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Department of Economic Development and Transportation
Nunavut Airports Division

Ministère du Développement économique et des Transports
Aéroports du collectivitès et des transports Nunavut

Rankin Inlet, August 8, 2006

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Via e-mail at colette.spagnuolo@ec.gc.ca

REF. NWB 1BR-IAD – Nunavut Airports – Culvert and Ditch Clean Project

Dear Madame:

As per your letter dated July the 14th 2006 (Your file 4703 001) I am providing the requested information:

- **Location where sediments to be excavated from the ditch will be stockpiled.**

Please find attached a sketch as a .pdf file (Sediment.pdf) where the proposed location is shown. This stockpile would be 80 m. long by 60 m. wide by approx. 1,10 m high.

- **Volume of material to be excavated.**

We estimate that approximately **5,200 M^3** will be excavated from the ditch

- **Erosion Protection Measures**

I am attaching all specifications and addendums for the construction contract that address this issue. In the file "Specs.pdf" you will find the following documents:

1. Spec 01561 – “Environmental Protection”
2. Spec. 02312 – “Airfield / Roadway / Ditch Grading
3. Spec. 02315 – “Excavating, Trenching and Backfilling”
4. Spec. 02371 – Rip-Rap
5. Addendum # 6, providing the contractor with the ECO Plan framework and recommendations for all environmental issues.

- **Drainage rerouting during the rehabilitation of the existing ditch**

The contractor will be required to divert remaining runoff away from the location of the work until such time as the work is complete. This may be accomplished through coffering the ditch above the upstream extremity of the worksite and employing one or both of the following alternatives:

1. pumping the water contained by the coffer to a location downstream of the location of the work, or;
2. pumping the water contained by the coffer into an alternate drainage course running southward along Taxi A, turning east parallel to the runway into the airport infield, from where it flows under Taxi B and is collected in the main drainage system for the airport lands and west 40 (See attached file “2d2.pdf”).

It is expected that alternative 1 will be used unless flows are higher than normal, in which case alternative 2 or a combination of both alternatives will be used.

<u>Environment Canada Recommendations:</u>

- **The proponent shall no deposit, nor permit the deposit of any fuel, wastes or sediment into any water body**

This issue is addressed in the attached documents.

- **Environment Canada recommends that the material be further sampled in order to verify the accuracy of the sampling results (Only one sample was tested for polyaromatic hydrocarbons (PAHs) and polychlorinated biphenyls(PCBs). Also, samples were taken from only three areas).**

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Department of Economic Development and Transportation
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Ministère du Développement économique et des Transports
Aéroports du collectivitès et des transports Nunavut

Nunavut Airports Division will further sample and analyze sediments so that the current results could be verified as per Environment Canada Recommendations. Could Environment Canada advise on the amount of additional samples and the kind of tests to be conducted in order to ensure that the results are reliable?

- **<u>All spills</u> shall be documented and reported to the 24 hour Spill line at (867)920-8130.**

I am notifying and requesting the Project Officer and the project's Consultant by carbon copying this requirement that this phone number be included into the Spills / Environmental Emergency Response Plan.

If you require further clarification or have any concern, please contact me at any time.

Best Regards,

Felipe Salgado, P.Eng.
Surface maintenance Engineer,
Nunavut Airports Division

Cc Florine Dahms, ACAP Funding Officer
Richard Dwyer, NWB Licensing Trainee
John Hawkins, Director Policy and Planning
David Ittinuar, Director, Nunavut Airports Division
John Graham, Director, Iqaluit International Airport
Anjan Joshi, Project Officer
Richard Kohler, EBA Engineering

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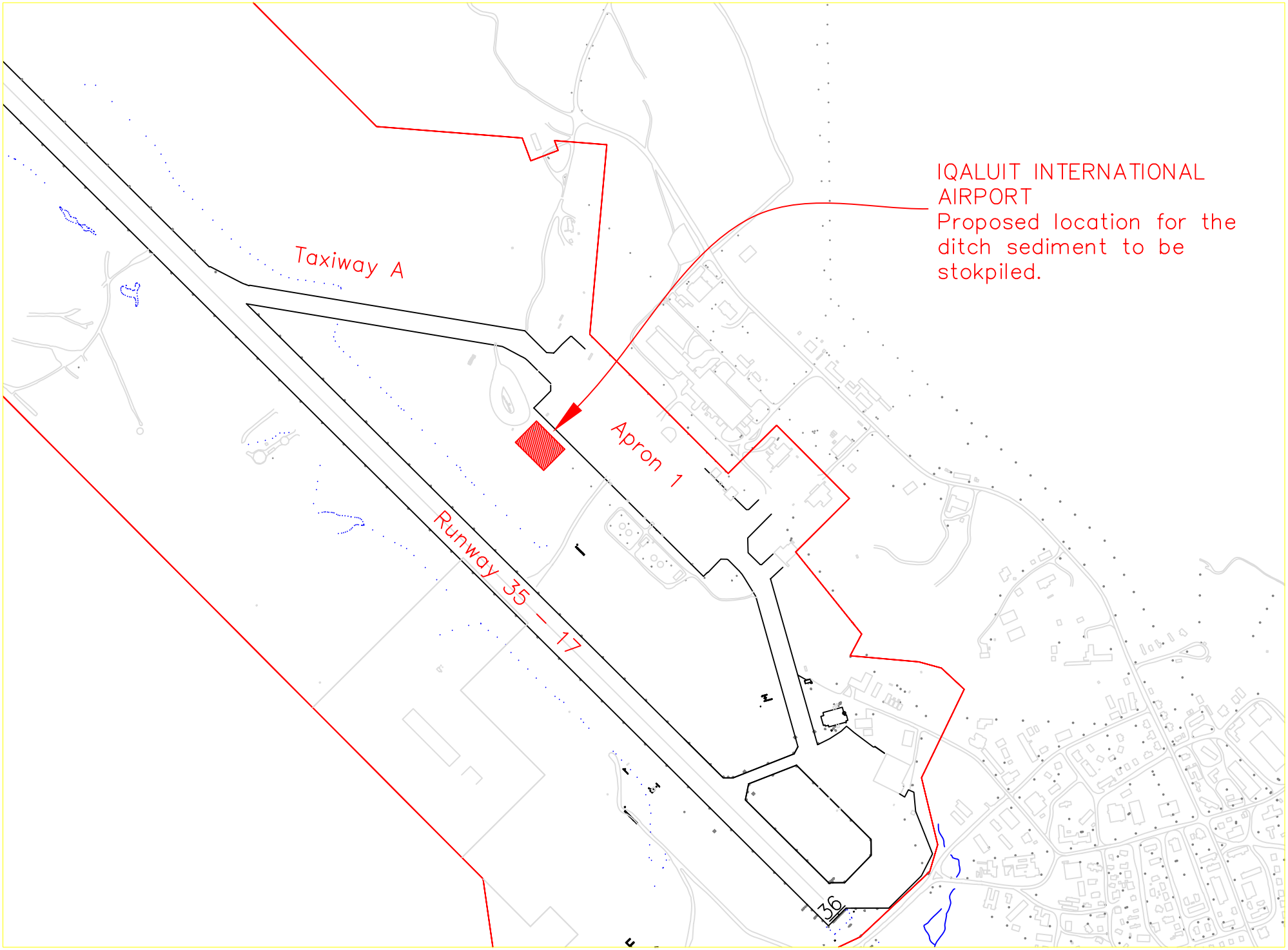
E-mail: fsalgado@nu.gov.ca


IQALUIT INTERNATIONAL AIRPORT
Proposed location for the ditch sediment to be stokpiled.
Taxiway A
Apron 1
Runway 35 - 17
36

PART 1-GENERAL

1.1 Submittals

.1 All required submittals to satisfy environmental and land use permit requirements shall be made directly to the responsible agency.

1.2 Fires

.2 Fires and burning of rubbish on site are not permitted.

1.3 Disposal of Wastes

.1 Do not bury rubbish and waste materials onsite. Dispose offsite in accordance with applicable laws.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers, or anywhere on site.

1.4 Drainage

.1 The Contractor shall provide temporary drainage and pumping as necessary to keep excavations and site free from water. The Contractor shall ensure that water does not collect in excavations and site from rainfalls during working hours or after hours when the Contractor is not onsite.

.2 Construction Drainage Plan:

.1 The Contractor shall prepare and provide a Construction Drainage Plan for approval by the Engineer, prior to the start of excavation.

.2 The Construction Drainage Plan shall indicate proposed locations and methods to provide temporary drainage and pumping as necessary to keep excavations and site free from water. The plan shall also indicate proposed methods to prevent soil erosion and discharge of water containing suspended materials into watercourses, sewer and drainage systems as per Local Erosion and Sediment Control guidelines.

.3 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.4 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

.5 Maintain and keep ditches open and free from debris at all times.

.6 Provide drainage control devices in ditches to minimize flow rates and prevent erosion.

1.5 Work Adjacent to Waterways

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material without the Engineer's approval.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

1.6 Pollution Control

.1 Provide and maintain temporary erosion, pollution and sediment control features required to prevent contamination of stormwater systems and waterways from sediments caused by runoff as per Local Erosion and Sediment Control guidelines.

.2 Control emissions from equipment and plant to local authorities emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads. The use of waste oil for dust control is prohibited.

.5 Minimize potential for spills of hazardous substances through proper use, handling, storage and disposal of products. Fuel or hazardous liquids shall be stored inside berms or self dyking containers capable of containing 110% of the volume of fuel or hazardous liquids.

.6 The Contractor shall prepare and provide a Spills/Environmental Emergency Response Plan to the Engineer for review prior to the start of work.

.7 All spills of any nature must be reported to the Engineer and Department of Indian and Northern Affairs Canada, and cleaned up immediately to the satisfaction of the Engineer.

1.7 Hazardous Materials

.1 If hazardous or contaminated material is encountered it must be reported to the Engineer immediately.

.2 Hazardous materials must be stored, used and disposed of in a proper manner by trained personnel. Copies of related documentation must be forwarded to the Engineer.

1.8 Air Quality/Ozone Depleting Substances(ODS)

.1 Ensure steps are taken to maintain indoor air quality/outdoor air quality.

.2 Release of any ODS must be reported to the Engineer.

.3 Ensure no unnecessary idling of vehicles during construction.

1.9 Inspection

.1 Provide required facilities and services to assist environmental inspection of the Contractor's construction site.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This section specifies the requirements for excavation, disposal of material, ditch excavation, construction of common fill areas, and preparation of pavement subgrades in accordance with the specifications and conforming to lines, grades, dimensions and typical cross sections indicated by the Contract Documents or as established by the Engineer.

1.2 Related Sections

.1 None designated.

1.3 References

.1 The abbreviated standard specifications for testing, materials, fabrication, and supply, referred herein, are fully described in Section 02000 References.

1.4 Measurement for Payment

.1 To Section 01013 Measurement for Payment.

1.5 Definitions: General

Excavation shall include the following:

.1 Excavation and disposal of muck or other unsuitable materials.

.2 Excavation for the preparation and construction of the subgrade of roadways, runways, taxiways and aprons.

.3 Excavation for subcuts.

.4 Excavation for the backfill of subcuts.

.5 Excavation for the construction of drainage ditches.

.6 Excavation of material for ditch blocks and ditch checks.

.7 Excavation for construction of approaches, entrances and parking areas for vehicles and aircraft.

.8 Excavation for the general grading of areas adjacent to roadways, runways, taxiways and aprons.

.9 Excavation for the backfill of holes or false grading to correct surface irregularities.

.10 The trimming and cleanup of all materials or excavation areas.

.11 Trimming and rounding of slopes.

.12 Transportation of excavated material from excavation area to stockpile or disposal area indicated regardless of distance.

.13 The construction of detours or other suitable provision to accommodate traffic, either pedestrian, vehicular or aircraft over or around any part of the work being performed.

.14 Maintaining the work in a finished condition until it has been accepted as completed by the Engineer.

1.6 Definitions: Specific

.1 Common Excavation: Excavation of all materials of whatever nature, including dense tills, hardpan, frozen materials and partially cemented materials which can be ripped and excavated with heavy construction equipment.

.2 Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having invidual volume in excess of 1 m^3.

.3 Common Fill: Material derived from usable excavation and placed above original ground or stripped surface up to subgrade elevation.

.4 Subgrade: In fills, the material confined between subgrade elevation and original ground, and between sideslopes; in cuts, the material below subgrade elevation confined between sideslopes.

.5 Subgrade Elevation: Elevation immediately below base or subbase, whichever is lower.

.6 Subcut: Excavation within or below the subgrade to length, width, and depth established by the Engineer.

.7 Stripping: Material composed of organic, unsuitable for common fill regardless of moisture content.

.8 Waste: Material unsuitable for common fill or material surplus to requirements to be disposed as directed.

.9 Borrow: Material obtained from areas outside of work area and required for construction of common fill and other portions of work.

.10 Unsuitable Materials

.1 Weak and compressible materials under pavement areas.

.2 Frost susceptible material under pavement areas.

.3 Very wet materials, which cannot be graded or properly compacted.

.4 Coarse-grained soils containing more than 20% by mass passing the 0.080 mm sieve.

PART 2 - PRODUCTS

2.1 Materials

.1 Common fill materials require approval from Engineer.

PART 3 - EXECUTION

3.1 Stripping

.1 Not included.

3.2 Excavating

.1 General

.1 Excavate to lines, grades, elevations, and dimensions indicated or as directed by the Engineer.

.2 All excavations shall be maintained in a well-drained condition at all times. Maintain profiles, crowns and cross slopes to provide good surface drainage. Do not allow standing water to occur on the excavated or fill surface at any time.

.3 Provide ditches as the work progresses to provide drainage.

.4 All deposits of frost susceptible and unsuitable materials shall be removed below subgrade to the length, widths and depths as directed by the Engineer, and such unsuitable materials shall be replaced with acceptable backfill material and compacted in place. Notify the Engineer when unsuitable materials are uncovered.

.1 The Engineer will require timely placement of backfill material, if such action is deemed essential to minimize deterioration or degradation of exposed materials.

.5 Where subgrade is on transition from excavation to common fill, treat ground slopes at grade points as directed by the Engineer.

.2 Side Ditches:

.1 Construct side ditches to depths and widths indicated in contract documents or as directed by the Engineer, to permit ready flow of surface water.

.2 Ditches in airfield cuts will be constructed as soon as possible to provide drainage in the cut to prevent softening of the subgrade.

.3 Maintain and keep ditches open and free from debris at all times.

.4 Provide drainage control devices in ditches to minimize flow rates and prevent erosion.

.3 Construction Drainage Plan:

.1 The Contractor shall prepare and provide a Construction Drainage Plan for approval by the Engineer, prior to the start of excavation.

.2 The Construction Drainage Plan shall indicate proposed locations and methods to provide temporary drainage and pumping as necessary to keep excavations and site free from water. The plan shall also indicate proposed methods to prevent soil erosion and discharge of water containing suspended materials into watercourses, sewer and drainage systems.

.4 Unsuitable or surplus material:

.1 Disposal of unsuitable or excess material shall be at locations as indicated in the Contract Documents or as directed by the Engineer.

3.3 Borrow Excavation (if required)

.1 Completely use in embankment suitable materials removed from work area excavations before taking material from borrow areas.

.2 Obtain from designated borrow areas, fill material required in excess of quantities available from cut areas.

.3 Engineer to designate location and extent of borrow areas and allowable depth of cutting.

.4 Contractor is responsible for construction and maintenance of all haul roads to pits. Location of pits and haul roads subject to Engineer's approval. Cost of constructing and maintaining haul roads to be considered part of cost of producing material and no separate payment made.

.5 Strip borrow topsoils and stockpile outside the work area. Stripped topsoil shall be removed from the areas to be excavated and stockpiled so as not to be contaminate by deleterious material.

.6 Remove materials unsuitable for embankment as designated by Engineer.

.7 Shape edges of borrow areas on slopes of 2:1 and provide drainage as directed by Engineer.

.8 Trim and leave borrow pits in suitable condition as directed by the Engineer.

.9 The stripped topsoil stockpiled from the Contractor's pit operations shall be spread uniformly over the entire trimmed and graded surfaces in a condition suitable for seeding by others. The Contractor shall not be required to place topsoil in areas which in the opinion of the Engineer may remain open for future pit operations, but shall trim off and dress slopes of topsoil material and leave site in neat condition.

.10 During course of construction, Engineer may order additional borrow investigation, using Contractor's equipment.

.11 Borrow pits may be deleted or added.

3.4 Common Fill Construction

.1 General:

.1 Maintain profiles, crowns and cross slopes to provide good surface drainage. Blade surface regularly to eliminate rutting.

.2 Begin common fill construction full width. Spread material in horizontal layers over the length of the fill area to prevent pockets of materials with different properties being placed side by side in the fill area.

.3 When directed, scarify or bench existing slopes in side hill or sloping sections to ensure proper bond between new materials and existing surfaces. Method used to be subject to prior approval by the Engineer.

.4 Break up or scarify existing surface prior to placing common fill material.

.5 Do not place material which is frozen or place material on frozen surface except in areas authorized in writing by the Engineer.

.6 Maintain crowned surface during construction to ensure ready runoff of surface water. Do not place material in free standing water. Drain low areas before placing materials.

.7 The Contractor shall have sufficient graders, water trucks, and rollers onsite to meet the specified spreading and compaction requirements for the amount of material hauled in each lift. The Engineer reserves the right to order the discontinuance of use of any equipment or method which, in his opinion, fails to produce satisfactory results.

.8 When common fills are to be placed over swampy or saturated ground, the Contractor may be permitted to end dump an initial lift of approved material of sufficient depth to support hauling equipment.

3.5 Compaction

.1 General

.1 Shape and roll alternately to obtain smooth, even and uniform compacted layers.

.2 When necessary apply water during compaction to obtain specified density. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

.3 Any soft, weak, or otherwise unsuitable material discovered at any stage of the work shall be excavated to the depth and extent designated by the Engineer. The material shall be replaced by suitable material.

.4 Should the surface become rutted or disturbed for any reason prior to or during the placing of the next layer, the Contractor shall re-grade and re-compact the subgrade at his own expense.

.2 Common Fill

.1 Place and compact to full width in layers not exceeding 200 mm loose thickness. The Engineer may authorize thicker lifts if specified compaction can be achieved and if material contains more than 25% by volume stone or rock fragments larger than 100mm.

.2 Break soil down to a size suitable for compaction and mix for uniform moisture and soil conditions to full depth of layer.

.3 Compact each layer to at least a minimum of 98% Standard Proctor Maximum Dry Density ASTM D698.

.4 During performance of the work, sufficient water shall be added or the soil shall be aerated to bring the moisture content to within ± 2% of optimum required for compaction.

.5 The moisture content shall be maintained at ± 2% of the optimum moisture content as defined by ASTM D698 until the next layer is placed.

3.6 Subgrade Preparation

.1 In common fill areas, do not place stones and boulders exceeding 150 mm maximum dimensions within 0.5 m of subgrade elevation.

.2 In excavation areas, remove stones and boulders exceeding 150 mm maximum dimension within 150 mm of subgrade elevation.

.3 Bring moisture content to +/- 2% of the optimum moisture content (ASTM D698) for each given material. Add water or aerate using a discer to uniformly mix the material for the full depth specified.

.4 Compact top 300 mm of subgrade soils to a minimum of 98% of Standard Proctor Maximum Dry Density (ASTM D698).

.5 The Contractor shall have sufficient graders, discers, water trucks and packers onsite to meet the specified mixing, moisture, and compaction requirements for the area worked in each day. The Engineer reserves the right to order the discontinuance of use of any equipment or method which, in his opinion, fails to produce satisfactory results

.6 Tight blade subgrade surface to required cross section and grade and to the tolerances specified in subsection 3.6.

3.7 Finishing and Tolerances

.1 Ditches

.1 Blade finished ditch subgrade surfaces in cut and fill areas free from ruts, depressions and debris. Hand finish areas that cannot be finished satisfactorily by machine.

.2 Finished ditch subgrade to be within 30 mm of design elevations, but not uniformly high or low.

.2 Pavement and Shoulder Subgrade

.1 Fine grade finished subgrade to be free from ruts, depressions, rock in excess of 75 mm, and debris and attain a tight dense surface.

.2 Following fine grading, static rolling subgrade surface using a smooth drum type roller can be done (if needed), to help attain a tight dense condition.

.3 Finished subgrade to be within 30 mm of design elevations, but not uniformly high or low.

.4 Finished subgrade surfaces to be free from depressions exceeding 30 mm in 5 m.

3.8 Proof Rolling

.1 For proof rolling, use fully loaded single or dual axle dump truck.

.2 The Engineer may authorize use of other acceptable proof rolling equipment.

.3 Proof roll top of subgrade upon completion of compaction and fine grading work.

.4 Make sufficient passes of proof roller to subject every point on the surface to three separate passes of loaded tire.

.5 Where proof rolling reveals areas of unstable subgrade, proceed as follows:

.1 Investigate material in unstable area to a depth of about 600mm to 750 mm below subgrade elevation, or as directed by the Engineer. If the material below the subgrade surface is deemed to be suitable, redo subgrade preparation to a depth necessary to achieve requirements of this section. After completion of rework, proof roll subgrade again.

.2 If the investigation reveals unsuitable material, remove such material to the depth and extent as directed by the Engineer. Use of geotextile and geogrid in the bottom of the excavation shall be at the discretion of the Engineer.

.3 Backfill area of excavation with common material in compliance with the compaction and moisture content requirements of this section. Prepare the subgrade surface according to subsection 3.6 Subgrade Preparation. Proof roll subgrade again.

.4 The use of Geotextile and Geogrid as a means to help correct areas of unstable subgrade shall be at the discretion of the Engineer and shall only be used after all methods noted in this section have been attempted. Unauthorized use of geotextile and geogrid shall be at the Contractors' expense.

3.9 Maintenance

.1 Maintain finished ditch subgrade surfaces in a condition in accordance with this Section until succeeding material is applied.

.2 Maintain finished subgrade in a condition in accordance with this Section until succeeding material is applied.

.3 Acceptance of finished subgrade by the Engineer does not relieve the Contractor of his responsibility to provide a subgrade meeting the requirements of this Section until succeeding material is applied.

.4 Maintain work area such that dust does not create a safety hazard to the airport.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This section specifies the requirements for excavating, trenching and backfilling of underground utility installations and related structures.

1.2 Related Sections

.1 Section 02225 Sitework Demolition and Removal

.2 Section 02641 Pipe Culverts

.3 Section 02704 Aggregates and Granular Materials

1.3 References

.1 The abbreviated standard specifications for testing, materials, fabrication, and supply, referred herein, are fully described in Section 02000 References.

1.4 Measurement for Payment

.1 No separate payment shall be made for Excavating, Trenching and Backfilling. Include costs for work performed under this section in the appropriate tender items.

1.5 Protection

.1 Existing buried utilities and structures.

.1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

.2 Prior to commencing any excavation work, notify applicable owner or authorities, confirm location and state of use of buried utilities and structures. Clearly mark such locations to prevent disturbance during work.

.3 Confirm locations of buried utilities by careful test excavations.

.4 Maintain and protect from damage, water, sewer, gas, fuel, electric, telephone and other utilities and structures encountered. Obtain approval from the Engineer before moving or otherwise disturbing utilities or structures.

.5 Record as-built location of maintained, re-routed and abandoned underground lines on Drawings.

1.6 Submittals

.1 The Contractor shall provide sieve analysis and source location of material that may be imported to the site for work performed under this section.

.2 The Engineer shall approve imported materials prior to use by the Contractor.

.3 Information shall be submitted to the Engineer two (2) weeks prior to commencing work.

PART 2 - PRODUCTS

2.1 Materials

.1 General excavation fill and bedding material shall be as shown on the drawings and as outlined in Section 02704.

.2 Rock excavation: excavation of material from solid masses of igneous, sedimentary or metamorphic rock which, prior to its removal, was integral with its parent mass, and boulders or rock fragments having invidual volume in excess of 1 m^3.

.3 Common excavation: excavation of material of whatever nature, which are not included under definitions of rock excavation including dense tills, hardpan and frozen materials.

PART 3 - EXECUTION

3.1 Site Preparation

.1 Remove all brush, weeds, grasses and accumulated debris from the site.

.2 Remove existing pavements to limits indicated or as directed by the Engineer. Work shall be performed in accordance with Section 02225 Sitework Demolition and Removal.

3.2 Excavation

.1 Excavate to lines, grades, elevations and dimensions as indicated or as directed by the Engineer.

.2 For trench excavation, unless otherwise authorized by the Engineer, do not excavate more than 30 m of trench in advance of installation operations and no trenches shall be left open at the end of day's operation.

.3 Where excavated material will be used as backfill, stockpile material onsite or as directed by the Engineer. If material is surplus to backfill requirements stockpile material as indicated or as directed by the Engineer.

.4 Where excavated material is unsuitable as backfill, stockpile material as indicated or as directed by the Engineer.

.5 Material that is suspected of contamination shall be stockpiled as directed by the Engineer. The Engineer will test the material to determine the extent of contamination and then direct the Contractor as to method of disposal or reuse.

.6 Trenching

.1 The minimum trench width below the crown of the pipe shall be not less than the nominal diameter of the pipe plus 400 mm. The maximum width of the trench below the crown of the pipe including shoring shall be not more than the nominal diameter of the pipe plus 600 mm or not more than a total width of 900 mm, whichever is the greatest. Where the maximum trench width is exceeded, the Contractor shall, at his own expense, provide special bedding or take other precautions as directed by the Engineer. Where more than one pipe is laid in the same trench, the minimum and maximum widths shall be as directed by the Engineer.

.2 The Contractor shall confine his activities to the immediate area of the trench. All activities outside trench boundaries shall be performed so as not to damage other existing features. The Contractor shall generally have the option of using either vertical shored trenches or Vee trenches. Every effort shall be made to restrict the trench widths to minimize the area disturbed.

.3 All excavated material shall be piled at least 1.0 m clear of the trench tip to prevent material from falling back into the excavation. The material shall be piled in such a manner that it will not endanger the work, or obstruct other work or rights-of-way, or affect the safety and operation of aircraft. Sufficient clear space must be left on one side of the trench to accommodate the work stakes.

.4 The trench shall be excavated so that the pipe can be laid to the alignment, grade and depth required, or the pipe can be removed as required.

.5 The subgrade shall provide a uniform and continuous support for the pipe and fittings on solid undisturbed ground. Any over excavation by the Contractor below the required grade shall be backfilled at his expense with material approved by the Engineer.

.7 Shoring

.1 When close sheeting is required, it shall be so driven as to prevent adjacent soil from entering the trench either below or through such sheeting. The Engineer reserves the right to order the sheeting

driven to the full depth of the trench or to such additional depths as may be required for the protection of the work.

.2 Trench bracing may be removed when the backfilling has reached the respective level of such bracing. Sheeting shall be removed as the backfilling proceeds. Backfilling of holes left by sheeting below the trench bottom shall be carefully compacted, and thereafter backfilling and withdrawal of sheeting shall proceed together. No voids shall be left in the backfill by the withdrawal of the sheeting.

.3 When a cage or shield is used in the trench instead of shoring, special care shall be taken to ensure that there is no lateral or longitudinal movement of the pipe when the cage is moved. The cage shall be raised vertically so that the bottom member is clear of the crown of the pipe before the cage is pulled forward in the trench.

.8 Trench Drainage

.1 Excavations shall be kept free of water while work is in progress.

.2 Gutters and natural drainage channels shall not be obstructed. Satisfactory provisions shall be made for alternate drainage where this is impractical.

.3 The trench shall be so drained that the workers may work safety and effectively. All water encountered in trenches shall be pumped or bailed out, and in no case shall the pipe be used as a drain for such water. It is essential that the discharge of the trench dewatering pumps be conducted away from the site of the work and into natural drainage channels, drains or storm sewers.

.9 Unsuitable Subgrade

.1 Where the subgrade of the trench is unstable or where it contains unsuitable materials, excavate and dispose of materials as directed by the Engineer.

.2 Replace material with suitable material approved by the Engineer.

.10 Over Excavation

.1 In areas of over excavation replace over excavation with material approved by Engineer.

.2 Unauthorized excavation and replacement with suitable materials shall be at the Contractor’s expense.

.11 Trench Subgrade

.1 Trim and remove loose material and debris from excavation prior to installing bedding and pipe.

.2 If the trench subgrade is disturbed compact foundation soil to density at least equal to undisturbed soil.

3.3 Utility Installation

.1 Place and compact bedding materials as specified by the appropriate section.

.2 Install the required pipe or duct as specified by the corresponding section.

.3 Place the remaining bedding and surround materials as specified by the appropriate section.

3.4 Backfilling

.1 Do not proceed with backfilling operations until the Engineer has inspected and approved installations.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Backfilling around installations.

.1 Place bedding and surround material as specified.

.2 Place layers simultaneously on both sides of installed work to equalize loading. Difference not to exceed 0.5 m.

.3 Place material by hand under, around and over installations until 600 mm of cover is provided. Dumping material directly on installation will not be permitted.

.5 Place backfill material in uniform layers not exceeding 200 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.5 Compaction

.1 Compact materials specified in this section as follows:

.1 Cohesive soils compacted to a minimum of 98% of Standard Proctor Maximum Dry Density (ASTM D698).

.2 Cohesionless soils compacted to a minimum of 100% of Standard Proctor Maximum Dry Density (ASTM D698).

.2 The type of compaction equipment shall be chosen with regard to minimizing the vibration affect on nearby structures and utilities. The Engineer shall have the right to request the Contractor to replace any equipment causing unacceptable vibrations. The Contractor is responsible for any damage caused due to construction.

3.6 Restoration

.1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects as directed by the Engineer.

.2 Clean and reinstate areas affected by work as directed by the Engineer.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This section specifies the requirements for producing, hauling placing, and finishing rip-rap for erosion protection, placed in accordance with the specification and to the lines, grades and dimensions indicated by the Contract Documents or as required by the Engineer.

1.2 Related Sections

.1 None specified.

1.3 References

.1 The abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are fully described in Section 02000 References.

1.4 Measurement for Payment

.1 To Section 01013 Measurement for Payment.

PART 2 - PRODUCTS

2.1 Stone

.1 No stone shall have maximum dimension greater than three times its least dimension. Hard, dense, durable angular quarry stone or hard, dense, angular boulders free from seams, cracks or other structural defects to meet the size distribution as indicated in the Contract Documents or as directed by the engineer.

2.2 Specifications

.1 Not more than 10% of total volume of stones with individual volume less than 15 dm^3.

.2 Not more than 50% of total volume of stones with individual volume of 85 dm^3.

.3 Remaining percentage of total volume to have uniform distribution of stones 15 and 85 dm^3.

PART 3 - EXECUTION

3.1 Placing

.1 Fine grade area to be rip-rapped to uniform, even surface. Fill depressions with suitable material and compact to provide firm bed.

.2 Place rip-rap to thickness and details as indicated in the Contract Documents or as directed by the Engineer.

.3 Place stones in manner approved by the Engineer to secure surface and create a stable mass. Place larger stones at bottom of slopes.

.4 Hand placing:

.1 Use larger stones for lower courses and as headers for subsequent courses.

.2 Stagger vertical joints and fill voids with rock spalls or cobbles.

.3 Finish surface even, free of large openings and neat in appearance.

END OF SECTION

Addendum No. 6

ADDENDUM # 6

Project No. 05-2014	Project Title: Re-opening Taxi way "A" & Rehabilitation Apron "1"
Division/Region: Projects / Baffin	Client: ED&T (Nunavut Airports)
Community: Iqaluit, Nunavut	Date of Issue: June 9, 2006
Contractor: All in Plan Holders ' List	Consultant: EBA Engineering Limited

TO ALL BIDDERS

1. General:
   - 1.1 This addendum shall be read in conjunction with the Drawings and Specification prepared for the above.
   - 1.2 Where inconsistent with the above, this addendum shall govern. This addendum forms an integral part of the Contract Documents and shall be included therein.
   - 1.3 No consideration shall be allowed for increased (extras) to the CONTRACT PRICE due to failure of the Contractor or Sub-contractor not being familiar with this addendum.
   - 1.4 The Tenderer will insert in the Tender Form the numbers of the addenda received by him during the tendering period and taken into account by him in preparing his tender.

SCOPE OF THE ADDENDUM

1. **Submission of Environmental Construction Operations Plan (ECO Plan)**

   - Enclosed is the framework (14 Pages) for the ECO plan for the project; contractor is to submit the ECO plan as early as possible upon the award of contract, as outlined in the framework in detail.

2. **Revisions in Electrical Drawings apply as follows:**

   2.1. Drawing E1.2:- Delete pad-mount transformer and primary power service shown. Provide, instead, secondary service conduit and wire underground from FEC to and up new Nunavut Power Corporation service pole. Nunavut Power Corporation will be installing a new pole, with pole-mounted transformer, in the general vicinity of the new FEC, exact location being determined by their existing pole line alignment. Obtain exact location from Nunavut Power Corporation.

   2.2. Drawing E2.0:- In the Power Single Line Diagram, delete reference to pad-mounted transformer and primary service. Secondary service to run to an up utility service pole as per description above for drawing E1.2.

END OF ADDENDUM

Project Officer: Anjan Joshi	Date: June 9, 2006
Project Manager : Patricio Fuentes	Date: June 9, 2006

IQALUIT AIRPORT

Environmental Construction Operations Plan (ECO Plan)

Iqaluit Airport ECO Plan for Construction

Table of Contents

I N T R O D U C T I O N

In order for the environment to be protected during construction, it is critical that all parties to Airport contracts, agreements, permits and authorizations, be aware of the environmental impact of their construction activities and provide measures and due diligence to protect the environment.

An Environmental Construction Operations Plan (ECO Plan) consists of guidelines and written procedures that address the environmental protection issues relevant to the specific project activities being performed. The Contractor must submit the ECO Plan to the Nunavut Department of Economic Development and Transportation (NDEDT) prior to commencement of the work and in sufficient time to allow evaluation of the suitability of the proposed strategy. NDEDT will then review the ECO Plan and address any concerns with the Contractor.

To achieve consistency in preparation of ECO Plans on Airport projects, the framework and guidelines contained in this document must always be considered when developing an ECO Plan. The framework and guidelines contain concepts and minimum submission requirements. The Contractor is encouraged to exceed the minimum submission requirements where it will enhance environmental protection. Within the framework, the Contractor will have the ability to adjust the ECO Plan based on site conditions.

It is critical that all parties are in agreement on the procedures and environmental control devices to be used for the protection of the environment. Once work has commenced, changes can be made as conditions dictate. The reasons or circumstances necessitating changes made to the ECO Plan must be documented in writing.

P R I M A R Y R E S P O N S I B I L I T I E S

In order for the environment to be protected during construction, it is critical that all parties to Airport contracts, agreements, permits and authorizations, be aware of their respective responsibilities concerning environmental protection.

The required ECO Plan prepared by the Contractor shall be directed to NDEDT. The following are the primary responsibilities of the Contractor, concerning environmental protection on Airport contracts.

- Develop an ECO Plan and submit it to NDEDT for evaluation prior to commencement of the work.
- Implement environmental protection measures in accordance with the ECO Plan.
- Monitor the work zone to ensure that the ECO Plan is effective for all conditions, including inclement weather conditions and during periods of construction and shut down.
- Maintain all environmental control and protection devices.
- Take appropriate and timely action to correct any deficiencies.
- Take action (i.e., shut down work) where it is recognized that an impact to the environmental will occur.

- Ensure that staff and subcontractors are trained and empowered to identify, address and report potential environmental problems.
- Report all environmental incidents to NDEDT immediately and provide a copy of the incident report to the proper authorities.
- Attend any meetings initiated by NDEDT to address any concerns regarding the performance of the ECO Plan.
- Ensure that all subcontractors comply with the ECO Plan.
- Provide a knowledgeable individual at the work site to maintain the environmental control devices and address any environmental protection issues that arise. The Contractor must identify this individual to NDEDT at the construction start-up meeting.

ECO PLAN REVIEW PROCESS

For all construction and restoration projects, an ECO Plan will be prepared by the Contractor and submitted to NDEDT prior to commencement of the work and in sufficient time to allow NDEDT (Project Manager) to evaluate the suitability of the proposed plan.

Process Review

Upon receipt of the ECO plan from the Contractor, NDEDT will review the plan and:

- If it is to the mutual satisfaction of the Contractor and NDEDT, the NDEDT will advise the Project Manager.
- If there are deficiencies or questions noted, NDEDT will follow-up with the Contractor.
- The Contractor will make appropriate changes to the ECO Plan and resubmit it to NDEDT. Once there is mutual agreement to the ECO Plan, the project may proceed.
- If, during the course of the project, it is determined that the ECO Plan is not adequate, it will be modified and accepted to the mutual satisfaction of all parties.

ECO PLAN FRAMEWORK

The purpose of the ECO Plan Framework is to provide guidance to Contractors in developing an acceptable ECO Plan for the duration of the project. The duration of the project is defined as the start of the project through to the issuance of a certificate of total performance. It is the Contractor's responsibility to prepare and determine the measures included in an ECO Plan. This Framework describes the components and information that should be included in an ECO Plan and the steps that a Contractor will typically follow to develop and implement a Plan.

The ECO Plan details the Contractor's plan for satisfying the environmental requirements associated with the specific project. The plan must:

- Provide a statement of the Contractor's commitment for protection of the environment, compliance with environmental legislation and satisfying NDEDT’s contractual and policy requirements.

- Identify and address, construction procedures, the environmental requirements and potential impacts associated with various construction activities.
- Provide emergency response procedures to minimize potential impacts of emergency situations on the environment.
- Describe how monitoring and reporting will be conducted to satisfy contractual and regulatory requirements.
- Describe how the ECO Plan will be implemented by establishing a plan for training, communication, documentation, auditing, management review and ECO Plan adjustments.

The ECO Plan submitted by the General Contractor must cover the activities of any subcontractors.

PREPARING AN ECO PLAN

To prepare an ECO Plan, a Contractor would conduct the following steps:

1. Develop a commitment statement to environmental protection that is appropriate to the project.
2. Identify the environmental aspects and potential impacts of the project. To identify environmental aspects and potential impacts of the project, the Contractor would review:
    - Environmental impacts of site activities; and
    - Environmental regulations pertaining to the project.
3. Describe procedures to address the environmental aspects and potential impacts relating to:
    - Site activities of specific project stages;
    - Construction site management;
    - Construction materials management; and
    - Waste management.
4. Describe emergency response procedures for all potential environmental site emergencies.
5. Describe procedures for monitoring and reporting information to satisfy environmental legislation and contractual requirements.
6. Describe how the ECO Plan will be implemented, reviewed and adjusted as appropriate.
    - Define roles and responsibilities.
    - Provide a plan for staff training and communication of the ECO Plan.
    - Indicate what documentation is to be kept (see Documentation section).
    - Review ECO Plan performance regularly and after incidents.
    - Adjust ECO Plan as appropriate for environmental protection condition changes and continual improvement.

POLICY STATEMENT

An environmental policy statement confirms the Contractor's corporate commitment to the protection of the environment. The Contractor's policy statement must:

- Be appropriate to the nature, scale and environmental impacts of the project;
- Develop a commitment statement to the NDEDT that is appropriate to the project;
- State the Contractor will comply with all relevant federal and territorial environmental laws; and
- Follow best management practices.

SITE MAP (Attached)

GEOGRAPHIC SCOPE

Activities and their corresponding issues and activities must be addressed for all locations related to the construction of the project. This includes (but is not limited to):

- Project site;
- Project site office location; and
- Any compounds related to materials processing and storage (batch plants, materials and waste storage compounds, maintenance compounds, parking locations, fill storage etc)

ACTIVITY/ENVIRONMENT RELATED ISSUES TO BE ADDRESSED IN THE ECO PLAN

Information on typical acitivities and possible mitigation can be found in **Appendix A**. The ECO Plan must address or provide procedures for the following items:

1. Earthworks

The ECO Plan must contain a description and drawings detailing the measures that the Contractor will implement to mitigate the impacts of earthwork on the environment. Consider the following:

Earthworks

- Erosion/sedimentation control

Excavation

- Removal, storage and replacement of soil horizon materials
- Procedures if contaminated material is encountered and how the material will be segregated and remediated

Note: Contact the NDEDT and the project consultant if suspected contaminated materials are encountered. Ensure the suspected contaminated material is segregated

Erosion & Sedimentation Control

- Provide details (description, maps, etc) showing sensitive erosion areas, methods for prevention, and maintenance/monitoring of erosion/sedimentation control structures
- Dust control
- Response to erosion events (wind and water)
- Minimization of surface disturbance

Site Drainage

- How the project fits within NDEDT's Master Drainage Plan
- Maintenance of drainage capability during construction
- Temporary draining and pumping diversion locations
- Prevention of oil/grease and other hydrocarbons from entering storm drainage system

2. Water Quality

- Prevention of deleterious substances from entering sanitary, storm drainage, surface and groundwater systems

3. Materials Management

During the duration of a project, various materials are utilized for construction, rehabilitation and maintenance of equipment. The ECO Plan must identify those materials and their potential impacts.

Hazardous Materials

In order to meet contract requirements, WHMIS and Transportation of Dangerous Goods (TDG) and environmental compliance responsibilities, the ECO Plan must identify:

- Methodology to determine the presence, testing, handling and disposal of hazardous materials encountered during any demolition or re-location activities (i.e., asbestos, PCB's, lead, contamination)

Note: If a hazardous or contaminated material is encountered it must be reported to NDEDT project manager and to the project consultant as soon as possible.

- Procedures to address the proper transportation, storage, containment and handling of hazardous materials
- Locations of stored hazardous materials, spills response plan, and spills response kits
- Hazardous material inventory indicating common name, shipping name, phase, containment, Class (if applicable), availability of MSDS and quantities
- Site access for ERS in an emergency situation

4. Waste Minimization

- Re-use and re-cycling of demolition materials
- Identification of waste materials generated and potential impacts on environment
- Segregation of wastes (hazardous, non-hazardous, recyclables, etc)
- Procedures for handling, containment, storage, transportation, disposal and documentation of waste and recyclables
- Describe how any impacts will be mitigated (i.e. berms, liners, ponds, containers)

5. Bird and Wildlife

- Aviation safety is the prime concern of airport operators. All efforts should be made to minimize the attraction of birds to the site.

6. Air Quality/Ozone Depleting Substances (ODS)

- Maintenance of air quality
- Minimization of vehicle idling times

7. Equipment and Equipment Maintenance

- Containment measures (i.e. spill kits, centralized maintenance etc)
- Equipment storage and maintenance locations

8. Waste Management

- Domestic garbage collection, transportation and disposal locations

9. Site Clean Up and Reclamation

EMERGENCY RESPONSE PROCEDURES

The ECO Plan must identify potential incidents that, through natural causes, accidents, human error or improper work practices, impact the environment. The ECO Plan must describe the emergency procedures that will be implemented to address the potential incidents. Potential incidents may include:

- Spills and releases (land, water and air).
    - Fuels
    - Oils and lubricants
    - Chemicals
    - Biological agents
    - Other substances that may be harmful to the environment
- Erosion events (water and wind).

Address the following in the ECO Plan:

- Minimization of potential for spills of hazardous substances;
- Resource assessment and allocation for response to spills; and
- On-site location of environmental emergency response plan.

Note: All spills must be reported to the NDEDT and the project consultant. A Spills Report must be completed and faxed to NDEDT

10. MONITORING AND REPORTING

The ECO Plan must describe the monitoring and reporting that is conducted through the duration of the project to satisfy contractual and regulatory requirements. Monitoring and reporting requirements may include:

- Water Quality;
- Soild Erosion; and
- Spills Reporting.

E C O P L A N I M P L E M E N T A T I O N

Implementation is critical to the success of the ECO Plan. It is important to have corporate support and for the staff to have ownership of the ECO Plan. The Contractor is responsible for the implementation of the ECO Plan for the duration of the project and ensuring that all personnel on site abide by the plan. This section of the Eco Plan should include:

TRAINING AND AWARENESS

- Training and awareness sessions;
- Tailgate meetings;
- A description of meeting frequency;
- A log of trained and updated staff;
- A bulletin board and memorandum circulation; and
- Encourage employee to submit ideas and suggestions.

DOCUMENTATION

Describe the information that will be kept to document the significant events relating to the implementation and adjustment of the ECO Plan. A binder or file with all relevant information should be retained at the construction site. The following are some of the events that should be documented:

- Accidents, spills and releases must be reported using NDEDT spills reporting policy
- Reviews, improvements and adjustments to the ECO Plan
- Training

- Materials inventory
- Waste Inventory
- Equipment inspections and maintenance
- Monitoring and maintenance of erosion and sediment controls

COMMUNICATION

Describe the communication that will be conducted through the duration of the project relating to the ECO Plan. Although each project may differ, communication with managers, staff, other Contractors and Subcontractors, NDEDT and regulatory agencies may include:

- Daily, weekly or monthly meetings.
- Daily, weekly or monthly reports.

MANAGEMENT REVIEW/ECO PLAN ADJUSTMENTS/CONTINUAL IMPROVEMENT

The Contractor is required to ensure the success and continual improvement of the ECO Plan. The ECO Plan is designed to change based on site conditions. The goal is for continual improvement by adjusting the plan as experience is gained. This plan must describe the frequency of management review and the procedures for adjusting the plan to address continued improvement.

Iqaluit Airport ECO Plan for Construction

A P P E N D I X " A "

Sample Mitigation Measures for Typical Airport Activities

Project Activity	Mitigation
Typical Construction and Decommissioning Activities	
Demolition/ Dismantling	• Asbestos removal - Because of the potential danger to human health, any project requiring asbestos removal should be undertaken following Government of Nunavut procedures for working with Asbestos • Old wiring/electrical components to be removed should be inspected for PCB's. If present, they should be handled according to the proper guidelines. • Asphalt must be disposed of at approved sites, and under no circumstances should it be disposed of along roadsides etc.
Fencing	• Wash down material or run-off from cast in place concrete work will be trapped onsite and not allowed to enter drainage system. • Build as per Transport Canada security fence specifications. • Fence lines often attract wildlife. This may not apply at airports where fences are used to ensure wildlife does not have access to airstrip areas.
Temporary Roads	• Construction of temporary roads should be avoided unless absolutely necessary.
Dewatering/Draining	• Timing windows of allowable in-stream work should be confirmed with DFO. • The activity should be scheduled to prevent interference with fish migration and spawning periods. • Temporary drainage should be designed to minimize the run-off from precipitation and increase percolation and the recharge of groundwater.
Channeling/ Dredging	• Downstream flooding may occur if the new channel is straighter and permits higher flow velocity than the former, or it the new channel avoids the meanders and ox-bow lakes of the old bed. Studying the capacity of the downstream area to handle the new flood conditions can minimize the impacts of flooding. • Minimizing the use of riprap in developed areas can lessen the undesirable effects of channeling. Other bank stabilization techniques may be more environmentally sensitive. Consult a bio-engineer or DFO staff to discuss other options.
Dredgate Disposal	• Dredgate should be disposed of at approved disposal sites as determined by Environment Canada. • Berms should be used to prevent leaching or movement of dredgate back into the water. • Soil disposal sites should be graded and seeded as soon as practical after completion of work.
Rock Blasting/ Drilling	• No blasting within 100 m of a water body, or within 100 m of critical wildlife habitat. Blasting is prohibited underwater. • Notify appropriate regulatory bodies before blasting. • Provide retention ridges to prevent material from rolling down blasted slopes. • Avoid blasting during temperature inversions. • Avoid blasting when wind conditions blow toward populated areas.

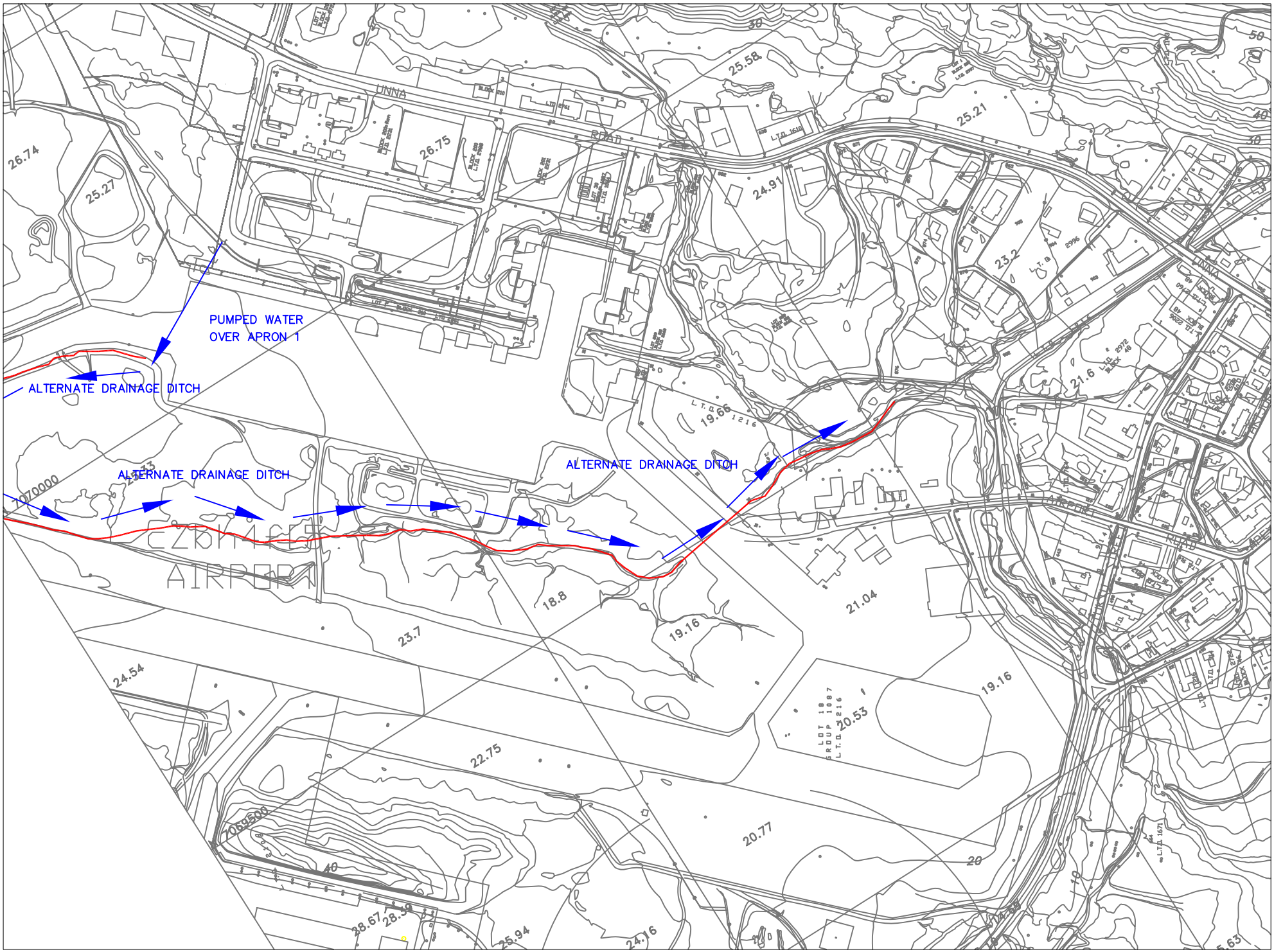
Iqaluit Airport ECO Plan for Construction

Project Activity	Mitigation
	• Blasting should not occur during sensitive periods for wildlife (e.g. migratory bird staging). When wildlife are within 500 m of proposed blasting operations, blasting should not be undertaken until the animals are moved or herded from the area by provincial or federal wildlife staff. Blasting must not be undertaken within 500 m of inhabited cliff nests or where mammal calving or den activities are occurring. • Blasting should be minimal and executed as quickly as possible to reduce the temporary disruption and displacement of bird and mammal populations in the area. • Run-off from blasting or drilling should be collected and treated to reduce acidity or toxicity, before being released to surface waters. • Minimize blast energy by using low velocity charges, multiple charges and special detonation techniques. • Minimize damage to surroundings by the use of blasting mats and blast detectors.
Earthworks (Cut/Fill)	• Cut/fill procedures should not be undertaken in environmentally sensitive areas. • Slopes in cut / fill operations should not exceed 33 degrees. • Steep slopes and ditch bottoms should be blanketed for containment and protection against erosion. • See section on Clearing, Grading, or Landscape / Erosion Control for more mitigation measures.
Excavation	• Retain as much natural vegetation cover as possible. • Avoid excavation on or near critically erodible or unstable soils, steep • slopes and stream banks. • Do not disturb unstable clay areas. • Steep slopes and ditch bottoms should be blanketed for protection against erosion. • Maintain a buffer zone between sensitive areas and construction. • Install sediment trap basins or ponds to prevent escape of silted water to nearby watercourses. • Stockpile topsoil from excavated areas for subsequent re-application to other areas. • Do not dump fill in streams. • Cover temporary fills or stockpiles with polyethylene sheeting or tarps
Excavated Earth Disposal/Fill	• Earth disposal / fill sites should be located at least 100 m away from watercourses.
Grading	• Graders should not operate off the road surface. • Ditches should be graded to a preferred side slope of 4 (horizontal) to 1 (vertical). • Slopes resulting from grading should be re-vegetated for erosion control • Smoothly graded cut and fill slopes should be avoided. Surfaces should be roughened perpendicular to the flow direction in order to retard run-off and increase filtration.
Landscaping/ Erosion Control	• The upper 1 foot of a sloped surface must be compacted to 90% of its maximum density at optimum moisture. • A cut slope must be capped with clay or vegetation. • Grade surfaces must be roughened perpendicular to drainage flow.
Gravel Crushing	• Restrict gravel crushing and washing to favourable climatic conditions (e.g. when the wind is blowing away from residential areas). • Water used to wash concrete should not be allowed to enter directly into water bodies.

Iqaluit Airport ECO Plan for Construction

Project Activity	Mitigation
Concrete/asphalt batch production	
Disposal of Rock/Aggregate	• Do not push or dump any type of fill in streams. Disposal sites should be located at least 100 m from streams. • Rock or aggregate should be stored at an appropriate site and re-used when possible. • If there are asphalt compounds involved, then mitigations described in Demolition /Dismantling must be referred to.
Dumping Core Material	• Material should be disposed according to applicable legislation
Access Road Development	• Avoid constructing temporary roads • Locate roads to minimize erosion and preserve the natural environment • No road grade should exceed 12%, or 5% near water bodies • Provide a buffer strip of 100 m near water bodies • Construction should take place in the specified period only, to reduce wildlife impact
Paving/Surfacing	• Asphalt and concrete work should be done during the summer (dry) months in order to reduce contaminated run-off from the freshly laid surfaces. • A “natural drainage” concept should be adopted involving the siting of impermeable surfaces as far as possible from ground water recharge zones. • Locate catchment facilities around the periphery of airport runways and aprons to channel runoff to one location (storage lagoon) for possible separation and recovery. • Only approved sealants should be applied to asphalt areas.
Culvert Installation/ Removal	• When installing a culvert at a stream crossing, guidelines provided by DFO must be followed. Consult with local DFO staff regarding distribution, and presence of fish in the stream or watercourse. An acceptable period of construction would be a time span in which there are no fish or fish eggs present in the water bodies. • Temporary stream crossings should be chosen so that bank disturbance, • Soil displacement and leveling of forested areas are minimized to control erosion. Temporary access to the stream should be made by fill ramps, and not excavated through banks. When use of heavy equipment is required in the stream, the same stream crossing or entrance area should be used every time. • Temporary water diversions or cofferdams may be required at stream crossings to form settling basins for the control of siltation. • Reconstruct stream banks to their original condition as soon as the activity is complete. All disturbed areas should be left in a stabilized condition. • Ensure that all construction equipment used is mechanically sound to avoid leakage of oil, gasoline, hydraulic fluids and grease.
Placing Concrete	• Asphalt and concrete work should only be done during the summer (dry) months in order to reduce contaminated runoff from freshly laid surfaces from entering watercourses. • Interceptor dikes, settling ponds, storage lagoons or other facilities, should trap wash-down material or run-off from exposed cast-in-place concrete and concrete trucks on-site. The sediment must be allowed to settle out and reach neutral pH before the clarified water is released to the drain system or allowed to percolate into the ground (48 hours). Failure to do this could lead to serious water quality and fisheries impacts. • Suitable materials that have a smaller environmental impact than concrete should be considered.

Project Activity	Mitigation
Removal of Temporary Structures	• Ensure that any materials to be disposed are done so according to applicable legislation. • Ensure that site of former structure is returned to as natural a state as possible (e.g. re-vegetation of area).
Structure Abandonment	• Any structure to be abandoned should be inspected for contamination. In particular, inspections should look for asbestos, PCBs' (often found in old wiring), abandoned underground / aboveground storage tanks and soil contamination from petroleum products.
OPERATIONAL (Airport and Tenant) Activities	
Use of controlled products or other hazardous materials	• Ensure all proper precautions are taken. • Ensure materials are disposed according to applicable legislation. (e.g. TDG Regulations, WHMIS, Alberta Fire Code)
Hazardous Material Disposal	• Disposal of all hazardous waste materials should be made in conformance with applicable legislation. (e.g. TDG Regulations, WHMIS, Nunavut Fire Code) • See: additional details of disposal of the following wastes: Asbestos, Asphalt.
Solid Waste Generation and Storage	• Airport Authorities should implement waste reduction and diversion plans for all operations. • Waste storage should be conducted in approved containers and is designated buildings or structures approved for such purposes. • Waste materials should not be stored for excessive periods of time, but should be transported off-site for further processing or disposal as soon as possible.
Solid Waste Land filling/Disposal	• Waste material should be disposed of only in a designated landfill site, not on the project site. • No burn areas are allowed within 200 m of water bodies. • Burning will be carried out under controlled conditions in consultation with local officials re: permits, risk to nearby inhabitants and desirable weather conditions.
Culvert/Ditch Maintenance	• Repair and replacement of culverts should include consideration of environmental concerns such as erosion and stream siltation, stabilization of disturbed or exposed slopes or embankments and blockage of fish passage. Guidelines provided by DFO should be followed. • All excavated debris and soil materials cleared from a culvert should be removed from the stream channel and disposed of at an appropriate site, to prevent it from washing downstream. • During the removal of rocks that have accumulated at the entry / approach to culverts, some rocks / boulders can be retained to provide resting places for migrating fish. Rocks should be placed 1 to 10 m apart alternating from one side of the channel to the other to avoid long runs of fast flowing water along either side. • See: Dewatering / Draining and Culvert Installation for additional mitigations.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