IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
Iqaluit, NU - Canada

ARCTIC INFRASTRUCTURE PARTNERS | INFRARED CAPITAL PARTNERS | BOUYGUES BUILDING Canada | COLASCANADA | WINNIPEG AIRPORTS AUTHORITY

ORIGINATOR

ARCTIC INFRASTRUCTURE PARTNERS

TITLE

EROSION AND SEDIMENT CONTROL PLAN

Prepared by Patrice Richard Bouygues-Sintra	Approved by Céline Matha Bouygues-Sintra		Reviewed by Michel Boulianne AIP	Reviewed by Igor Bogouchevski AIP	Approved by John Wood AIP

IIAIP	PS	Z	DBJV	TRA	G	00000	0	2014-07-14
Project	Phase	Zone	Issuer	Doc. Type	Disc.	Seq. Num.	Rev.	Date (YYYYMMDD)

CONTENTS

July 2nd, 2014
To: Government of Nunavut

Object: EROSION & SEDIMENT CONTROL PLAN

Artic infrastructure partners (AIP)
DBJV Bouygues/Sintra
Iqaluit International Airport Improvement Project (IIAIP)
Iqaluit, Nunavut, Canada

To whom it may concern,

In a concern to protect the environment, we are pleased to provide our comprehensive action plan on erosion and sediment control (ESC) for the IIAIP. This plan will define, in a general matter, the implementation of appropriate methods to limit erosion and sediment discharge in nearby streams.

We therefore transmit this report that includes environmental actions to be taken to control the impact of our work on water streams. In addition, this plan contains specific plans for particular work where sediment risk release appears to be higher.

Key Individuals

Quality Manager, AIP

- **Weekly and Monthly Reports and Monitoring on ESC (Weekly and Monthly Environmental Reports, official submittals)**
- **Communication with AIP Environmental Director**

Environmental Monitor, AIP

- **Monthly review on ESC (Monthly Environmental Reports, official submittals)**
- **Annual report on ESC (Annual Environmental Reports, official submittals)**
- **Communication with Civil Works Superintendent & Quality Manager**
- **Audit work in his pick to control and ensure the proper fulfillment of commitments**

Civil Work Superintendent, Sintra

- **Supervises the ESC execution**
- **Oversees construction site environmental implementations**
- **Manages Health, Safety and Environmental protocols**
- **Monitors the weather**
- **Transfer reports to key individuals and to mandatory authorities**

Notifies the Project Construction Manager and the entire work team on changes to occur due to external impacts

Civil Works construction manager, D&B JV

Supervises the ESC execution
Manages quality of works
Oversees the superintendent in HSE duties (Health, Safety and Environment)
Oversees *the scope of work operations*
Audit work to ensure the proper fulfillment of commitments

Scope of Work (Appendix B – Construction Site Scope of Work Map)

Landside

Earthworks, buried services and paving works:

- Construction of new parking lots, pavement of roads (North Commercial Rd, Mivvik Rd, accesses to ATB and CSB buildings);
- Installation of drainage culverts, water and sanitary sewage lines, and electrical services; and
- Installation of pumps and pipes for a fueling system.

Airport runway, taxiways and aprons

Earthworks, paving works and lighting

- Repairs of Runway 17-35 and Aprons 1, 2 and 3 (cracks repairs, milling and resurfacing), extension of Apron 1 (earthworks and paving), Taxiway A new alignment and Taxiways C and D (earthworks, milling and paving), construction of Taxiways F and G (earthworks and paving), and installation of airfield lighting poles.

High-risk site Identifications (Appendix A – Site Topographic Map)

1- Drainage ditch between the Nunavut Arctic College building and the airport
2- Existing watercourse which passes through the inner-field of the airport.

Specific Mitigation Actions

Environmental mitigation actions for erosion and sediment control are referred to Table 1 and detailed in Appendix C.

Table 1. Specific Environmental Mitigation Plans

No	Site Identification	Area	Work Planned	Expected Impacts	Mesures
Env-spec #1-0	Entire Work Zone	Airport Runway and Aprons Sector	July 2014 to September 2017 Earthworks (Cut and Fill)	Sediment discharge due to rain, snowmelt or water pumping	Temporary ditch construction to realign water drainage towards sedimentation traps or basins
Env-spec #2-0	Landside ATB Sector	Proxymity of the Current Running Ditch	July to October 2014 Temporary realignment of the running ditch and arch culvert installation	Sediment discharge due to temporary realignment of the running ditch or due to cutting	- Geotextile installation at the bottom of the realigned ditch. - Trap and basin installment to protect against erosion.
Env-spec #3-0	Landside CSB Sector	In Proximity of the Running Ditch	July to October 2014 Construction of permanent Culverts	Sediment discharge due to civil work proximity of the running ditch	Temporary ditch construction to realign water drainage towards sedimentation traps or basins
Env-spec #4-0	Soil impacted areas	Landside	June to July 2014	None	- Bitumen metal drum and soil decontamination - Impacted groundwater decontaminated
Env-spec #5-0	Soil impacted areas	Airport Runway and Aprons Sector	June to July 2014	None	Please refer to the Pre-Existing Contamination Mangement Plan for Remedial Options*

*PECMP, Section 6.0, APPLICATION OF REMEDIAL OPTIONS TO AREAS REQUIRING MANAGEMENT, May 2014.

Dust Control

Wind and dust is capable of causing erosion. Therefore, when and where needed, dust will be controlled by sprinkling water from a water-truck.

Temporary Emergency Measures

Accidental spills or equipment failures (trap or basin);

- Recovery spill kits placed on-site adjacent to two streams
- Absorbent booms (200 mm diameter) - 2 on the construction site

Absorbent layers – all equipment shall be equipped with at least 5 layers;
Geotextile or web protection against erosion available on site;
Sediment traps with berms (Figure 1);
Sedimentation basin (Figure 2);
Temporary ditches to redirect water as needed;
No parking and storage area can be built within 15 meters of any watercourse;
Culvert edges maintenance;
Generators and water pumps must be enclosed in berms that have a capacity of 110 % of their fuel tank volume; and
Water-truck for dust suppression.

Records

- For inadvertent spills; and
- For unusual climate conditions.

Weather Monitoring

- Daily monitoring of weather forecasts; and
- In case of heavy rain, inspect the site and intervene if necessary.

Responsibilities

- Notify all workers and staff of the existence and requirements to follow the mitigation; actions of this Erosion and Sediment Control Plan;
- Machinery fording will not be tolerated in any stream;
- Temporary retention structures dismantling with the exception of culvert edges stabilization; and
- Notify Nunavut Environment Emergency Authority for all hazardous product spills that are over 4 liters.

FIGURE 1 – Trap and Berms

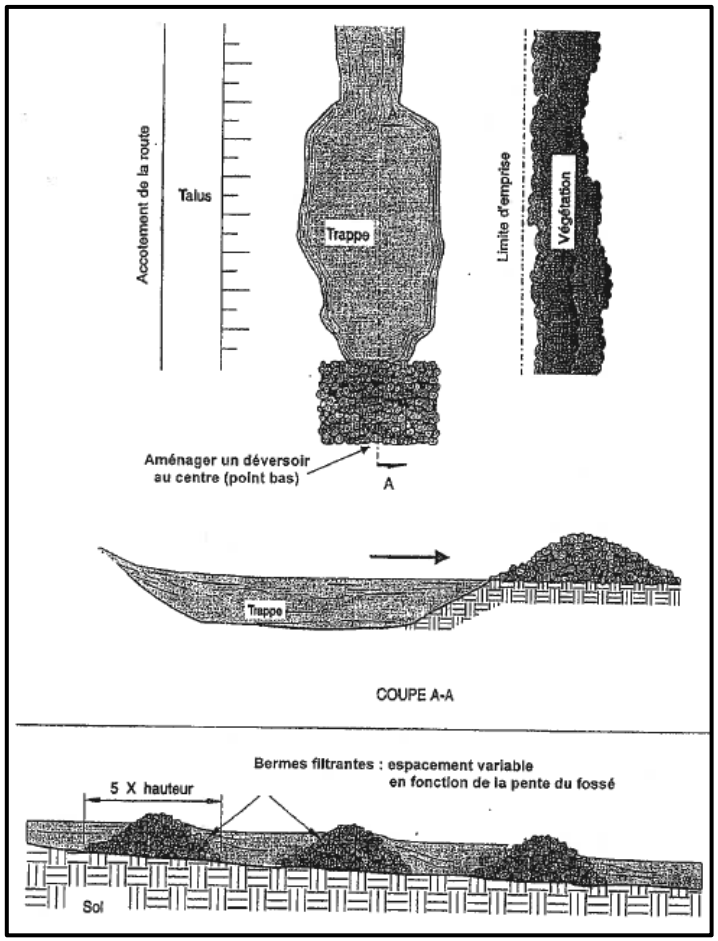
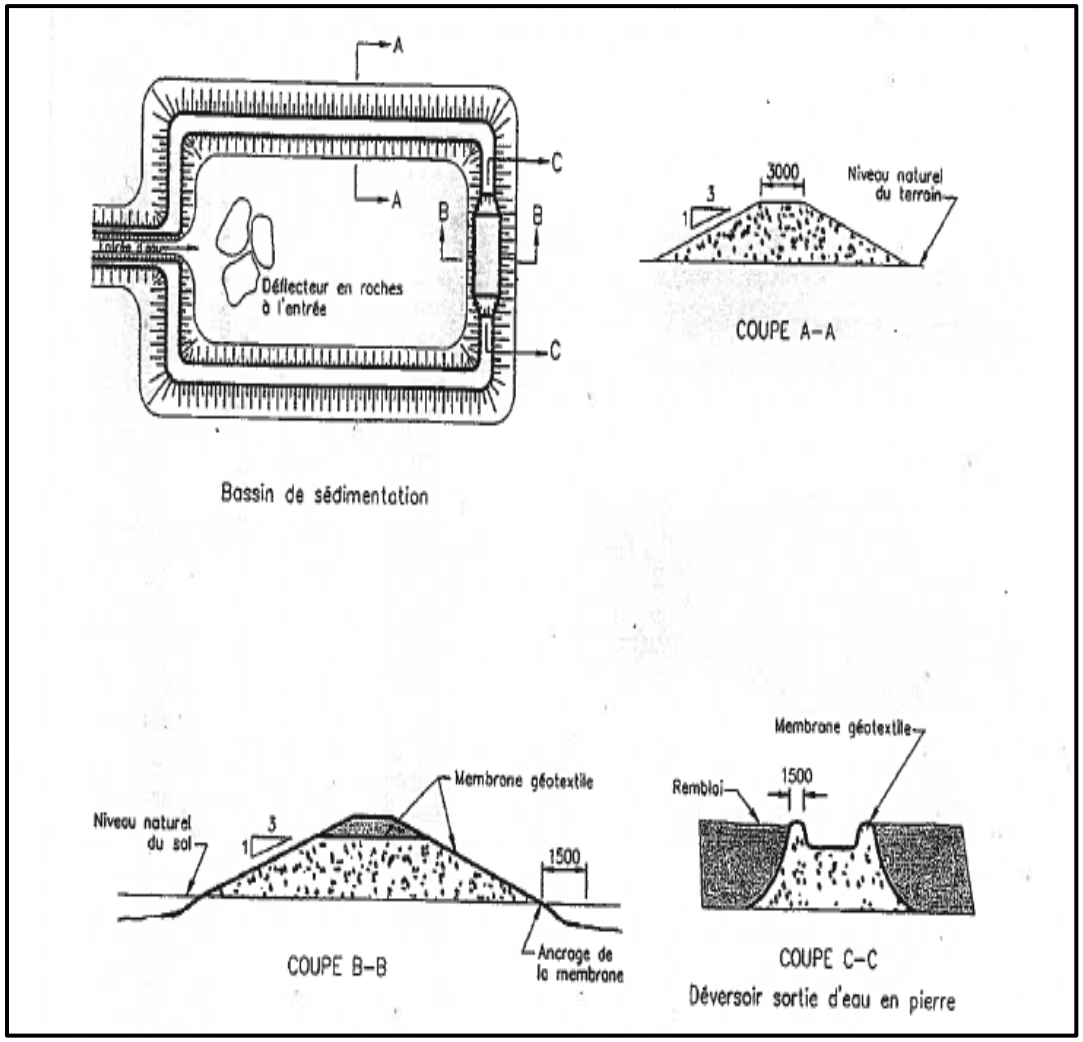
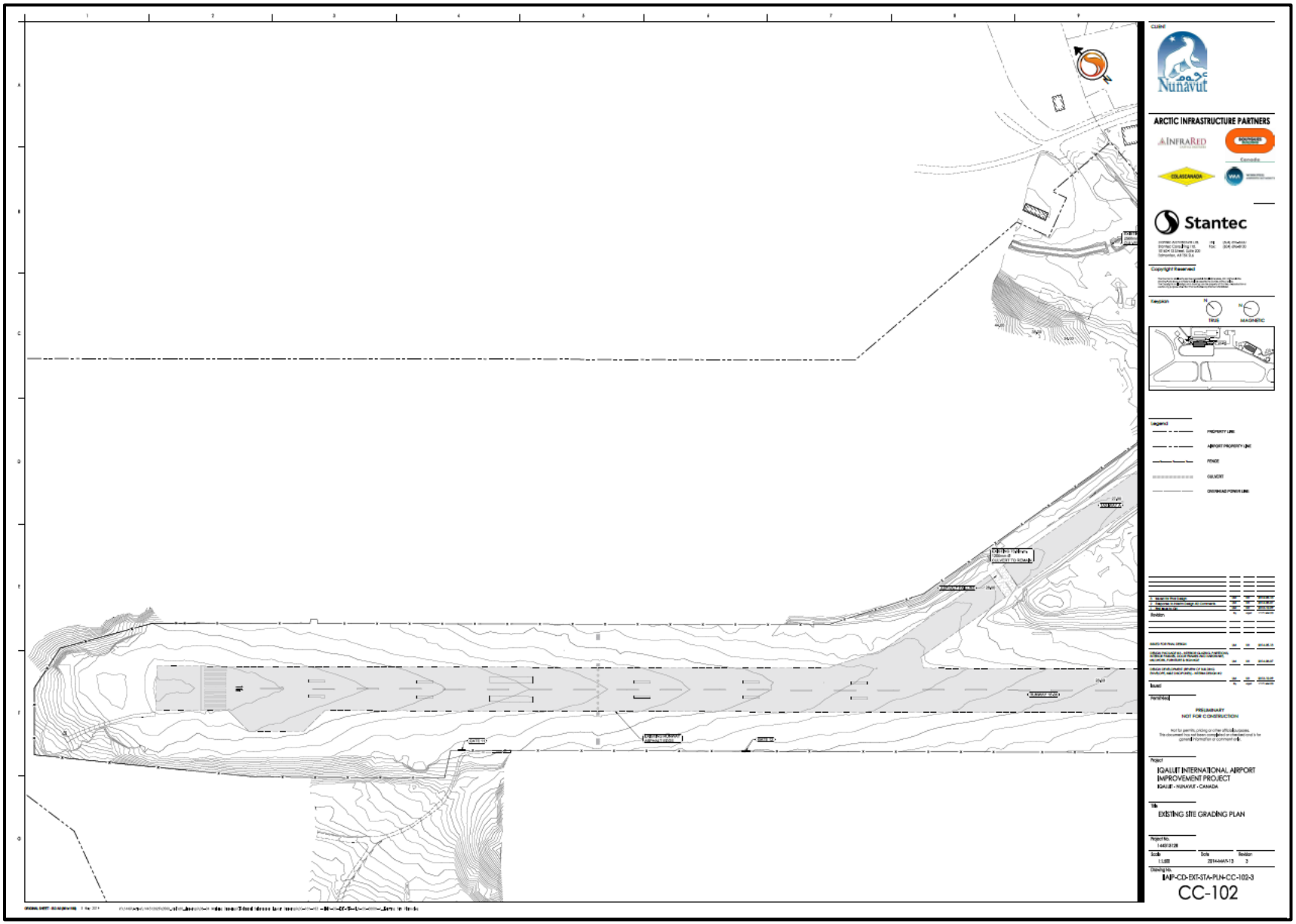
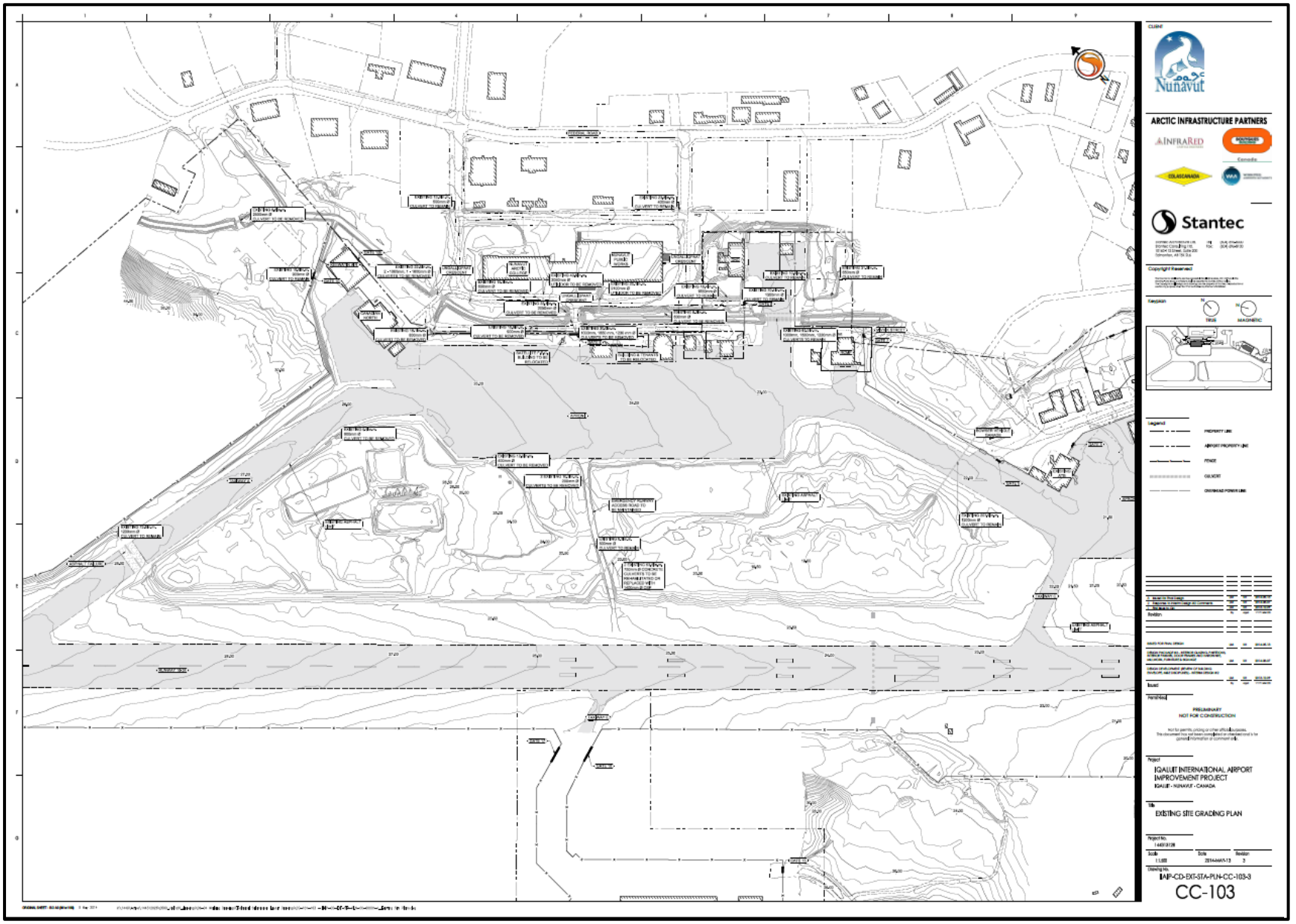


FIGURE 2 – Sedimentation Basin



Appendix A – Topographic Maps of IIAIP (Layout CC-102, CC-103, CC-109)

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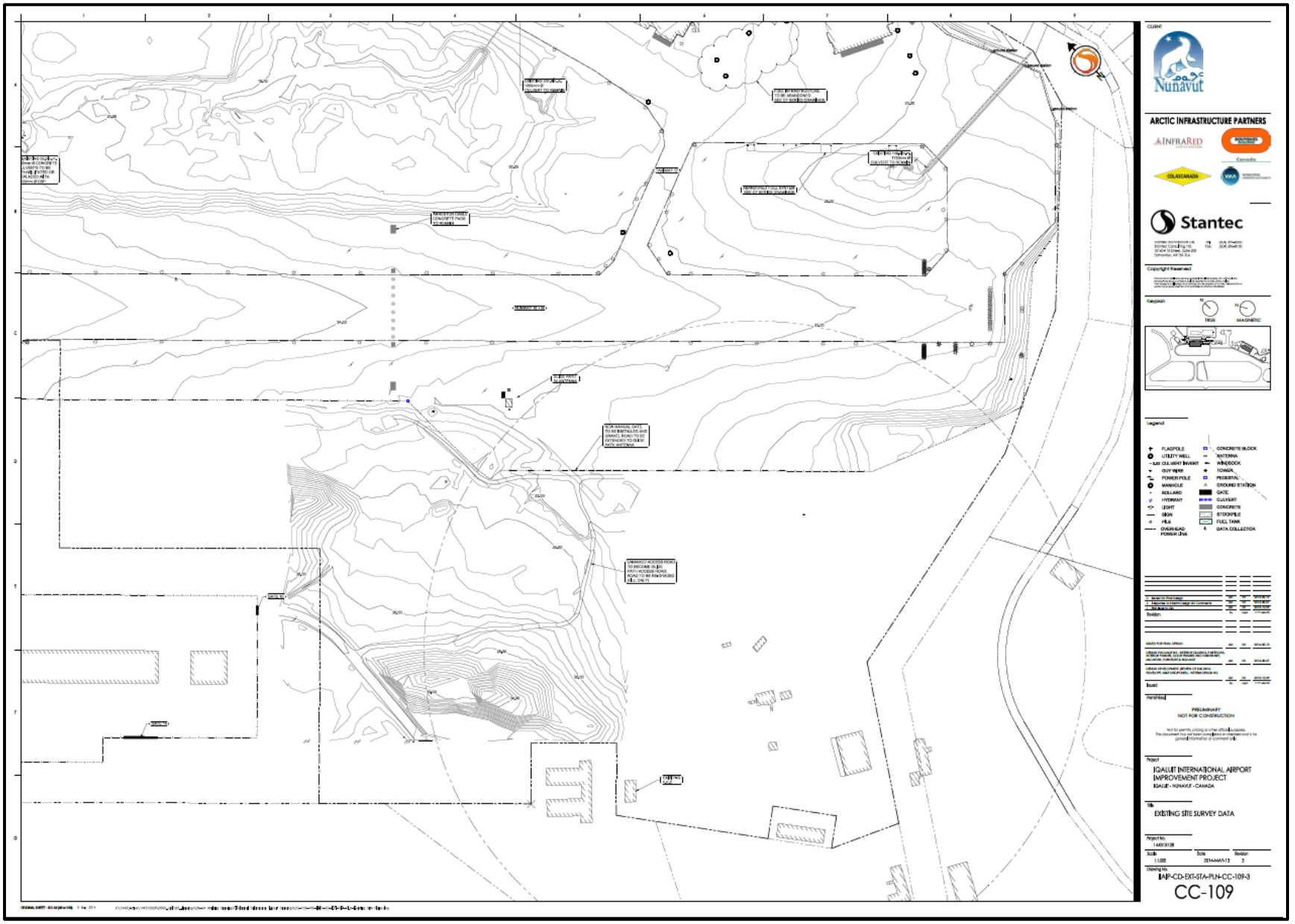
IQALUIT INTERNATIONAL AIRPORT
IMPROVEMENT PROJECT
IQALUIT - NUNAVUT - CANADA
EXISTING SITE GRADING PLAN
IAIP-CD-EXT-STA-PLN-CC-103-3
CC-103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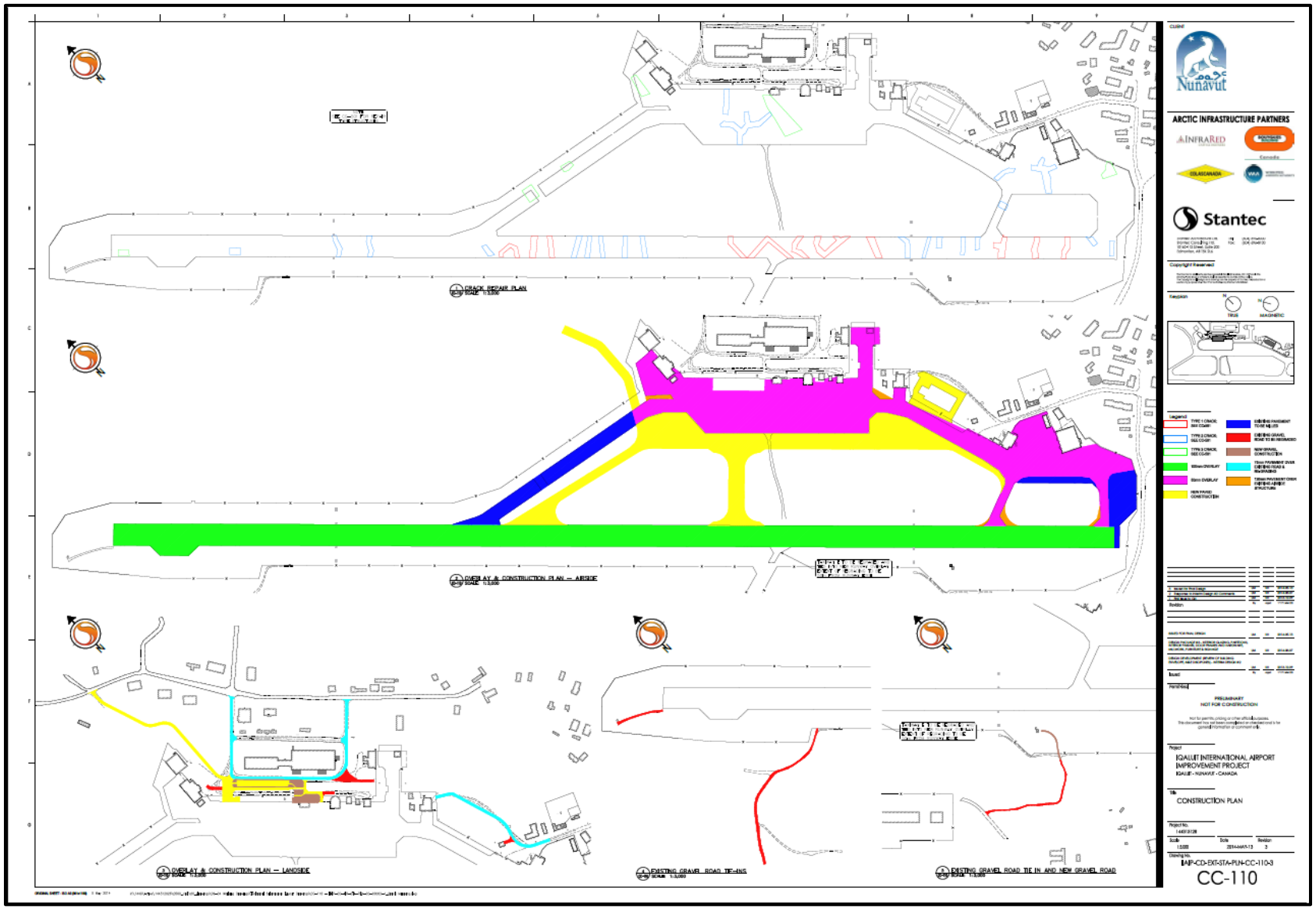
Keyplan
TRUE
MAGNETIC
Legend
FLAGPOLE
UTILITY WELL
CULVERT INVERT
GUY WIRE
POWER POLE
MANHOLE
BOLLARD
HYDRANT
LIGHT
SIGN
PILE
OVER-HEAD POWER LINE
CONCRETE BLOCK
ANTENNA
WINDSOCK
TOWER
PEDESTAL
GROUND STATION
GATE
CULVERT
CONCRETE
STOCKPILE
FUEL TANK
DATA COLLECTOR
Revision
Issued
Permitting
PRELIMINARY
NOT FOR CONSTRUCTION
Project
IQALUIT INTERNATIONAL AIRPORT
IMPROVEMENT PROJECT
IQALUIT - NUNAVUT - CANADA
Title
EXISTING SITE SURVEY DATA
Project No.
Scale
1:500
Date
Revision
IAIP-CD-EXT-STA-PLN-CC-109-3
CC-109

Appendix B – Construction Site - Scope of Work Map (Layout CC-110)



Appendix C – Specific Environmental Mitigation Actions #1-0 (Layouts CC-225, CC-226, CC-227)

2014-05-15

Sintra/AIP

Iqaluit International Airport Improvement project IIAIP

Specific Environmental Mitigation Actions #1-0 = Excavation

Site Identification : Entire Work Zone

Work Planned : Earthworks (Cut and Fill)

Schedule : July 2014 to September 2017

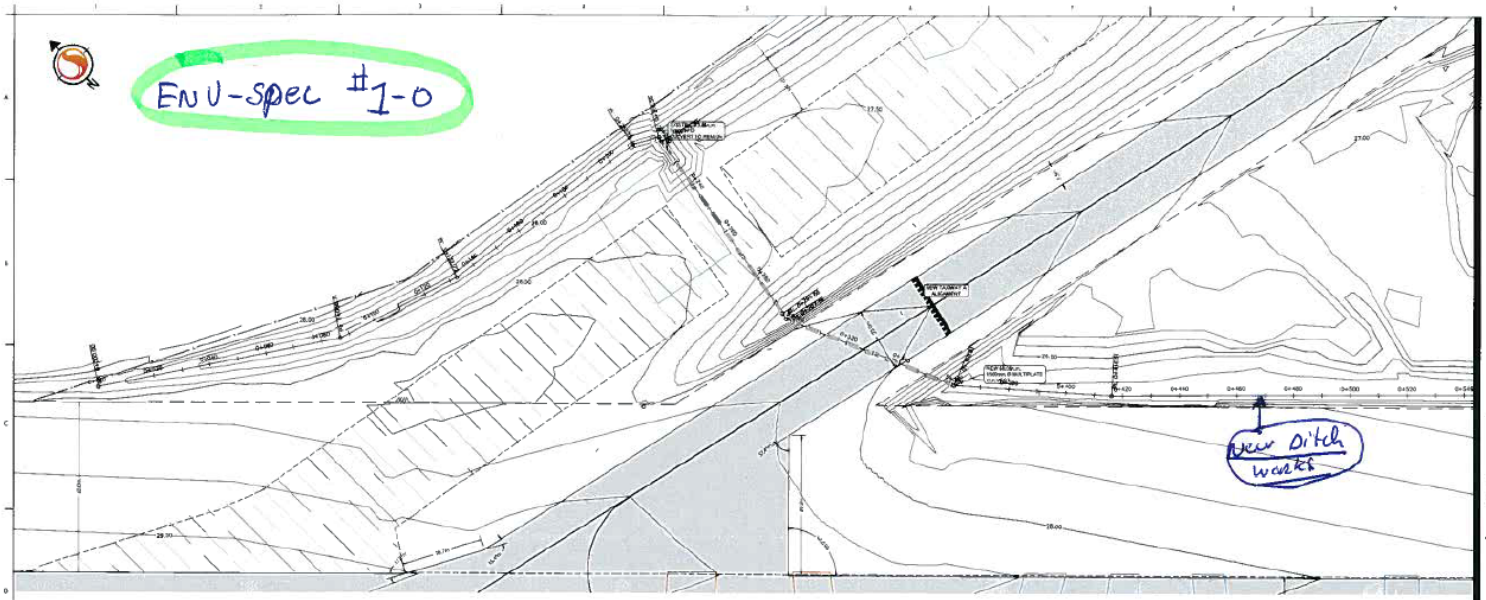
Expected Impacts : Sediment discharge due to rain, snowmelt or water pumping.

1- Airport Runway and Aprons Sector
[Refer to detailed Plans in Appendix-A (CC-225 to CC-227)]
- Due to work areas that are close by, construction of two sedimentation basins (5m x 15 m) to control surface water and ditch runoffs.

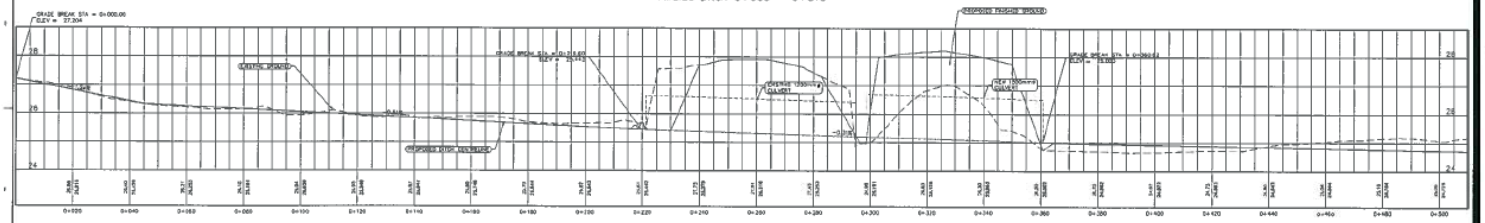
2- Following the progress of work, manage the possibility to add sediment traps or berms.

3- Add cascading basins upstream if the two basins are ineffective

ENV-spec #1-0



Airside Ditch 0+000 – 0+510



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Project
IQALUIT INTERNATIONAL AIRPORT
IMPROVEMENT PROJECT
IQALUIT - NUNAVUT - CANADA

Title
PROPOSED AIRSIDE
DITCH
PLAN & PROFILE: 0+000 TO 0+510

Project No.
144013109

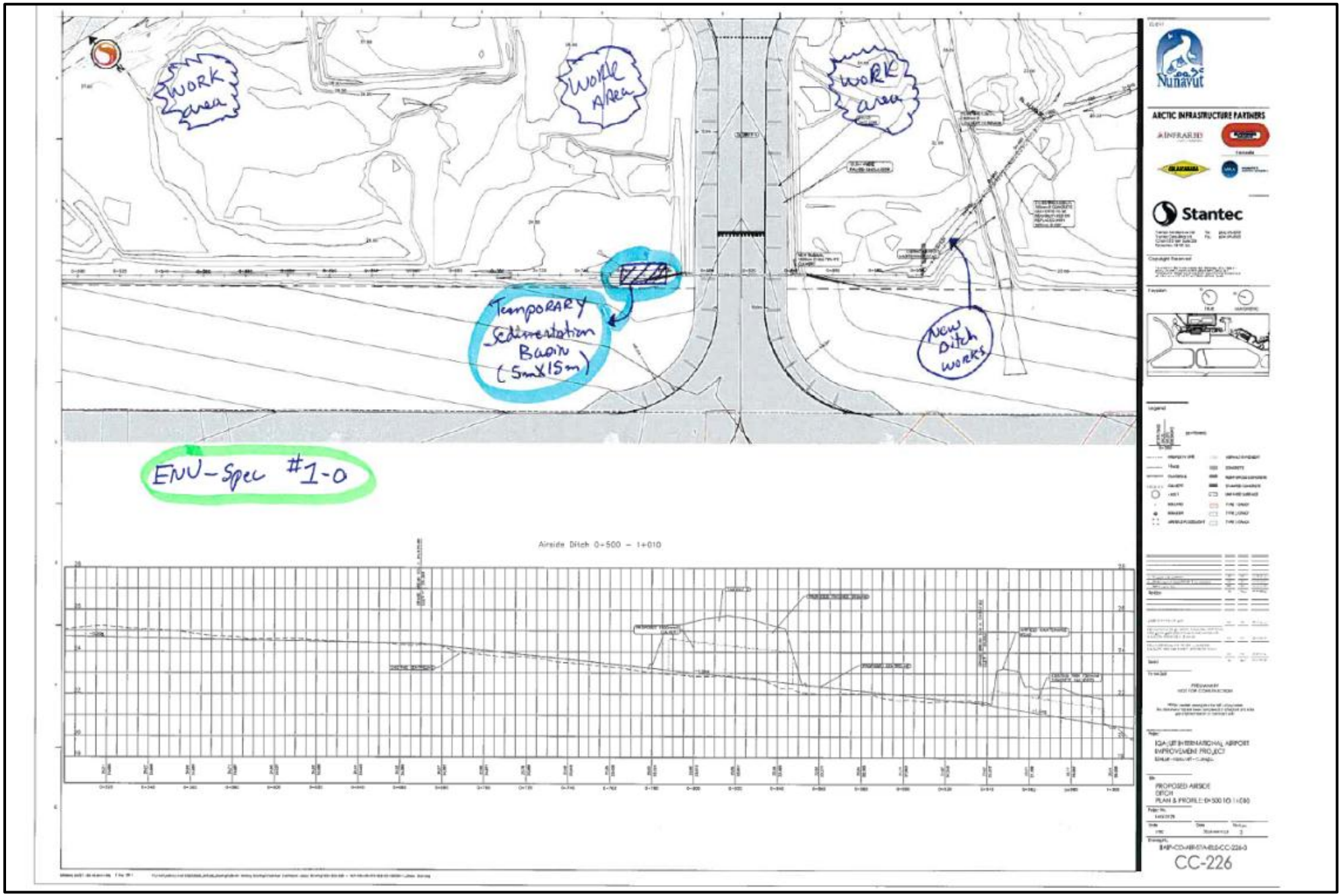
Scale
1:50

Date

Revision
3

Drawing No.
IIAIP-CD-AIR-STA-ELE-CC-225-3

CC-225


WORK area
WORK AREA
WORK area
Temporary Sedimentation Basin (5mX15m)
New Ditch works
ENV-Spec #1-0
Airside Ditch 0+500 – 1+010
Nunavut
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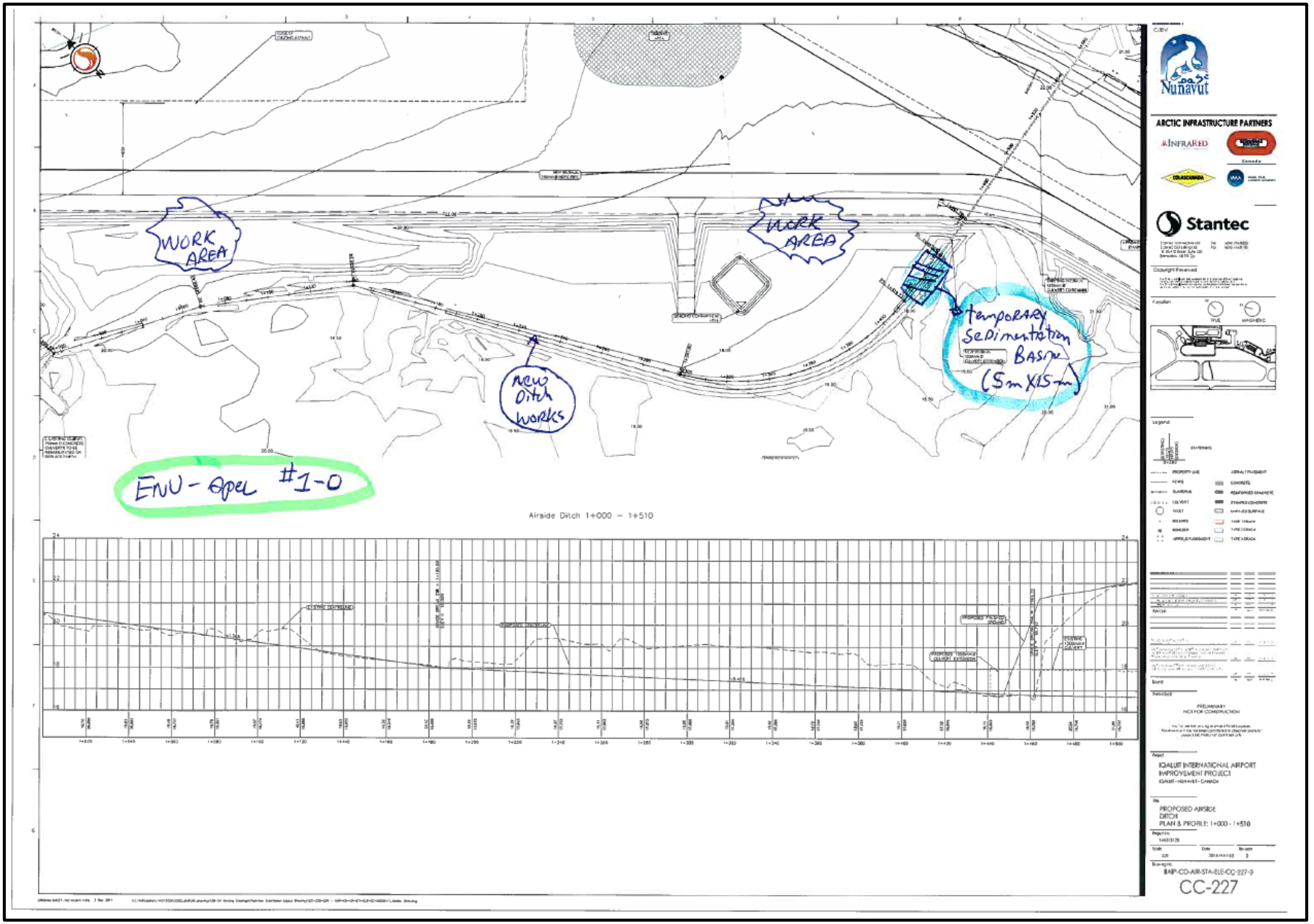
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
PROPOSED AIRSIDE DITCH PLAN & PROFILE: 0+500 TO 1+010
CC-226


WORK AREA
WORK AREA
Temporary Sedimentation Basin (5m X15m)
new Ditch works
ENV - Appl #1-0
Airside Ditch 1+000 - 1+510
ARCTIC INFRASTRUCTURE PARTNERS
Stantec
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
PROPOSED AIRSIDE DITCH PLAN & PROFILE: 1+000 - 1+510
CC-227

Appendix D – Specific Environmental Mitigation Actions #2-0 (Layouts CC-104; CC-105; SK-099; SK-101; SK-112; SK-113)

2014-05-15

Sintra/AIP

Iqaluit International Airport Improvement project IIAIP

Specific Environmental Mitigation Actions #2-0 = Landside, ATB sector

Site Identification : Proximity of the current running ditch

Work Planned : Temporary realignment of the running ditch and construction of an arch culvert

Schedule : July to October 2014

Expected Impacts : Sediment discharge due to temporary realignment of the running ditch or due to cutting

1- Landside, ATB sector [Refer to detailed Plans CC-104 and CC-105]

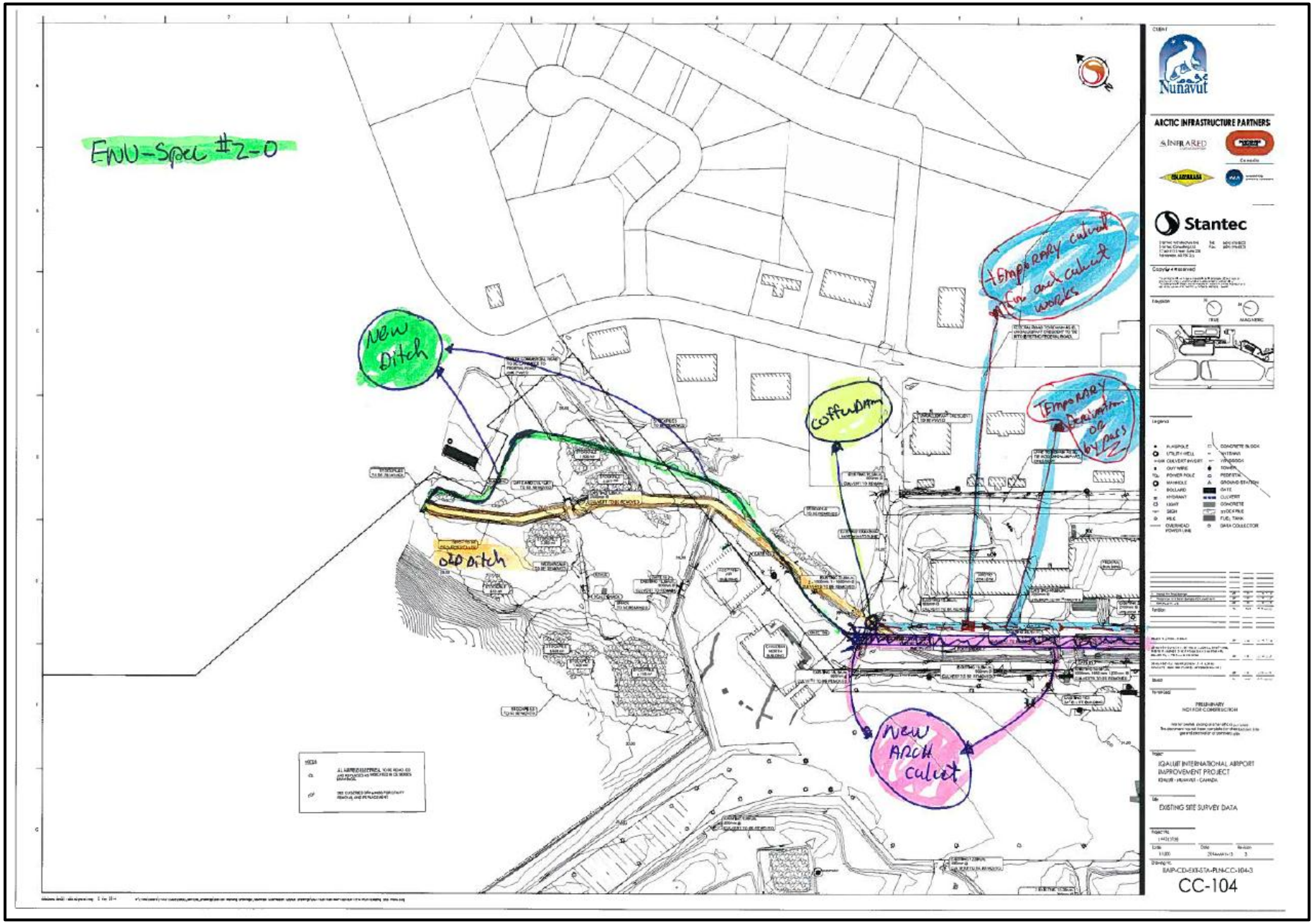
2- Temporary ditch realignment for New Arch Culver installation
[Refer to Cutting Plane Figures SK099-101-112-113]

3- Before realignement and to limit sediment discharge, the running ditch will be protected or covered with a geotextile

4- Two temporary culverts are to be installed to give access to the arch culvert work

5- A cofferdam will be build upstream

6- Downstream of the arch culvert works, a temporary sediment basin will be build for better drainage control through water pumping


ENV-Spec #2-0
New Ditch
Old Ditch
Coffer Dam
Temporary culvert for each culvert works
Temporary deviation or bypass
New ARCH culvert
Nunavut
ARCTIC INFRASTRUCTURE PARTNERS
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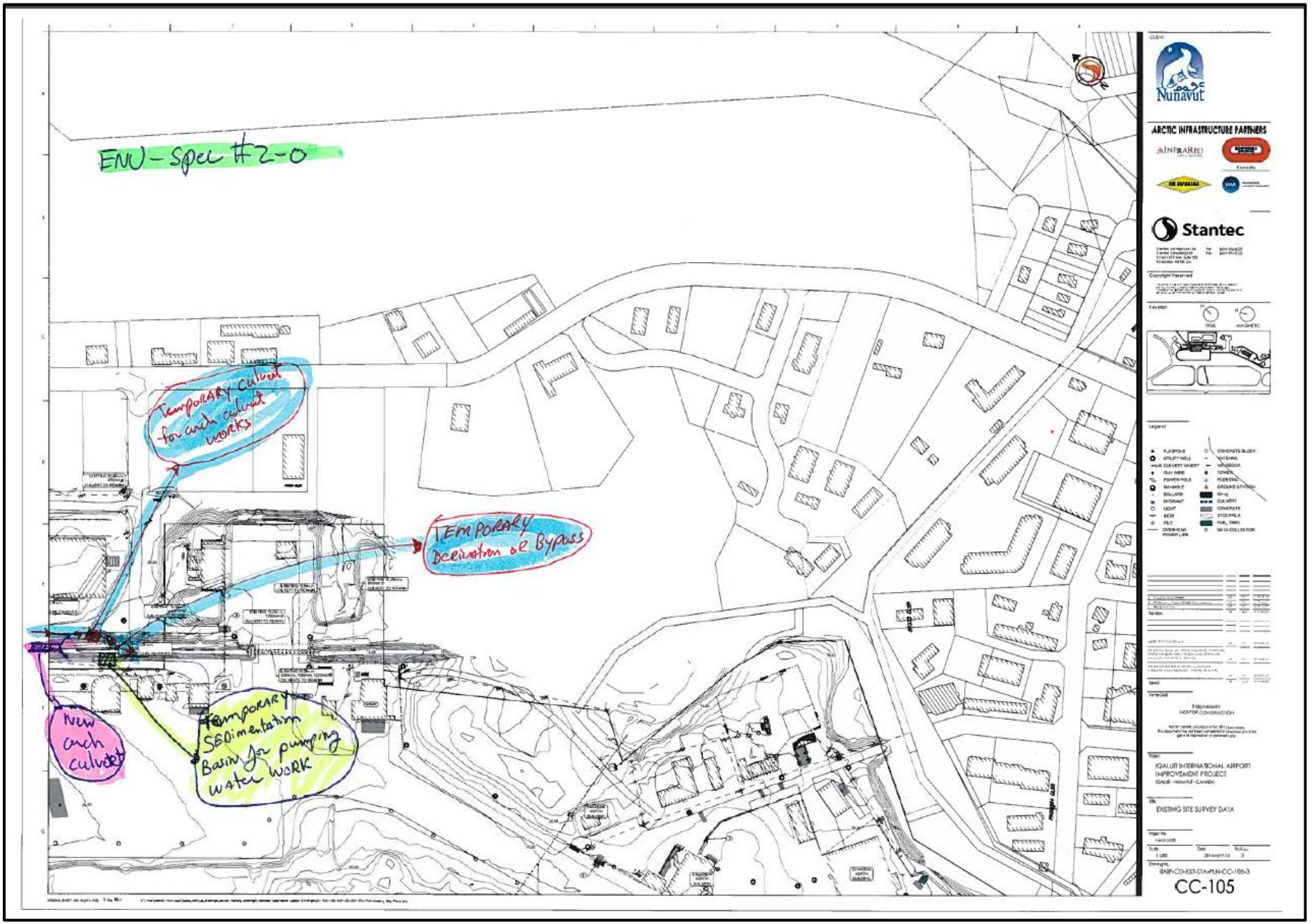
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
EXISTING SITE SURVEY DATA
CC-104


ENV – Spec #2-0
Temporary culvert for each culvert works
Temporary Deviation or Bypass
New each culvert
Temporary Sedimentation Basin for pumping water work
Nunavut
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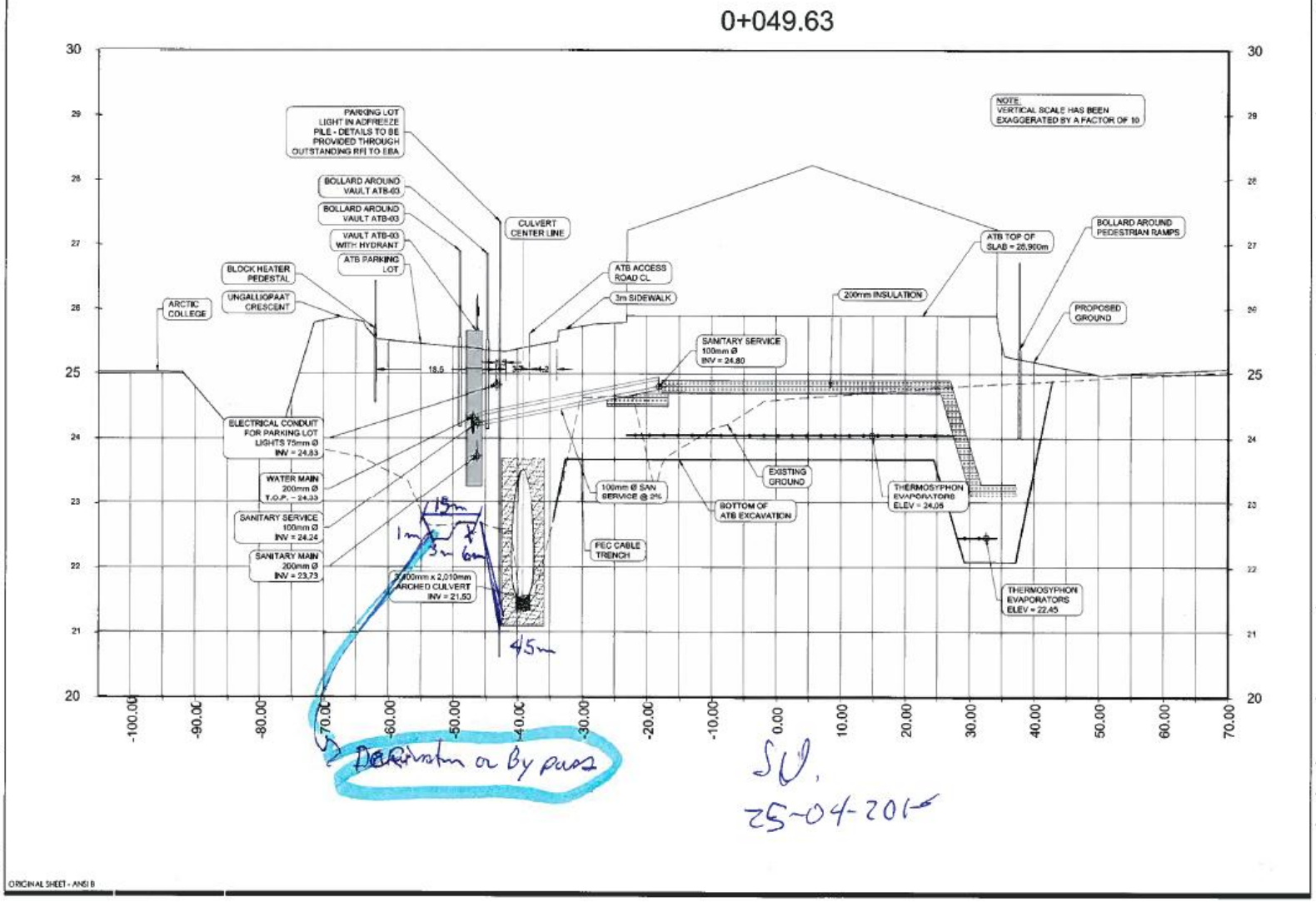
Stantec
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
EXISTING SITE SURVEY DATA
CC-105

ENV-Spec #2-0



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IQALUIT - NUNAVUT - CANADA

Title
CIVIL SITE SECTION
STA 0+049.63 ALONG
GRIDLINE F

Project No.
144313128

Scale
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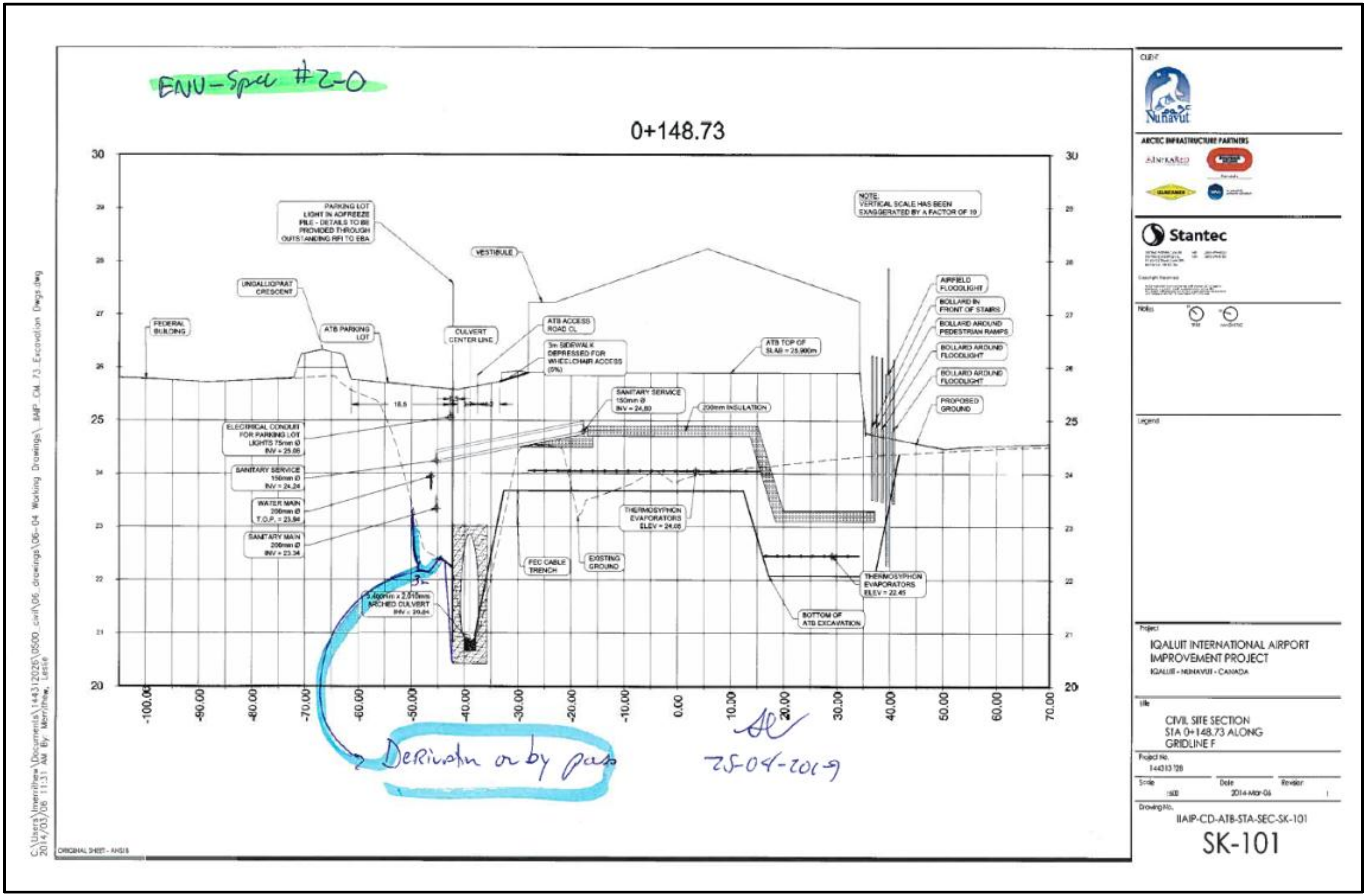
Date
20-FEB-2014

Revision

Drawing No.
IIAIP-CD-ATB-STA-SEC-SK-099

SK-099


ENU-Spec #2-O
0+148.73
PARKING LOT LIGHT IN ADFREEZE PILE - DETAILS TO BE PROVIDED THROUGH OUTSTANDING RFI TO EBA
VESTIBULE
UNGALLIQPAAT CRESCENT
FEDERAL BUILDING
ATB PARKING LOT
CULVERT CENTER LINE
ATB ACCESS ROAD CL
3m SIDEWALK DEPRESSED FOR WHEELCHAIR ACCESS (0%)
SANITARY SERVICE 150mm Ø INV = 24.80
200mm INSULATION
ATB TOP OF SLAB = 25.900m
NOTE: VERTICAL SCALE HAS BEEN EXAGGERATED BY A FACTOR OF 10
AIRFIELD FLOODLIGHT
BOLLARD IN FRONT OF STAIRS
BOLLARD AROUND PEDESTRIAN RAMPS
BOLLARD AROUND FLOODLIGHT
BOLLARD AROUND FLOODLIGHT
PROPOSED GROUND
ELECTRICAL CONDUIT FOR PARKING LOT LIGHTS 75mm Ø INV = 25.06
SANITARY SERVICE 150mm Ø INV = 24.24
WATER MAIN 200mm Ø T.O.P. = 23.94
SANITARY MAIN 200mm Ø INV = 23.34
THERMOSYPHON EVAPORATORS ELEV = 24.06
FEC CABLE TRENCH
EXISTING GROUND
THERMOSYPHON EVAPORATORS ELEV = 22.45
BOTTOM OF ATB EXCAVATION
ARCHED CULVERT
Derivation or by pass
25-04-2019
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Project
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
IQALUIT - NUNAVUT - CANADA
Title
CIVIL SITE SECTION STA 0+148.73 ALONG GRIDLINE F
Project No.
Scale
Date
2014-Mar-06
Revision
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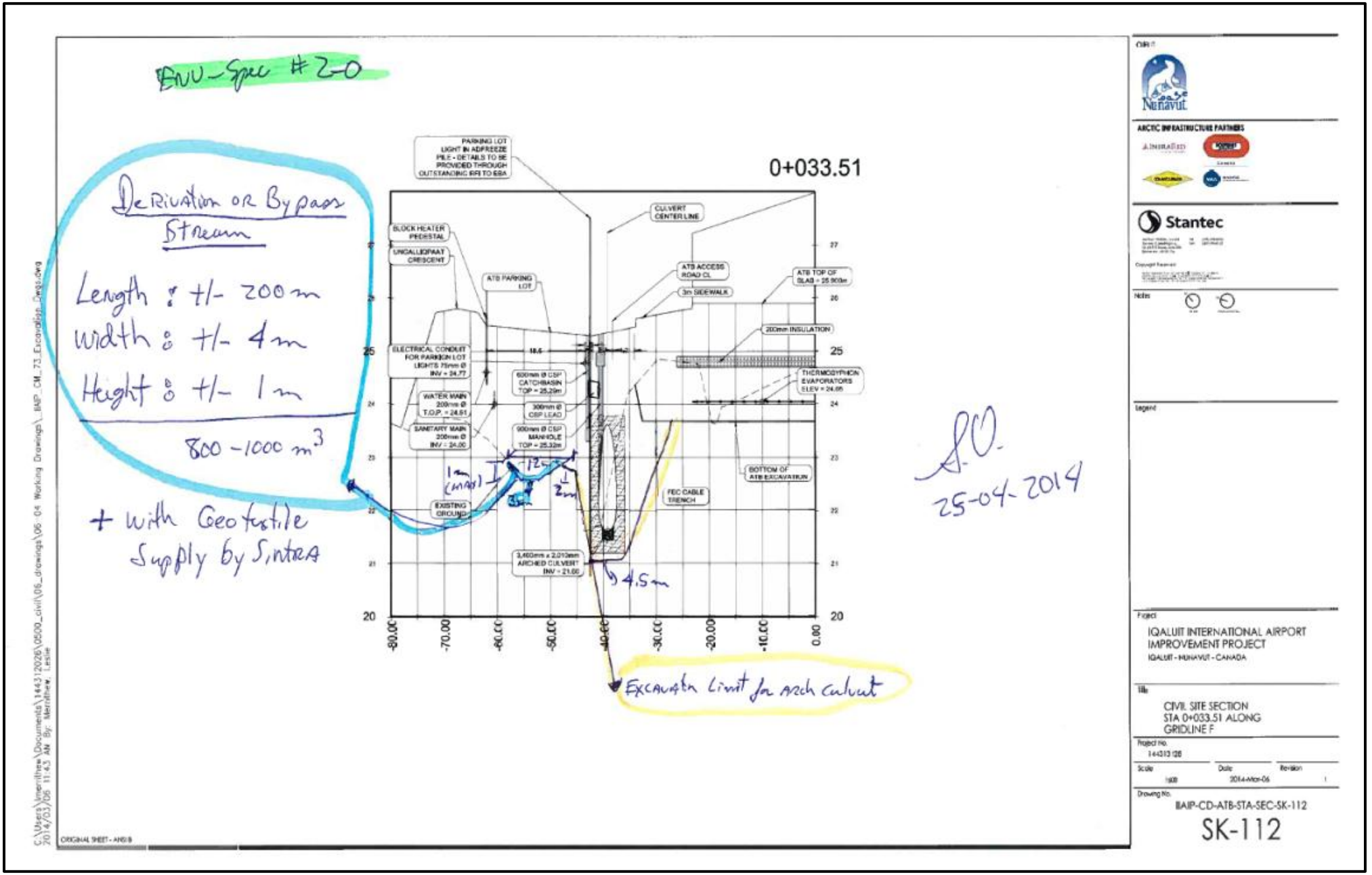
SK-101


BNV-Spec #2-0
Derivation or Bypass Stream
Length : +/- 200 m
Width : +/- 4 m
Height : +/- 1 m
800 - 1000 m3
+ with Geotextile Supply by Sintra
0+033.51
PARKING LOT LIGHT IN ADFREEZE PILE - DETAILS TO BE PROVIDED THROUGH OUTSTANDING RFI TO EBA
BLOCK HEATER PEDESTAL
UNGALLERMAT CRESCENT
ATB PARKING LOT
CULVERT CENTERLINE
ATB ACCESS ROAD CL
3m SIDEWALK
ATB TOP OF SLAB = 25.903m
200mm INSULATION
ELECTRICAL CONDUIT FOR PARKING LOT LIGHTS 75mm Ø INV = 24.77
600mm Ø CSP CATCHBASIN TOP = 25.29m
THERMOSYPHON EVAPORATORS ELEV = 24.65
WATER MAIN 200mm Ø T.O.P. = 24.61
300mm Ø CSP LEAD
SANITARY MAIN 200mm Ø INV = 24.00
900mm Ø CSP MANHOLE TOP = 25.32m
BOTTOM OF ATB EXCAVATION
FEC CABLE TRENCH
EXISTING GROUND
3,460mm x 2,010mm ARCHED CULVERT INV = 21.66
4.5m
Excavation Limit for arch culvert
20
21
22
23
24
25
26
27
-80.00
-70.00
-60.00
-50.00
-40.00
-30.00
-20.00
-10.00
0.00
f.O.
25-04-2014
Stantec
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IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
IQALUIT - NUNAVUT - CANADA
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Project No.
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Date
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Revision
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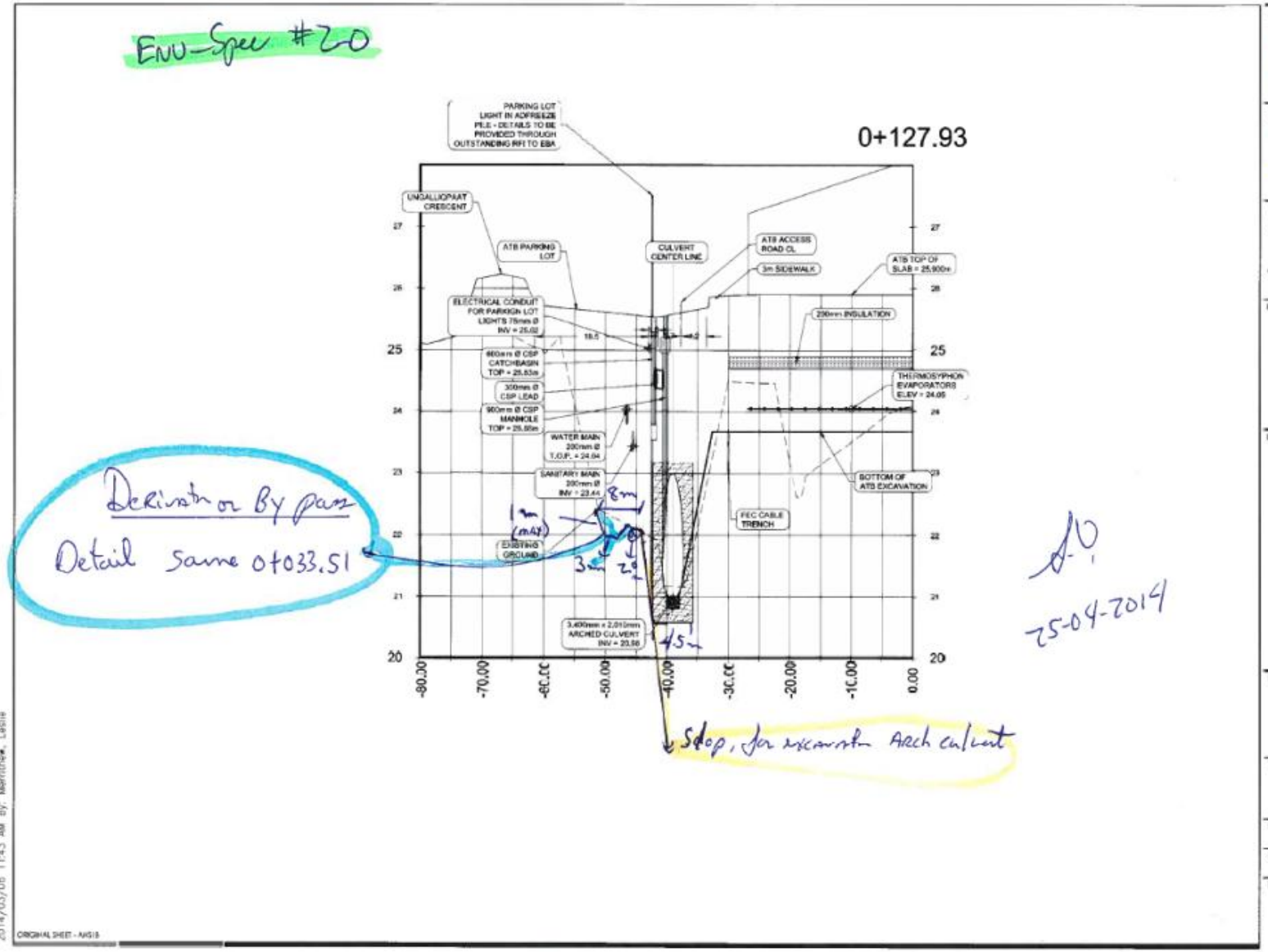

Deviation or By pass

Detail same of 033.51

Stop, for excavation Arch culvert

A.D.

25-04-2014

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IQALUIT - NUNAVUT - CANADA

Title
CIVIL SITE SECTION
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Project No.
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SK-113

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Appendix E – Specific Environmental Mitigation Actions #3-0 (Layout CC-120)

2014-05-15

Sintra/AIP

Iqaluit International Airport Improvement project IIAIP

Specific Environmental Mitigation Actions #2-0 = Landside, CSB sector

Site Identification : In Proximity of the Running Ditch

Work Planned : Construction of two new culverts near running ditch
Mivvik road construction

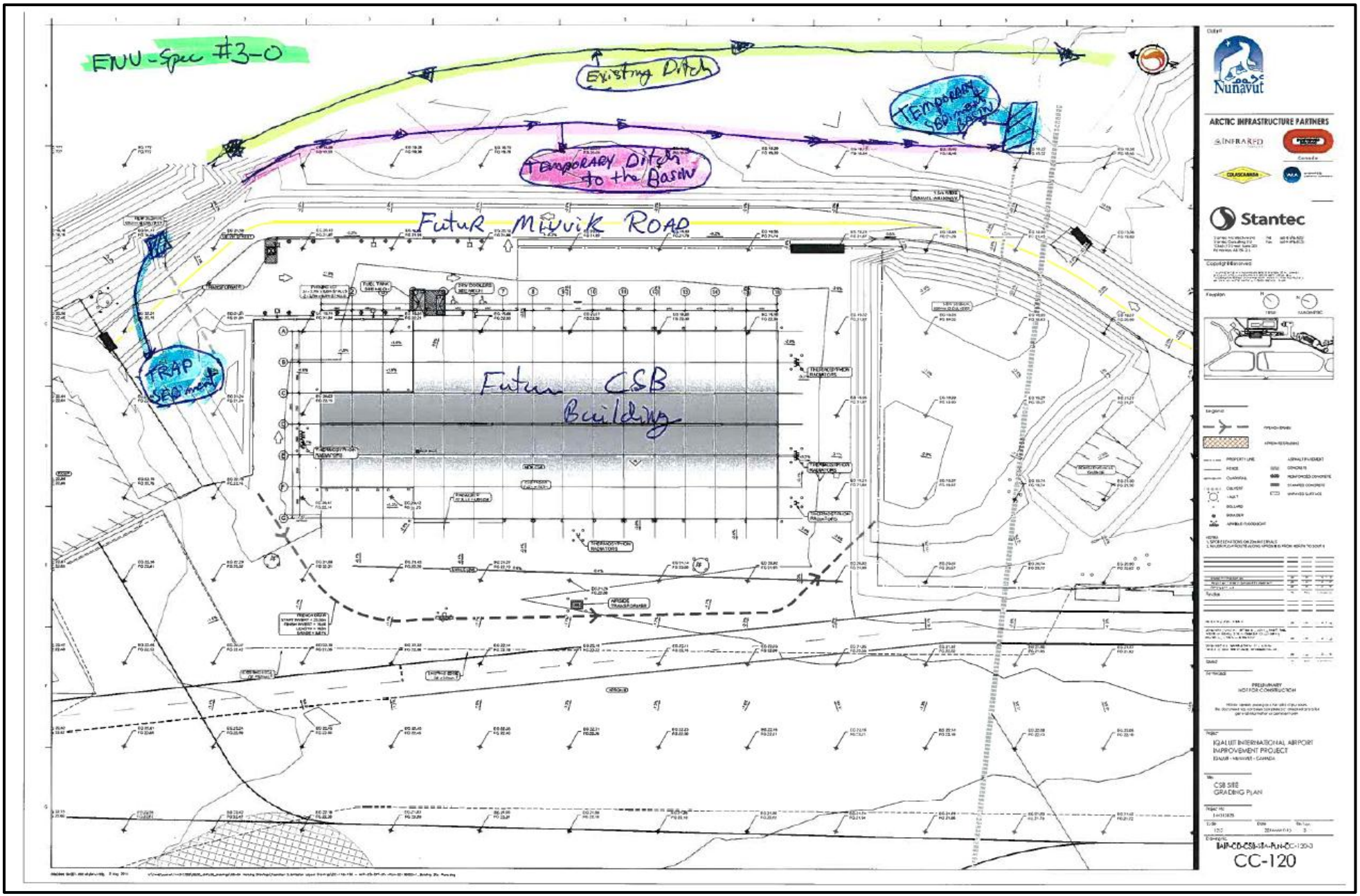
Schedule : July to October 2014

Expected Impacts : Sediment discharge due to the proximity of civil work close to the running ditch
[Refer to detailed Plan CC-120]

1- Construction of a temporary sediment trap. First culvert

2- Temporary construction of a sedimentation basin for the second culvert

3- Construction of a temporary ditch to collect water surface from the Mivvik road works. The water will be discharged in the second culvert.


ENV-Spec #3-0
Existing Ditch
TEMPORARY SEDIMENT BASIN
TEMPORARY Ditch to the Basin
Futur Mivvik ROAD
TRAP SEDiment
Futur CSB Building
Nunavut
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INFRARED
COLLECTIVA
Stantec
IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
CSB SITE GRADING PLAN
CC-120