Water Treatment Plant / Truck Fill Station

Civil Related Infrastructure
Operation and Maintenance

Municipality of Igloolik, Nunavut

Prepared for:
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Project No.: OTT-00019838-B0

Date: September 2020

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Table of Contents

Building Manual Updates and Reviews

This Building Manual should be reviewed and updated annually.
Any changes to the document including removal or adding of pages should be recorded in the following table.

Review Date	Description and Update or Changes	Pages Updated or Removed	Supervisor Signature

1 Introduction

Building operation and maintenance consist of ongoing tasks to keep the facility that houses the water treatment plant (WTP) and truck fill station, and the surrounding access areas to the facility, functioning as they were originally intended. This Building Manual provides guidance to the operation and maintenance staff how to operate and maintain the building.

There are four main functions of this Building Manual:

- Summary of the building
- Instructions for the inspection of the building elements in order to identify potential damage or deterioration of the building elements
- Instructions for action in association with remedial work on damaged or deteriorated elements of the building
- Source of information and training

1.1 Summary of the Building

This Buildings Manual provides a summary of the key information about the building, including the original design details and information on its general management. The design drawings are included in Appendix A. The water treatment plant building is shown in Photo 1.

Photo 1: Water Treatment Plant Building

2 Responsibilities

Maintenance tasks are typically divided between:

- Supervisor – familiar with the maintenance and responsible for planning, assigning tasks and managing the maintenance resources
- Maintainer / Operator - responsible for the operation and maintenance of the WTP / Truck Fill
- Maintenance Technician – responsible for performing remedial work on the building

3 Building Site

The building is located north of the water reservoir and is used for withdrawing, treating and filling the trucks that deliver water for consumption in the Municipality.

The building has exterior and interior elements associated with the operation and maintenance of the facility. The exterior elements include the roof, exterior walls, the building access, the windows and the foundation. The interior elements include the ceiling, the interior walls, and the floor.

Maintenance of the building includes the maintenance of the building site which provides access to the building.

3.1 Building Overview

Building overview is provided in Table 1.

Table 1: Building Overview

Building Name	Water Treatment Plant / Truck Fill Station		
Building Address	Igloolik, Nunavut		
Building Type	Industrial		
Date of Construction	2017		
Number of Buildings	1		
Number of Building Units	1		
Building Appurtenances	Truck fill arm, water intake pipeline		
Building Purpose	Provide drinking water to the Municipality on daily basis all year round		
Number of stories above grade	1	Below grade	0
Common Areas	Roof, cladding, windows, doors, corridors, and electrical and mechanical systems		

3.2 Building Contacts

The contact list and their phone numbers are provided in Table 2.

Table 2: Contact List

Title	Email	Phone Number
Interim CAO (Jean-Marie Ipkangnak)	financedirector@igloolik.ca	(867) 934-8830
Public Works Director & Foreman (Donald Ittusardjut)	publicworksdirector@igloolik.ca	(867) 934-8830
Water Plant Operator (Steve Sarpinak & Derek Aqqiaruq)	waterplant@igloolik.ca	(867) 934-8830
Fire Chief (Juluis Kappianaq)	officemanager@igloolik.ca	(867) 934-8888
Chief Administrative Officer (CAO)		(867) 934-8940
Baffin Regional Director		(867) 897-3601
Municipal Planning Engineer (Bhabesh Roy, P.Eng.)	broy@gov.nu.ca	(867) 899-7314
Spill Contact: Emergency Spill Hotline (24-hour line)		(867) 920-8130
Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) Inspector		(867) 975-4295
GN Pond Inlet Regional Office		(867) 899-7314
GN Emergency Measures Officer		(888) 624-4043
Igloolik Health Centre		(867) 934-2100
RCMP Igloolik		(867) 934-0123
Environment Canada Emergency Iqaluit		(867) 975-4644
GN Environment Health Office		(867) 473-2676
Canadian North (First Air) Air Cargo		+1 (800) 267-1247

3.3 Building Access

Access to the building is an important part of the building function. Water trucks use a designated access road and truck turn around north of the building to drive to the building and under the truck filling arm.

Daily access to the truck filling arm and any other operating areas of the building should be maintained. Fire access should be maintained at all times.

Daily operation and maintenance of the access should include:

- Inspections of the truck turn around and access road to verify it is suitable for safe travel of the water trucks.
- Snow clearing from the access road and the truck turn around and in front of the doors and openings that provide access to the building.
- Routine checks of roadside guardrail system at access road curves.

- Routine checks of guardrail posts at building operator parking and around the backside of the building.
- Observing drainage around the building and noting any ponding and if the drainage is positive away from the building.
- Clearing the ditches at the building site to limit any water runoff accumulation.
- Routine checks of the westside and eastside culverts for any blockage or damage, and if they still serve as intended.
- Observing the condition of the utility poles present at the building site.

4 Building Exterior

Building exterior includes construction works such as doors and windows, exterior walls, roofing and the foundation.

4.1 Doors and Windows

Doors and windows should be checked during routine inspections including checking if there are any gaps between the window and door frames and the walls.

The doors and windows should be inspected weekly for damage or deterioration, including vandalism.

4.2 Exterior Walls

Exterior walls should be inspected at least monthly for signs of damage or deterioration and any changes that could indicate possible foundation problems such as difficulty in opening the doors or window or cracking in the walls.

4.3 Roof

The roof should be inspected twice a year and after extreme weather and include:

- Review of the roof files and warranties
- The roof and soffit check ups as part of the routine building inspections, at least once a month and after extreme weather events
- Checking the perimeter of the roof for damage or deterioration
- Cleaning debris from any roof drains
- Checking the roof where it connects to the walls
- Protecting metal roof against corrosion

4.4 Foundation

Foundation structure should be inspected if the overall structural integrity is maintained. Foundation observations should be a part of routine building inspections. Thorough foundation inspections should be conducted annually by a qualified professional.

A foundation inspection should include:

- Any signs that the foundation has moved, shifted or began to fail
- Any cracking in the exposed foundation elements
- Any changes in the foundation backfill condition

5 Building Interior

Building interior should provide a safe environment for the building daily operations with unobstructed access to the equipment and operating areas and good housekeeping.

5.1 Interior Walls and Ceilings

Interior walls should be inspected at least monthly and the inspection should include checking for:

- Any signs of wear;
- Cracks in the walls, near the windows and doors;
- Separation of the walls from the ceiling;
- Signs of foundation settlement;
- Signs of water damage; and
- Signs of ventilation issues, such as mold.

5.2 Doors and Windows

Doors and windows should be checked during routine inspections if they:

- Function properly when opening and closing;
- Exhibit any signs of condensation; and
- Have any broken windowpanes.

Door and windows are usually not replaced often. Small parts such as hinges, locks and handles should be replaced when damaged.

5.3 Roof

The interior roof inspection should include checking for any water damage from possible leaks.

5.4 Floor

The floor should be checked during the routine inspections for:

- Signs of wear that affects daily operations;
- Any separation of the floor from the interior walls; and
- Any sloping that might indicate foundation problems.

5.5 Maintaining Common Areas

Common areas should be maintained to provide proper access to the equipment and operating areas and clean environment for the building staff. Common area maintenance should include:

- Having and following a maintenance schedule;
- Providing enough cleaning time;

- Removing trash regularly; and
- Reporting items that are broken or need replacement.

5.6 Fire Fighting Equipment

The locations of fire extinguishers should be clearly marked and familiar to all the building staff. Fire extinguishers must be serviced at least once a year.

6 Building Maintenance Checklist

Building maintenance checklist form is included below.

Date:		
Element	**Element Condition**	**Element Action**
BUILDING SITE ELEMENTS		
Walkway and Driving Surface		
Fencing		
Guardrails and Guardrail Posts		
Drainage / Ditches / Culverts		
Utility Poles		
BUILDING EXTERIOR		
Windows		
Doors / Overhead Doors		
Exterior Cladding		
Balconies		
Balcony Guards		
Soffits/Fascia/Eavestroughs/Downspouts		
Roofing		
Skylights		
BUILDING STRUCTURE		
Foundation Structure		
BUILDING INTERIOR		
Windows		
Doors / Overhead Doors		
Walls and Ceilings		
Roofing		
Floor		
Interior Paint		

Date:

Element	Element Condition	Element Action

7 Training Program

Building maintenance personnel should be familiar with all aspects of daily operations in the building and be properly trained.

7.1 Outline of Training Program

The building maintenance personnel training program may include the following key steps:

- Familiarization with building layout, emergency exits, housed equipment, and operation procedures
- Overview of the processes taking place during daily building operations
- Familiarization with elements of the building site, building envelope, building structure and interior

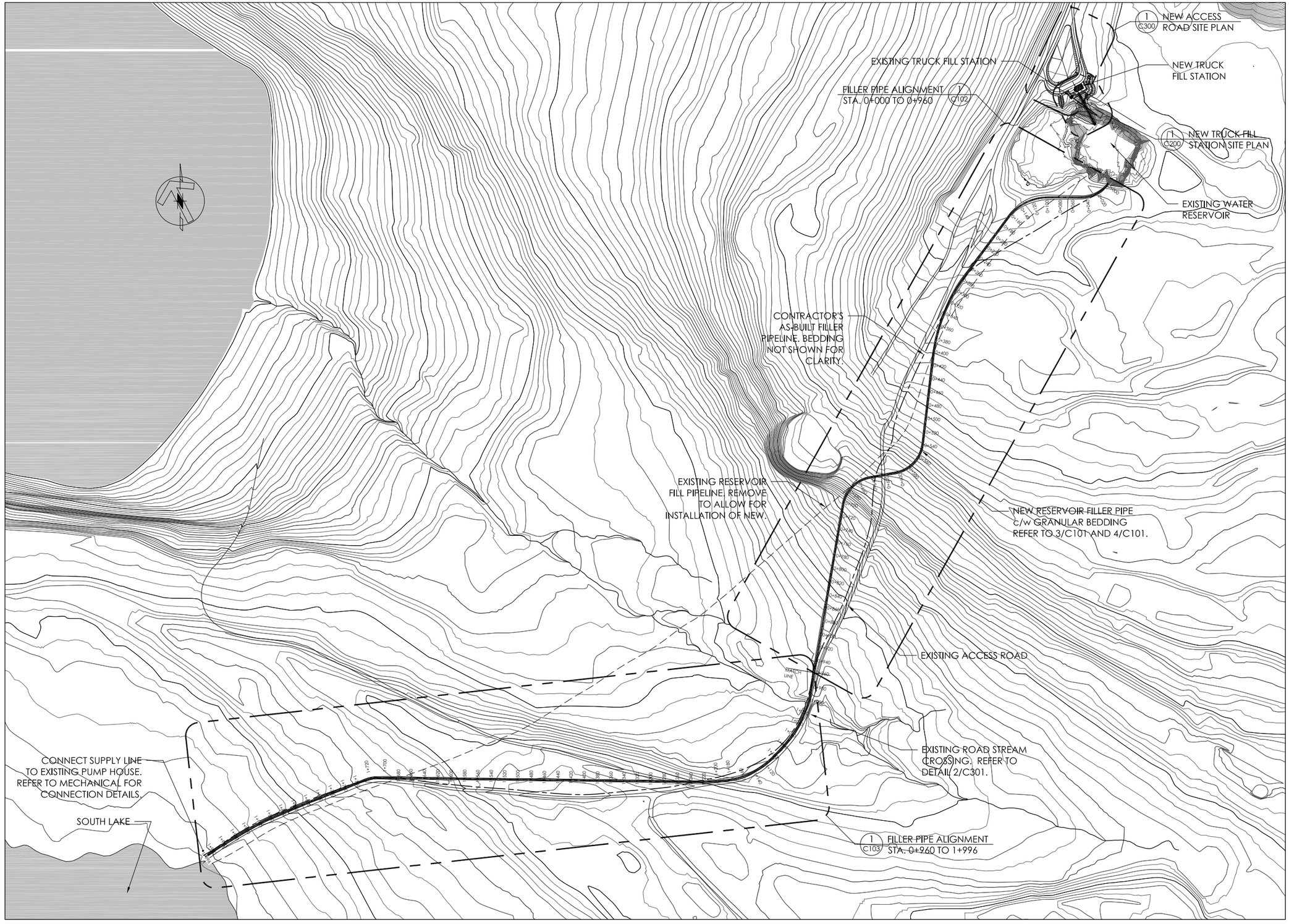
All employees and contractors are required to have their basic first aid training, as well as WHMIS training, before working on the site.

Supervisors are required to have advanced level first aid training, as well as transport of dangerous goods training.

8 References

Arktis Piusitippaa, 2016, Improvement of Water System Supply, Stamped and signed October 26, 2016.

Appendix A
Design Drawings



1 C100 NEW PIPELINE SITE PLAN
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PROJECT:

IMPROVEMENT OF WATER SUPPLY SYSTEM

IGLOOLIK, NUNAVUT

DRAWING NAME:

NEW TRUCK FILL STATION & PIPELINE SITE PLAN

DRAWING NO.:

C100

DELETED

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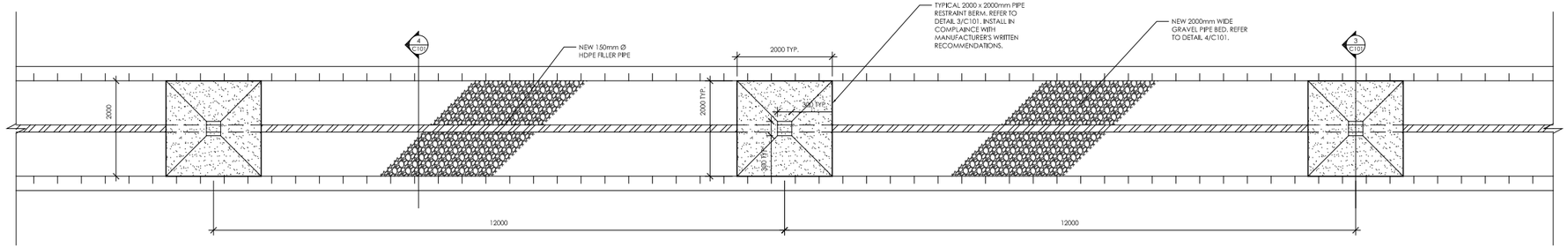

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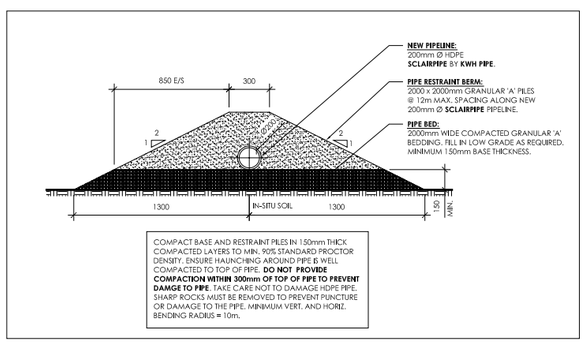

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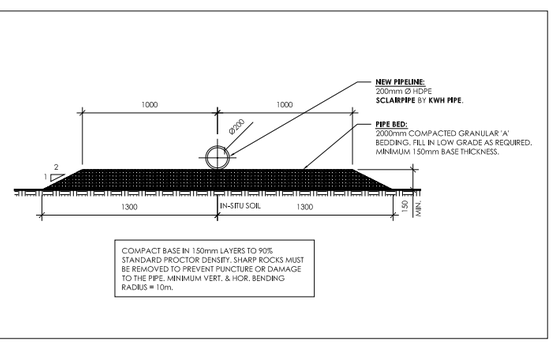

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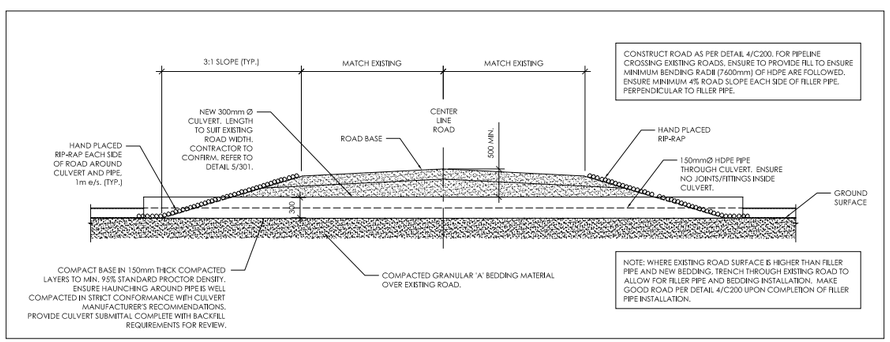

5 C101 TYPICAL SECTION: ROAD OVER NEW PIPELINE
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PROJECT:

IMPROVEMENT OF WATER SUPPLY SYSTEM

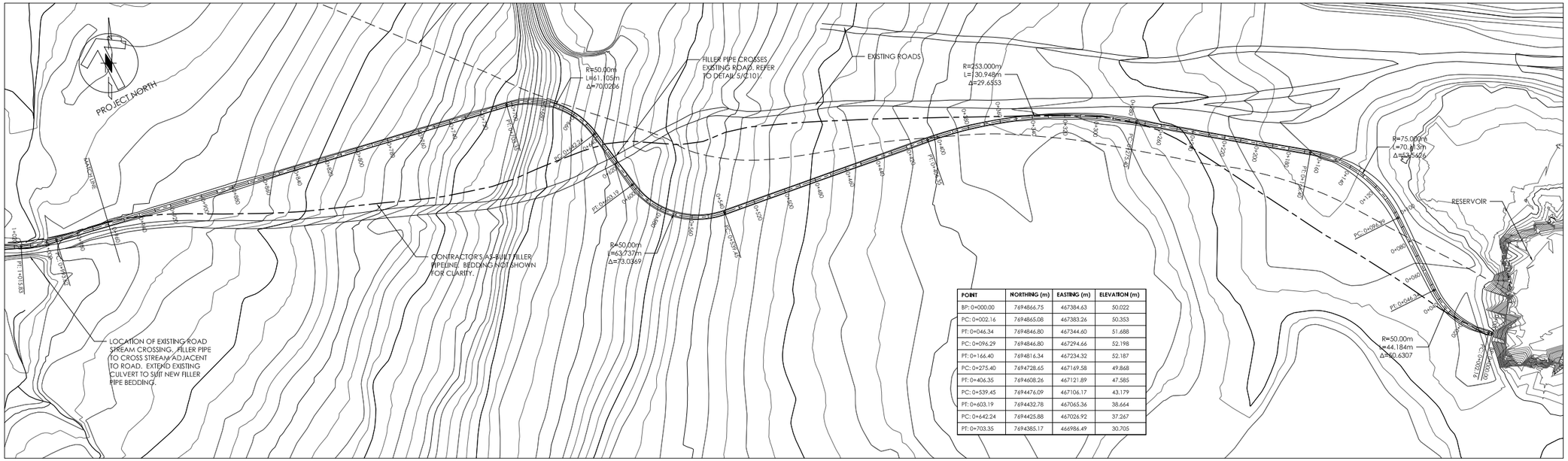
IGLOOLIK, NUNAVUT

DRAWING NAME:

NEW FILLER PIPELINE PROFILE, PARTIAL PLAN & DETAILS

DRAWING NO.:

C101



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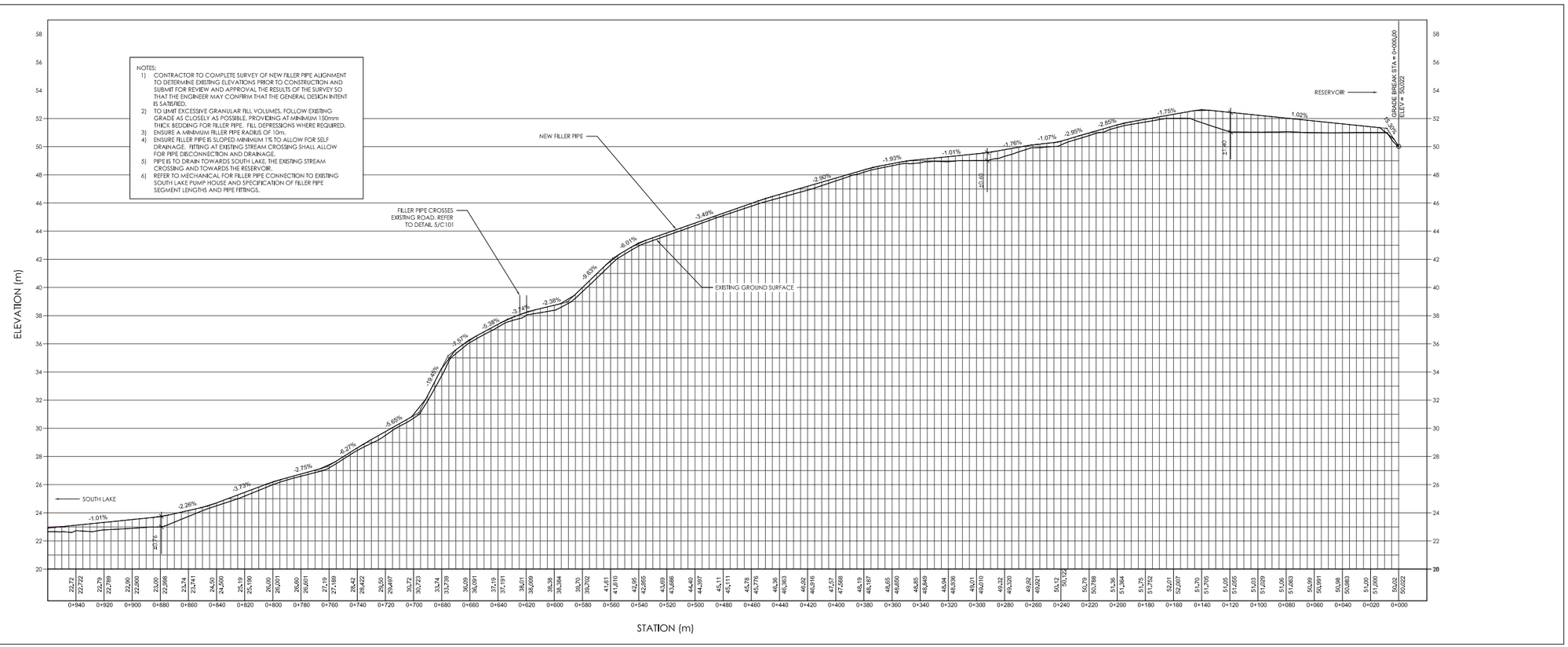

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IMPROVEMENT OF WATER SUPPLY SYSTEM

IGLOOLIK, NUNAVUT

DRAWING NAME:
NEW FILLER PIPELINE PARTIAL PLAN AND PROFILE (STA. 0+000 TO 0+960)

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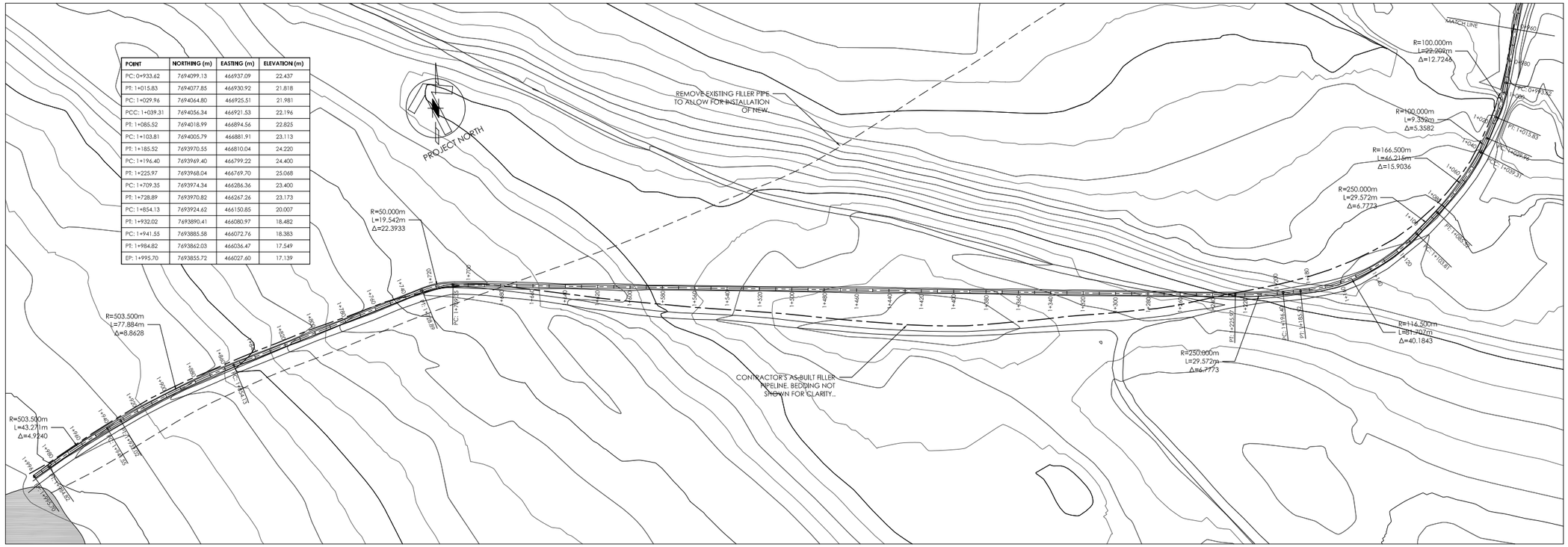

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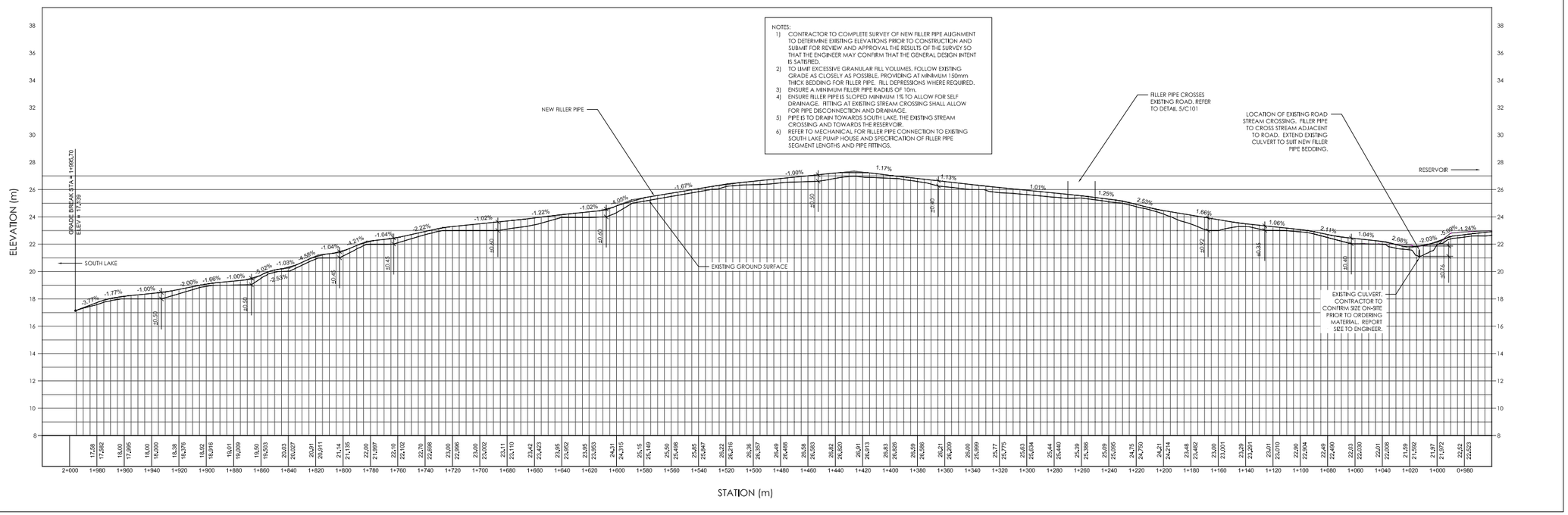

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IMPROVEMENT OF WATER SUPPLY SYSTEM

IGLOOLIK, NUNAVUT

DRAWING NAME:
NEW FILLER PIPELINE PARTIAL PLAN AND PROFILE (STA. 0+960 TO 1+996)

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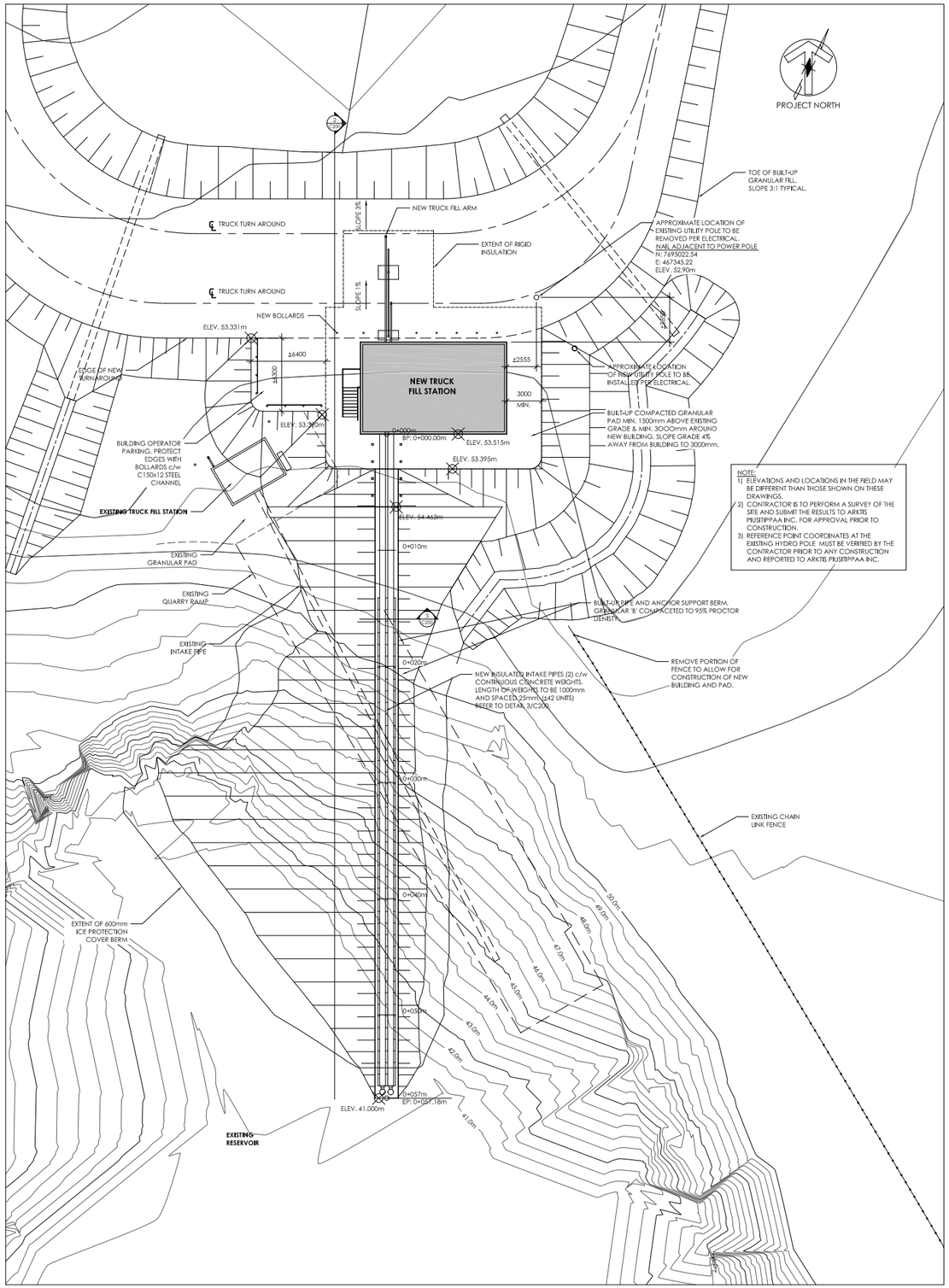

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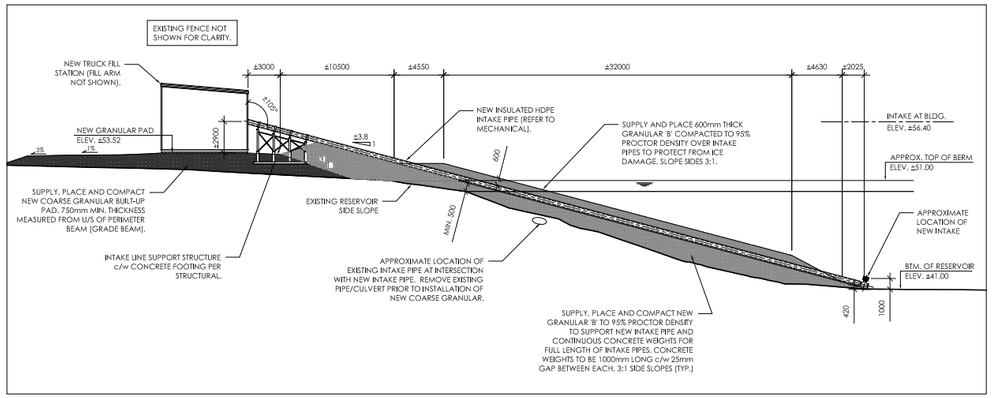

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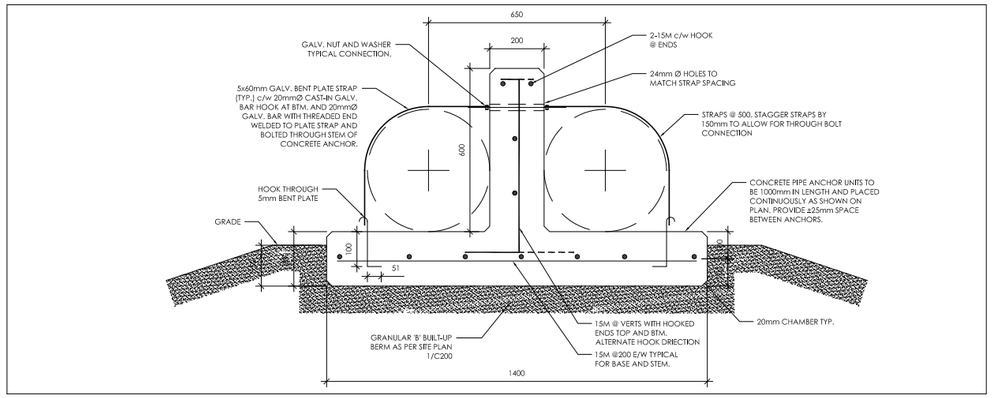

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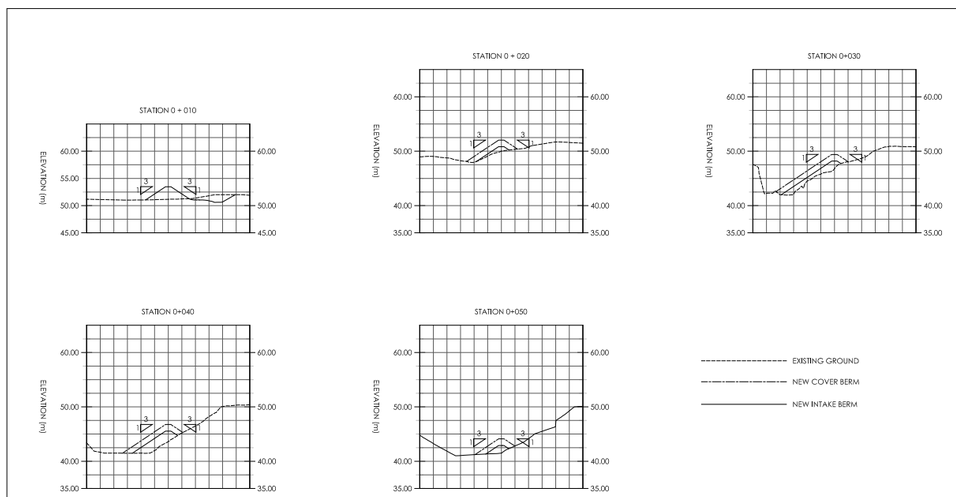

4 C200 INTAKE BERM SECTIONS
1:1000 H 1:2000 V

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FOR CIVIL ONLY
REGISTERED PROFESSIONAL ENGINEER G.M. FAIRTHORNE LICENSED Oct 16/16 NWT/NU

PERMIT TO PRACTICE
FAIRTHORNE ENGINEERING INC.
Signature
Date Oct. 26, 2016
PERMIT NUMBER: P 1035
NT/NU Association of Professional Engineers and Geoscientists

PERMIT TO PRACTICE
ARKTIS PIUSITIPPAA INC.
Signature
Date Oct 26 / 2016
PERMIT NUMBER: P 745
NWT/NU Association of Professional Engineers and Geoscientists

REGISTERED PROFESSIONAL ENGINEER S.P. THORPE LICENSED Oct 27/16 NT/NU
FOR GEOTECHNICAL ONLY

No.	DATE:	REVISION:
06	10/26/16	ISSUED FOR CONSTRUCTION
05	04/25/16	ADDENDUM NO. 1
04	03/28/16	RE-ISSUED FOR TENDER
03	04/16/14	ISSUED FOR TENDER
02	01/13/14	ISSUED AT 99% COMPLETE
01	11/25/13	ISSUED AT 50% COMPLETE

Arktis piusitippaa
P.O. BOX 242, GJOA HAVEN, NU, X0B 1J0
TEL: (867) 446-0036 Fax: (866) 475-1147

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DRAWN BY:	KH,GF	DESIGNED BY:	KH, PB, GF
DATE:	OCTOBER 2016	CHECKED BY:	GF
SCALE:	AS NOTED	PLOT DATE:	10/26/16

PROJECT:

IMPROVEMENT OF WATER SUPPLY SYSTEM

IGLOOLIK, NUNAVUT

DRAWING NAME:

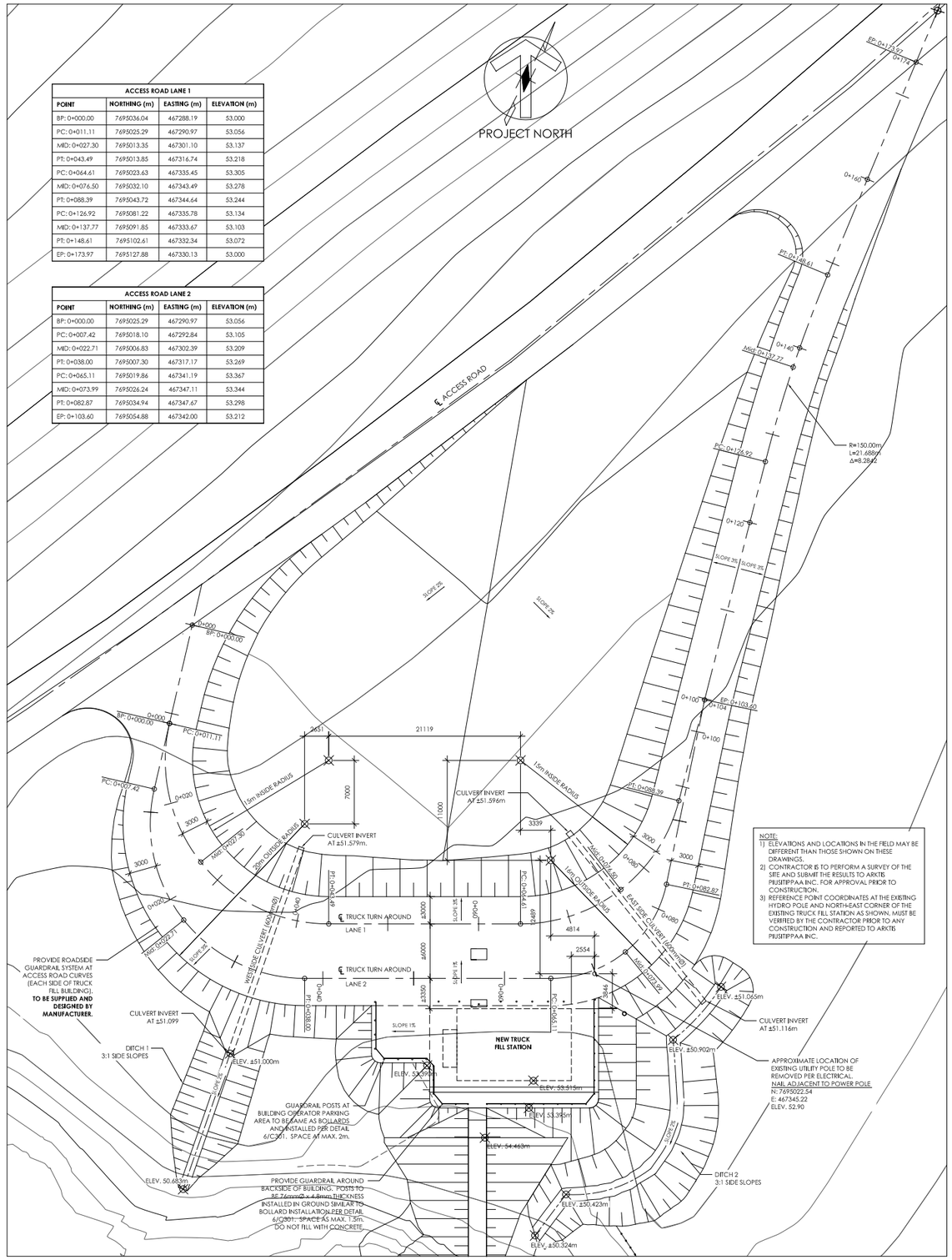
NEW TRUCK FILL STATION SITE PLAN, SECTIONS & DETAIL

DRAWING NO.:

C200

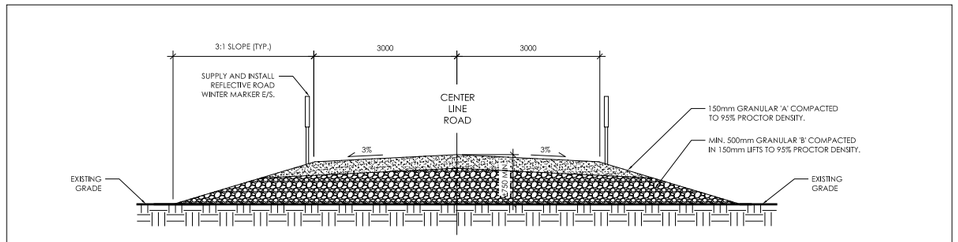
ACCESS ROAD LANE 1			
POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)
BP: 0+000.00	7695036.04	467288.19	53.000
PC: 0+011.11	7695025.29	467290.97	53.056
MID: 0+027.30	7695013.35	467301.10	53.137
PT: 0+043.49	7695013.85	467316.74	53.218
PC: 0+064.61	7695023.63	467335.45	53.305
MID: 0+076.50	7695032.10	467343.49	53.278
PT: 0+088.39	7695043.72	467344.64	53.244
PC: 0+126.92	7695081.22	467335.78	53.134
MID: 0+137.77	7695091.85	467333.67	53.103
PT: 0+148.61	7695102.61	467332.34	53.072
EP: 0+173.97	7695127.88	467330.13	53.000

ACCESS ROAD LANE 2			
POINT	NORTHING (m)	EASTING (m)	ELEVATION (m)
BP: 0+000.00	7695025.29	467290.97	53.056
PC: 0+007.42	7695018.10	467292.84	53.105
MID: 0+022.71	7695006.83	467302.39	53.209
PT: 0+038.00	7695007.30	467317.17	53.269
PC: 0+065.11	7695019.86	467341.19	53.367
MID: 0+073.99	7695026.24	467347.11	53.344
PT: 0+082.87	7695034.94	467347.67	53.298
EP: 0+103.60	7695054.88	467342.00	53.212



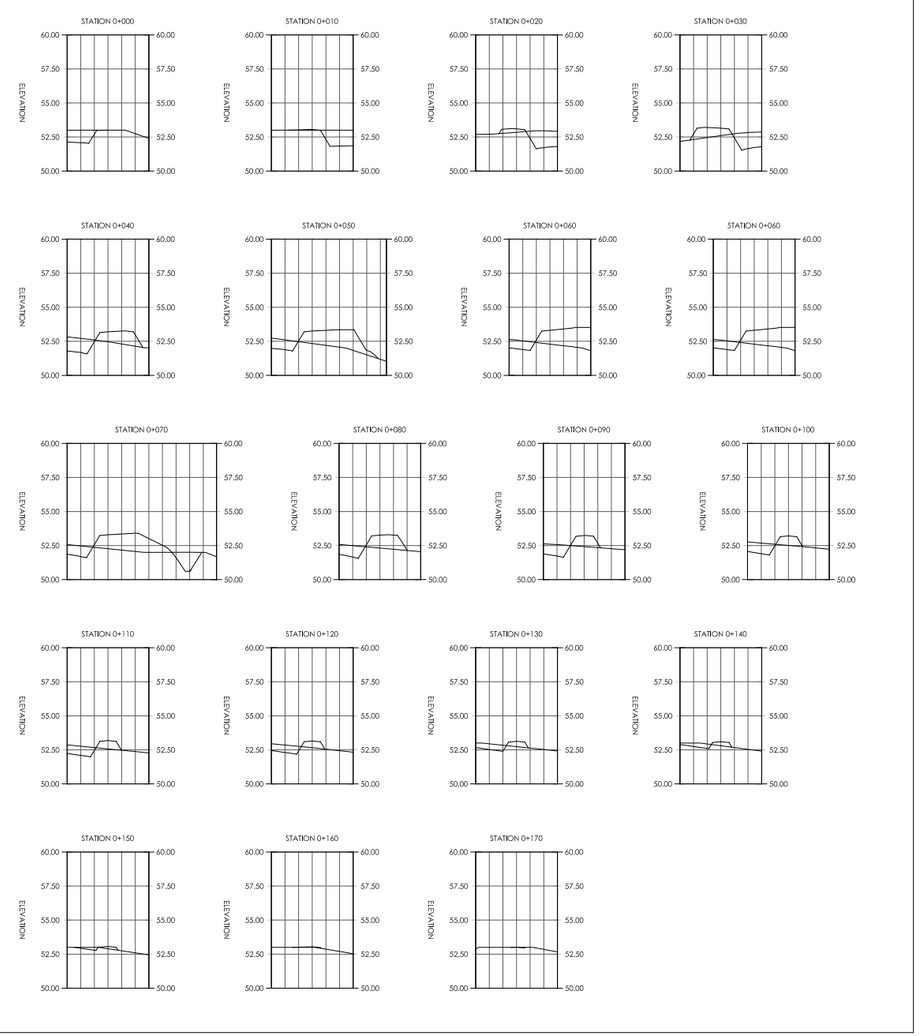
NOTE:
1) ELEVATIONS AND LOCATIONS IN THE FIELD MAY BE DIFFERENT THAN THOSE SHOWN ON THESE DRAWINGS.
2) CONTRACTOR IS TO PERFORM A SURVEY OF THE SITE AND SUBMIT THE RESULTS TO ARKTIS PIUSITIPPAA INC. FOR APPROVAL PRIOR TO CONSTRUCTION.
3) REFERENCE POINT COORDINATES AT THE EXISTING HYDRO POLE AND NORTH-EAST CORNER OF THE EXISTING TRUCK FILL STATION AS SHOWN. MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION AND REPORTED TO ARKTIS PIUSITIPPAA INC.

1 C300 NEW ACCES ROAD SITE PLAN
1:250



TRUCK FILL APPROACH IS OF SIMILAR CONSTRUCTION, BUT SLOPES AWAY FROM NEW BUILDING AND IS TWO LANES WIDE FOR PARALLEL TRUCK USE. REFER TO SITE PLAN 1/C200.

2 C300 TYPICAL ROAD SECTION
1:40



3 C300 ACCESS ROAD SECTIONS
1:1000 H 1:2000 V

Nunavut

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FOR CIVIL ONLY
REGISTERED PROFESSIONAL ENGINEER G.M. FAIRTHORNE LICENSEE NWT/NU
PERMIT TO PRACTICE FAIRTHORNE ENGINEERING INC.
Signature
Date Oct 26, 2016
PERMIT NUMBER: P 1035
NT/NU Association of Professional Engineers and Geoscientists

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PROJECT:

IMPROVEMENT OF WATER SUPPLY SYSTEM

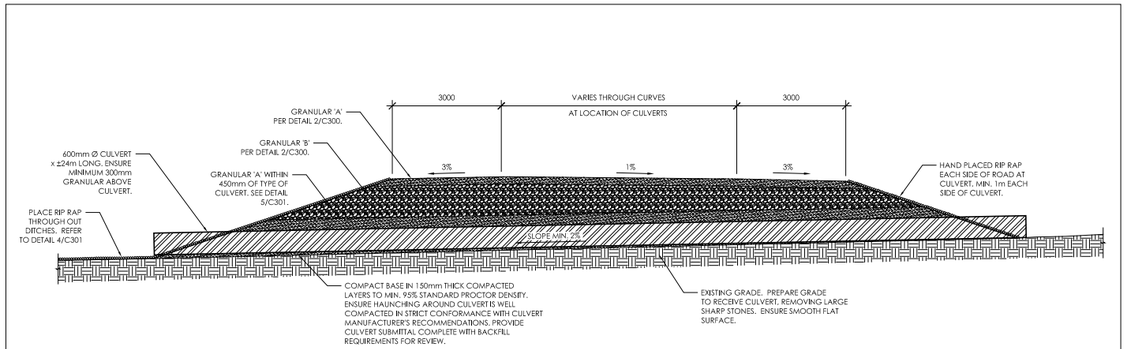
IGLOOLIK, NUNAVUT

DRAWING NAME:

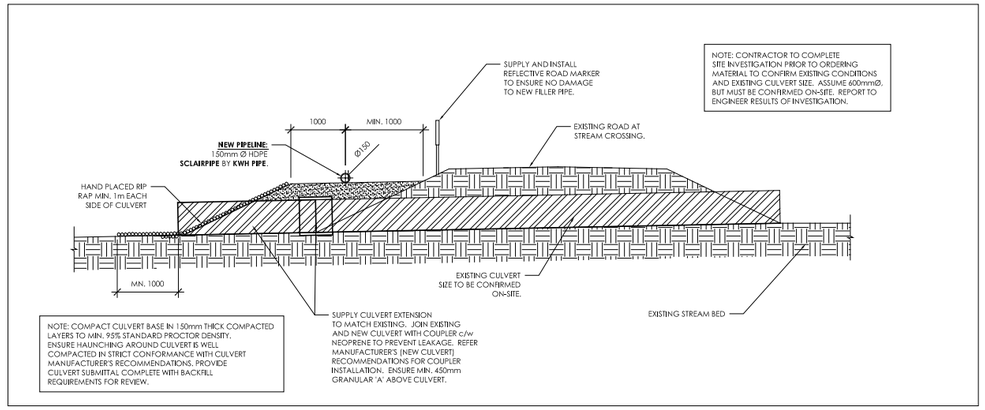
NEW ACCESS ROAD SITE PLAN, SECTIONS & DETAIL

DRAWING NO.:

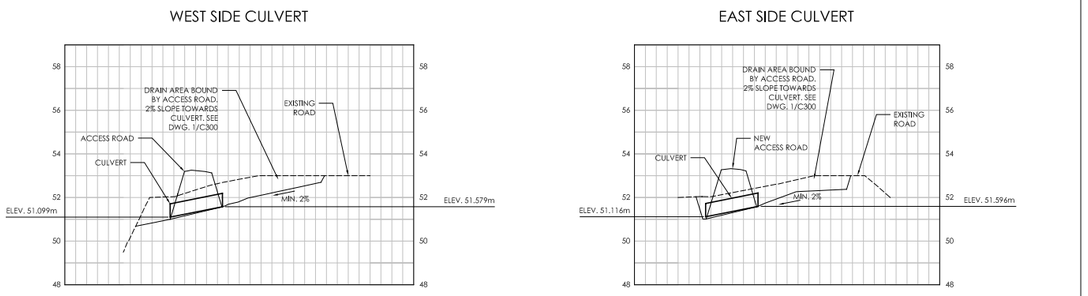
C300



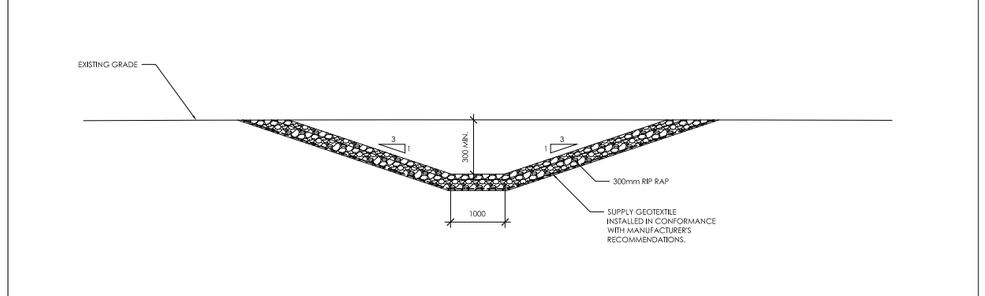
1 C301 TYPICAL CULVERT DETAIL
1:75



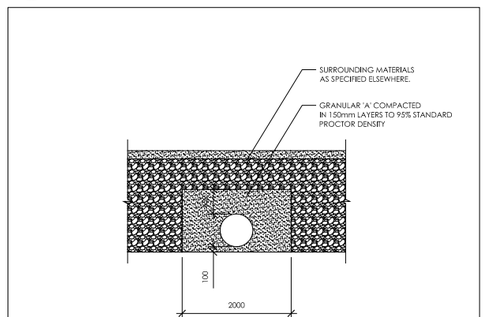
3 C301 CULVERT EXTENSION AT FILLER PIPE STREAM CROSSING
1:50



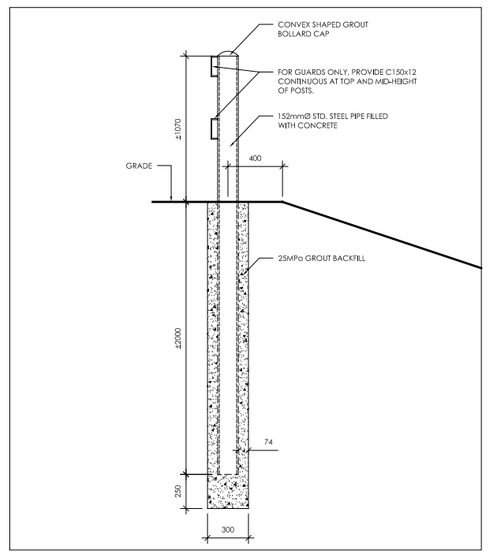
2 C301 CULVERT SECTIONS
1:1250



4 C301 TYPICAL DITCH DETAIL
1:50



5 C301 TYPICAL CULVERT SECTION
1:50



6 C301 TYPICAL BOLLARD SECTION
1:20

Nunavut

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S.P. THORPE
LICENSEE
26 OCT 16
NT/NU
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IGLOOLIK, NUNAVUT

DRAWING NAME:

CULVERT AND MISC. DETAILS

DRAWING NO.:

C301