

MUNICIPALITY OF ARCTIC BAY

**Operation & Maintenance Plan for
Municipal Water Licence Sewage
Disposal Facilities**

November 2024

Document Control

Date	Document Title	Author	Details
July 2012	Arctic Bay Waste Water Facility Operations and Maintenance Manual Volumes 1 and 2	exp Services Inc.	Previous manual
November 2024	Municipality of Arctic Bay Operation & Maintenance Plan for Municipal Water License: Sewage Disposal Facilities	GN-CGS and Dillon Consulting Ltd.	Consolidation of information and update of information and previous manual into standardized template

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1.0 Site Description

Date this plan was prepared: 2024-Nov-16

1.1 Location of the Sewage Disposal Facility (SDF)

Municipality: Arctic Bay
Latitude: 73°02'28"N
Longitude: 85°05'28"W
Proximity to Town: 1.5km East



Figure 1: Arctic Bay Sewage Disposal Facility from Google Earth, 2024

1.2 SDF Site Summary

Year of commissioning the SDF: 2013

Design life of the SDF: 2033

1.2.1 Site History

The sewage treatment facility is located approximately 1.5 km East of the community. The facility was commissioned in 2013 and is comprised of a single cell lagoon, two truck discharge areas, and a wetland treatment area. Effluent flows approximately 700 metres through the wetland from the sewage detention cell to the marine environment of Victor Bay.

The sewage lagoon was constructed in a small valley overlooking the decommissioned lagoons and Admiralty Inlet to the south and Victor Bay to the north. A new access road was constructed from the existing sewage lagoons to the new lagoon.

1.2.2 Ground Conditions

Permafrost is present in the soil; it recedes to approximately 1 metre below the surface in the summertime.

1.2.3 Treatment System

The Hamlet uses a single cell Sewage Lagoon system, which receives trucked wastewater, to treat Sewage generated by the community. The Lagoon system, which was constructed in 2013 and has a projected lifespan of 20 years, is complemented by a wetland area (a vegetative filter strip) that is used to further treat wastewater from the Sewage Lagoon system. The treated sewage effluent is pumped from the sewage disposal facility to the wetland area beginning mid-August and continuing until mid to late September. The end of the Vegetated Filter Strip Wetland Area is located approximately 700 metres from the discharge point of the sewage disposal facility, at Victor Bay.

2.0 Staff

2.1 Chief Administrative Officer

Name: Andre Larabie

Phone: 867-438-9917

Email: cao@arcticbay.ca

Responsibilities:

The CAO manages the municipal staff to ensure that:

- Proper operation of the SDF is carried out
- Sampling and inspections are completed
- Information under the water licence monitoring program is provided to the Government of Nunavut Department of Community and Government Services (GN-CGS) for Annual Report preparation
- Submission of the Annual Report for the Nunavut Water Board (NWB)

2.2 Foreman

Name: Sam Willie

Phone: 867-439-8260

Email: foreman@arcticbay.ca

Responsibilities:

- Daily operations and maintenance of the SDF.
- The sampling program at the monitoring stations
- Maintaining signage at the SDF and monitoring stations
- Annual decanting of the lagoon effluent into the adjacent wetland treatment area

2.3 Solid Waste Truck Drivers

Name: Various

Phone: N/A

Email: N/A

Responsibilities: The sewage vacuum truck drivers collect sewage from holding tanks within the municipality. Sewage is transported to the lagoon where it is deposited.

3.0 Health and Safety

All personnel working within the SDF must follow the Nunavut Safety Act and be made aware of potential health hazards associated with working around sewage and wastewater. This is imperative so individuals make a conscious effort to perform all necessary safety procedures to protect themselves, their co-workers and family members at home. Safety precautions include:

- Ensure all equipment is kept as clean as possible;
- Assume anything touched by sewage is contaminated;
- Protective clothing such as coveralls, gloves, boots, and safety glasses are to be provided to personnel and always worn when working around sewage;
- Workers must always wear protective gloves
- Work clothing is not worn home
- Workers must wash their hands with soap and water on a regular basis, especially before delivering drinking water, eating and before going home;
- Workers are prohibited from eating or drinking in and around the sewage vacuum trunks; and
- Workers must keep their vaccinations up to date.

4.0 Security and Control

Access Control of to the facility:

- Perimeter fencing around the SDF
- Signage
- 450 m restricted land use development setback surrounding the SDF

5.0 Wastewater Conveyance

Wastewater transportation:	Vacuum Truck
Annual volume of sewage collected:	Reported in Annual Report
Number of days per week sewage is collected:	5

5.1 Operations

- Sewage is collected Monday through Friday from holding tanks in residences and other buildings in the community. Sewage is collected using sewage vacuum trucks.
- The vacuum trucks pump out sewage from the building holding tanks and transport it to the detention cell.
- Sewage is deposited into the lagoon from the vacuum trucks using one of three offload chutes and concrete splash pads, located on the east side of the offload truck pad. The sewage truck backs up to one of the offload chutes and the release valve of the truck is opened. Bollards with railings have been placed in front of each offload chute for safety precautions. Sewage should be disposed in the south cell first until filled, then the smaller north cell.
- The volume of sewage discharged into the lagoon is estimated from the municipal water delivery records

5.2 Influent Volume

Table 1: Wastewater Generation Estimates

Year	Estimated Wastewater Volume (m ³)	Difference (%)
2015	29,072	0
2016	29,401	1.12
2017	29,696	0.99
2018	29,992	0.98
2019	30,288	0.97
2020	30,551	0.86
2021	30,818	0.87
2022	31,109	0.94
2023	31,405	0.94

6.0 SDF Design

Lagoon Capacity:	59,900 m ³
Lagoon Dimensions:	700m x 150m
Wetland Treatment Area:	11.2 Hectares
Wetland Hydraulic Retention Time:	Unknown
Effluent Path Length:	700 m
Discharge Method:	Decant
Final Receiving Body:	Victor Bay
Type of Receiving Environment:	Marine

An overview of the wastewater treatment process:

Sewage is discharged into the detention cell year-round. The detention cell provides primary treatment of sewage as effluent is held in the impervious cell for a period of time. In August, the filter strip wetlands are ice-free and considered active. The lagoon is decanted during this stage to provide a continuous release of effluent over the wetland during the optimal period for treatment. Sewage trucks will continue discharging to the lagoon throughout the decanting process. The natural wetland provides the post-lagoon final treatment prior to the release into Victor Bay.



Figure 2: Seasonal Effluent Flow Through the Wetland Treatment Area

Description of the Final Receiving Environment:

Victor Bay is a marine environment located approximately 700 metres away from the lagoon. Victor Bay extends from Admiralty Inlet, which sustains a large population of narwhals. Caribou, polar bears, and walrus frequent the area.

7.0 Effluent Discharge

Discharge Method:	Decant
Time of Decant:	August to September
Duration of Decant:	1 month
Average Discharge Flowrate:	Unknown

Description of Effluent Sampling Procedures:

Per water license 3BM-ARC1924, the Municipality is required to measure and record, in cubic metres, the monthly and annual quantities of raw sewage offloaded from trucks and the number of days of use for the Sewage Disposal Facilities. The Municipality is also required to measure and record, in cubic metres, the monthly and annual quantities of effluent pumped from Monitoring Program Station ARC-4, as well as sample, measure the quantity, and analyze the quality of any sludge removed from the Wastewater Treatment Facility in accordance with procedures developed for the approved Operations and Maintenance Plan. The results must be reported within the Annual Report. All sampling, sample preservation, and analyses must be conducted in accordance with methods prescribed in the current edition of Standard Methods for the Examination of Water and Wastewater, or by such other methods approved by the Board in writing. All analyses must be performed by a laboratory accredited according to ISO/IEC Standard 17025. The accreditation should be current and in good standing.

Description of Operations:

Daily operational duties include:

- Collection of municipal wastewater from holding tanks and delivery to the sewage lagoon system.
- Minimize spills, and immediately clean up when they occur.
- Repairs to equipment when breakdowns occur.
- Maintain road, discharge point, and truck turning pads free of snow.
- Record Operation and Maintenance information as required.

Weekly operational duties include:

- Remove non-sewage materials from the lagoon. Floating materials such as plastic bags should be removed, and solid waste items disposed at the solid waste site adjacent to the lagoon.
- Assess truck discharge location and containment berms for erosion.

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- Record Operation and Maintenance information as required.

Monthly operational duties include:

- Preventative measures and maintenance on sewage trucks.
- Assess inventory of parts for truck maintenance.
- Grade and maintain the access road as required.
- Conduct monitoring program as required.
- Record Operation and Maintenance information as required.

Yearly operational duties include:

- Carry out decanting process during the designated timeframe.
- Conduct annual monitoring program.
- Decanting pump maintenance.
- Review the operation and maintenance records to evaluate the effectiveness of the sewage treatment system and plan for the upcoming year.

8.0 Maintenance

Overview of Maintenance Activities:

- Annual inspections will be undertaken by Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) accompanied by a licensee from the Municipality of Arctic Bay and/or a licensee representative from GN-CGS. The inspection report and recommendations will be reviewed by a GN-CGS municipal engineer and submitted in the Annual Report submitted to the Nunavut Water Board (NWB).
- Regular visual inspections by municipal staff of the:
 - Offload chutes
 - Lagoon berms
 - Signage

Any issues identified by municipal staff must be reported to the regional municipal engineer. Follow-up actions will be undertaken by the municipality with support from the GN-CGS.

Sludge Management:

It is anticipated that the sewage lagoon will not require desludging during its 20-year design life, the available storage for sludge is greater than the quantity estimated to be generated.

The effluent quality will guide the Hamlet if or when a sludge management program is implemented. Monitoring of the effluent from the lagoon will indicate when the performance of the lagoon starts to degrade. Degradation of the performance of a lagoon is normally caused by sludge accumulation and will be the indicator to desludge the lagoon.

Prior to disposal, the sludge must be tested to ensure the disposal method chosen is safe and environmentally responsible. Evaluating the analytical results obtained by sludge sampling, the Government of Nunavut defaults to criteria established by the Canadian Council of Ministers of the Environment (CCME). For soil, the CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (updated September 2007) is used to compare the metals and VOC analytical results. The CCME has also established the Canada-Wide Standards (CWS) for Petroleum Hydrocarbons (PHC) in Soil (April 2001), which is the federal remedial standard for petroleum impacted soils. The CCME and CWS criteria are based on four land use categories: i) agricultural; ii) residential/parkland; iii) commercial; and iv) industrial. As the

sludge is to be disposed of at the landfill site, the industrial land use category is utilized for assessing the sludge management.

Surface Water Management:

Runoff from the Sewage Disposal Facility is monitored on an annual basis so that grading directs surface water away from the lagoon berms.

At some point, for a variety of reasons, impacted surface water may accumulate in the SDF. The water may or may not be impacted by contaminants from sewage. In the event this occurs, the following procedures will be followed:

1. Collect samples from the water licence monitoring program at stations as outlined in the Environmental Monitoring Program and QA/QC Plan. It is recognized that it may take some time for results to be received from the accredited laboratory.
2. Analyze samples for parameters of concern and compare the results to the relevant Canadian Water Quality Guidelines.
3. Water should be inspected for odours, stain, or signs of visible impact (sheens, floating scum).
4. Consult with the GN-CGS municipal engineer and CIRNAC on discharge options.

9.0 Monitoring

Regulatory Inspection: The annual CIRNAC inspection will take place accompanied by the licensee from the Municipality and/or with a licensee representative from GN-CGS. The inspection report will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

Table 2: License Requirements Related to O&M of the SDF

Requirements	Reported
Monthly and annual quantities of wastewater disposal	Annual report submitted to NWB
Notice of commencement of monitoring program and observed flow	Notice given to the CIRNAC inspector
A summary of modifications and/or major maintenance work carried out on the SDF	Proposal submitted to NWB 60 days prior
A list of spills and unauthorized discharges.	Annual report submitted to NWB
A summary of any studies requested for the SDF and future planned studies planned	Annual report submitted to NWB
Monitoring Program Station ARC-4 shall not exceed the effluent quality limits: 120 mg/L BOD ₅ 180 mg/L TSS 1x10 ⁶ CFU/dl Fecal Coliform No visible sheen of Oil and grease 6-9 pH	Annual report submitted to NWB
A freeboard of 1.0 m in the lagoon must be maintained	Annual report submitted to NWB

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Table 3: Monitoring Program Station Location and Description

Station	Description	Latitude	Longitude
ARC-3	Raw Wastewater Discharge (South Berm)	73°02'25"	85°05'36"
ARC-4	Lagoon Pump Discharge (North Berm)	73°02'31"	85°06'02"
ARC-6b	Surface Water at the end of Wetland area	73°02'52"	85°07'21"
ARC-8	Sewage Sludge	73°02'28"	85°05'22"

10.0 Modifications and Upgrades

Planned modifications or upgrades:

There are no planned modifications or upgrades at this time.

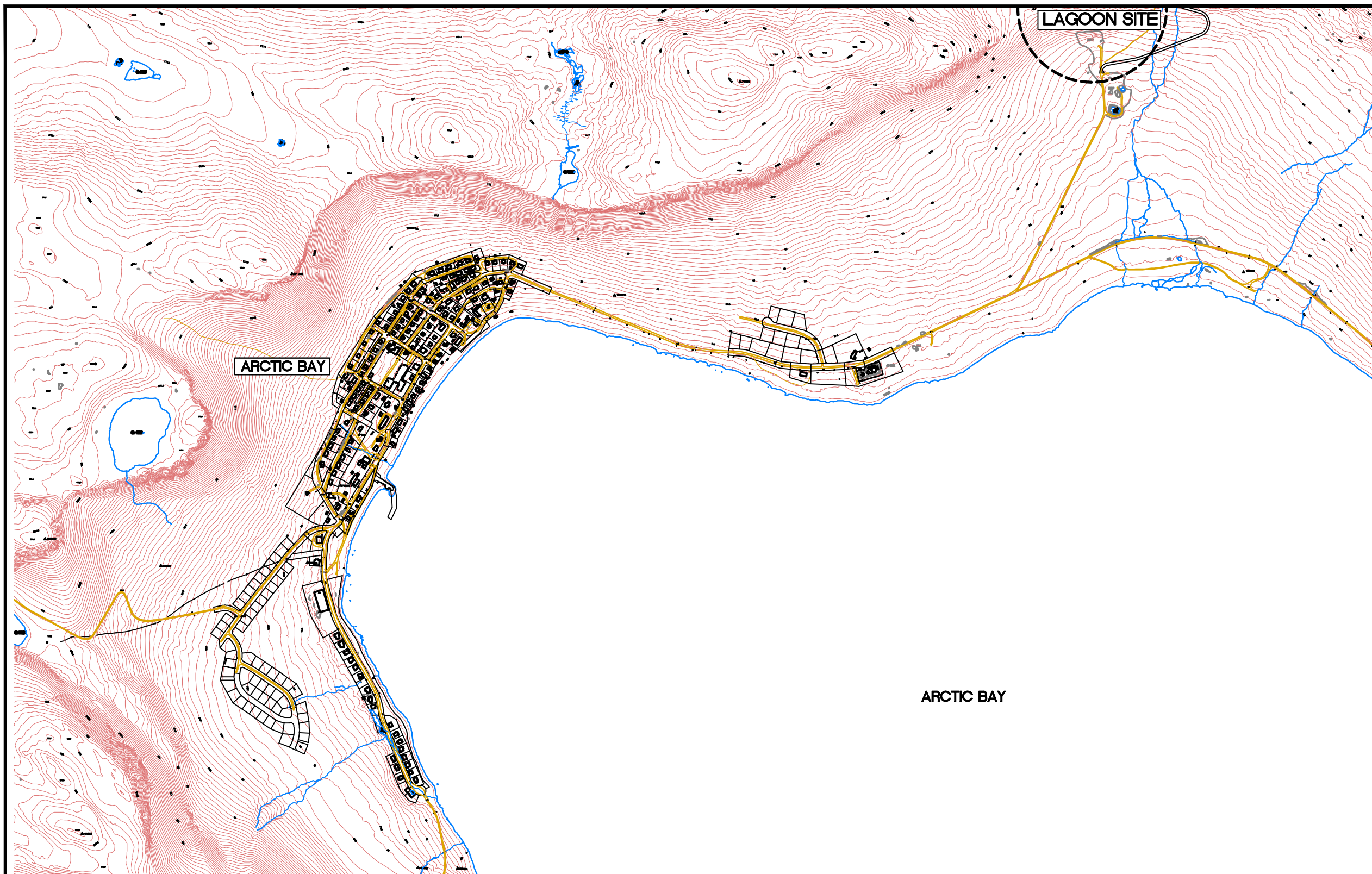
11.0 Previous Reports

- Arctic Bay Waste Water Facility Operations and Maintenance Manual Volumes 1 and 2, exp Services Inc., 2012

Appendix A

As-Built Drawings

GOVERNMENT OF NUNAVUT



INDEX OF INCLUDED DRAWINGS

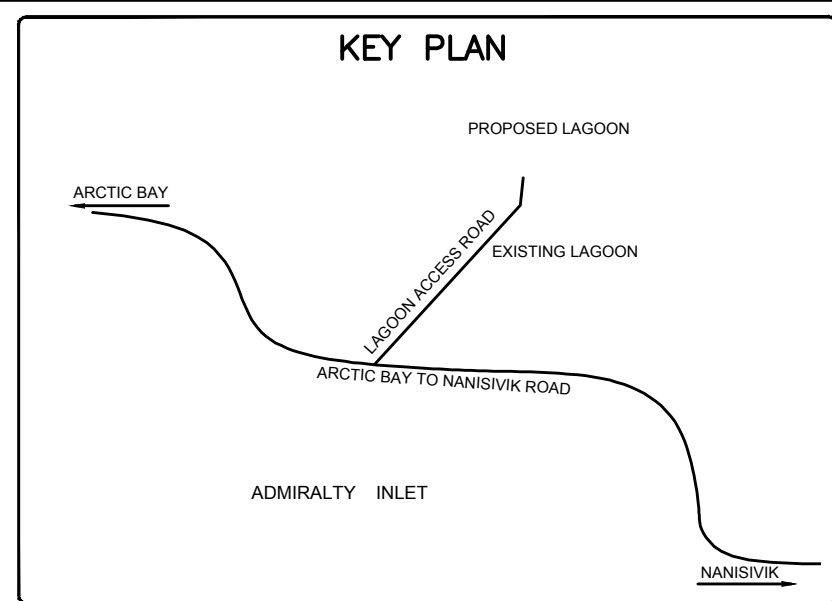
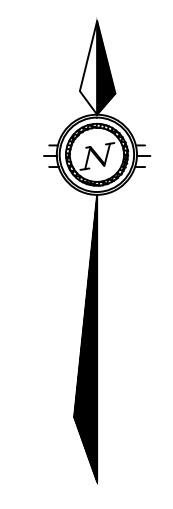
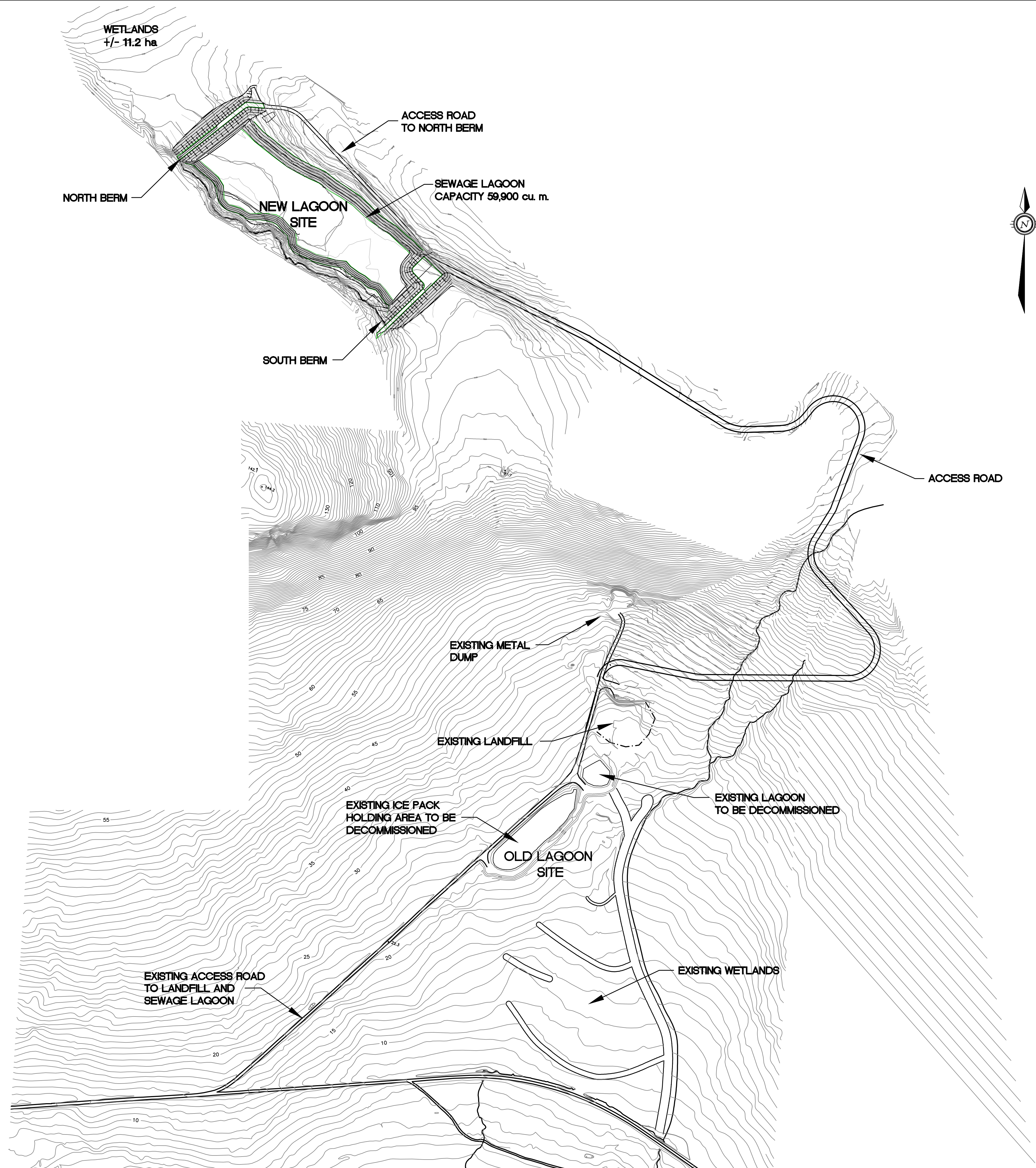
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OTCD00019054A-TD1	REV 4	TRUCK DISCHARGE PLAN
OTCD00019054A-DE1	REV 4	DETAILS
OTCD00019054A-DE2	REV 4	DETAILS
OTCD00019054A-SLP1	REV 4	SIGNAGE LOCATION PLAN
OTCD00019054A-CS1	REV 4	CROSS SECTIONS

ARCTIC BAY WASTEWATER LAGOON

 **Trow** Associates Inc.
154 COLONNADE ROAD SOUTH PHONE (613) 225-9940
OTTAWA, ONTARIO K2E 7J5 FAX (613) 225-7337

AS-BUILT INFORMATION PROVIDED BY KUDLIK CONSTRUCTION LTD. NOVEMBER 2011

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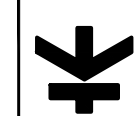
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DATE: NOVEMBER 30, 2011

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No.	DESCRIPTION	DATE	BY	APP'D
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S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

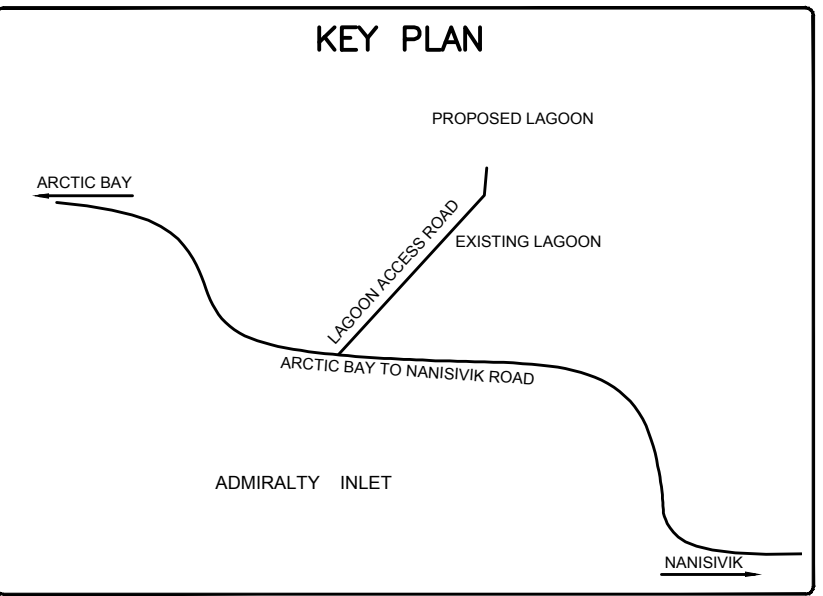
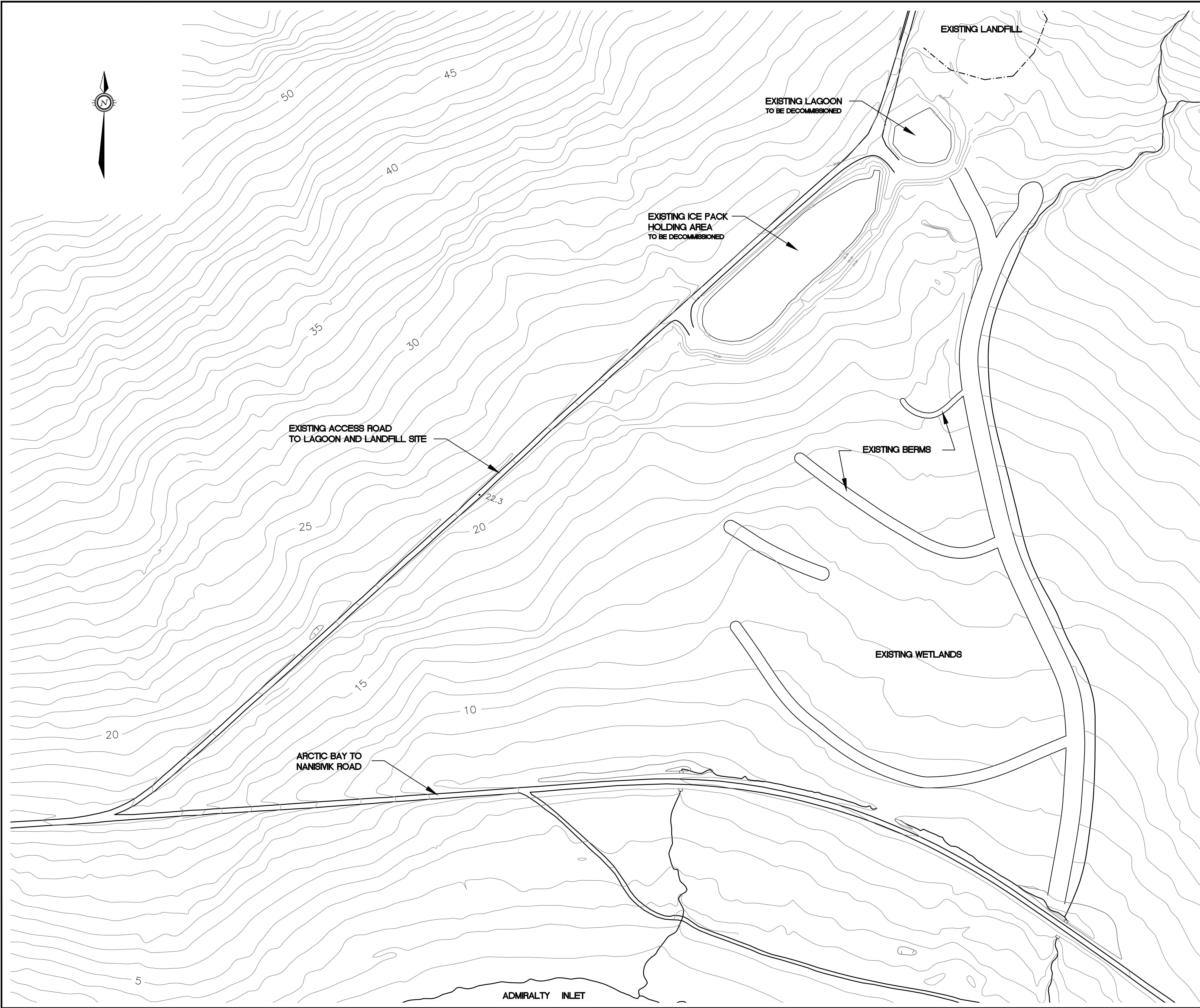
 **Trow Associates Inc.**
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel:(613)225-9940
Fax:(613)225-7337

CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY WASTEWATER LAGOON

TITLE
OVERALL
SITE PLAN

design by	SAD	project no.	OTCD000190544
drawn by	MEB	drawing no.	OSP-1
checked by	SLB	date	
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AS-BUILT

DATE: NOVEMBER 30, 2011


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No.	DESCRIPTION	DATE	BY	APP'D
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154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel:(613)225-9940
Fax:(613)225-7337

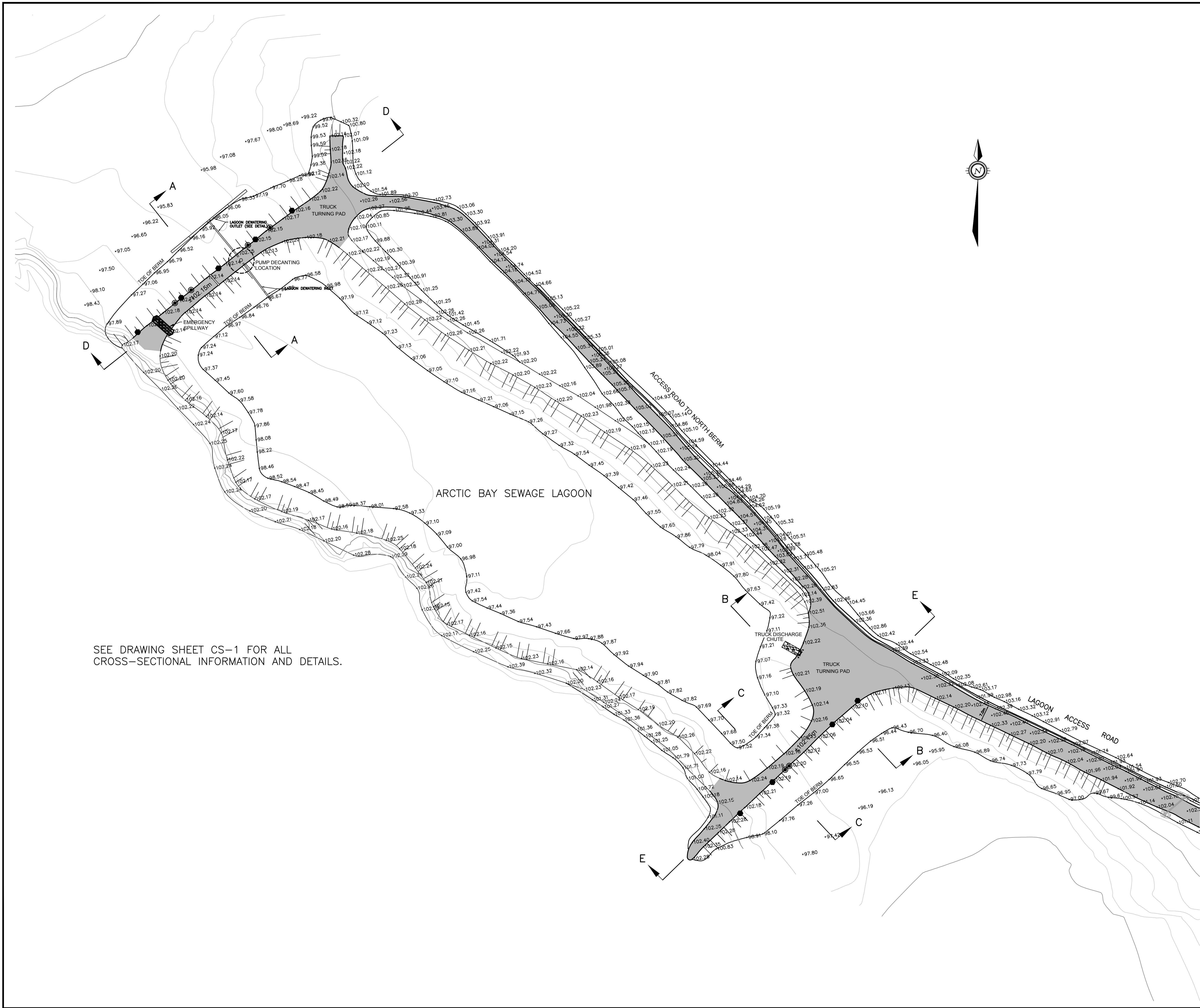
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GOVERNMENT OF NUNAVUT

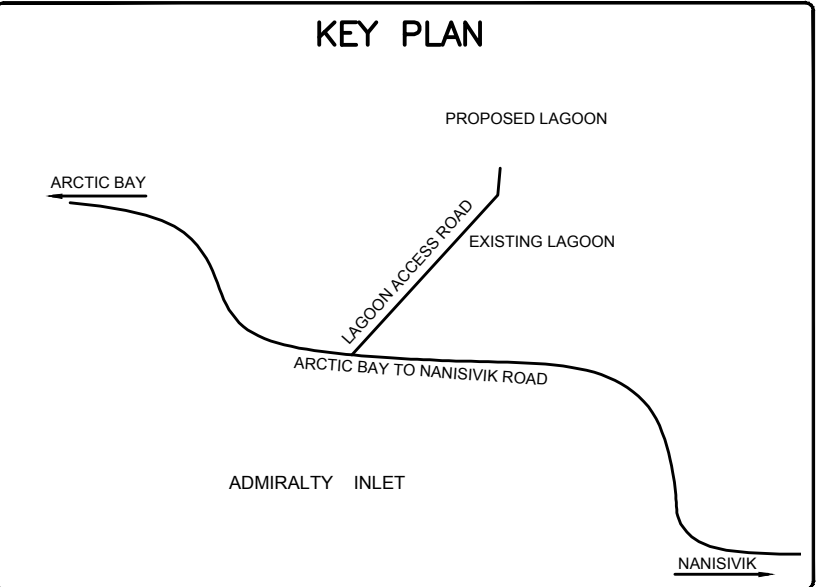
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ARCTIC BAY WASTEWATER LAGOON

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SEE DRAWING SHEET CS-1 FOR ALL
CROSS-SECTIONAL INFORMATION AND DETAILS.



LEGEND

- BERM CORE DETECTION - THERMISTOR CASING w/ THERMISTOR STRING AND DATA LOGGER CONNECTION
- SAMPLING POINT

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

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1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
No.	DESCRIPTION	DATE	BY	APP'D

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APRIL 27TH, 2009

Trow Associates Inc.
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GOVERNMENT OF NUNAVUT

PROJECT

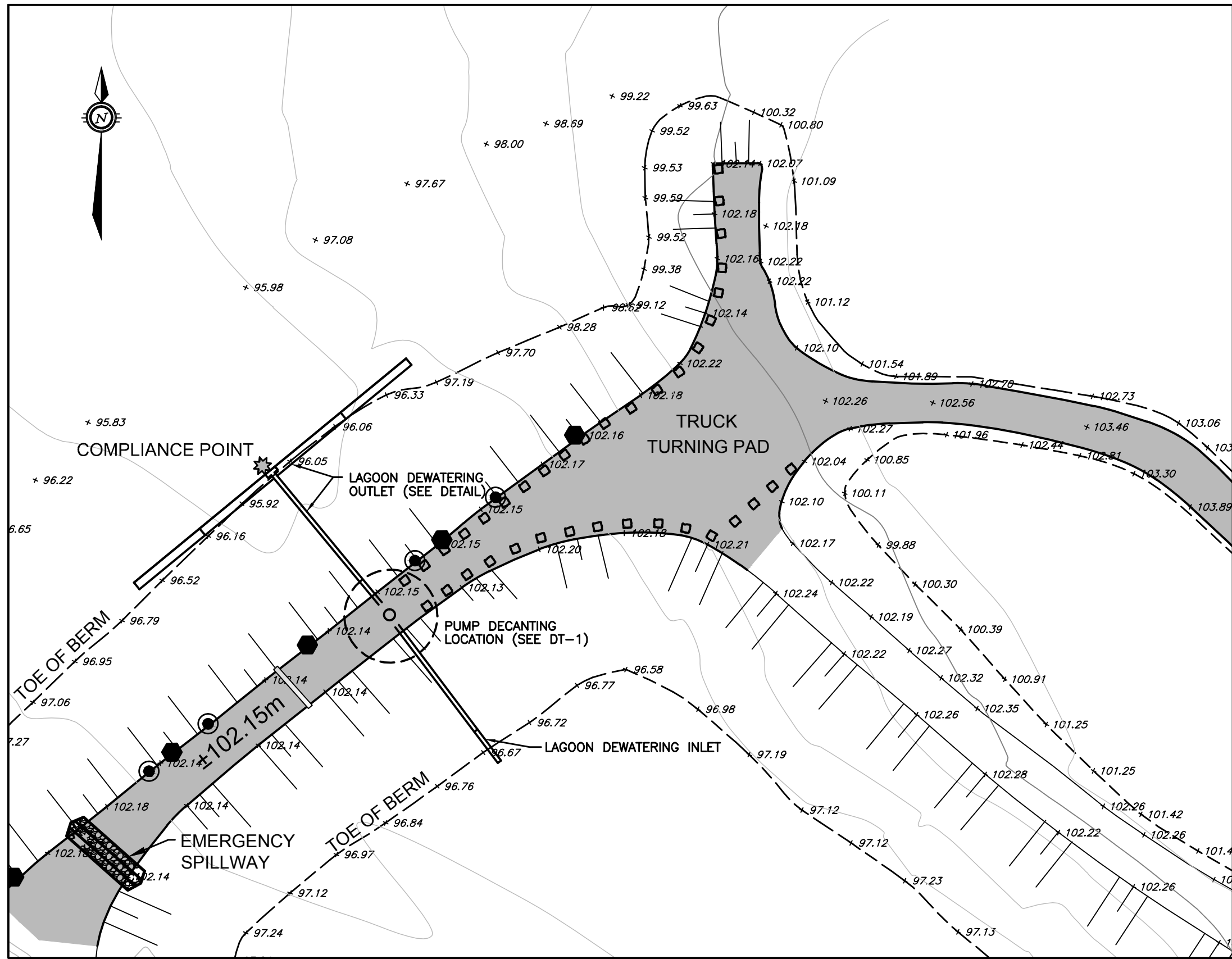
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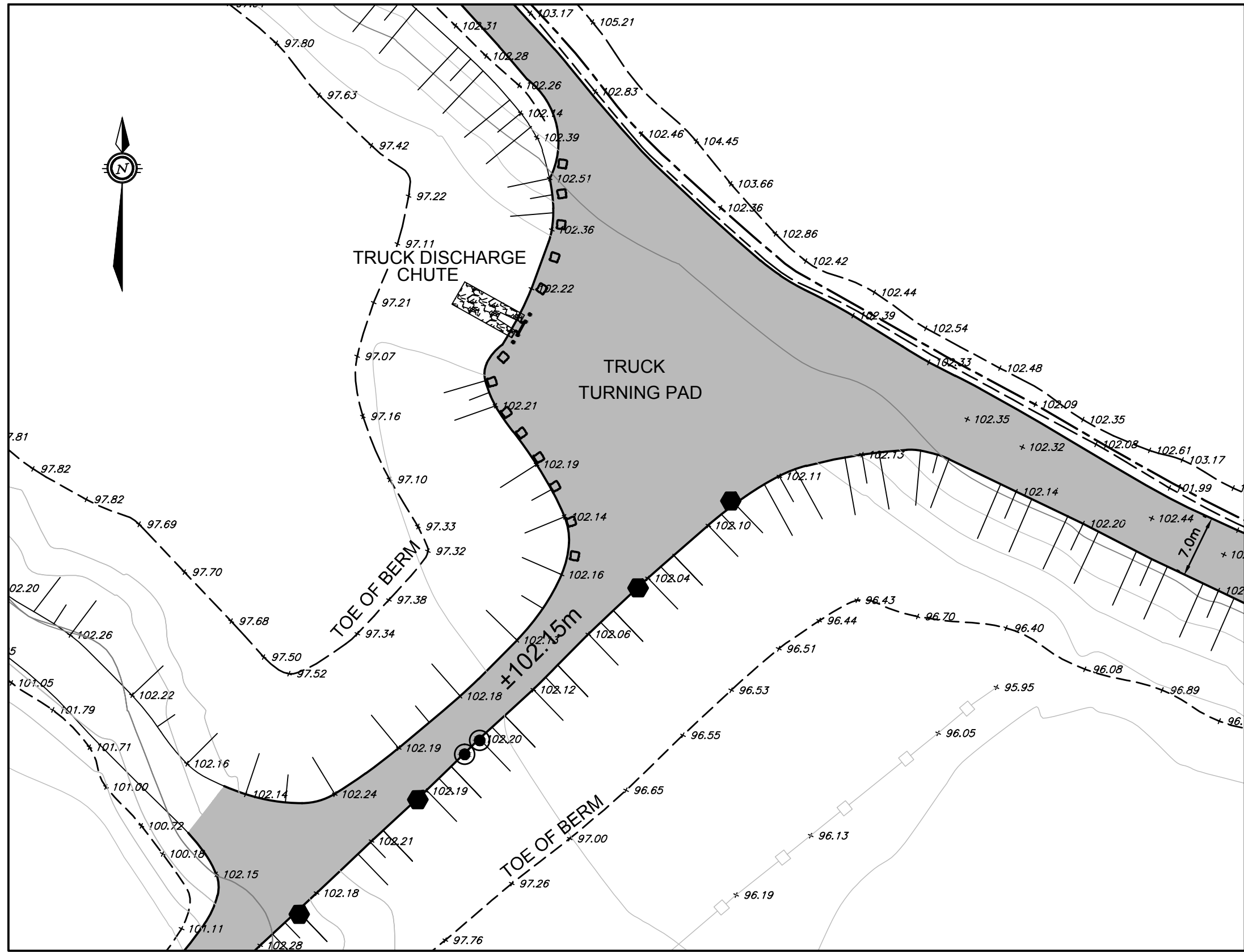
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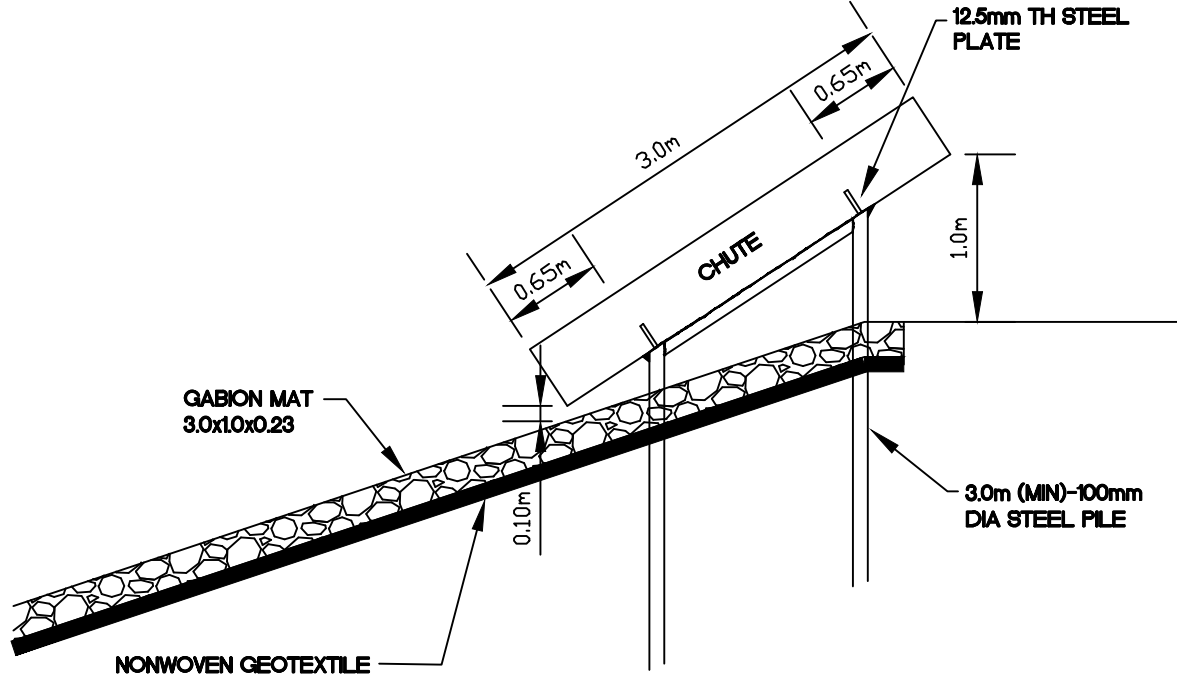
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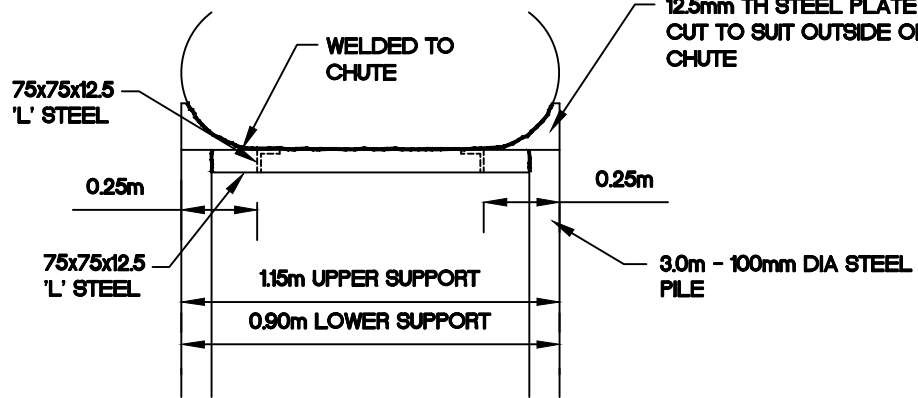
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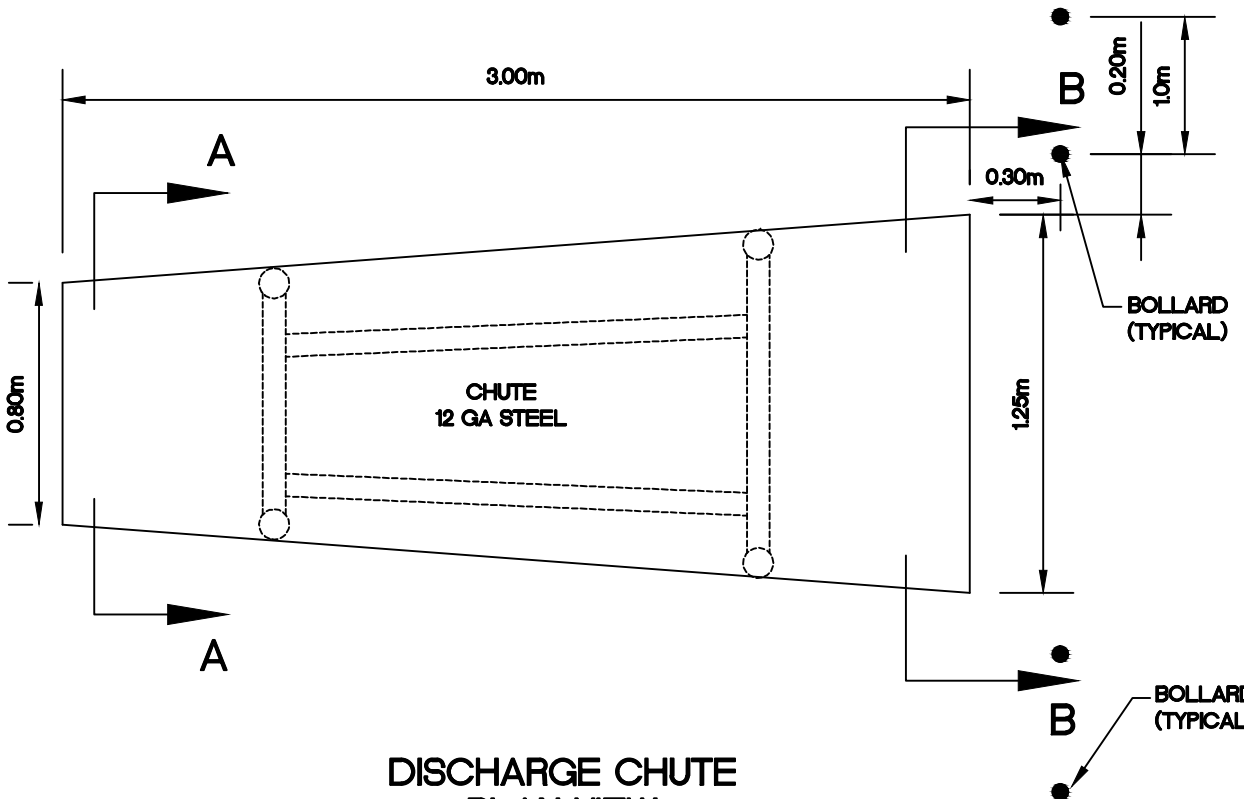
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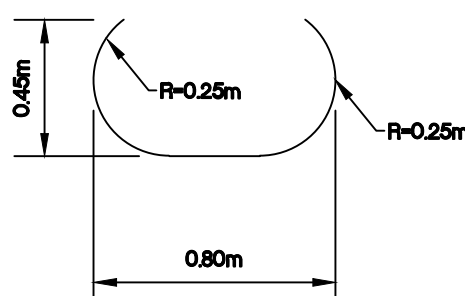
TRUCK DISCHARGE CHUTE
SECTION VIEW
SCALE 1:50



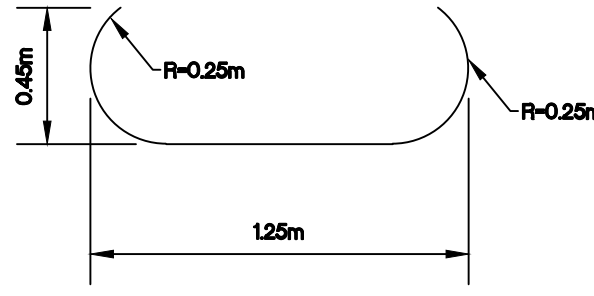
TRUCK DISCHARGE CHUTE
END VIEW
SCALE 1:25



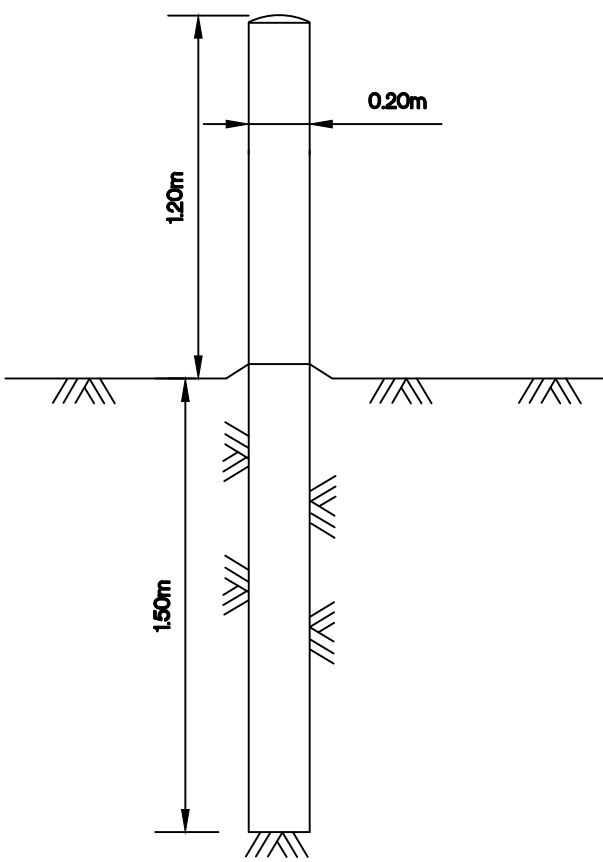
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SCALE 1:25



SECTION A-A
SCALE 1:25



SECTION B-B
SCALE 1:25

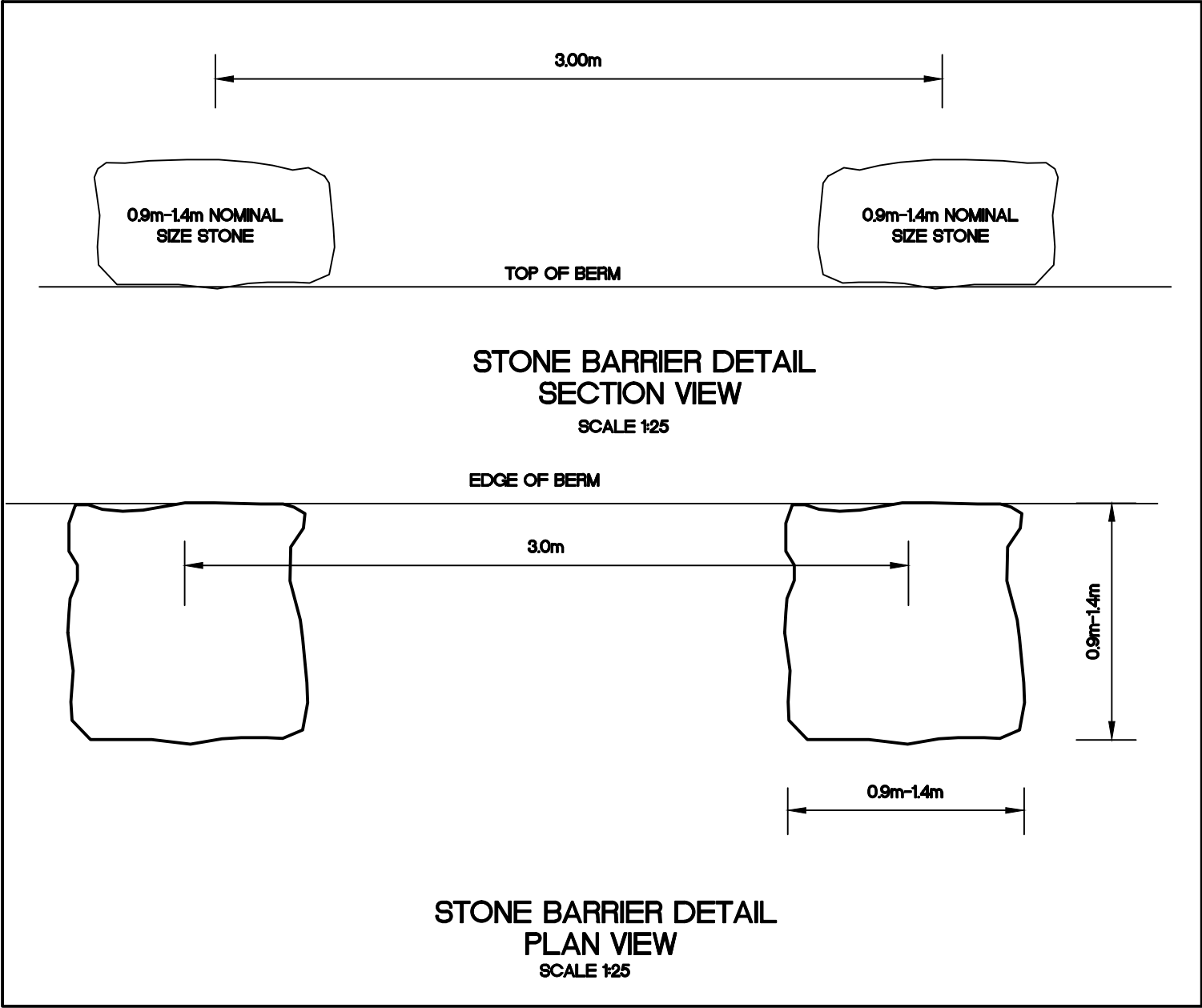


BOLLARD DETAIL
SCALE 1:25

SECTION A-A
SCALE 1:25

SECTION B-B
SCALE 1:25

TRUCK DISCHARGE CHUTE DETAIL



STONE BARRIER DETAIL
PLAN VIEW
SCALE 1:25

KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1 ELEV. = 59.12
CONTOUR ELEVATIONS WERE DRENED FROM NAD 83 CONTROL
MONUMENT 7038914 LOCATED NORTH OF THE ARCTIC BAY
AIRPORT UNDER CONSTRUCTION.

No.	DESCRIPTION	DATE	BY	APP'D
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3	AS-CONSTRUCTED	17/11/11	MEB	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
REVISIONS				

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APRIL 27TH, 2009



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PROJECT

ARCTIC BAY WASTEWATER LAGOON

TITLE

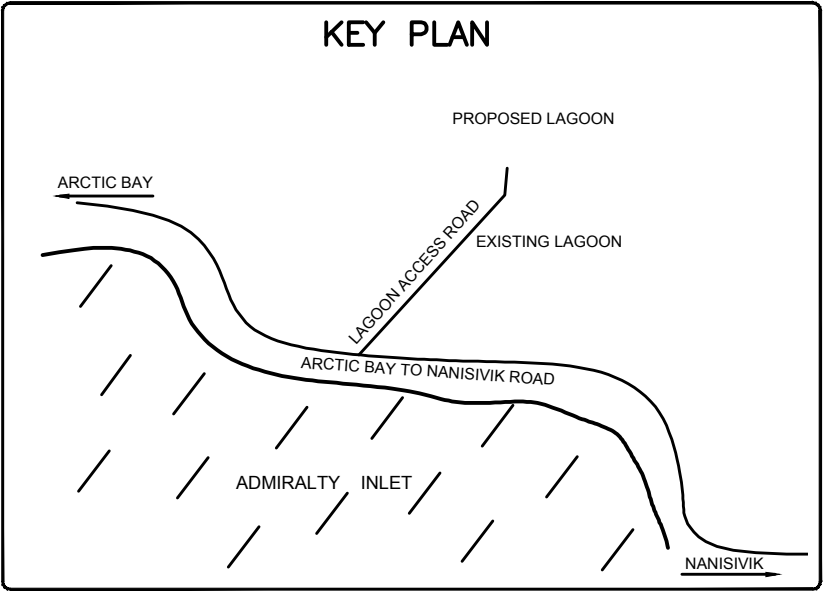
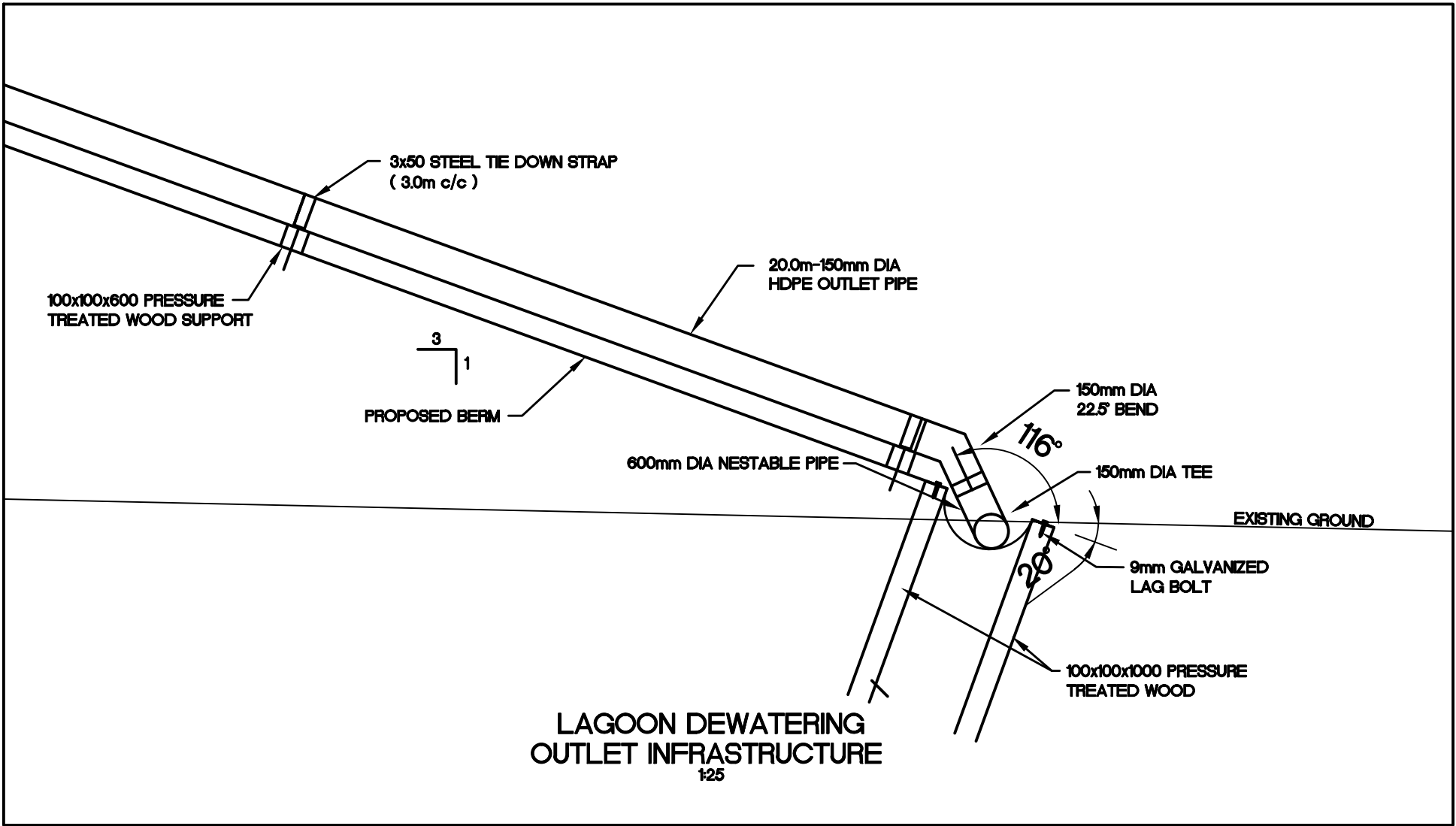
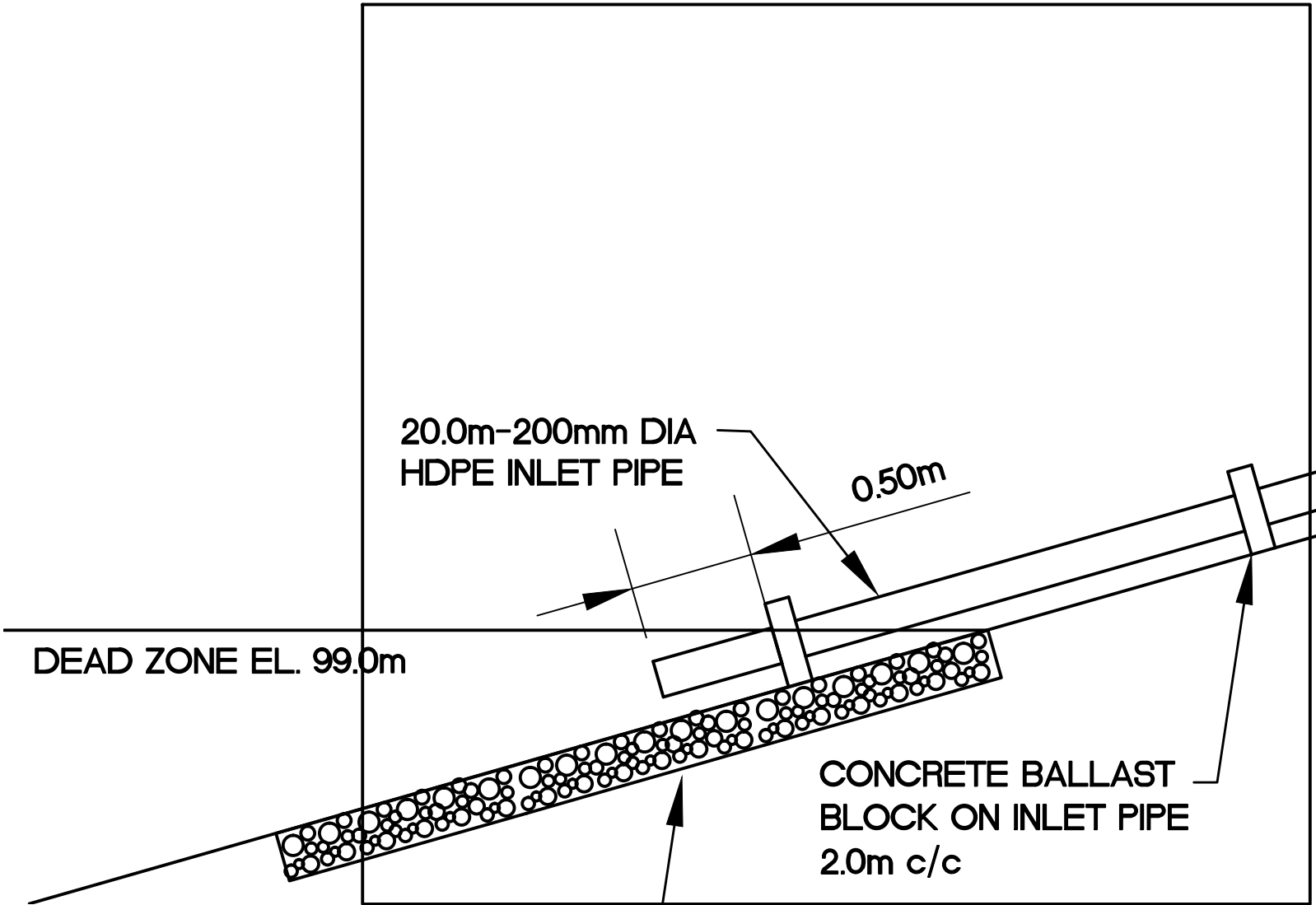
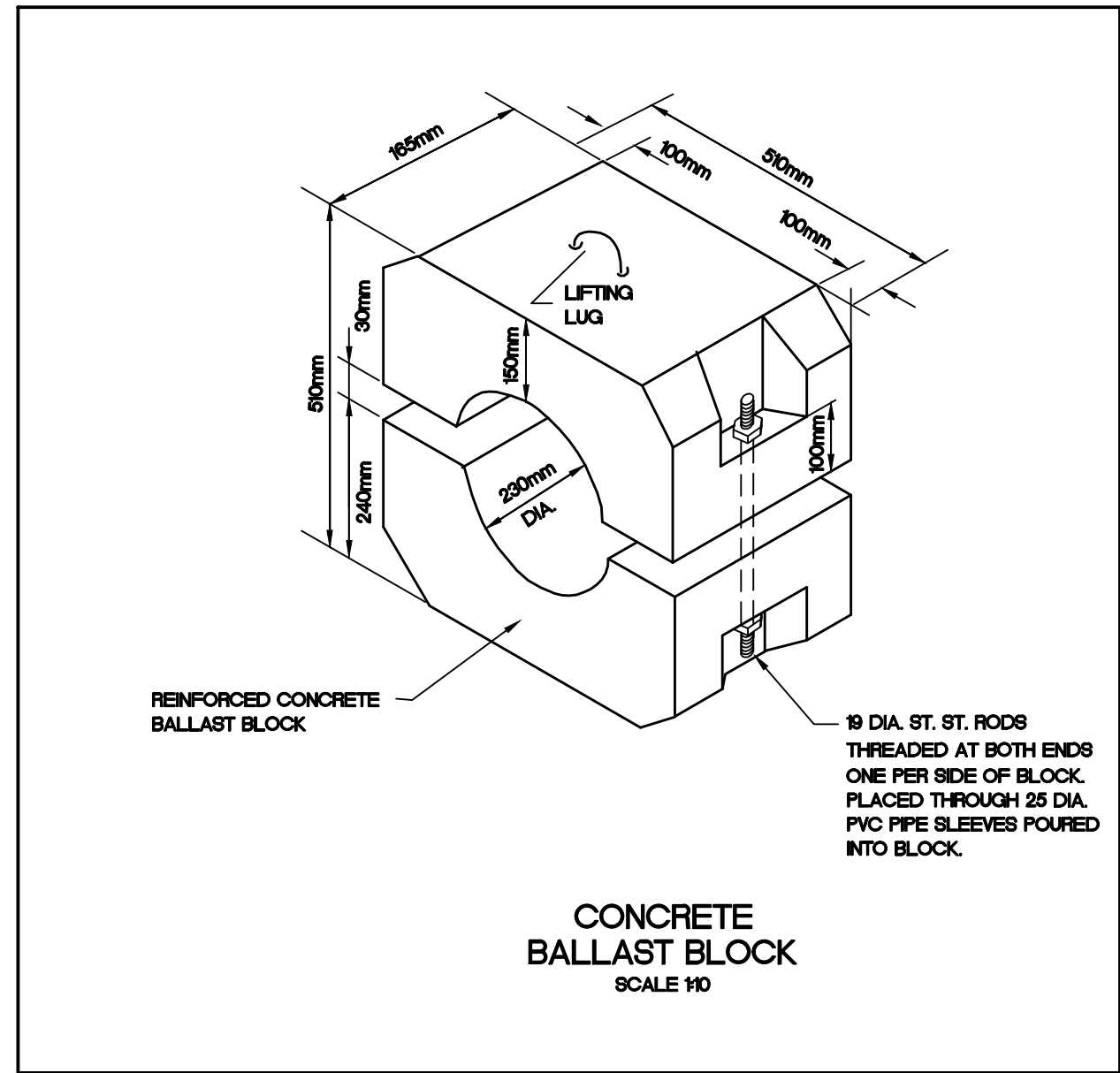
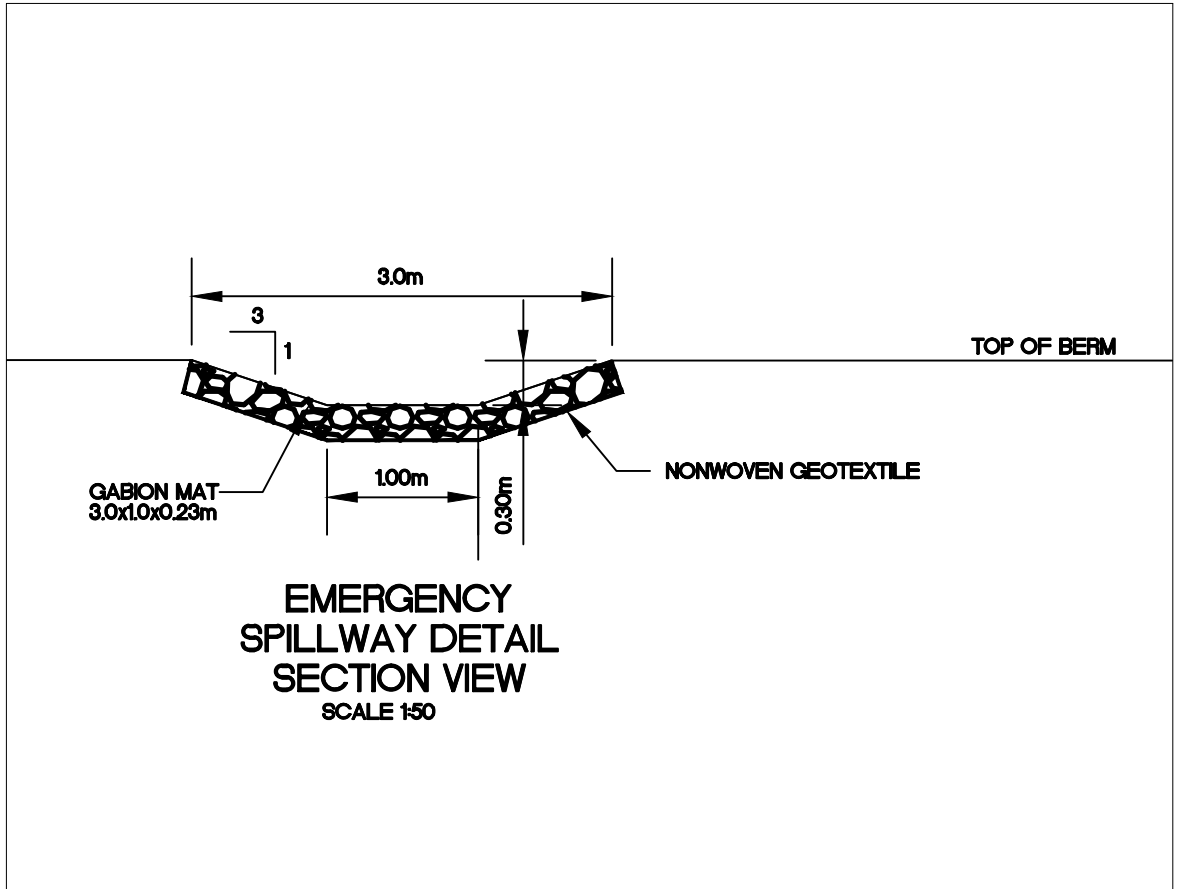
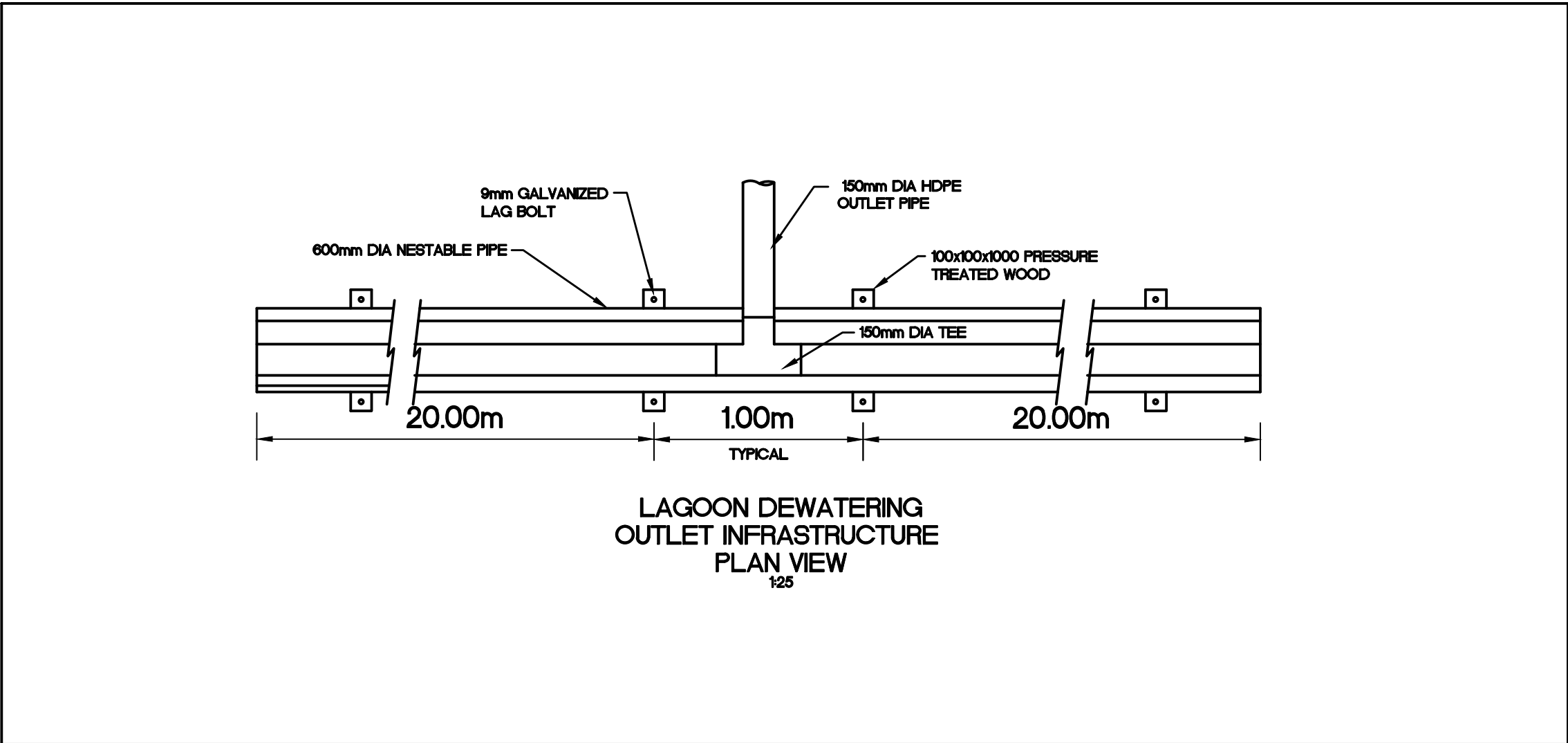
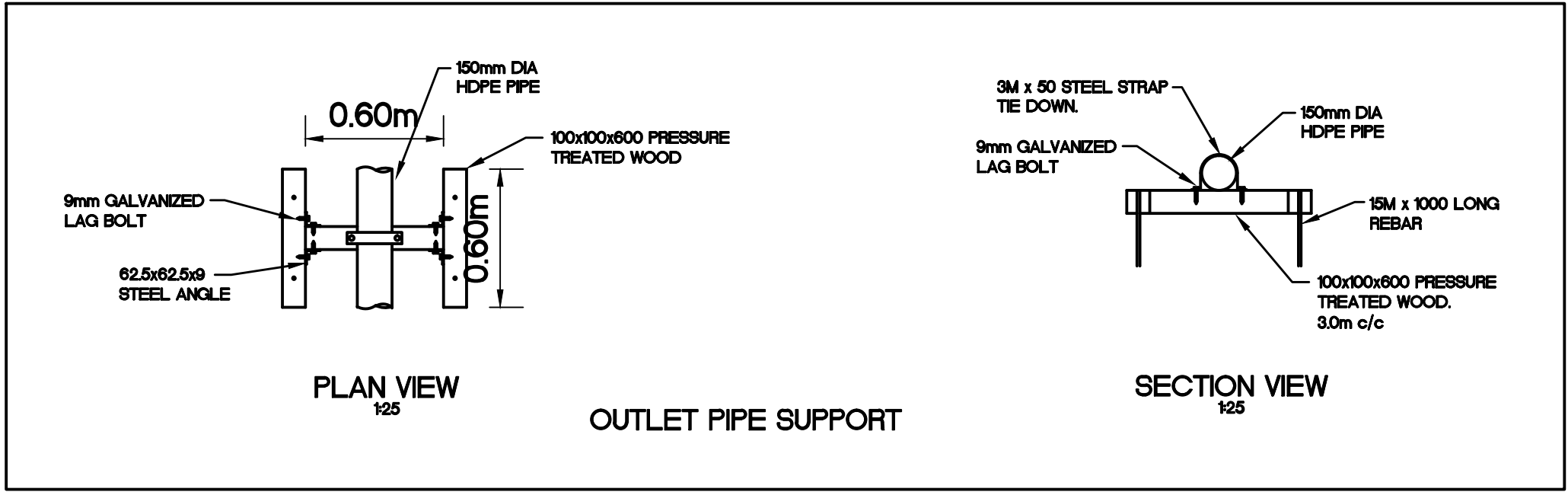
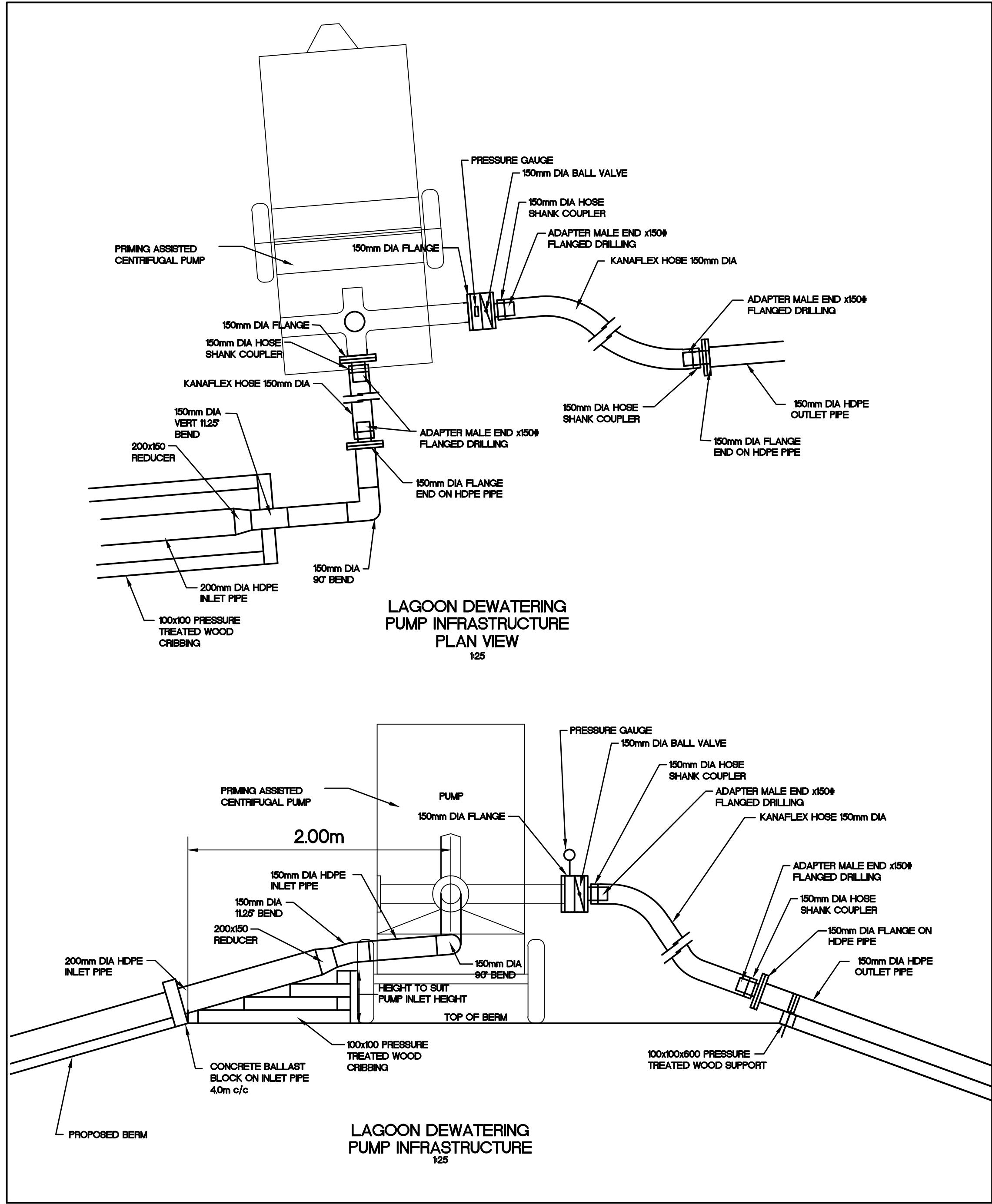
LOCATION PLAN FOR
TRUCK DISCHARGE AND
DECANTING

design by	SAD
drawn by	MEB
checked by	SLB
date	15/01/2008
scale	HORIZ 1:500

project no. OTCD000190544

drawing no.

TD-1



LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1 ELEV. = 59.12

CONTOUR ELEVATIONS WERE DRENED FROM NAD 83 CONTROL MONUMENT 7038914 LOCATED NORTH OF THE ARCTIC BAY AIRPORT UNDER CONSTRUCTION.

No.	DESCRIPTION	DATE	BY	APP'D
4	AS-BUILT	30/11/11	SAB	SLB
3	AS-CONSTRUCTED	17/11/11	MEB	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
REVISIONS				

DRAWINGS ORIGINALLY SEALED BY S.L.BURDEN, P.eng. OF exp. SERVICES Inc. APRIL 27TH, 2009

Trow Associates Inc.

154 Colonnade Road South
Ottawa, Ont. K2E 7J5

Tel: (613) 225-9940
Fax: (613) 225-7337

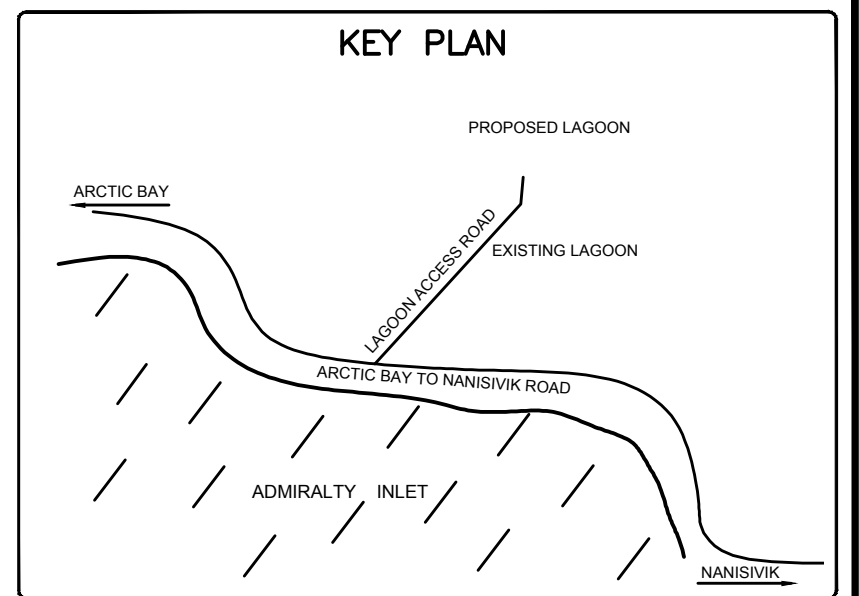
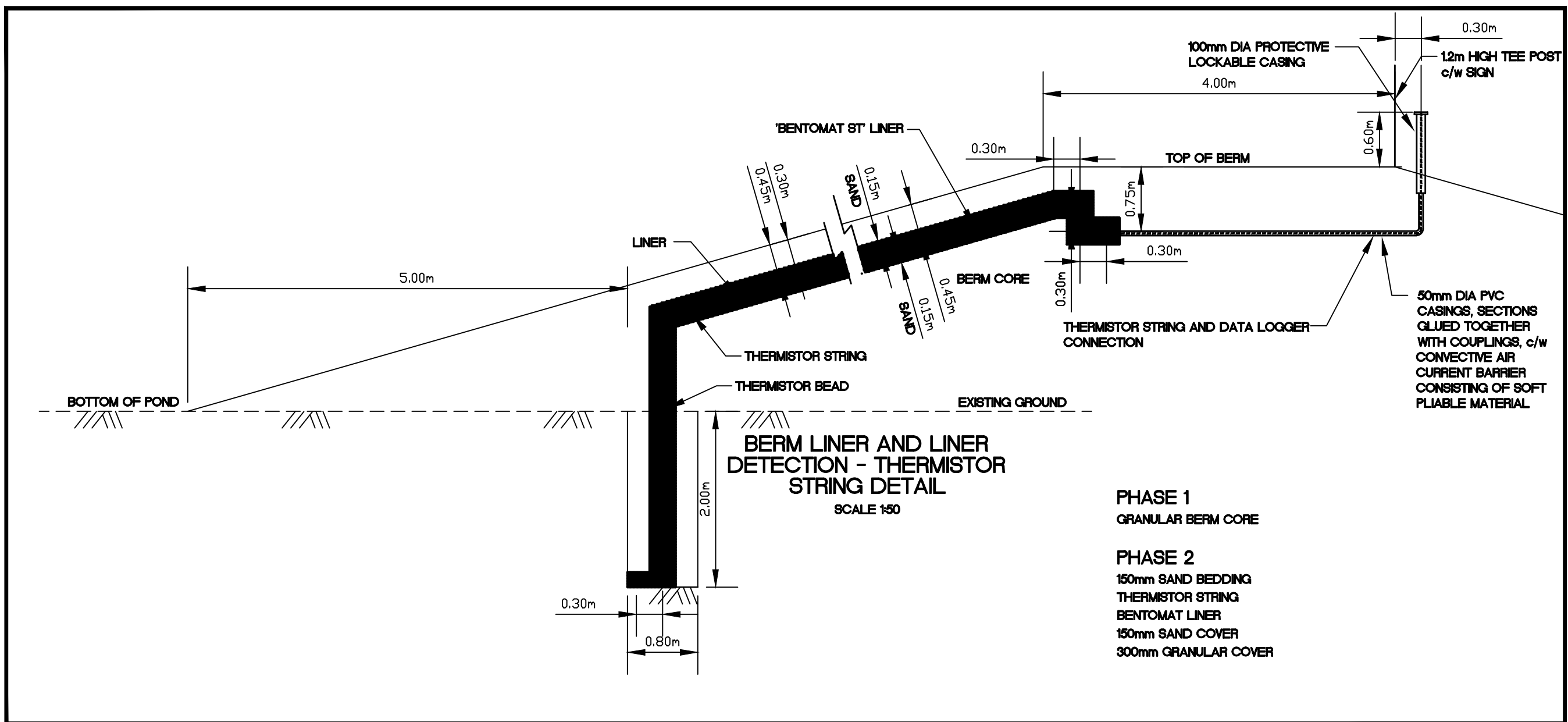
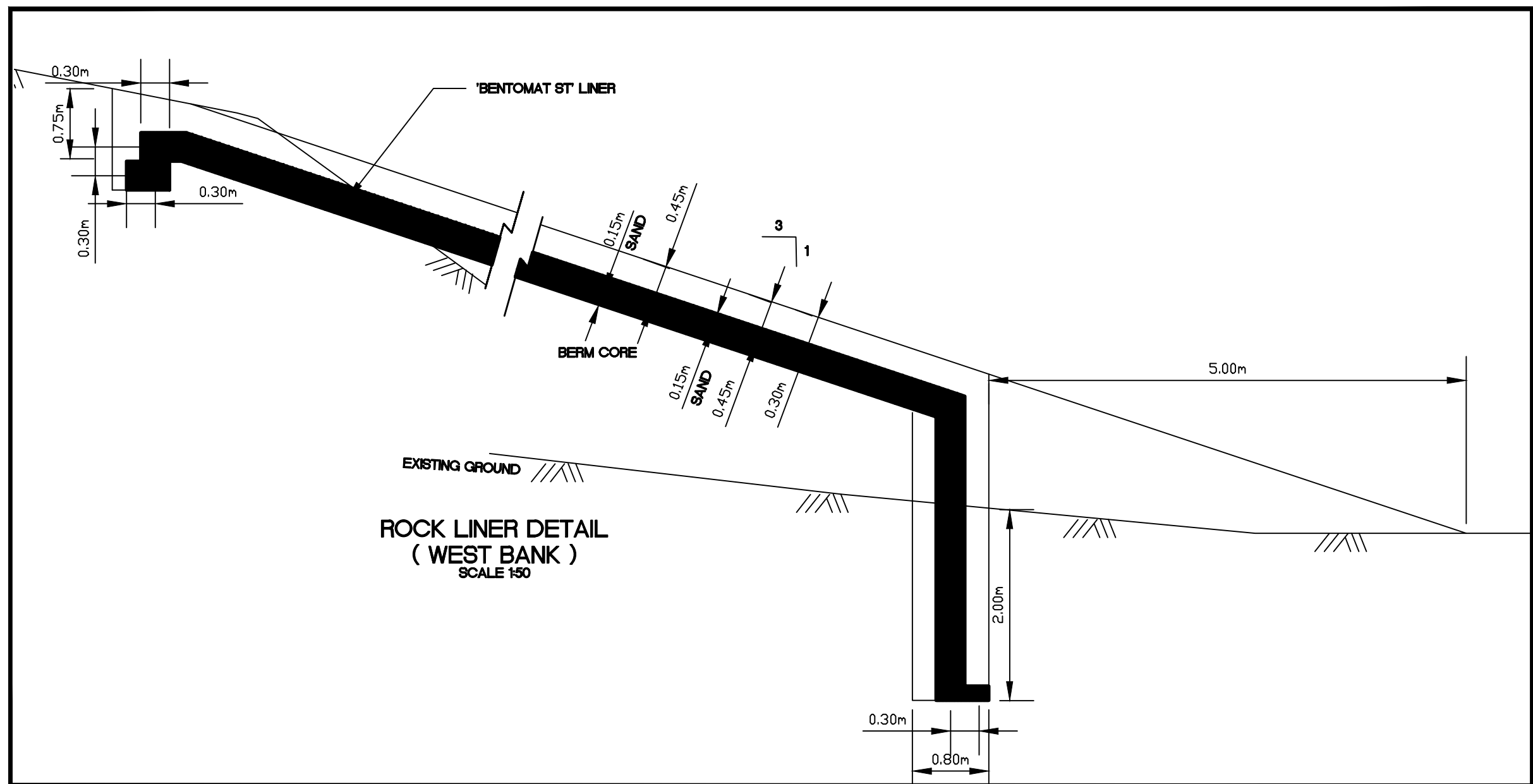
CLIENT

GOVERNMENT OF NUNAVUT

PROJECT

ARCTIC BAY WASTEWATER LAGOON

DETAILS	
design by	SAD
drawn by	MEB
checked by	SLB
date	15/01/2008
scale	
project no.	OTCD000190544
drawing no.	DE-1



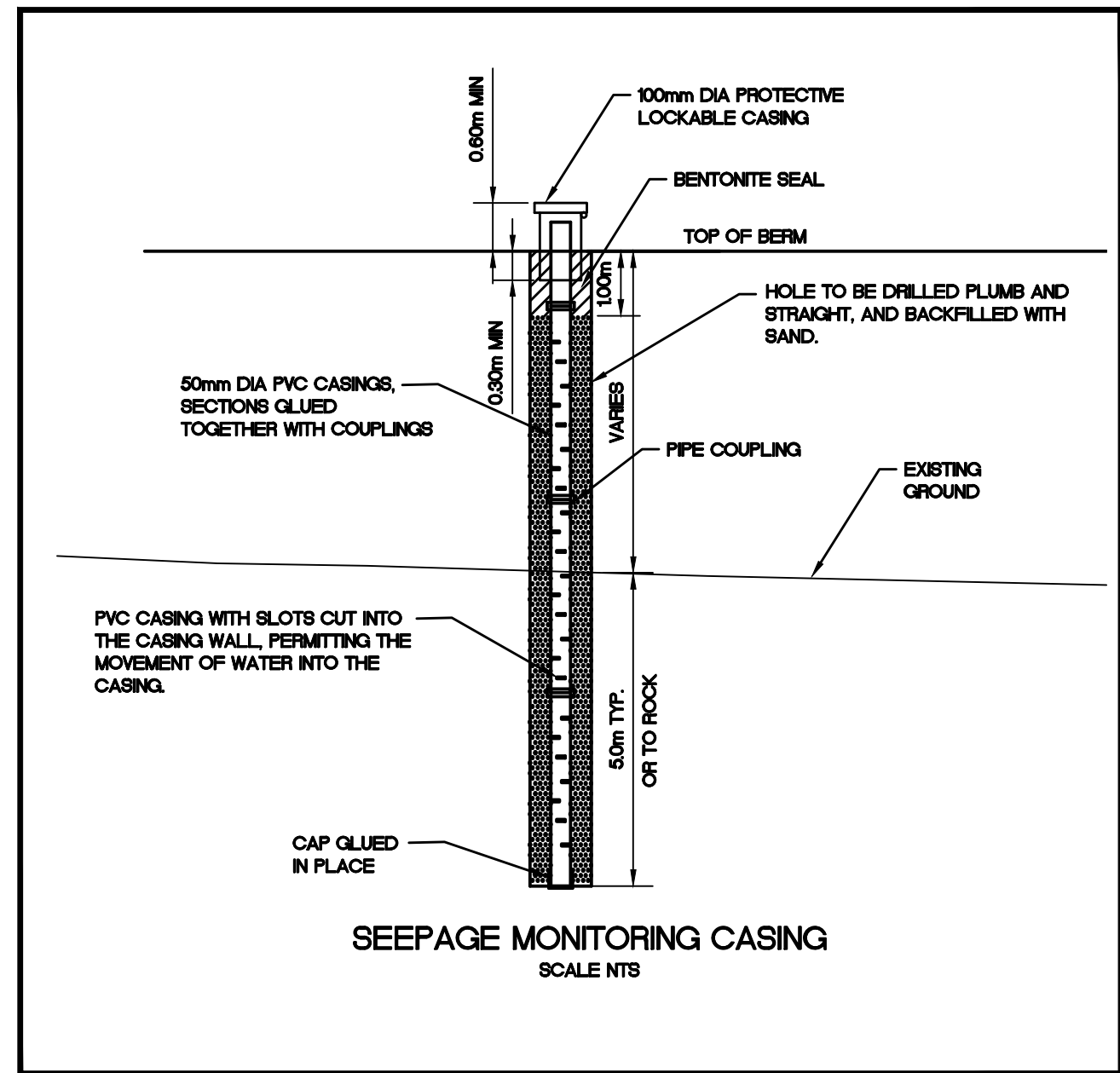
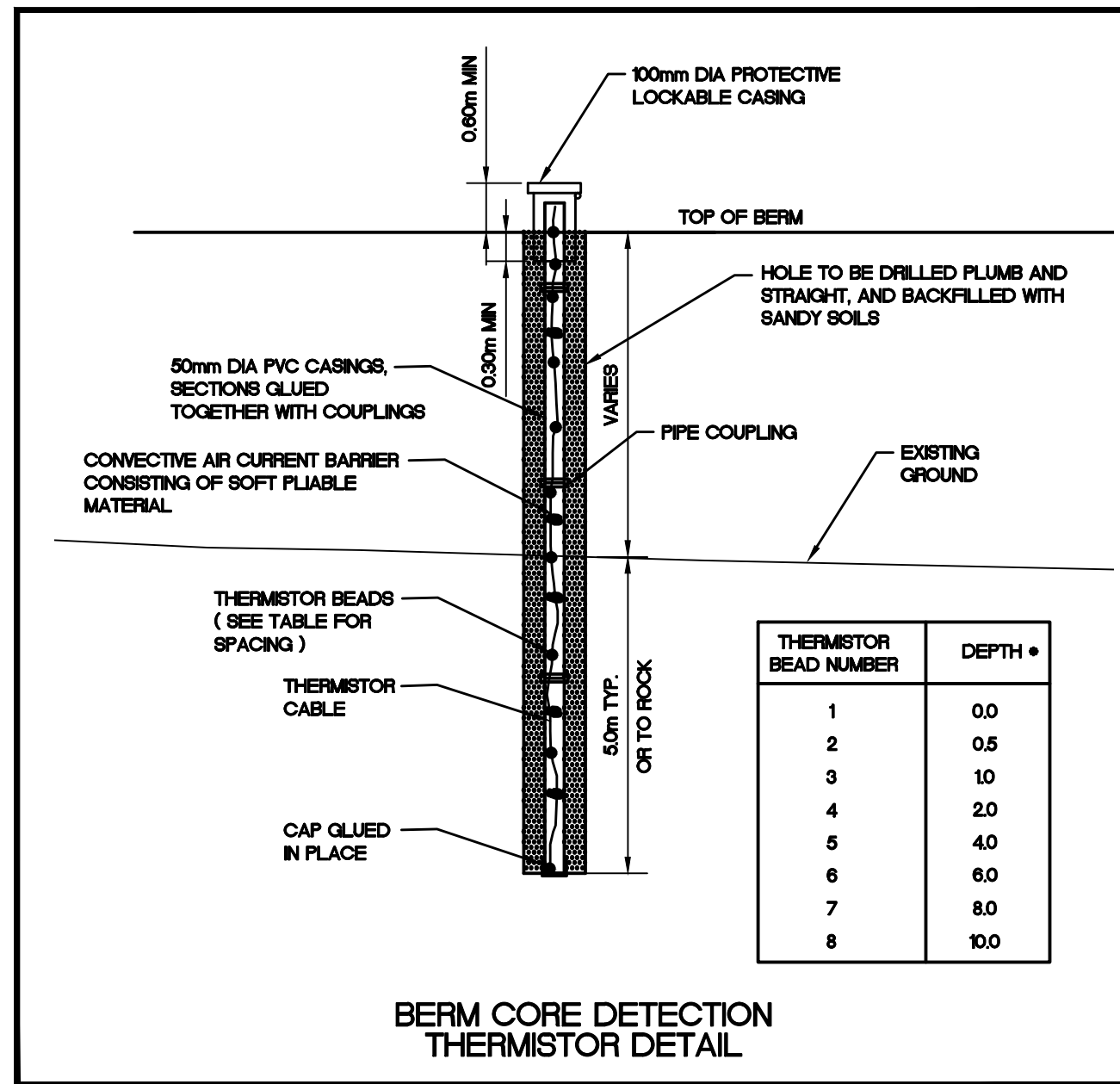
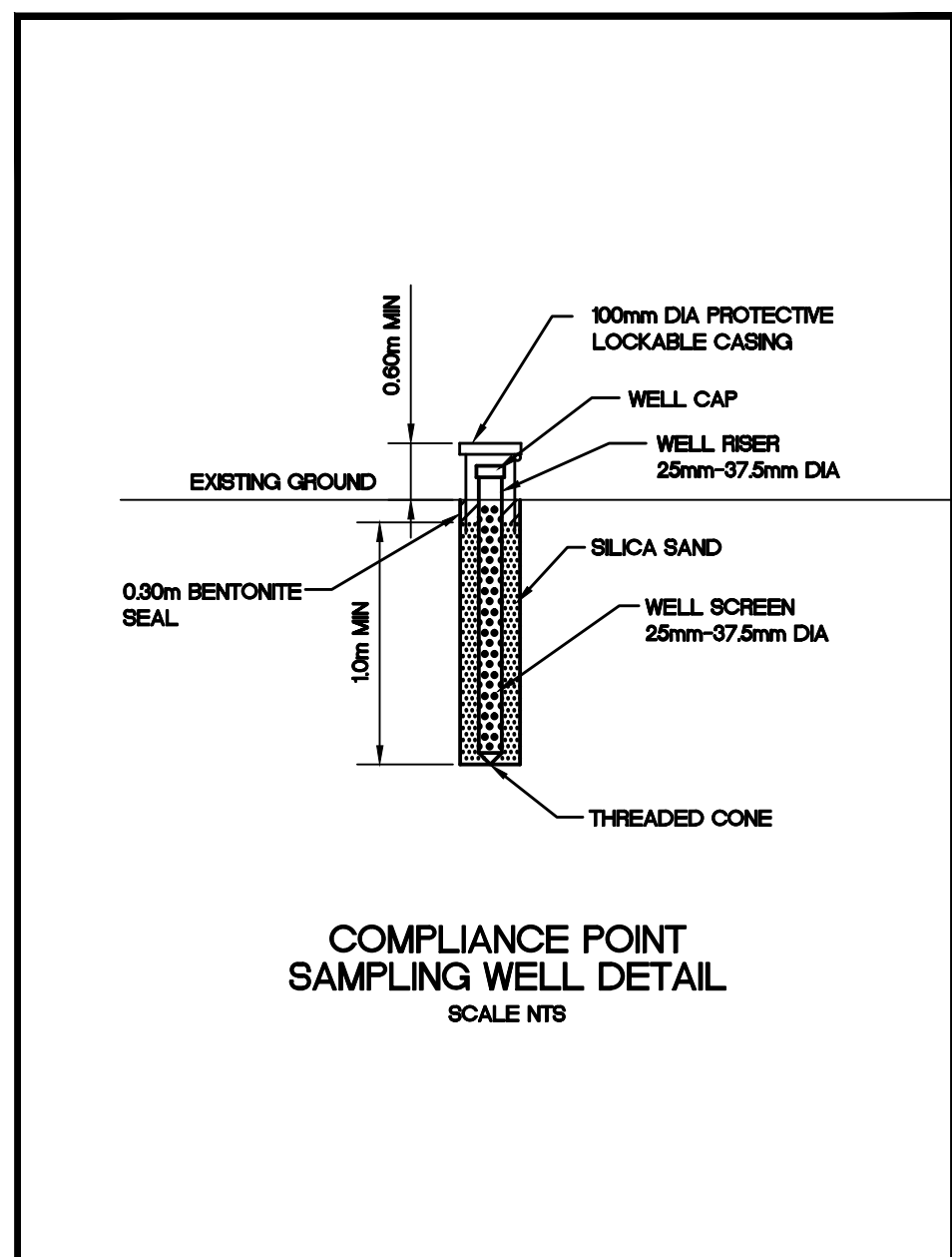
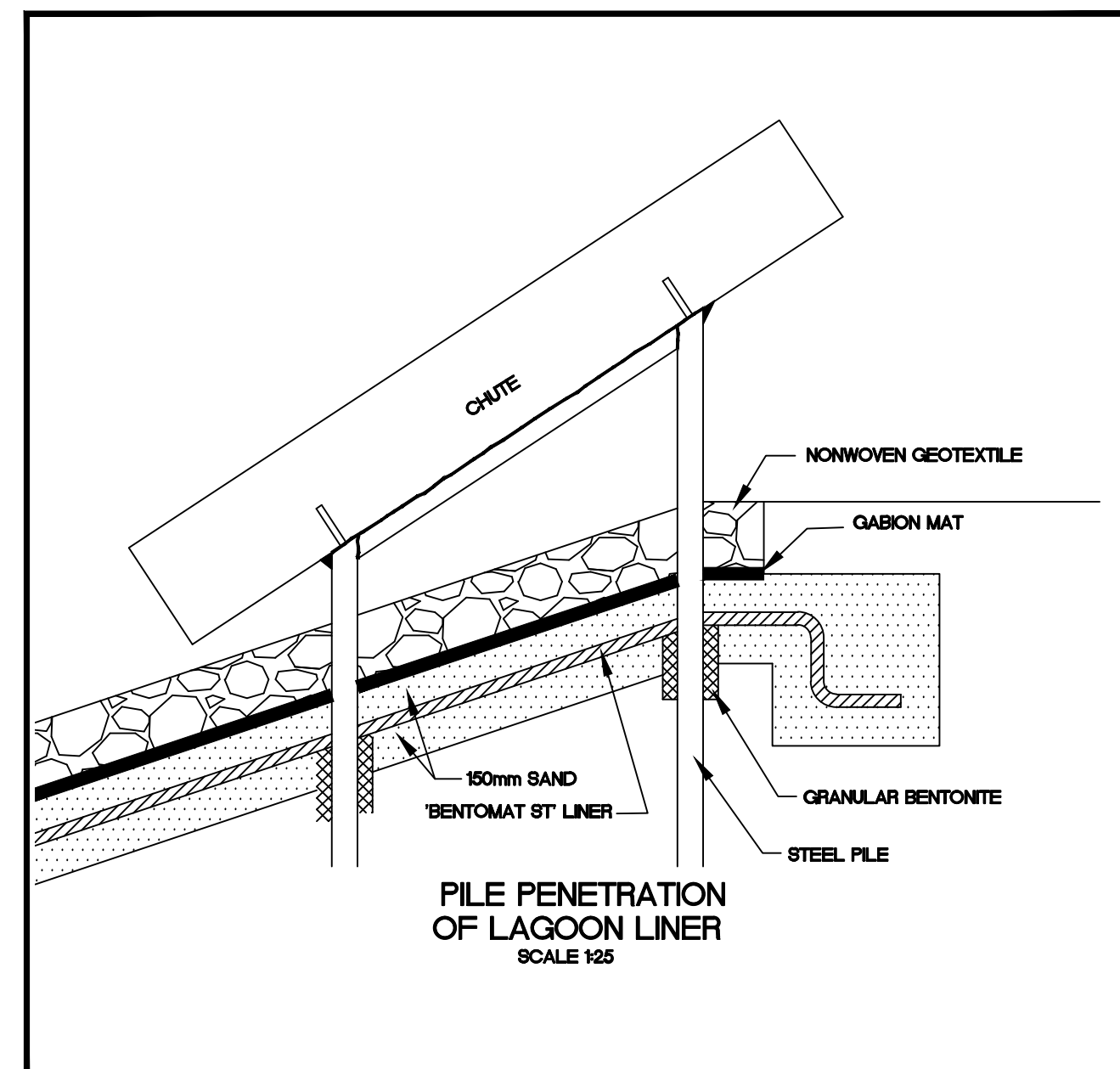
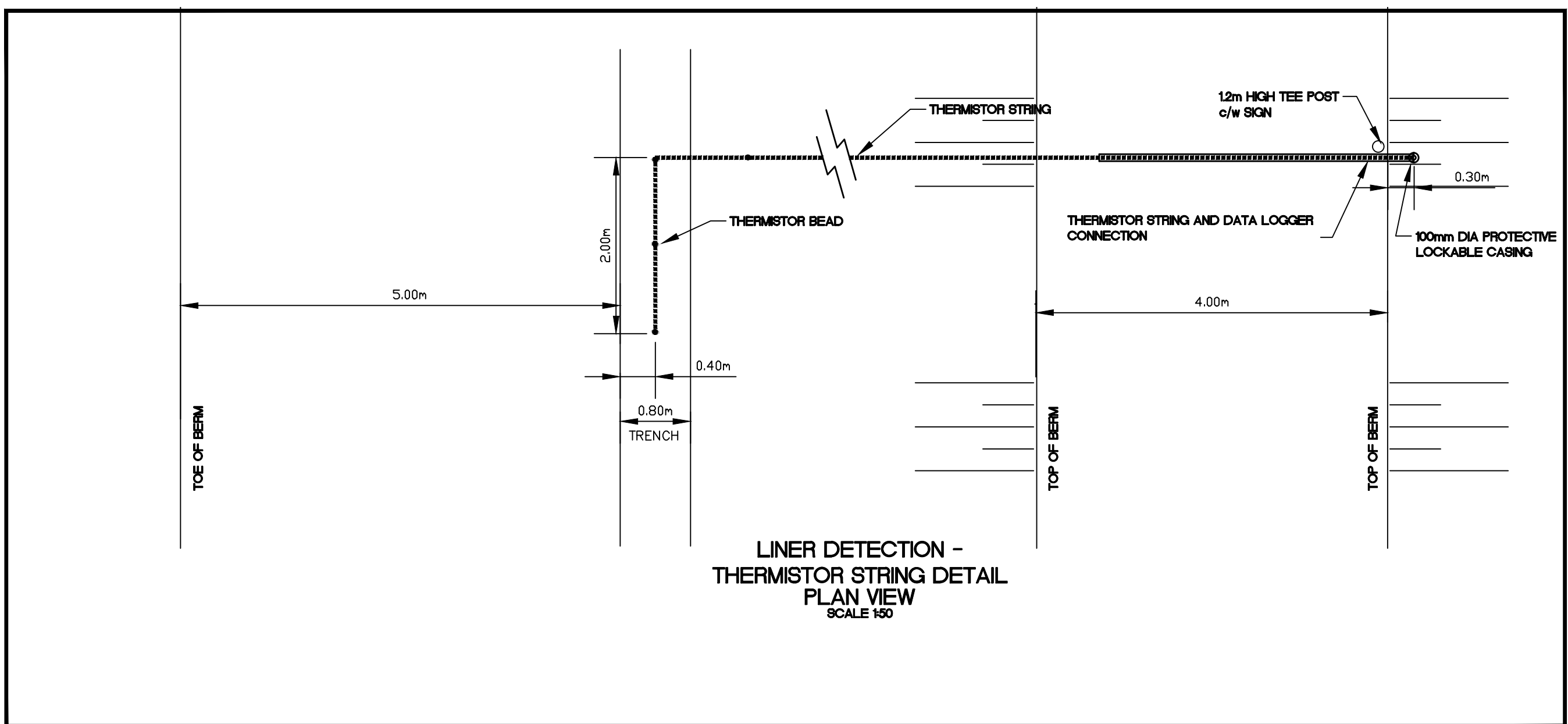
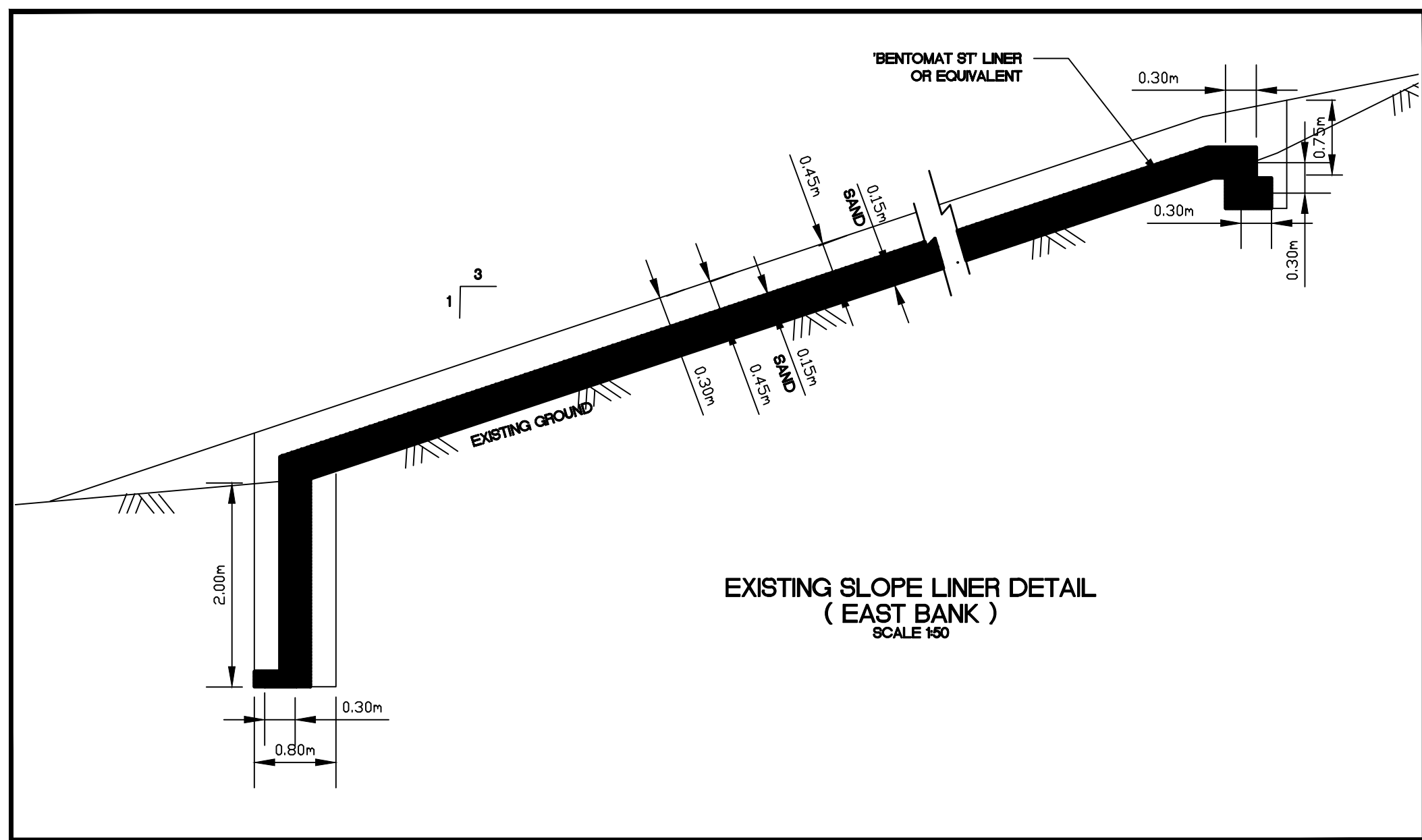
LEGEND

AS-BUILT
DATE: NOVEMBER 30, 2011

BENCH MARK
BM 1 ELEV. = 59.12
CONTOUR ELEVATIONS WERE DRENED FROM NAD 83 CONTROL MONUMENT 7038914 LOCATED NORTH OF THE ARCTIC BAY AIRPORT UNDER CONSTRUCTION.

No.	DESCRIPTION	DATE	BY	APP'D
4	AS-BUILT	30/11/11	SAB	SLB
3	AS-CONSTRUCTED	17/11/11	MEB	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB

REVISIONS



DRAWINGS ORIGINALLY SEALED BY
S.L.BURDEN, P.eng. OF exp. SERVICES Inc.
APRIL 27TH, 2009

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

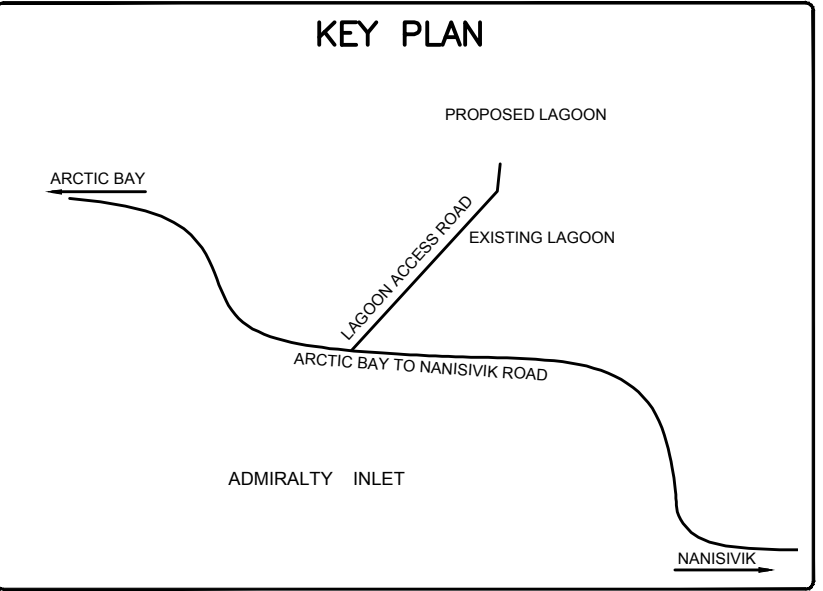
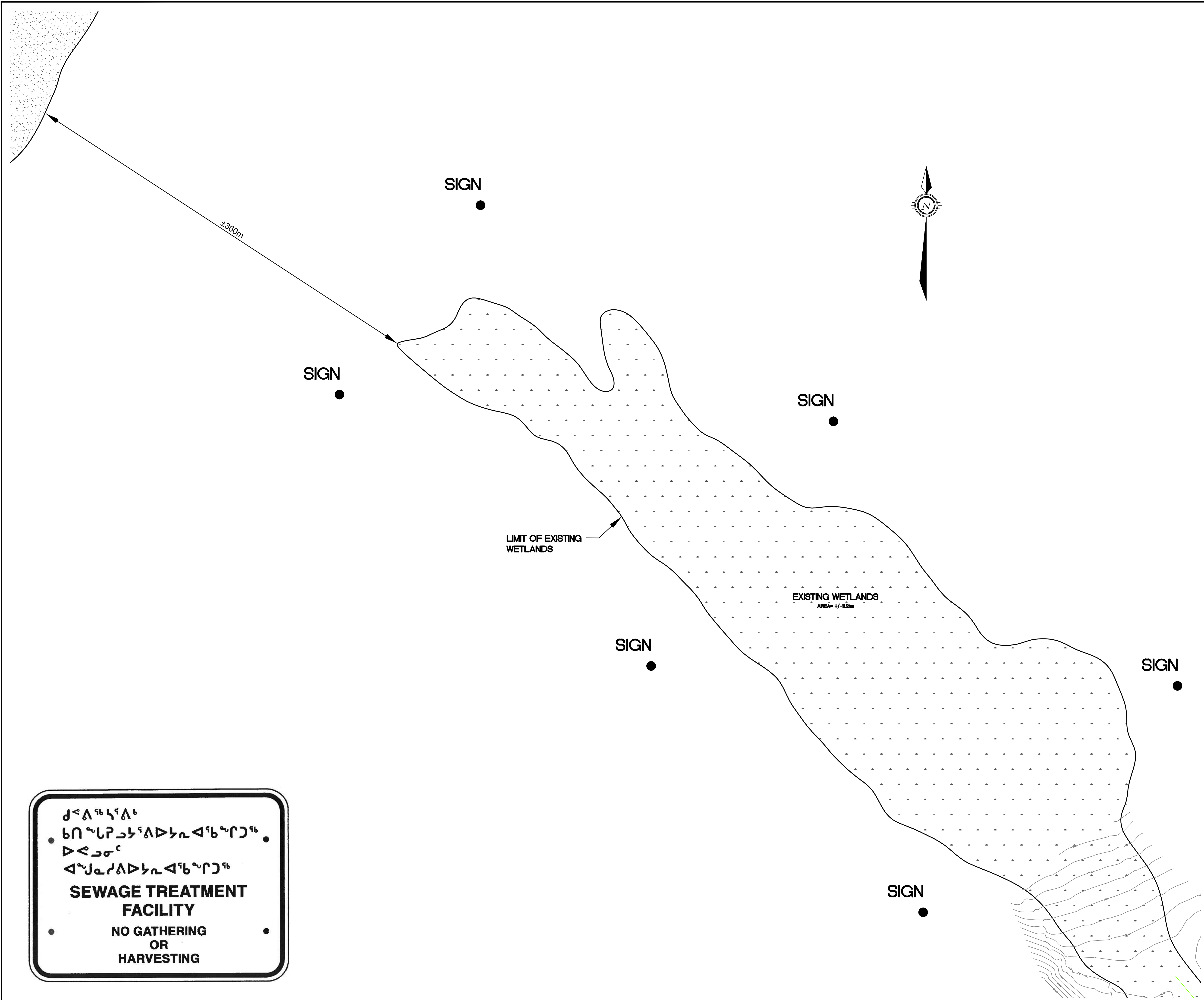
CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY WASTEWATER LAGOON

TITLE
DETAILS

design by SAD **project no.** OTC000190544
drawn by MEB **drawing no.**
checked by SLB
date 15/01/2008
scale

DE-2



LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011


BENCH MARK

BM 1 ELEV. = 59.12

CONTOUR ELEVATIONS WERE DREIVED FROM NAD 83 CONTROL MONUMENT 7038914 LOCATED NORTH OF THE ARCTIC BAY AIRPORT UNDER CONSTRUCTION.

4	AS-BUILT	30/11/11	SAB	SLB
3	AS-CONSTRUCTED	17/11/11	MEB	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
No.	DESCRIPTION	DATE	BY	APP'D
R E V I S I O N S				

DRAWINGS ORIGINALLY SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

 **Trow Associates Inc.**
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel:(613)225-9940
Fax:(613)225-7337

CLIENT

GOVERNMENT OF NUNAVUT

PROJECT

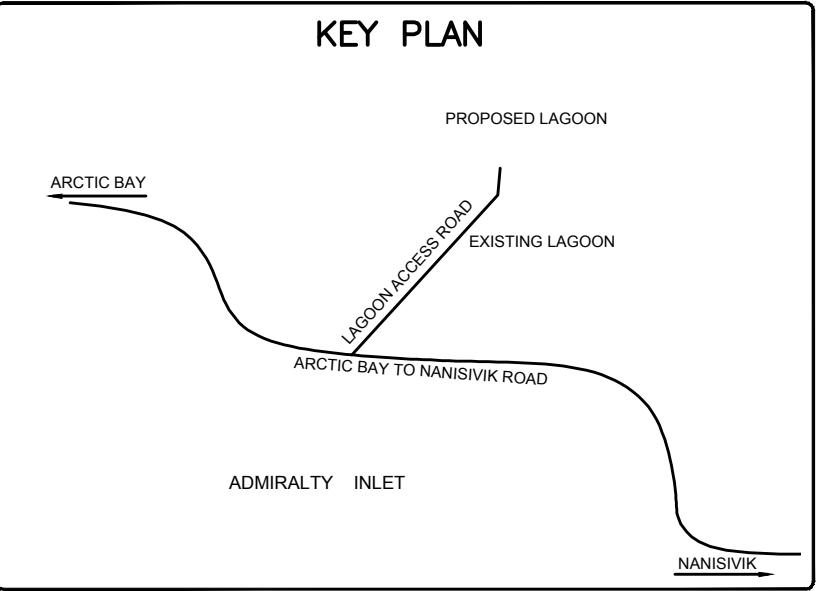
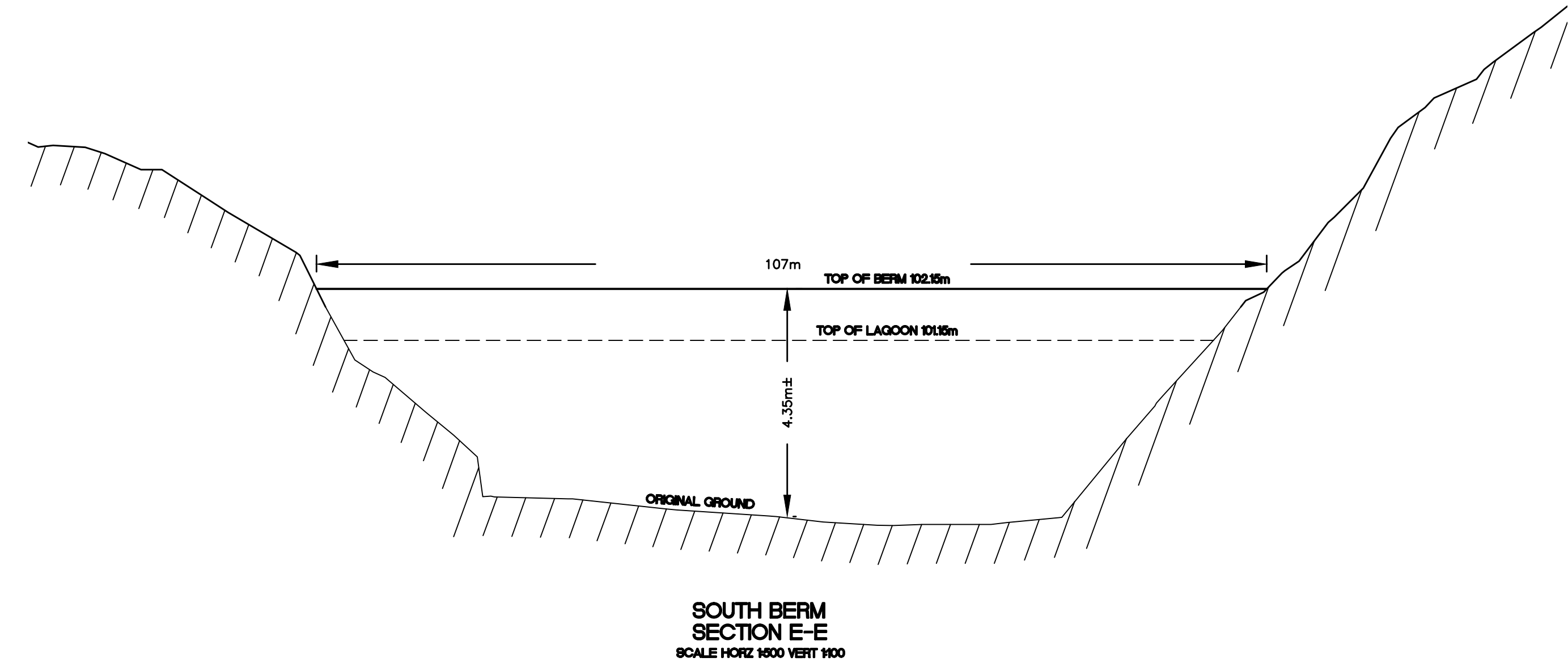
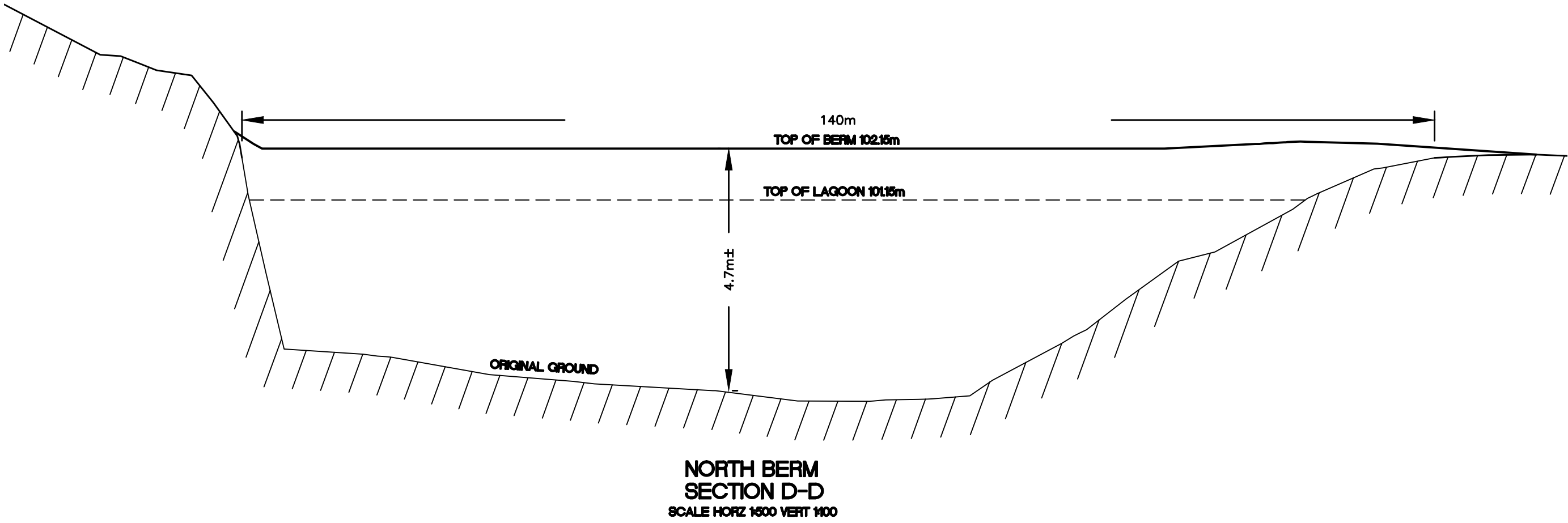
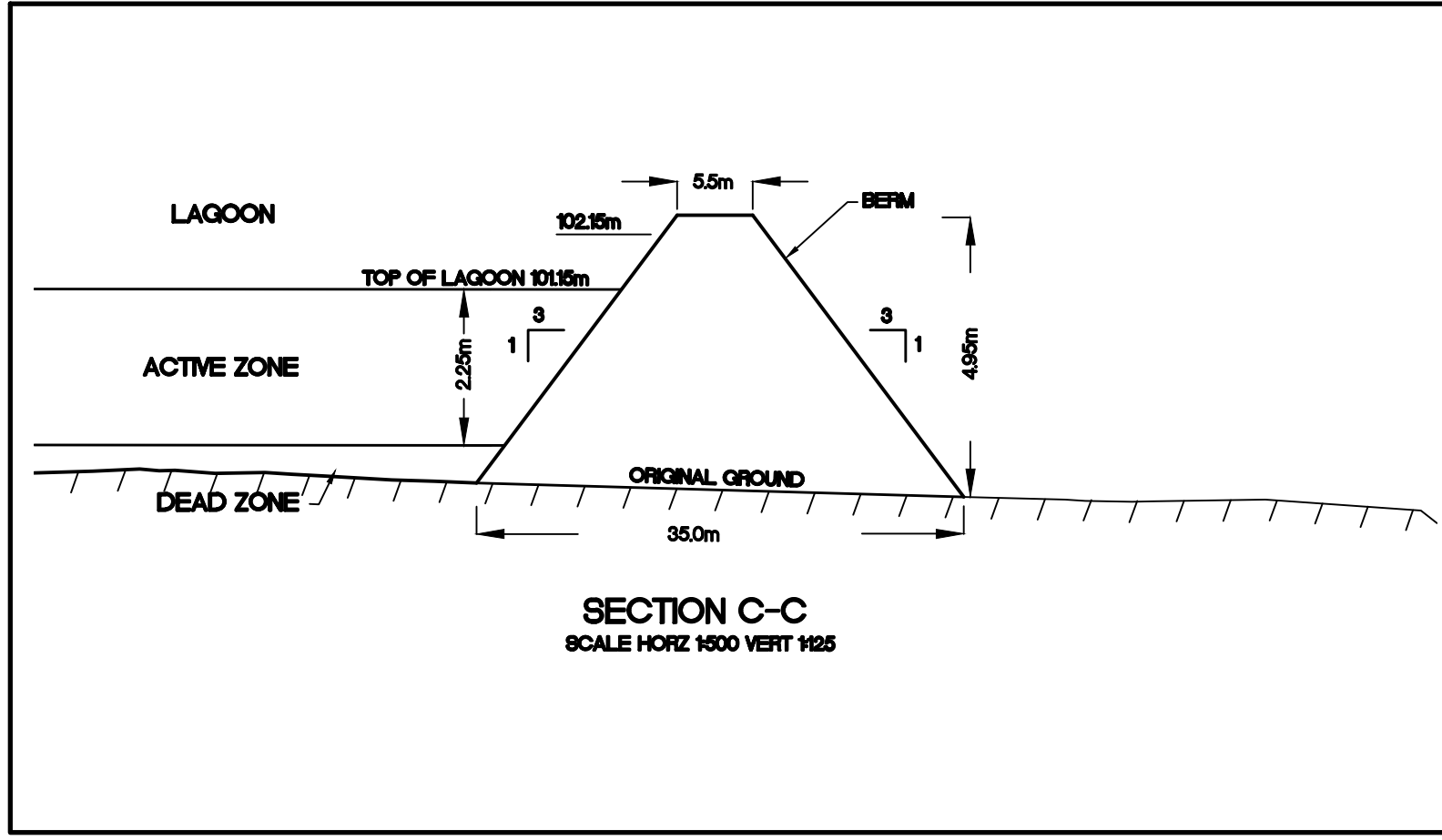
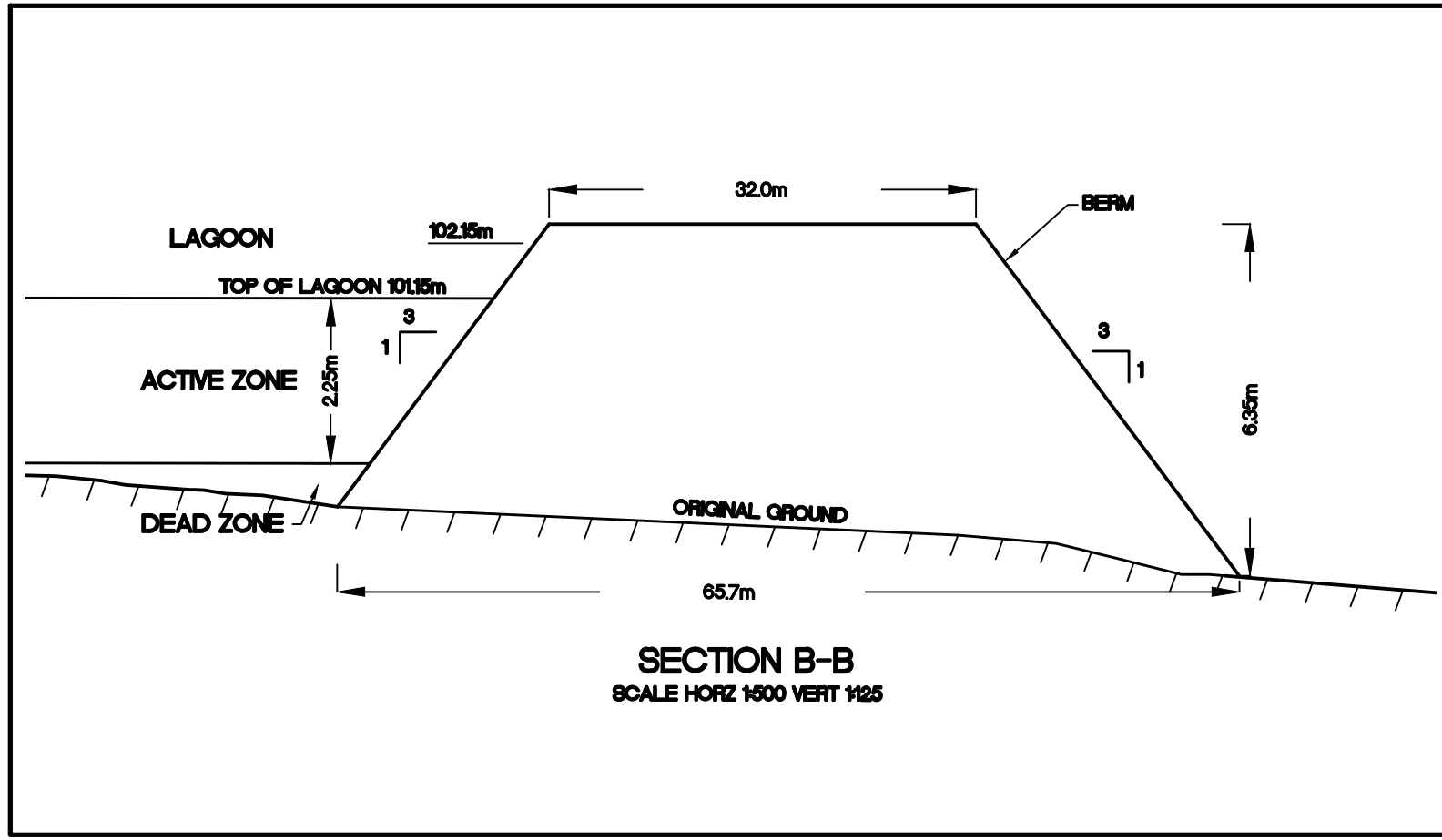
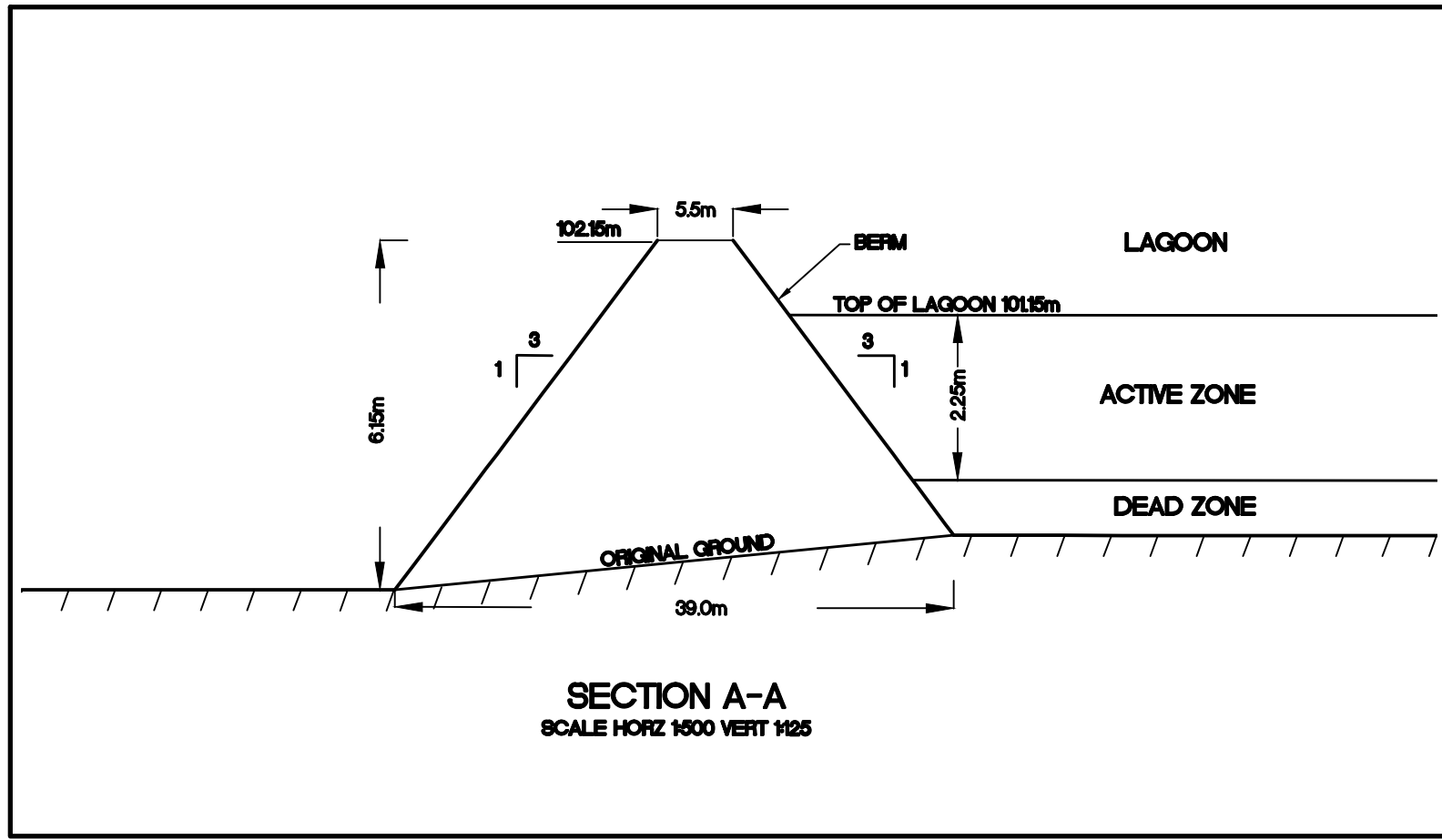
ARCTIC BAY WASTEWATER LAGOON

TITLE

SIGNAGE LOCATION PLAN

design by	SAD	project no.	OTCD000190544
drawn by	MEB	drawing no.	
checked by	SLB		
date	15/01/2008		
scale	HORIZ 1:1500		

SLP-1



LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1 ELEV. = 59.12

CONTOUR ELEVATIONS WERE DREIVED FROM NAD 83 CONTROL MONUMENT 7038914 LOCATED NORTH OF THE ARCTIC BAY AIRPORT UNDER CONSTRUCTION.

No.	DESCRIPTION	DATE	BY	APP'D
4	AS-BUILT	30/11/11	SAB	SLB
3	AS-CONSTRUCTED	17/11/11	MEB	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB

DRAWINGS ORIGINALLY SEALED BY S.L.BURDEN, P.eng. OF exp. SERVICES Inc. APRIL 27TH, 2009

Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

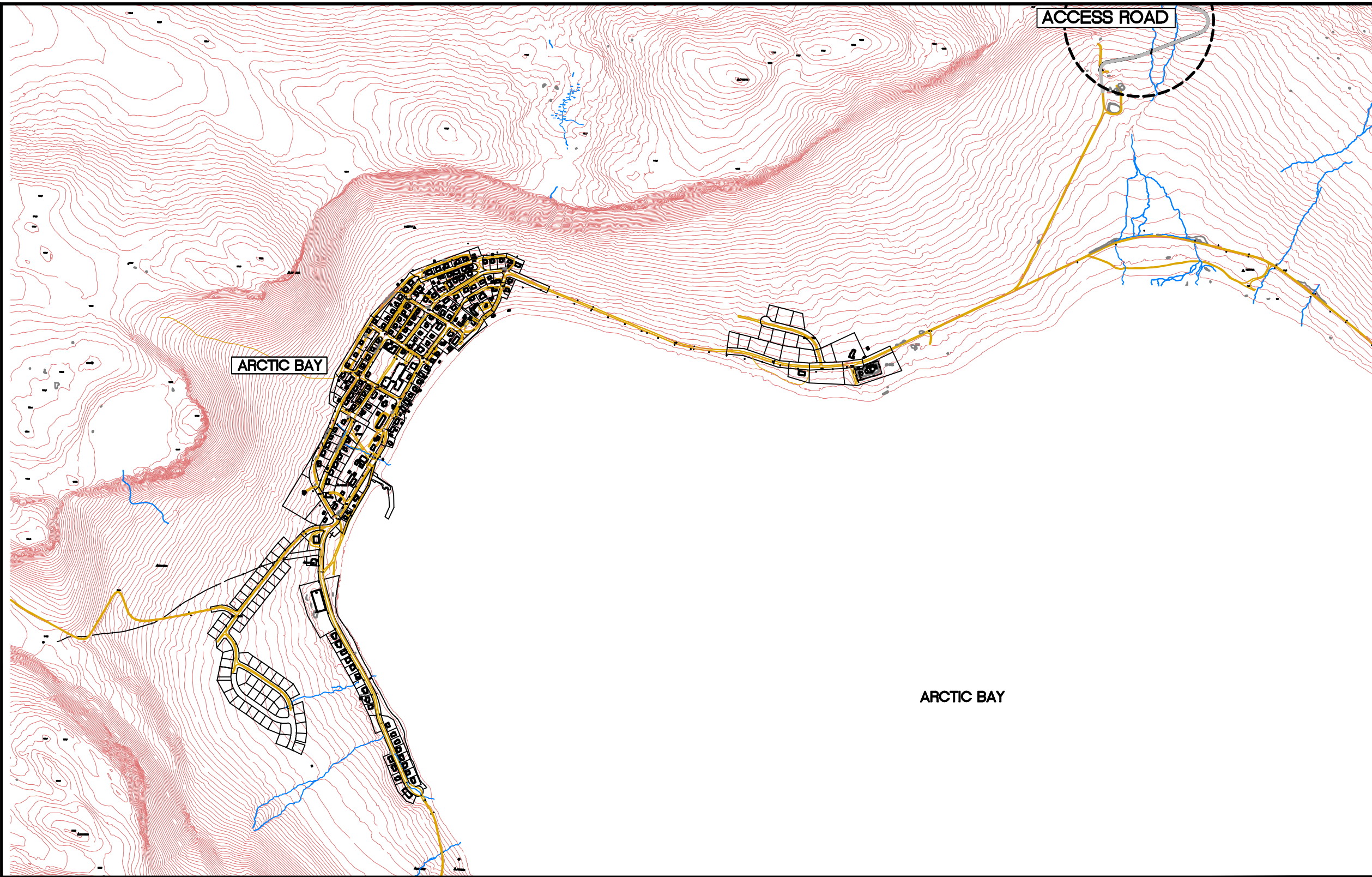
CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY WASTEWATER LAGOON

TITLE
CROSS SECTIONS

design by	SAD	project no.	OTCD000190544
drawn by	MEB	drawing no.	CS-1
checked by	SLB		
date	15/01/2008		
scale			

GOVERNMENT OF NUNAVUT



INDEX OF INCLUDED DRAWINGS

DRAWING NO.	REVISION	DESCRIPTION
OTCD00019054A-SP1	REV 5	SITE PLAN
OTCD00019054A-PP1	REV 5	ACCESS ROAD PLAN & PROFILE
OTCD00019054A-PP2	REV 5	ACCESS ROAD PLAN & PROFILE
OTCD00019054A-PP3	REV 5	ACCESS ROAD PLAN & PROFILE
OTCD00019054A-PP4	REV 5	ACCESS ROAD PLAN & PROFILE
OTCD00019054A-PP5	REV 5	ACCESS ROAD PLAN & PROFILE
OTCD00019054A-PP6	REV 5	ACCESS ROAD SECOND BERM PLAN & PROFILE
OTCD00019054A-PP7	REV 5	ACCESS ROAD SECOND BERM PLAN & PROFILE
OTCD00019054A-DE1	REV 6	ROAD DETAILS

ARCTIC BAY WASTEWATER LAGOON ROAD



Trow

Associates Inc.

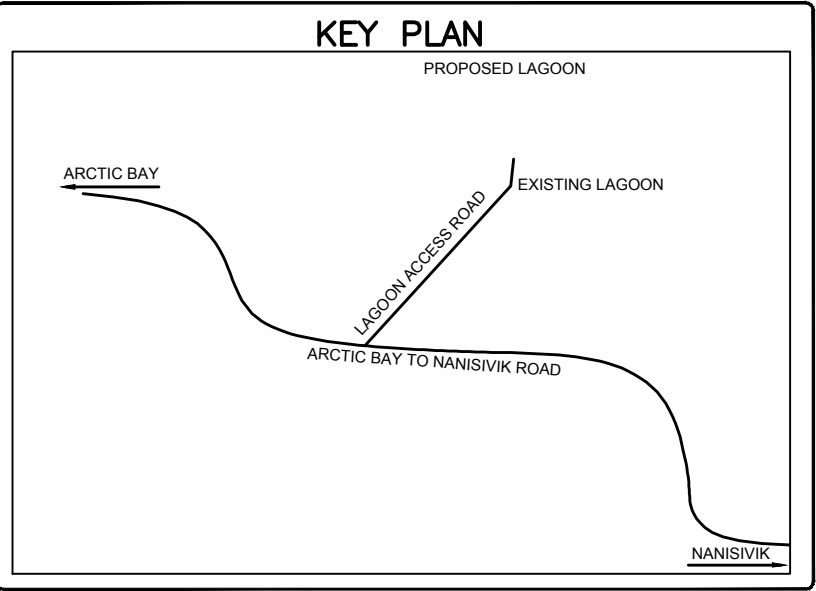
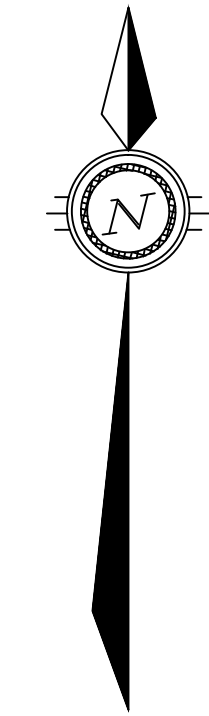
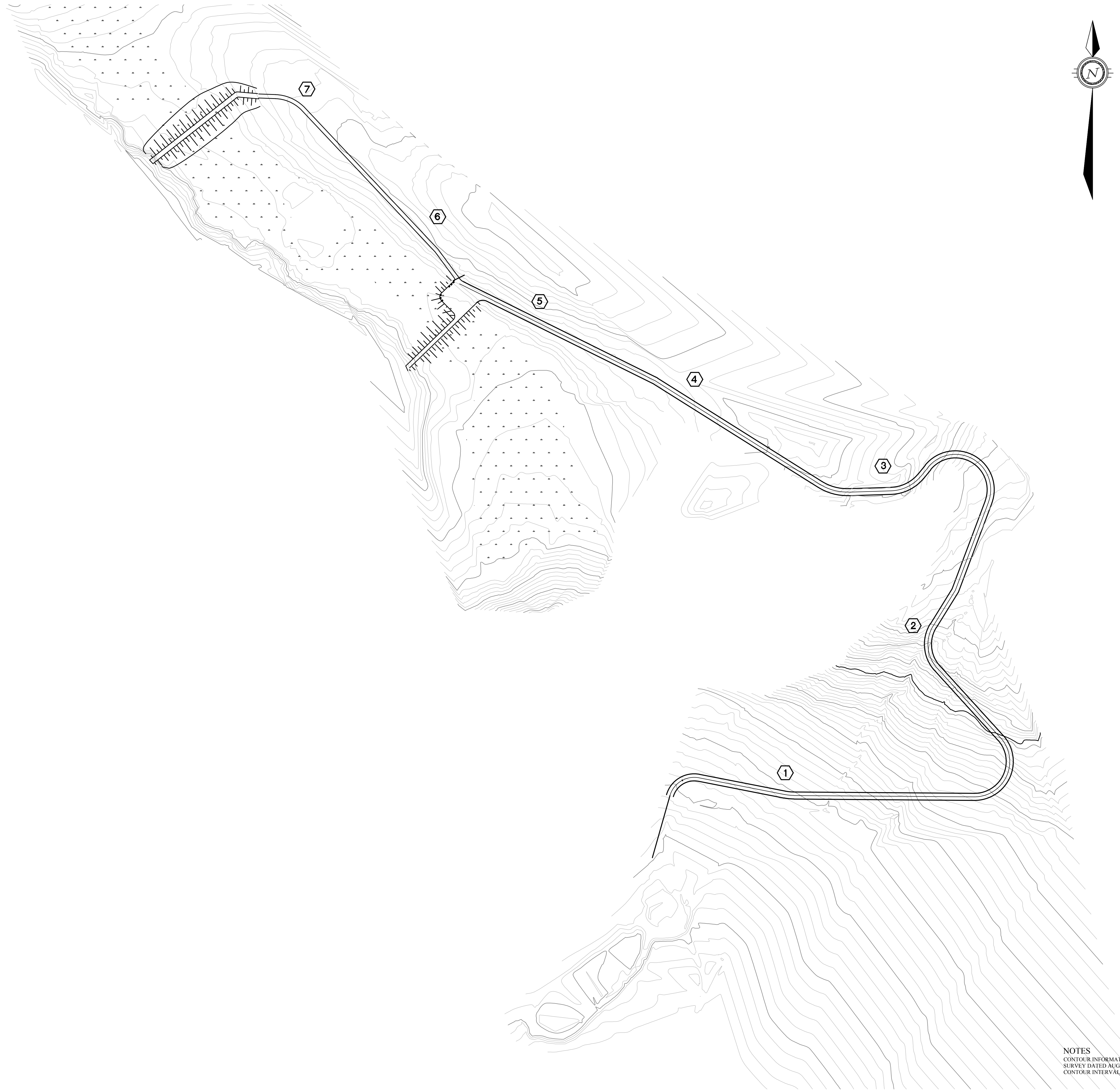
154 COLONNADE ROAD SOUTH
OTTAWA, ONTARIO K2E 7J5

PHONE (613) 225-9940
FAX (613) 225-7337

AS-BUILT INFORMATION PROVIDED BY KUDLIK CONSTRUCTION LTD. NOVEMBER 2011

AS-BUILT

DATE: NOVEMBER 30, 2011



LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK	
BM 1	ELEV. = 000.00
DESCRIPTION HERE	

5	AS-BUILT	30/11/11	SAB	SLB
4	AS-CONSTRUCTED	17/11/11	MEB	SLB
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
No.	DESCRIPTION	DATE	BY	APP'D
R E V I S I O N S				

DRAWINGS ORIGINALLY SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

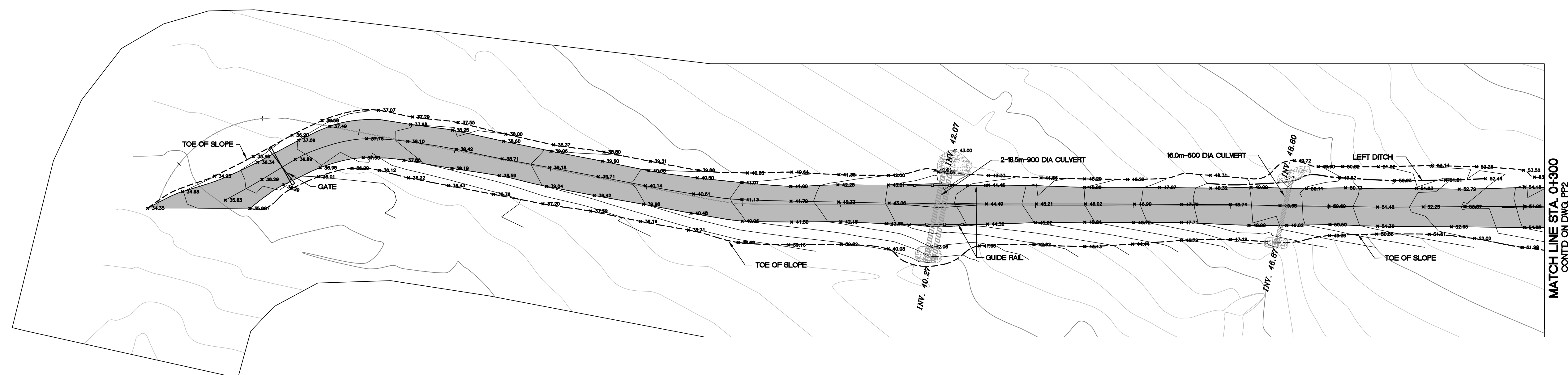
Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY
WASTE WATER LAGOON
ROAD

TITLE SITE PLAN	
design by S.A.D.	project no. OTCD000190544
drawn by M.M.R.	drawing no.
checked by S.L.B.	SP1
date 10/09/2007	
scale HORIZ 1:2000	

NOTES
CONTOUR INFORMATION WAS DERIVED BY TROW ASSOCIATES INC.
SURVEY DATED AUGUST 23, 2007.
CONTOUR INTERVALS ARE SET AT 1.00m



KEY PLAN

LEGEND

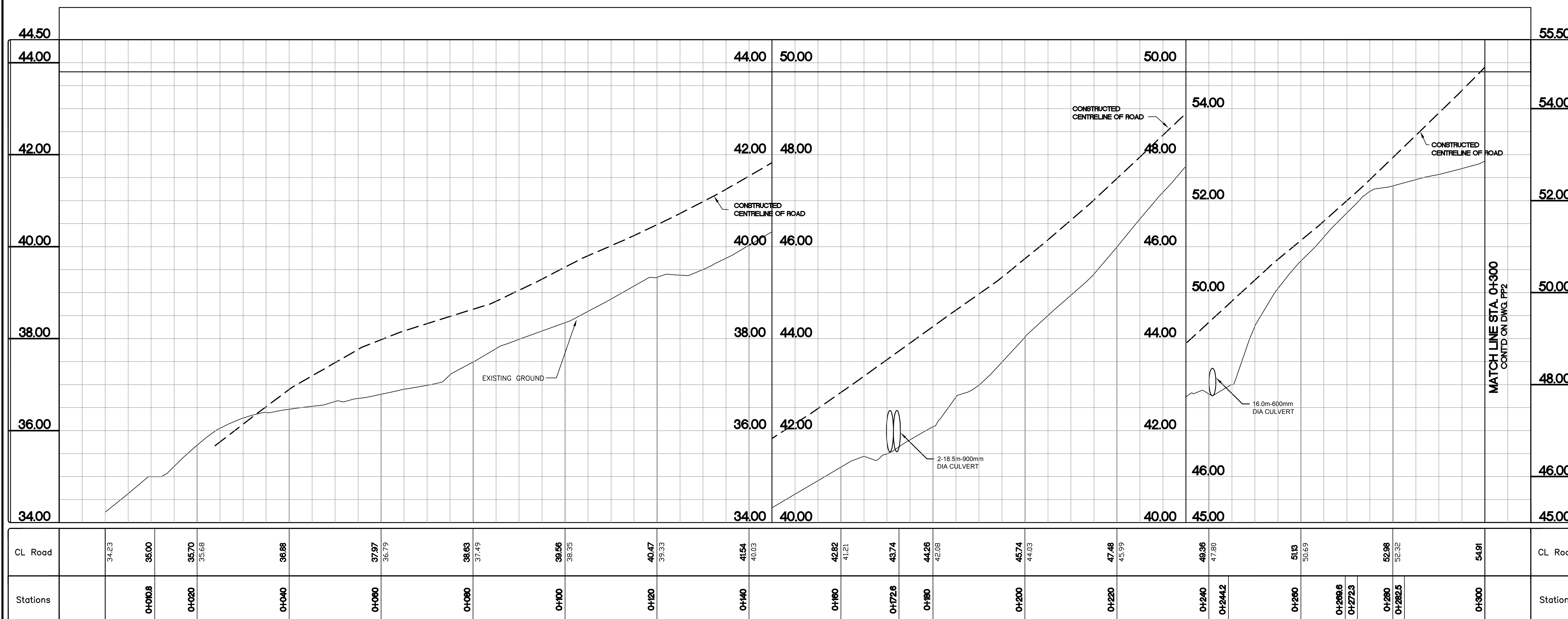
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DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1	DESCRIPTION HERE
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ELEV. = 000.00



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4	AS-CONSTRUCTED	17/11/11	MEB	SI
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SI
2	TENDER SET	27/04/09	MMR	SI
1	ISSUED FOR APPROVAL	24/04/08	MMR	SI
No.	DESCRIPTION	DATE	BY	AP
R E V I S I O N S				

DRAWINGS ORIGINALLY
SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

 **Trow** Associates Inc.
154 Colonnade Road South Tel: (613) 225-9944
Ottawa, Ont. K2E 7J5 Fax: (613) 225-7333

CLIENT

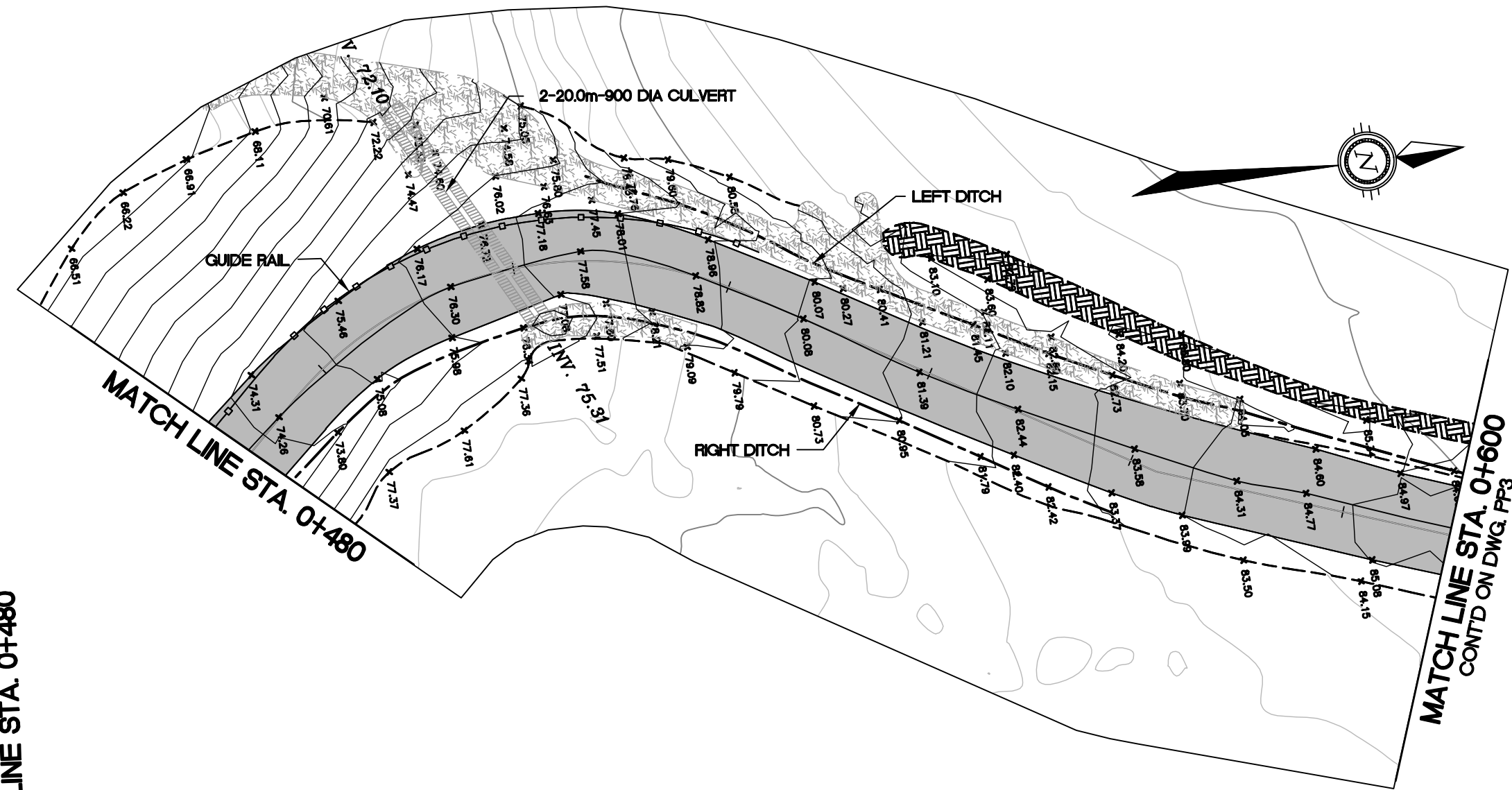
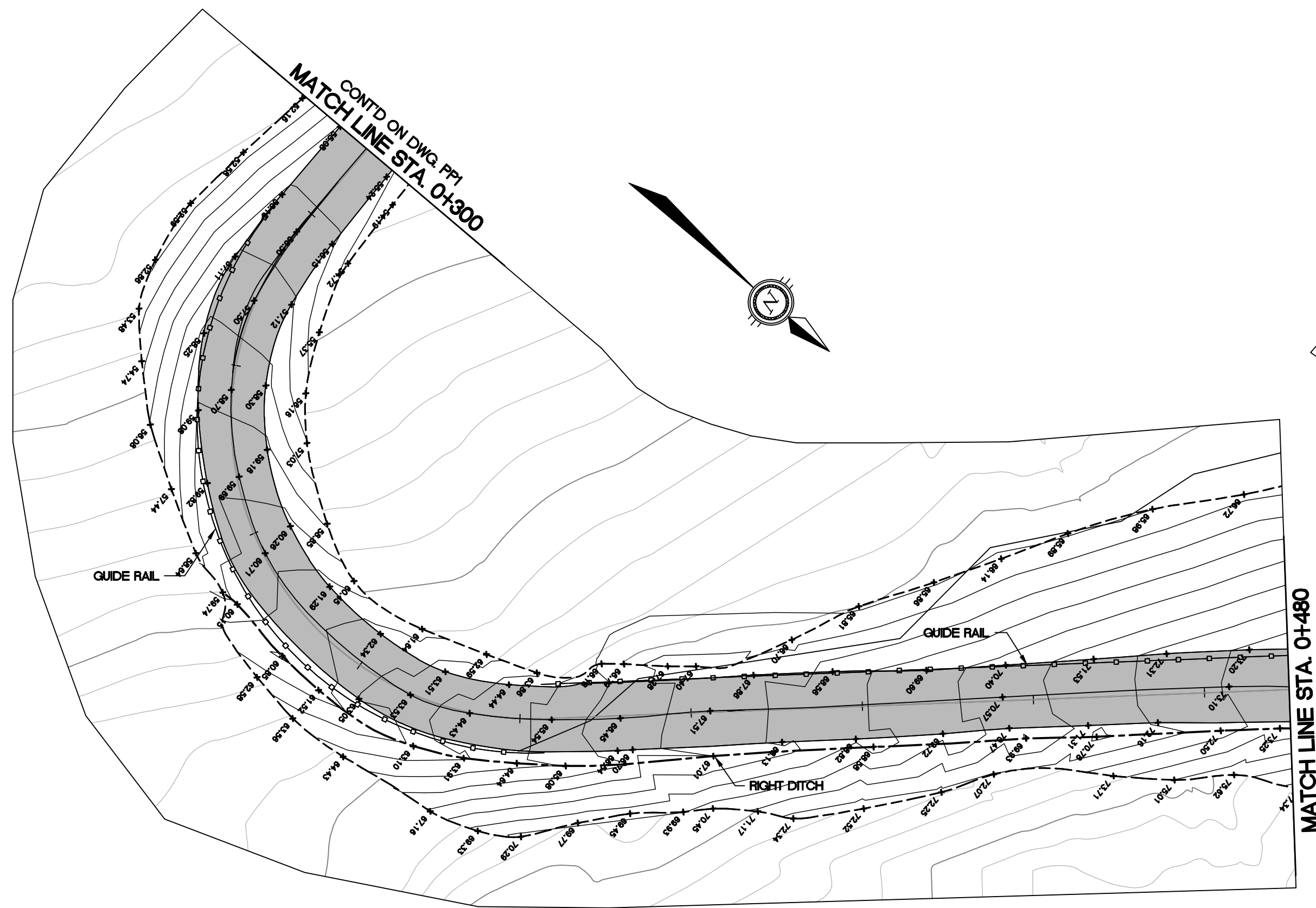
GOVERNMENT OF NUNAVUT

PROJECT

ARCTIC BAY
WASTE WATER
LAGOON ROAD

TITLE	ACCESS ROAD PLAN & PROFILE STA. 0+000 TO STA. 0+300
-------	---

design by	S.A.D.	project no. OTCD19054A drawing no. PP1
drawn by	M.M.R.	
checked by	S.L.B.	
date	21/04/08	
scale	HORIZ 1:500 VERT 1:50	



KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1 ELEV. = 000.00
DESCRIPTION HERE

No.	DESCRIPTION	DATE	BY	APP'D
5	AS-BUILT	30/11/11	SAB	SLB
4	AS-CONSTRUCTED	17/11/11	MEB	SLB
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
R E V I S I O N S				

DRAWINGS ORIGINALLY
SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

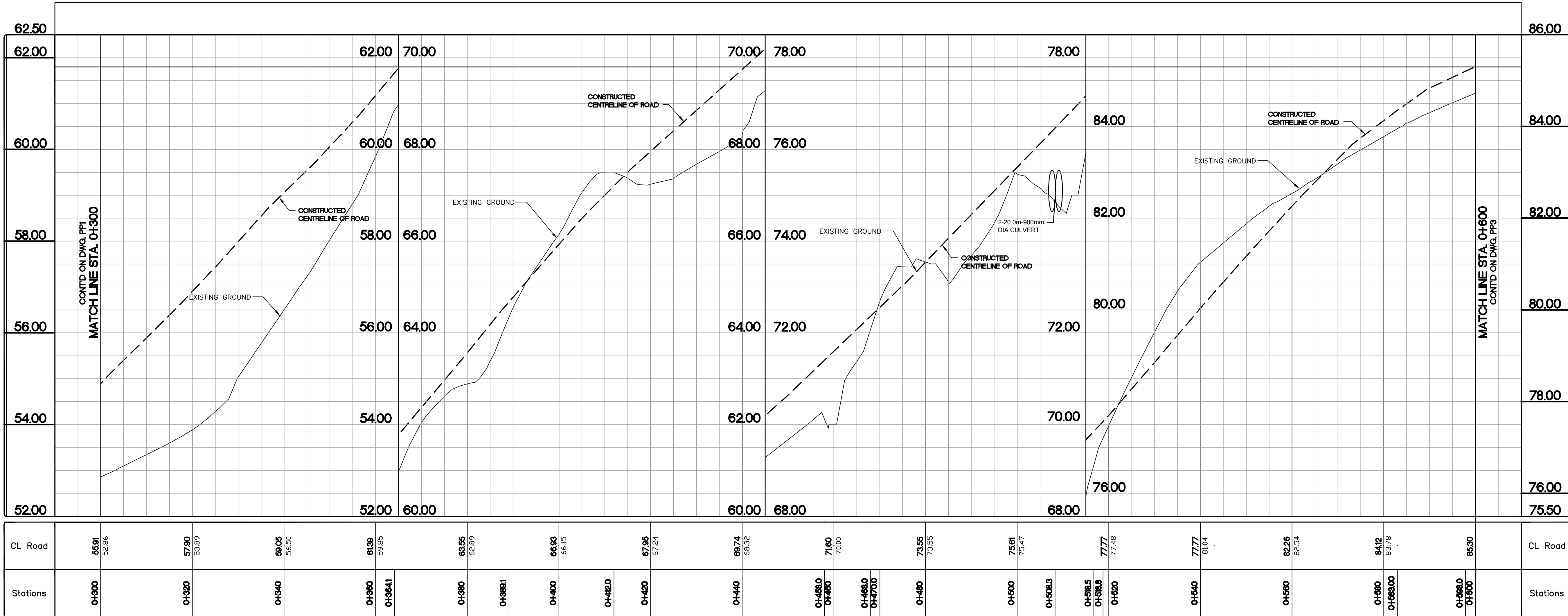
Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY
WASTE WATER
LAGOON ROAD

TITLE
ACCESS ROAD
PLAN & PROFILE
STA. 0+300 TO STA. 0+600

design by	S.A.D.	project no.	OTCD19054A
drawn by	M.M.R.	drawing no.	PP2
checked by	S.L.B.		
date	21/04/08		
scale	HORIZ 1:500 VERT 1:50		



KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1 ELEV. = 000.00
DESCRIPTION HERE

5	AS-BUILT	30/11/11	SAB	SLB
4	AS-CONSTRUCTED	17/11/11	MEB	SLB
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
No.	DESCRIPTION	DATE	BY	APP'D
R E V I S I O N S				

DRAWINGS ORIGINALLY
SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

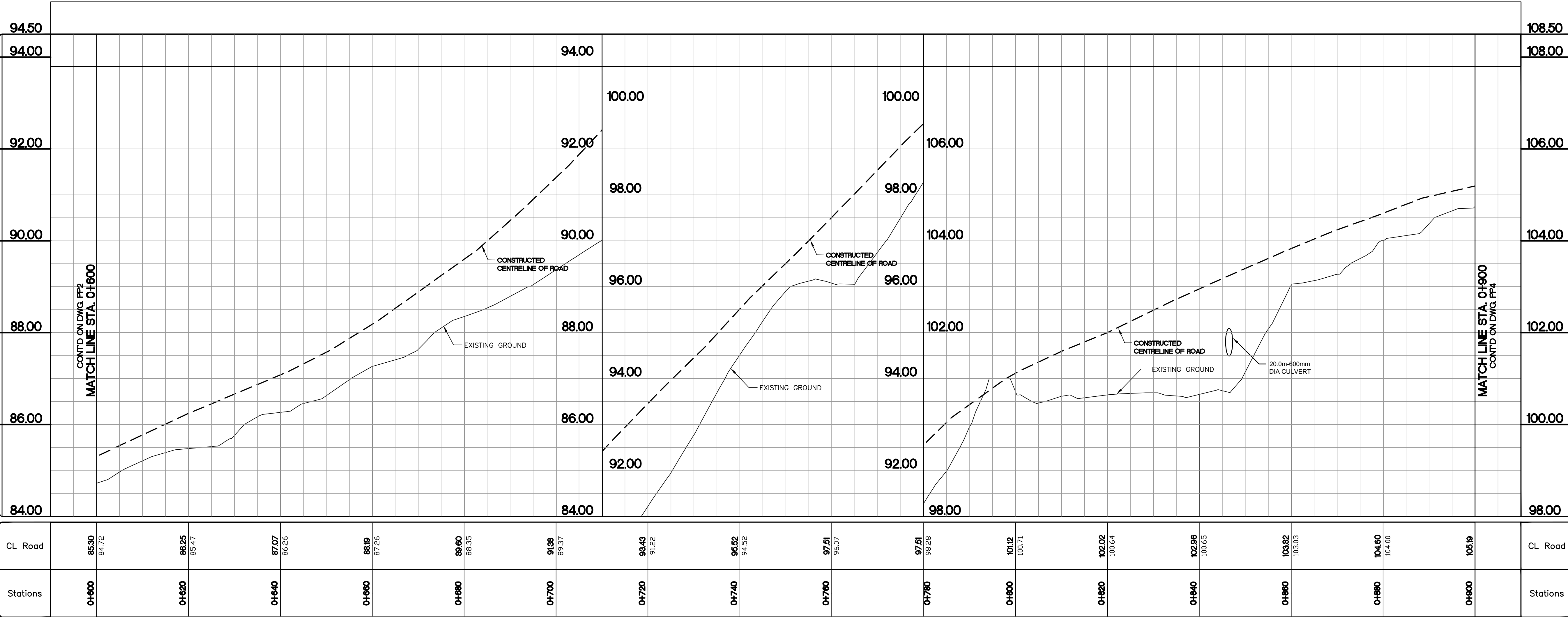
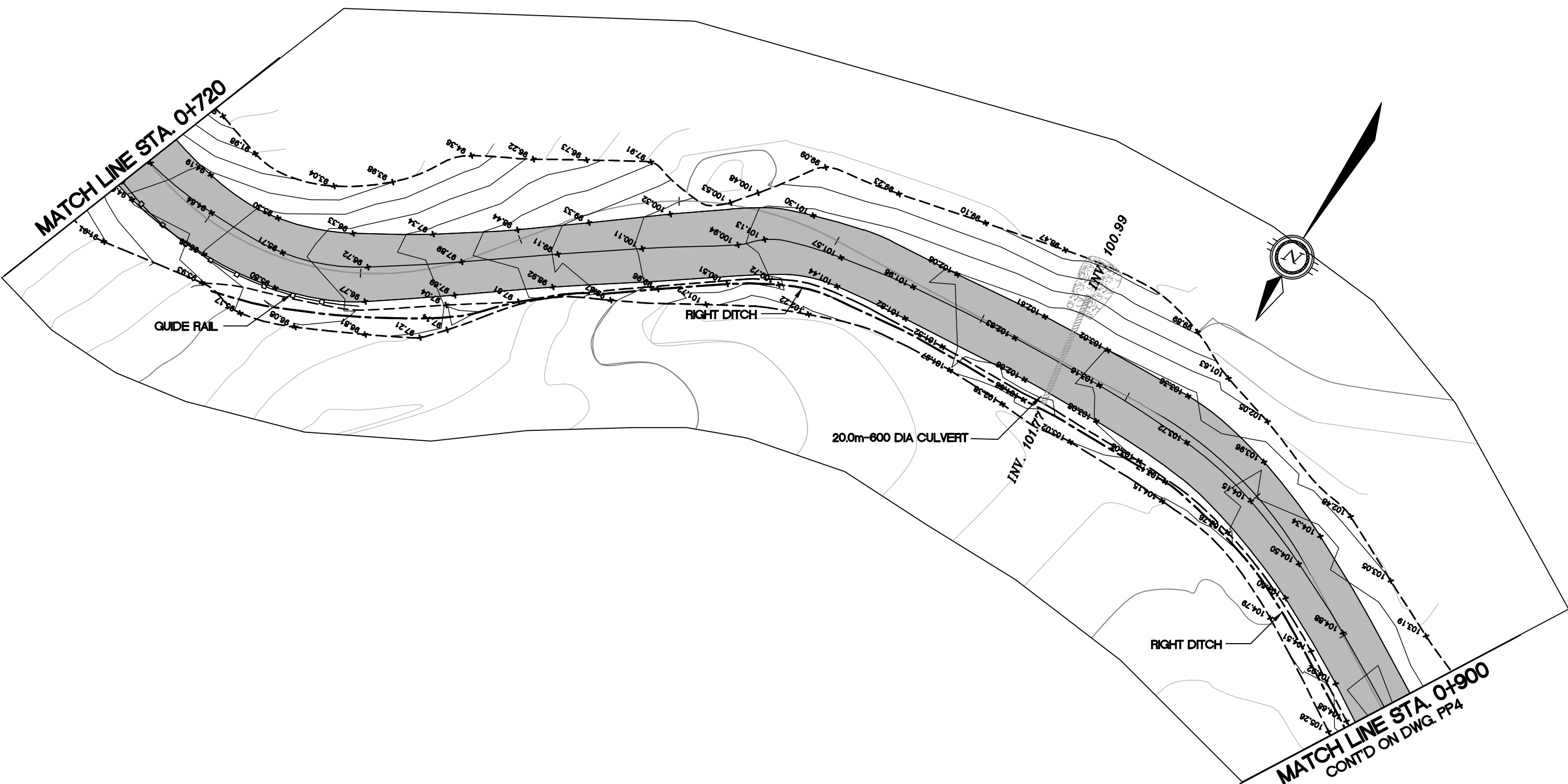
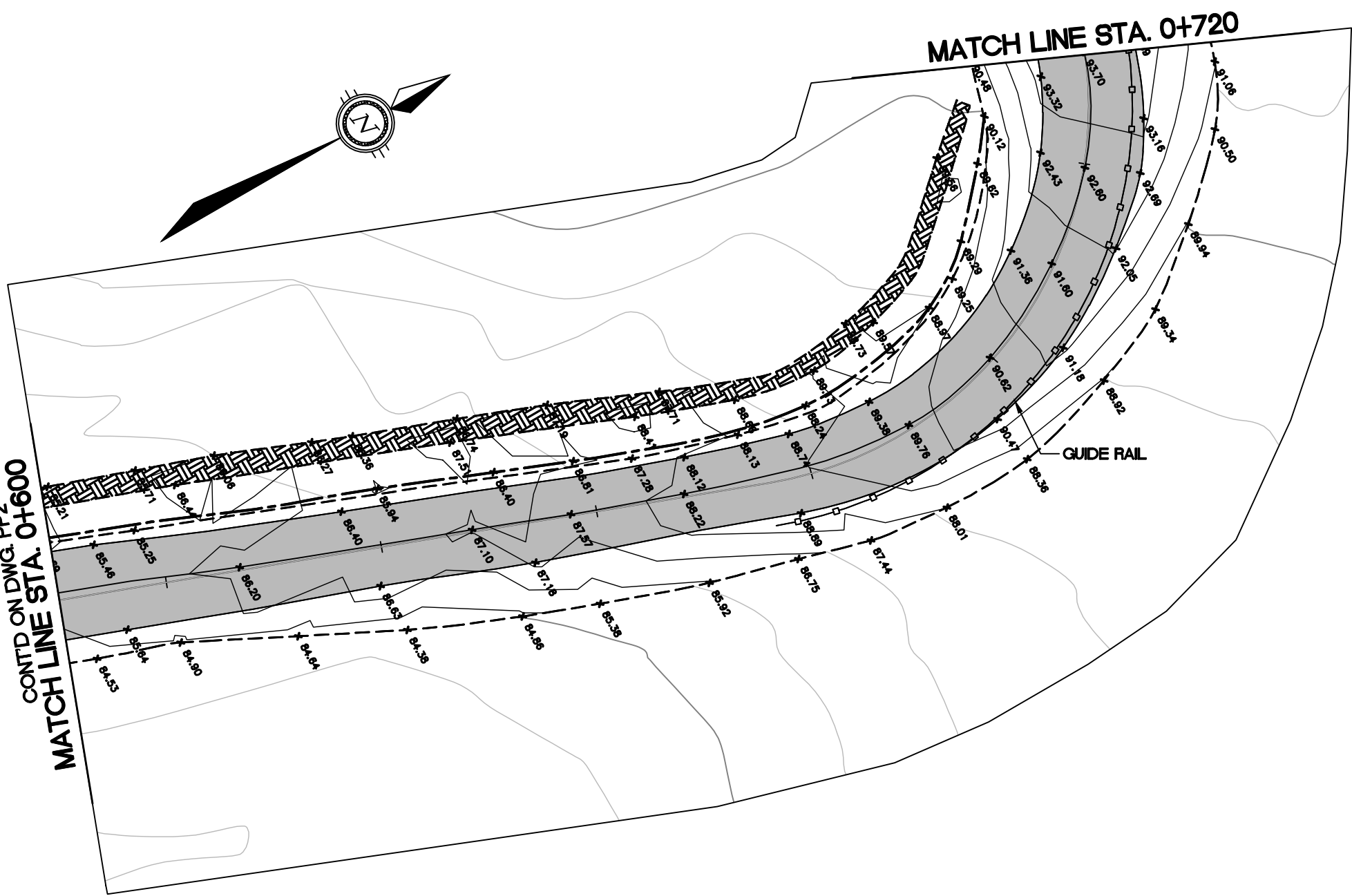
Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

CLIENT
GOVERNMENT OF NUNAVUT

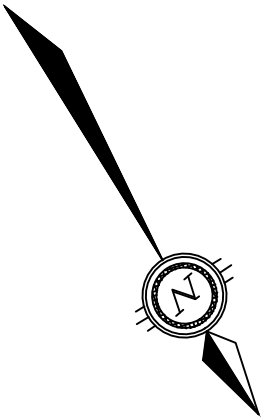
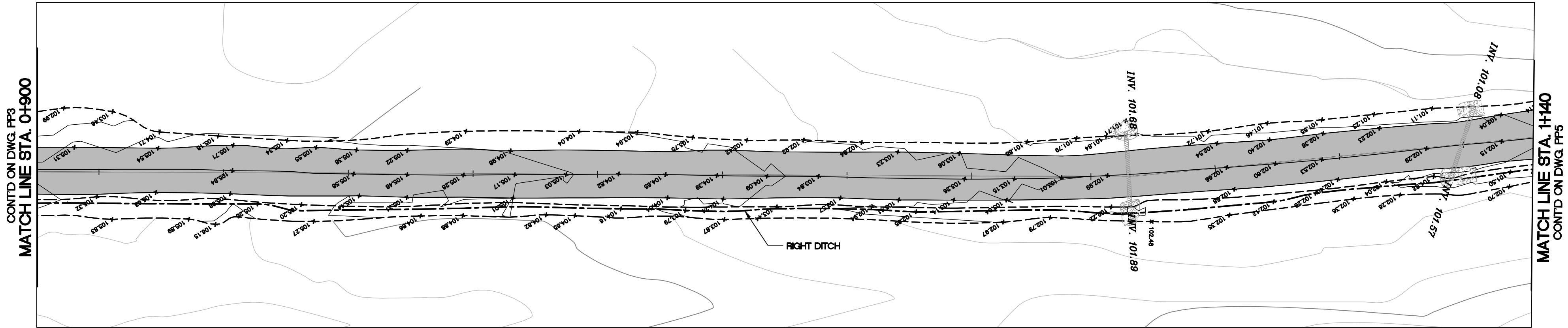
PROJECT
ARCTIC BAY
WASTE WATER
LAGOON ROAD

TITLE
ACCESS ROAD
PLAN & PROFILE
STA. 0+600 TO STA. 0+900

design by	S.A.D.	project no.	OTCD19054A
drawn by	M.M.R.	drawing no.	PP3
checked by	S.L.B.		
date	21/04/08		
scale	HORIZ 1:500 VERT 1:50		



CL Road	85.30 84.72	86.25 85.47	87.07 86.26	88.19 87.26	88.60 88.35	89.38 89.37	93.43 91.22	95.52 94.52	97.51 96.07	97.51 98.28	101.12 100.71	102.02 100.54	102.96 100.65	103.82 103.03	104.80 104.00	105.19	CL Road
Stations	0+600	0+620	0+640	0+660	0+680	0+700	0+720	0+740	0+760	0+780	0+800	0+820	0+840	0+860	0+880	0+900	Stations



KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1
DESCRIPTION HERE
ELEV. = 000.00

No.	DESCRIPTION	DATE	BY	APP'D
5	AS-BUILT	30/11/11	SAB	SLB
4	AS-CONSTRUCTED	17/11/11	MEB	SLB
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB

REVISIONS

DRAWINGS ORIGINALLY
SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009

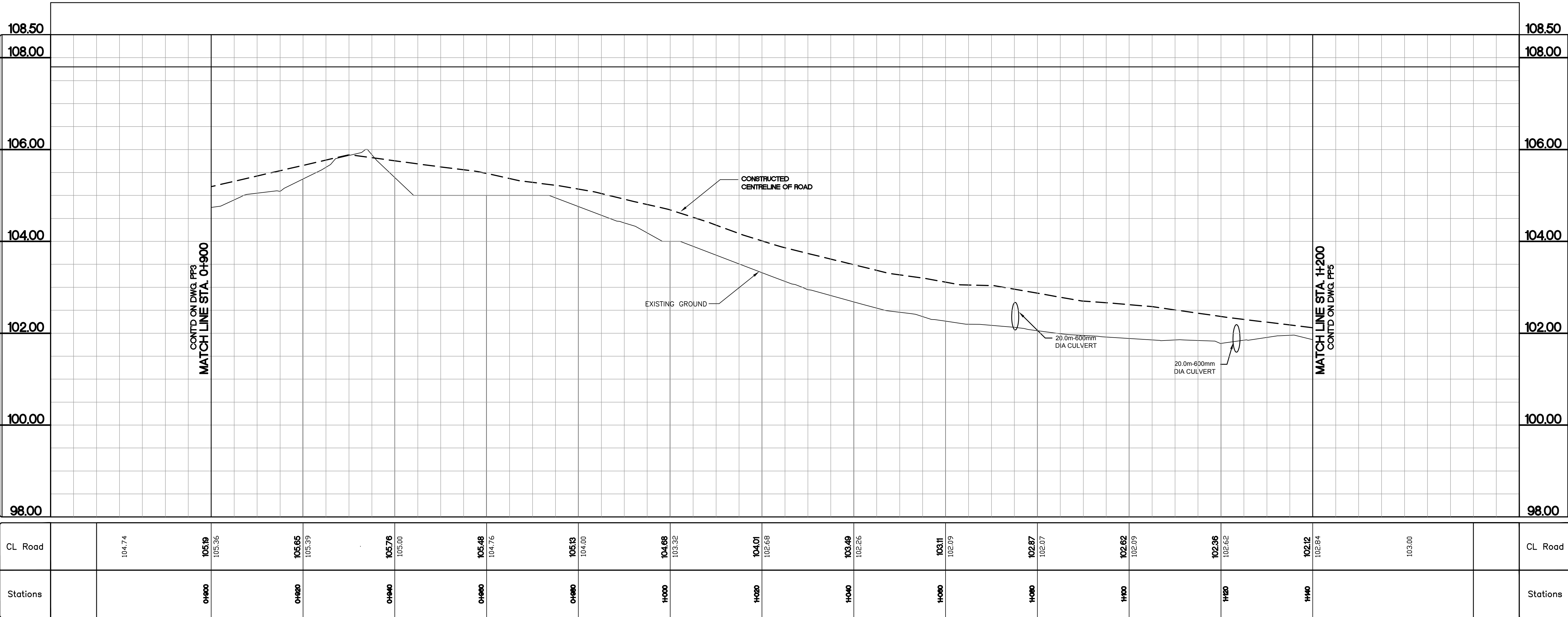
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154 Colonnade Road, South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

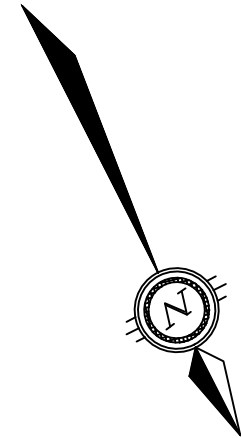
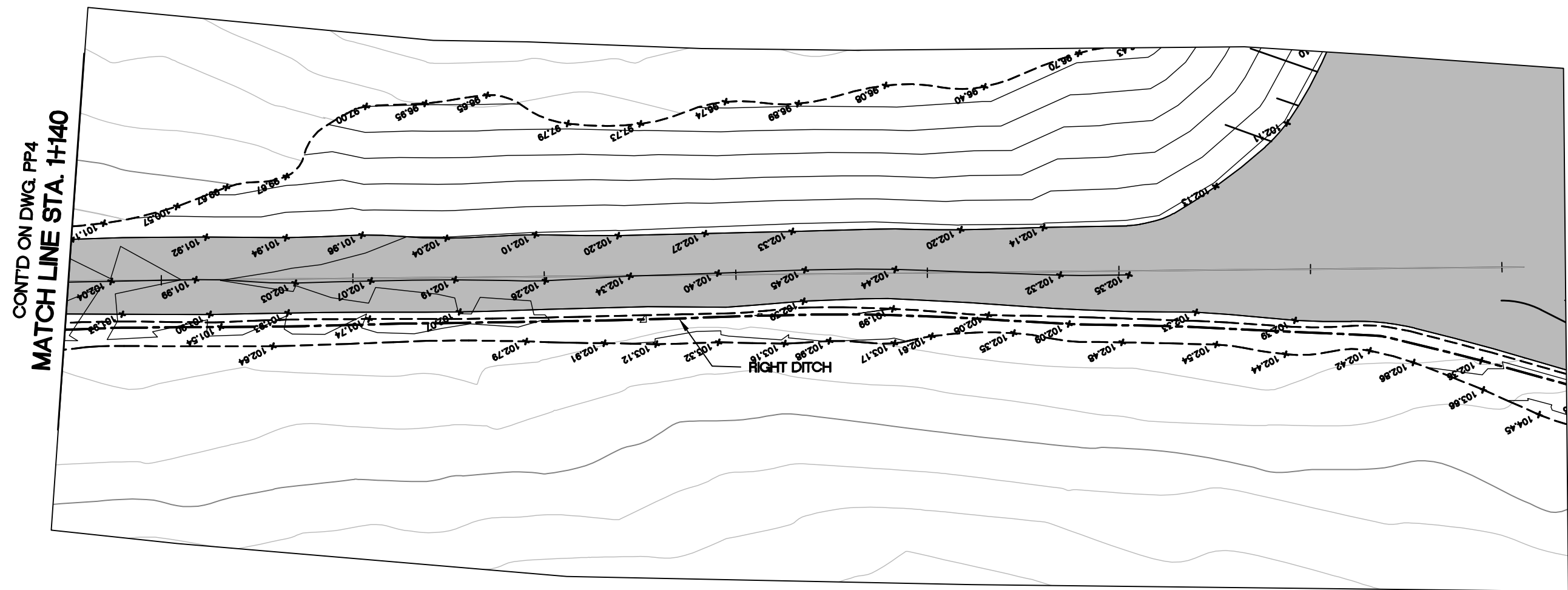
CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY
WASTE WATER
LAGOON ROAD

TITLE
ACCESS ROAD
PLAN & PROFILE
STA. 0+900 TO STA. 1+200

design by	S.A.D.	project no.	OTCD19054A
drawn by	M.M.R.	drawing no.	PP4
checked by	S.L.B.		
date	21/04/08		
scale	HORIZ 1:500 VERT 1:50		





KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

BENCH MARK

BM 1
DESCRIPTION HERE
ELEV. = 000.00

No.	DESCRIPTION	DATE	BY	APP'D
5	AS-BUILT	30/11/11	SAB	SLB
4	AS-CONSTRUCTED	17/11/11	MEB	SLB
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB
2	TENDER SET	27/04/09	MMR	SLB
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB
R E V I S I O N S				

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APRIL 27TH, 2009

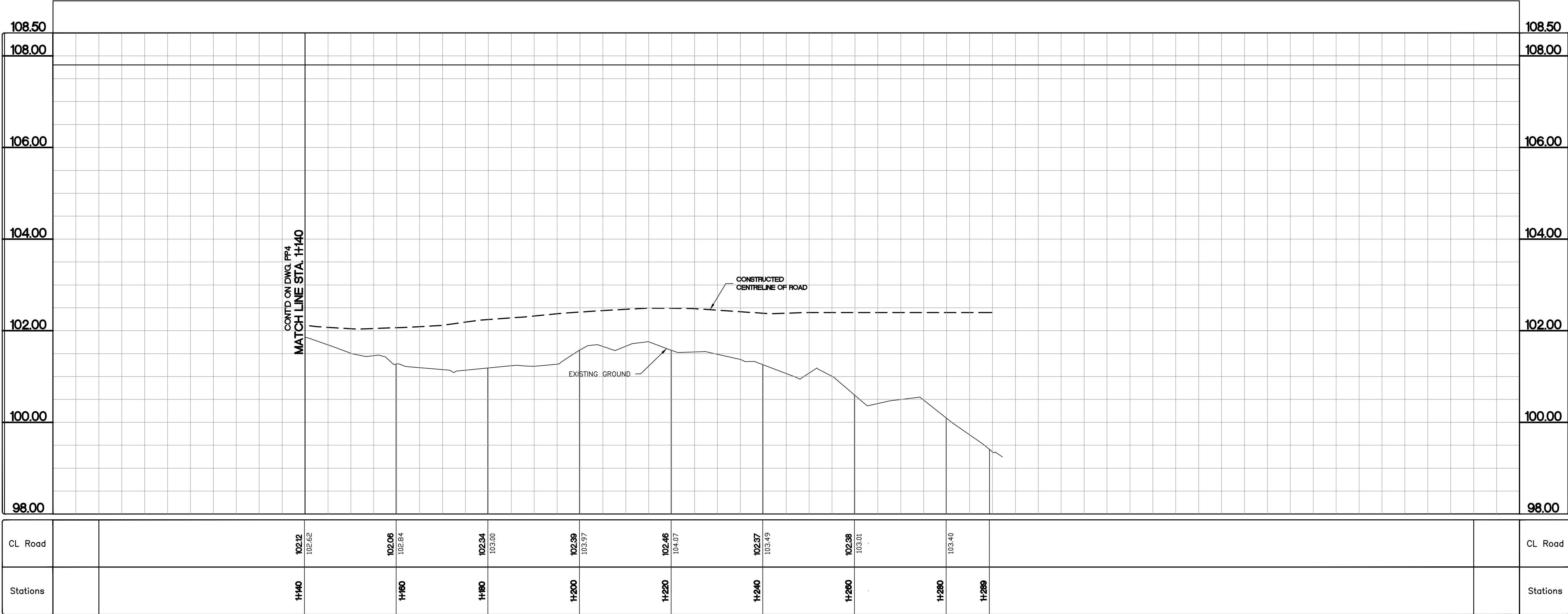
Trow Associates Inc.
154 Colonnade Road South
Ottawa, Ont. K2E 7J5
Tel: (613) 225-9940
Fax: (613) 225-7337

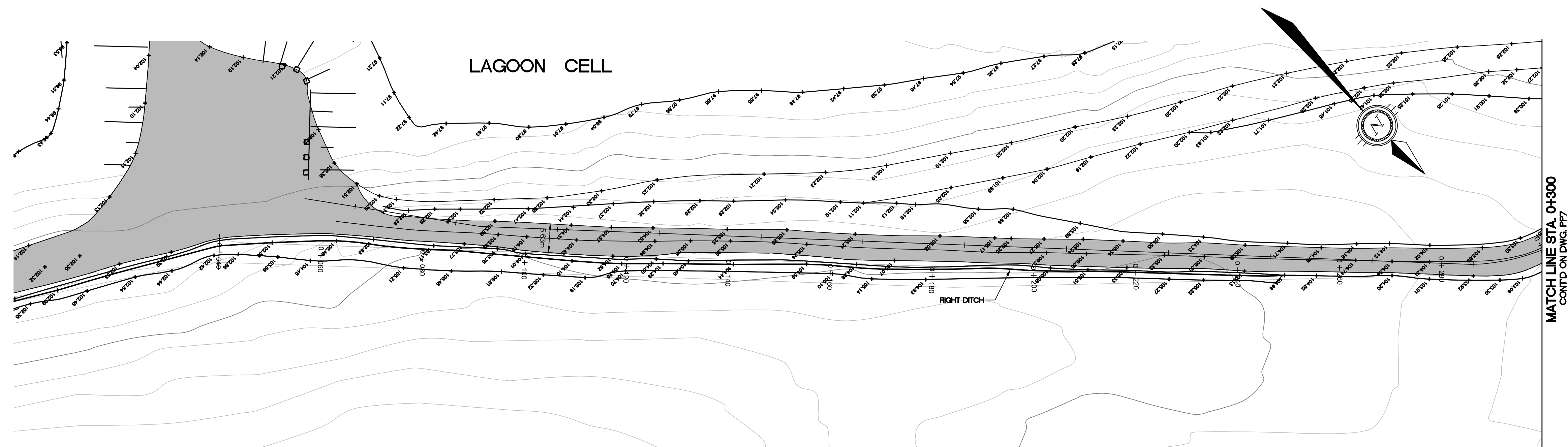
CLIENT
GOVERNMENT OF NUNAVUT

PROJECT
ARCTIC BAY
WASTE WATER
LAGOON ROAD

TITLE
ACCESS ROAD
PLAN & PROFILE
STA. 1+140 TO STA. 1+245

design by	S.A.D.	project no.	OTCD19054A
drawn by	M.M.R.	drawing no.	PP5
checked by	S.L.B.		
date	21/04/08		
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KEY PLAN

LEGEND

AS-BUILT

DATE: NOVEMBER 30, 2011

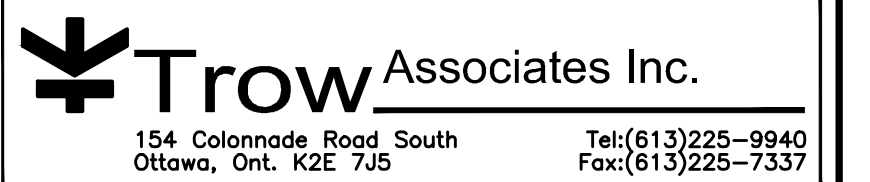
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5	AS-BUILT	30/11/11	SAB	SLB					
4	AS-CONSTRUCTED	17/11/11	MEB	SLB					
3	ISSUED FOR CONSTRUCTION	14/09/09	MMR	SLB					
2	TENDER SET	27/04/09	MMR	SLB					
1	ISSUED FOR APPROVAL	24/04/08	MMR	SLB					
No.	DESCRIPTION	DATE	BY	APP'D					
R E V I S I O N S									

DRAWINGS ORIGINALLY
SEALED BY
S.L.BURDEN, P.eng. OF
exp. SERVICES Inc.
APRIL 27TH, 2009



CLIENT

GOVERNMENT OF NUNAVUT

PROJECT

ARCTIC BAY
WASTE WATER LAGOON

TITLE

ACCESS ROAD
SECOND BERM
PLAN & PROFILE

design by

S.A.D.

project no. OTCD19054A

drawn by

M.M.R.

drawing no.

checked by

S.L.B.

date

07/12/07

scale

HORIZ 1:500 VERT 1:50

PP6