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Memo

To: Chris Hanks Date: May 11, 2011

Company: HBML From: Kelly Sexsmith

Copy to: Project #: 1CH008.043.3600

Subject: Formal SRK Responses to KIA Requests

SRK has prepared this memo in response to questions and comments by the Kitikmeot Inuit Association (KIA) on the "Hope Bay Doris North Waste Rock and Ore Management Plan" dated December 2010. The original comments by KIA and SRKs responses are provided below.

KIA Question #1: Construction details (preferably "as-built" drawing) regarding the pollution control system, i.e., the waste rock and ore storage pads, and the sedimentation and pollution control ponds. These details would provide clarity regarding the adequacy and effectiveness of the system, such as, for example, the exchange between the sedimentation pond and the pollution control pond, the extent of coverage of the HDPE liner, etc., etc.

SRK response: The IFC Drawings for the Sedimentation and Pollution Control Ponds as well as the waste rock storage pads are provided in Attachment 1. There are separate documents detailing both interim and operational water management plans for the site. Any comments on the design or operation of those facilities are should be provided in the context of the Water Management Plans.

<u>KIA Question #2:</u> An estimate is requested regarding the maximum storage capacity of the waste rock pad based on maintaining stable slopes.

SRK response: The expected volume of waste rock that is expected to be stored in the waste rock piles is 530,000 tonnes, including an allowance for the 30,000 tonnes of waste rock that will be displaced from use as backfill by cyanide residues. There is an additional contingency of 50,000 tonnes provided to address any small changes in the mine plans. The storage capacity of the pile, as shown in Figure 5c, is 601,000 tonnes. A five metre increase in height is possible in the eastern side of the pile, and could provide another 18,000 tonnes, or maximum storage capacity of 619,000 tonnes.

The storage capacities are based on an overall final slope angle of 2H:1V. A technical memo documenting the pile stability analysis for the 619,000 tonne pile configuration is provided in Attachment 2.

KIA Question #3: Details and justification are needed regarding the characterization, classification and segregation of waste rock. More specifically:

- a. The proposed two categories (mineralized and non-mineralized rock) to classify waste rock do not necessarily correspond to PAG and Non-PAG rock
- b. Will visual inspection, based on presence of sulphides, be sufficient to adequately characterize the waste rock?
- c. No specific testing was proposed to be carried out on waste rock material designated for use in construction. The material needs be assessed for metal leaching potential, and the environmental impacts of the soluble metals species must be considered.

SRK Response: SRK presented an up-to-date summary of the geochemical characterization data available for the Doris North waste rock in Section 2.5.1 and Appendix 1 of the waste rock management plan. This

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includes a statistical summary of critical ABA parameters according to the proposed management units, some key findings on carbonate mineralogy from the mineralogical testing, and some key findings on sulphate and metal release rates from the kinetic testing. HBML plans to issue a complete update on this testwork with the upcoming Amendment 3 package. In the interim, a meeting was held between HBML, KIA, BGC (KIAs technical consultant), and SRK on various aspects of the Hope Bay project. Key findings of the waste rock characterization programs were presented and discussed during the meeting, and KIA were provided with an opportunity to ask further questions. With respect to the specific comments provided by KIA prior to that meeting, we are providing the following responses:

a: In developing the Waste Rock Management Plan, SRK has recommended a more conservative segregation criteria that not only recognizes the ARD potential of the rock, but also the potential for increased risk of sulphate and metal leaching in non-PAG rocks that contain elevated levels of both sulphide and carbonate. Based on the segregation criteria proposed in the management plan, all of the "non-mineralized" rock is expected to be non-PAG with low (<0.5%)¹ sulphide concentrations, while the "mineralized" rock is expected to include: 1) any rock with >0.5% sulphides, regardless of ARD potential, 2) any rock that is not spatially abundant, and therefore not well characterized or understood (e.g. the gabbro), and 3) any rock that is located in the alteration zones that surround the ore, regardless of actual sulphide content or ARD potential due to the anticipated challenges of separating rock in this area. Therefore, the "mineralized" rock will include all of the PAG and non-PAG material with "elevated" sulphides. This degree of conservatism is appropriate given that there is more than excess capacity for all of the mineralized rock to be backfilled in the underground mine.

Additionally, the segregation plan takes considers the characteristics of each of the major rock units, and is only proposed for units that are well characterized and that consistently contain large amounts of NP, such as the basalt and the buffer zone material (also basalt). The high NP content ensures that even if the segregation was not complete, there would still be an extremely low risk of ARD. The characteristics of the diabase are very uniform as would be expected for an intrusive volcanic that post-dates the mineralization that is associated with the gold deposits, and therefore segregated as non-mineralized on the basis of rock type (but with visual inspections to confirm rock type and low sulphide content). The gabbro and any other minor rock units that have had more limited testing (for example other types of mafic dykes), are being handled as mineralized rock due to limited information and/or lower NP content.

b: Visual inspection has been proposed as the primary screening method for segregating the waste rock into mineralized and non-mineralized storage areas on the pile. The inspection will include both rock type and sulphide content. The geologists have been further instructed to classify rock as "mineralized" if there are any doubts as to their ability to see or estimate the abundance of sulphides. However, HBML would like to emphasize that samples are also being collected at a minimum frequency of one sample per 5,000 tonnes for acid-base accounting (ABA) testing, with additional samples providing a sampling density of one sample per 1,000 tonnes for total inorganic carbon (TIC) and total sulphur content in units that have a higher degree of variability such as basalt or alteration zone material. The final destination of these materials in the dump is also being tracked so that the laboratory results can be directly tied to specific locations within the non-mineralized area of the pile.

The laboratory results are closely reviewed on receipt and are being used to assess the accuracy of the visual determinations. Once sufficient data are available for samples representing a variety of rock types, HBML will assess the accuracy of the visual methods, and may propose further changes in the sampling plans. However, in the current plan, the laboratory data will be the primary basis for assessing whether the non-mineralized rock can be used in construction. If the segregation programs do not prove to be effective, and the non-mineralized rock does not meet the criteria considered acceptable for construction, then it will remain in the waste rock stockpile area until backfilling commences. In the event that small amounts of mineralized rock remain within the non-mineralized area of the pile at closure, the abundance of carbonate minerals present in all of the basalt rock units that would surround these materials is expected to provide an appropriate level of

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¹ Note that this corresponds to 0.25% sulphur content, or an acid potential of <8 kg CaCO₃ eq/tonne.

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control for long term metal leaching and/or ARD issues. It is also likely that permafrost will aggrade into the rock, which would provide an additional level of control for these processes.

The assumption that visual methods would be an appropriate means of segregating the rock is based on correlations between observations of sulphides in the geological logs and corresponding test results in data from recent construction characterization programs (SRK 2010a-d) in which the site geologists were asked to pay particular attention to the visual estimates. As shown in Figure 1, samples with higher sulphur values based on laboratory testing corresponded to observations of more than trace amounts of pyrite.

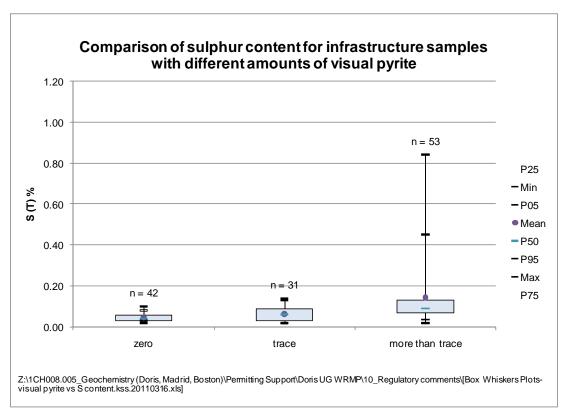


Figure 1: Comparison of sulphur content for infrastructure samples with different amounts of visual pyrite

c: Specific testing of the material designated for use in construction has been proposed in the Waste Rock Management Plan. Section 3.3.3 describes the confirmatory testing programs and the criteria that will be used to establish whether the waste rock is suitable for use in construction. Section 5.3.2 described the additional testing that would be completed following construction. Section 2.5.1 describes the characterization testing that was completed on waste rock from the underground mining area prior to mining.

The confirmatory testing programs include acid base accounting tests (as described under response b and in the plan) and shake flask extraction tests to characterize the soluble sulphate and metal content of the rock, as well as any residual nutrients from blasting.

The pre-development characterization programs include kinetic testing and field barrel tests to characterize the soluble metal content. Rates of metal leaching in kinetic test samples with less than 0.5% sulphide are comparable to that of the quarry rock that is currently being used in construction (SRK 2007).

KIA Question #4: Details are needed regarding the projected volumes and proportions of the different waste rock management units (i.e., mineralized and non-mineralized waste rock). What is the contingency plan if there is excess "mineralized" waste rock (i.e., exceeding backfill capacity) when backfilling begins?

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SRK Response: On the basis of rock type and the available laboratory testing data, the proportions of mineralized and non-mineralized waste rock have been estimated and used to estimate the relative quantities of mineralized and non-mineralized rock from the underground mine. The estimates, shown in Attachment 3, indicate that there would be approximately 343,000 tonnes of non-mineralized rock and 163,000 tonnes of mineralized rock². Given that there is capacity to backfill 370,000 tonnes of waste rock in the underground mine, there should be more than sufficient capacity to backfill all of the mineralized rock, even if there is some conservatism in the segregation procedures (i.e. leading to more non-mineralized rock in the mineralized pile). For example, even if twice as much basalt and buffer zone material was classified as mineralized, there would still be an excess of 176,000 tonnes of backfill capacity remaining in the mine.

<u>KIA Question #5:</u> Clarification and details are requested regarding whether HBML is designing the pollution control system to withstand 1:100 year 24-hour duration storms, or 1:25 year 24-hour duration storms.

SRK response: Information on the design criteria for the water management facilities is provided in the water management plans. A separate response will be provided to address this comment.

References:

- SRK Consulting, 2010a. Geochemical Characterization and Recommendations for Portal Face-Off Area Construction Rock, Doris North, Hope Bay Project, April 22, 2010.
- SRK Consulting, 2010b. Geochemical Characterization and Recommendations for Doris North Fuel Tank Farm and Mill Pad, Doris North, Hope Bay Project, April 23, 2010.
- SRK Consulting, 2010c. Geochemical Characterization and Recommendations for Roberts Bay Fuel Tank Farm, Doris North, Hope Bay Project, April 23, 2010.
- SRK Consulting, 2010d. Geochemical Characterization and Recommendations for Quarry 5, Doris North, Hope Bay Project. Memo dated June 8, 2010.
- SRK Consulting, 2007. Geochemical Characterization of Quarry Materials, Doris North Project, Hope Bay, Nunavut, Canada (Revised March 2007). Prepared for Miramar Hope Bay Ltd., March 2007.

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² Note that these volumes reflect the total expected underground waste production figures, as opposed to the peak waste rock storage quantities that take backfilling into consideration.

Engineering Drawings for the Doris North Camp Area, Doris North Project, Nunavut, Canada

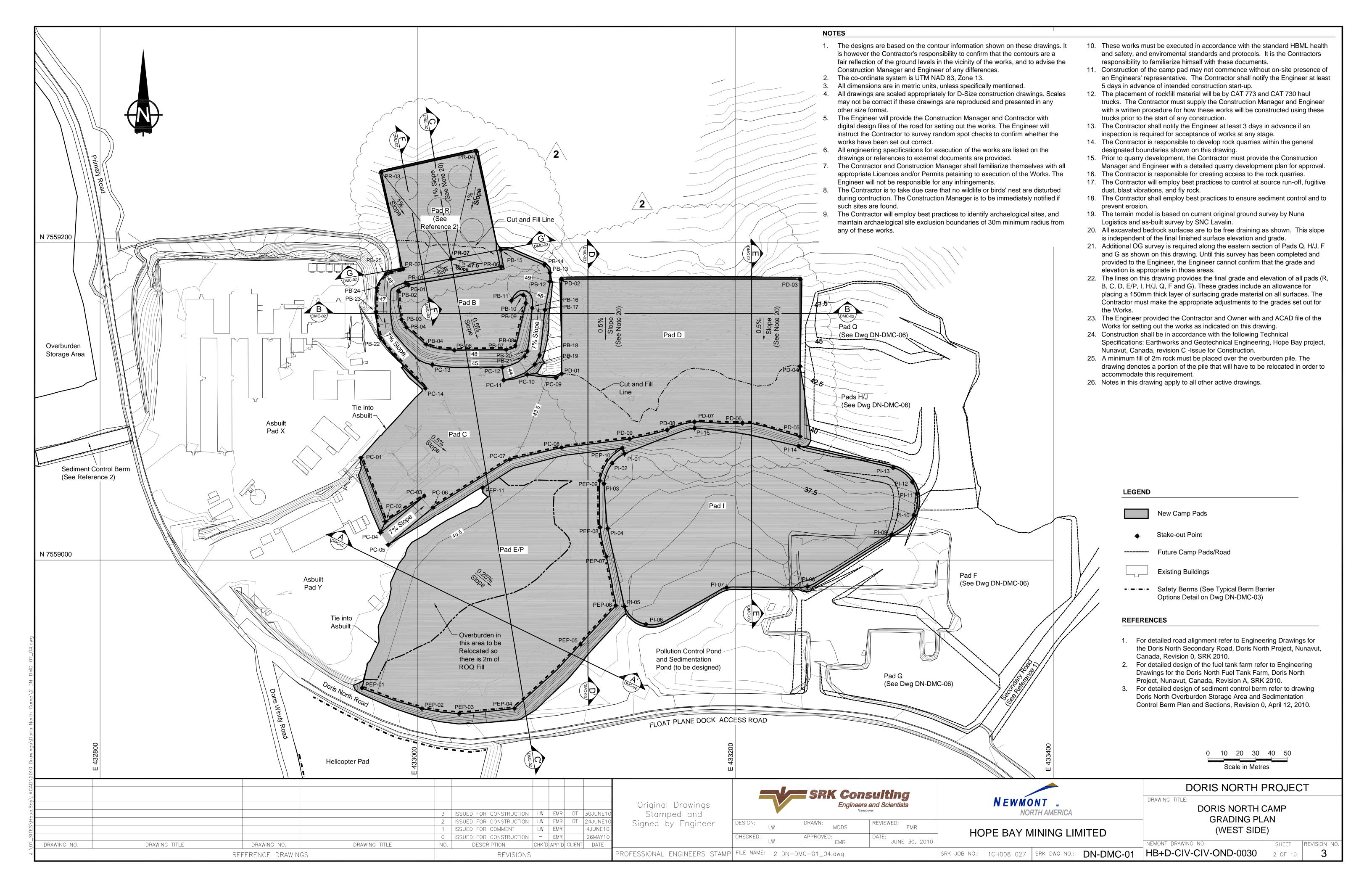
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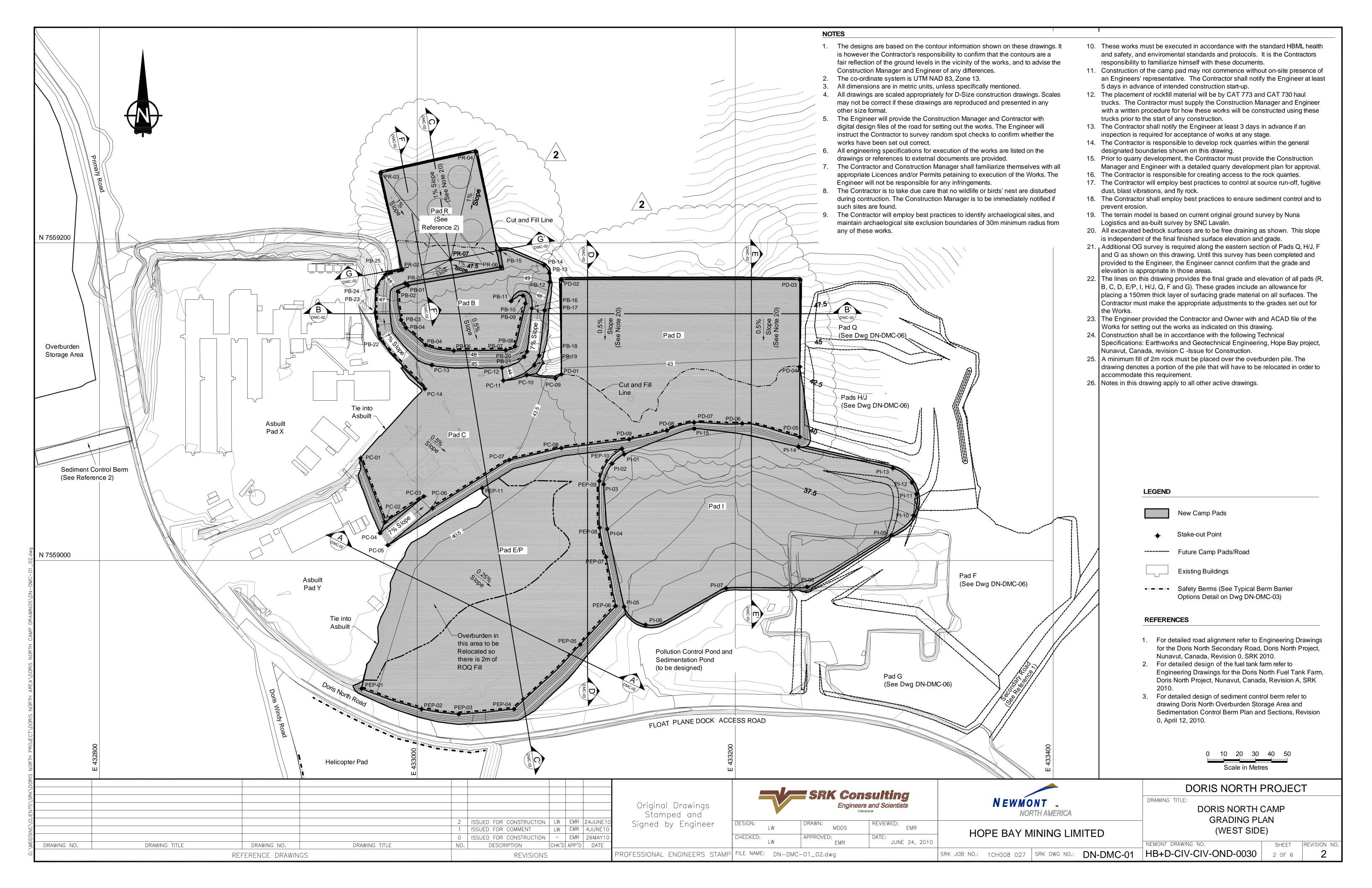
SRK DWG NUMBER	NEWMONT DWG NUMBER	DRAWING TITLE	REVISION	DATE	STATUS	C	LD/REPLACED REVISION	IS
DN-DMC-00	HB+D-CIV-CIV-OND-0039	Engineering Drawings for Doris North Camp Area	4	September 29, 2010	Issued for Construction	Rev. 3, June 30, 2010	Rev. 0, June 24, 2010	Rev. A, June 4, 2010
DN-DMC-01	HB+D-CIV-CIV-OND-0030	Doris North Camp Grading Plan (West Side)	3	June 30, 2010	Issued for Construction	Rev. 2, June 24, 2010	Rev. 1, June 4, 2010	Rev. 0, May 26, 2010
DN-DMC-02	HB+D-CIV-CIV-OND-0040	Doris North Camp Sections and Details (West Side)	1	June 30, 2010	Issued for Construction	Rev. 0, June 24, 2010	Rev. A, June 4, 2010	
DN-DMC-03	HB+D-CIV-CIV-OND-0041	Doris North Camp Sections and Details (West Side)	1	June 30, 2010	Issued for Construction	Rev. 0, June 24, 2010	Rev. A, June 4, 2010	
DN-DMC-04	HB+D-CIV-CIV-OND-0042	Doris North Camp Sections and Details (West Side)	1	June 30, 2010	Issued for Construction	Rev. 0, June 24, 2010	Rev. A, June 13, 2010	
DN-DMC-05	HB+D-CIV-CIV-OND-0052	Material Specifications (West Side)	1	June 30, 2010	Issued for Construction	Rev. 0, June 24, 2010	Rev. A, June 4, 2010	
DN-DMC-06	HB+D-CIV-CIV-OND-0048	Doris North Camp Grading Plan (East Side)	0	June 24, 2010	Issued for Construction			
DN-DMC-07	HB+D-CIV-CIV-OND-0049	Doris North Camp Sections and Details (East Side)	0	June 24, 2010	Issued for Construction			
DN-DMC-08	HB+D-CIV-CIV-OND-0050	Doris North Camp Sections and Details (East Side)	0	June 24, 2010	Issued for Construction			
DN-DMC-09	HB+D-CIV-CIV-OND-0051	Material Specifications (East Side)	0	June 24, 2010	Issued for Construction			
DN-DMC-010	HB+D-CIV-CIV-OND-0070	Sedimentation and Pollution Control Ponds Grading Plan	0	September 29, 2010	Issued for Construction	Rev. A, July 28, 2010		
DN-DMC-011	HB+D-CIV-CIV-OND-0071	Sedimentation and Pollution Control Ponds Sections	0	September 29, 2010	Issued for Construction	Rev. A, July 28, 2010		
DN-DMC-012	HB+D-CIV-CIV-OND-0072	Float Plane Dock Access Road and Dyke Profiles	0	September 29, 2010	Issued for Construction	Rev. A, July 28, 2010		
DN-DMC-013	HB+D-CIV-CIV-OND-0073	Material Specifications (Sedimentation & Pollution Control Ponds)	0	September 29, 2010	Issued for Construction	Rev. A, July 28, 2010		
DN-DMC-014	HB+D-CIV-CIV-OND-0080	Sedimentation and Pollution Control Ponds Typical Details	0	September 29, 2010	Issued for Construction	Rev. A, July 28, 2010		
DN-DMC-015	HB+D-CIV-CIV-OND-0082	Pad R - Raised Access Ramp	1	August 08, 2010	Issued for Construction			
DN-DMC-016	HB+D-CIV-CIV-OND-0088	Pollution Control Pond Surfaces 1 and 2	0	September 29, 2010	Issued for Construction			
DN-DMC-017	HB+D-CIV-CIV-OND-0089	Pollution Control Pond Surfaces 3 and 4	0	September 29, 2010	Issued for Construction			
DN-DMC-018	HB+D-CIV-CIV-OND-0091	Pad C Expansion	0	September 8, 2010	Issued for Construction			
DN-DMC-019	HB+D-CIV-CIV-OND-0109	Doris North Access Road General Arrangement	0	September 24, 2010	Issued for Construction			
DN-DMC-020	HB+D-CIV-CIV-OND-0110	Doris North Access Road Profiles	0	September 24, 2010	Issued for Construction			
DN-DMC-021	HB+D-CIV-CIV-OND-0111	Doris North Access Road Sections and Details Sheet 1 of 2	0	September 24, 2010	Issued for Construction			
DN-DMC-022	HB+D-CIV-CIV-OND-0112	Doris North Access Road Sections and Details Sheet 2 of 2	0	September 24, 2010	Issued for Construction			
DN-DMC-023	HB+D-CIV-CIV-OND-0113	Material Specifications (Doris North Access Road)	0	September 24, 2010	Issued for Construction			

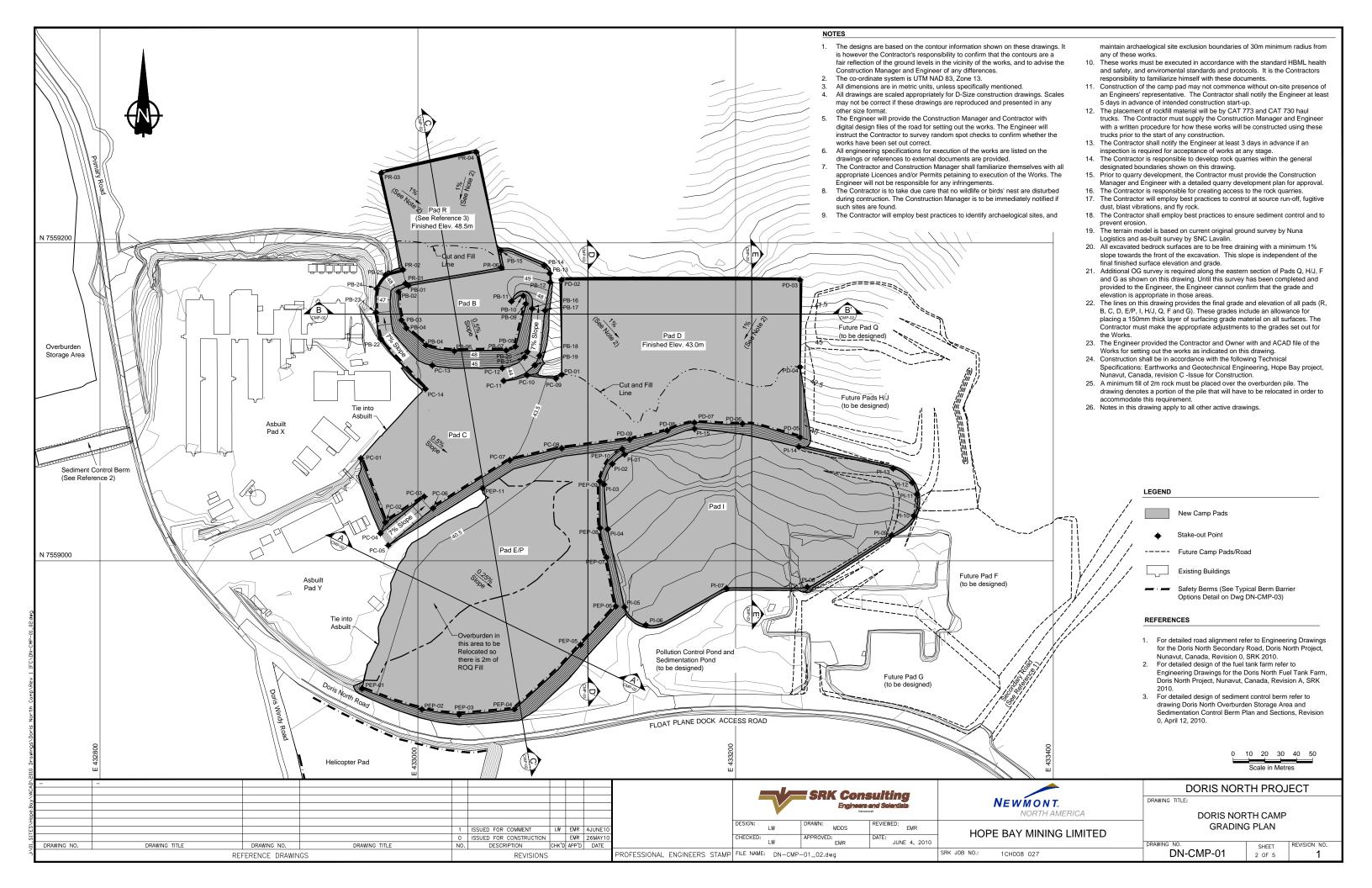
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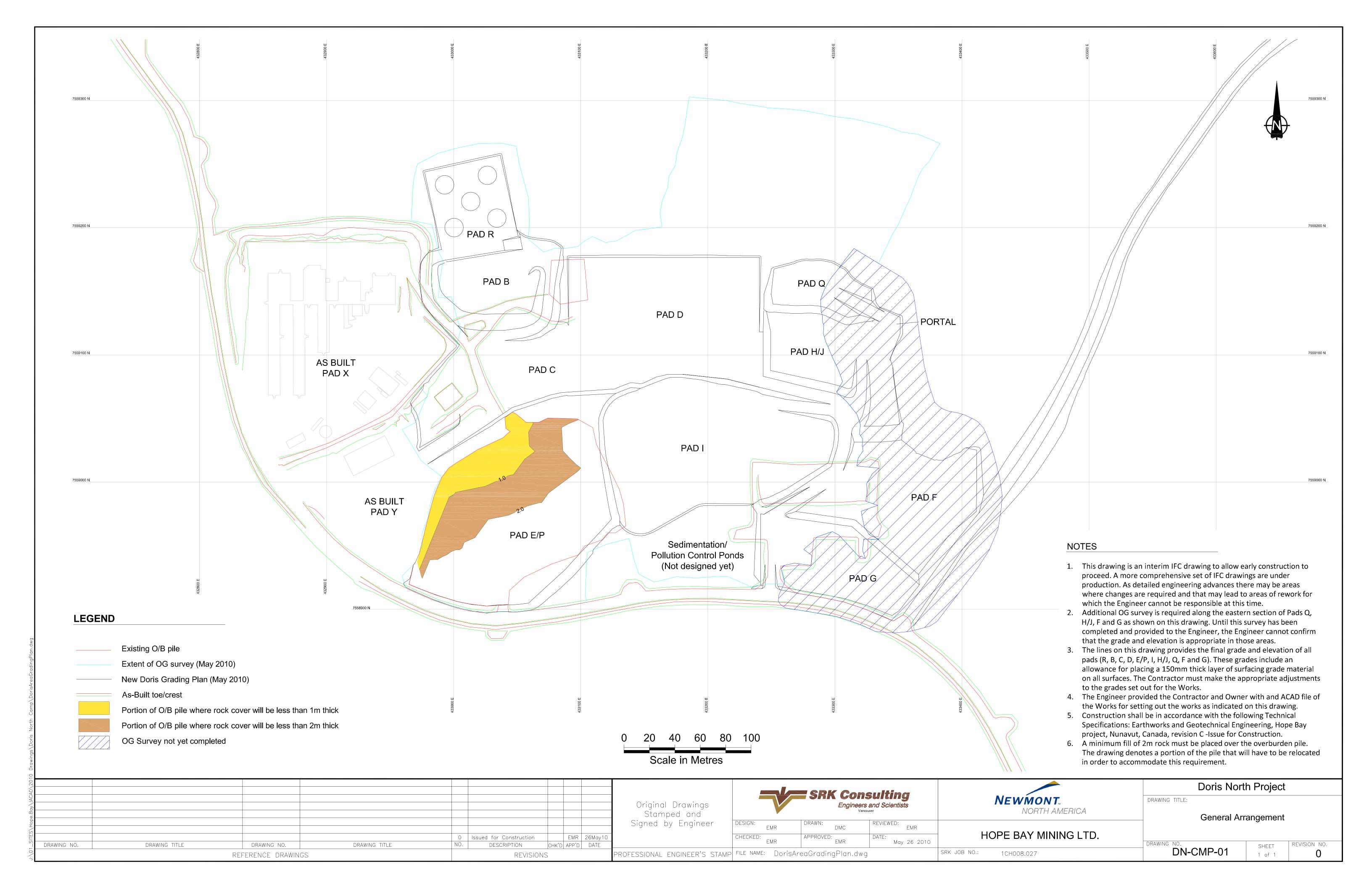


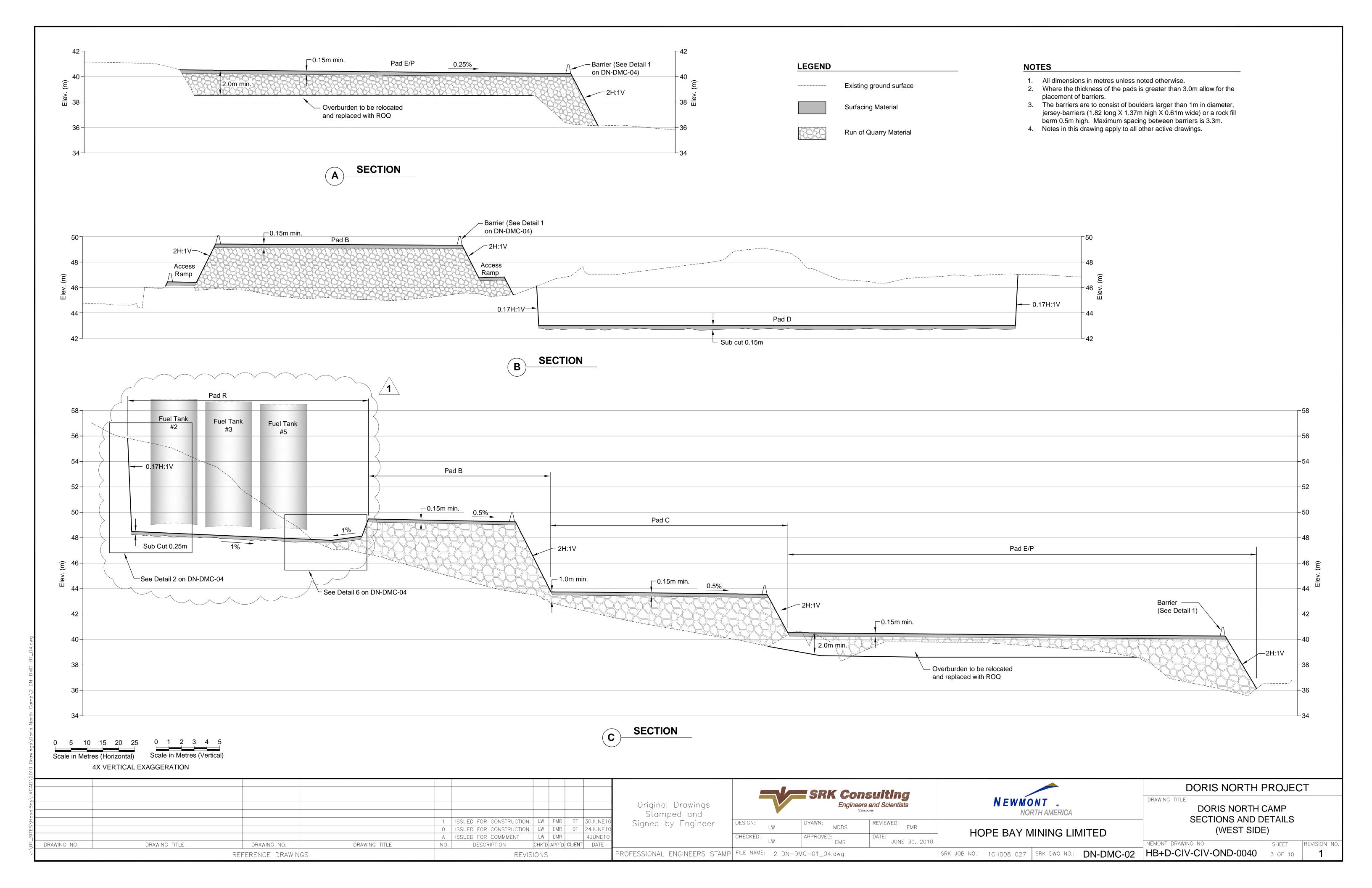
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September 29, 2010
DN-DMC-00 / HB+D-CIV-CIV-OND-0039

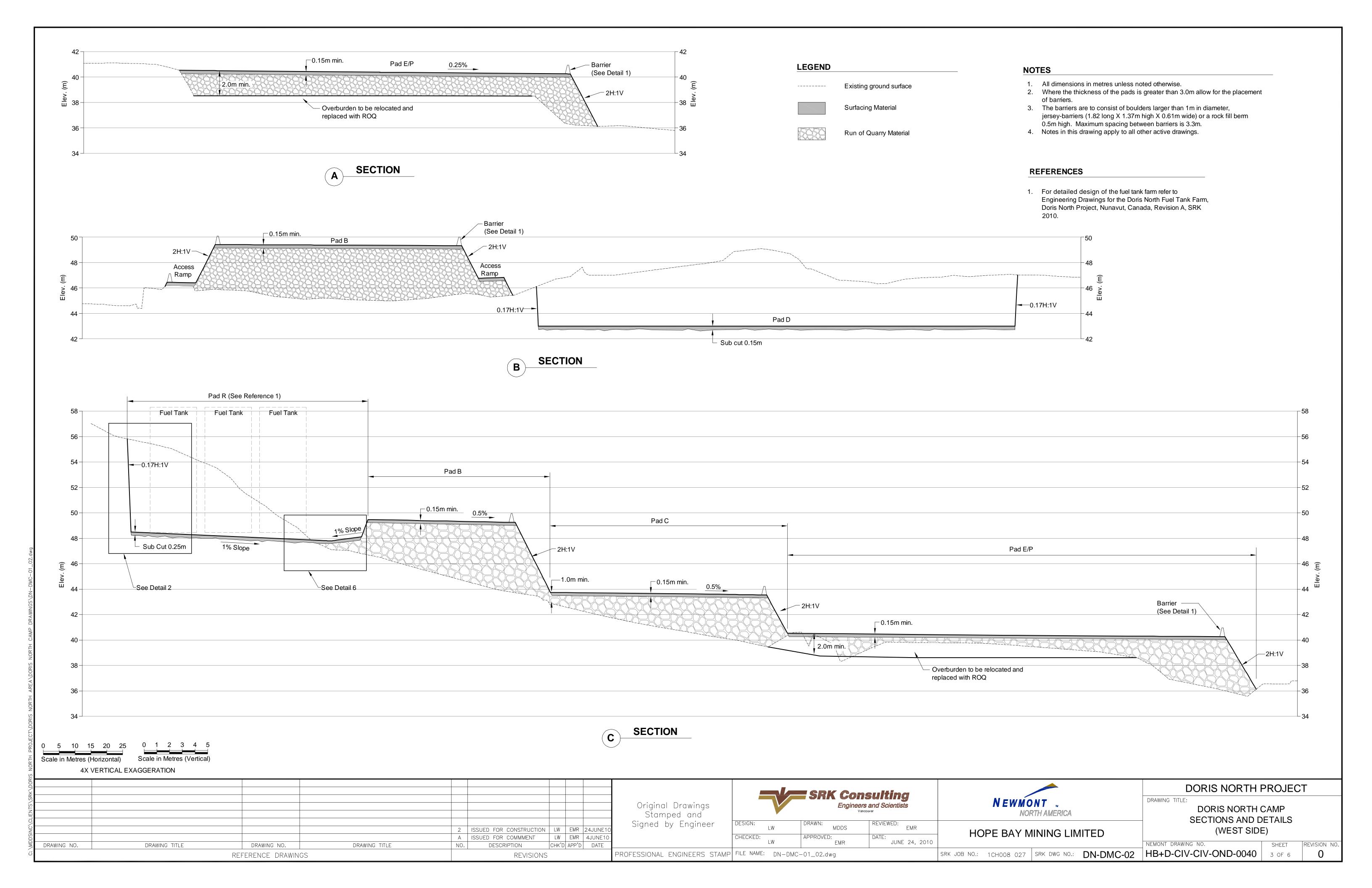


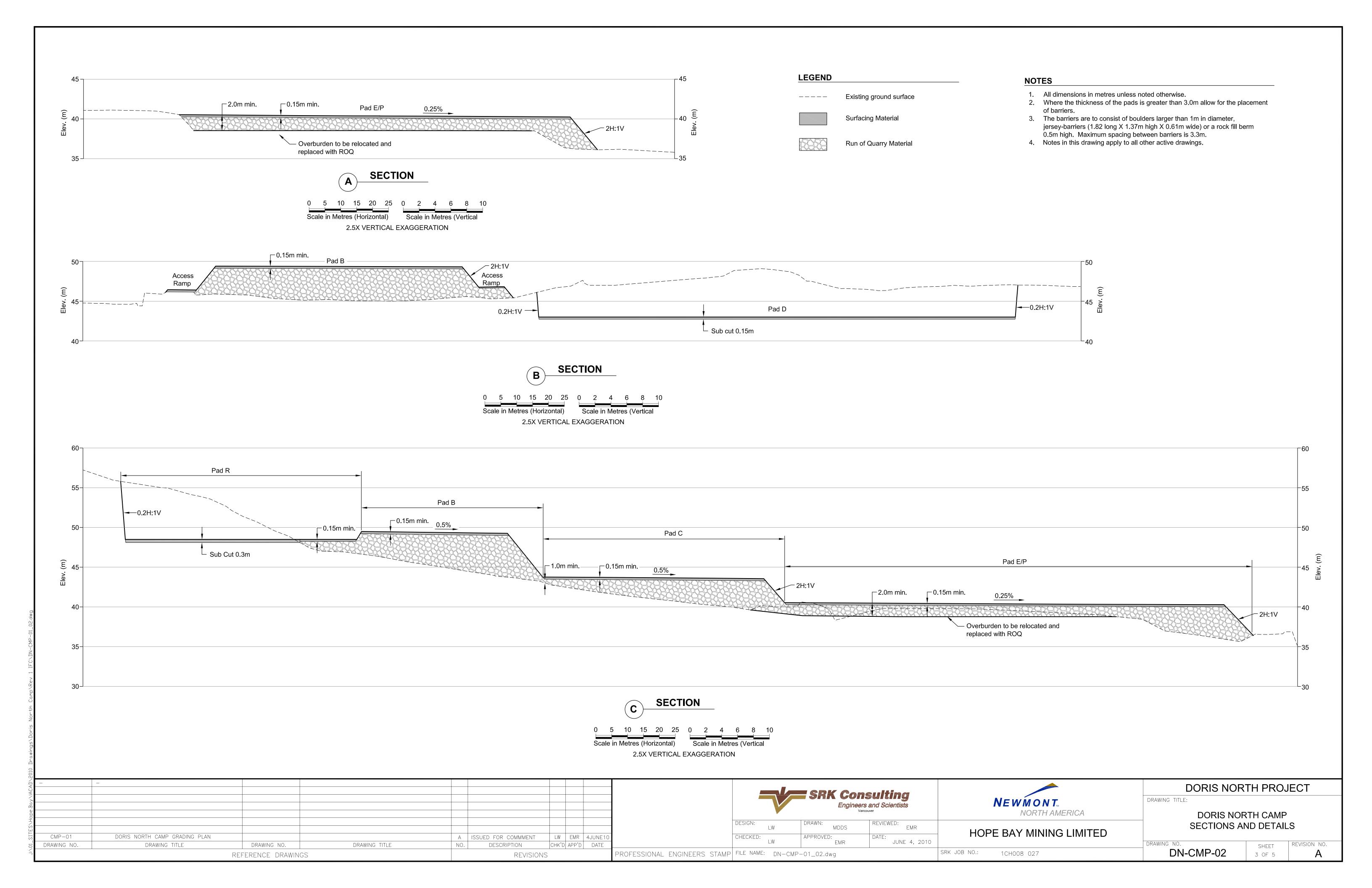


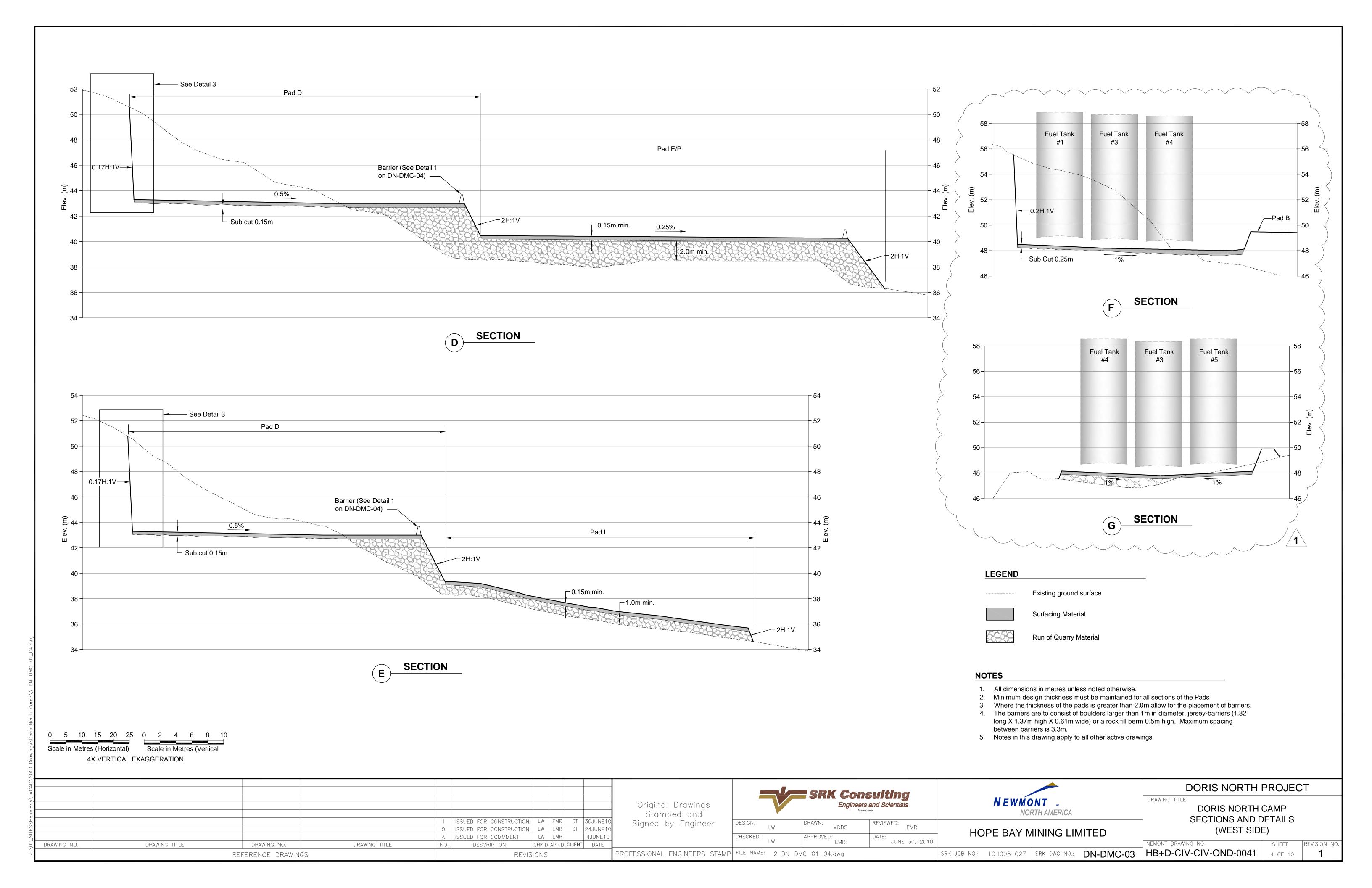


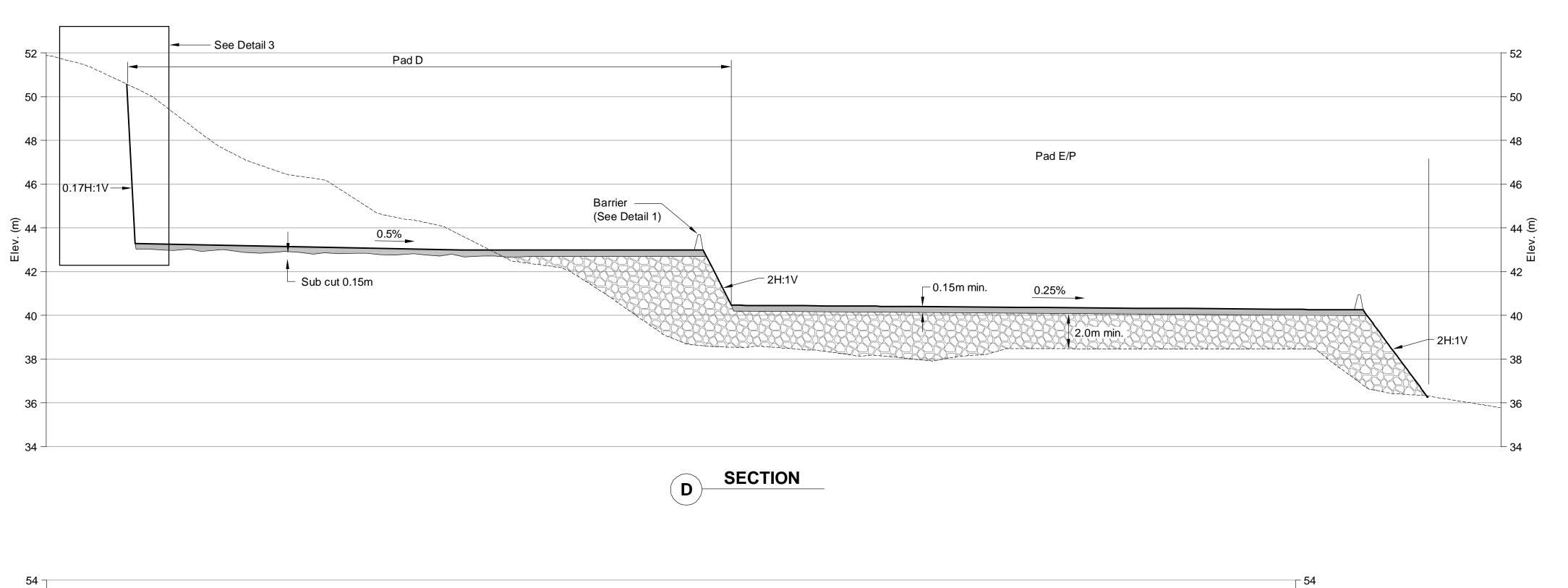


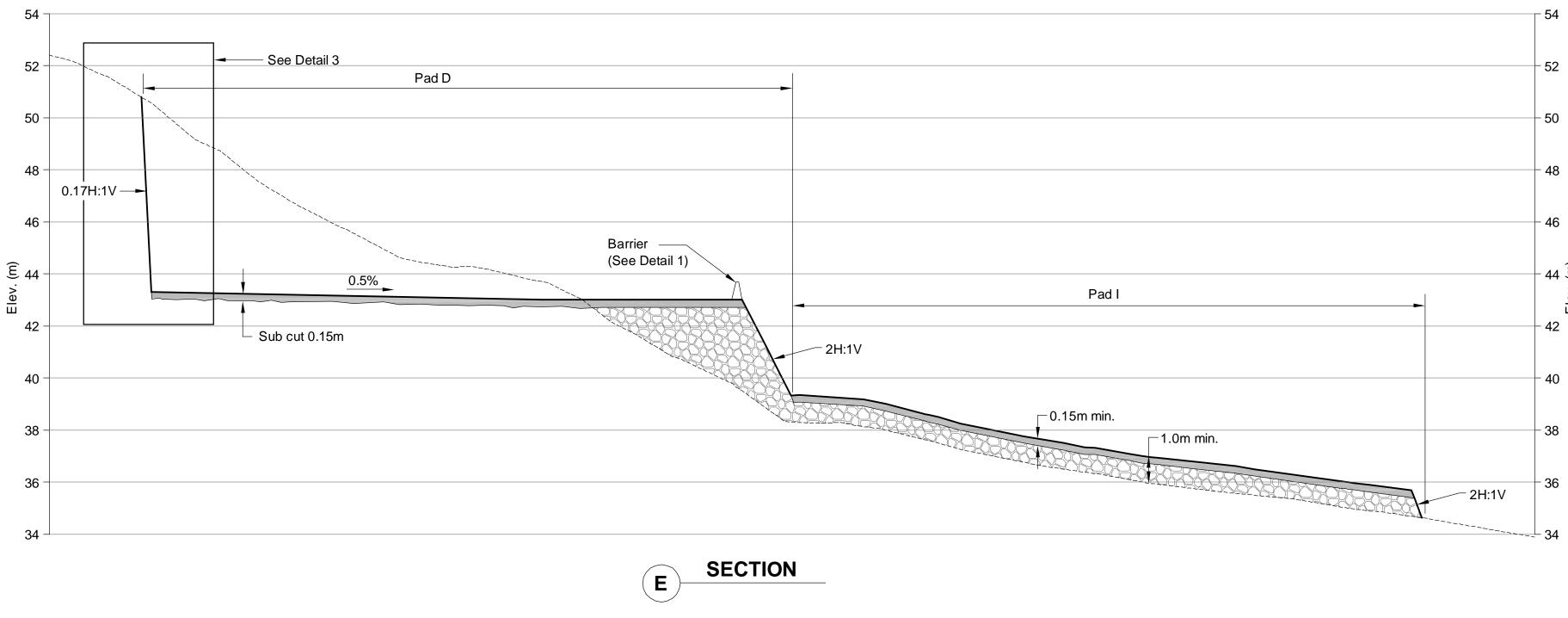












LEGEND

Existing ground surface

Run of Quarry Material

Surfacing Material

NOTES

- 1. All dimensions in metres unless noted otherwise.
- 2. Minimum design thickness must be maintained for all sections of the Pads
- 3. Where the thickness of the pads is greater than 2.0m allow for the placement
- 4. The barriers are to consist of boulders larger than 1m in diameter, jersey-barriers (1.82 long X 1.37m high X 0.61m wide) or a rock fill berm
- 0.5m high. Maximum spacing between barriers is 3.3m.5. Notes in this drawing apply to all other active drawings.



2 ISSUED FOR CONSTRUCTION LW EMR 24JUNE? A ISSUED FOR COMMMENT LW EMR 4JUNE10 CHK'D APP'D DATE DRAWING NO. DRAWING TITLE DRAWING NO, DRAWING TITLE NO. DESCRIPTION REFERENCE DRAWINGS REVISIONS

Original Drawings Stamped and Signed by Engineer

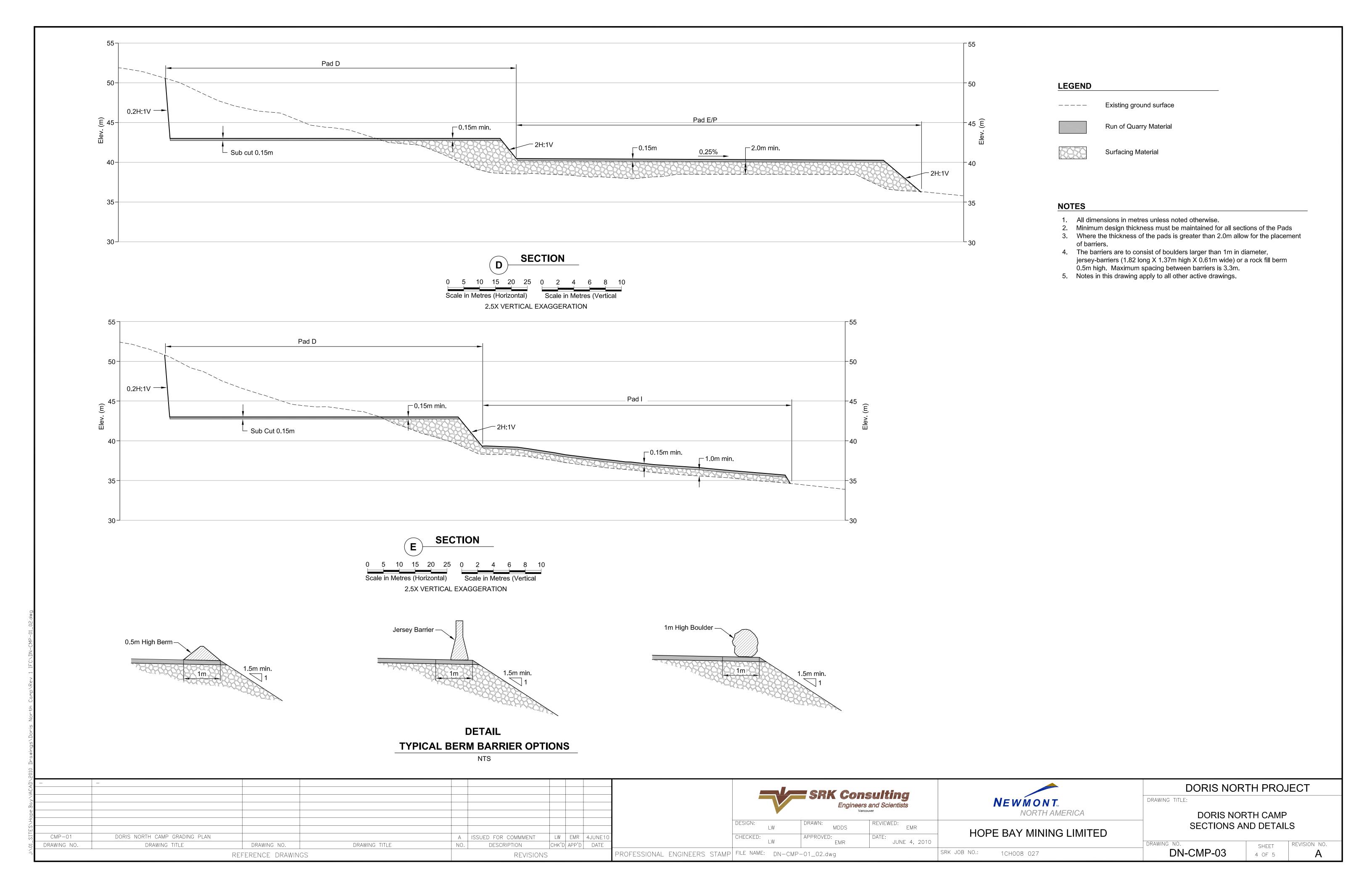
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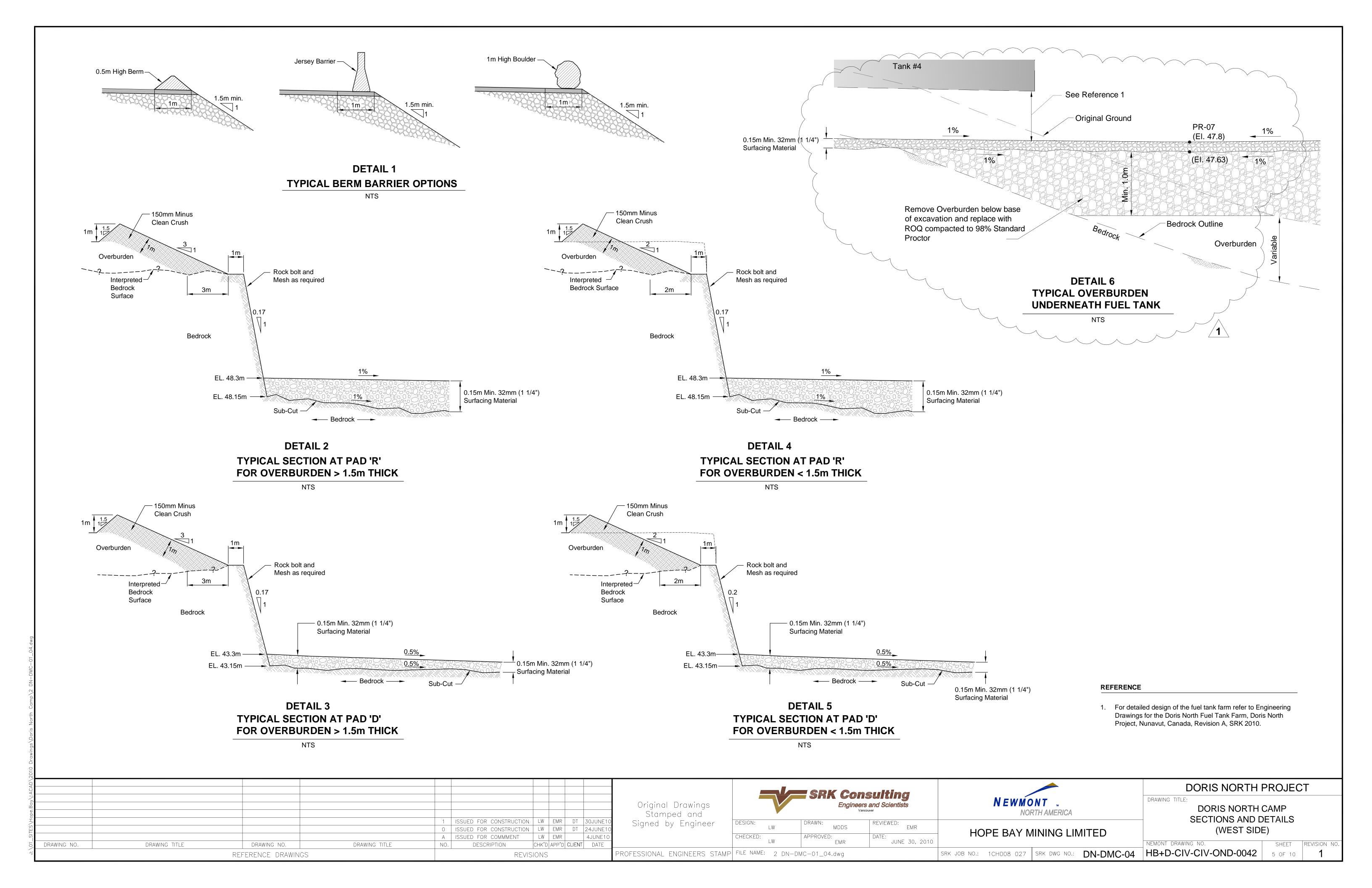
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Vancouver REVIEWED: EMR DESIGN: CHECKED: APPROVED: JUNE 24, 2010 NEWMONT ... NORTH AMERICA

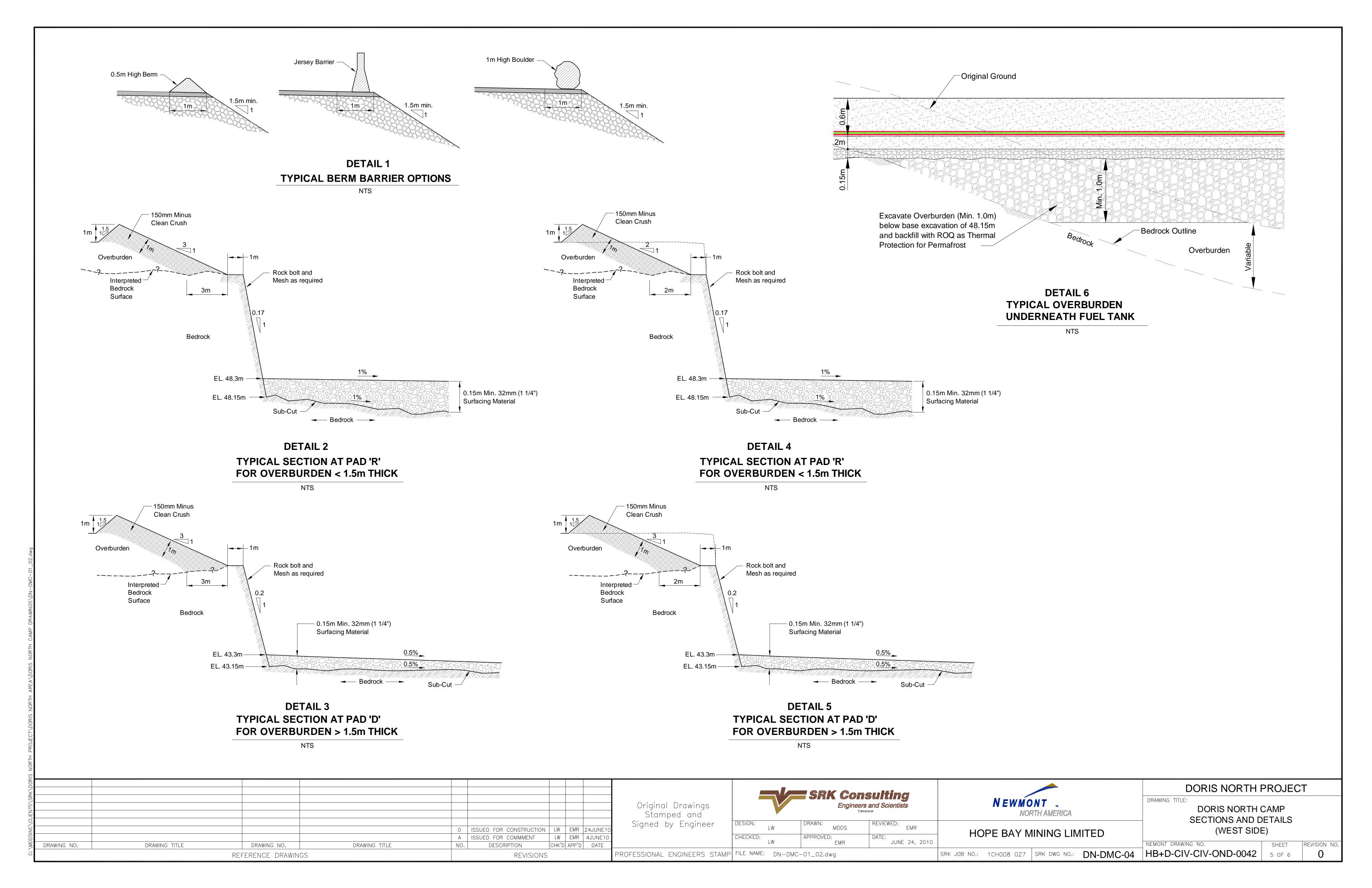
HOPE BAY MINING LIMITED

DORIS NORTH PROJECT DRAWING TITLE: DORIS NORTH CAMP SECTIONS AND DETAILS (WEST SIDE)

NEMONT DRAWING NO. REVISION NO. SHEET SRK JOB NO.: 1CHOO8 027 SRK DWG NO.: DN-DMC-03 HB+D-CIV-CIV-OND-0041 4 OF 6







- Soil classification for these works are based on the Unified Soil Classification System (USCS).
- 2. On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- Snow and ice on construction material must be removed prior to loading for construction use.
- Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or culverts. Any damage must be immediately reported to the Engineer.
- Maximum lift thickness is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- Run of Quarry, and Surfacing material has to be compacted after placement.
- Compaction will be a field specification, based on trial compaction tests to be carried out by the Contractor to the satisfaction of the Engineer.
- 9. It is the Contractor's responsibility to create the construction materials as specified through appropriate crushing. Any deviations must be approved by the Engineer
- 10. Construction fill material shall be from approved rock quarries, shall be non-acid generating, free of organic material or similar impurities, as well as snow and ice.
- 11. Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development plan.
- 12. Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 13. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness < 0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 14. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm $(1\frac{1}{4}$ ").
- 15. ROQ material shall be visually inspected by the Engineer on a routine basis and the Contractor will be advised if the material does not meet the specification in Note 17.
- The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.
- 17. Sample collection and testing of ROQ, and surface material for geochemical suitability is required and will be carried out by the Site Environmental Manager in accordance with procedures developed by SRK.

Materials List and Quantities

Item	Quantity / Are	ea / Volume	Description		
1. Run of Quarry Material	Pad B	16,964 m³	Volumes derived by Eagle Point 7.2.		
	Pad R Cut	15,660 m³	- Side slopes 1.5H:1V for fill less than 2m		
	Pad R Fill	1,134 ³	- Side slopes 2H:1V for fill greater than 2m		
	Pad C	16,197 m³	- Fills are min. 1.0m		
	Pad D Fill	8,309 m³	 Volumes derived by merging Topography/ 		
	Pad D Cut	37,000 m³	As-built to Pad Design Surfaces.		
	Pad E/P	31,372 m³			
	Pad I	14,526 m ³			
	Total Fill:	87,368 m ³			
	Total Cut:	37,000 m³			
2. Surface Grade Material	Pad B	1,267 m³			
2. Gariago Grado Material	Pad R	1,148 m ³			
	Pad C	1,153 m ³			
	Pad D	2,167 m ³			
	Pad E/P	2,628 m ³			
	Pad I	2,474 m³			
	Total Fill:	10,837 m ³			
Volume of Overburden to be Relocated	Pad E/P	3,000 m³	Approximate		

PAD E/P STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PEP-01	7,558,919.48	432,964.90	40.52	
PEP-02	7,558,906.59	433,002.59	40.43	
PEP-03	7,558,903.36	433,026.07	40.37	
PEP-04	7,558,906.62	433,060.82	40.29	
PEP-05	7,558,947.15	433,102.43	40.25	
PEP-06	7,558,971.42	433,124.60	40.27	
PEP-07	7,559,002.17	433,118.72	40.33	
PEP-08	7,559,020.66	433,114.68	40.37	
PEP-09	7,559,049.99	433,114.54	40.43	
PEP-10	7,559,070.39	433,128.67	40.42	
PEP-11	7,559,045.52	433,040.74	40.54	

PAD I STAKE-OUT TABLE			
ID	Northing	Easting	Elevation (m)
PI-01	7,559,066.95	433,130.11	38.63
PI-02	7,559,060.99	433,122.40	38.89
PI-03	7,559,047.97	433,117.24	38.96
PI-04	7,559,019.96	433,119.52	38.00
PI-05	7,558,970.86	433,130.17	37.53
PI-06	7,558,959.60	433,143.56	36.22
PI-07	7,558,982.64	433,194.28	35.97
PI-08	7,558,983.45	433,245.15	37.82
PI-09	7,559,016.12	433,298.27	37.57
PI-10	7,559,028.39	433,312.20	38.50
PI-11	7,559,041.74	433,314.16	39.50
Pl-12	7,559,049.18	433,311.31	40.00
PI-13	7,559,058.11	433,299.18	40.34
PI-14	7,559,071.72	433,239.77	39.98
PI-15	7,559,083.02	433,174.19	41.04

PAD D STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PD-01	7,559,117.24	433,090.58	43.00	
PD-02	7,559,176.74	433,090.58	43.00	
PD-03	7,559,176.74	433,240.58	43.00	
PD-04	7,559,121.97	433,240.58	43.00	
PD-05	7,559,077.76	433,240.58	43.00	
PD-06	7,559,086.30	433,204.33	43.00	
PD-07	7,559,086.93	433,174.09	43.00	
PD-08	7,559,081.90	433,156.97	43.00	
PD-09	7,559,076.33	433,133.35	43.00	

PAD C STAKE-OUT TABLE			
ID	Northing	Easting	Elevation (m)
PC-01	7,559,064.43	432,964.17	43.87
PC-02	7,559,024.15	432,979.50	43.86
PC-03	7,559,040.04	433,003.85	43.64
PC-04	7,559,017.28	432,976.48	41.12
PC-05	7,559,009.66	432,981.39	41.05
PC-06	7,559,033.11	433,009.57	43.60
PC-07	7,559,063.38	433,057.89	43.52
PC-08	7,559,070.80	433,090.58	43.00
PC-09	7,559,114.73	433,086.93	43.47
PC-10	7,559,116.72	433,068.83	43.56
PC-11	7,559,113.24	433,054.04	43.66
PC-12	7,559,121.20	433,053.17	43.71
PC-13	7,559,122.92	433,009.12	43.86
PC-14	7,559,108.11	433,004.73	43.85

PAD B STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PB-01	7,559,173.16	432,994.14	49.49	
PB-02	7,559,169.27	432,987.78	49.48	
PB-03	7,559,151.46	432,989.70	49.39	
PB-04	7,559,146.47	432,992.83	49.36	
PB-05	7,559,135.72	433,005.25	49.30	
PB-06	7,559,132.08	433,022.95	49.26	
PB-07	7,559,132.48	433,055.63	49.23	
PB-08	7,559,134.83	433,061.37	49.23	
PB-09	7,559,161.67	433,067.92	49.36	
PB-10	7,559,166.67	433,066.40	49.38	
PB-11	7,559,163.24	433,058.91	49.37	
PB-12	7,559,175.26	433,083.23	49.00	
PB-13	7,559,180.79	433,083.05	49.50	
PB-14	7,559,185.77	433,079.65	50.24	
PB-15	7,559,195.22	433,052.24	50.00	
PB-16	7,559,158.60	433,072.01	47.00	
PB-17	7,559,157.48	433,080.02	47.00	
PB-18	7,559,128.98	433,076.64	45.09	
PB-19	7,559,123.04	433,073.57	45.09	
PB-20	7,559,131.51	433,068.94	44.82	
PB-21	7,559,128.15	433,067.20	44.82	
PB-22	7,559,139.71	432,976.60	45.50	
PB-23	7,559,156.19	432,973.70	46.50	
PB-24	7,559,171.16	432,974.14	47.38	
PB-25	7,559,179.89	432,979.71	48.00	

PAD R STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PR-01	7,559,174.38	432,992.43	48.50		
PR-02	7,559,182.97	432,990.53	48.50		
PR-03	7,559,243.98	432,977.03	48.50		
PR-04	7,559,257.17	433,036.67	48.50		
PR-05	7,559,193.47	433,050.72	48.50		
PR-06	7,559,184.44	433,052.90	48.50		

_								
			Α	ISSUED FOR COMMENT	LW	EMR	4JUNE10	
DRAWING TITLE	DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION	CHK'D	APP'D	DATE	
REFERENCE DRAWINGS				REVISIONS				PF
	DRAWING TITLE	DRAWING TITLE DRAWING NO.	DRAWING TITLE DRAWING NO. DRAWING TITLE	DRAWING TITLE DRAWING NO. DRAWING TITLE NO.	DRAWING TITLE DRAWING NO. DRAWING TITLE NO. DESCRIPTION	DRAWING TITLE DRAWING NO. DRAWING TITLE NO. DESCRIPTION CHK'D	DRAWING TITLE DRAWING NO. DRAWING TITLE NO. DESCRIPTION CHK'D APP'D	DRAWING TITLE DRAWING NO. DRAWING TITLE NO. DESCRIPTION CHK'D APP'D DATE



	DESIGN:	DRAWN: MDDS	REVIEWED: EMR	ЦО
)	CHECKED:	APPROVED: EMR	DATE: JUNE 4, 2010	ПО
	PROFESSIONAL ENGINEER'S STAMP FILE NAME: DN-CMP	-03.dwg		SRK JOB NO.:



1CH008 027

HOPE BAY MINING LIMITED

Doris North Project

DRAWING TITLE:

MATERIAL SPECIFICATIONS

DRAWING NO.	CLIEFT	REVISION

DN-CMP-04 5 OF 5

- Soil classification for these works are based on the Unified Soil Classification System (USCS).
- 2. On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- Snow and ice on construction material must be removed prior to loading for
- Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or culverts. Any damage must be immediately reported to the Engineer.
- Maximum lift thickness is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- Run of Quarry, and Surfacing material has to be compacted after placement.
- Compaction will be a field specification, based on trial compaction tests to be carried out by the Contractor to the satisfaction of the Engineer.
- 9. It is the Contractor's responsibility to create the construction materials as specified through appropriate crushing. Any deviations must be approved by the Engineer.
- 10. Construction fill material shall be from approved rock quarries, shall be non-acid generating, free of organic material or similar impurities, as well as snow and ice.
- 11. Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development plan.
- 12. Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 13. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness < 0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 14. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm $(1\frac{1}{4}$ ").
- $\frac{3}{4}$ " Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm $(1\frac{1}{4}")$ but no smaller than 19mm $(\frac{3}{4}")$
- 16. ROQ material shall be visually inspected by the Engineer on a routine basis and the Contractor will be advised if the material does not meet the specification in Note 17.
- 17. The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.
- Sample collection and testing of ROQ, and surface material for geochemical suitability is required and will be carried out by the Site Environmental Manager in accordance with procedures developed by SRK.

Materials List and Quantities

Item	Quantity / Area / Volume		Description		
1. Run of Quarry Material	Pad B Pad R Fill Pad C Pad D Fill Pad E/P Pad I Total Fill:	16,964 m ³ 1,134 m ³ 16,197 m ³ 8,309 m ³ 31,372 m ³ 14,526 m ³ 88,502 m ³	Volumes derived by Eagle Point 7.2. - Side slopes 1.5H:1V for fill less than 2m - Side slopes 2H:1V for fill greater than 2m - Fills are min. 1.0m - Volumes derived by merging Topography/ As-built to Pad Design Surfaces.		
2. Surface Grade Material	Pad B Pad R Pad C Pad D Pad E/P Pad I Total Fill:	1,267 m ³ 1,148 m ³ 1,153 m ³ 2,167 m ³ 2,628 m ³ 2,474 m ³			
Volume of Overburden to be Relocated	Pad E/P	3,000 m³	Approximate		
4. Volume of Rock Cut	Pad R Cut Pad D Cut	15,660 m³ 37,000 m³			
	Total Cut:	52,660 m³			

PAD E/P STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PEP-01	7,558,919.48	432,964.90	40.52		
PEP-02	7,558,906.59	433,002.59	40.43		
PEP-03	7,558,903.36	433,026.07	40.37		
PEP-04	7,558,906.62	433,060.82	40.29		
PEP-05	7,558,947.15	433,102.43	40.25		
PEP-06	7,558,971.42	433,124.60	40.27		
PEP-07	7,559,002.17	433,118.72	40.33		
PEP-08	7,559,020.66	433,114.68	40.37		
PEP-09	7,559,049.99	433,114.54	40.43		
PEP-10	7,559,070.39	433,128.67	40.42		
PEP-11	7,559,045.52	433,040.74	40.54		

PAD I STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PI-01	7,559,066.95	433,130.11	38.63		
PI-02	7,559,060.99	433,122.40	38.89		
PI-03	7,559,047.97	433,117.24	38.96		
PI-04	7,559,019.96	433,119.52	38.00		
PI-05	7,558,970.86	433,130.17	37.53		
PI-06	7,558,959.60	433,143.56	36.22		
PI-07	7,558,982.64	433,194.28	35.97		
PI-08	7,558,983.45	433,245.15	37.82		
PI-09	7,559,016.12	433,298.27	37.57		
PI-10	7,559,028.39	433,312.20	38.50		
PI-11	7,559,041.74	433,314.16	39.50		
PI-12	7,559,049.18	433,311.31	40.00		
PI-13	7,559,058.11	433,299.18	40.34		
PI-14	7,559,071.72	433,239.77	39.98		
PI-15	7,559,083.02	433,174.19	41.04		

PAD C STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PC-01	7,559,064.43	432,964.17	43.87		
PC-02	7,559,024.15	432,979.50	43.86		
PC-03	7,559,040.04	433,003.85	43.64		
PC-04	7,559,017.28	432,976.48	41.12		
PC-05	7,559,009.66	432,981.39	41.05		
PC-06	7,559,033.11	433,009.57	43.60		
PC-07	7,559,063.38	433,057.89	43.52		
PC-08	7,559,070.80	433,090.58	43.00		
PC-09	7,559,114.73	433,086.93	43.47		
PC-10	7,559,116.72	433,068.83	43.56		
PC-11	7,559,113.24	433,054.04	43.66		
PC-12	7,559,121.20	433,053.17	43.71		
PC-13	7,559,122.92	433,009.12	43.86		
PC-14	7,559,108.11	433,004.73	43.85		

	PAD B STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)			
PB-01	7,559,173.16	432,994.14	49.49			
PB-02	7,559,169.27	432,987.78	49.48			
PB-03	7,559,151.46	432,989.70	49.39			
PB-04	7,559,146.47	432,992.83	49.36			
PB-05	7,559,135.72	433,005.25	49.30			
PB-06	7,559,132.08	433,022.95	49.26			
PB-07	7,559,132.48	433,055.63	49.23			
PB-08	7,559,134.83	433,061.37	49.23			
PB-09	7,559,161.67	433,067.92	49.36			
PB-10	7,559,166.67	433,066.40	49.38			
PB-11	7,559,163.24	433,058.91	49.37			
PB-12	7,559,175.26	433,083.23	49.00			
PB-13	7,559,180.79	433,083.05	49.50			
PB-14	7,559,185.77	433,079.65	50.24			
PB-15	7,559,195.22	433,052.24	50.00			
PB-16	7,559,158.60	433,072.01	47.00			
PB-17	7,559,157.48	433,080.02	47.00			
PB-18	7,559,128.98	433,076.64	45.09			
PB-19	7,559,123.04	433,073.57	45.09			
PB-20	7,559,131.51	433,068.94	44.82			
PB-21	7,559,128.15	433,067.20	44.82			
PB-22	7,559,139.71	432,976.60	45.50			
PB-23	7,559,156.19	432,973.70	46.50			
PB-24	7,559,171.16	432,974.14	47.38			
PB-25	7,559,179.89	432,979.71	48.00			

PAD R STAKE-OUT TABLE					
ID	Northing	Easting	Base Elev.	Surface Elev.	
PR-01	7,559,174.38	432,992.43	47.54	48.13	
PR-02	7,559,182.97	432,990.53	47.63	48.16	
PR-03	7,559,243.98	432,977.03	48.25	48.50	
PR-04	7,559,257.17	433,036.67	48.25	48.50	
PR-05	7,559,200.53	433,049.16	47.70	48.20	
PR-06	7,559,184.44	433,052.90	47.54	48.14	
PR-07	7,559,189.37	433,020.91	47.63	47.80	

	PAD D STAKE-OUT TABLE					
ID	Northing	Easting	Base Elev.	Surface Elev.		
PD-01	7,559,117.24	433,090.58	43.08	43.23		
PD-02	7,559,176.74	433,090.58	43.38	43.53		
PD-03	7,559,176.74	433,240.58	43.34	43.49		
PD-04	7,559,121.97	433,240.58	43.07	43.22		
PD-05	7,559,077.76	433,240.58	42.85	43.00		
PD-06	7,559,086.30	433,204.33	42.85	43.00		
PD-07	7,559,086.93	433,174.09	42.85	43.00		
PD-08	7559081.901	433156.97	42.85	43.00		
PD-09	7559076.325	433133.353	42.85	43.00		

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				1 1	ISSUED FOR CONSTRUCTION	LW EMR	. DT	30JUNE10
				0	ISSUED FOR CONSTRUCTION	LW EMR		24JUNE10
DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION	CHK'D APP'	CLIENT	DATE
	RF	FERENCE DRAWING	iGS	1	RFVIS	JONS		l

Original Drawings Stamped and Signed by Engineer

PROFESSIONAL ENGINEER'S STAMP FILE NAME: DN-DMC-05.dwg





DRAWING TITLE: MATERIAL SPECIFICATIONS (WEST SIDE)

Doris North Project

SHEET 6 OF 10

SRK JOB NO.: 1CH008 027 | SRK DWG NO.: DN-DMC-05 | HB+D-CIV-CIV-OND-0052

HOPE BAY MINING LIMITED

NEMONT DRAWING NO.

REVISION NO

- Soil classification for these works are based on the Unified Soil Classification System (USCS).
- 2. On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- Snow and ice on construction material must be removed prior to loading for
- Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or culverts. Any damage must be immediately reported to the Engineer.
- Maximum lift thickness is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- Run of Quarry, and Surfacing material has to be compacted after placement.
- Compaction will be a field specification, based on trial compaction tests to be carried out by the Contractor to the satisfaction of the Engineer.
- 9. It is the Contractor's responsibility to create the construction materials as specified through appropriate crushing. Any deviations must be approved by the Engineer.
- Construction fill material shall be from approved rock quarries, shall be non-acid generating, free of organic material or similar impurities, as well as snow and ice.
- 11. Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development plan.
- Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 13. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness < 0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 14. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm $(1\frac{1}{4}$ ").
- $\frac{3}{4}$ " Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm $(1\frac{1}{4}")$ but no smaller than 19mm $(\frac{3}{4}")$
- ROQ material shall be visually inspected by the Engineer on a routine basis and the Contractor will be advised if the material does not meet the specification in Note 17.
- 17. The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.
- Sample collection and testing of ROQ, and surface material for geochemical suitability is required and will be carried out by the Site Environmental Manager in accordance with procedures developed by SRK.

Materials List and Quantities

Item	Quantity / Area / Volume		Description
1. Run of Quarry Material	Pad B Pad R Fill Pad C Pad D Fill Pad E/P Pad I Total Fill:	16,964 m ³ 1,134 m ³ 16,197 m ³ 8,309 m ³ 31,372 m ³ 14,526 m ³ 88,502 m ³	Volumes derived by Eagle Point 7.2. - Side slopes 1.5H:1V for fill less than 2m - Side slopes 2H:1V for fill greater than 2m - Fills are min. 1.0m - Volumes derived by merging Topography/ As-built to Pad Design Surfaces.
2. Surface Grade Material	Pad B Pad R Pad C Pad D Pad E/P Pad I Total Fill:	1,267 m ³ 1,148 m ³ 1,153 m ³ 2,167 m ³ 2,628 m ³ 2,474 m ³	
Volume of Overburden to be Relocated	Pad E/P	3,000 m³	Approximate
4. Volume of Rock Cut	Pad R Cut Pad D Cut	15,660 m³ 37,000 m³	
	Total Cut:	52,660 m ³	

PAD E/P STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PEP-01	7,558,919.48	432,964.90	40.52		
PEP-02	7,558,906.59	433,002.59	40.43		
PEP-03	7,558,903.36	433,026.07	40.37		
PEP-04	7,558,906.62	433,060.82	40.29		
PEP-05	7,558,947.15	433,102.43	40.25		
PEP-06	7,558,971.42	433,124.60	40.27		
PEP-07	7,559,002.17	433,118.72	40.33		
PEP-08	7,559,020.66	433,114.68	40.37		
PEP-09	7,559,049.99	433,114.54	40.43		
PEP-10	7,559,070.39	433,128.67	40.42		
PEP-11	7,559,045.52	433,040.74	40.54		

PAD I STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PI-01	7,559,066.95	433,130.11	38.63		
PI-02	7,559,060.99	433,122.40	38.89		
PI-03	7,559,047.97	433,117.24	38.96		
PI-04	7,559,019.96	433,119.52	38.00		
PI-05	7,558,970.86	433,130.17	37.53		
PI-06	7,558,959.60	433,143.56	36.22		
PI-07	7,558,982.64	433,194.28	35.97		
PI-08	7,558,983.45	433,245.15	37.82		
PI-09	7,559,016.12	433,298.27	37.57		
PI-10	7,559,028.39	433,312.20	38.50		
PI-11	7,559,041.74	433,314.16	39.50		
PI-12	7,559,049.18	433,311.31	40.00		
Pl-13	7,559,058.11	433,299.18	40.34		
PI-14	7,559,071.72	433,239.77	39.98		
PI-15	7,559,083.02	433,174.19	41.04		

PAD C STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PC-01	7,559,064.43	432,964.17	43.87	
PC-02	7,559,024.15	432,979.50	43.86	
PC-03	7,559,040.04	433,003.85	43.64	
PC-04	7,559,017.28	432,976.48	41.12	
PC-05	7,559,009.66	432,981.39	41.05	
PC-06	7,559,033.11	433,009.57	43.60	
PC-07	7,559,063.38	433,057.89	43.52	
PC-08	7,559,070.80	433,090.58	43.00	
PC-09	7,559,114.73	433,086.93	43.47	
PC-10	7,559,116.72	433,068.83	43.56	
PC-11	7,559,113.24	433,054.04	43.66	
PC-12	7,559,121.20	433,053.17	43.71	
PC-13	7,559,122.92	433,009.12	43.86	
PC-14	7,559,108.11	433,004.73	43.85	

PAD D STAKE-OUT TABLE					
ID	Northing	Easting	Base Elev.	Surface Elev.	
PD-01	7,559,117.24	433,090.58	43.25	43.40	
PD-02	7,559,176.74	433,090.58	43.85	44.00	
PD-03	7,559,176.74	433,240.58	43.85	44.00	
PD-04	7,559,121.97	433,240.58	43.25	43.40	
PD-05	7,559,077.76	433,240.58	42.85	43.00	
PD-06	7,559,086.30	433,204.33	42.85	43.00	
PD-07	7,559,086.93	433,174.09	42.85	43.00	
PD-08	7559081.901	433156.97	42.85	43.00	
PD-09	7559076.325	433133.353	42.85	43.00	

PAD B STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
PB-01	7,559,173.16	432,994.14	49.49		
PB-02	7,559,169.27	432,987.78	49.48		
PB-03	7,559,151.46	432,989.70	49.39		
PB-04	7,559,146.47	432,992.83	49.36		
PB-05	7,559,135.72	433,005.25	49.30		
PB-06	7,559,132.08	433,022.95	49.26		
PB-07	7,559,132.48	433,055.63	49.23		
PB-08	7,559,134.83	433,061.37	49.23		
PB-09	7,559,161.67	433,067.92	49.36		
PB-10	7,559,166.67	433,066.40	49.38		
PB-11	7,559,163.24	433,058.91	49.37		
PB-12	7,559,175.26	433,083.23	49.00		
PB-13	7,559,180.79	433,083.05	49.50		
PB-14	7,559,185.77	433,079.65	50.24		
PB-15	7,559,195.22	433,052.24	50.00		
PB-16	7,559,158.60	433,072.01	47.00		
PB-17	7,559,157.48	433,080.02	47.00		
PB-18	7,559,128.98	433,076.64	45.09		
PB-19	7,559,123.04	433,073.57	45.09		
PB-20	7,559,131.51	433,068.94	44.82		
PB-21	7,559,128.15	433,067.20	44.82		
PB-22	7,559,139.71	432,976.60	45.50		
PB-23	7,559,156.19	432,973.70	46.50		
PB-24	7,559,171.16	432,974.14	47.38		
PB-25	7,559,179.89	432,979.71	48.00		

PAD R STAKE-OUT TABLE					
ID	Northing	Easting	Base Elev.	Surface Elev.	
PR-01	7,559,174.38	432,992.43	47.54	48.13	
PR-02	7,559,182.97	432,990.53	47.63	48.16	
PR-03	7,559,243.98	432,977.03	48.25	48.50	
PR-04	7,559,257.17	433,036.67	48.25	48.50	
PR-05	7,559,200.53	433,049.16	47.70	48.20	
PR-06	7,559,184.44	433,052.90	47.54	48.14	
PR-07	7,559,189.37	433,020.91	47.63	47.80	
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O ISSUED FOR CONSTRUCTION LW EMR 24JUNE DRAWING TITLE DRAWING NO. DRAWING TITLE DESCRIPTION DRAWING NO.

Original Drawings Stamped and Signed by Engineer





HOPE BAY MINING LIMITED

Doris North Project DRAWING TITLE:

> MATERIAL SPECIFICATIONS (WEST SIDE)

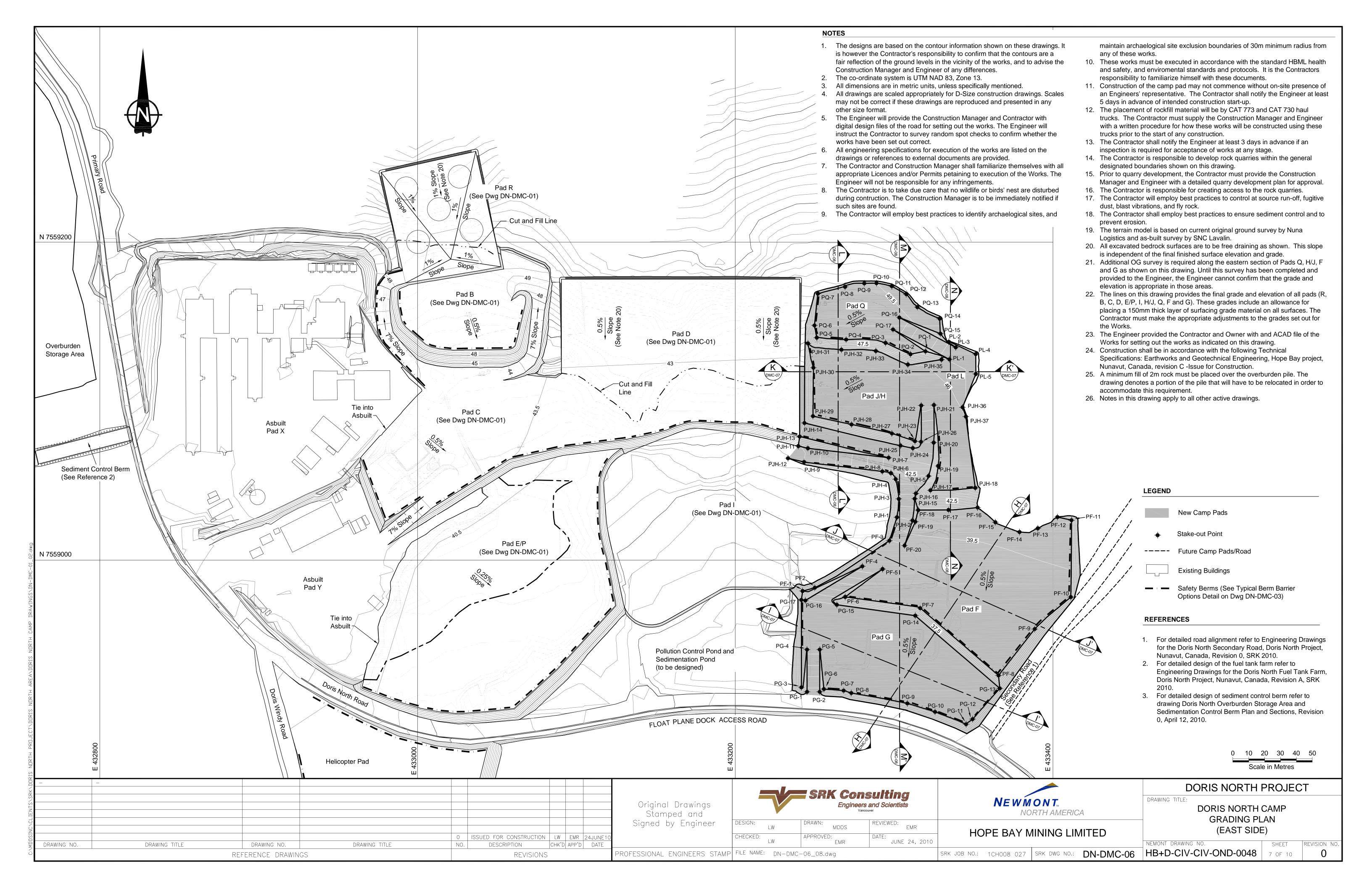
NEMONT DRAWING NO. REVISION NO SRK JOB NO.: 1CH008 027 SRK DWG NO.: DN-DMC-05 HB+D-CIV-CIV-OND-0043 6 OF 6

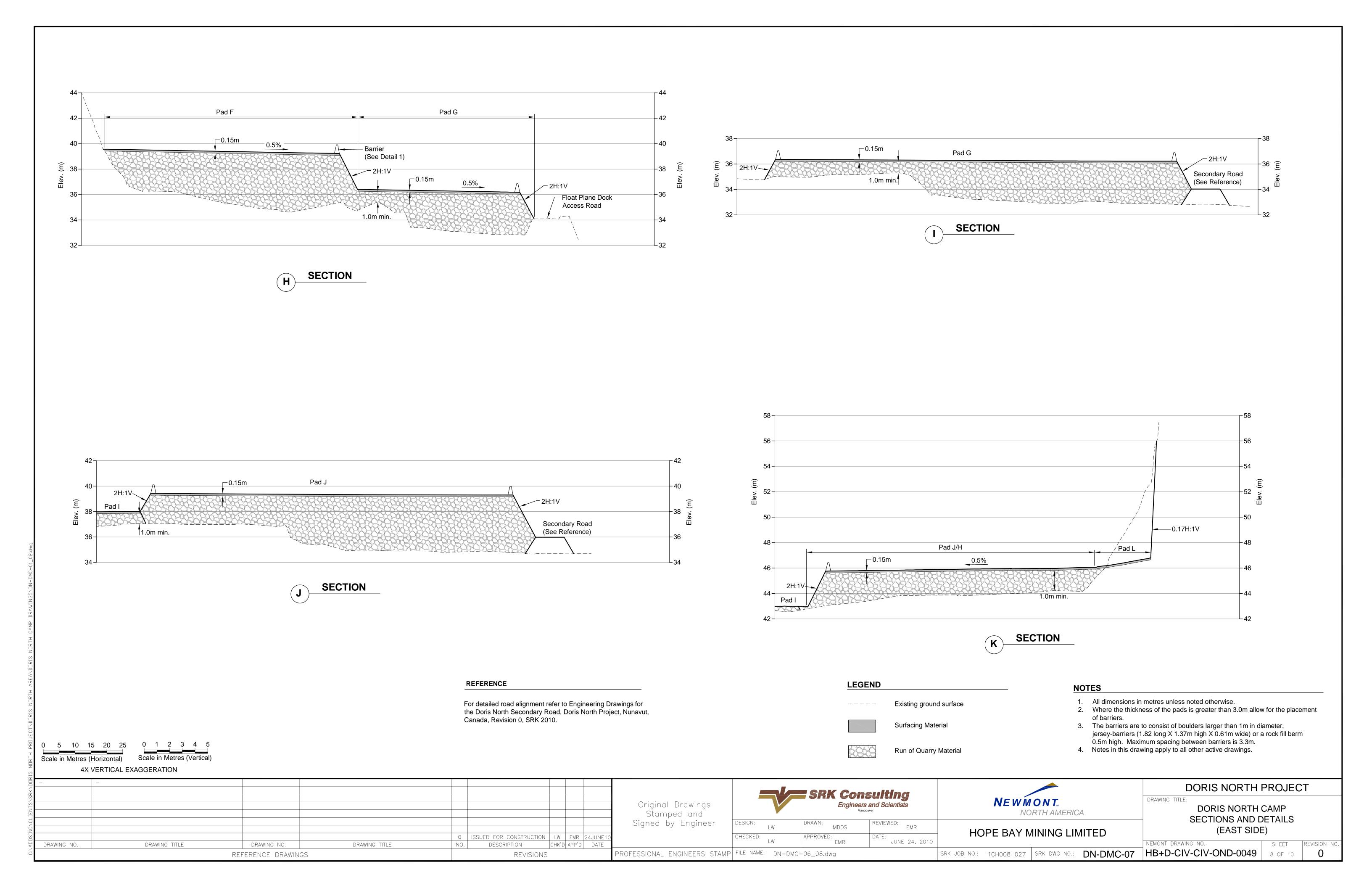
REFERENCE DRAWINGS

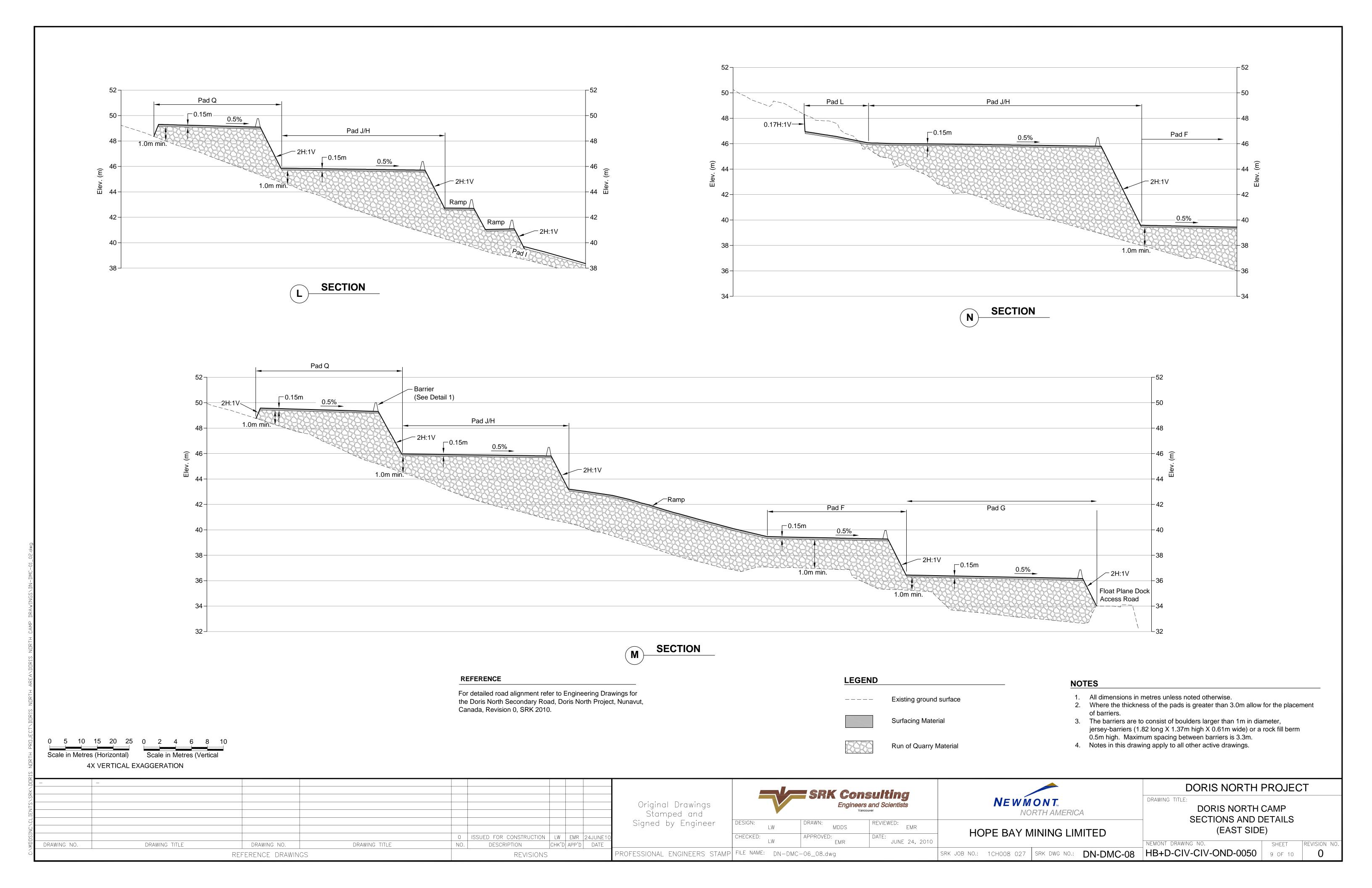
REVISIONS

CHK'D APP'D DATE

PROFESSIONAL ENGINEER'S STAMP FILE NAME: DN-DMC-05.dwg







- Soil classification for these works are based on the Unified Soil Classification System (USCS).
- On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- Snow and ice on construction material must be removed prior to loading for
- Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or culverts. Any damage must be immediately reported to the Engineer.
- Maximum lift thickness is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- Run of Quarry, and Surfacing material has to be compacted after placement.
- Compaction will be a field specification, based on trial compaction tests to be carried out by the Contractor to the satisfaction of the Engineer.
- 9. It is the Contractor's responsibility to create the construction materials as specified through appropriate crushing. Any deviations must be approved by the Engineer.
- Construction fill material shall be from approved rock quarries, shall be non-acid generating, free of organic material or similar impurities, as well as snow and ice.
- Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development plan.
- 12. Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 13. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness < 0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 14. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm $(1\frac{1}{4})$.
- $\frac{3}{4}$ " Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm $(1\frac{1}{4}")$ but no smaller than 19mm $(\frac{3}{4}")$
- ROQ material shall be visually inspected by the Engineer on a routine basis and the Contractor will be advised if the material does not meet the specification in Note 17.
- The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.
- Sample collection and testing of ROQ, and surface material for geochemical suitability is required and will be carried out by the Site Environmental Manager in accordance with procedures developed by SRK.

Materials List and Quantities

Item	Quantity / Area /	Volume	Description
1. Run of Quarry Material	Pad G/F Pad J/H Pad Q	48,740 m³ 26,440 m³ 6,820 m³	Volumes derived by Eagle Point 7.2 Side slopes 1.5H:1V for fill less than 2m - Side slopes 2H:1V for fill greater than 2m - Fills are min. 1.0m
	Total Fill: Total Cut: (Pad L)	82,000 m ³ 1,293 m ³	 Volumes derived by merging Topography/ As-built to Pad Design Surfaces.
2. Surface Grade Material	Pad G/F Pad J/H Pad L Pad Q	2,200 m³ 1,100 m³ 75 m³ 380 m³	
	Total Fill:	3,755 m³	
3. Volume of Rock Cut	Pad L	1,293 m³	
	Total Fill:	1,293 m³	

PAD G STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PG-1	7,558,917.14	433,245.19	34.33	
PG-2	7,558,917.14	433,253.19	34.33	
PG-3	7,558,919.92	433,241.61	36.18	
PG-4	7,558,943.72	433,245.19	36.19	
PG-5	7,558,943.72	433,253.19	36.19	
PG-6	7,558,918.85	433,255.82	36.18	
PG-7	7,558,917.89	433,268.24	36.18	
PG-8	7,558,916.38	433,273.04	36.18	
PG-9	7,558,909.84	433,308.33	36.17	
PG-10	7,558,904.51	433,325.76	36.15	
PG-11	7,558,896.74	433,345.32	36.14	
PG-12	7,558,899.95	433,349.42	36.16	
PG-13	7,558,919.31	433,366.52	36.28	
PG-14	7,558,965.06	433,313.33	36.45	
PG-15	7,558,971.88	433,263.96	36.45	
PG-16	7,558,974.62	433,244.15	36.46	
PG-17	7,558,974.97	433,241.61	36.46	

	PAD L STAKE	-OUT TABLE	
ID	Northing	Easting	Elevation (m)
PL-1	7,559,126.33	433,334.82	46.57
PL-2	7,559,137.40	433,334.44	47.82
PL-3	7,559,133.85	433,338.80	46.62
PL-4	7,559,129.64	433,351.42	46.80
PL-5	7,559,117.13	433,351.48	46.80

	PAD F STAKE	-OUT TABLE	
ID	Northing	Easting	Elevation (m)
PF-1	7,558,980.57	433,242.39	39.29
PF-2	7,558,982.64	433,250.10	39.30
PF-3	7,559,012.23	433,297.05	39.47
PF-4	7,558,996.12	433,280.03	39.39
PF-5	7,558,994.36	433,292.76	39.38
PF-6	7,558,976.86	433,269.22	39.28
PF-7	7,558,969.78	433,316.43	39.27
PF-8	7,558,927.43	433,365.74	39.11
PF-9	7,558,956.65	433,388.55	39.29
PF-10	7,558,976.76	433,411.24	39.42
PF-11	7,559,025.12	433,411.70	39.65
PF-12	7,559,027.09	433,402.83	39.65
PF-13	7,559,020.01	433,390.48	39.59
PF-14	7,559,017.67	433,378.95	39.56
PF-15	7,559,023.83	433,363.75	39.56
PF-16	7,559,033.08	433,352.56	39.61
PF-17	7,559,031.57	433,334.20	39.59
PF-18	7,559,031.46	433,315.17	39.58
PF-19	7,559,024.15	433,313.39	39.54
PF-20	7,559,009.14	433,306.58	39.46

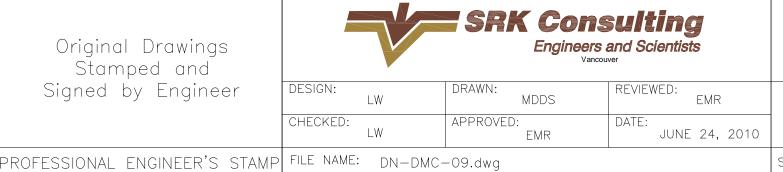
ID	Northing	Easting	Elevation (m)
PJH-1	7,559,026.96	433,301.80	40.49
PJH-2	7,559,024.92	433,311.62	40.50
PJH-3	7,559,038.53	433,302.95	41.30
PJH-4	7,559,050.91	433,301.00	42.19
PJH-5	7,559,052.90	433,321.65	42.50
PJH-6	7,559,054.73	433,298.01	42.50
PJH-7	7,559,064.41	433,296.57	42.65
PJH-8	7,559,055.81	433,292.60	42.50
PJH-9	7,559,061.74	433,243.35	40.00
PJH-10	7,559,070.37	433,245.72	40.08
PJH-11	7,559,071.75	433,239.69	39.97
PJH-12	7,559,064.08	433,233.21	39.41
PJH-13	7,559,077.76	433,240.58	43.00
PJH-14	7,559,086.29	433,243.58	42.99
PJH-15	7,559,038.62	433,312.98	41.30
PJH-16	7,559,041.97	433,313.75	41.54
PJH-17	7,559,043.91	433,322.85	45.76
PJH-18	7,559,045.51	433,351.10	45.86
PJH-19	7,559,059.26	433,327.68	45.83
PJH-20	7,559,073.95	433,324.94	44.00
PJH-21	7,559,097.56	433,325.07	45.90
PJH-22	7,559,097.31	433,317.07	45.90
PJH-23	7,559,074.83	433,313.15	45.80
PJH-24	7,559,070.49	433,311.79	43.50
PJH-25	7,559,072.03	433,304.08	43.00
PJH-26	7,559,074.43	433,316.96	44.00
PJH-27	7,559,079.67	433,298.63	45.80
PJH-28	7,559,085.34	433,273.21	45.73
PJH-29	7,559,090.58	433,248.91	45.66
PJH-30	7,559,121.06	433,249.20	45.77
PJH-31	7,559,136.34	433,245.76	45.65
PJH-32	7,559,132.38	433,266.86	45.87
PJH-33	7,559,131.58	433,288.51	45.95
PJH-34	7,559,123.06	433,308.68	45.99
PJH-35	7,559,126.18	433,329.85	46.07
PJH-36	7,559,096.16	433,343.08	46.41
PJH-37	7,559,090.29	433,345.20	46.00

PAD J/H STAKE-OUT TABLE

PAD J/H STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PQ-1	7,559,131.39	433,319.74	49.43	
PQ-2	7,559,129.58	433,310.31	49.35	
PQ-3	7,559,136.68	433,294.61	49.28	
PQ-4	7,559,138.75	433,269.81	49.12	
PQ-5	7,559,139.99	433,251.34	48.99	
PQ-6	7,559,147.66	433,249.88	49.04	
PQ-7	7,559,167.67	433,252.02	49.19	
PQ-8	7,559,171.97	433,269.13	49.34	
PQ-9	7,559,174.14	433,281.23	49.45	
PQ-10	7,559,174.27	433,288.92	49.50	
PQ-11	7,559,172.34	433,298.58	49.56	
PQ-12	7,559,167.34	433,307.69	49.59	
PQ-13	7,559,159.20	433,314.65	49.58	
PQ-14	7,559,151.90	433,328.68	49.63	
PQ-15	7,559,142.45	433,329.17	49.57	
PQ-16	7,559,152.65	433,303.31	49.46	
PQ-17	7,559,145.11	433,299.32	49.38	

				0	ISSUED FOR CONSTRUCTION	LW	EMR	24JUNE10
DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION		APP'D	
	REFERENCE DRAWINGS				REVISIONS	'		F

Original Drawings Stamped and Signed by Engineer



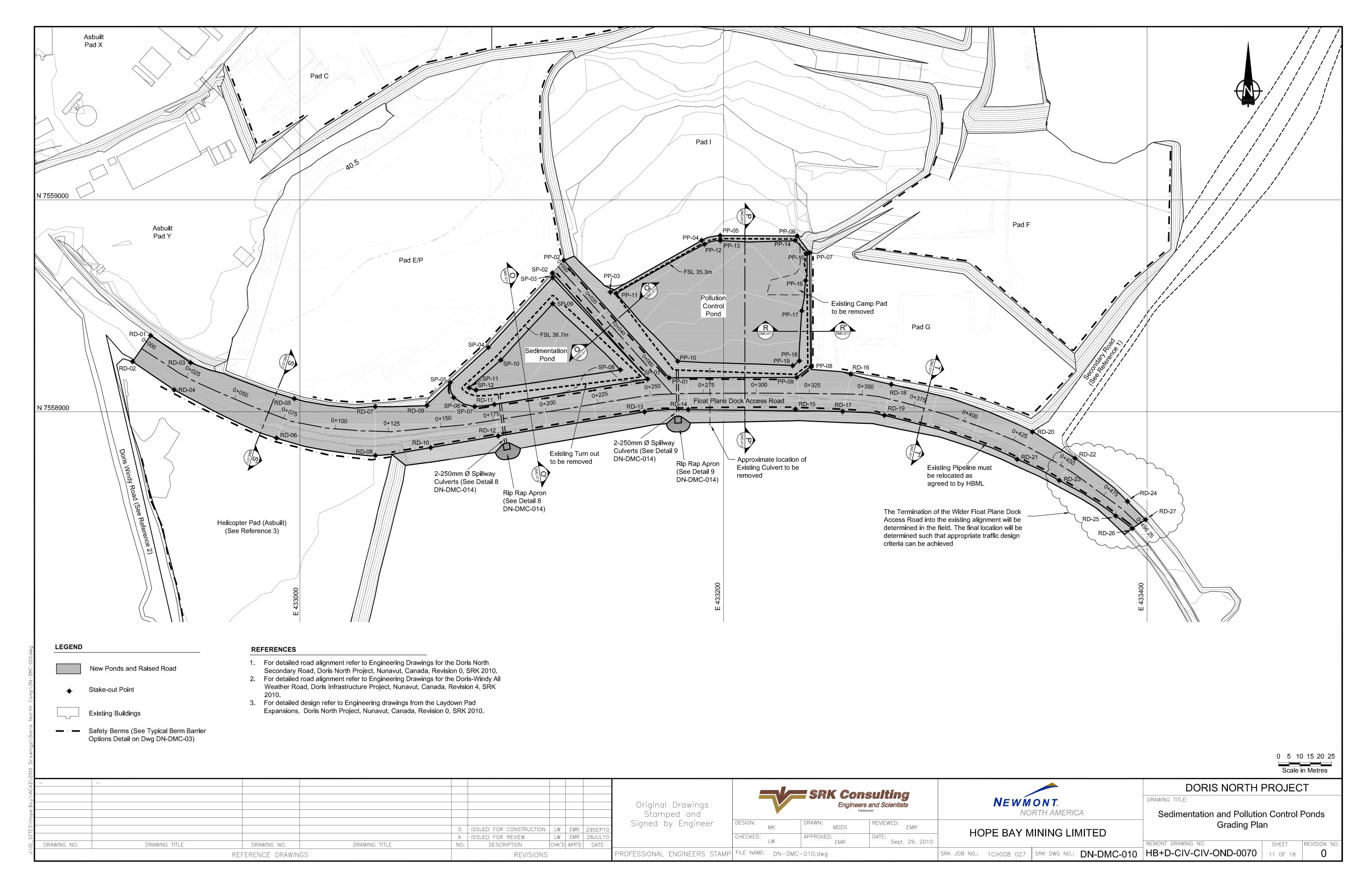
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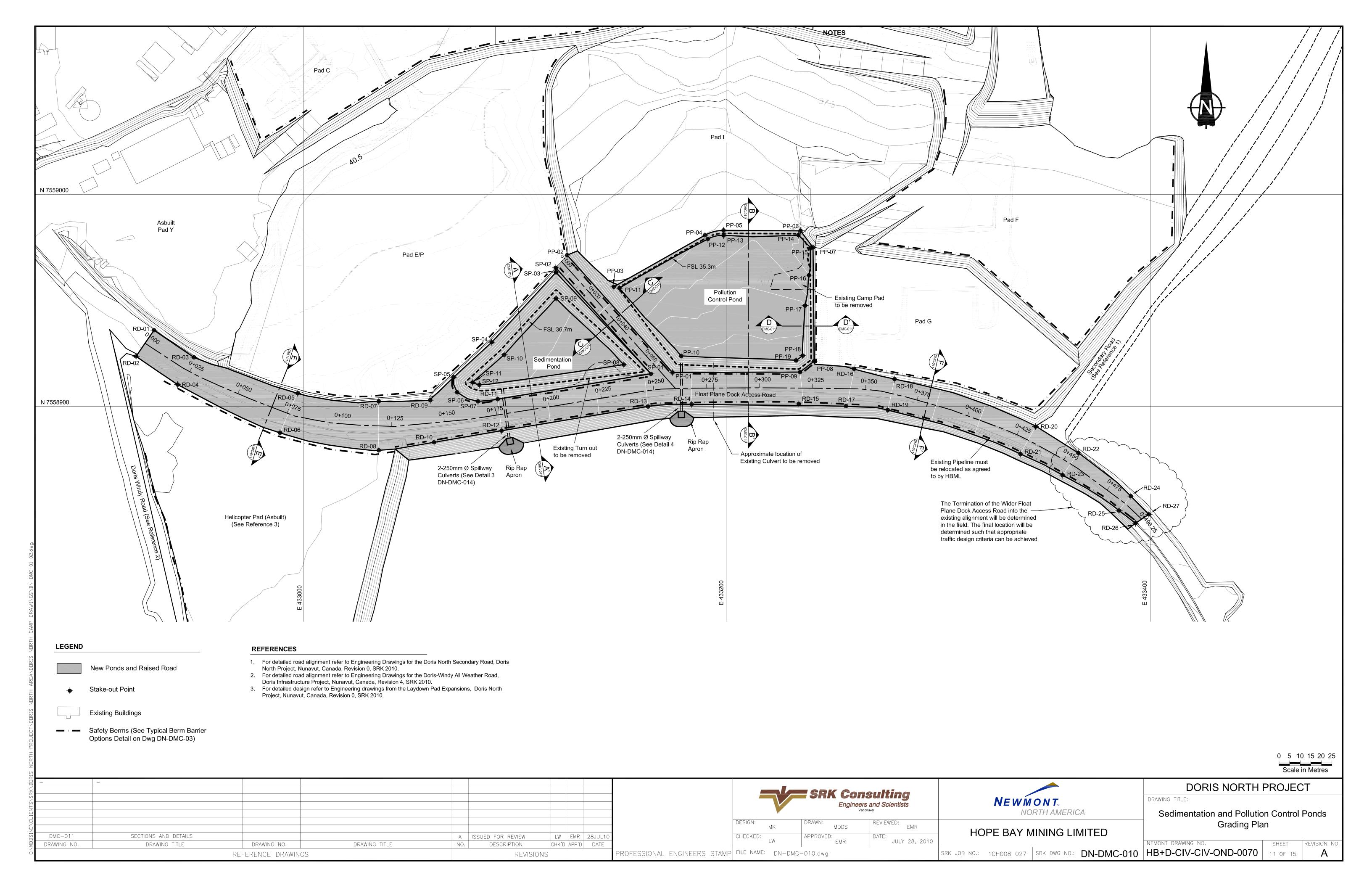
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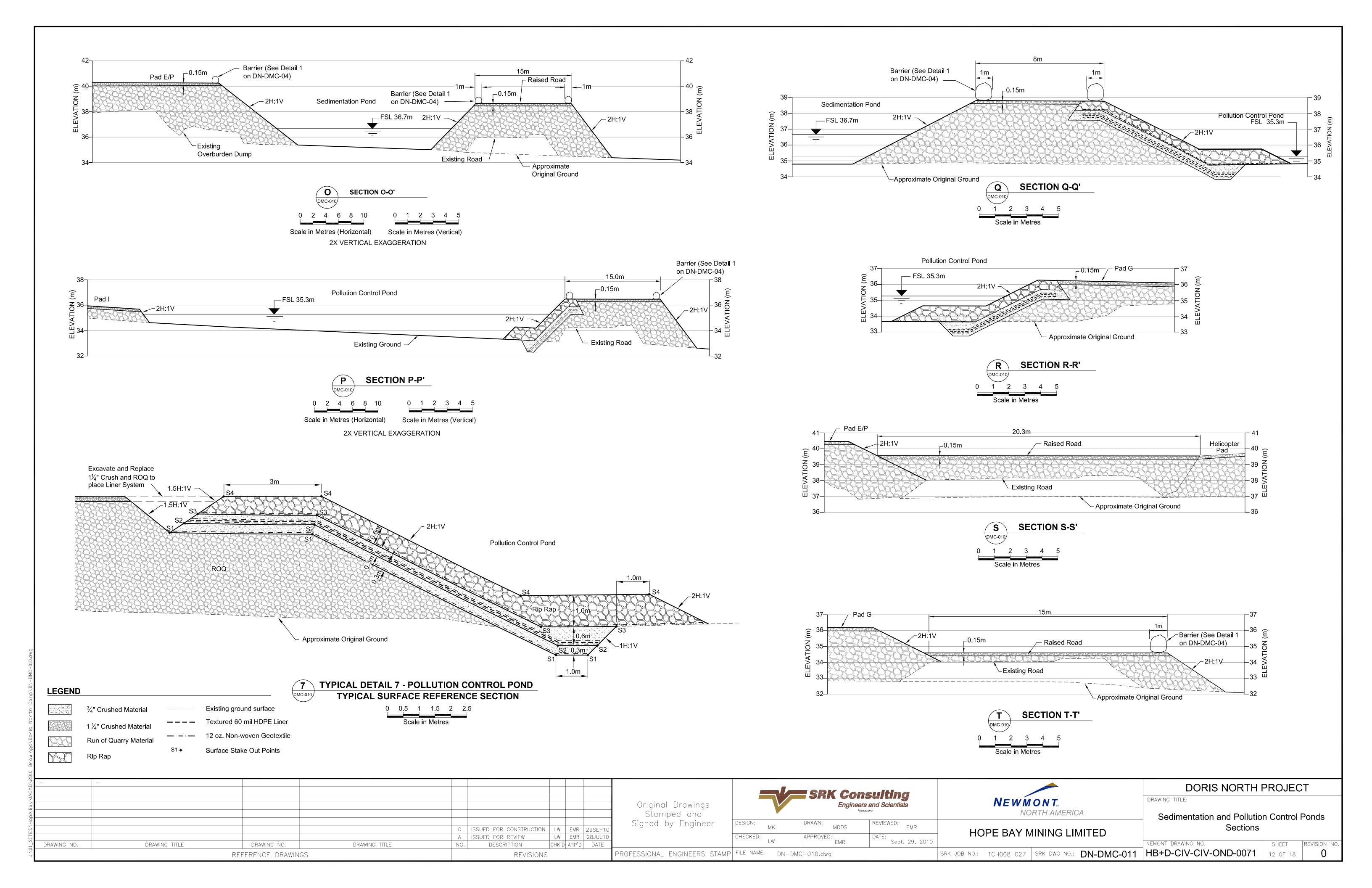
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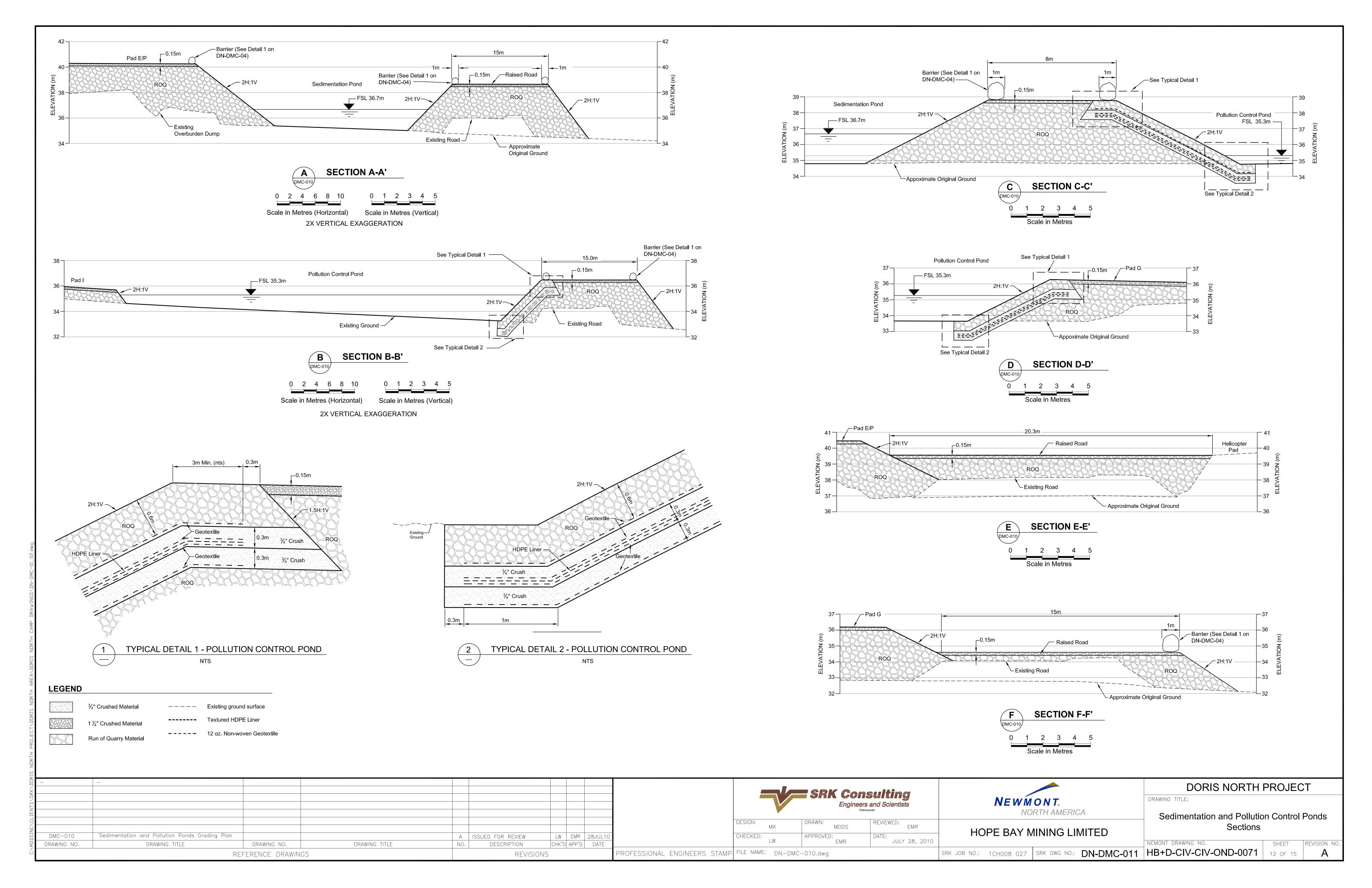
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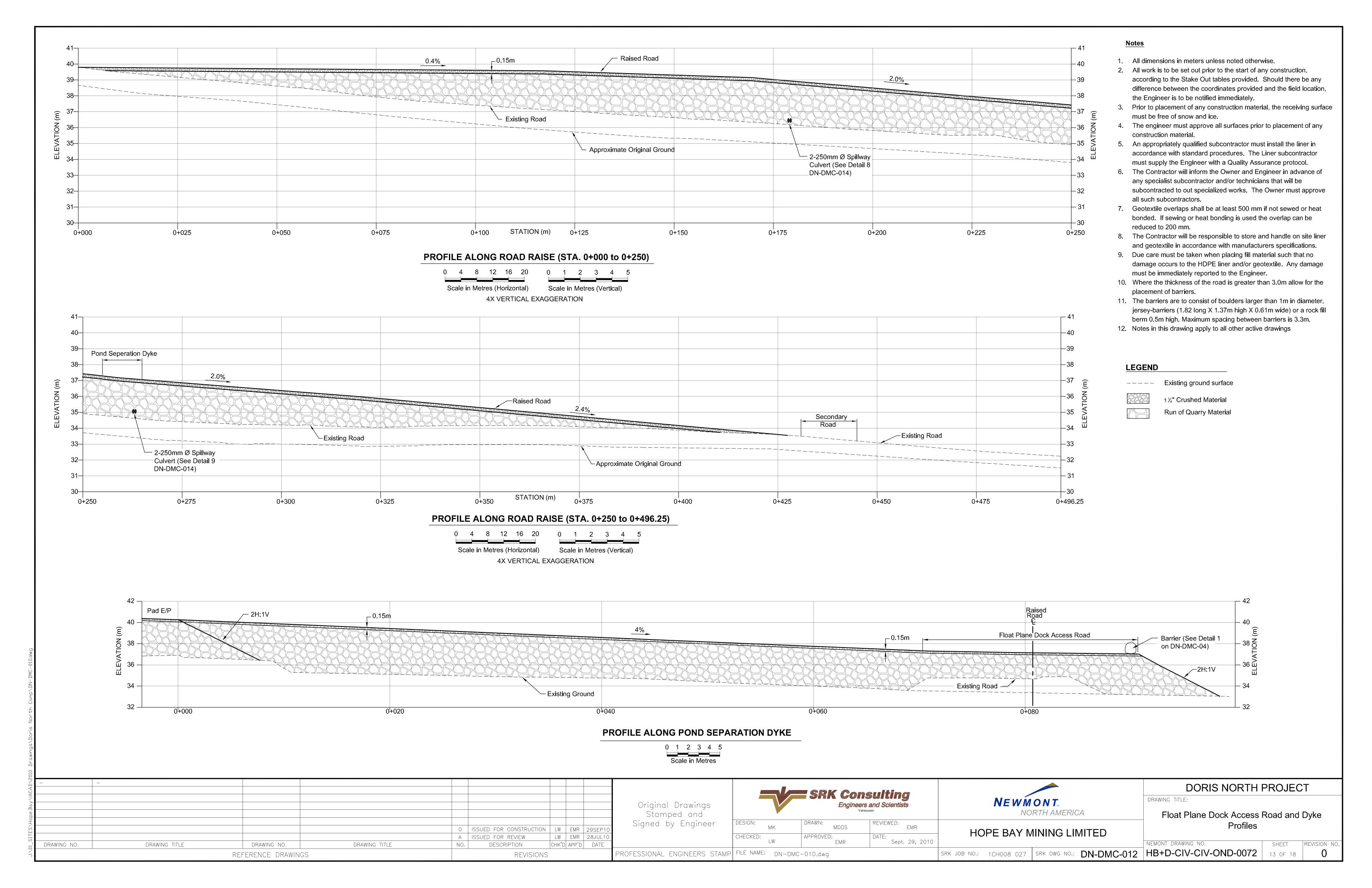
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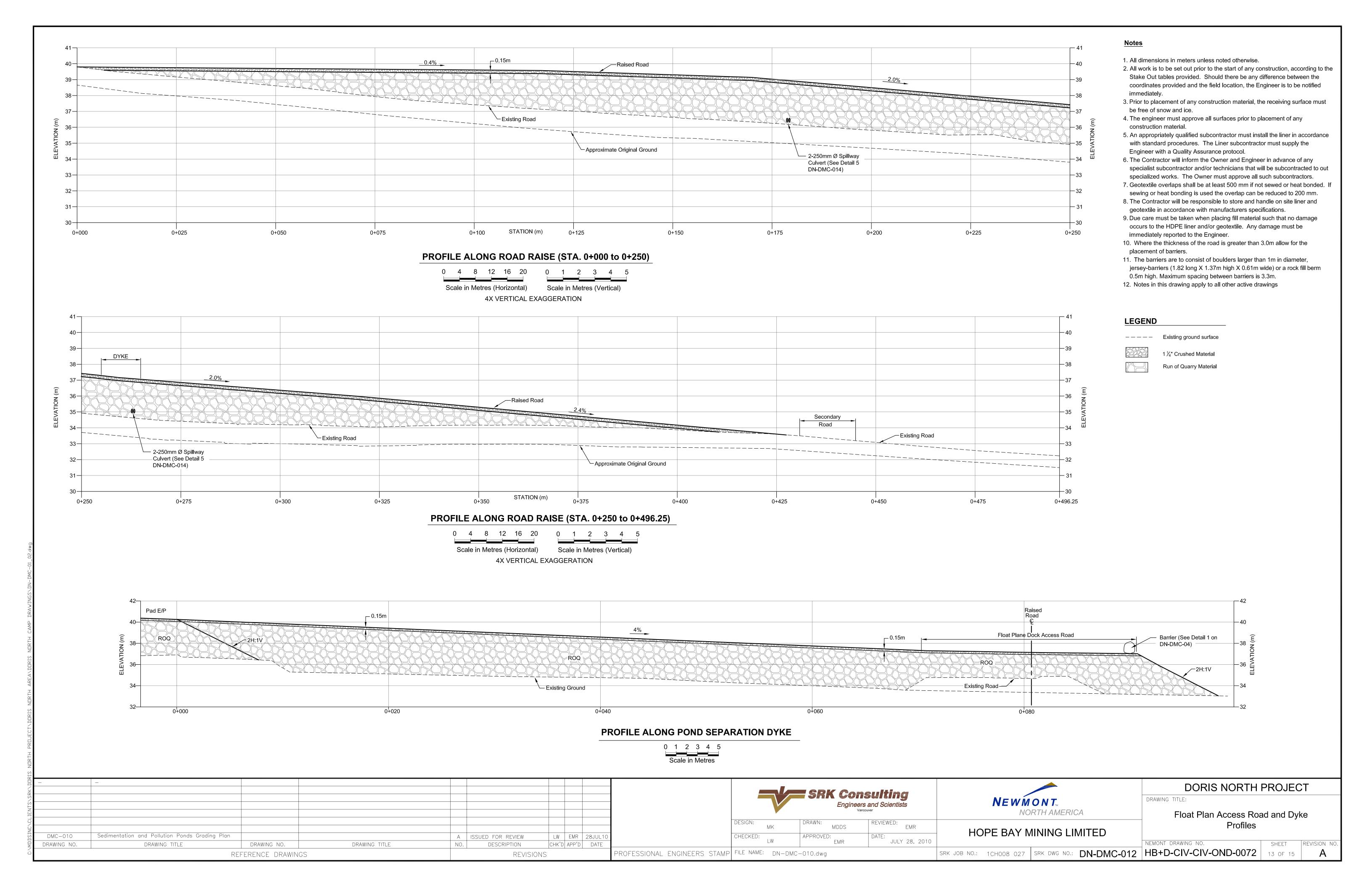












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- 2. On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- 3. Snow and ice on construction material must be removed prior to loading for construction use.
- 4. Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or liner system. Any damage must be immediately reported to the Engineer.
- 5. Geotextile shall be 12 oz. non-woven geotextile.
- 6. Liner shall be 60 mil textured HDPE liner.
- 7. Maximum lift thickness of ROQ is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- 8. In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- 9. Run of Quarry, and Surfacing material has to be compacted after placement.
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- 13. Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development
- 14. Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 15. Rip Rap shall be clean with no fine grained material and a minimum boulder size of 1000mm.
- 16. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness <0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 17. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm (1-1/4").
- 18. 3/4" Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm (1-1/4") but no smaller than 19mm (3/4")
- 19. The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.

Materials List and Quantities

Item	Quantity/Area/Vo	olume	Description
3/4" Finishing Material	Liner Subgrade (0.3 m)	1,100 m ³	Volumes Derived by Eagle Point V7.2
	Overliner (0.3 m)	1,100 m ³	- Side slope 1.5H:1V for fill less than 2m
	Culvert	60 m ³	- Side slope 2H:1V for fill greater than 2m
	Total	2,260 m ³	-Fills are a min. 1.0m
Surfacing Material (1-1/4"	Berm Surfacing	100 m ³	- Volume derived by merging Topography/As-built
Crush)	Road surfacing	1,200 m ³	to Pad Design surfaces
	Total	1,300 m ³	
Run of Quarry Material	Berm	6,600 m ³	
	Road	14,000 m ³	
	Total	26,600 m ³	
Geotextile	Pollution Control Pond	8,200 m ²	12 oz. Non-Woven
	Total	8,200 m ²	
Liner	Pollution Control Pond	2,000 m ²	Textured HDPE 60 or equivalent
	Total	2,000 m ²	
Rip Rap		100 m ³	Spillway Aprons
	Total	100 m ²	
Culverts 4 in total		95 m	250mm Diameter Corrugated Steel Culvert
	Total	95 m	

SEDIMENTATION POND STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
SP-01	7,558,915.40	433,164.14	37.43	
SP-02	7,558,965.46	433,119.21	40.26	
SP-03	7,558,963.30	433,119.29	39.50	
SP-04	7,558,930.28	433,088.97	39.50	
SP-05	7,558,913.78	433,070.97	39.49	
SP-06	7,558,906.68	433,072.64	39.38	
SP-07	7,558,902.40	433,082.52	39.21	
SP-08	7,558,919.76	433,151.32	34.24	
SP-09	7,558,950.99	433,119.36	35.32	
SP-10	7,558,924.38	433,094.87	35.33	
SP-11	7,558,911.32	433,079.92	35.42	
SP-12	7,558,910.20	433,083.15	35.34	

POLLUTION CONTROL POND STAKE-OUT TABLE				
ID	Northing	Easting	Elevation (m)	
PP-01	7,558,916.02	433,174.34	37.17	
PP-02	7,558,971.42	433,124.60	40.27	
PP-03	7,558,956.47	433,146.60	36.00	
PP-04	7,558,980.84	433,189.66	36.00	
PP-05	7,558,983.10	433,198.43	36.00	
PP-06	7,558,982.91	433,234.79	36.00	
PP-07	7,558,975.09	433,240.71	36.00	
PP-08	7,558,921.36	433,241.22	36.00	
PP-09	7,558,916.20	433,234.56	36.00	
PP-10	7,558,923.81	433,178.43	33.28	
PP-11	7,558,955.84	433,149.30	35.07	
PP-12	7,558,979.05	433,191.02	34.88	
PP-13	7,558,980.76	433,198.49	34.82	
PP-14	7,558,980.92	433,233.79	35.00	
PP-15	7,558,974.63	433,239.49	35.39	
PP-16	7,558,961.93	433,238.83	35.00	
PP-17	7,558,947.61	433,236.97	34.00	
PP-18	7,558,923.98	433,235.81	33.31	
PP-19	7,558,921.73	433,232.66	33.24	

ROAD RAISE STAKE-OUT TABLE					
ID	Northing	Easting	Elevation (m)		
RD-01	7,558,935.99	432,929.51	39.80		
RD-02	7,558,923.63	432,921.02	39.80		
RD-03	7,558,923.18	432,948.38	39.75		
RD-04	7,558,910.31	432,940.63	39.75		
RD-05	7,558,906.18	432,997.35	39.50		
RD-06	7,558,887.56	432,989.00	39.50		
RD-07	7,558,902.40	433,035.62	39.50		
RD-08	7,558,879.29	433,035.66	39.50		
RD-09	7,558,902.93	433,059.98	38.50		
RD-10	7,558,883.06	433,061.75	39.17		
RD-11	7,558,903.45	433,091.83	39.00		
RD-12	7,558,888.55	433,093.64	39.00		
RD-13	7,558,899.97	433,162.77	37.50		
RD-14	7,558,901.05	433,183.38	37.00		
RD-15	7,558,901.20	433,233.97	36.00		
RD-16	7,558,917.58	433,260.20	35.50		
RD-17	7,558,900.48	433,256.70	35.50		
RD-18	7,558,912.91	433,279.21	35.00		
RD-19	7,558,898.29	433,275.98	35.00		
RD-20	7,558,890.48	433,345.81	33.50		
RD-21	7,558,877.55	433,338.66	33.50		
RD-22	7,558,878.02	433,365.99	33.00		
RD-23	7,558,867.59	433,358.54	33.00		
RD-24	7,558,857.68	433,390.74	33.00		
RD-25	7,558,850.86	433,385.22	33.00		
RD-26	7,558,849.04	433,399.29	32.22		
RD-27	7,558,844.88	433,393.00	33.50		

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				0	ISSUED FOR CONSTRUCTION	LW	EMR	29SEP10	
				A	ISSUED FOR REVIEW	LW	EMR	28JUL10	
DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE	NO.	DESCRIPTION	CHK'D	APP'D	DATE	
	REI	FERENCE DRAWINGS			REVISIONS				PR

Original Drawings Stamped and Signed by Engineer





(Sedimenta

Doris North Project DRAWING TITLE:

> Material Specifications tation and Pollution Control Ponds)

NEMONT DRAWING NO. REVISION NO

PROFESSIONAL ENGINEER'S STAMP FILE NAME: DN-DMC-010.dwg

SRK JOB NO.: 1CH008 027 | SRK DWG NO.: DN-DMC-013 | HB+D-CIV-CIV-OND-0073 | 14 OF 18

- 1. Soil classification for these works are based on the Unified Soil Classification System (USCS).
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- 4. Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or liner system. Any damage must be immediately reported to the Engineer.
- 5. Geotextile shall be 12 oz. non-woven geotextile.
- 6. Liner shall be 60 mil textured HDPE liner.
- 7. Maximum lift thickness of ROQ is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- 8. In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- 9. Run of Quarry, and Surfacing material has to be compacted after placement.
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- 18. 3/4" Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm (1-1/4") but no smaller than 19mm (3/4")
- 19. The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing

Materials List and Quantities

Item	Quantity/Area/Vo	olume	Description
3/4" Finishing Material	Liner Subgrade (0.3 m)	1,100 m ³	Volumes Derived by Eagle Point V7.2
	Overliner (0.3 m)	1,100 m ³	- Side slope 1.5H:1V for fill less than 2m
	Culvert	60 m ³	- Side slope 2H:1V for fill greater than 2m
	Total	2,260 m ³	-Fills are a min. 1.0m
Surfacing Material (1-1/4"	Berm Surfacing	100 m ³	- Volume derived by merging Topography/As-built
Crush)	Road surfacing	1,200 m ³	to Pad Design surfaces
	Total	1,300 m ³	
Run of Quarry Material	Berm	6,600 m ³	
	Road	14,000 m ³	
	Total	26,600 m ³	
Geotextile	Pollution Control Pond	8,200 m ²	12 oz. Non-Woven
	Total	8,200 m ²	
Liner	Pollution Control Pond	2,000 m ²	Textured HDPE 60 or equivalent
	Total	2,000 m ²	
Rip Rap		100 m ³	Spillway Aprons
	Total	100 m ²	
Culverts 4 in total		95 m	250mm Diameter Corrugated Steel Culvert
	Total	95 m	

SE	DIMENTATION PO	OND STAKE-OU	T TABLE
ID	Northing	Easting	Elevation (m)
SP-01	7,558,915.40	433,164.14	37.43
SP-02	7,558,965.46	433,119.21	40.26
SP-03	7,558,963.30	433,119.29	39.50
SP-04	7,558,930.28	433,088.97	39.50
SP-05	7,558,913.78	433,070.97	39.49
SP-06	7,558,906.68	433,072.64	39.38
SP-07	7,558,902.40	433,082.52	39.21
SP-08	7,558,919.76	433,151.32	34.24
SP-09	7,558,950.99	433,119.36	35.32
SP-10	7,558,924.38	433,094.87	35.33
SP-11	7,558,911.32	433,079.92	35.42
SP-12	7,558,910.20	433,083.15	35.34

	POLLUTION CONTRO	OL POND STAKE-OUT T	ABLE
ID	Northing	Easting	Elevation (m)
PP-01	7,558,916.02	433,174.34	37.17
PP-02	7,558,971.42	433,124.60	40.27
PP-03	7,558,956.47	433,146.60	36.00
PP-04	7,558,980.84	433,189.66	36.00
PP-05	7,558,983.10	433,198.43	36.00
PP-06	7,558,982.91	433,234.79	36.00
PP-07	7,558,975.09	433,240.71	36.00
PP-08	7,558,921.36	433,241.22	36.00
PP-09	7,558,916.20	433,234.56	36.00
PP-10	7,558,923.81	433,178.43	33.28
PP-11	7,558,955.84	433,149.30	35.07
PP-12	7,558,979.05	433,191.02	34.88
PP-13	7,558,980.76	433,198.49	34.82
PP-14	7,558,980.92	433,233.79	35.00
PP-15	7,558,974.63	433,239.49	35.39
PP-16	7,558,961.93	433,238.83	35.00
PP-17	7,558,947.61	433,236.97	34.00
PP-18	7,558,923.98	433,235.81	33.31
PP-19	7,558,921.73	433,232.66	33.24

ID	Northing	Easting	Elevation (m)
RD-01	7,558,935.99	432,929.51	39.80
RD-02	7,558,923.63	432,921.02	39.80
RD-03	7,558,923.18	432,948.38	39.75
RD-04	7,558,910.31	432,940.63	39.75
RD-05	7,558,906.18	432,997.35	39.50
RD-06	7,558,887.56	432,989.00	39.50
RD-07	7,558,902.40	433,035.62	39.50
RD-08	7,558,879.29	433,035.66	39.50
RD-09	7,558,902.93	433,059.98	38.50
RD-10	7,558,883.06	433,061.75	39.17
RD-11	7,558,903.45	433,091.83	39.00
RD-12	7,558,888.55	433,093.64	39.00
RD-13	7,558,899.97	433,162.77	37.50
RD-14	7,558,901.05	433,183.38	37.00
RD-15	7,558,901.20	433,233.97	36.00
RD-16	7,558,917.58	433,260.20	35.50
RD-17	7,558,900.48	433,256.70	35.50
RD-18	7,558,912.91	433,279.21	35.00
RD-19	7,558,898.29	433,275.98	35.00
RD-20	7,558,890.48	433,345.81	33.50
RD-21	7,558,877.55	433,338.66	33.50
RD-22	7,558,878.02	433,365.99	33.00
RD-23	7,558,867.59	433,358.54	33.00
RD-24	7,558,857.68	433,390.74	33.00
RD-25	7,558,850.86	433,385.22	33.00
RD-26	7,558,849.04	433,399.29	32.22
RD-27	7,558,844.88	433,393.00	33.50

ROAD RAISE STAKE-OUT TABLE

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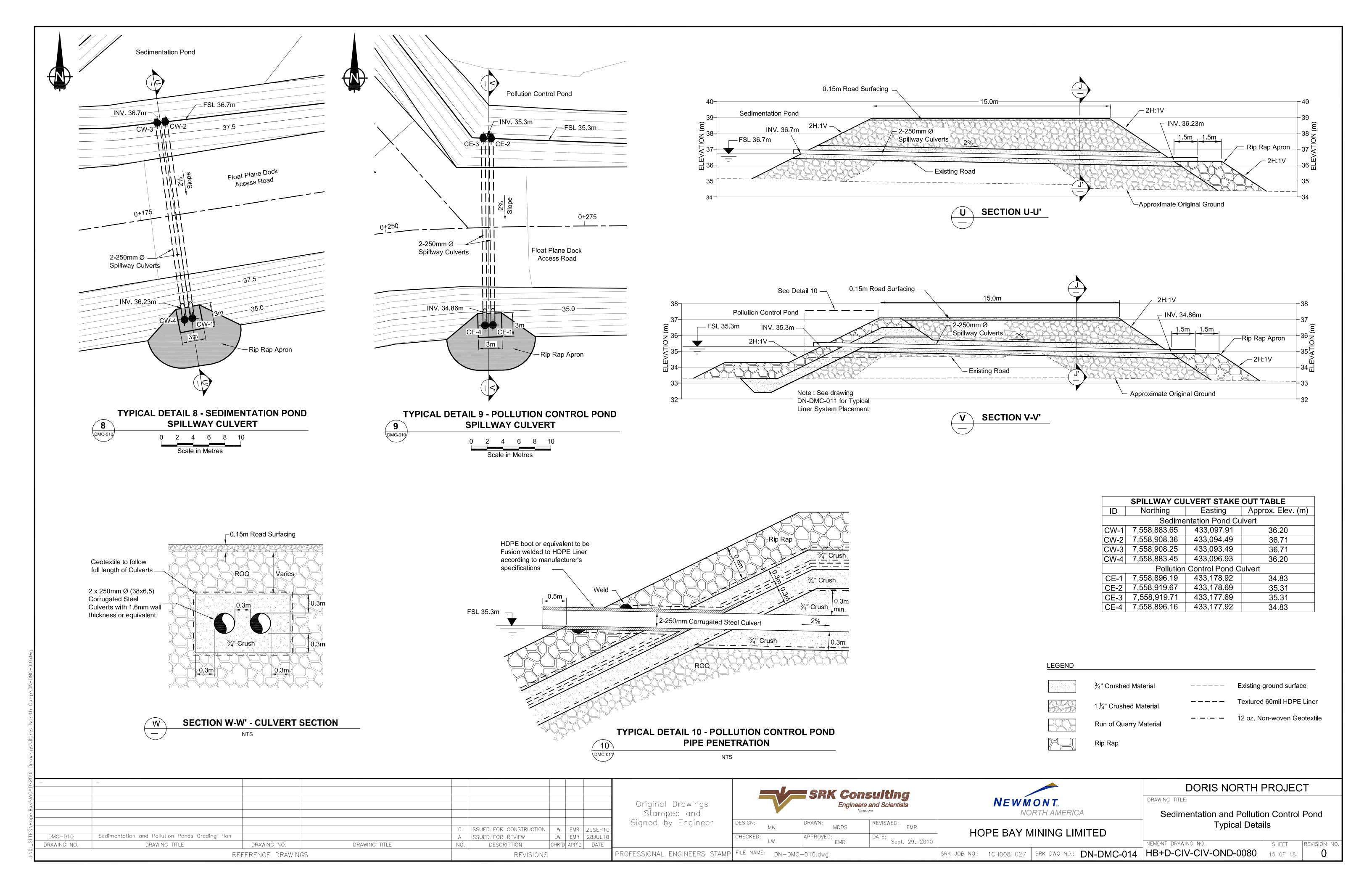


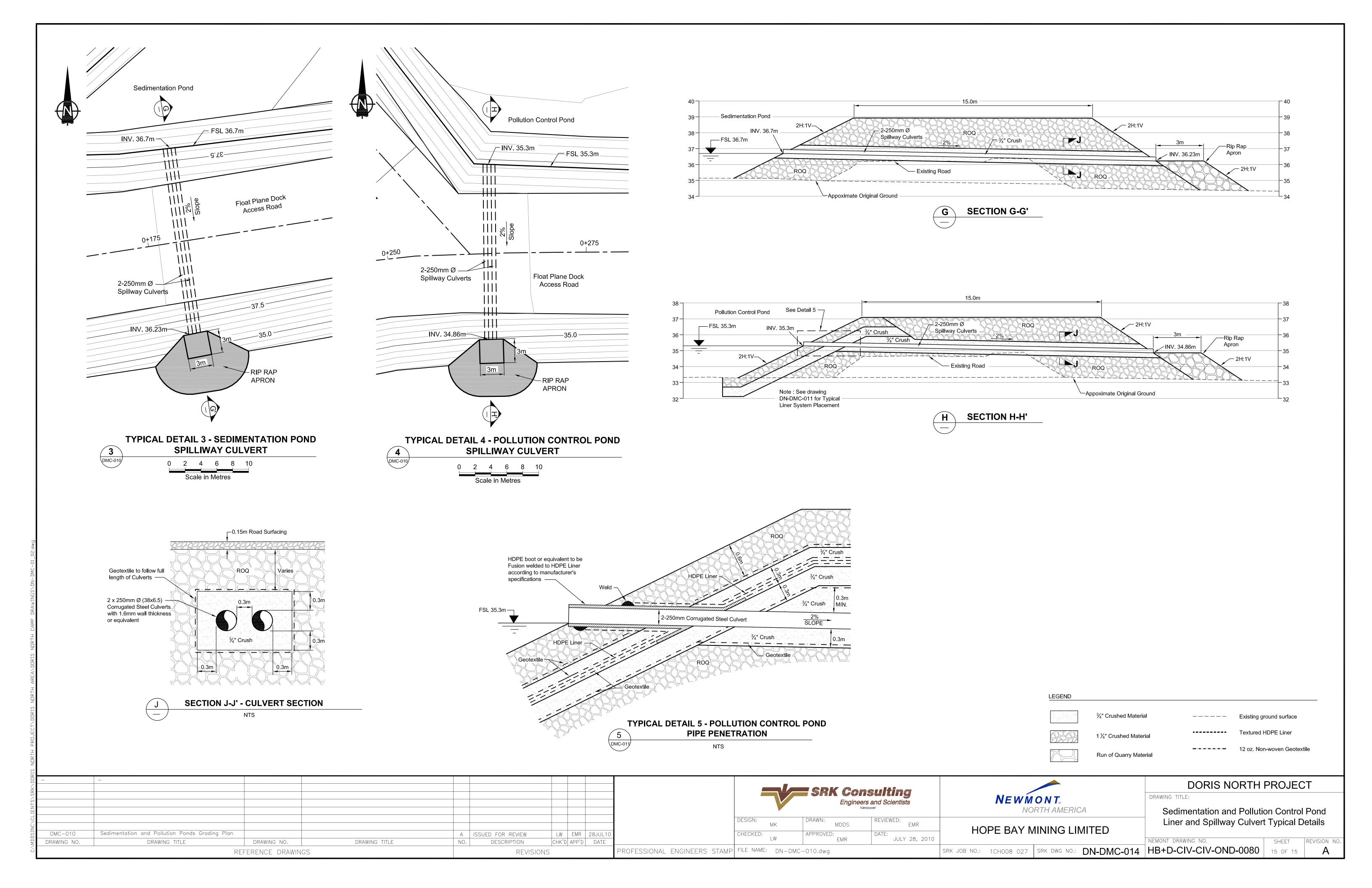
HOPE BAY MINING LIMITED

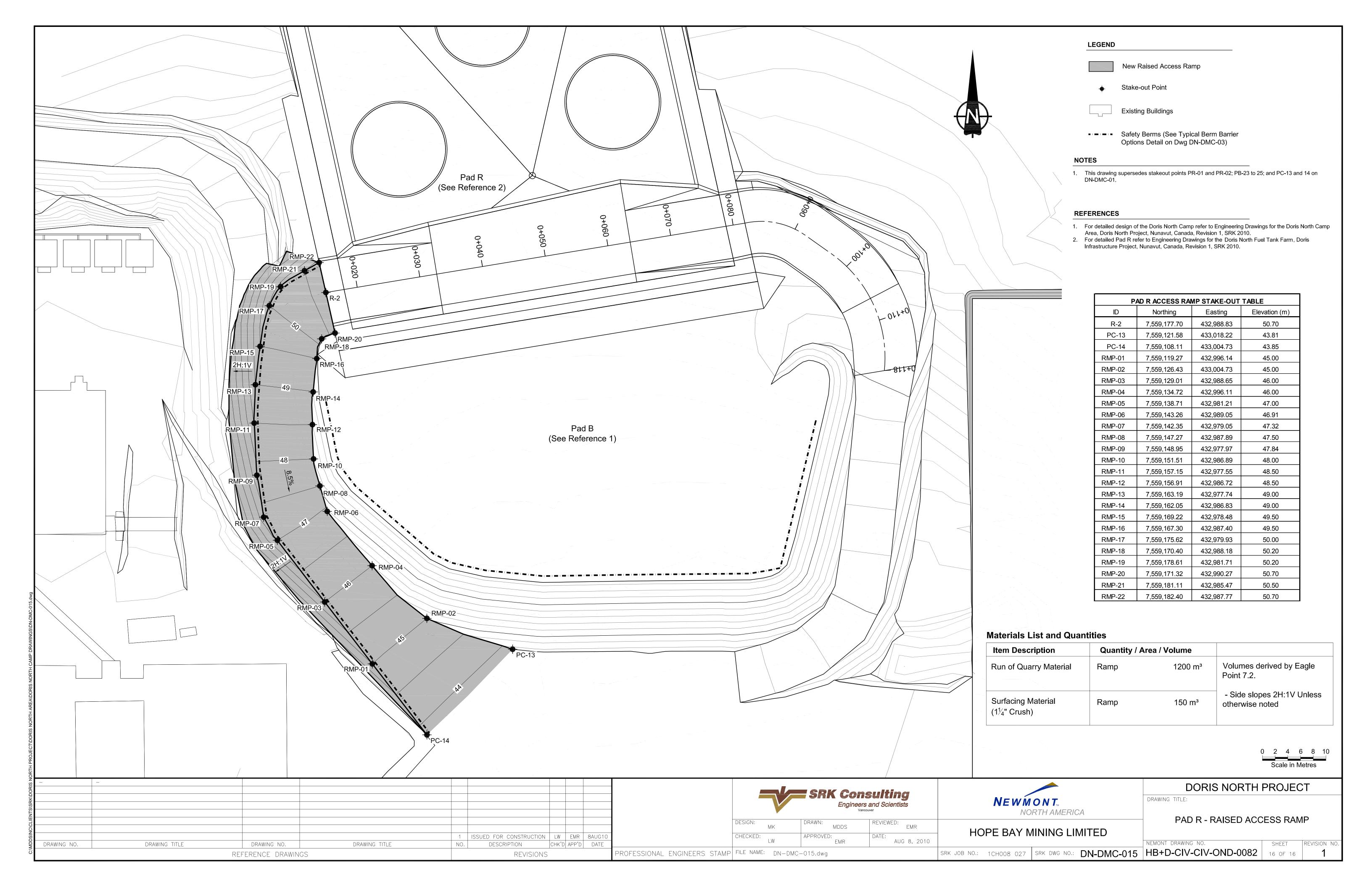
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	Material Specifications

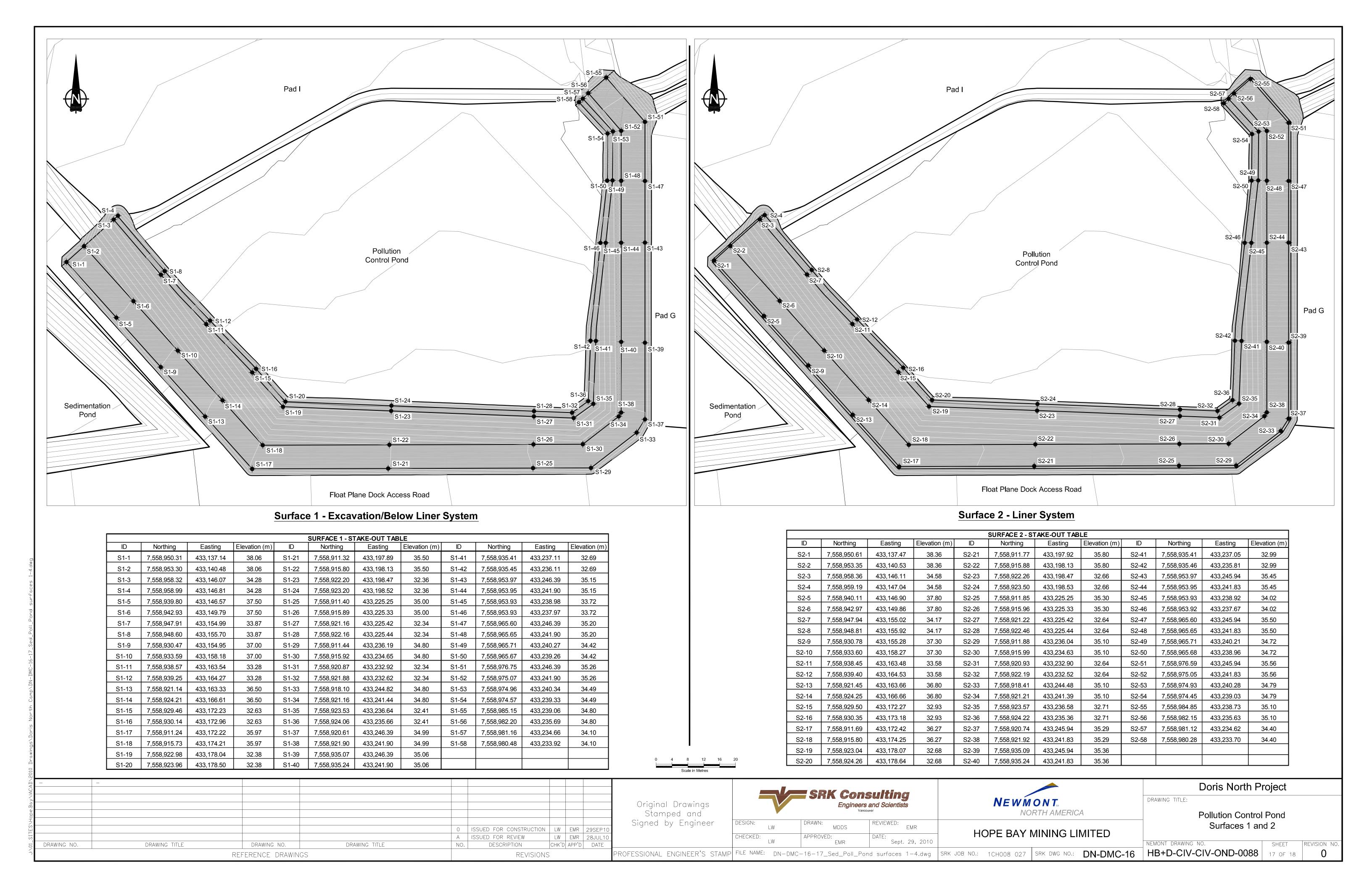
(Sedimentation and Pollution Control Ponds) NEMONT DRAWING NO.

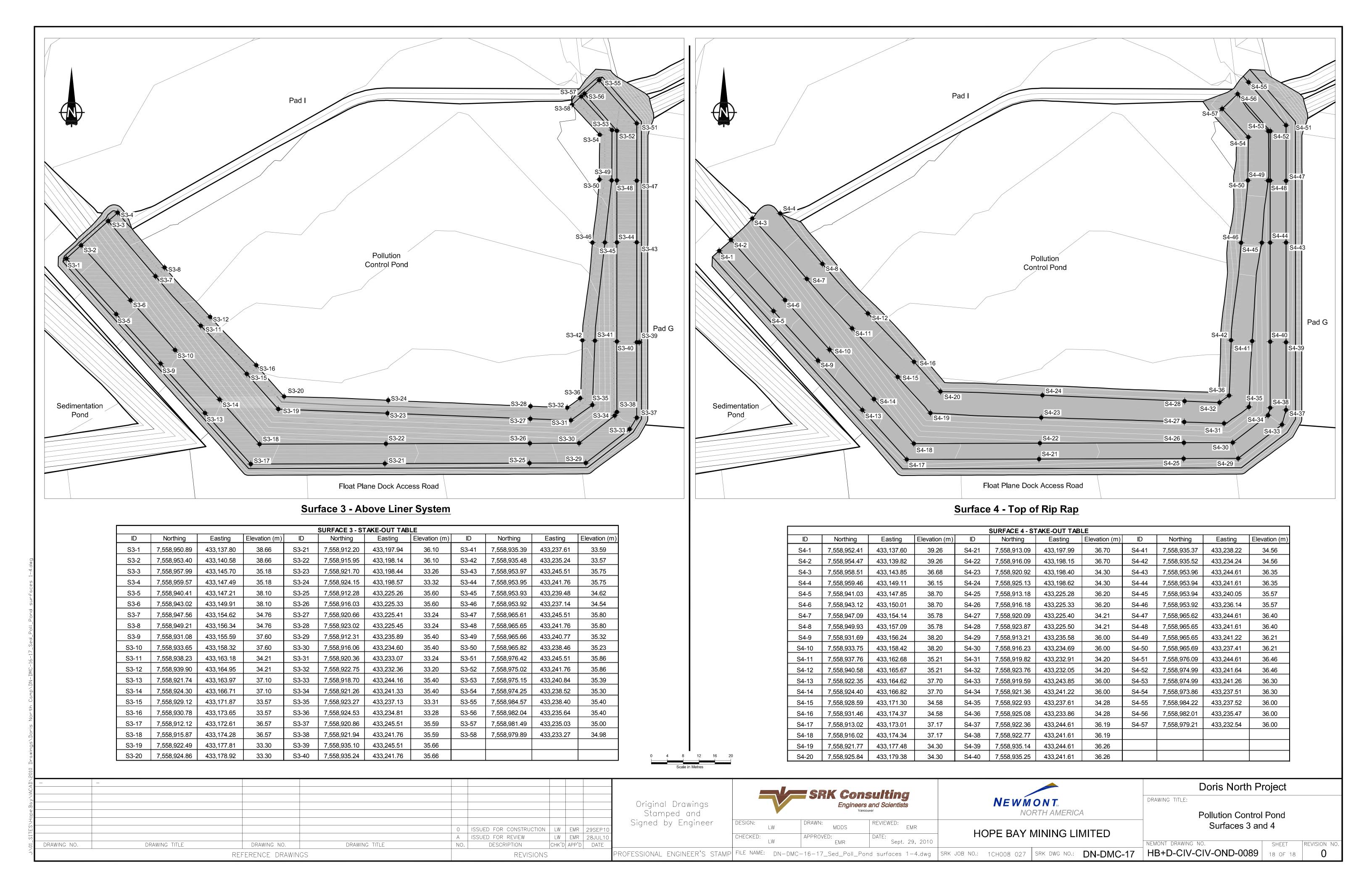
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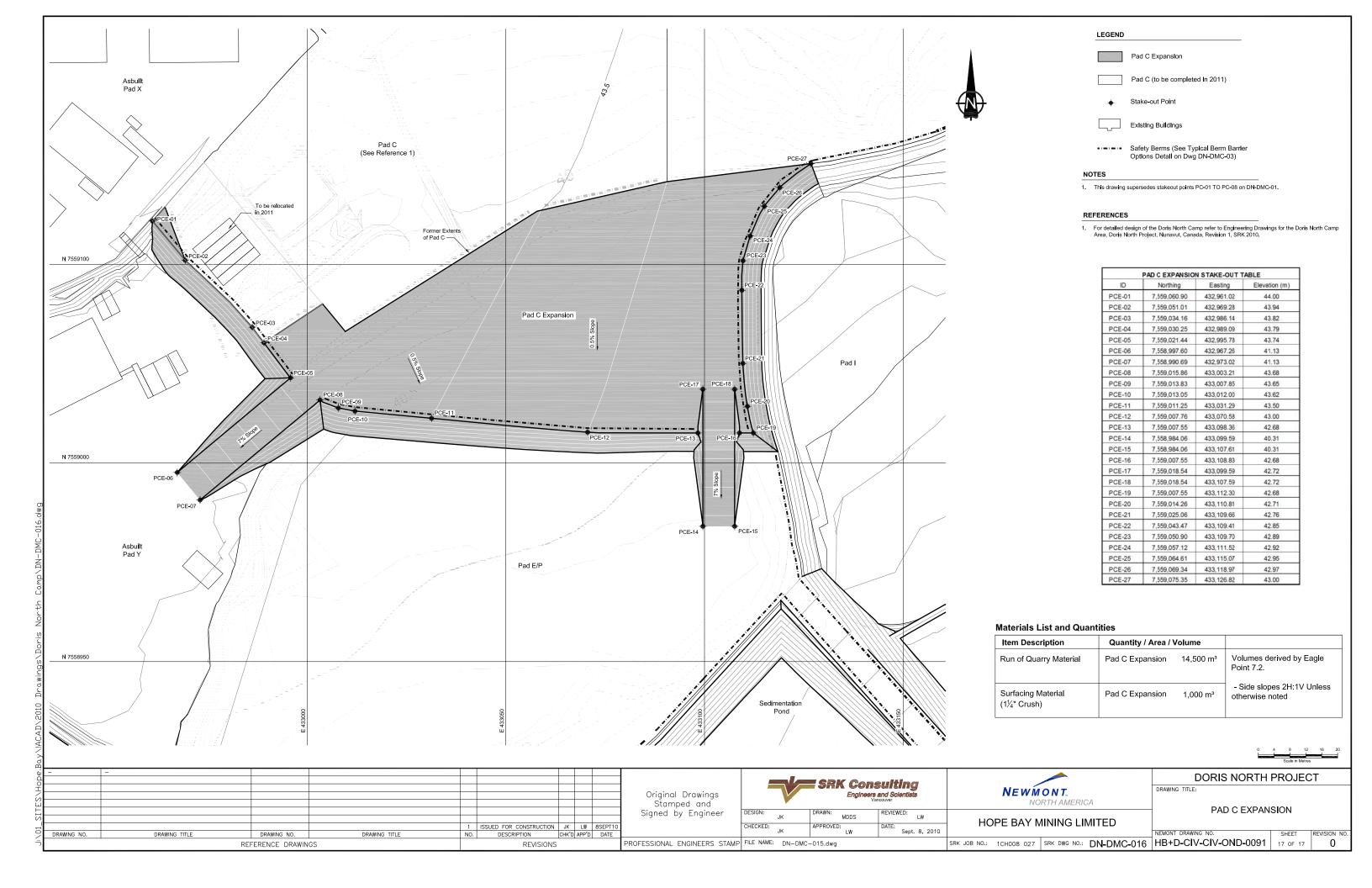


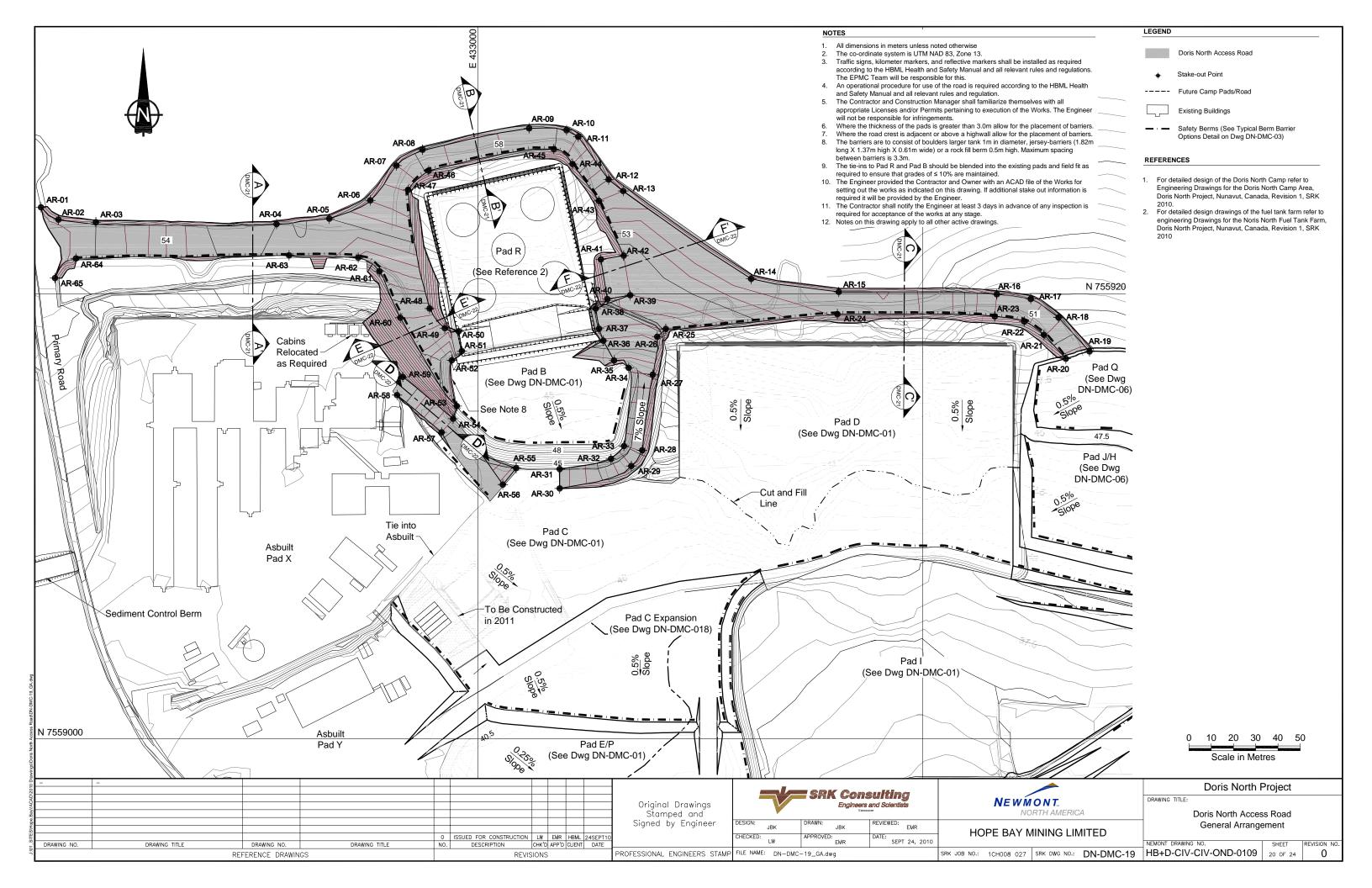


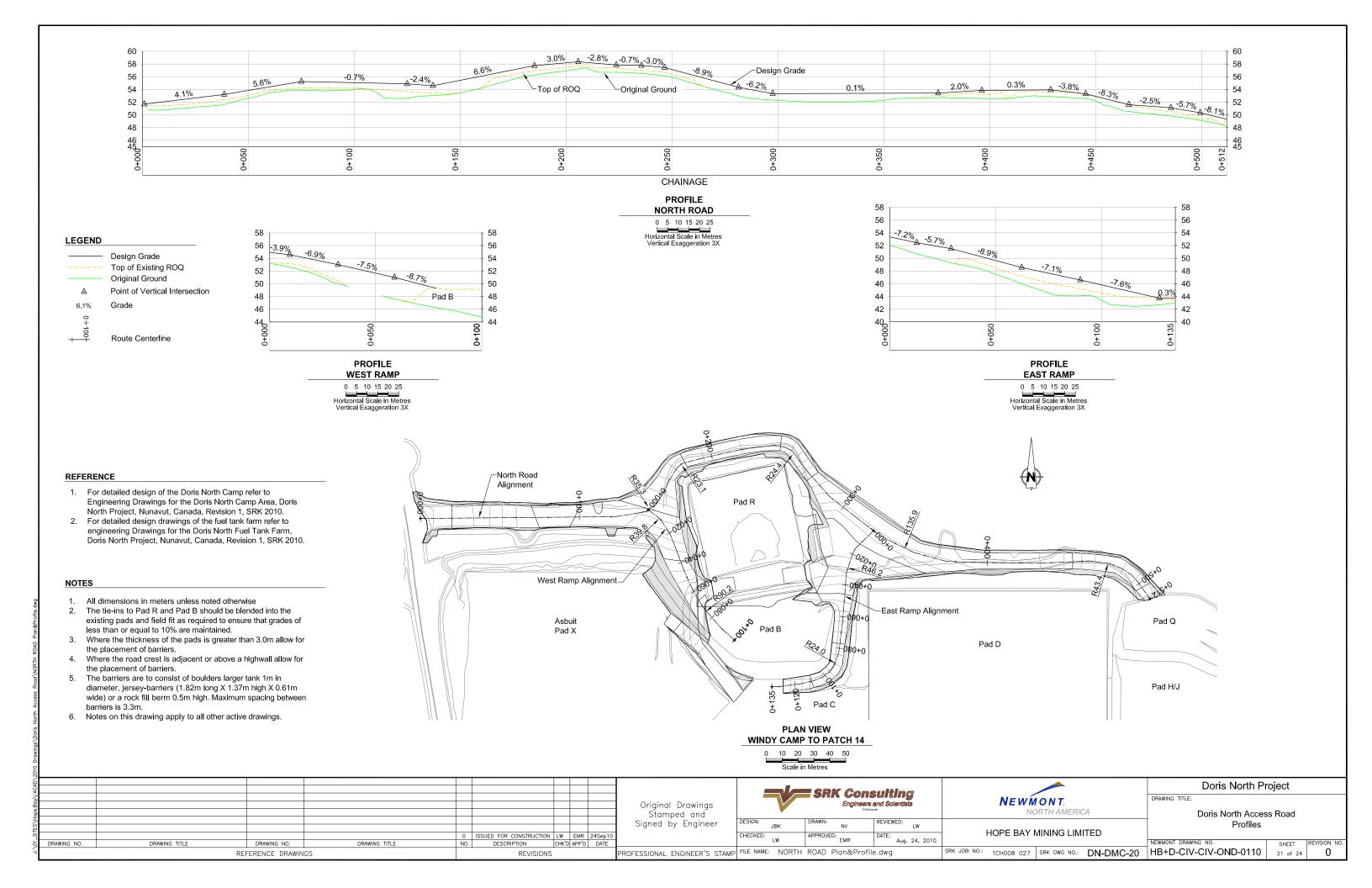


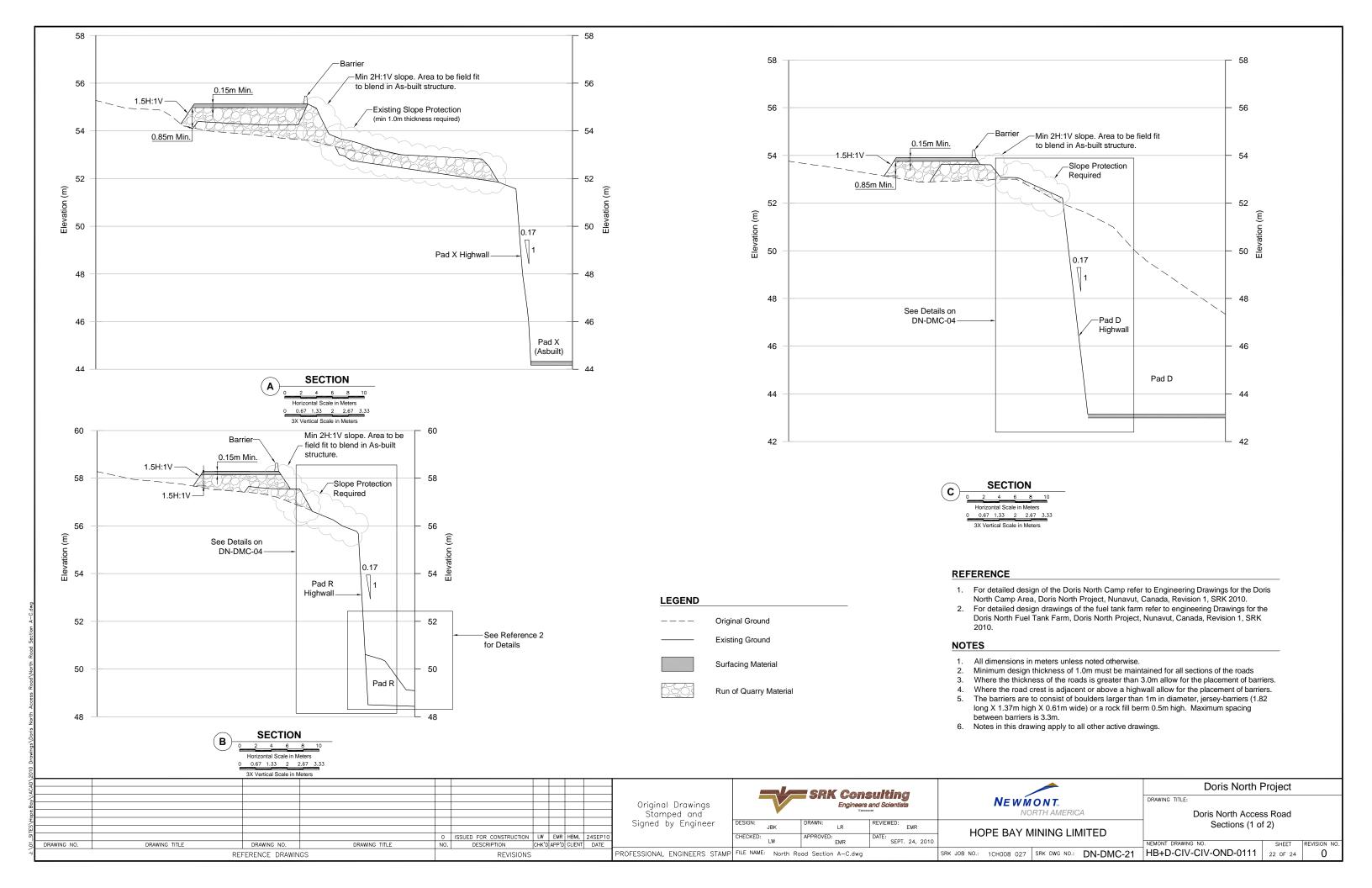


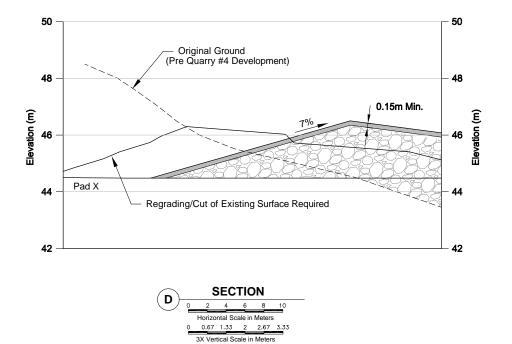


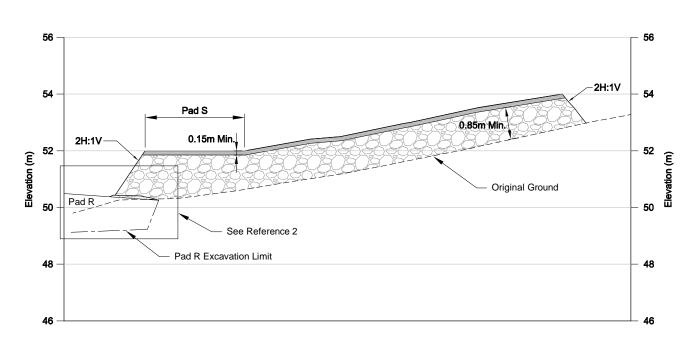


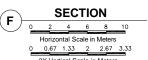


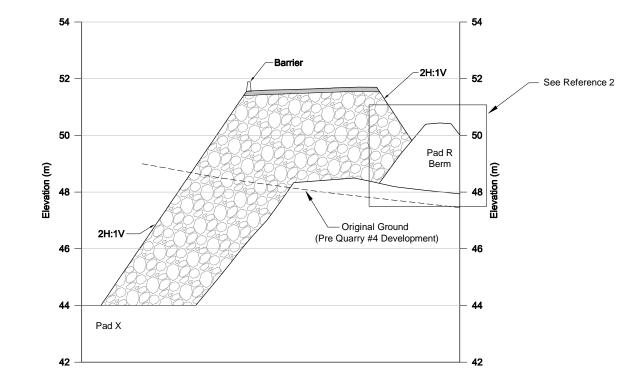


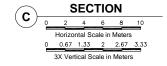












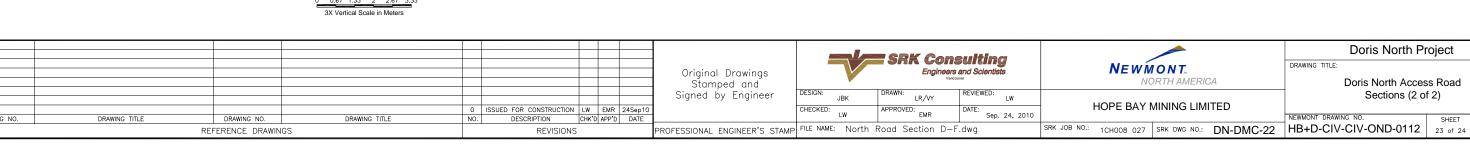
REFERENCE

- For detailed design of the Doris North Camp refer to Engineering Drawings for the Doris North Camp Area, Doris North Project, Nunavut, Canada, Revision 1, SRK 2010.
- For detailed design drawings of the fuel tank farm refer to engineering Drawings for the Doris North Fuel Tank Farm, Doris North Project, Nunavut, Canada, Revision 1, SRK 2010.

NOTES

- 1. All dimensions in meters unless noted otherwise.
- 2. Minimum design thickness of 1.0m must be maintained for all sections of the roads.
- Where the thickness of the roads is greater than 3.0m allow for the placement of barriers.
 Where the road crest is adjacent or above a highwall allow for the placement of barriers.
- The barriers are to consist of boulders larger than 1m in diameter, jersey-barriers (1.82 long X 1.37m high X 0.61m wide) or a rock fill berm 0.5m high. Maximum spacing
- between barriers is 3.3m.

 6. Notes in this drawing apply to all other active drawings.



LEGEND

Original Ground

Existing Ground

Surfacing Material

Run of Quarry Material

NOTES

- Soil classification for these works are based on the Unified Soil Classification System (USCS).
- 2. On bare tundra surfaces the maximum snow thickness allowed prior to fill placement shall be 102mm (4"). On all other surfaces complete snow removal is required. The Engineer must approve all surfaces prior to placement of any construction material.
- Snow and ice on construction material must be removed prior to loading for construction use.
- Due care must be taken when placing fill materials such that no damage occurs to the subgrade and/or culverts. Any damage must be immediately reported to the Engineer.
- Maximum lift thickness is 1.85m. Staged construction will be required where fill thickness exceeds 1.85m.
- In areas where staged construction is required, all snow shall be removed and the surface scarified prior to placing the next lift. The Engineer will approve such staged construction.
- Run of Quarry, and Surfacing material has to be compacted after placement.
- Compaction will be a field specification, based on trial compaction tests to be carried out by the Contractor to the satisfaction of the Engineer.
- It is the Contractor's responsibility to create the construction materials as specified through appropriate crushing. Any deviations must be approved by the Engineer.
- Construction fill material shall be from approved rock quarries, shall be non-acid generating, free of organic material or similar impurities, as well as snow and ice.
- 11. Construction fill material must be free of overburden soils. Such unsuitable material shall be disposed of in a designated on site disposal area as outlined in the Contractors' quarry development plan.
- 12. Construction fill material will not have to be washed to remove blast residues or fines, unless specifically instructed by the Engineer.
- 13. Run of Quarry (ROQ) shall be well-graded, containing sufficient quantities of gravel, sand, and silt sized material. For fill thickness <0.85m the maximum boulder size shall not exceed 500mm. For fill thickness >0.85m the maximum boulder size shall not exceed 900mm.
- 14. Surfacing material shall be a well-graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 51mm (2") but no smaller than 32mm $(1\frac{1}{4}$ ").
- 15. $\frac{3}{4}$ Finishing material shall be well graded manufactured crush product produced from ROQ material. The screen size shall be no greater than 32mm $(1\frac{1}{4})$ but no smaller than 19mm $(\frac{3}{4})$
- 16. ROQ material shall be visually inspected by the Engineer on a routine basis and the Contractor will be advised if the material does not meet the specification in Note 17.
- 17. The Contractor shall collect samples of the surfacing material directly from the crusher stockpile and submit for laboratory testing including but not limited to grain size distribution, and moisture content at least 1 sample every 8,000m³. The Engineer may conduct additional sampling and testing as deemed necessary.
- Sample collection and testing of ROQ, and surface material for geochemical suitability is required and will be carried out by the Site Environmental Manager in accordance with procedures developed by SRK.

Materials List and Quantities

Item	Quantity / Area / V	olume/	Description			
Run of Quarry Material	Pad R Access Road Pad D Access Road	11,700 m³ 1,500 m³	Volumes derived by Eagle Point 7.2 Side slopes 1.5H:1V for fill less than 2m - Side slopes 2H:1V for fill greater than 2m - Fills are min. 1.0m			
	Total Fill:	13,200 m ³	Volumes derived by merging Topography/ As-built to Pad Design Surfaces.			
2. Surface Grade Material	Pad R Access Road Pad D Access Road	1,300 m³ 500 m³				
	 Total Fill:	1,800 m³				

ACCESS I	ROAD STAKE	OUT POINTS
ID	Easting	Northing
AR-01	432803.63	7559238.90
AR-02	432811.44	7559233.38
AR-03	432828.27	7559232.20
AR-04	432909.50	7559231.36
AR-05	432933.21	7559233.81
AR-06	432951.65	7559242.03
AR-07	432963.38	7559257.66
AR-08	432975.13	7559264.81
AR-09	433023.04	7559274.40
AR-10	433039.87	7559273.56
AR-11	433045.13	7559270.60
AR-12	433058.79	7559251.40
AR-13	433065.32	7559246.24
AR-14	433122.86	7559206.76
AR-15	433162.25	7559200.89
AR-16	433233.30	7559199.81
AR-17	433248.53	7559197.72
AR-18	433261.02	7559189.40
AR-19	433274.97	7559174.15
AR-20	433264.31	7559170.89
AR-21	433254.49	7559181.59
AR-22	433245.62	7559187.57
AR-23	433232.37	7559189.85
AR-24	433161.61	7559190.89
AR-25	433084.47	7559184.26
AR-26	433080.63	7559180.71
AR-27	433078.60	7559163.67
AR-28	433073.89	7559129.71
AR-29	433068.96	7559122.64
AR-30	433036.79	7559112.56
AR-31	433036.79	7559121.25
AR-32	433059.86	7559125.87
AR-33	433065.66	7559123.67
7117-00	+55005.00	7003101.04

CCESS ROAD STAKE OUT POINTS							
ID	Easting	Northing					
AR-34	433067.81	7559166.75					
AR-35	433061.21	7559170.08					
AR-36	433056.40	7559178.96					
AR-37	433054.47	7559184.34					
AR-38	433052.97	7559193.39					
AR-39	433068.46	7559199.40					
AR-40	433058.20	7559197.66					
AR-41	433055.28	7559215.48					
AR-42	433065.54	7559217.21					
AR-43	433054.35	7559241.77					
AR-44	433042.53	7559258.38					
AR-45	433034.15	7559265.04					
AR-46	432977.87	7559255.37					
AR-47	432968.65	7559246.75					
AR-48	432978.32	7559193.40					
AR-49	432985.12	7559184.58					
AR-50	432991.35	7559183.18					
AR-51	432992.82	7559174.32					
AR-52	432988.30	7559170.16					
AR-53	432990.55	7559149.57					
AR-54	432988.87	7559143.89					
AR-55	433017.22	7559121.69					
AR-56	433011.21	7559114.29					
AR-57	432983.70	7559137.78					
AR-58	432963.66	7559154.51					
AR-59	432966.24	7559162.70					
AR-60	432965.11	7559189.27					
AR-61	432955.74	7559210.18					
AR-62	432946.20	7559216.32					
AR-63	432915.10	7559217.32					
AR-64	432819.33	7559215.91					
AR-65	432809.89	7559207.09					

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										Original Drawings Stamped and Signed by Engineer	Ь
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Material Specifications Doris North Access Road

Doris North Project

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SRK Consulting (Canada) Inc. Suite 2200 – 1066 West Hastings Street Vancouver, B.C. V6E 3X2 Canada

vancouver@srk.com www.srk.com

Tel: 604.681.4196 Fax: 604.687.5532

Memo

To: Project File **Date:** December 1, 2010

CC: Murray McGregor, Maritz Rykaart

Subject: Doris North Project Waste Rock Pile Project #: 1CH008.027.0300

Stability Analysis

This memo presents the results of a slope stability analyses for the waste rock pile at the Doris North Mill site. The stability analysis was carried out using the Morgenstern-Price method as applied in SLOPE/W. The model is set up using three materials: marine silt and clay, run of quarry foundation pad, and run of mine waste rock. Loading of the waste rock pile will occur at a rate that could outpace freezeback into the waste rock pile and therefore the entire waste rock pile is conservatively assumed to be unfrozen. The typical active layer thickness for uncovered marine silt and clay is about 1 m. However, for the purpose of this analysis, conservative active layer thickness of 2 m was used to compensate for the presence of the rockfill pad over the tundra soils which change the thermal regime.

Table 1 summarizes the material properties used in the analysis taken from the previous Doris Creek Bridge Abutments stability analysis.

Table 1: Material Properties

	Parameter	Run of Quarry Foundation Pad	Waste Rock	Marine Silt and Clay Foundation	
Saturated Unit Weight (kN/m³)		20	20	18.5	
Degree of Saturation		30%	30%	85%	
Porosity		0.30	0.30	0.52	
Vol	umetric Water Content	0.090	0.090	0.442	
l lafa	Apparent Cohesion c' (kPa)	0	0	0	
Unfrozen	Friction angle, φ ⁰	40	39	30	
Frazan	Apparent Cohesion c' (kPa)	5	n/a	112	
Frozen	Friction angle, φ ⁰	40	n/a	26	

SRK Consulting Page 2 of 3

The analysis is carried out using a critical cross-section of the waste rock pile, taking into consideration the foundation slope and ultimate pile height. This typical section, complete with assigned material zones are presented in Figure 1 (note the overall slope angle is 2H:1V).

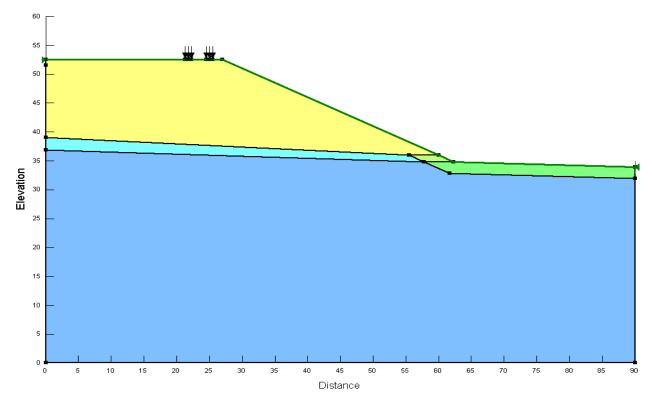


Figure 1: Critical Section of the Waste Rock Pile used in the Slope Stability Analysis

The critical slip surface was evaluated under two conditions; for a free standing waste rock pile without consideration of haul truck wheel loads at the crest, and with wheel loads. A sample calculation for haul truck wheel loading is included as Appendix A. Both rotational slip surfaces and blocks failure modes were considered in each case.

The Project site is located in a stable seismic zone of Canada with low peak ground accelerations. The waste rock piles are temporary, as they will be hauled back underground for ground support within 2 to 4 years of being stockpiled. For these reasons the stability analysis under seismic conditions was not assessed.

Graphic results for the critical slip surfaces of each analysis are presented in Appendix B. In each case where haul truck wheel loads are included, a load induced failure occurs near the crest of the pile. For the case where no wheel loads are considered, the critical slip surface appears as a shallow skin failure along the outer edge of the pile.

SRK Consulting Page 3 of 3

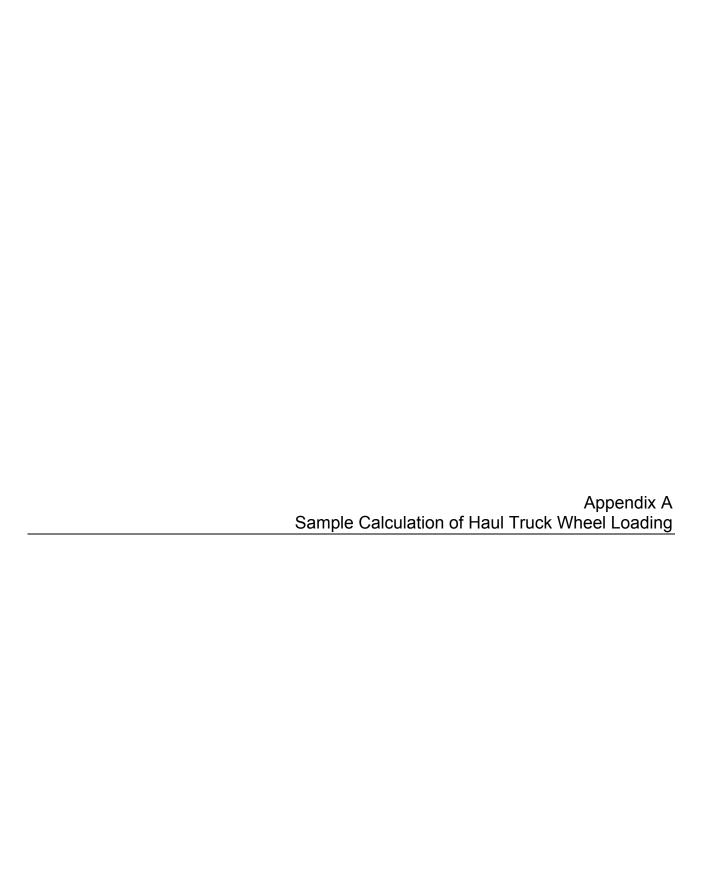
Table 2: Calculated Factors of Safety from SLOPE/W Models

Condition	Calculation Method	Factor of Safety	Critical Slip Surface Location
Haul Truck Wheel	Entrance and Exit	1.315	Load induced failure occurs near the
Loads Considered	Block Specified	1.343	crest of the pile.
Free Standing Waste	Entrance and Exit	1.621	Shallow skin failure along the outer edge
Pile	Block Specified	1.630	of the pile

A dump stability rating for the waste rock pile was completed in accordance with the guidelines set by the British Columbia Mine Waste Rock Pile Research Committee in their 1991 publication of "*Mined Rock and Overburden Piles: Investigation and Design Manual*". For frozen foundation conditions the stability rating of the waste rock pile is 300 (Class I Stability), while for unfrozen foundation conditions the stability rating increases to 500 (Class II Stability). Details of the rating are provided in Appendix C.

The level of stability analysis presented in this memo is in accordance with the stated stability rating assessed for the waste rock pile.

The client should implement measures to ensure proper setback distances for haul trucks from the operating crest of the waste rock pile. Installation of thermistors to monitor foundation frost conditions is recommended to warn against possible onset of unfrozen conditions.





Project No	1 C H 008.	027	Site _	Vanc	eu ye	<i>,</i>
Prepared by _	Murray	M'Gregor	Date	Nov.	73	2010
Approved by _			_ Date _			

Subject Vehicle Loading on Waste Rock Piles Calculation Sheet 1 of 1

From Manufacturer Website:

CAT 773 Gross Opperating Weight: 222,000 lbs = 100,698 kg

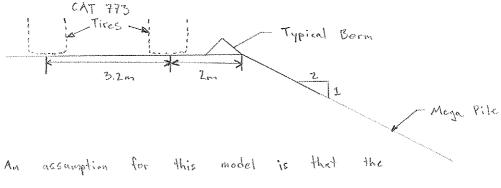
Load Weight Distributions: Front 35% Rear 65%

Rear Tire Load:
$$(100,698 \text{ kg})(65\%)/11$$
 (re) $(9.81 \text{ N})/15$ = 321 kN

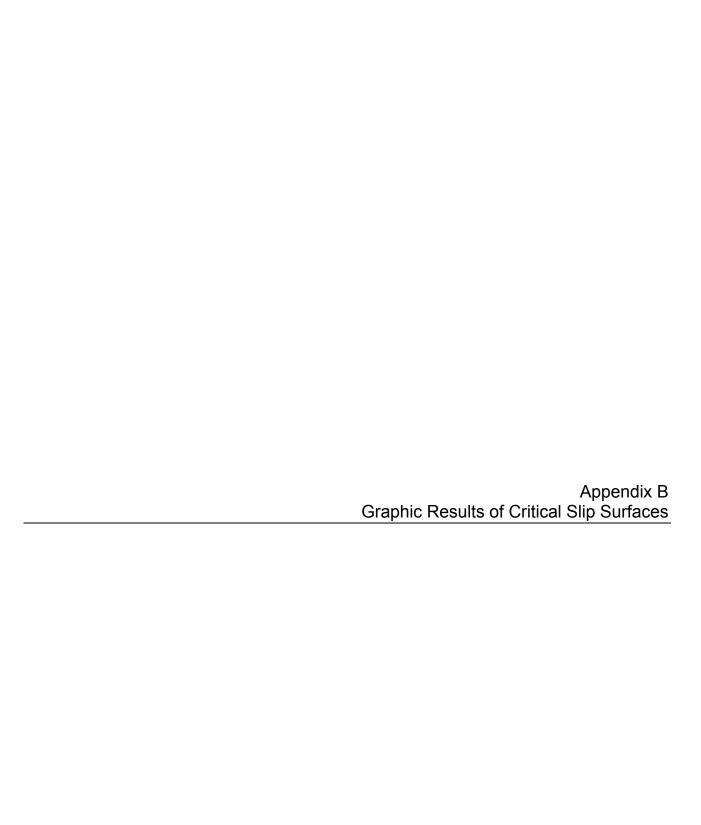
Axk(2) $(100,698 \text{ kg})/15$

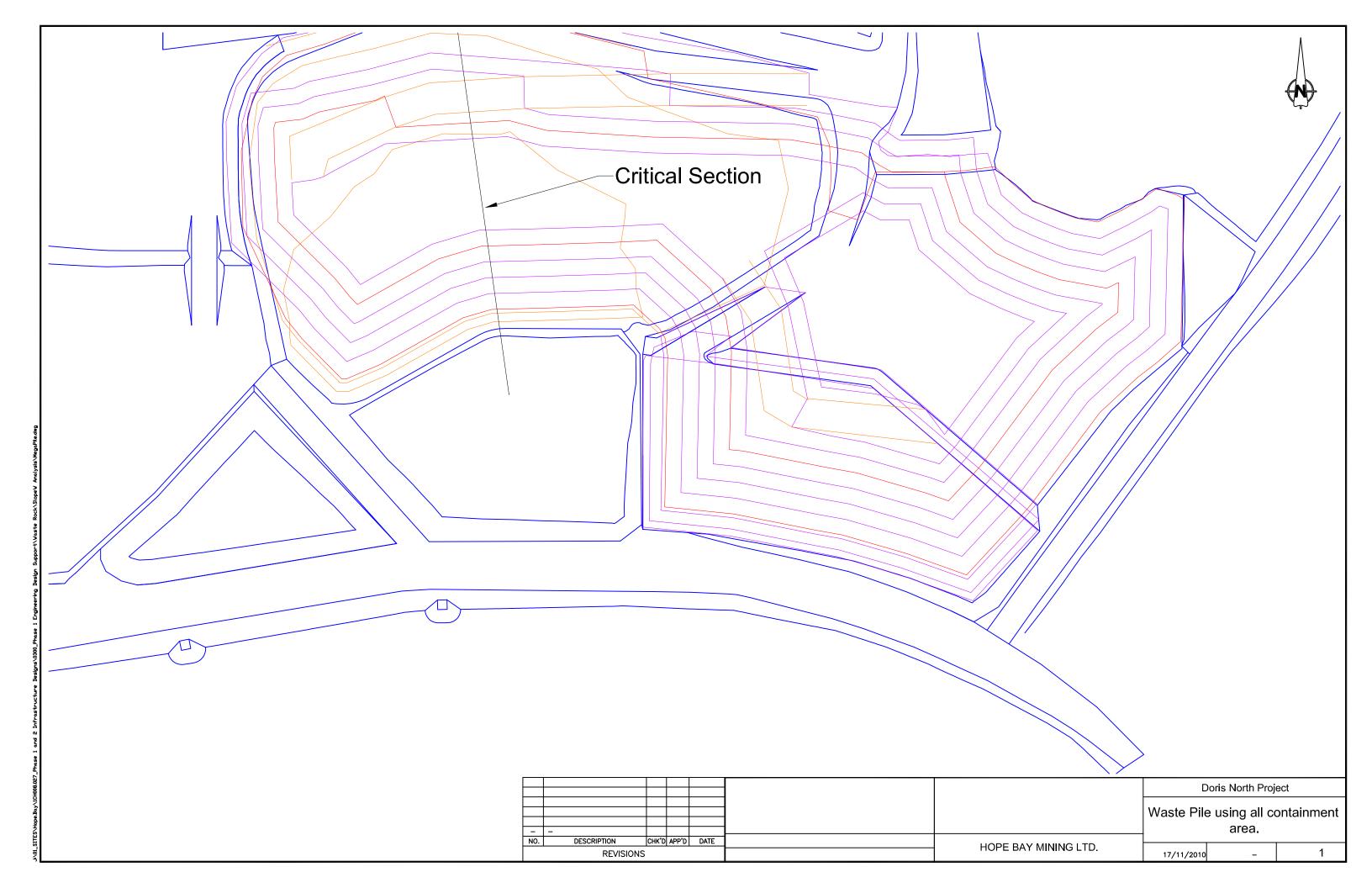
Centerline Front Tire Width: 10,59 = 3.2m

Offset from Slope Edge: (Beam width) + (1/2 fine width) = Zom
Typical Barn Width = 1 meter minimum



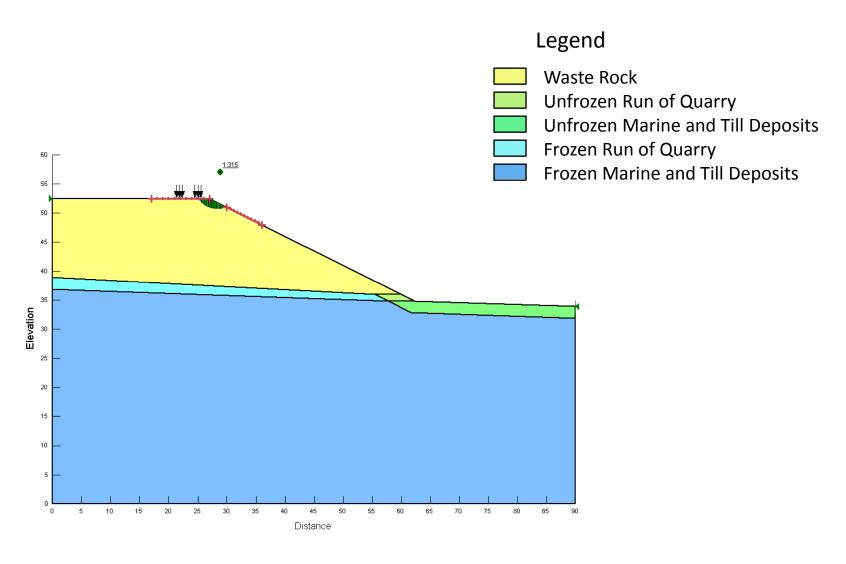
tires act as equal pressure loads over Im2 areas.





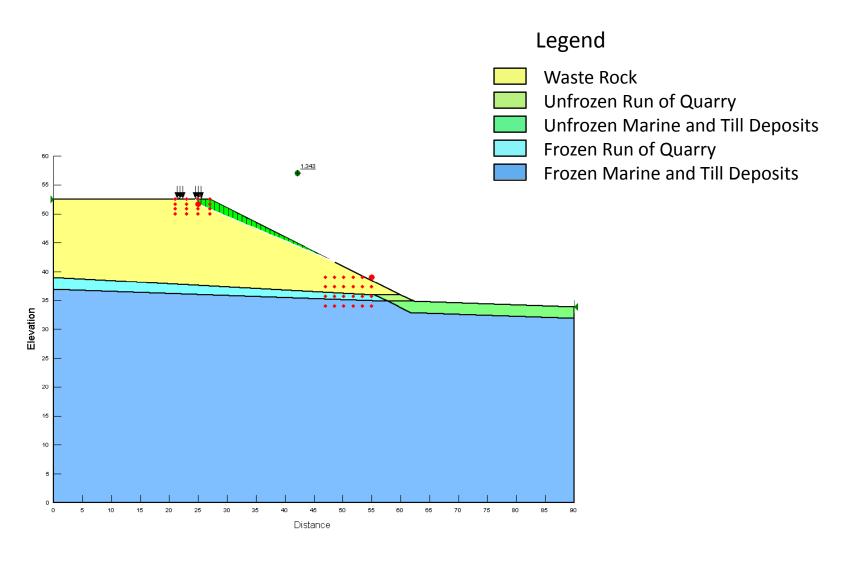
Doris North Waste Pile Section Defined by Entry and Exit

(Morgenstern-Price Method with Haul Truck Loading)



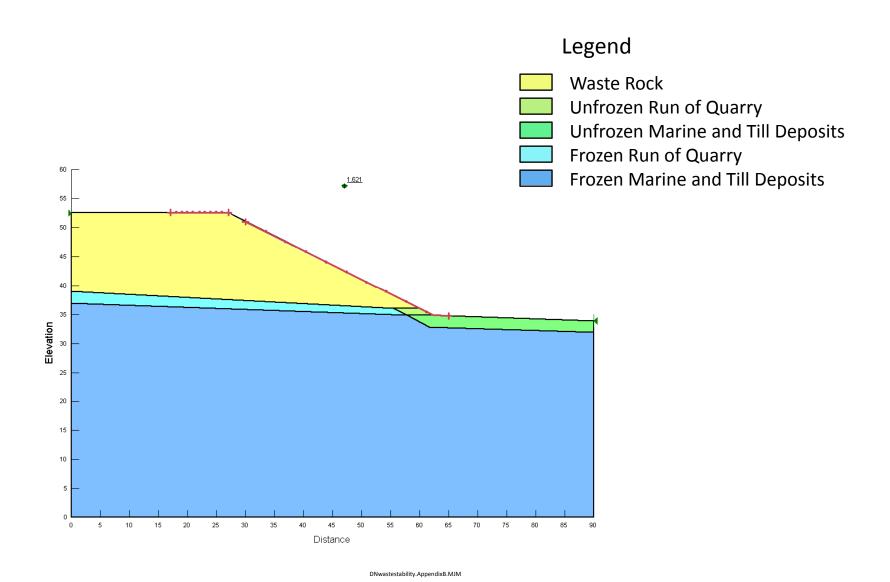
Doris North Waste Pile Section Defined by Blocks

(Morgenstern-Price Method with Haul Truck Loading)



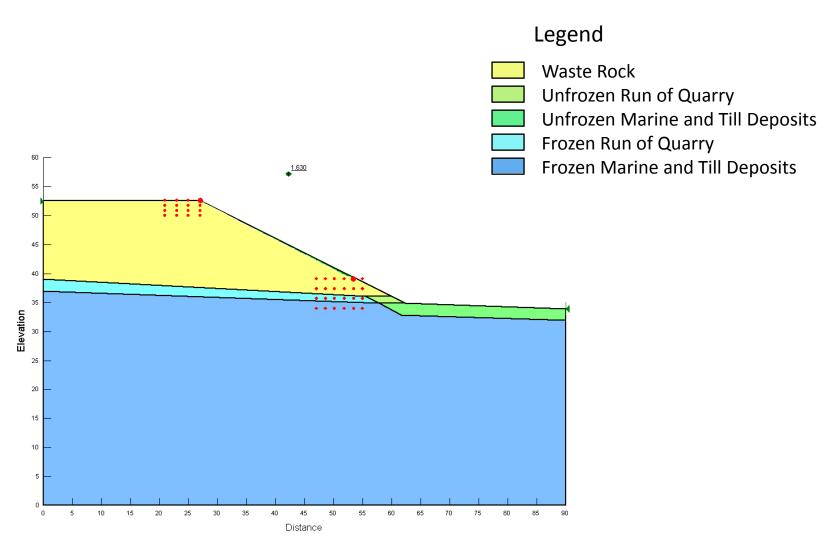
Doris North Waste Pile Section Defined by Entry and Exit

(Morgenstern-Price Method without Haul Truck Loading)



Doris North Waste Pile Section Defined by Blocks

(Morgenstern-Price Method without Haul Truck Loading)



Appendix C Waste Rock Pile Stability Ratings



Project No	1CH008,027	Site Vancouver
Prepared by _	Munay McGregor	Date Nov. 20, 2018
Approved by _		Date

	Approved by	Date	Date					
Subject Doris North	Waste Rock Pile Stability Ratio	Sheet	of					
Stability Factor	Occeription		Points.					
Dump Height	Maximum 21 m		0					
Damp Velume	532,00 tonnes (1 1/18 tonnes) = 29	0,000m3	0					
Dung Slope	2:1 = 28.6° Moderale		50					
Foundation Slope	Slope 1% < 10°							
Confinement	Unconfined		(00					
Foundation Type	Competent (trezen) / Weak (untroxe	n)	200					
Dump Material Quality	Strong - High		0					
Construction Method	Lifts & 25m - Favourable		. 0					
Pieretometria/Climate	Medicale percipitation (Intermedial	(_r)	100					
Dumping Kate	5 m /lincol meter/day (Low)		O i					
Sciemicity	Low		0					
		·						
	Maximum dumping rate:	Frozen Total	306					
	=81,000 towns /quarter	Unfrozen	500					
	= 27,000 townes /month	Total						
	= 14,500 m3/month							
	= 490 m3/day		7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -					
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	= 4.9 m3/lineal meter/day		a u la la descripto de la ca					
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Table 1: Geochemical Classification and Management Recommendations for Proposed Waste Management Units

		No. of Samples		Classification Based on NP/AP			TIC/AP			% Samples with	Classification base Criteria***	ed on Segregation	Notes	Management	
	, ,			(% of samples)		(% of samples	s)	S >0.25%	(% of samples/qua	ntity of rock)			
				non- PAG	uncertain	PAG	non- PAG	uncertain	PAG		non-Mineralized	Mineralized			
Basalt	203,000	98	Sulphur content highly variable, with less than 0.5% in 95% of samples, and localized concentrations up to 6.8% (10 cm vein). NPs were greater than 30 kg CaCO ₃ eq/tonne in 95% of the samples. TICs were typically elevated.	96%	2%	2%	91%	3%	6%	8%	92% 159,000 tonnes	8% 14,000 tonnes	Descriptions for all uncertain and PAG samples noted elevated sulphides.	Low Risk: separate any high sulphide material.	
Gabbro	a minor subunit within basalt*	41	Sulphur content low with values between 0.01 and 0.32% in 95% of samples, with a maximum value of 0.74%. NP and TIC were consistently low with median values of 17 and 0.5 kg CaCO ₃ eq/tonne.	85%	10%	5%	8%	25%	67%	12%	0% n/a	100% *30,000 tonnes	Data set is biased toward the spatially clustered samples from 06TDD614.	Moderate Risk due to low NP: store in mineralized pile.	
Diabase	143,000	34	Sulphur content consistently low, with all values less than 0.1%. NP and TIC are also low, with median values of 12 and 1.5 kg CaCO ₃ eq/tonne.	100%	0%	0%	62%	24%	15%	0%	100% 203,000 tonnes	0% n/a	Given the consistently low AP, should be managed as non-PAG.	Low Risk: confirm lithology.	
Buffer Zone	58,000	24	Sulphur content highly variable, with median values of 0.15%, 95 th percentile values of 1.4%, and maximum values of 4.2%. NP and TIC were greater than 89 and 127 kg CaCO ₃ eq/tonne in 95% of the samples.	96%	4%	0%	100%	0%	0%	29%	71% 41,000 tonnes	29% 17,000 tonnes	Most PAG or uncertain samples contained sulphide or were logged as quartz veins.	Low Risk: separate any high sulphide material.	
Alteration Zone	102,000	45	Sulphur content highly variable, with median values of 0.2%, 95 th percentile values of 1.9%, and maximum values of 3.4%. NP and TIC were typically high, but larger number of samples had lower NP values than observed in the buffer zone or the basalt.	87%	11%	2%	93%	3%	3%	46%	0% n/a	100% 102,000 tonnes	Most PAG or uncertain samples contained sulphide or were logged as quartz veins.	Moderate Risk: store in mineralized pile.	
Stopes	n/a**	17	Sulphur content highly variable, with median values of 0.27%, 95 th percentile values of 2.3%, and maximum values of 5.4%. NP and TIC were highly variable, ranging from negligible to as high as 400 kg CaCO ₃ eq/tonne	41%	41%	18%	25%	38	38%	53%	n/a	n/a	Most PAG or uncertain samples contained or were logged as quartz veins.	n/a: all material from the stopes will be processed.	
Totals	506,000										403,000 tonnes	163,000 tonnes			

Notes: * The gabbro is not defined in the geological model but is considered a minor component of the zone defined as basalt. A search of the geological database indicated that 6% of the core in the deposit area was gabbro. Therefore, conservatively neglecting core that is from ore zones, approximately 30,000 tonnes of gabbro could be present. This is taken from the block model quantities for basalt.

^{**} all of the rock in the stopes is ore and will be processed.

^{***}Segregation criteria based on rock type and then visual percent sulphides. For diabase, gabbro, alteration zone and stopes, rock type is the only criteria considered. For basalt and buffer zone rock the percent of samples with greater than 0.25% sulphur based on lab analyses was used to estimate the percent of material in each category.