

## RECEIVED

By Licence Administrator at 4:00 pm, Jun 02, 2011

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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.

KIA Question #2: 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%)<sup>1</sup> 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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<sup>&</sup>lt;sup>1</sup> Note that this corresponds to 0.25% sulphur content, or an acid potential of <8 kg CaCO<sub>3</sub> 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.

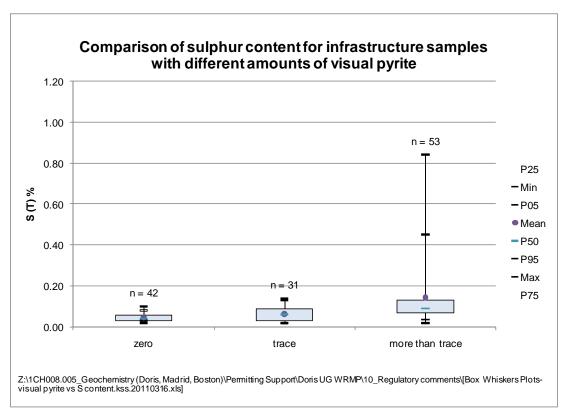


Figure 1: Comparison of sulphur content for infrastructure samples with different amounts of visual pyrite

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 rock<sup>2</sup>. 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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<sup>&</sup>lt;sup>2</sup> 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

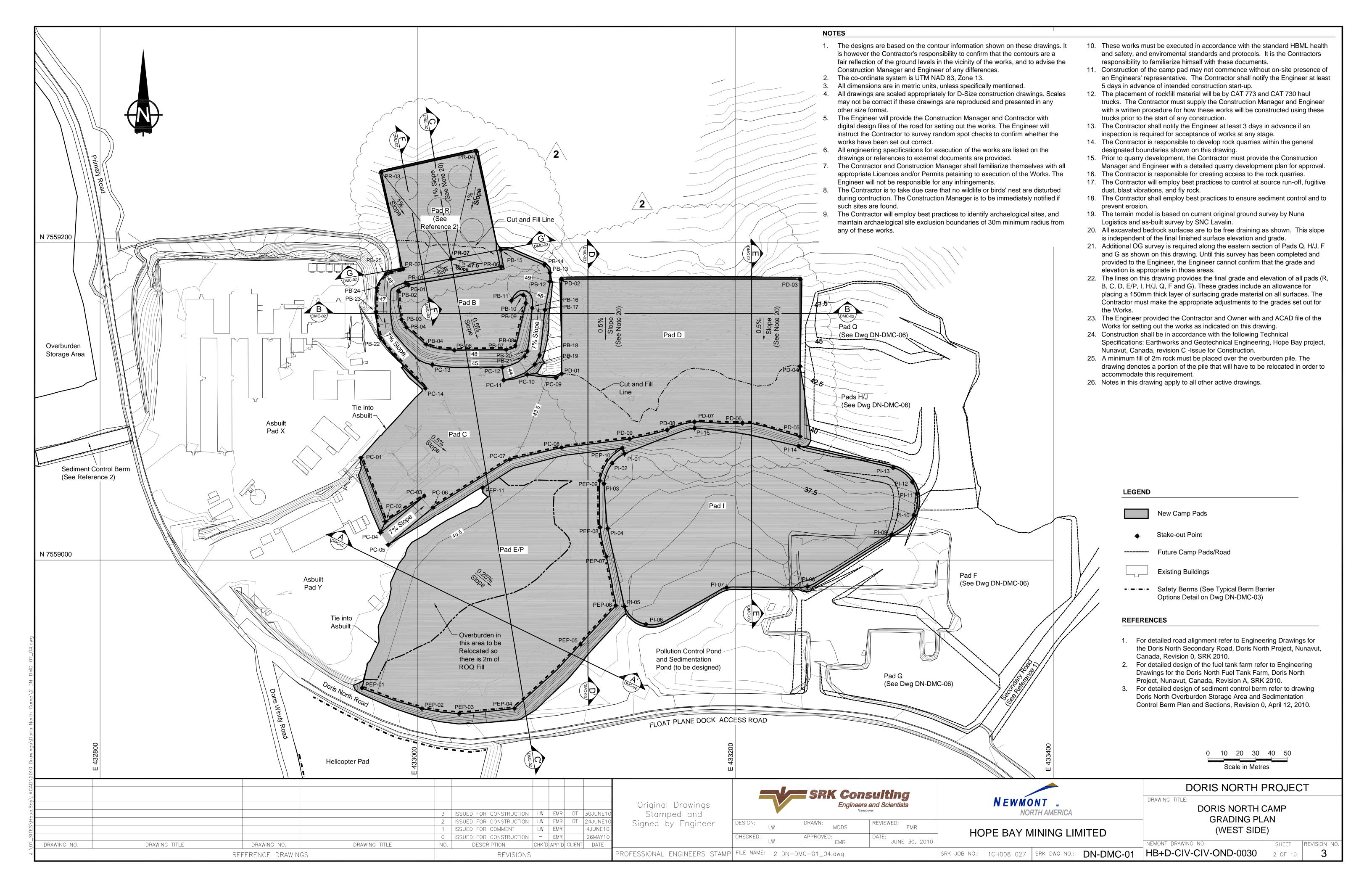
# **ACTIVE DRAWING STATUS**

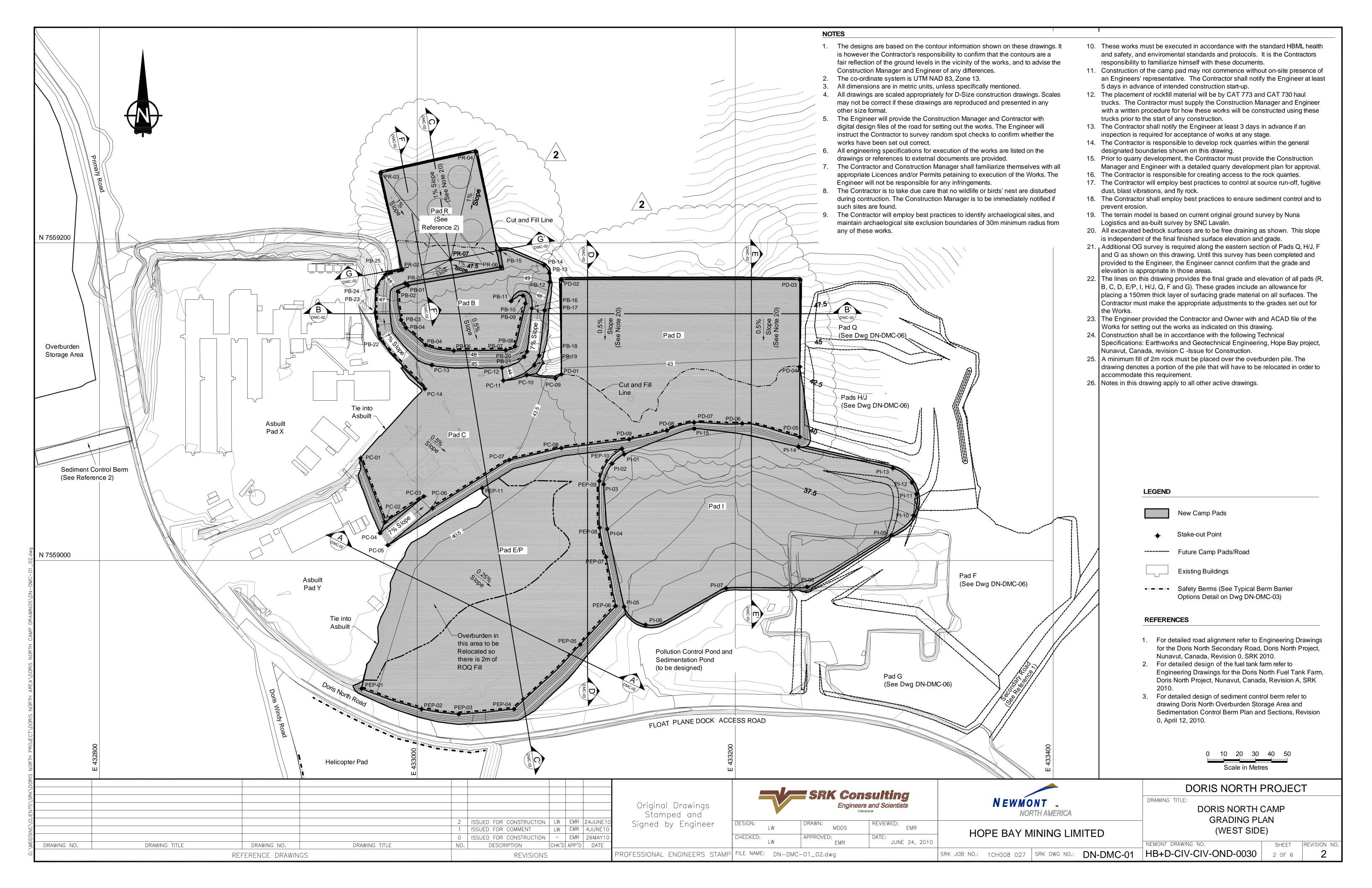
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|----------------|-----------------------|---|----------|---------------------------|--------------------------------|-----------------------|-----------------------|----------------------|
| DN-DMC-00      | HB+D-CIV-CIV-OND-0039 | Engineering Drawings for Doris North Camp Area                    | 4        | <b>September 29, 2010</b> | 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             | <b>Issued for Construction</b> | 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        | <b>September 29, 2010</b> | Issued for Construction        | Rev. A, July 28, 2010 |                       |                      |
| DN-DMC-011     | HB+D-CIV-CIV-OND-0071 | Sedimentation and Pollution Control Ponds Sections                | 0        | <b>September 29, 2010</b> | 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        | <b>September 29, 2010</b> | Issued for Construction        | Rev. A, July 28, 2010 |                       |                      |
| DN-DMC-013     | HB+D-CIV-CIV-OND-0073 | Material Specifications (Sedimentation & Pollution Control Ponds) | 0        | <b>September 29, 2010</b> | 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        | <b>September 29, 2010</b> | 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        | <b>September 29, 2010</b> | Issued for Construction        |                       |                       |                      |
| DN-DMC-017     | HB+D-CIV-CIV-OND-0089 | Pollution Control Pond Surfaces 3 and 4                           | 0        | <b>September 29, 2010</b> | 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        | <b>September 24, 2010</b> | Issued for Construction        |                       |                       |                      |
| DN-DMC-020     | HB+D-CIV-CIV-OND-0110 | Doris North Access Road Profiles                                  | 0        | <b>September 24, 2010</b> | 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        |                       |                       |                      |

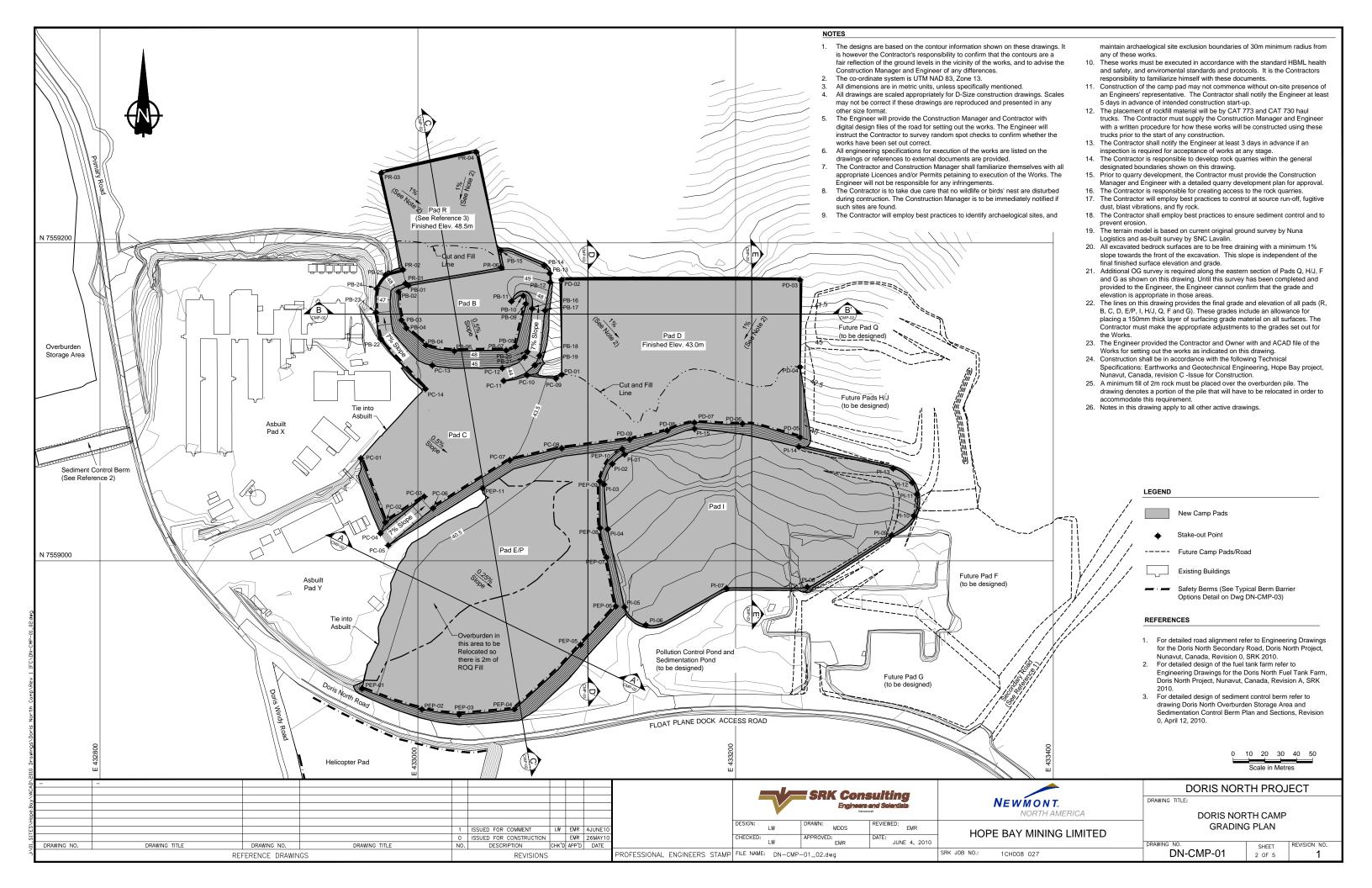
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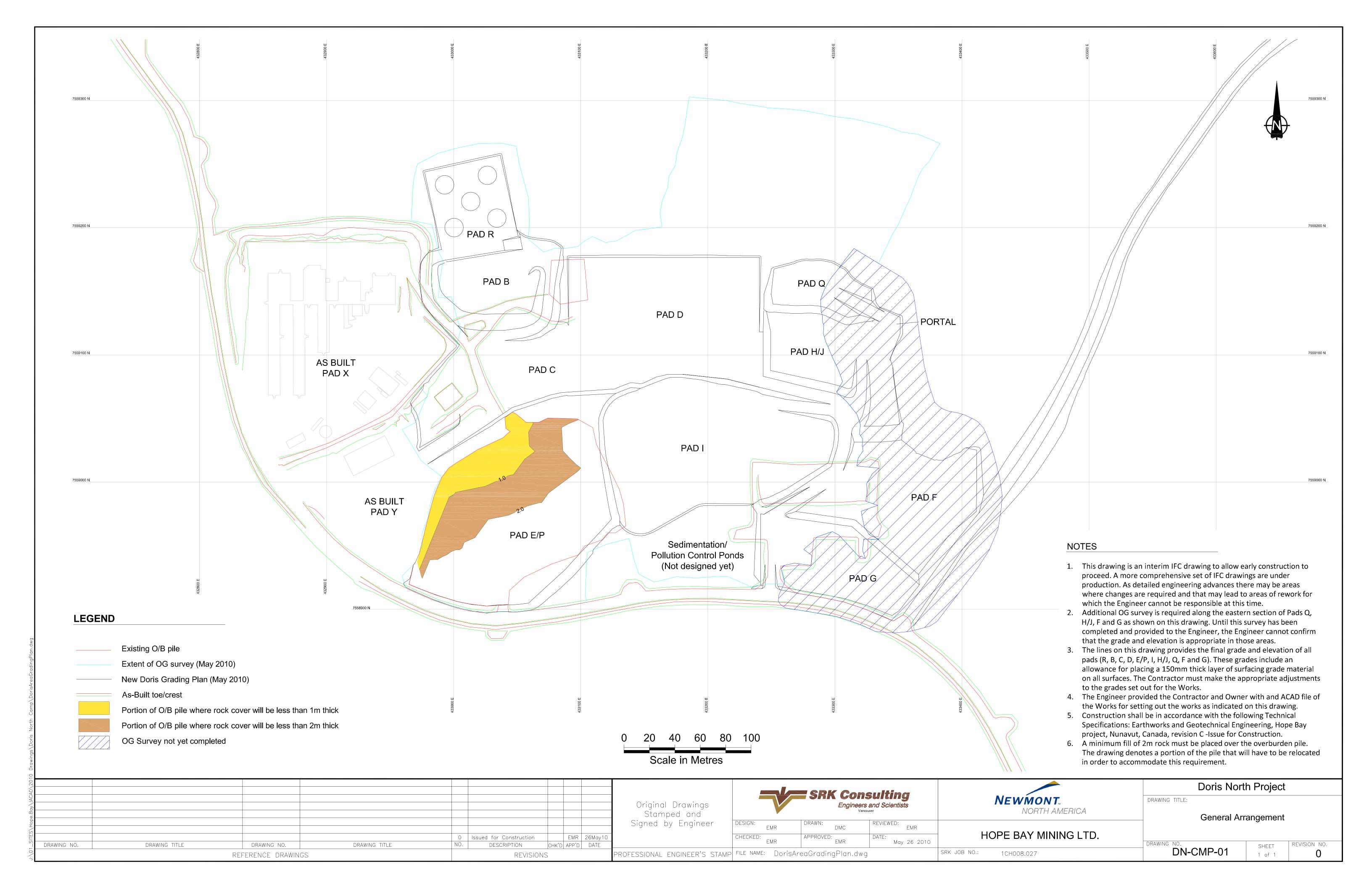


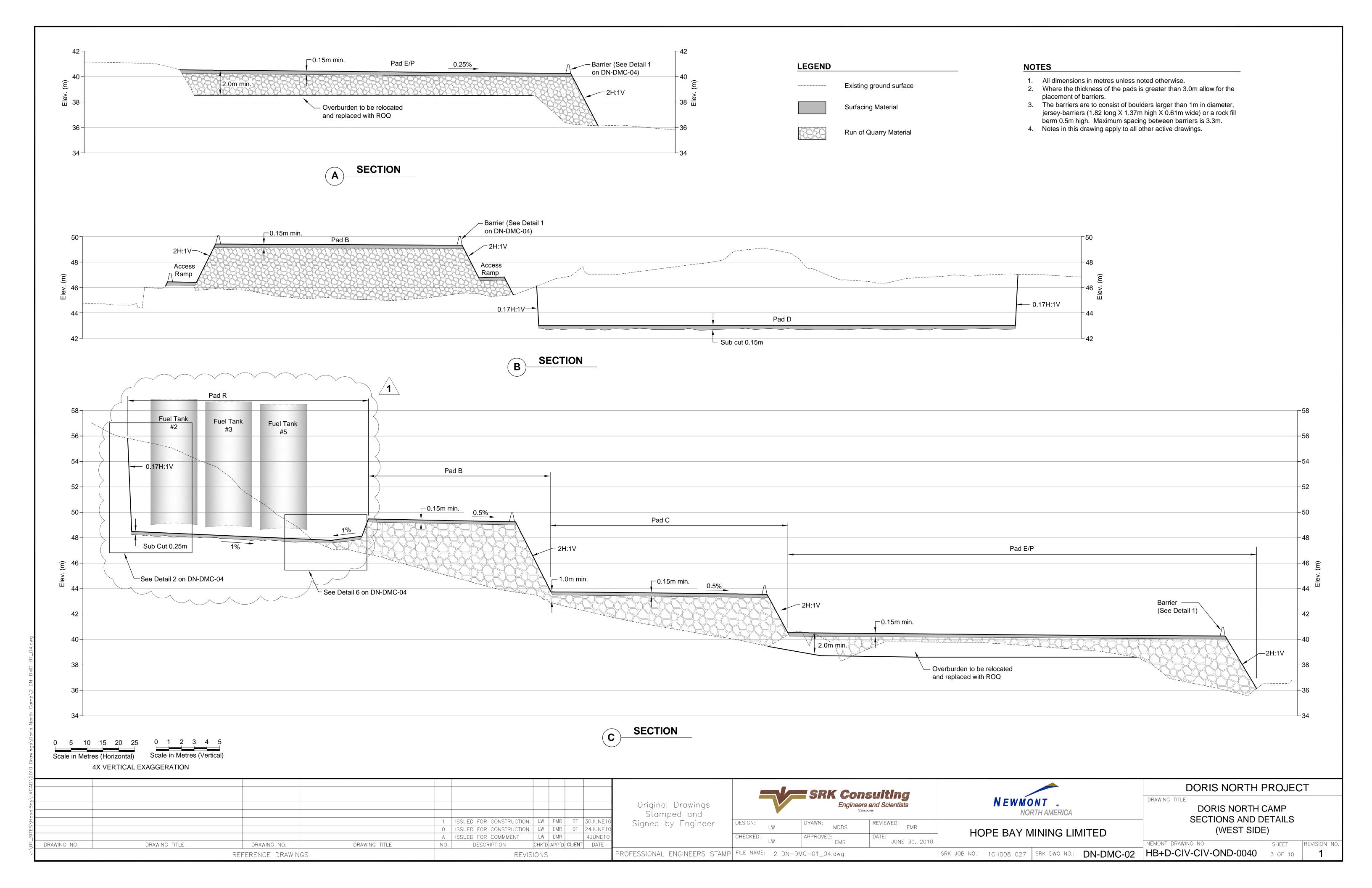
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ISSUED FOR CONSTRUCTION
Revision 4
September 29, 2010
DN-DMC-00 / HB+D-CIV-CIV-OND-0039

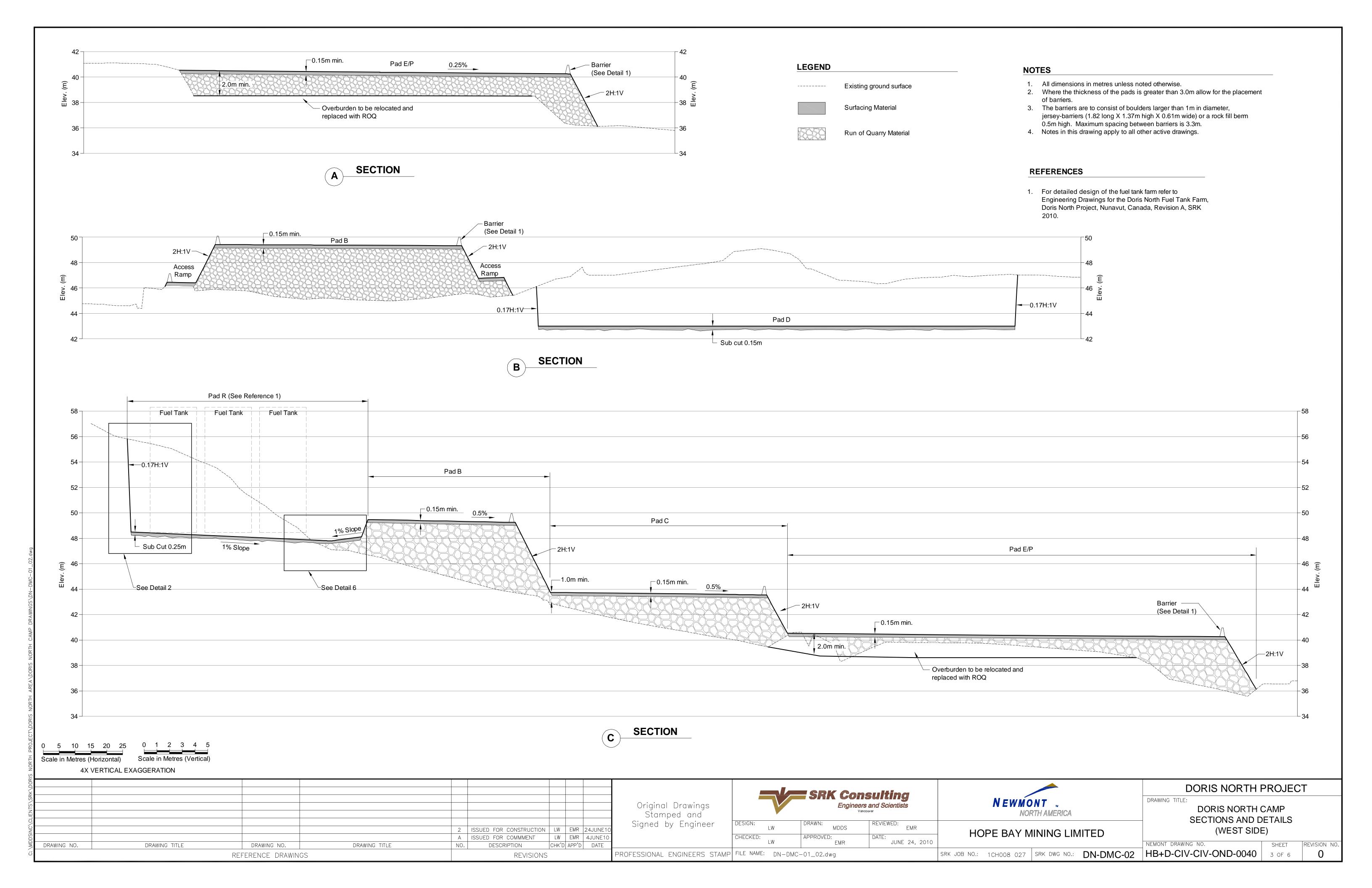


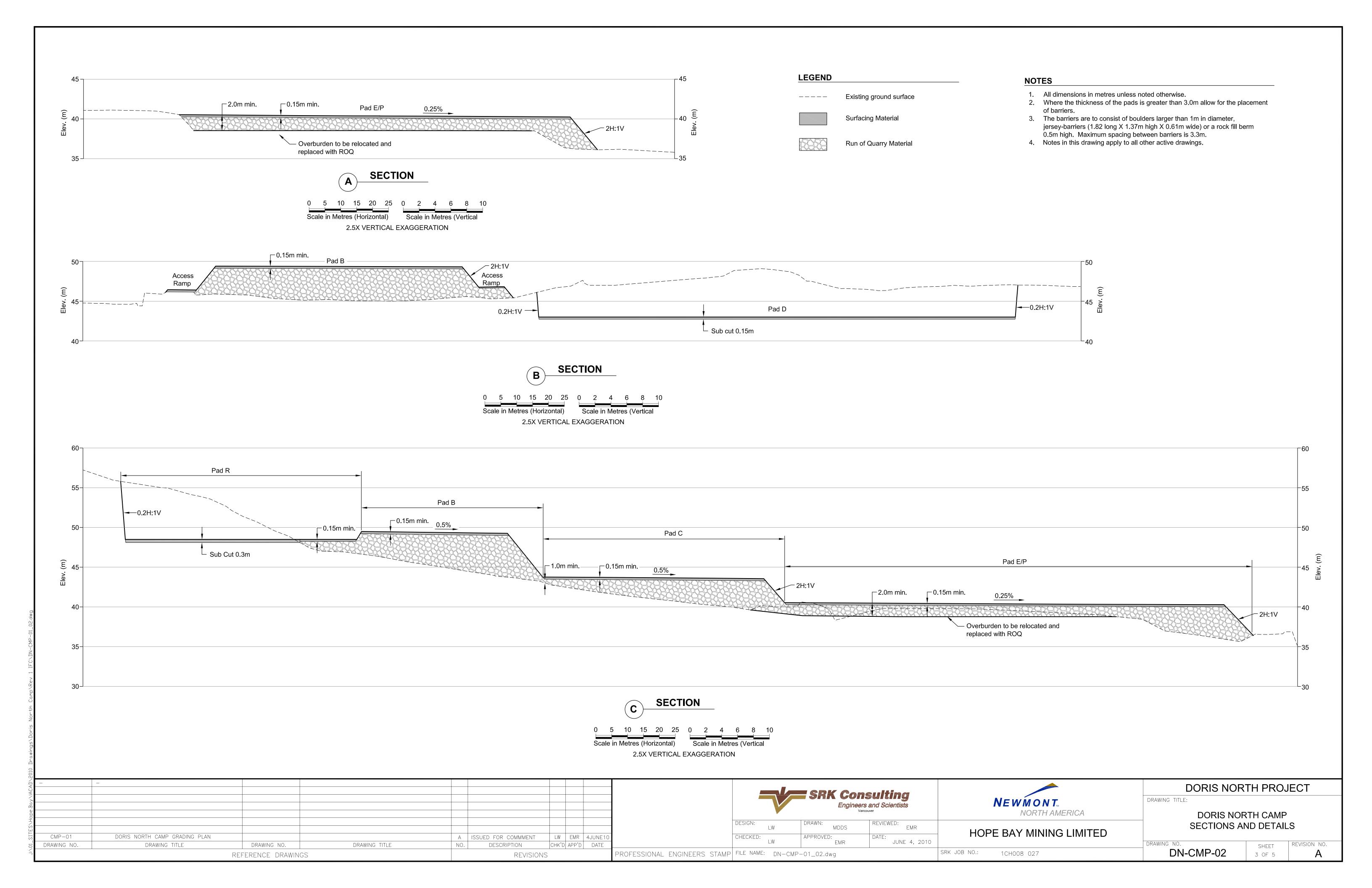


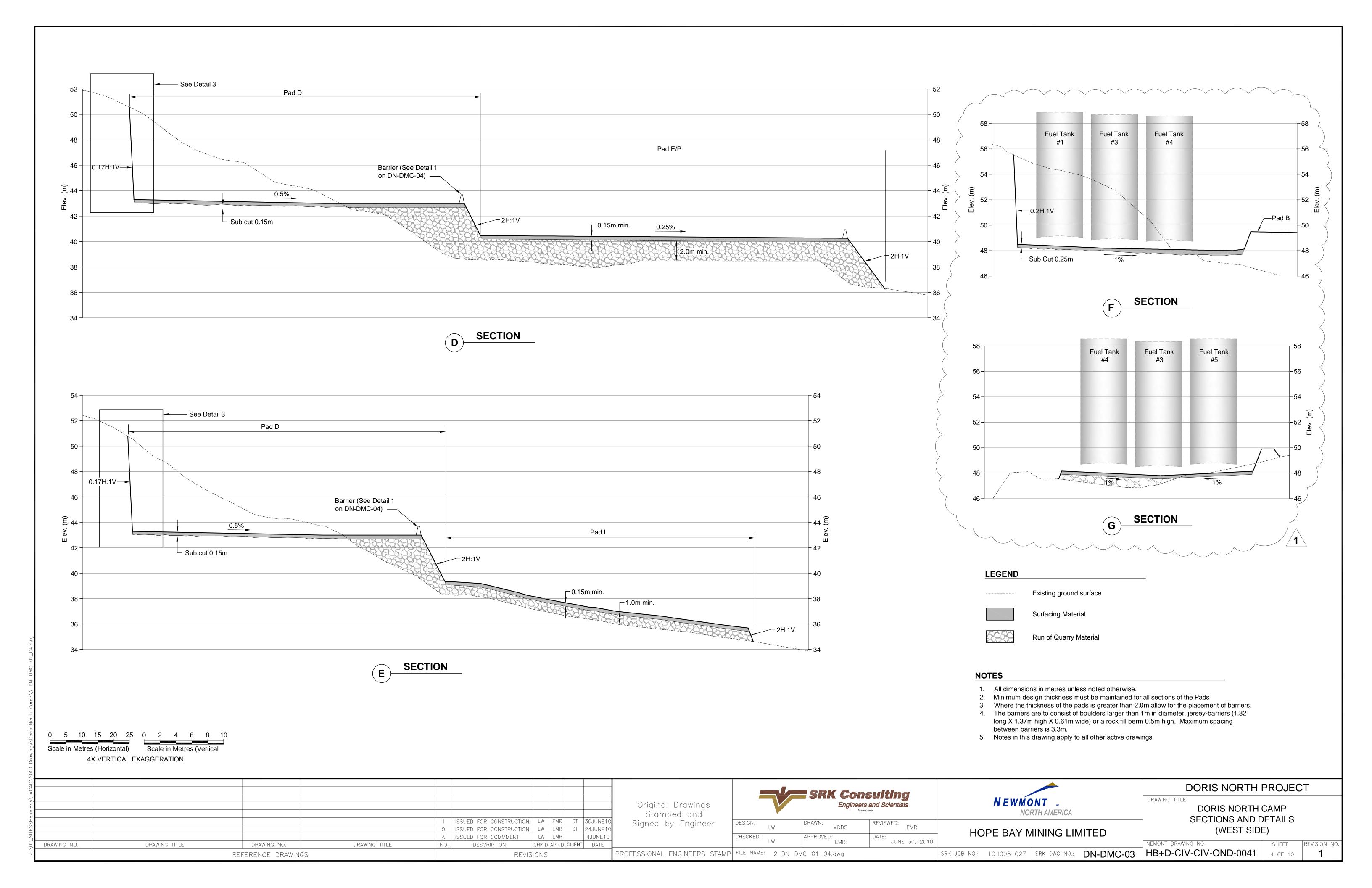


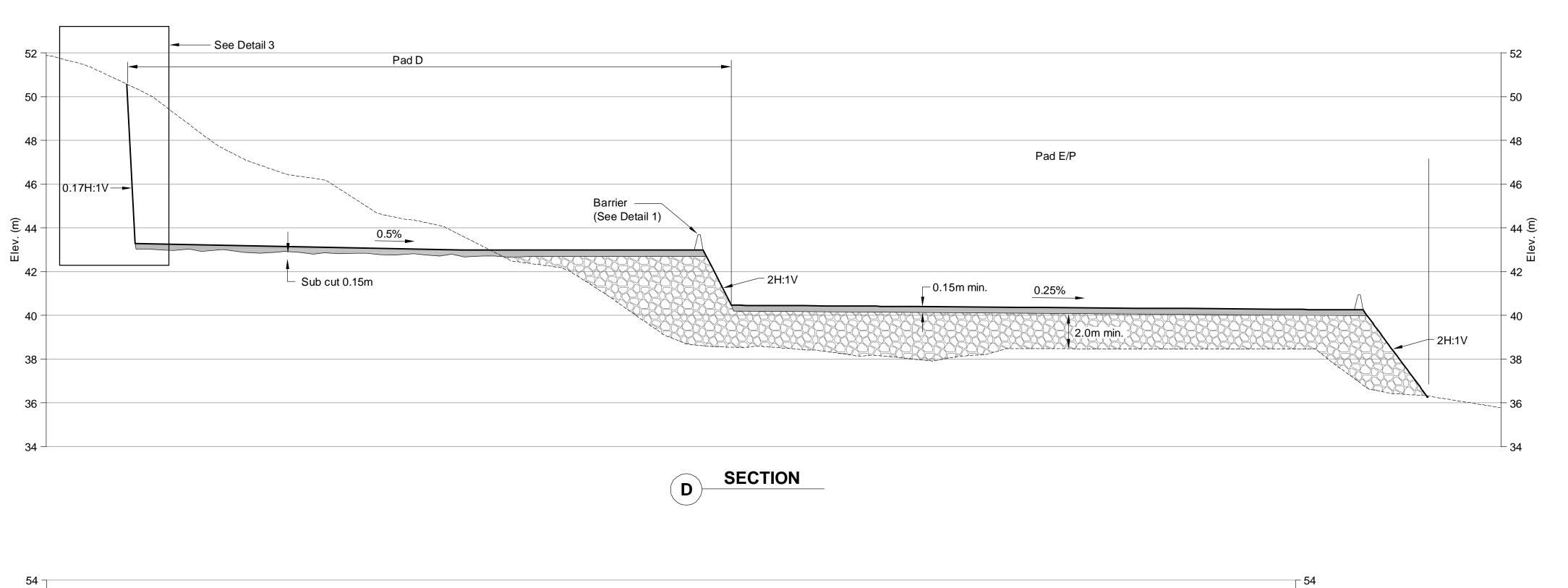


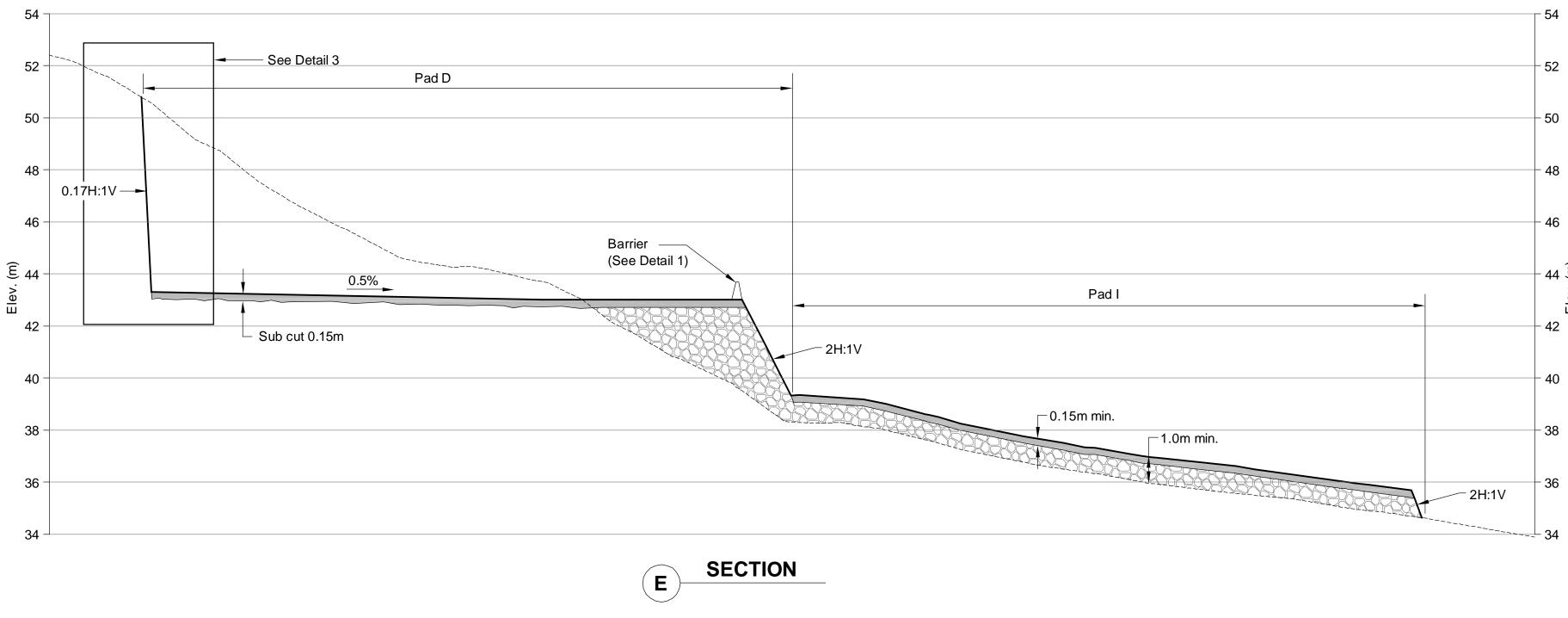












**LEGEND** 

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

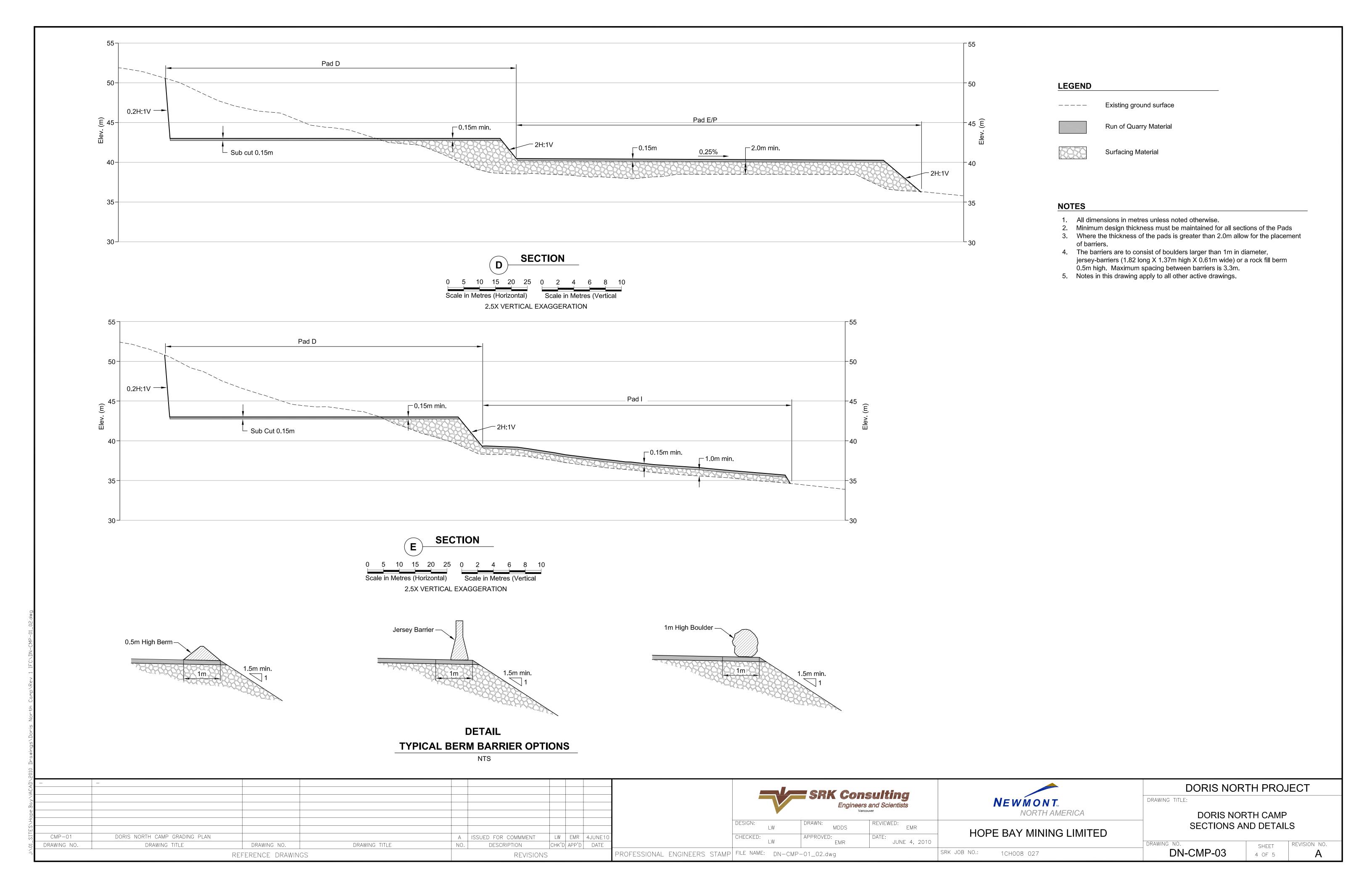
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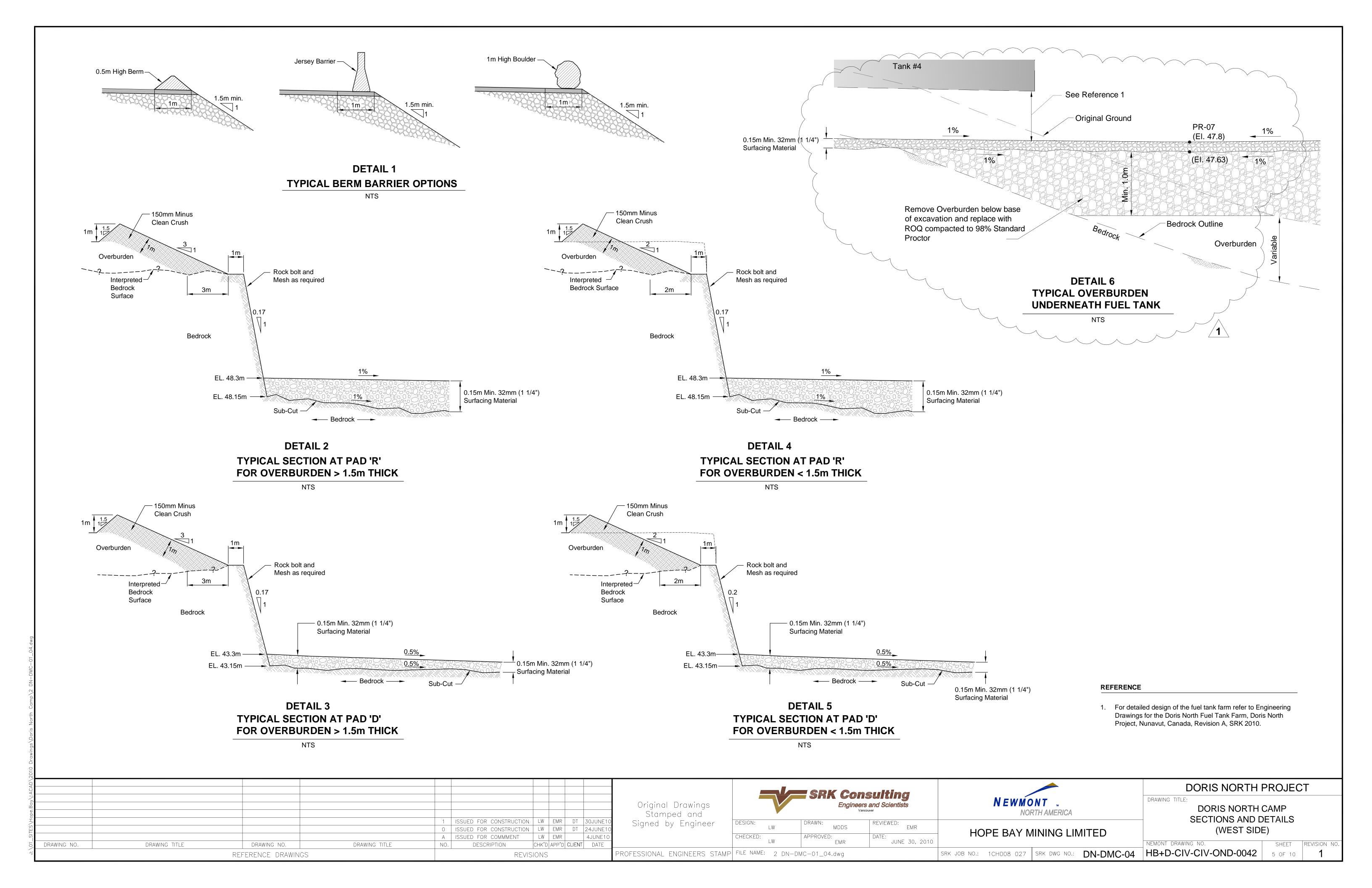
SRK Consulting Engineers and Scientists
Vancouver REVIEWED: EMR DESIGN: CHECKED: APPROVED: JUNE 24, 2010 NEWMONT ... NORTH AMERICA

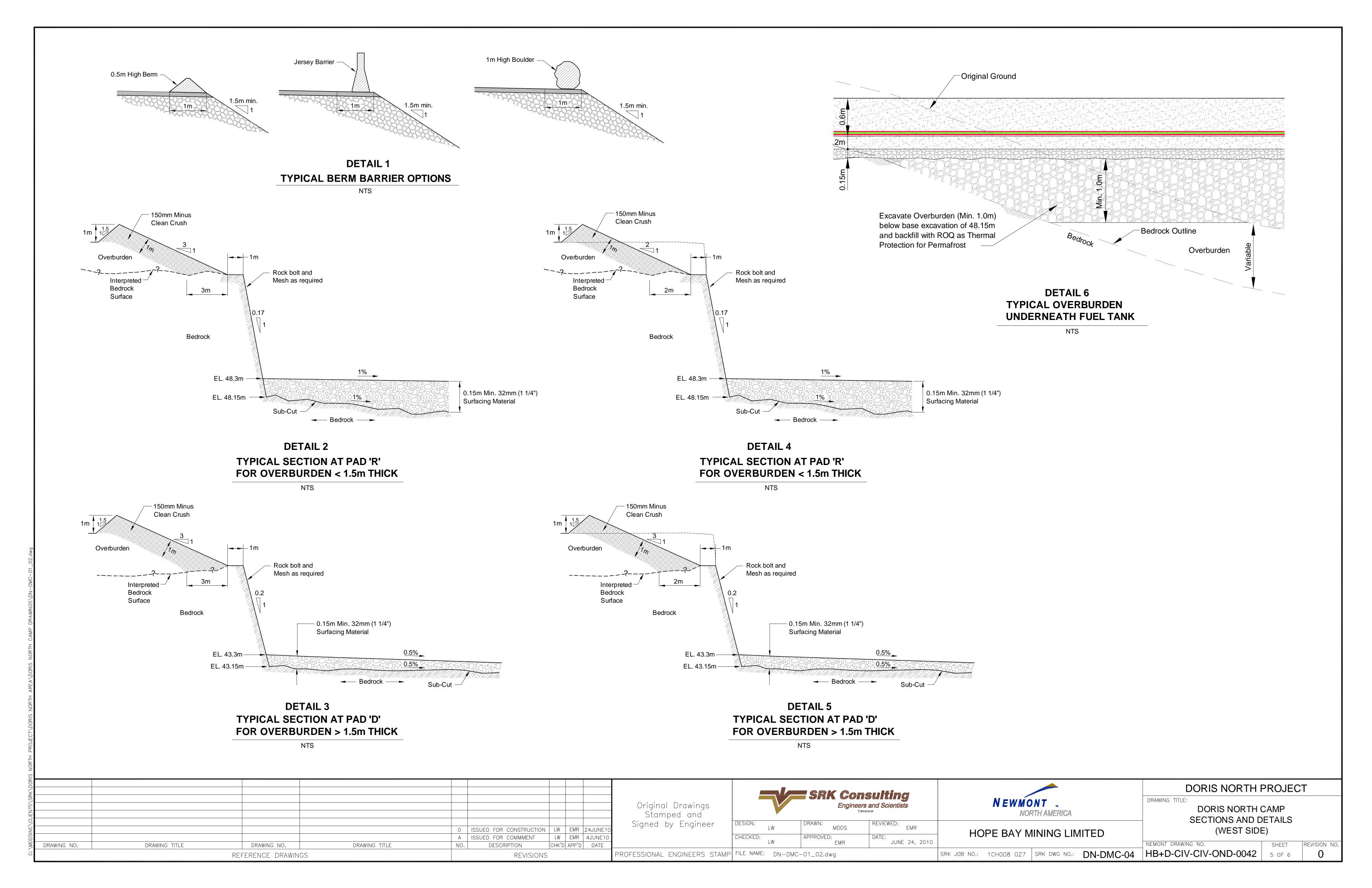
HOPE BAY MINING LIMITED

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 8,000m<sup>3</sup>. 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              | <ul> <li>Volumes derived by merging Topography/</li> </ul> |  |  |
|  | Pad D Cut      | 37,000 m³             | As-built to Pad Design Surfaces.                           |  |  |
|  | Pad E/P        | 31,372 m³             |  |  |  |
|  | Pad I          | 14,526 m <sup>3</sup> |  |  |  |
|  | Total Fill:    | 87,368 m <sup>3</sup> |  |  |  |
|  | Total Cut:     | 37,000 m³             |  |  |  |
| 2. Surface Grade Material                | Pad B          | 1,267 m³              |  |  |  |
| 2. Gariago Grado Material                | Pad R          | 1,148 m <sup>3</sup>  |  |  |  |
|  | Pad C          | 1,153 m <sup>3</sup>  |  |  |  |
|  | Pad D          | 2,167 m³              |  |  |  |
|  | Pad E/P        | 2,628 m <sup>3</sup>  |  |  |  |
|  | Pad I          | 2,474 m³              |  |  |  |
|  | Total Fill:    | 10,837 m <sup>3</sup> |  |  |  |
| 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:<br>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 8,000m<sup>3</sup>. 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 <sup>3</sup><br>1,134 m <sup>3</sup><br>16,197 m <sup>3</sup><br>8,309 m <sup>3</sup><br>31,372 m <sup>3</sup><br>14,526 m <sup>3</sup><br>88,502 m <sup>3</sup> | 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 <sup>3</sup> 1,148 m <sup>3</sup> 1,153 m <sup>3</sup> 2,167 m <sup>3</sup> 2,628 m <sup>3</sup> 2,474 m <sup>3</sup>   |  |  |  |
| Volume of Overburden to be Relocated | Pad E/P  | 3,000 m³  | Approximate  |  |  |
| 4. Volume of Rock Cut                | Pad R Cut<br>Pad D Cut                                       | 15,660 m³<br>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 8,000m<sup>3</sup>. 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 <sup>3</sup><br>1,134 m <sup>3</sup><br>16,197 m <sup>3</sup><br>8,309 m <sup>3</sup><br>31,372 m <sup>3</sup><br>14,526 m <sup>3</sup><br>88,502 m <sup>3</sup> | 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 <sup>3</sup> 1,148 m <sup>3</sup> 1,153 m <sup>3</sup> 2,167 m <sup>3</sup> 2,628 m <sup>3</sup> 2,474 m <sup>3</sup>   |  |
| Volume of Overburden to be Relocated | Pad E/P  | 3,000 m³  | Approximate  |
| 4. Volume of Rock Cut                | Pad R Cut<br>Pad D Cut                                       | 15,660 m³<br>37,000 m³  |  |
|                                      | Total Cut:   | 52,660 m <sup>3</sup>   |  |

| 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                    | 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 |  |  |  |
|                       |               |            |       |       |  |  |  |

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)

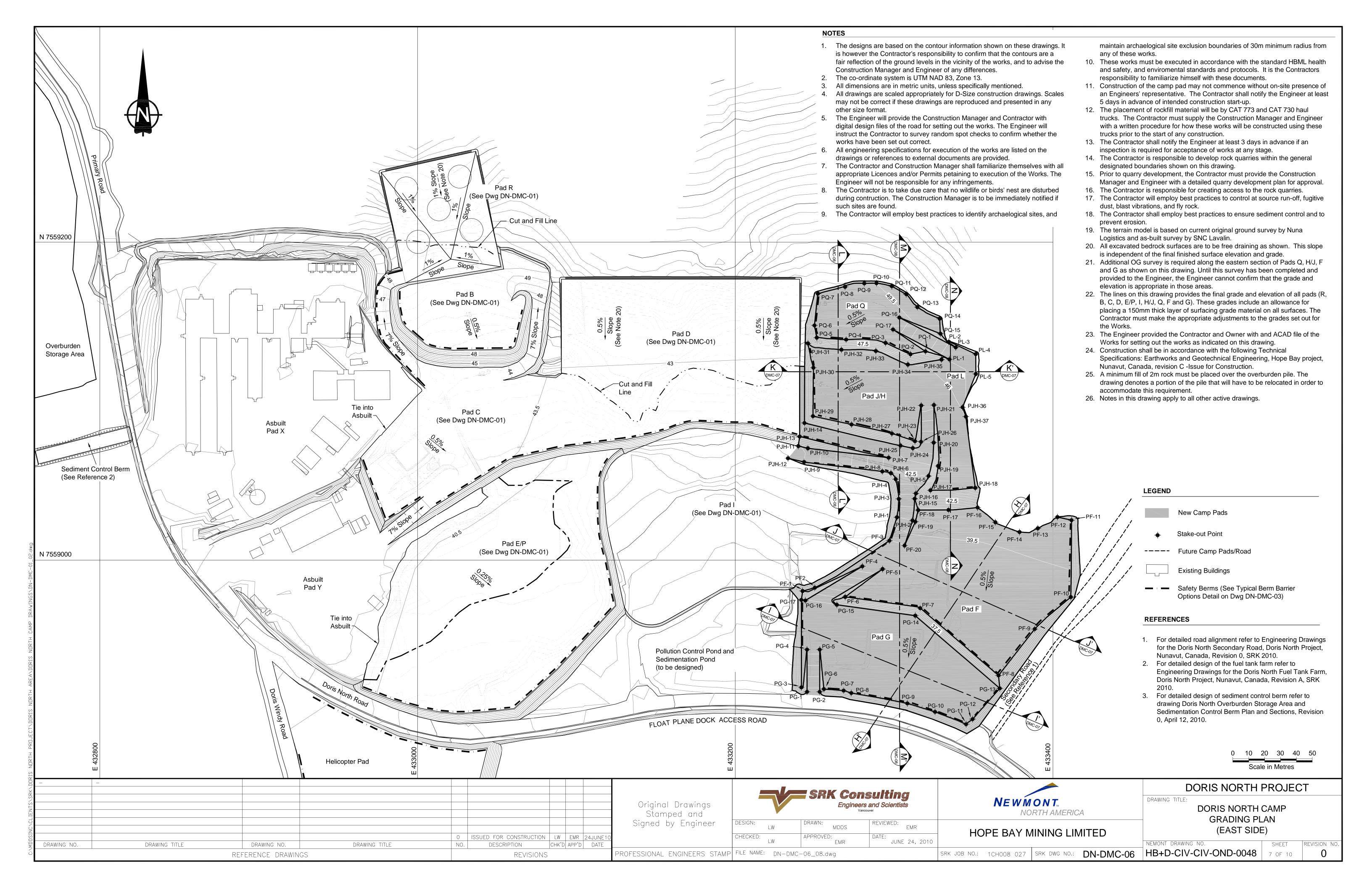
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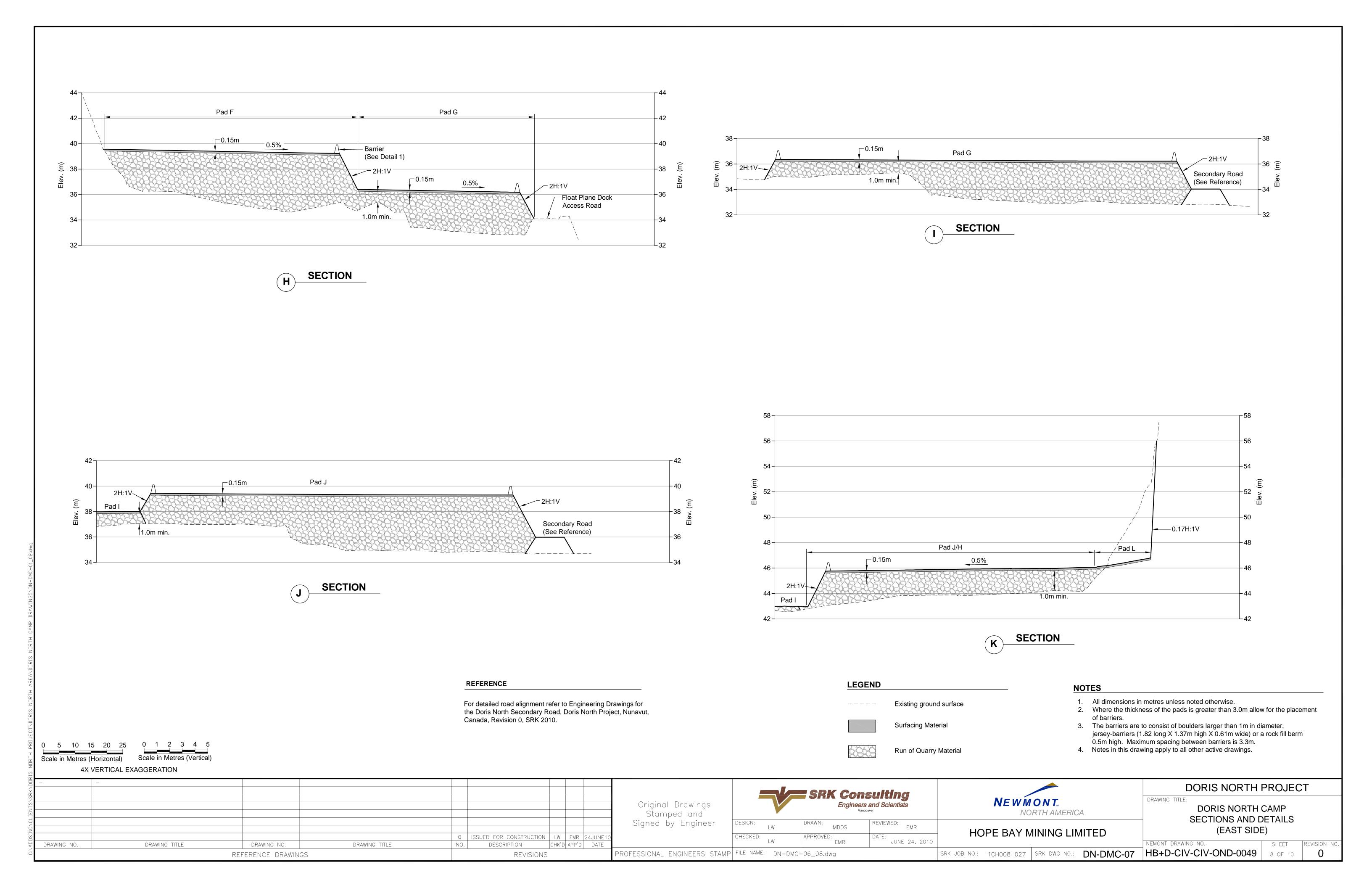
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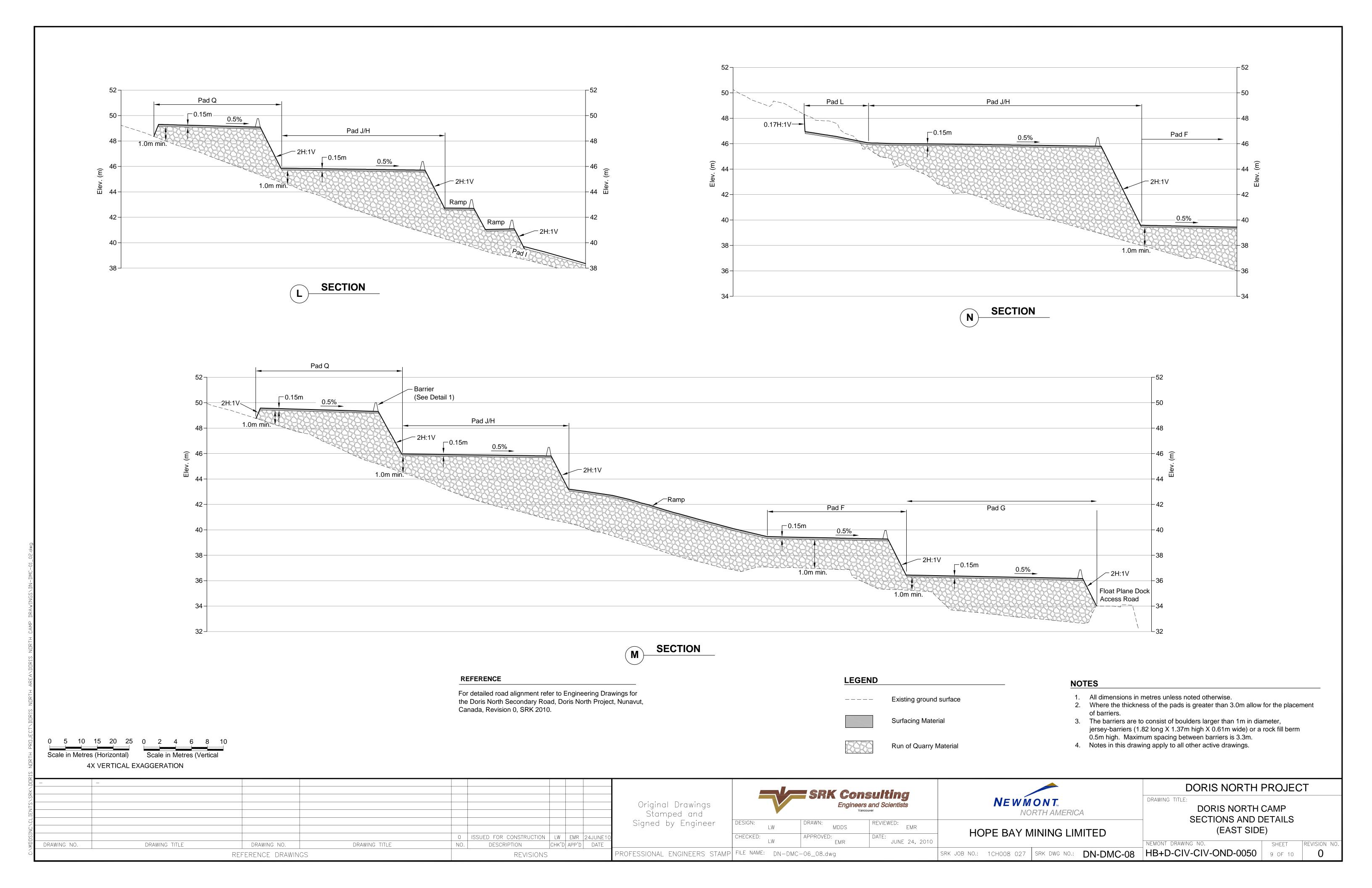
REVISIONS

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 8,000m<sup>3</sup>. 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<br>Pad J/H<br>Pad Q          | 48,740 m³<br>26,440 m³<br>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:<br>Total Cut: (Pad L)    | 82,000 m <sup>3</sup><br>1,293 m <sup>3</sup> | <ul> <li>Volumes derived by merging Topography/<br/>As-built to Pad Design Surfaces.</li> </ul>   |
| 2. Surface Grade Material | Pad G/F<br>Pad J/H<br>Pad L<br>Pad Q | 2,200 m³<br>1,100 m³<br>75 m³<br>380 m³       |   |
|                           | Total Fill:                          | 3,755 m <sup>3</sup>                          |   |
| 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         |  |

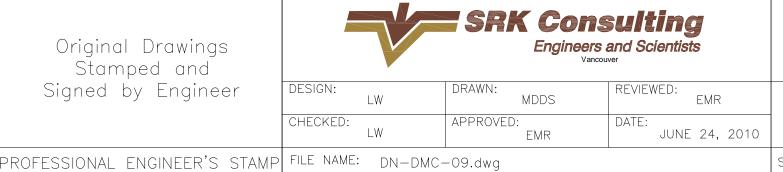
| ID     | Northing     | Easting    | Elevation (m) |
|--------|--------------|------------|---------------|
| PJH-1  | 7,559,026.96 | 433,301.80 | 40.49         |
| PJH-2  | 7,559,024.92 | 433,311.62 | 40.50         |
| PJH-3  | 7,559,038.53 | 433,302.95 | 41.30         |
| PJH-4  | 7,559,050.91 | 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



**NEWMONT** NORTH AMERICA

HOPE BAY MINING LIMITED

**Doris North Project** DRAWING TITLE:

> MATERIAL SPECIFICATIONS (EAST SIDE)

NEMONT DRAWING NO. REVISION NO SRK JOB NO.: 1CH008 027 | SRK DWG NO.: DN-DMC-09 | HB+D-CIV-CIV-OND-0051 | 10 OF 10

