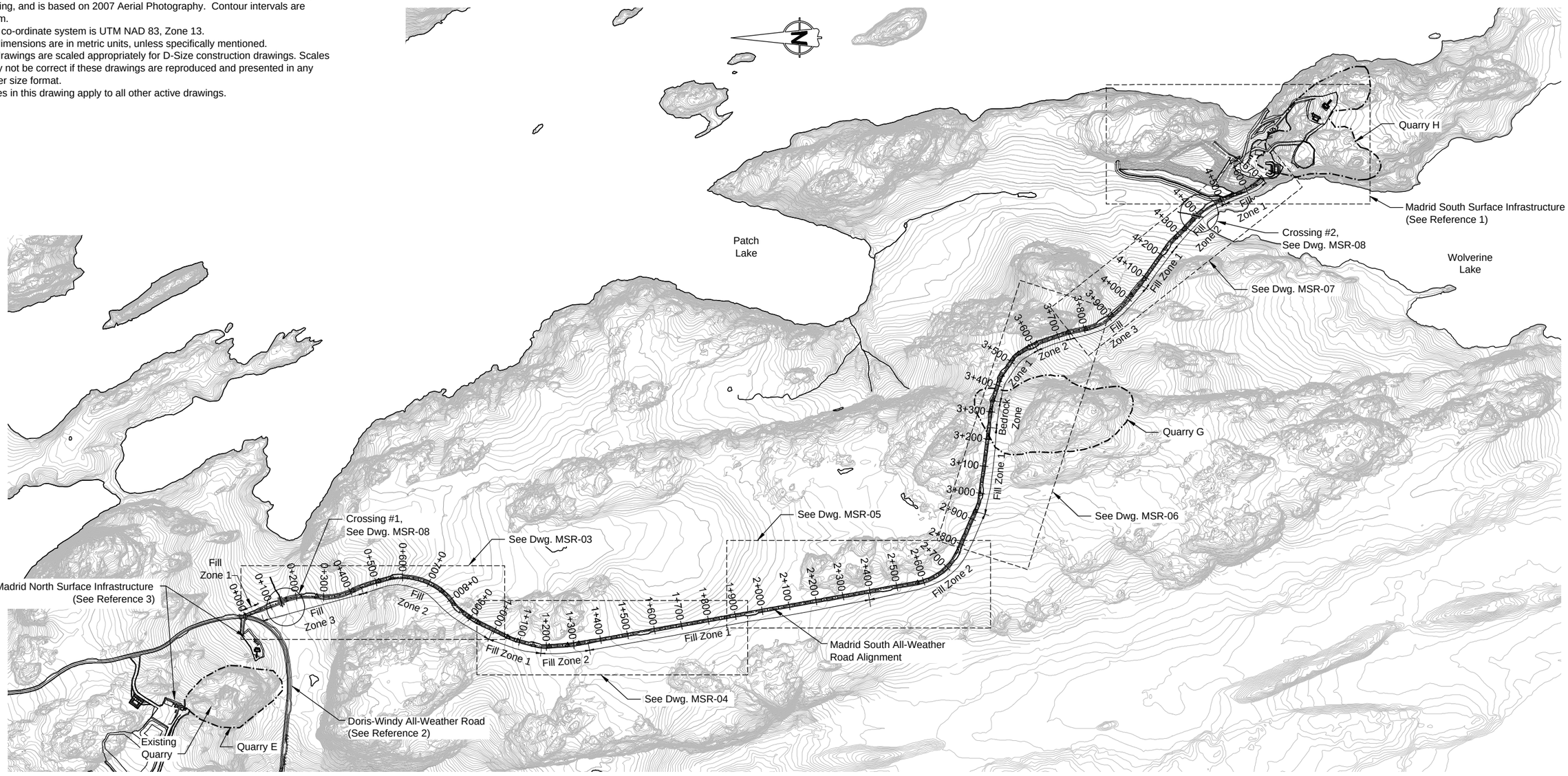
NOTES

1. Topographic contour data for the terrain model were provided by Hope Bay Mining, and is based on 2007 Aerial Photography. Contour intervals are 0.5m.
2. The co-ordinate system is UTM NAD 83, Zone 13.
3. All dimensions are in metric units, unless specifically mentioned.
4. All drawings are scaled appropriately for D-Size construction drawings. Scales may not be correct if these drawings are reproduced and presented in any other size format.
5. Notes in this drawing apply to all other active drawings.



LEGEND

- Existing Approved and Permitted Quarry
- Proposed Development Quarry
- Road Alignment
- Route Centerline (1+000)

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

REFERENCES

1. Engineering drawings for the Madrid South Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision F. Project No. 1CT022.001. October 31, 2014.
2. Engineering Drawings for the Doris-Windy All-Weather Road, Doris Infrastructure Project, Nunavut, Canada. Revision AB1. As-Built Drawings Prepared for Hope Bay Mining Ltd. Project Number: 1CH008.033/.058. May 11, 2012
3. Engineering drawings for the Madrid North Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision E. Project No. 1CT022.001. October 31, 2014.

0 100 200 300 400 500
Scale in Metres

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS			

NO.	DESCRIPTION	CHK'D	APP'D	DATE
B	Minor Edits	LW	EMR	31Oct14
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings Stamped and Signed by Engineer

PROFESSIONAL ENGINEERS STAMP

srk consulting

DESIGN:	DRAWN:	REVIEWED:
JK	NV	LW
CHECKED:	APPROVED:	DATE:
JK	EMR	October 31, 2014

FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:

Madrid South All-Weather Access Road
General Arrangement

DRAWING NO.	SHEET	REVISION NO.
MSR-02	3 OF 17	B

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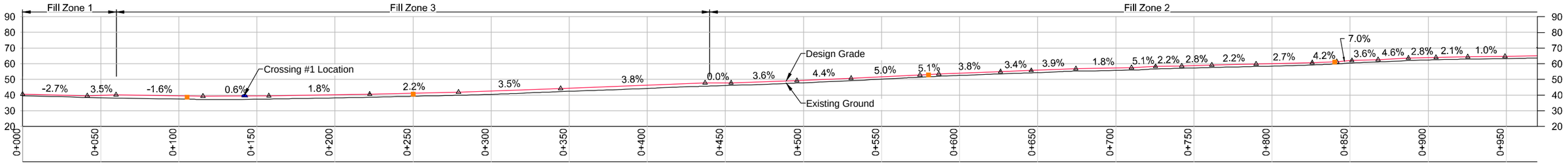
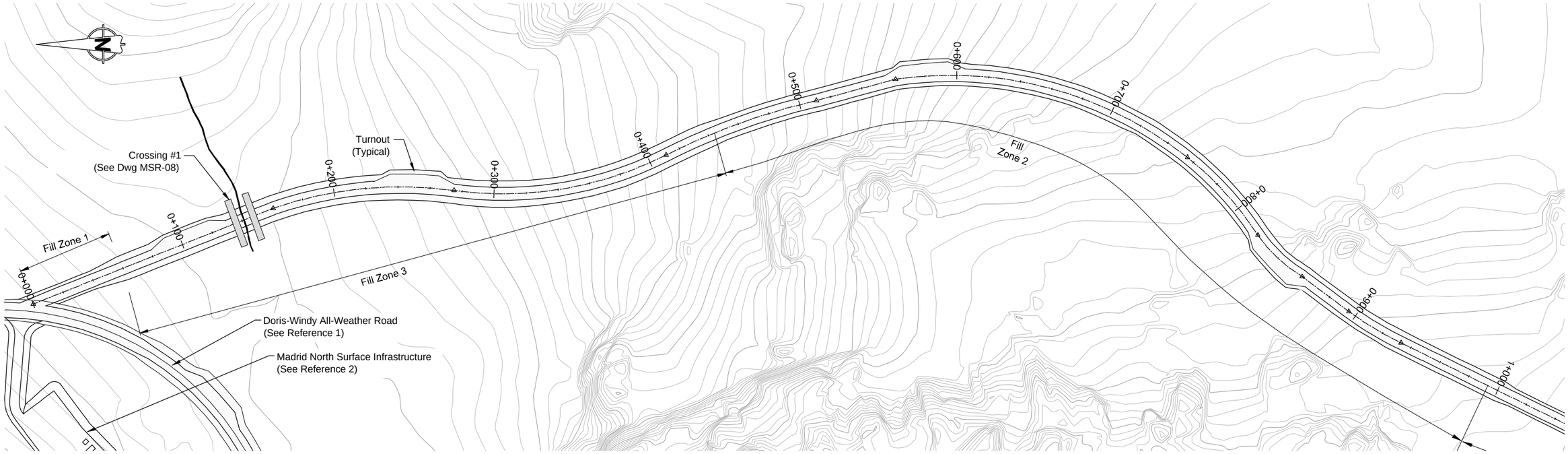
PROFILE LEGEND

- Point of Intersection
- 6.1% Grade
- Turnout Location; not to scale (See Drawing MSR-07 for Typical Layout)



PROFILE
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres



PLAN VIEW
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

LEGEND

- Point of Intersection
- Route Centerline (1+000)
- Road Alignment
- Crossing Location

NOTES

1. All dimensions in metres unless noted otherwise.
2. Notes in this drawing apply to all other active drawings.

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

REFERENCES

1. Engineering Drawings for the Doris-Windy All-Weather Road, Doris Infrastructure Project, Nunavut, Canada. Revision AB1. As-Built Drawings Prepared for Hope Bay Mining Ltd. Project Number: 1CH008.033/.058. May 11, 2012
2. Engineering drawings for the Madrid North Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision E. Project No. 1CT022.001. October 31, 2014.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
D	Minor Edits	LW	EMR	31Oct14
C	Minor Edits	LW	EMR	12Sep14
B	Issued for Discussion	LW	EMR	5Aug14
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

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DESIGN: JK | DRAWN: NV | REVIEWED: LW
CHECKED: LW | APPROVED: EMR | DATE: October 31, 2014
FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

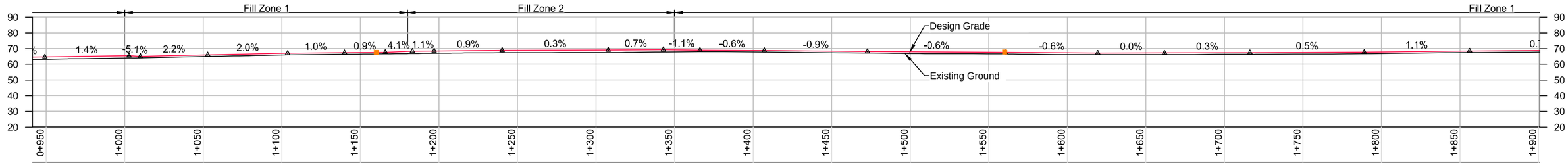
DRAWING TITLE: Road Alignment Plan and Profile (1 of 5)

DRAWING NO. MSR-03 | SHEET 4 OF 17 | REVISION NO. D

C:\01_SITES\Hope Bay\Madrid South Access\1CT022_001_Madrid South_all weather road.dwg

PROFILE LEGEND

- Point of Intersection
- 6.1% Grade
- Turnout Location; not to scale
  (See Drawing MSR-07 for Typical Layout)



PROFILE
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

PLAN VIEW
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

LEGEND

- Point of Intersection
- Route Centerline 1+000
- Road Alignment
- Crossing Location

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

NOTES

1. All dimensions in metres unless noted otherwise.
2. Notes in this drawing apply to all other active drawings.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE
REFERENCE DRAWINGS			

NO.	DESCRIPTION	CHK'D	APP'D	DATE
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings Stamped and Signed by Engineer

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DESIGN:	DRAWN:	REVIEWED:
JK	NV	LW
CHECKED:	APPROVED:	DATE:
JK	EMR	Mar. 14, 2014

FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

MAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Road Alignment
Plan and Profile
(2 of 5)

DRAWING NO.	SHEET	REVISION NO.
MSR-04	5 OF 17	A

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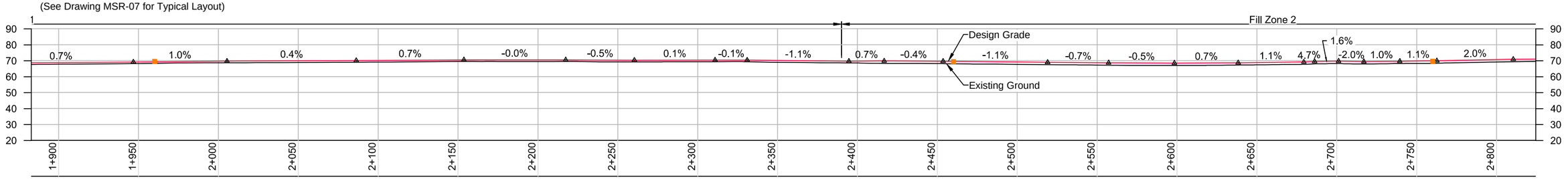
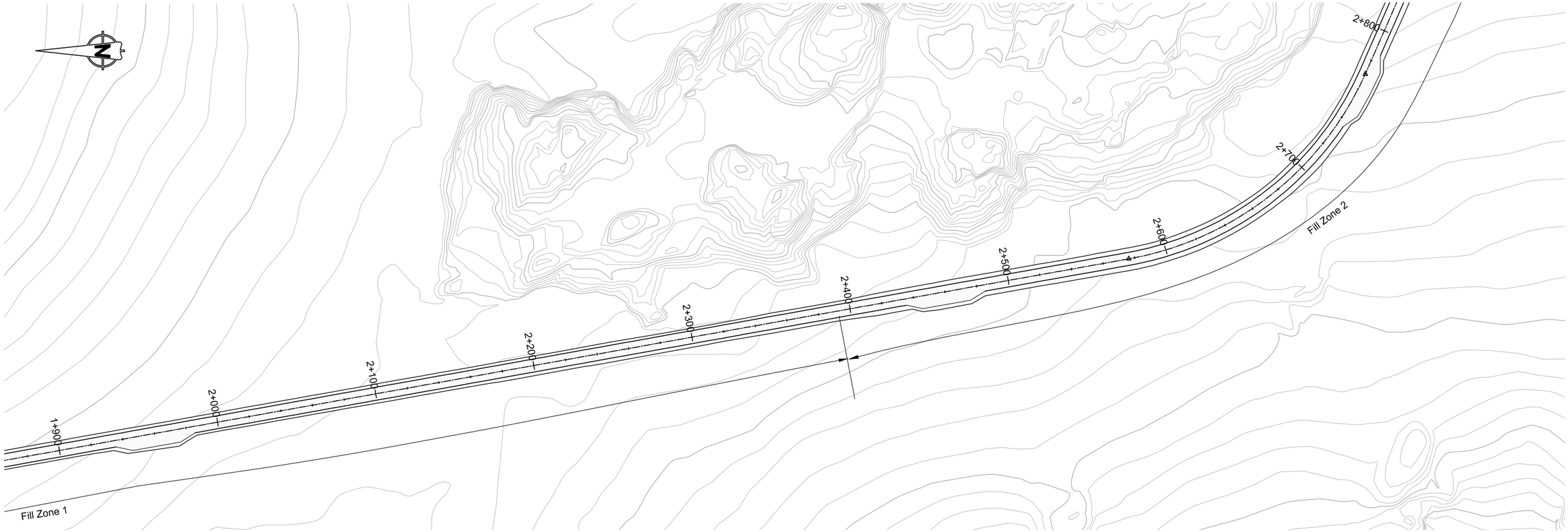
PROFILE LEGEND

- Point of Intersection
- 6.1% Grade
- Turnout Location; not to scale
  (See Drawing MSR-07 for Typical Layout)



PROFILE
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres



LEGEND

- Point of Intersection
- Route Centerline (1+000)
- Road Alignment
- Crossing Location

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

PLAN VIEW
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

NOTES

1. All dimensions in metres unless noted otherwise.
2. Notes in this drawing apply to all other active drawings.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings Stamped and Signed by Engineer

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JK	NV	LW
CHECKED:	APPROVED:	DATE:
JK	EMR	Mar. 14, 2014

FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Road Alignment
Plan and Profile
(3 of 5)

DRAWING NO.	SHEET	REVISION NO.
MSR-05	6 OF 17	A

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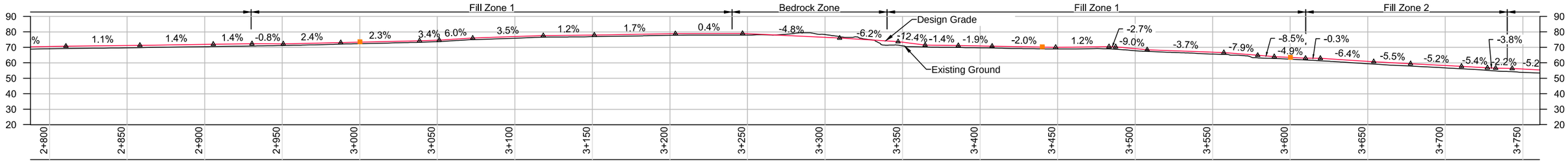

PROFILE LEGEND

- Point of Intersection
- 6.1% Grade
- Turnout Location; not to scale (See Drawing MSR-07 for Typical Layout)

PROFILE
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

LEGEND

- Point of Intersection
- Route Centerline 1+000
- Road Alignment
- Crossing Location

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

PLAN VIEW
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

NOTES

1. All dimensions in metres unless noted otherwise.
2. Notes in this drawing apply to all other active drawings.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings Stamped and Signed by Engineer

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DESIGN:	DRAWN:	REVIEWED:
JK	NV	LW
CHECKED:	APPROVED:	DATE:
JK	EMR	Mar. 14, 2014

FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

MAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Road Alignment
Plan and Profile
(4 of 5)

DRAWING NO.	SHEET	REVISION NO.
MSR-06	7 OF 17	A

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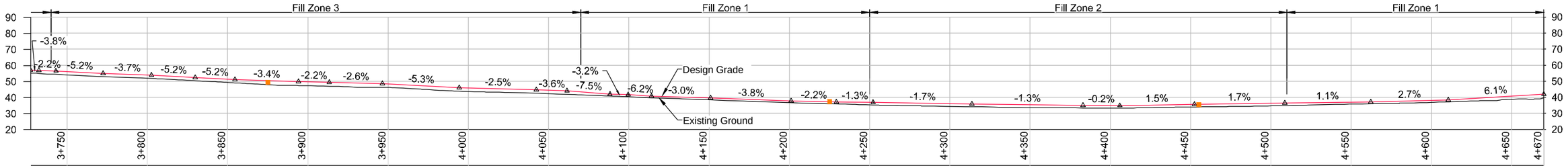
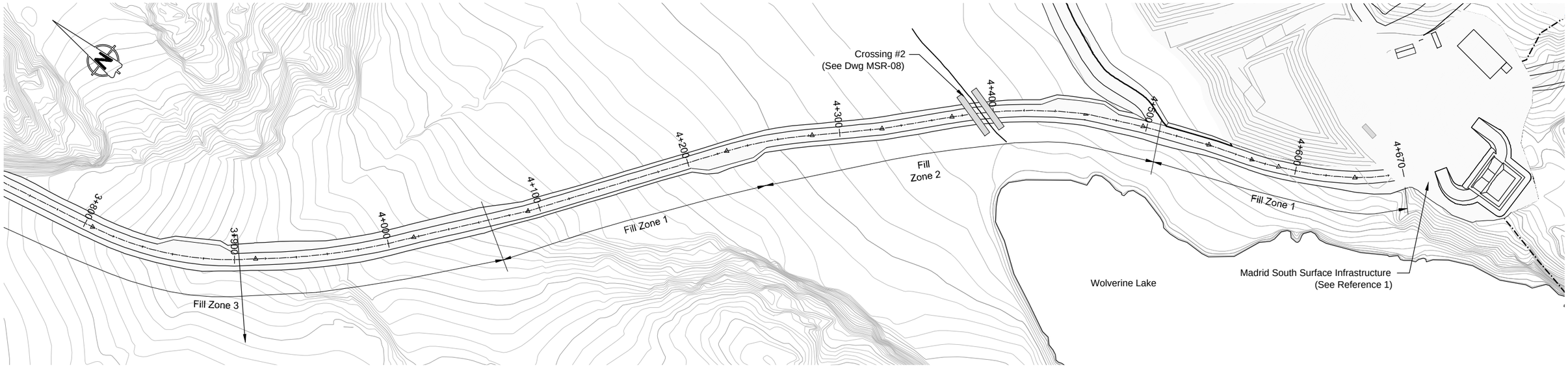
PROFILE LEGEND

- Point of Intersection
- 6.1% Grade
- Turnout Location; not to scale
  (See Drawing MSR-07 for Typical Layout)



PROFILE
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres



PLAN VIEW
MADRID NORTH TO MADRID SOUTH

0 10 20 30 40 50
Scale in Metres

LEGEND

- Point of Intersection
- 1+000 Route Centerline
- Road Alignment
- Crossing Location

ROAD CONSTRUCTION ZONES TABLE:

Fill Zone 1	1.0m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 2	1.5m min. Overall Road Thickness with 1.5H:1V Side Slopes
Fill Zone 3	2.0m min. Overall Road Thickness with 2.0H:1V Side Slopes
Bedrock Zone	0.3m min Road Thickness (ROQ not required) with Side Slopes to be determined in the field

NOTES

1. All dimensions in metres unless noted otherwise.
2. Notes in this drawing apply to all other active drawings.

REFERENCE

1. Engineering drawings for the Madrid South Surface Infrastructure, Hope Bay Project, Nunavut, Canada. Issued for Discussion. Revision F. Project No. 1CT022.001. October 31, 2014.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
D	Minor Edits	LW	EMR	31Oct14
C	Minor Edits	LW	EMR	12Sep14
B	Issued for Discussion	LW	EMR	5Aug14
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings Stamped and Signed by Engineer

PROFESSIONAL ENGINEER'S STAMP

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DESIGN:	DRAWN:	REVIEWED:
JK	NV	LW
CHECKED:	APPROVED:	DATE:
LW	EMR	October 31, 2014

FILE NAME: 1CT022_001_Madrid South_all weather road.dwg

TMAC RESOURCES

HOPE BAY PROJECT

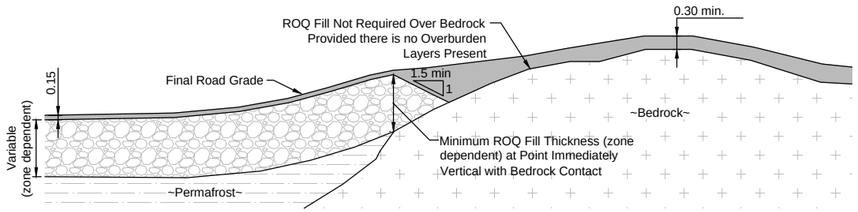
SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Road Alignment
Plan and Profile
(5 of 5)

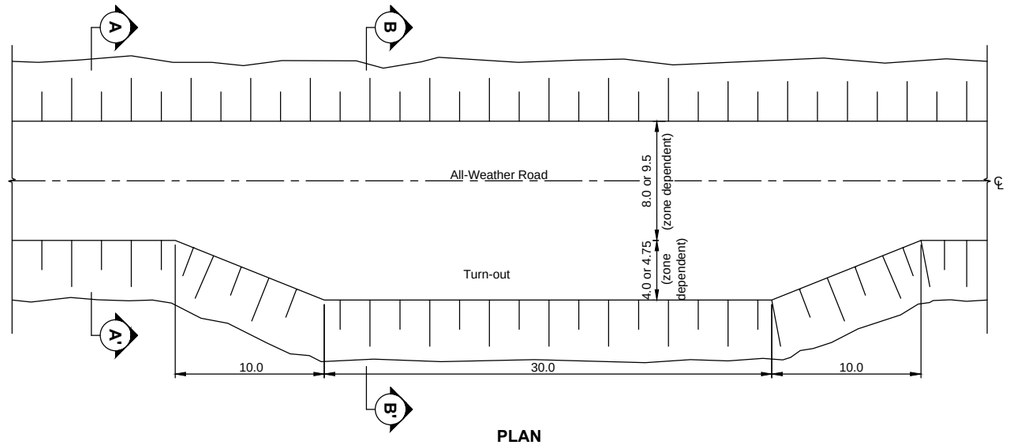
DRAWING NO.	SHEET	REVISION NO.
MSR-07	8 OF 17	D

C:\01_SITES\Hope Bay\Madrid South Access\1CT022_001_Madrid South_all weather road.dwg



ALL-WEATHER ROAD PROFILE
TRANSITION FROM PERMAFROST TO BEDROCK

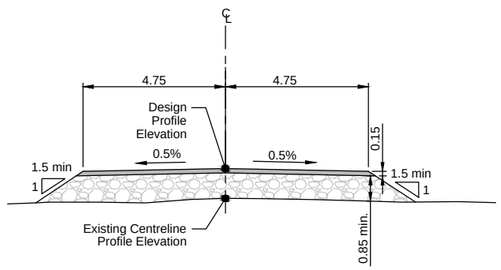
0 1 2 3 4 5
Scale in Metres



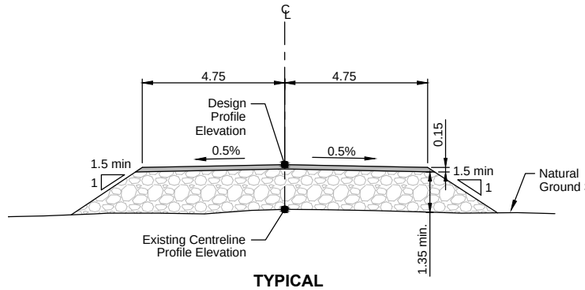
PLAN
TYPICAL ALL-WEATHER ROAD & TURNOUT

0 2 4 6 8 10
Scale in Metres

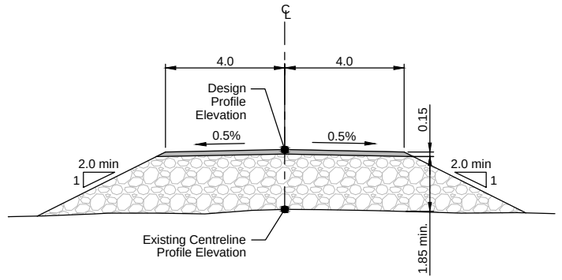
Fill Zone 1



Fill Zone 2

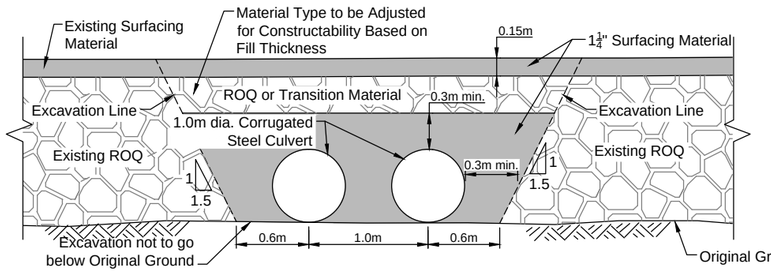


Fill Zone 3



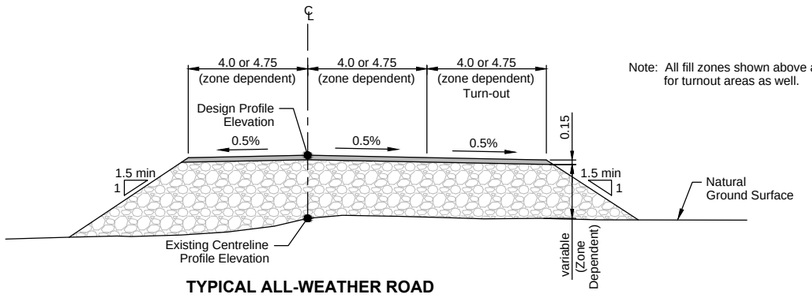
TYPICAL
ALL-WEATHER ROAD SECTION
A

0 1 2 3 4 5
Scale in Metres



DETAIL 6
TYPICAL CROSS SECTION OF CULVERT CROSSING
6

NOT TO SCALE



Note: All fill zones shown above apply for turnout areas as well.

TYPICAL ALL-WEATHER ROAD
WITH TURN-OUT SECTION
B

0 1 2 3 4 5
Scale in Metres

LEGEND

- Surfacing Material
- Run of Quarry Material

NOTES

1. All dimensions in metres unless noted otherwise.
2. Minimum design thickness must be maintained for all sections of the all-weather road including turnouts. See Drawings MSR-01 for fill zone chainage intervals.
3. Notes in this drawing apply to all other active drawings.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REVISIONS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
B	Issued for Discussion	LW	EMR	5Aug14
A	Issued for Discussion	JK	EMR	14Mar14

Original Drawings Stamped and Signed by Engineer

PROFESSIONAL ENGINEERS STAMP

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DESIGN:	DRAWN:	REVIEWED:
LW	NV	EMR
CHECKED:	APPROVED:	DATE:
LW	EMR	August 5, 2014

FILE NAME: 1CT022_001_Madrid South plan_sections.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Road
Plan and Sections

DRAWING NO.	SHEET	REVISION NO.
MSR-08	9 OF 17	B

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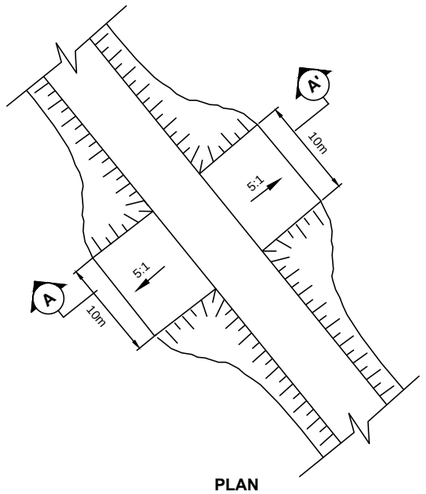
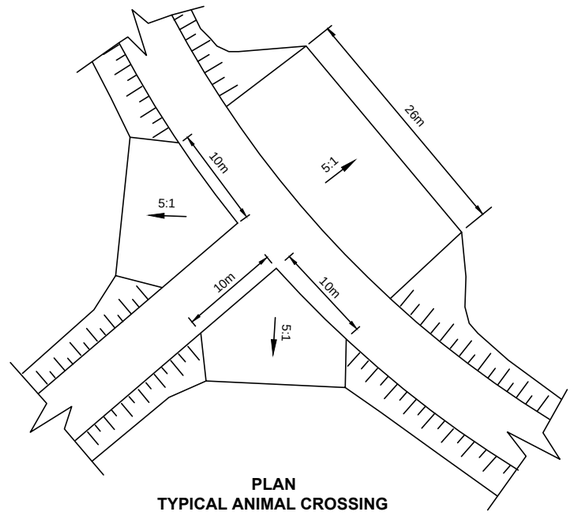
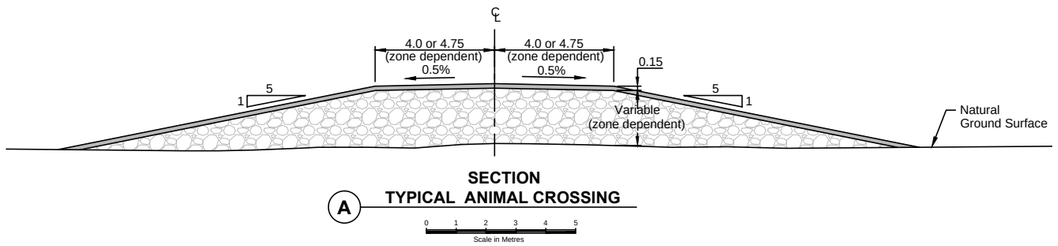


PLAN
TYPICAL ANIMAL CROSSING
NTS



PLAN
TYPICAL ANIMAL CROSSING
AT ROAD JUNCTION
NTS



SECTION
TYPICAL ANIMAL CROSSING
A

LEGEND

- Surfacing Material
- Run of Quarry Material

NOTES

1. All dimensions in metres unless noted otherwise.
2. Locations for animal crossings will be identified by Land Owner and Elders once road construction is completed.
3. Notes in this drawing apply to all other active drawings.

DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

Original Drawings
Stamped and
Signed by Engineer

PROFESSIONAL ENGINEERS STAMP

srk consulting

DESIGN:	DRAWN:	REVIEWED:
LW	NV	EMR
CHECKED:	APPROVED:	DATE:
JK	EMR	Mar. 14, 2014

FILE NAME: 1CT022_001_Madrid South plan_sections.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:
Animal Crossings
Plan and Sections

DRAWING NO.	SHEET	REVISION NO.
MSR-09	10 OF 17	A

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Materials List and Quantity Estimates

Item	Quantity / Area / Volume	Description
1. Culverts	4 (Estimated) (Dependant Final Crossing Selected)	AIL Corrugated Steel Pipe 68x13 corrugated profile 1000 mm diameter and 1.6 mm thick Length = 30480 mm per culvert
2. Run of Quarry Material	Road: 63,664m^3 Turnouts (15): 4,140m^3 Total: 67,804m^3	Approximate In-Place Neat-line Volume (3D volume based on Civil 3D surfaces - no allowance has been made for losses and/or tundra embedment)
3. Surface Grade Material	Road: 5,604m^3 Turnouts (15): 360m^3 Total: 6,564m^3	Approximate In-Place Neat-line Volume
4. Geotextile	600m to 800m (Estimated)	12 oz non-woven

Tolerances on Road Material Placement:

Location	Fill (mm)	Excavation (mm)
Vertical Tolerance on Roads	0 to +75	n/a
Horizontal Tolerance on Roads	-150 to +150	

Note: Grade shall not be uniformly high or low.

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DRAWING NO.	DRAWING TITLE	DRAWING NO.	DRAWING TITLE

REFERENCE DRAWINGS

NO.	DESCRIPTION	CHK'D	APP'D	DATE
B	Issued for Discussion	LW	EMR	5Aug14
A	Issued for Discussion	JK	EMR	14Mar14

REVISIONS

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PROFESSIONAL ENGINEERS STAMP

srk consulting

DESIGN:	DRAWN:	REVIEWED:
JK	NV	EMR
CHECKED:	APPROVED:	DATE:
LW	EMR	August 5, 2014

FILE NAME: 1CT022_001_Madrid South plan_sections.dwg

TMAC RESOURCES

HOPE BAY PROJECT

SRK JOB NO.: 1CT022.001

Madrid South All-Weather Road

DRAWING TITLE:

Material List and Quantity Estimates

DRAWING NO.	SHEET	REVISION NO.
MSR-16	17 OF 17	B

Appendix 5

(for Chapter 5, Environmental Setting)

TMAC, December 2014 – Madrid Advanced Exploration Program:
Environmental Baseline Conditions

TMAC Resources Inc.

MADRID ADVANCED EXPLORATION PROGRAM
Environmental Baseline Conditions

TMAC Resources Inc.
901-372 Bay Street
Toronto, ON M5H 2W9
Tel: (416) 628-0216
info@tmacresources.com

December 2014

MADRID ADVANCED EXPLORATION PROGRAM

ENVIRONMENTAL BASELINE CONDITIONS

December 2014
Project #0194097-007

Citation:

TMAC. 2014. *Madrid Advanced Exploration Program: Environmental Baseline Conditions.* Prepared by TMAC Resources Inc.: Toronto, Ontario.

Prepared by:

TMAC Resources Inc.
Toronto, Ontario

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ENVIRONMENTAL BASELINE CONDITIONS

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Glossary and Abbreviations

Glossary and Abbreviations

Terminology used in this document is defined where it is first used. The following list will assist readers who may choose to review only portions of the document.

Active layer	The relatively thin layer of soil/overburden above continuous permafrost that thaws during the summer months.
ANFO	Ammonium Nitrate and Fuel Oil
asl	Above sea level
BHP	BHP Minerals Canada Ltd. (BHP Billiton)
BMP	Best Management Practice
CCD	Counter current decantation
DFO	Department of Fisheries and Oceans (Fisheries and Oceans Canada)
ESC	Erosion and Sediment Control
FOB	Fine ore bin
Freshet	In channels, the relatively high annual peak water discharge period resulting from spring/summer meltwater runoff of the winter snowpack.
HBML	Hope Bay Mining Ltd.
Hydrograph	A graphical plot of water discharge versus time
ICU	Intensive cyanidation unit
m	Metres
NAD83	North American Datum 1983, based on the spheroid (GRS80)
NIRB	Nunavut Impact Review Board
NPC	Nunavut Planning Commission
NWB	Nunavut Water Board
PMF	Probable Maximum Flood
RSA	Regional Study Area
Runoff	The part of precipitation that appears in surface streams and is a measure of hydrologic response of a watershed, commonly presented as a depth of water over an entire watershed in mm.
TIA	Tailings Impoundment Area
TMAC	TMAC Resources Inc.
TSS	Total Suspended Solids
Unit Yield	A ratio of water discharges normalized to the drainage area for a basin.

UTM	Universal Transverse Mercator
Watershed	The entire geographical area drained by a river and its tributaries; an area characterized by all runoff being conveyed to the same outlet.
WKRLUP	West Kitikmeot Regional Land Use Plan
ZOI	Zone of Influence

1. Environmental and Social Setting

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1.1 BASELINE STUDIES

Baseline environmental studies have been conducted in the Hope Bay Belt (includes the Madrid Advanced Exploration Project, "the Project" region) since 1993, and are still ongoing today (Figures 1.1-1 and 1.1-2).

The following components have been included in historical baseline studies in the Hope Bay Belt:

- Climate and meteorology;
- Air quality;
- Noise and vibrations;
- Hydrology;
- Hydrogeology;
- Bathymetry;
- Fish and fish habitat (marine and freshwater);
- Aquatics (includes marine and freshwater surface water quality, sediment quality, and aquatic biology);
- Ecosystem mapping, vegetation, and overburden;
- Wildlife, including Caribou, Muskox, wolves, Arctic Fox, Wolverine, Grizzly Bear, birds, waterfowl, raptors, seabirds, dens, small mammals, and marine mammals;
- Heritage Resources (archaeology);
- Public consultation;
- Traditional Knowledge;
- Socio-economics; and
- Land and resource use.

Table 1.1-1 provides a list of baseline reports that contain information most relevant to the Madrid Advanced Exploration Project Type B Water Licence Application. Environmental baseline studies have been conducted within the Hope Bay Belt for several years as part of ongoing exploration activities, planning and design, environmental assessment and authorization compliance. The list included in Table 1.1-1 should not be considered an exhaustive list; rather, it provides the sources containing the majority of collected data. Data continues to be collected on an ongoing basis through various baseline and compliance studies occurring in the Hope Bay Belt region.

The following sections provide high-level summaries of the existing environmental conditions within the Hope Bay Belt, with a particular focus on the Madrid Area where appropriate.