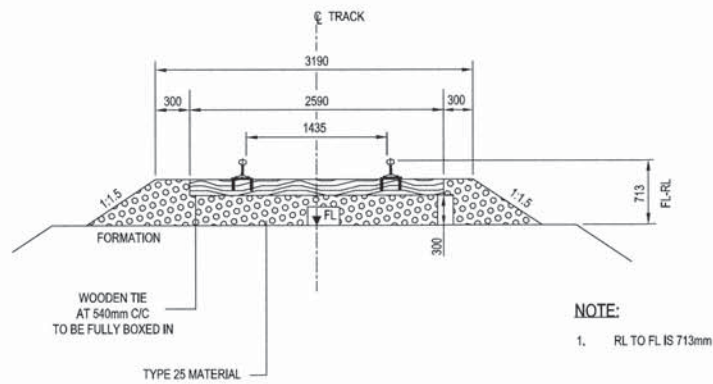


Attachment 11.5

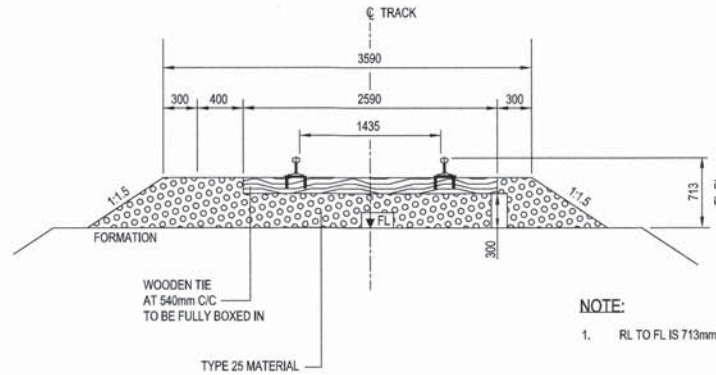
North Railway Typical Drawings

(7 Pages)

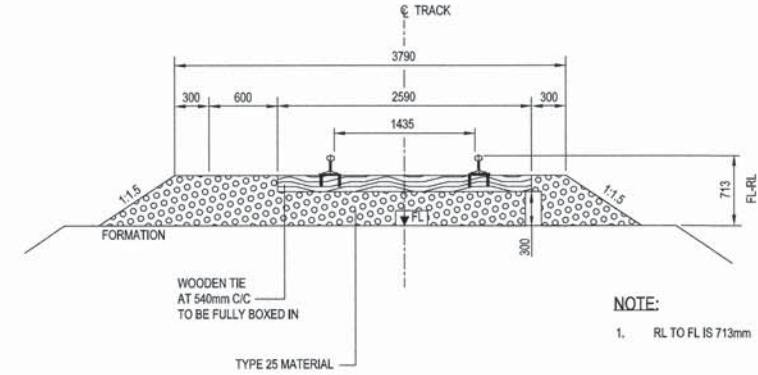
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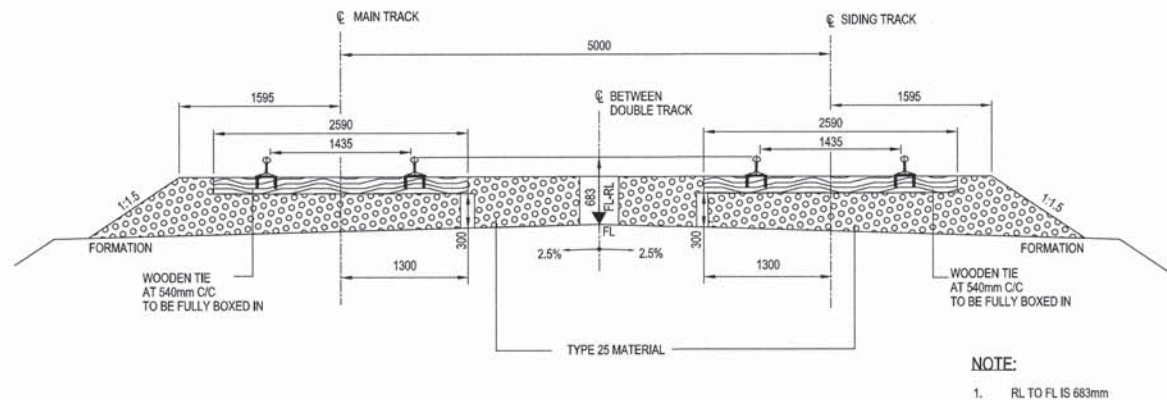
TYPICAL CROSS SECTION- SUPERSTRUCTURE
HARDWOOD TIES
R > 800m AND TANGENT TRACK
NTS



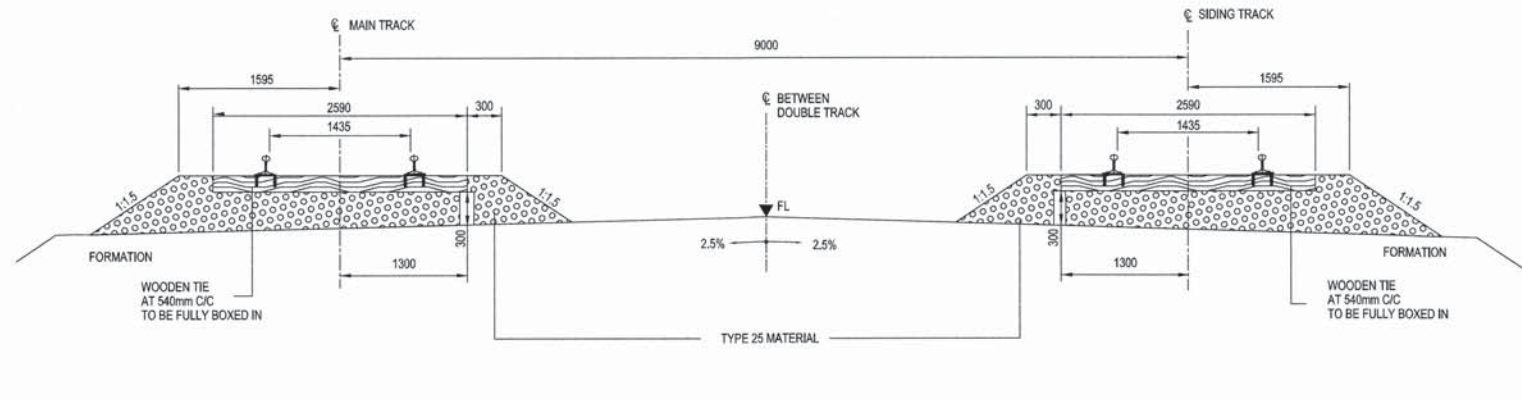
TYPICAL CROSS SECTION- SUPERSTRUCTURE
HARDWOOD TIES
400m < R ≤ 800m
NTS



TYPICAL CROSS SECTION- SUPERSTRUCTURE
HARDWOOD TIES
R ≤ 400m
NTS



TYPICAL CROSS SECTION AT PASSING LOOP LOCATION-SUPERSTRUCTURE
HARDWOOD TIES
NTS



TYPICAL CROSS SECTION AT PASSING LOOP LOCATION- SUPERSTRUCTURE
IN YARD
HARDWOOD TIES
NTS

NOTE:
1. THIS DRAWING WAS PREVIOUSLY ISSUED AS H353004-00000-220-294-0003-0001.

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DRAWING No.	DRAWING TITLE
H353004-30000-224-294-0006-0001	TYPICAL CROSS SECTION- SHEET 6 OF 6
H353004-30000-224-294-0005-0002	TYPICAL CROSS SECTION- SHEET 5 OF 6
H353004-30000-224-294-0005-0001	TYPICAL CROSS SECTION- SHEET 4 OF 6
H353004-30000-224-294-0004-0002	TYPICAL CROSS SECTION- SHEET 3 OF 6
H353004-30000-224-294-0004-0001	TYPICAL CROSS SECTION- SHEET 2 OF 6

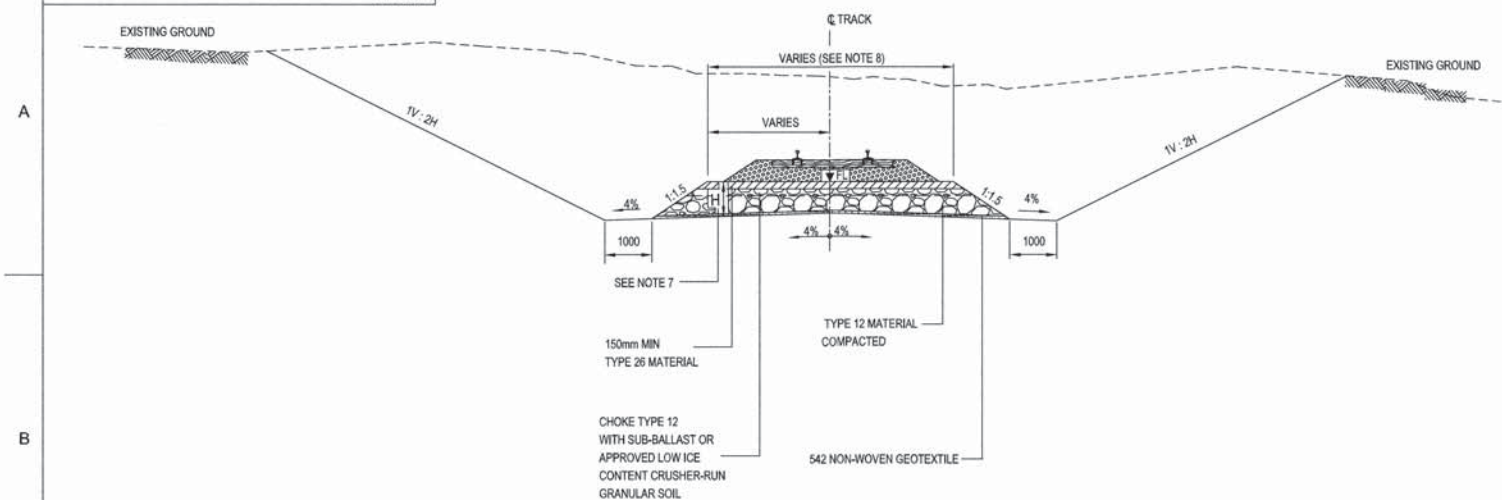


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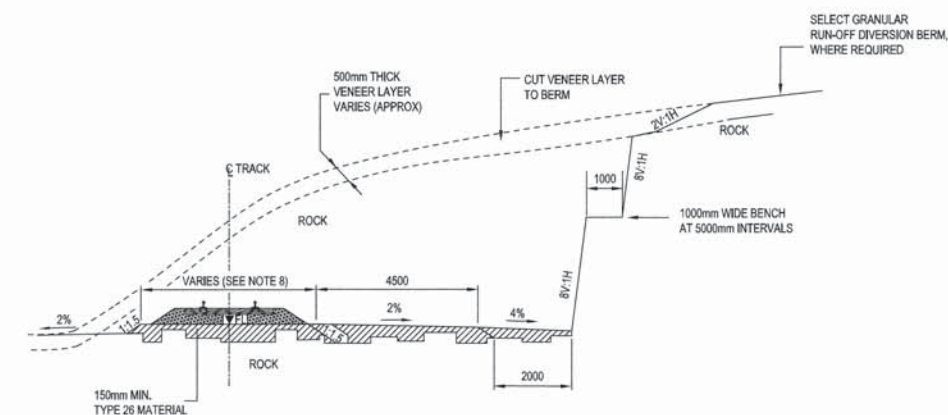
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No.	DESCRIPTION	BY	DATE
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			2018/10/19

HATCH			
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DESIGNER	S PINKNEY-ATKINSON		NR
CHECKER	GLEN JOHNSTONE		Johnstone, Glen
DESIGN COORD.	GLEN JOHNSTONE		Johnstone, Glen
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AREA MANAGER	FAY PITTMAN		2018-11-08

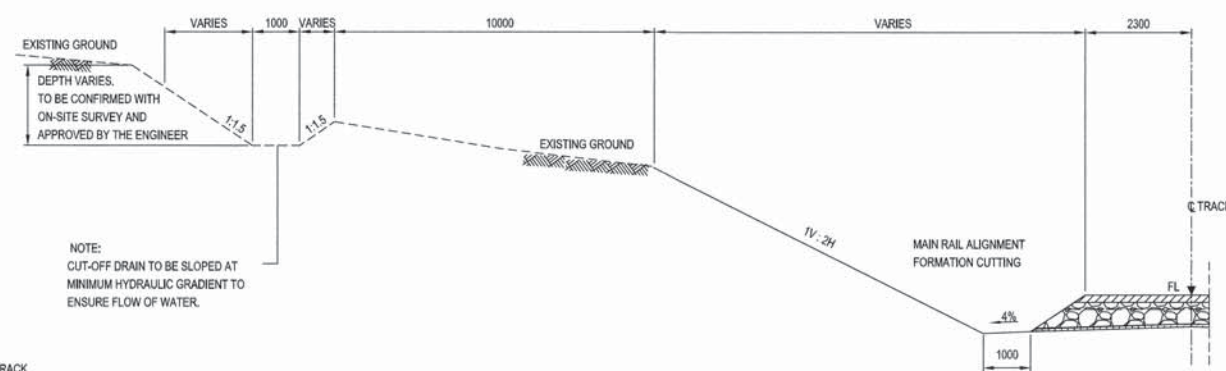
Baffinland	
MARY RIVER EXPANSION STAGE 3 BAFFINLAND IRON ORE MINES	
RAIL SITE STANDARD DRAWING TYPICAL CROSS SECTION- SHEET 1 OF 6	
SCALE NTS OR AS NOTED	DWG. No. H353004-30000-224-294-0003-0001
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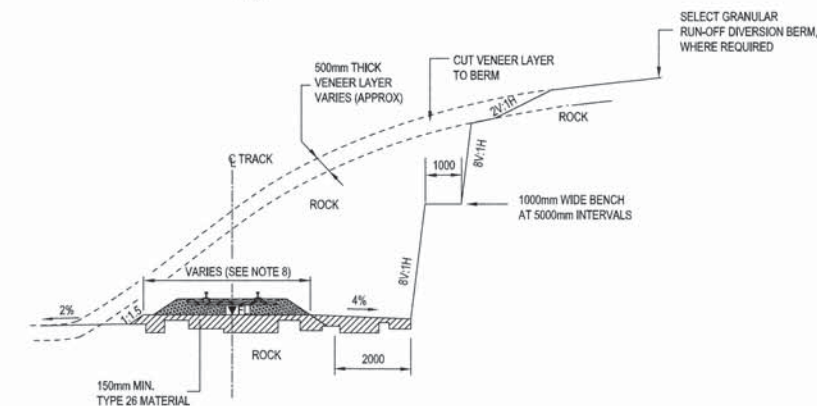
TYPICAL CROSS SECTION (CUT IN ICE POOR PERMAFROST)



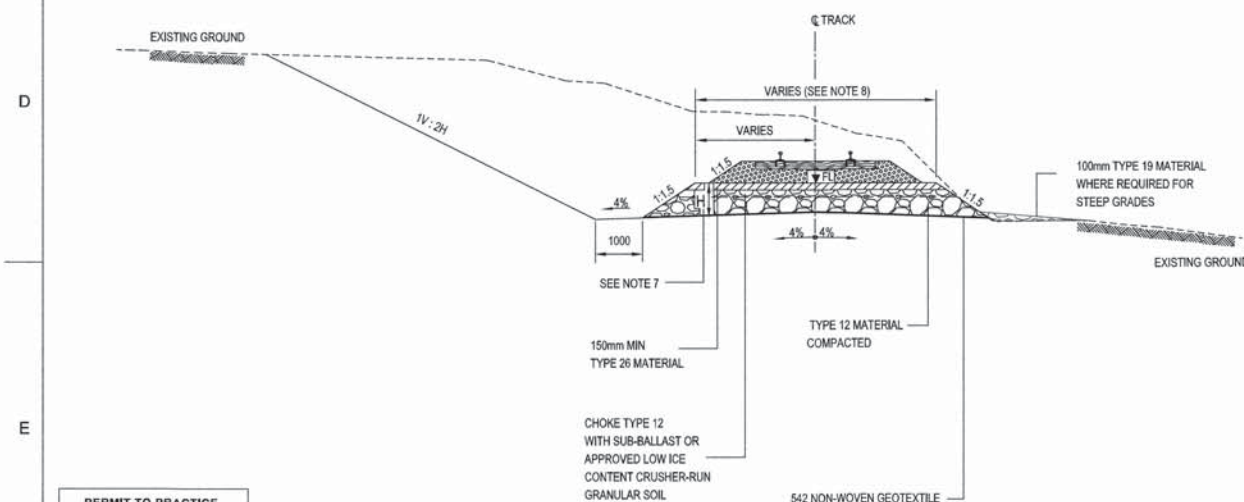
TYPICAL CROSS SECTION (CUT IN GRANITIC ROCK)
WITH SERVICE ROAD
NTS



TYPICAL CROSS SECTION (CUT-OFF DRAIN ICE POOR PERMAFROST)
NTS



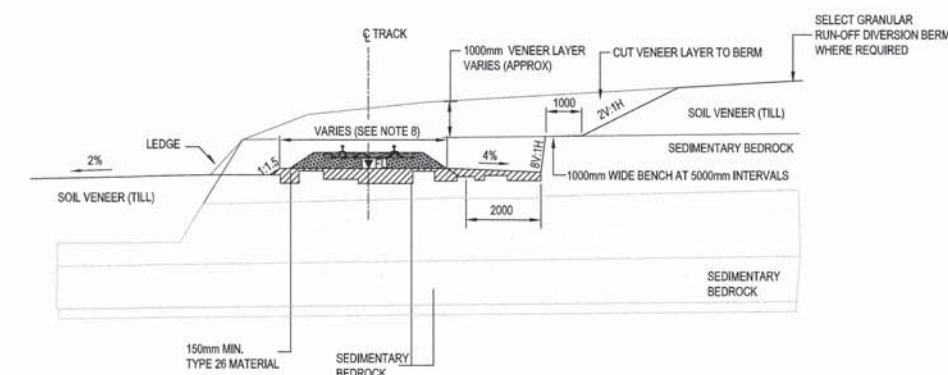
TYPICAL CROSS SECTION (CUT IN GRANITIC ROCK)



TYPICAL CROSS SECTION (CUT IN ICE POOR PERMAFROST WITH DAYLIGHTING)

NOTE:

1. MATERIAL TYPE DEFINITION:
TYPE 12: RUN OF QUARRY/ ROCK FILL LAYER
TYPE 19: RIP RAP LAYER
TYPE 26: SUB-BALLAST LAYER
VENEER LAYER: INSITU SAND AND GRAVEL LAYER
2. PROPOSED EMBANKMENT DOES NOT HAVE SUITABLY WIDE SUB-BALLAST SHOULDERS. EMPLOYER SHALL DEVELOP SAFE OPERATING PROCEDURES FOR ACCESS TO INSPECT AND REPAIR TRAIN EQUIPMENT IN THE CASE OF A BREAKDOWN ON A HIGH EMBANKMENT.
3. FOR SUPERSTRUCTURE DETAILS REFER TO DRAWING H353004-30000-224-294-0003-0001
4. LONGITUDINAL SLOPE ON RUNOFF AREA TO BE 2 % WHERE PRACTICAL.
5. THIS DRAWING WAS PREVIOUSLY ISSUED AS H353004-00000-220-294-0004-0001.
6. THESE TYPICAL SECTIONS ARE APPLICABLE TO ICE POOR AND ROCK EXCAVATIONS.
7. H = 800mm TO TOP OF GEOTEXTILE.
8. FORMATION WIDTH VARIES:
R > 800m AND TANGENT TRACK : 52'2mm
400m < R ≤ 800m : 56'2mm
R ≤ 400m : 58'2mm
WHERE R : RADIUS (HORIZONTAL ALIGNMENT)
9. FL : FORMATION LEVEL.



TYPICAL CROSS SECTION (CUT IN SEDIMENTARY BEDROCK LEDGES)

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Date 2018-11-8

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HATCH


Baffinland

BAFFINLAND IRON ORE MINES LP
MARY RIVER EXPANSION PROJECT

RAIL SITE
STANDARD DRAWING
TYPICAL CROSS SECTION- SHEET 2 OF 6

SCALE NTS OR AS NOTED	DWG. No. H353004-30000-224-294-0004-0001	REV 0
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DESIGNER	S PINKNEY-ATKINSON	NR	
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ENG. MANAGER	DANIEL STANGER		2018-10-30
19 AREA MANAGER	FAY PITTMAN		2018-11-05
	ROLE	NAME	SIGNATURE DATE
DRAWING APPROVAL STATUS: Approved for Construction			



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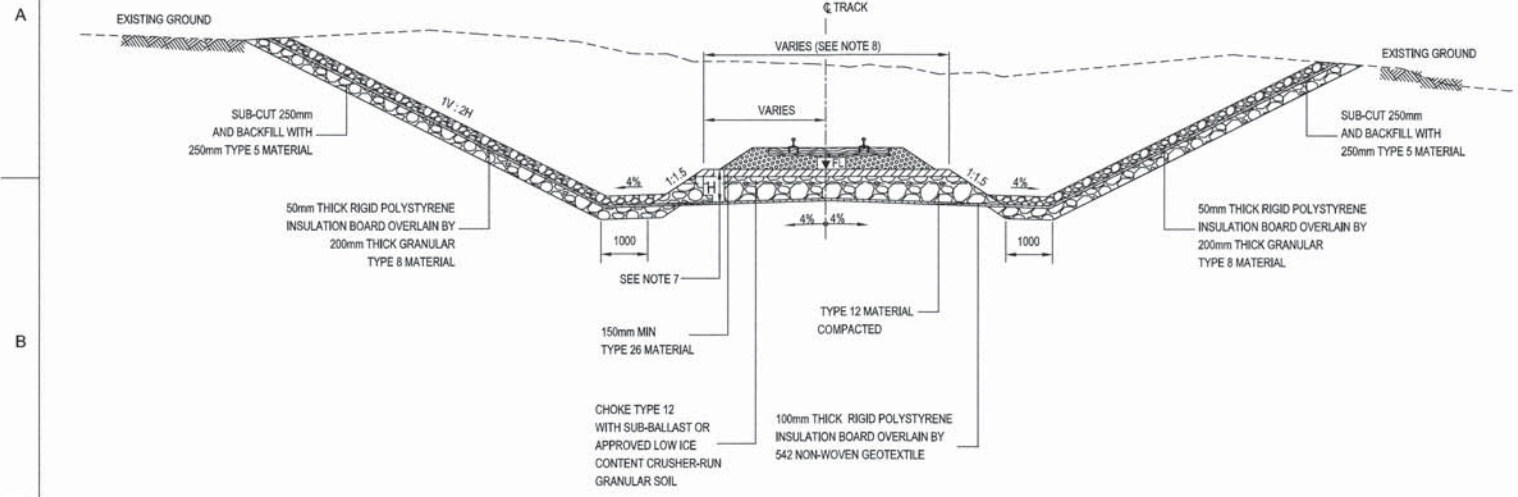
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DRAWING APPROVAL STATUS: Approved for Construction

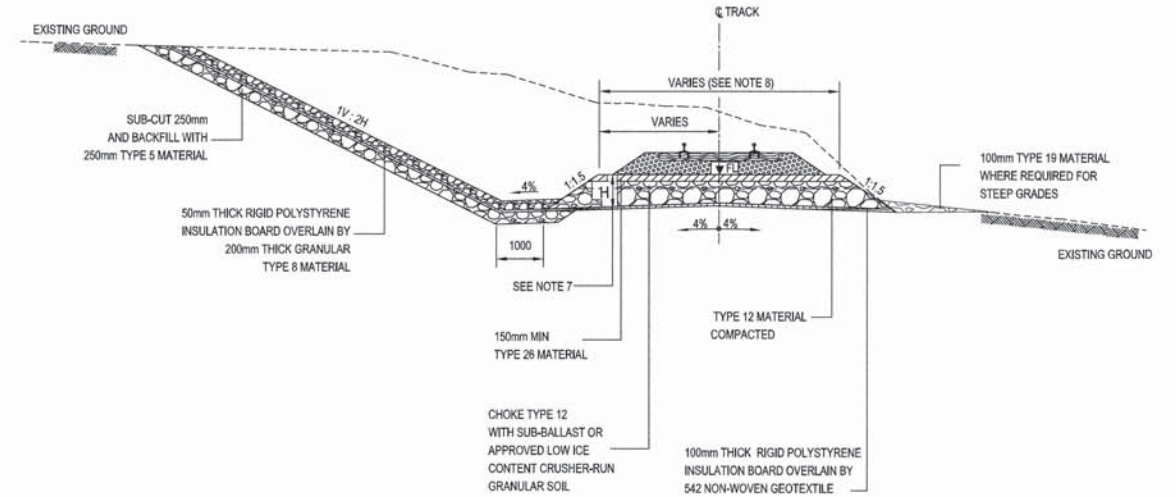
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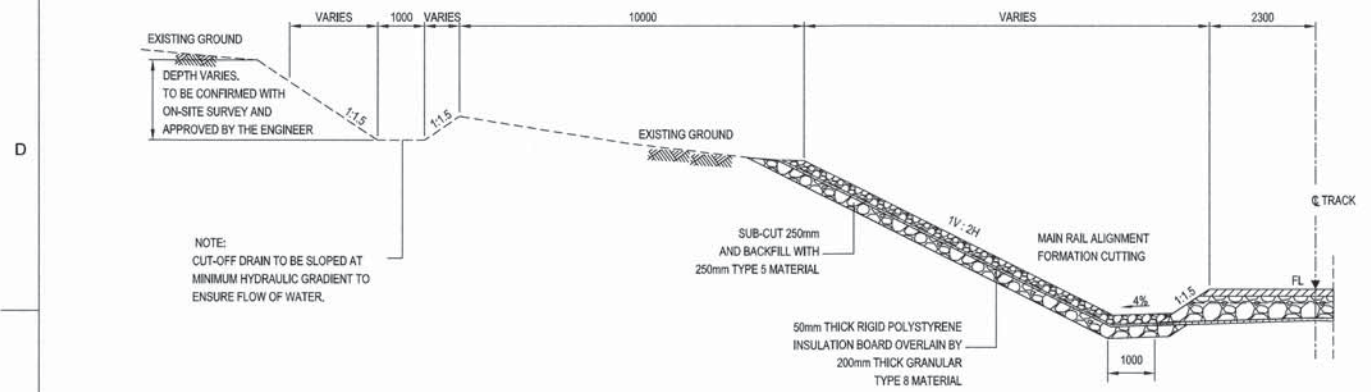
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TYPICAL CROSS SECTION (CUT IN ICE RICH PERMAFROST)
NTS



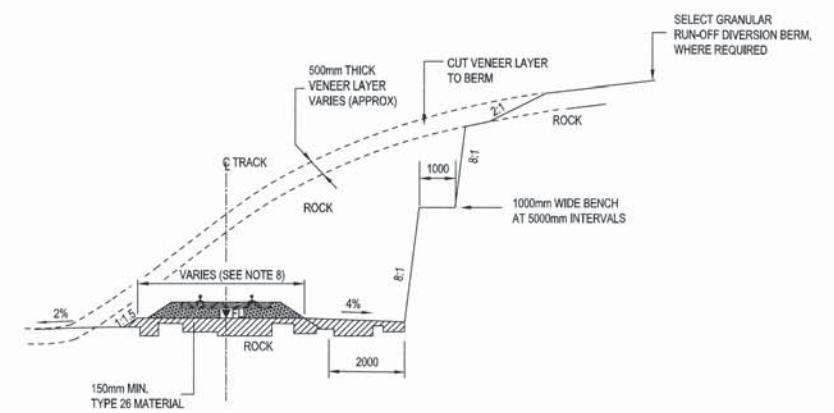
TYPICAL CROSS SECTION (CUT IN ICE RICH PERMAFROST WITH DAYLIGHTING)
NTS



TYPICAL CROSS SECTION (CUT-OFF DRAIN ICE RICH PERMAFROST)
NTS

NOTE:

- MATERIAL TYPE DEFINITION:
TYPE 12: RUN OF QUARRY/ ROCK FILL LAYER
TYPE 19: RIP RAP LAYER
TYPE 25: BALLAST LAYER
TYPE 26: SUB-BALLAST LAYER
VENEER LAYER: INSITU SAND AND GRAVEL LAYER
- PROPOSED EMBANKMENT DOES NOT HAVE SUITABLY WIDE SUB-BALLAST SHOULDERS. EMPLOYER SHALL DEVELOP SAFE OPERATING PROCEDURES FOR ACCESS TO INSPECT AND REPAIR TRAIN EQUIPMENT IN THE CASE OF A BREAKDOWN ON A HIGH EMBANKMENT.
- FOR SUPERSTRUCTURE DETAILS REFER TO DRAWING H353004-30000-224-294-0003-0001.
- LONGITUDINAL SLOPE ON RUNOFF AREA TO BE 2 % WHERE PRACTICAL.
- THIS DRAWING WAS PREVIOUSLY ISSUED AS H353004-00000-220-294-0004-0001.
- THESE TYPICAL SECTIONS ARE APPLICABLE TO ICE RICH PERMAFROST SOILS.
- H = 800mm TO UNDERSIDE OF POLYSTYRENE INSULATION
- FORMATION WIDTH VARIES:
R > 800m AND TANGENT TRACK : 5212mm
400m < R ≤ 800m : 5612mm
R ≤ 400m : 5612mm
WHERE R: RADIUS (HORIZONTAL ALIGNMENT)
- FL : FORMATION LEVEL.



TYPICAL CROSS SECTION (CUT IN GRANITIC ROCK)
NTS

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Signature
Date

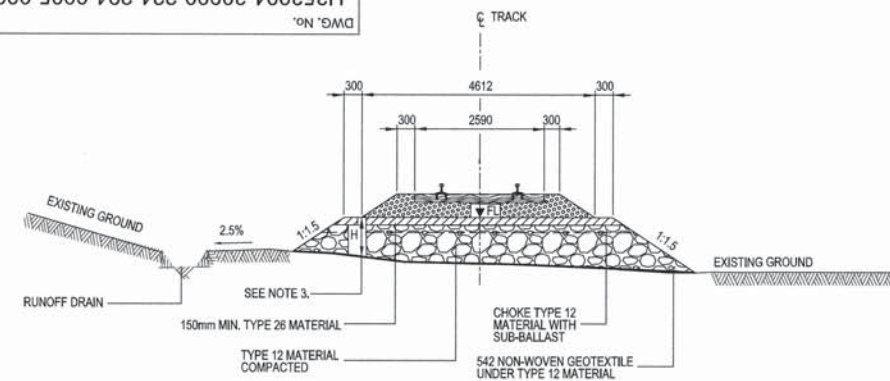
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APPROVED FOR CONSTRUCTION	
No.	DESCRIPTION
0	APPROVED FOR CONSTRUCTION
BY	CHK'D
2018/10/19	DATE
REVISIONS	
DRAWING APPROVAL STATUS: Approved for Construction	

THIS DRAWING WAS PREPARED BY HATCH LTD. (PROXY) FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (CLIENT), AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE CLIENT. INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENTS RENTAL RIGHTS. REVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, REINSTATEMENT AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.			
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DESIGN COORD.	GLEN JOHNSTONE	Johnstone, Glen	
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ENG. MANAGER	DANIEL STANGER		2018-10-30
AREA MANAGER	FAY PITTMAN		2018-11-08
ROLE	NAME	SIGNATURE	DATE

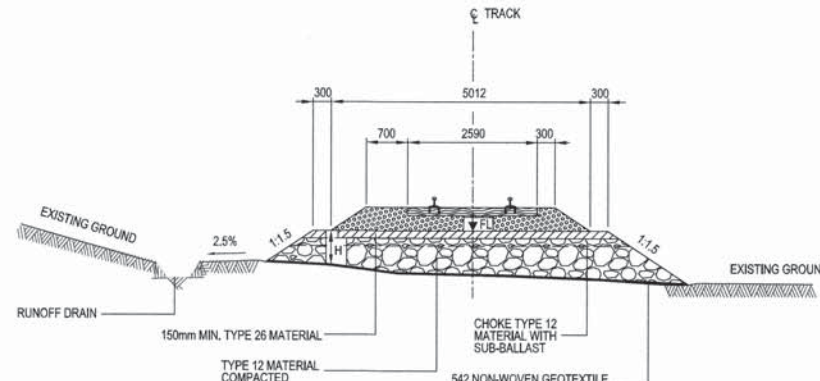
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BAFFINLAND			
BAFFINLAND IRON ORE MINES LP MARY RIVER EXPANSION PROJECT			
RAIL SITE STANDARD DRAWING TYPICAL CROSS SECTION- SHEET 3 OF 6			
SCALE	DWG. No.	REV	
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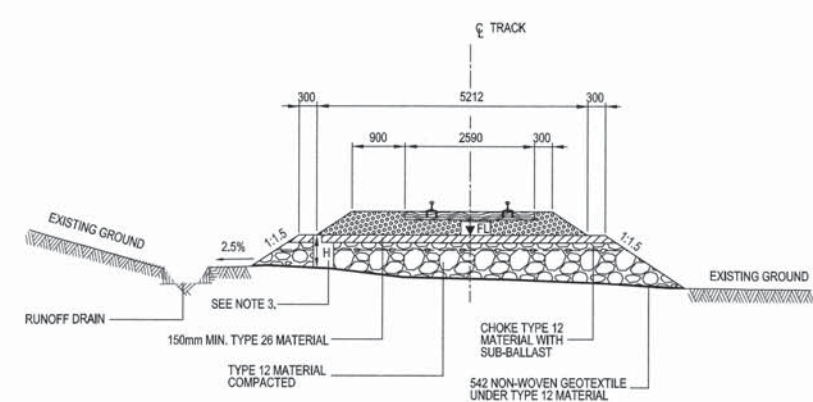
TYPICAL CROSS SECTION (FILL)
R > 800m AND TANGENT TRACK

NTS



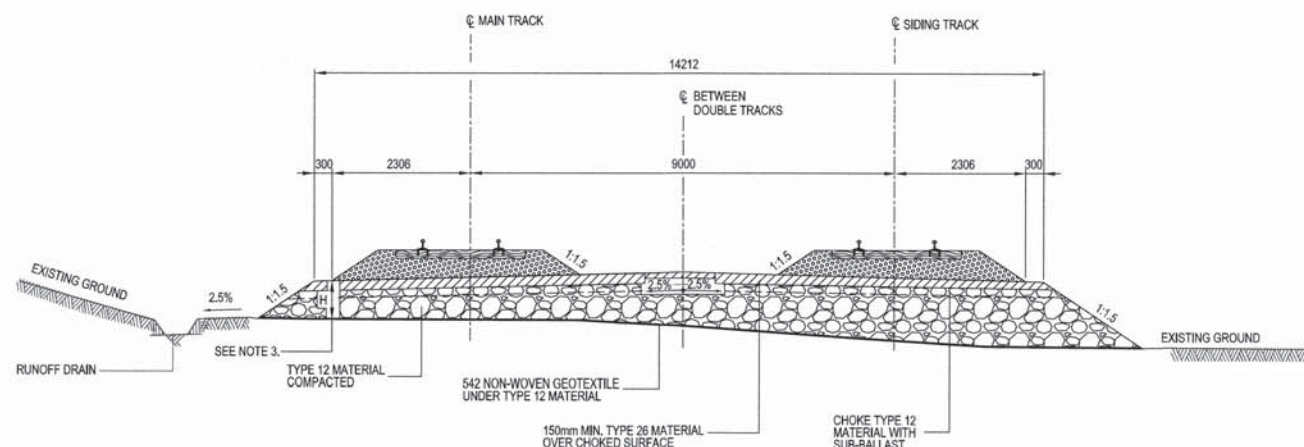
TYPICAL CROSS SECTION (FILL)
400m < R ≤ 800m

NTS



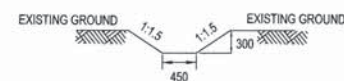
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R ≤ 400m

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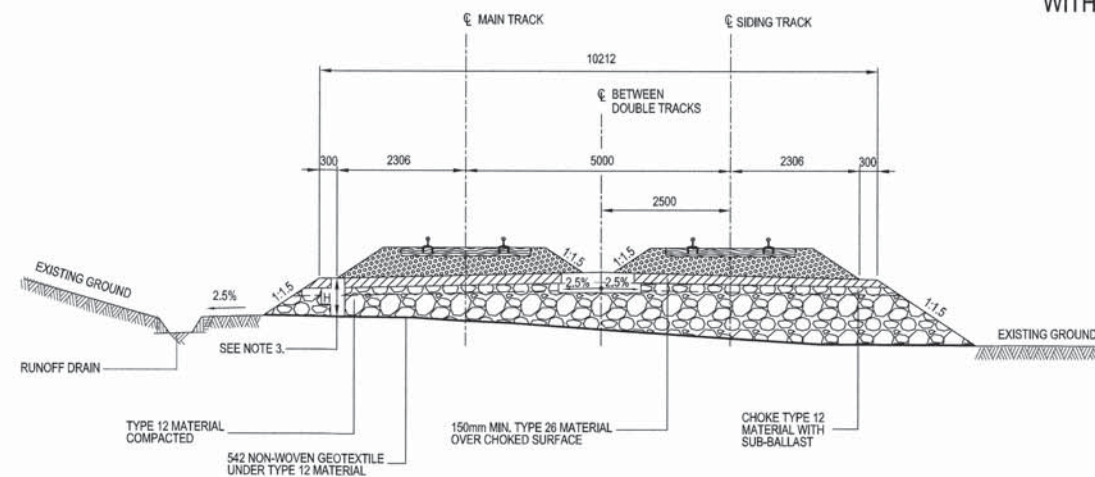
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IN YARD

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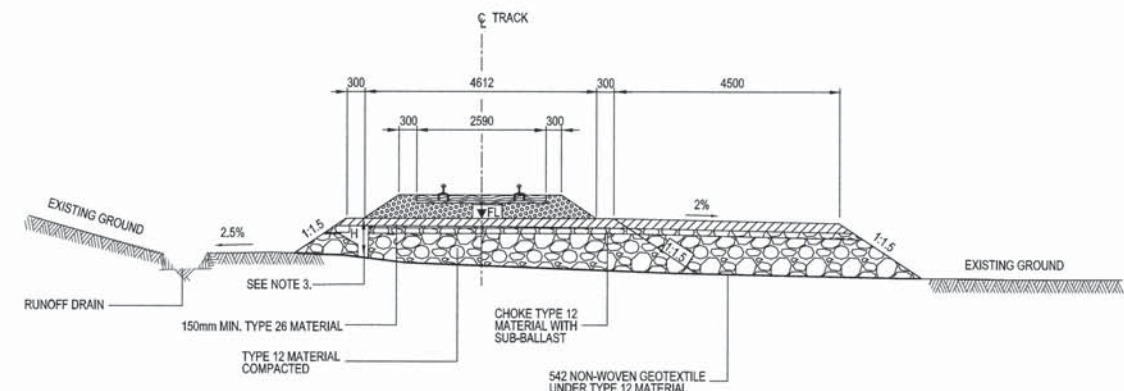
NOTE

1. RUNOFF DRAINS WILL BE SLOPED AT 2% LONGITUDINAL WHERE PRACTICAL



TYPICAL CROSS SECTION AT PASSING LOOP LOCATION (FILL)

NTS



TYPICAL CROSS SECTION (FILL)
WITH SERVICE ROAD

NTS

NOTE:

1. MATERIAL TYPE DEFINITION:
TYPE 12: RUN OF QUARRY/ROCK FILL LAYER
TYPE 25: BALLAST LAYER
TYPE 26: SUB-BALLAST LAYER
2. PROPOSED EMBANKMENT DOES NOT HAVE SUITABLY WIDE SUB-BALLAST SHOULDERS, EMPLOYER SHALL DEVELOPE SAFE OPERATING PROCEDURES FOR ACCESS TO INSPECT AND REPAIR TRAIN EQUIPMENT IN THE CASE OF A BREAKDOWN ON A HIGH EMBANKMENT.
3. MINIMUM EMBANKMENT (TYPE 12 PLUS SUB-BALLAST) THICKNESS VARIES DEPENDING ON SUB-GRADE CONDITION
H= 1500mm STANDARD DIMENSION FOR ICE RICH PERMAFROST
4. 542 NON-WOVEN GEOTEXTILE UNDER TYPE 12 MATERIAL ON ICE RICH SILT.
5. FOR RUNOFF DRAIN DETAILS REFER TO TYPICAL RUNOFF DRAIN DIMENSIONS.
6. FOR SUPERSTRUCTURE DETAILS REFER TO DRAWING H353004-30000-224-294-0003-0001.
7. THIS DRAWING WAS PREVIOUSLY ISSUED AS H353004-00000-220-294-0005-0001.
8. THESE TYPICAL SECTIONS ARE APPLICABLE TO ICE RICH PERMAFROST FILL AREAS.

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HATCH LTD.

Signature _____
Date 2018-11-08

PERMIT NUMBER: P 512
The Association of Professional Engineers,
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TYPICAL RUNOFF DRAIN DIMENSIONS
NTS

NTS

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HATCH



Baffinland

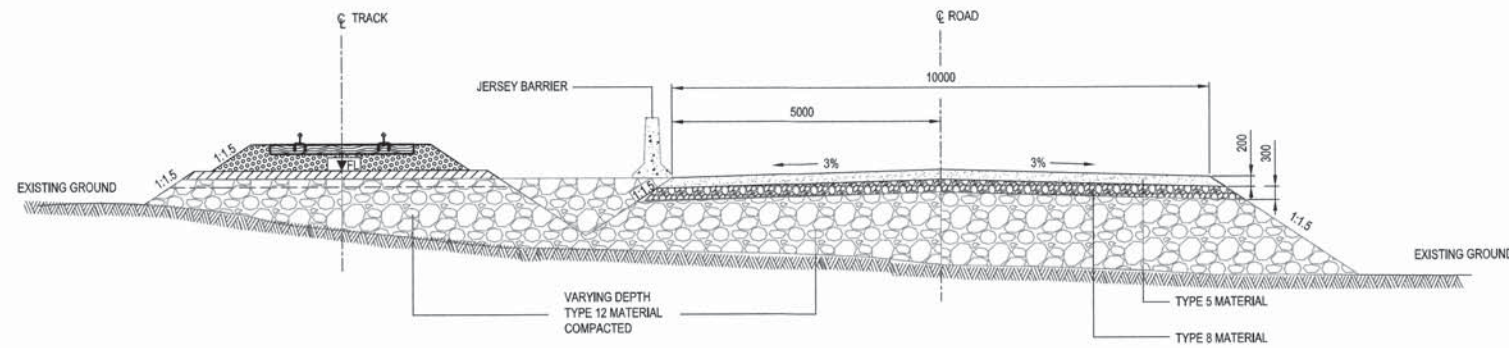
BAFFINLAND IRON MINES LP
MARY RIVER EXPANSION PROJECT

RAIL SITE
STANDARD DRAWING
TYPICAL CROSS SECTION- SHEET 5 OF 6

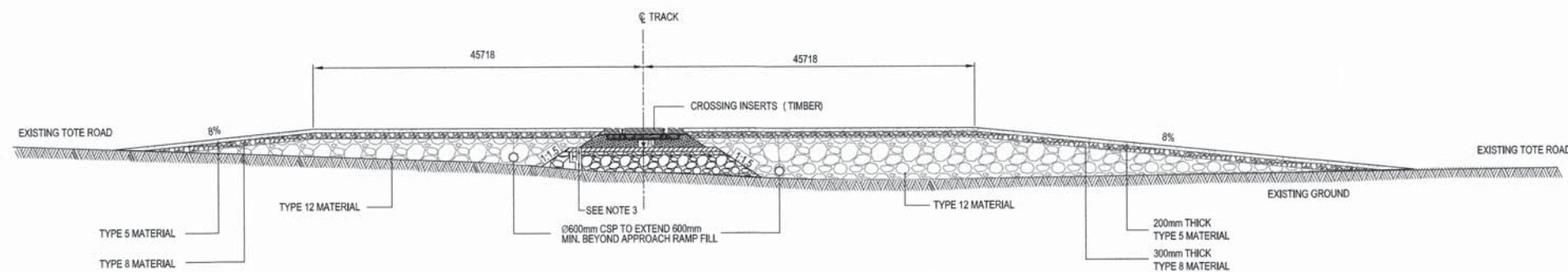
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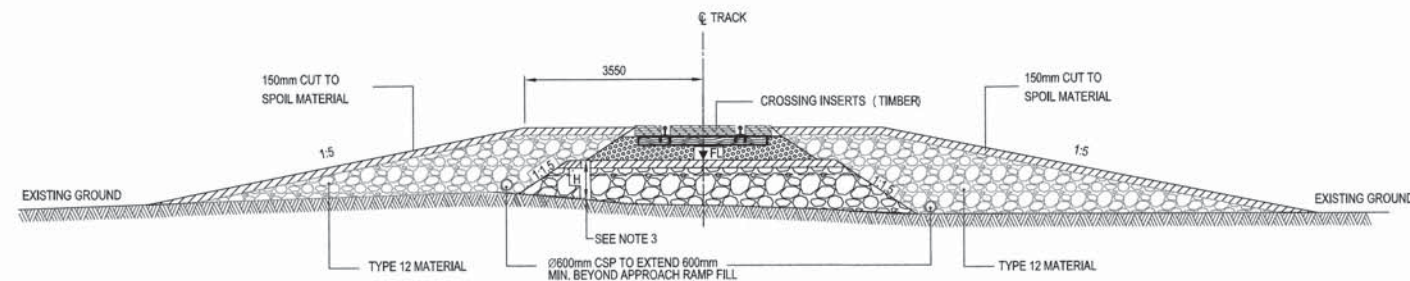
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TYPICAL CROSS SECTION FOR TOTE ROAD AND RAIL INTERFACE






TYPICAL CROSS SECTION FOR LEVEL CROSSING

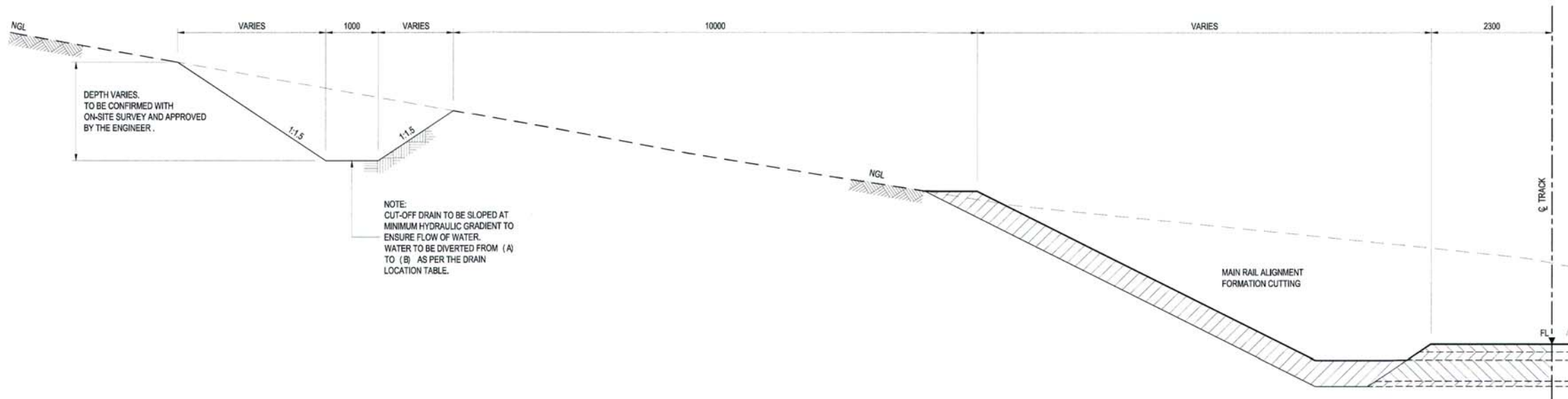


TYPICAL CROSS SECTION FOR CARIBOU AND SNOW MOBILE CROSSING

- NOTES:**
1. MATERIAL TYPE DEFINITION:
TYPE 5: 32mm MINUS
TYPE 8: 150mm MINUS
TYPE 12: RUN OF QUARRY/ROCK FILL LAYER
TYPE 25: BALLAST LAYER
TYPE 26: SUB-BALLAST LAYER
 2. PROPOSED EMBANKMENT DOES NOT HAVE SUB-BALLAST SHOULDERS. EMPLOYER SHALL DEVELOP SAFE OPERATING PROCEDURES FOR ACCESS TO INSPECT AND REPAIR TRAIN EQUIPMENT IN THE CASE OF A BREAKDOWN ON A HIGH EMBANKMENT.
 3. MINIMUM EMBANKMENT (TYPE 12 PLUS SUB-BALLAST) THICKNESS VARIES DEPENDING ON SUB-GRADE CONDITION
H= 700mm STANDARD DIMENSION
H= 1500mm FOR ICE RICH PERMAFROST.
 4. 542 NON-WOVEN GEOTEXTILE UNDER TYPE 12 MATERIAL ON ICE RICH SILT.
 5. FOR JERSEY BARRIER DETAILS REFER TO TYPICAL JERSEY BARRIER DIMENSIONS.
 6. FOR SUPERSTRUCTURE DETAILS REFER TO DRAWING H353004-30000-224-294-0003-0001.
 7. THIS DRAWING WAS PREVIOUSLY ISSUED AS H353004-00000-220-294-0005-0001.
 8. TIMBER CROSSING INSERTS SHALL BE 178mm HIGH AND 229mm WIDE INSERTS TO BE FASTENED TO TIMBER TIES USING 305mm LAG SCREWS. MINIMUM OF 76mm SHALL BE MAINTAINED BETWEEN GAUGE FACE OF THE RAIL AND NEAREST CROSSING INSERT.
 9. WHERE REQUIRED, JERSEY BARRIER LOCATED ON RAIL SIDE.

**PERMIT TO PRACTICE
HATCH LTD.**
Signature: _____
Date: 2018-11-08
PERMIT NUMBER: P 512
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU

				<div style="border: 1px solid black; padding: 5px; text-align: center;"> APPROVED FOR CONSTRUCTION </div>				<small>THIS DRAWING WAS PREPARED BY HATCH LTD. IN PART FOR THE EXCLUSIVE USE OF BAFFINLAND IRON MINES LP (CLIENT) AND ITS USE IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTRACT BETWEEN HATCH AND THE CLIENT. INCLUDING ANY LIMITATIONS ON LIABILITY CONTAINED THEREIN. THIS DRAWING AND ITS CONTENTS REMAIN THE INTELLECTUAL PROPERTY OF HATCH SUBJECT TO CLIENT'S ROYALTY-FREE, IRREVOCABLE, PERPETUAL AND NON-EXCLUSIVE LICENSE TO USE AND REPRODUCE THE DRAWING FOR PURPOSES CONNECTED WITH THE PROJECT, INCLUDING THE CONSTRUCTION, COMPLETION, MAINTENANCE, EXTENSION, RENOVATION AND REPAIR OF THE PROJECT. THIS DRAWING, AND THE INFORMATION CONTAINED HEREIN, SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE MODIFIED WITHOUT THE WRITTEN CONSENT OF HATCH.</small>				 																																																			
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CUT-OFF DRAIN
TYPICAL CROSS SECTION
SCALE 1:50

DIRECTION OF FLOW OF STREAM DIVERSION		
CHAINAGE FROM (km)	CHAINAGE TO (km)	LENGTH (m)
12661	12760	99
20618	20498	320
46454	46473	19
47552	47602	50
49799	49980	181
58940	59060	120
58940	59060	120
58442	58552	110
58706	58652	154
60623	60950	327
61580	61340	240
62550	62920	370
63110	62930	180
63090	62930	160
63724	63555	169
64827	64950	123
66164	66228	64
82266	82094	172
90726	90910	184
89200	90500	1300
91216	90910	306
97286	97194	92

NOTE:
1. THIS DRAWING WAS PREVIOUSLY ISSUED:
H353004-00000-224-272-0032-0001

PERMIT TO PRACTICE
HATCH LTD.

Signature _____

Date _____ December 20, 2018

PERMIT NUMBER: P 512

The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU

APPROVED FOR CONSTRUCTION

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HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

RAIL SITE
STANDARD DRAWING
TYPICAL CUT-OFF DRAIN DETAIL



0 APPROVED FOR CONSTRUCTION.

AJVN 67 2018/11/27

DRAFTSPERSON	A VAN NIEKERK	NR	22/11/17
DESIGNER	A VAN NIEKERK	NR	22/11/17
CHECKER	G JOHNSTONE		
DESIGN COORD.	G JOHNSTONE		
RESP. ENG.	D STANGER		
LEAD DISC. ENG.	F VAN BILJON	van Biljon, Fanus	
AREA LEAD	F VAN BILJON	van Biljon, Fanus	
ENG. MANAGER	D STANGER		
AREA MANAGER	F PITTMAN		

ROLE NAME SIGNATURE DATE

DRAWING APPROVAL STATUS: Approved for Construction

SCALE
1:100
OR AS NOTED

DWG. No.
H353004-30000-224-294-0008-0001

REV
0

SHEET SIZE: D