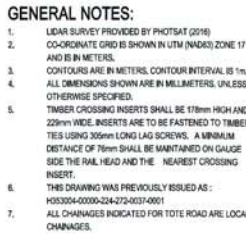


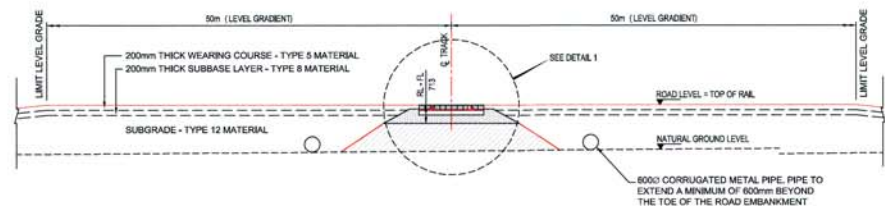
Attachment 12.2

Tote Road Grade Crossing Layouts

(8 Pages)



CO-ORDINATE LIST UTM (NAD83)		ZONE 17
	E	N
PI 1 START	509643.378	799003.695
BCC CURVE A	509649.499	799003.587
PI 2 CURVE A	509688.872	799003.031
EOC CURVE A	501706.578	799007.852
PI 3 CURVE B	509752.611	799027.225
BCC CURVE B	509808.992	799057.243
EOC CURVE B	509819.930	799057.594
LEVEL CROSSING	509808.992	799077.044
BCC CURVE C	509819.128	799078.508
PI 4 CURVE C	509995.052	799078.265
BCC CURVE D	509971.682	799078.114
EOC CURVE D	509923.220	799083.984
PI 5 CURVE D	509934.033	799097.196
EOC CURVE D	509907.481	799095.292
PI 6 END	509907.453	799095.002



SCALE 1:100



DETAIL 1

PERMIT TO PRACTICE
HATCH LTD.
Signature _____
Date 2018-11-17
PERMIT NUMBER: P 512
The Association of Professional Engineers,
Geologists and Geophysicists of NWTAG

APPROVED FOR CONSTRUCTION



		THIS DRAWING AND THE INFORMATION CONTAINED HEREIN SHALL BE TREATED AS CONFIDENTIAL FOR ALL OTHER PURPOSES AND SHALL NOT BE REPRODUCED WITHOUT THE WRITTEN CONSENT OF JPMORGAN		
No.	DESCRIPTION	BY	CHKD	DATE
2	RAIL FORMATION AND CHANGE ALTERED THE SUIT RAIL REALIGNMENT			2018/11
1	ROAD ALIGNMENT ALTERED TO SUIT CHANGED RAIL ALIGNMENT			2018/06
0	APPROVED FOR CONSTRUCTION	AJVN		
REVISIONS				

HATCH

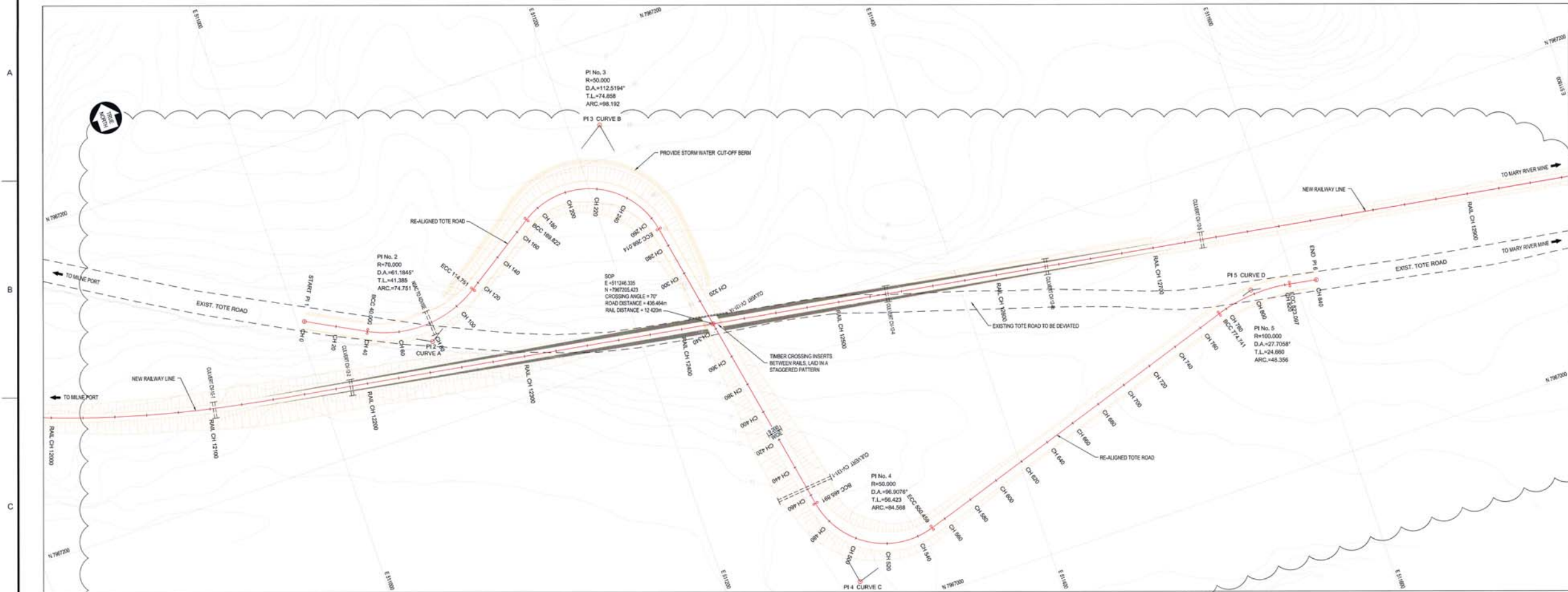


BAFFINLAND IRON MINES LTD.
MARY RIVER PROJECT

TOTE ROAD
LAYOUT AND LONGITUDINAL SECTION
GRADE CROSSING AT CH. 9+460

SCALE 1:1,000 OR AS NOTED	DWG. No. H353004-30000-224-271-0033-0001
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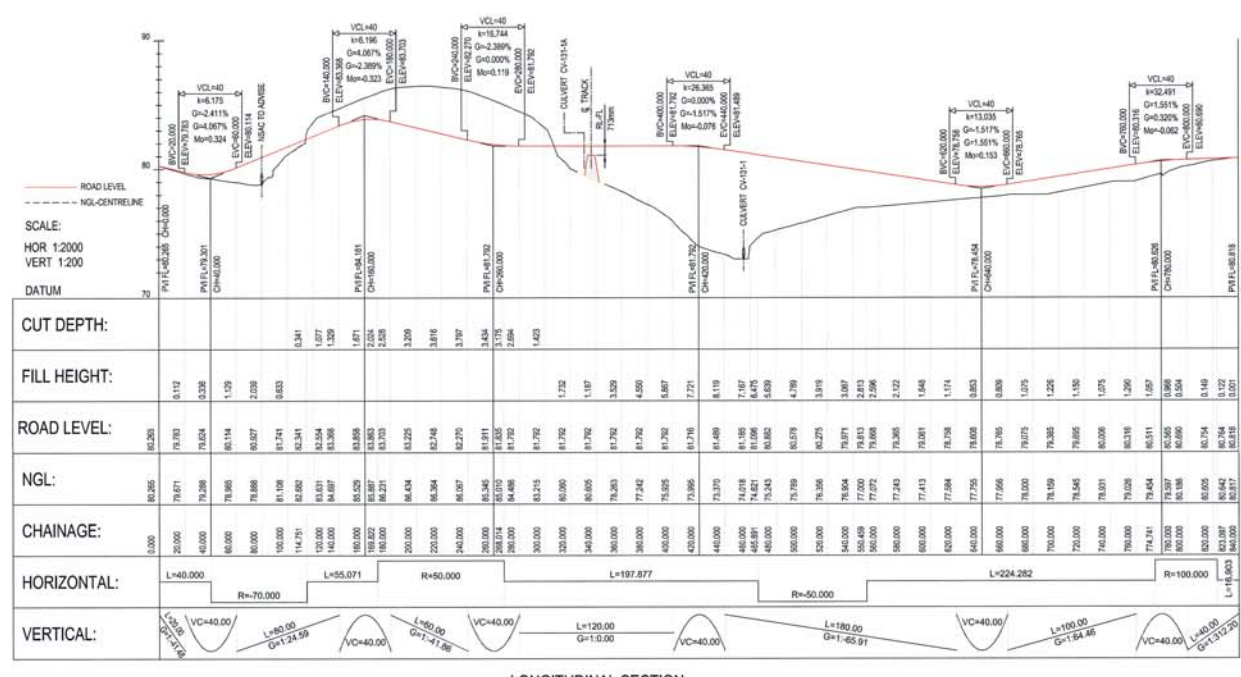
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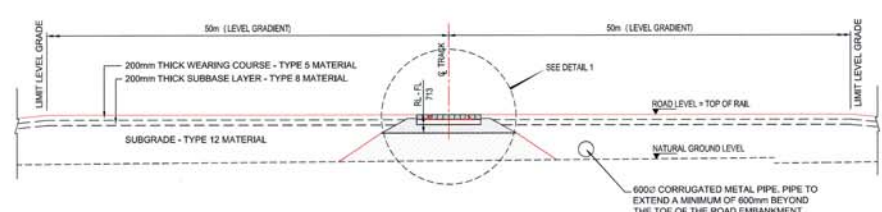
- GENERAL NOTES:
1. L&S SURVEY PROVIDED BY PHOTSAF (2016)
 2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
 3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 1m.
 4. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
 5. TIMBER CROSSING INSERTS SHALL BE 178mm HIGH AND 225mm WIDE. INSERTS ARE TO BE FASTENED TO TIMBER TIES USING 305mm LONG LAG SCREWS. A MINIMUM DISTANCE OF 75mm SHALL BE MAINTAINED ON GAUGE SIDE THE RAIL HEAD AND THE NEAREST CROSSING INSERT.
 6. THIS DRAWING WAS PREVIOUSLY ISSUED AS: H353004-30000-224-271-0034-0001
 7. ALL CHANGES INDICATED FOR TOTE ROAD ARE LOCAL CHANGES.

CO-ORDINATE LIST UTM (NAD83) ZONE 17		
	E	N
PI 1 START	511004.291	7967289.875
BCC CURVE A	511026.673	7967271.217
PI 2 CURVE A	511076.280	7967251.912
ECC CURVE A	511110.838	7967274.881
BCC CURVE B	511156.825	7967304.980
PI 3 CURVE B	511219.335	7967346.165
ECC CURVE B	511233.438	7967272.848
GRADE CROSSING	511246.335	7967205.423
BCC CURVE C	511270.720	7967073.314
PI 4 CURVE C	511281.350	7967022.362
ECC CURVE C	511330.982	7967045.119
BCC CURVE D	511548.666	7967108.560
PI 5 CURVE D	511572.150	7967116.589
ECC CURVE D	511586.441	7967111.829
PI 6 END	511613.081	7967108.911

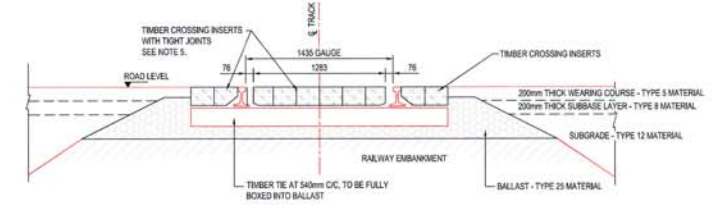
PLAN
SCALE 1:1000



LONGITUDINAL SECTION



CROSS SECTION THROUGH RAILWAY LEVEL CROSSING
SCALE 1:100



DETAIL 1
SCALE 1:25

APPROVED FOR CONSTRUCTION

HATCH

Baffinland

BAFFINLAND IRON MINES LP
MARY RIVER PROJECT

TOTE ROAD
LAYOUT AND LONGITUDINAL SECTION
GRADE CROSSING AT RAIL CH. 12+420

SCALE: 1:1000
DWG. No. H353004-30000-224-271-0034-0001

REVISIONS

2. GRADE CROSSING RELOCATED TO CH 12+420

1. ROAD ALIGNMENT ALTERED TO SUITE NEW RAIL ALIGNMENT

0. APPROVED FOR CONSTRUCTION

BY: CHKD: DATE: 2019/04/10

REVISIONS

DRAFTSPERSON: A VAN NIEKERK
DESIGNER: A VAN NIEKERK
CHECKER: G JOHNSTONE
DESIGN COORD: G JOHNSTONE
RESP. ENG: R HALIM
LEAD DISC. ENG: F VAN BIJON
AREA LEAD: F VAN BIJON
ENG. MANAGER: F PITTMAN

DRAWING APPROVAL STATUS: Approved for Construction

SCALE: 1:1000
DWG. No. H353004-30000-224-271-0034-0001

REVISIONS

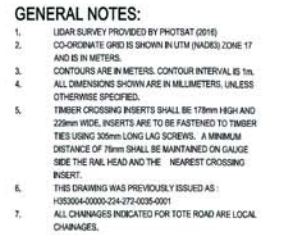
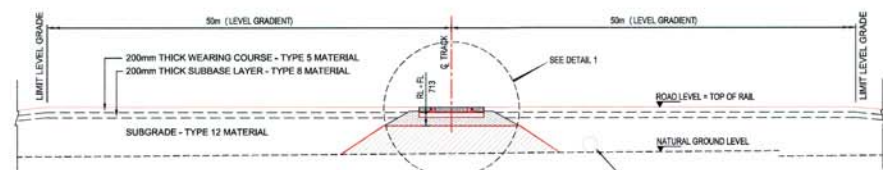
E

Diagram illustrating the cross-section detail of a timber tie on a railway embankment. The diagram shows the tie, crossing inserts, and the underlying layers (wearing course, subbase layer, and subgrade). Dimensions and materials are specified:

- Timber tie width: 143mm GAUGE
- Timber tie thickness: 76mm
- Timber crossing inserts: 1283mm
- Timber tie at 340mm GC, to be fully boxed into ballast
- 200mm THICK WEARING COURSE - TYPE 5 MATERIAL
- 200mm THICK SUBBASE LAYER - TYPE 8 MATERIAL
- SUBGRADE - TYPE 12 MATERIAL
- RAILWAY EMBANKMENT
- BALEST - TYPE 25 MATERIAL
- ROAD LEVEL
- SCALE 1:25

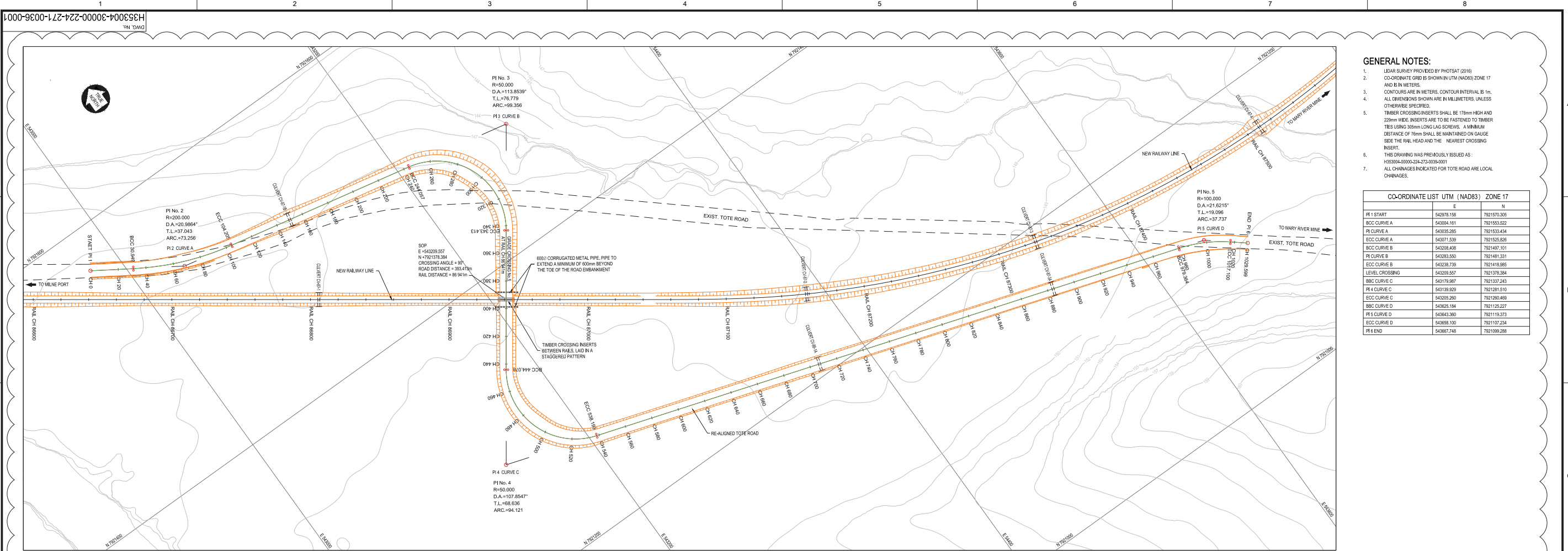


REG. PROFESSIONAL

[illegible]

DRAFTSPERSON	A VAN NIEKERK	NR	09/02/18
DESIGNER	A VAN NIEKERK	NR	09/02/2018
CHECKER	F VAN BILJON	van Biljon, Frits	09/02/2018
DESIGN COORD.	F VAN BILJON	van Biljon, Frits	09/02/2018
RESP. ENG.	D STANGER	Stanger, David	09/02/2018
LEAD DESIGN ENG.	F VAN BILJON	van Biljon, Frits	09/02/2018
AREA LEAD	F VAN BILJON	van Biljon, Frits	09/02/2018
ENG. MANAGER	D STANGER	Stanger, David	09/02/2018
AREA MANAGER	F PITTMAN	Frits Pitman	10/02/18
ROLE	NAME	SIGNATURE	DATE
DRAWING APPROVAL STATUS	APPROVED FOR CONSTRUCTION		

TOTE ROAD LAYOUT AND LONGITUDINAL SECTION GRADE CROSSING AT CH. 55+243		
SCALE 1:1000 C.B.A. NOTED	DWG. No. H353004-30000-224-271-0035-0001	REV 1

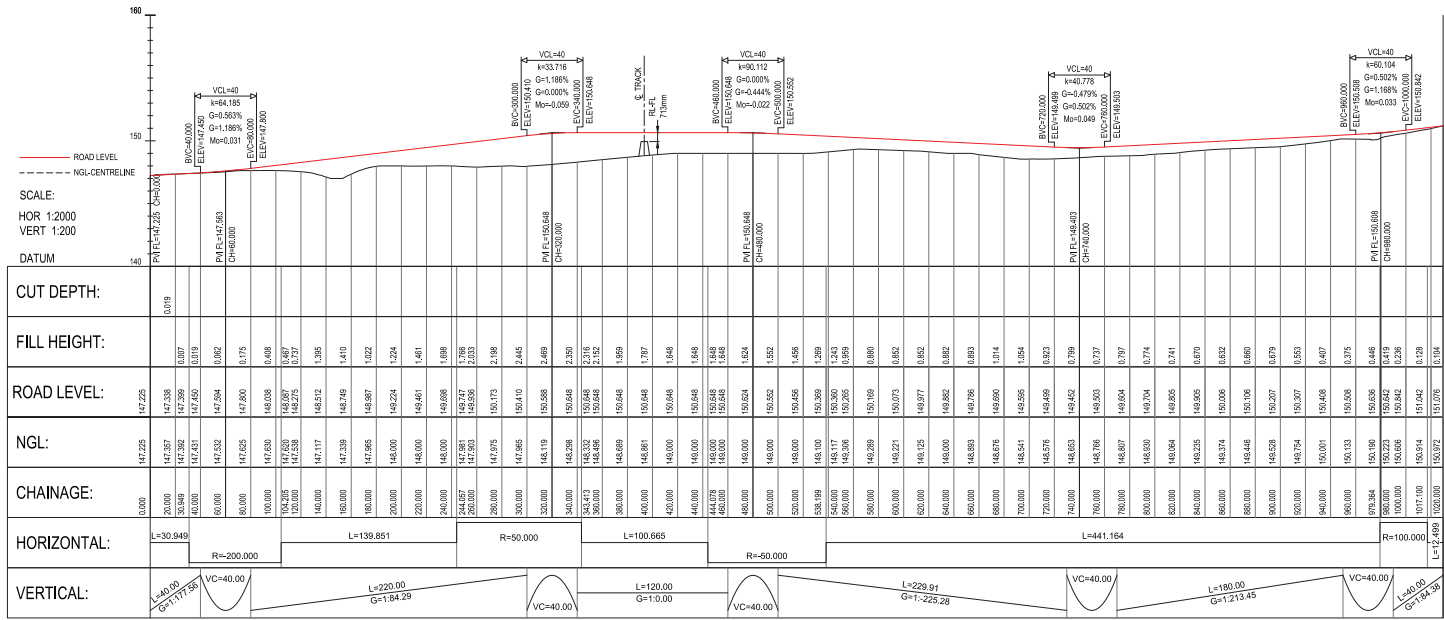


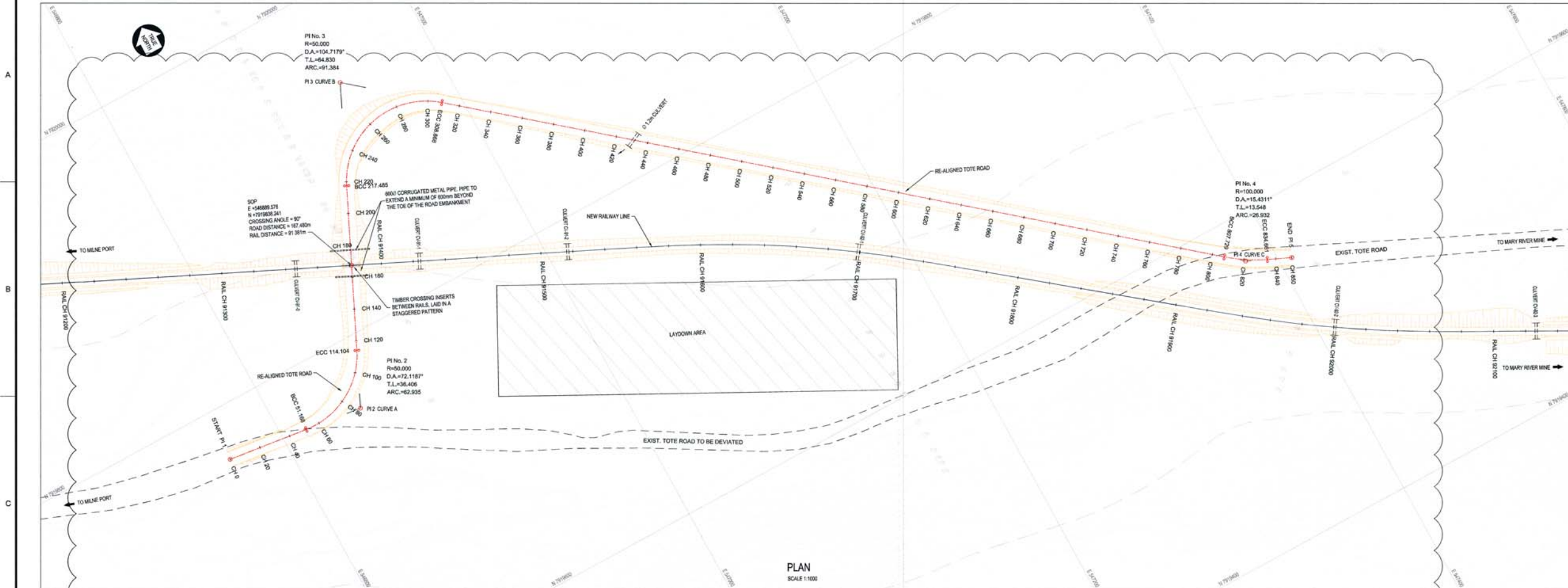
GENERAL NOTES:

- LIDAR SURVEY PROVIDED BY PHOTSAF (2016)
- CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IN METERS.
- CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 1m.
- ALL DIMENSIONS SHOWN ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
- TIMBER CROSSING INSERTS SHALL BE 178mm HIGH AND 229mm WIDE, INSERTS ARE TO BE FASTENED TO TIMBER TIES USING 355mm LONG LAG SCREWS. A MINIMUM DISTANCE OF 76mm SHALL BE MAINTAINED ON GAUGE SIDE THE RAIL HEAD AND THE NEAREST CROSSING INSERT.
- THIS DRAWING WAS PREVIOUSLY ISSUED AS : H353004-00000-224-271-0036-0001
- ALL CHANGES INDICATED FOR TOTE ROAD ARE LOCAL CHANGES.

	E	N
PI 1 START	542978.159	7921570.305
BCC CURVE A	542994.151	7921550.522
PI CURVE A	543035.295	7921533.434
ECC CURVE A	543071.539	7921525.828
BCC CURVE B	543208.408	7921497.101
PI CURVE B	543283.550	7921481.331
ECC CURVE B	543238.739	7921418.985
LEVEL CROSSING	543209.557	7921378.384
BBC CURVE C	543179.867	7921337.243
PI 4 CURVE C	543139.829	7921291.510
ECC CURVE C	543235.280	7921260.469
BCC CURVE D	543625.184	7921125.227
PI 5 CURVE D	543843.380	7921119.373
ECC CURVE D	543858.100	7921107.234
PI 6 END	543887.748	7921099.288

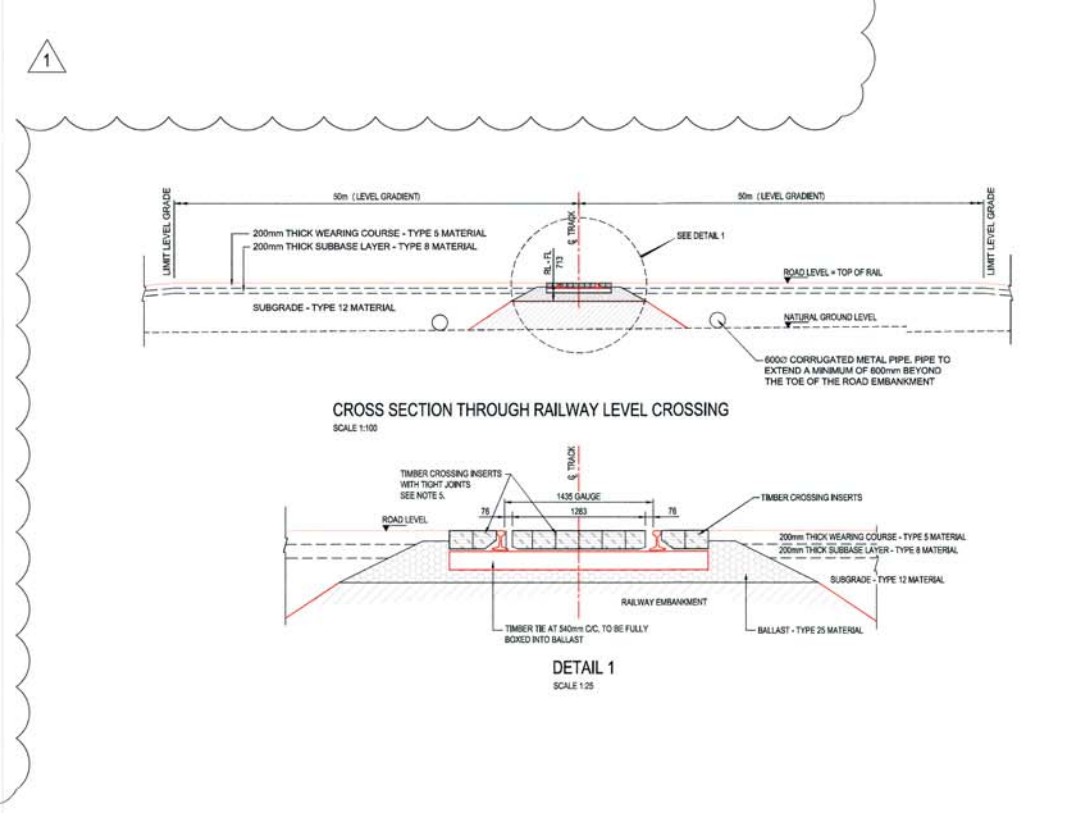
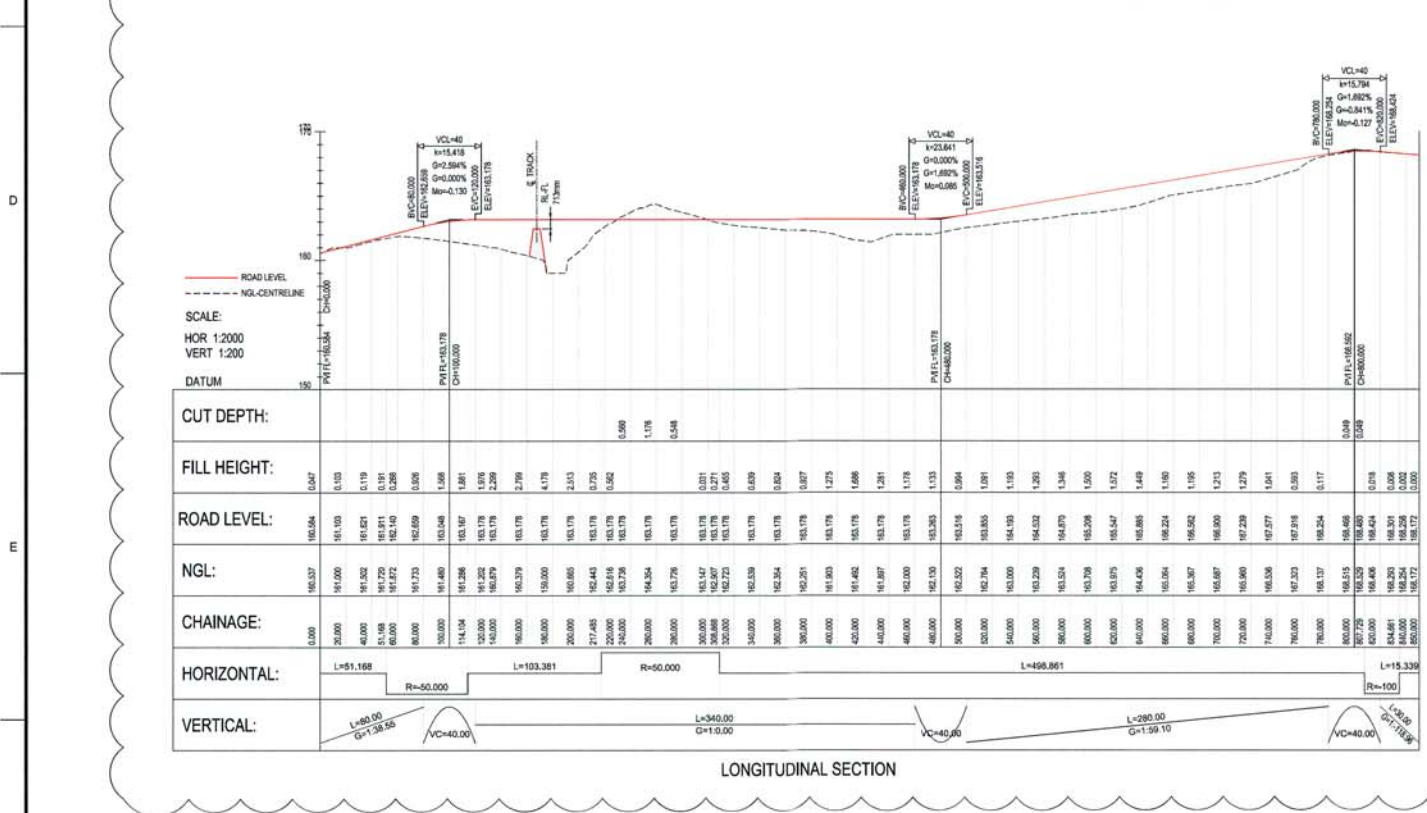
PLAN
SCALE 1:1000





- GENERAL NOTES:
1. LIDAR SURVEY PROVIDED BY PHOTAS (2016)
 2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METERS.
 3. CONTOURS ARE IN METERS. CONTOUR INTERVAL IS 1m.
 4. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
 5. TIMBER CROSSING INSERTS SHALL BE 175mm HIGH AND 225mm WIDE. INSERTS ARE TO BE FASTENED TO TIMBER TIES USING 305mm LONG LAG SCREWS. A MINIMUM DISTANCE OF 75mm SHALL BE MAINTAINED ON GAUGE SIDE THE RAIL HEAD AND THE NEAREST CROSSING INSERT.
 6. THIS DRAWING HAS PREVIOUSLY ISSUED AS H353004-00000-224-271-0045-0001
 7. ALL CHAINAGES INDICATED FOR TOTE ROAD ARE LOCAL CHAINAGES.

CO-ORDINATE LIST UTM (NAD83) ZONE 17			
	E	N	
PI 1 START	548754.587	7919707.872	
BCC CURVE A	548815.348	7919707.828	
PI 2 CURVE A	548851.465	7919706.943	
ECC CURVE A	548888.819	7919706.307	
LEVEL CROSSING	548888.819	7919706.307	
BCC CURVE B	548910.799	7919838.241	
PI 3 CURVE B	548938.316	7919842.213	
ECC CURVE B	548988.089	7919900.885	
BCC CURVE C	547271.175	7919991.130	
PI 4 CURVE C	547381.578	7919972.483	
ECC CURVE C	547383.916	7919968.854	
PI 5 END	547407.885	7919965.517	



H353004-30000-224-294-0007 ROAD SIGNAGE DETAIL

H353004-30000-224-294-0010 TYPICAL HAIL ROAD CROSS SECTION

H353004-30000-224-294-0009 TYPICAL LEVEL CROSSING LAYOUT

H353004-30000-224-273-0025 CROSS SECTIONS CH. 0.000m TO CH. 850.000m

DRAWING No. _____ DRAWING TITLE _____

REFERENCE DRAWINGS

APPROVED FOR CONSTRUCTION

2018-11-17

REG. PROFESSIONAL

HATCH

BAFFINLAND

BAFFINLAND IRON MINES LP

MARY RIVER PROJECT

TOTE ROAD

LAYOUT AND LONGITUDINAL SECTION

GRADE CROSSING AT CH. 91+750

SCALE: 1:1,000

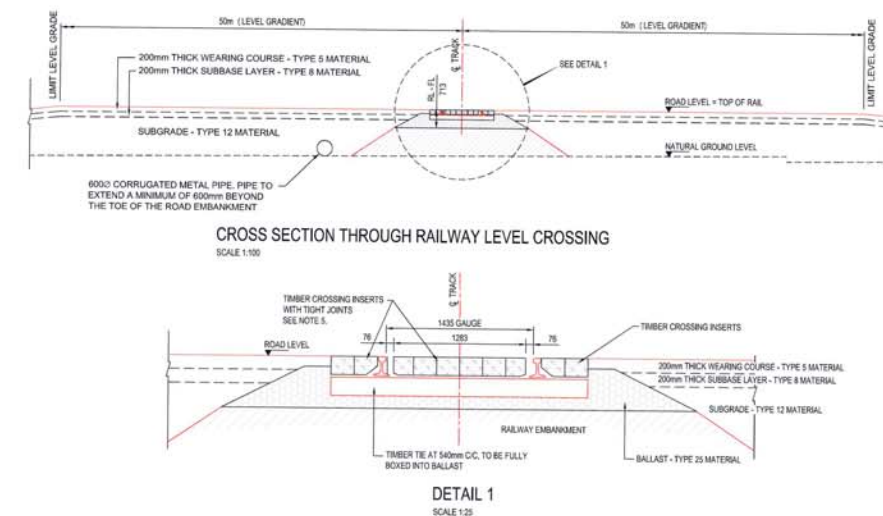
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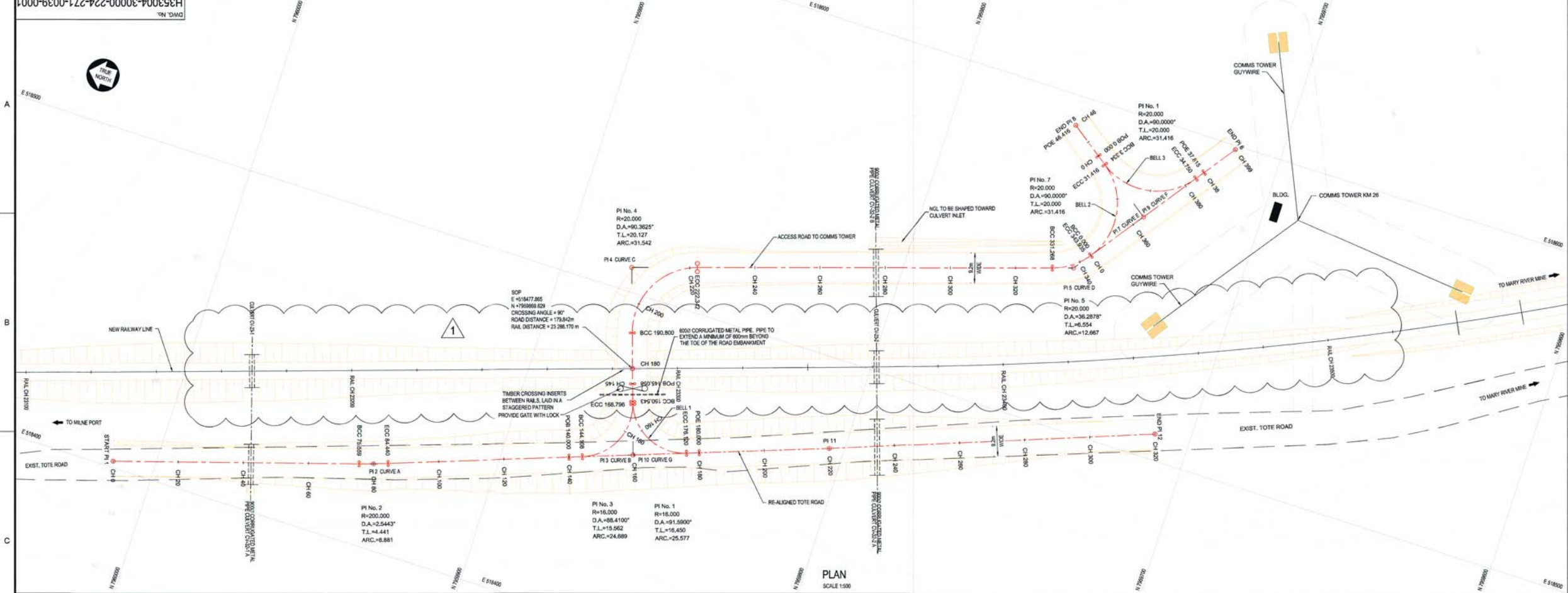
REV 1

SHEET SIZE A0

NO.	DESCRIPTION	DATE	BY	CHKD
1	ROAD ALIGNMENT ALTERED TO SUIT NEW RAIL ALIGNMENT.	2018/11/14	AJVN	
2	APPROVED FOR CONSTRUCTION	2018/04/06	AJVN	

DRAWING APPROVAL STATUS: APPROVED FOR CONSTRUCTION

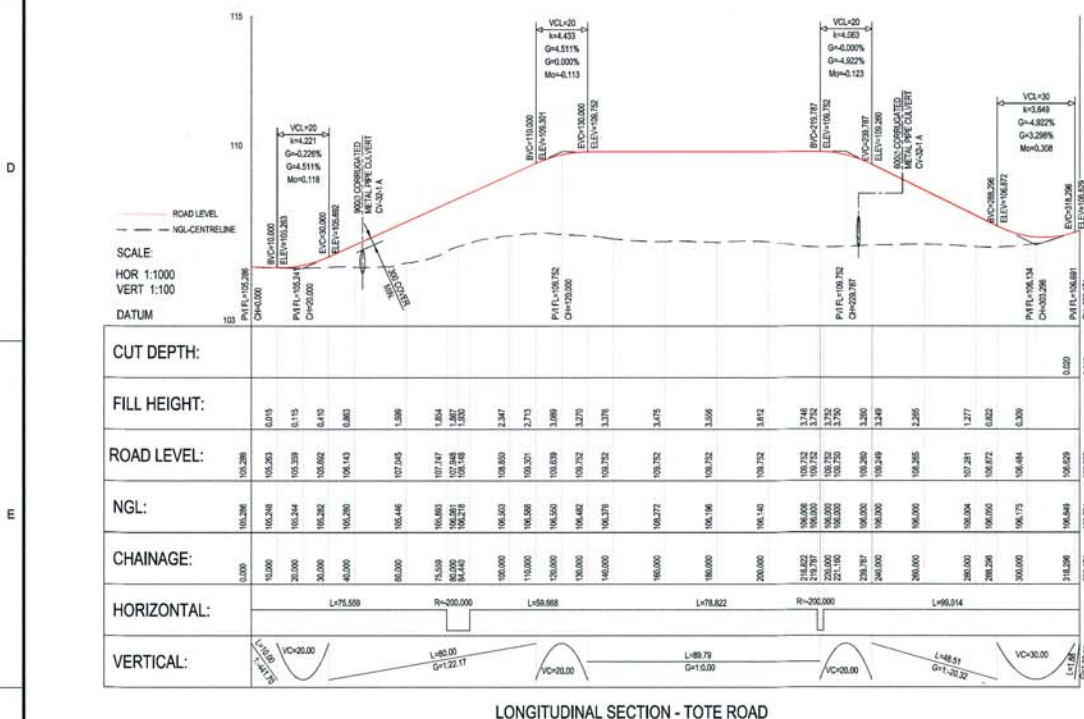
[illegible]



- GENERAL NOTES:**
1. LIDAR SURVEY PROVIDED BY PHOTASAT (2016)
 2. CO-ORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IN METERS
 3. CONTOURS ARE IN METERS, CONTOUR INTERVAL IS 1m, ALL DIMENSIONS SHOWN ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED
 4. TIMBER CROSSING INSERTS SHALL BE 170mm HIGH AND 22mm WIDE, INSERTS ARE TO BE FASTENED TO TIMBER TIES USING 300mm LONG LAG SCREWS. A MINIMUM DISTANCE OF 70mm SHALL BE MAINTAINED ON GAUGE SIDE OF THE RAIL HEAD AND THE NEAREST CROSSING INSERT.
 5. ALL CHANGES INDICATED FOR TOTE ROAD ARE LOCAL CHANGES.

CO-ORDINATE LIST UTM (NAD83) ZONE 17			
	E	N	
PI 1 START	518401.920	7960012.700	
CULVERT CV-30-1	518415.899	7959955.365	
BCC CURVE A	518424.309	7959940.535	
PI CURVE A	518424.925	7959936.263	
ECC CURVE A	518427.138	7959932.113	
BCC CURVE B	518447.350	7959875.596	
PI 10 CURVE B & G	518453.286	7959851.522	
ECC CURVE B	518457.371	7959855.180	
CULVERT	518470.219	7959867.113	
LEVEL CROSSING	518477.865	7959868.628	
BCC CURVE C	518488.275	7959873.049	
PI CURVE C	518507.366	7959878.332	
ECC CURVE C	518513.558	7959880.172	
BCC CURVE D	518546.906	7959756.477	
PI CURVE D	518549.912	7959750.237	
ECC CURVE D	518554.222	7959748.396	
PI 11 END	518598.763	7959744.197	
PI 1 & CURVE E & F	518570.429	7959734.873	
ECC CURVE E & BCC CURVE F	518592.149	7959730.877	
PI 11 END	518596.942	7959730.030	
ECC CURVE F	518596.630	7959722.900	
BCC CURVE G	518458.123	7959845.843	
ECC CURVE G	518458.123	7959845.843	
PI 11	518473.003	7959804.502	
CULVERT CV-30-2	518478.138	7959790.779	
PI 12 END	518507.845	7959713.846	

LEGEND:
 R = RADIUS
 D.A. = DEFLECTION ANGLE
 T.L. = TANGENT LENGTH
 A.R.C. = ARC LENGTH
 V.C.L. = VERTICAL CURVE LENGTH
 I = GRADE
 G = GRADE
 M₀ = MID ORIGINATE
 CH = ROAD CHAINAGE
 RAIL CH = RAIL CHAINAGE



LONGITUDINAL SECTION - TOTE ROAD

