

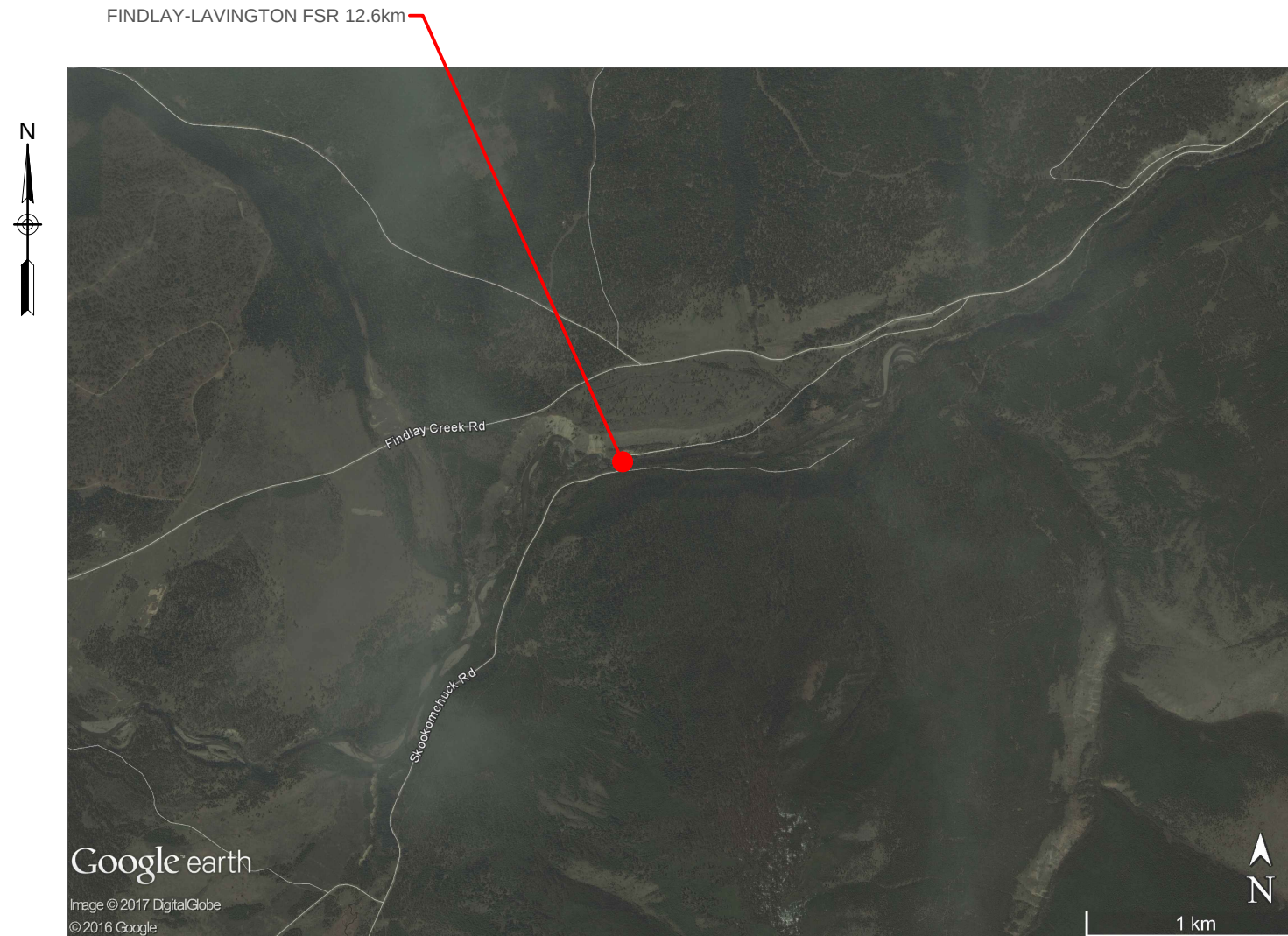


Ministry of Forests, Lands and Natural Resource Operations



Southern Engineering Group

N2-038 FINDLAY CREEK



SITE INFORMATION	
SITE No.	N2-038
STRUCTURE No.	N2-038A
FSR NAME & KM	FINDLAY-LAVINGTON FSR 12.6km
LATITUDE	50°7'55"N
LONGITUDE	-115°58'5"W
DESIGN SUMMARY	27.432m CONCRETE/STEEL COMPOSITE BRIDGE ON STEEL TOWERS AND PRECAST CONCRETE SPREAD FOOTINGS

DRAWING SCHEDULE	
PAGE No.	DESCRIPTION
1	GENERAL NOTES 1
2	GENERAL NOTES 2
3	EXISTING PLAN VIEW
4	EXISTING PROFILE VIEW
5	PROPOSED PLAN VIEW
6	PROPOSED PROFILE VIEW
7	PROPOSED ABUTMENT VIEW
8	EXISTING PHOTOS
9-11	PROPOSED ROAD SECTIONS
12-13	PROPOSED VEHICLE TRACKING

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PLOT DATE: June 12, 2017

1. GENERAL

- 1.1. PROFESSIONAL OF RECORD FOR COMPLEX CROSSINGS SHALL BE A PROFESSIONAL ENGINEER
- 1.2. EXPECTED LIFE OF THE STRUCTURE IN PLACE IS 45 YEARS

2. SITE SURVEY

SURVEY TABLE	
DATE OF SURVEY	4/10/2017
SITE LOCATION	50°7'55"N , -115°58'5"W
SURVEYOR	D. Alway, H. Beurskens
COMPANY	MFLNRO

3. GEOTECHNICAL

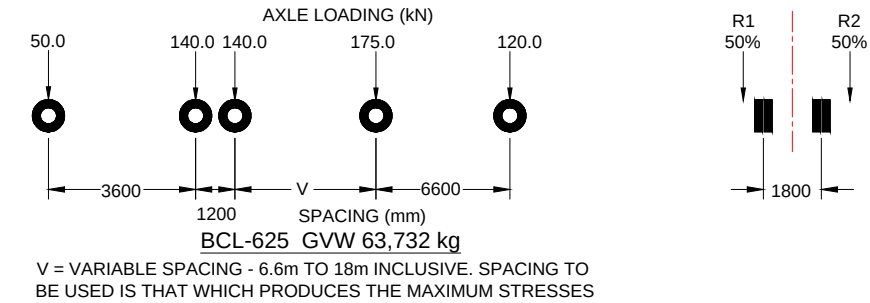
- 3.1. A FORMAL GEOTECHNICAL ASSESSMENT WAS NOT CARRIED OUT. THE SITE APPEARS TO BE COMPOSED OF A BLANKET OF GRANULAR COLLUVIUM. IF EXCAVATION OF FOUNDATIONS REVEALS DEVIATIONS, THE DESIGNEE IS TO BE ADVISED PRIOR TO CONTINUATION OF WORK. FOUNDATION DESIGN REFERENCES THE CANADIAN FOUNDATION MANUAL. SUBSURFACE INFORMATION HAS BEEN INFERRED FROM THE SITE OBSERVATIONS OF SOIL EXPOSURES IN ROAD CUTS AND ALONG STREAM BANKS
- 3.2. FOUNDATIONS HAVE BEEN DESIGNED TO 200 kPa MAXIMUM ALLOWABLE BEARING PRESSURE
4. HYDROLOGY AND HYDRAULIC ASSESSMENT
- 4.1. A PEAK FLOW FOR DESIGN PURPOSES WAS DETERMINED BASED ON A REVIEW OF CHANNEL CHARACTERISTICS, PREVIOUS HIGH FLOW EVIDENCE AND REVIEW OF OBSERVATIONS MADE DURING THE JUNE 2013 FLOOD EVENT. NO DETAIL HYDRAULIC ASSESSMENT COMPLETED.
- 4.2. FREEBOARD HEIGHT REQUIREMENT SHOWN REFERS TO UPSTREAM FACE OF BRIDGE.
- 4.3. LANDSLIDE AND DEBRIS FLOWS ARE NOT INCLUDED IN THIS DESIGN.

5. SITE PREPARATION AND INSTALLATION GENERAL

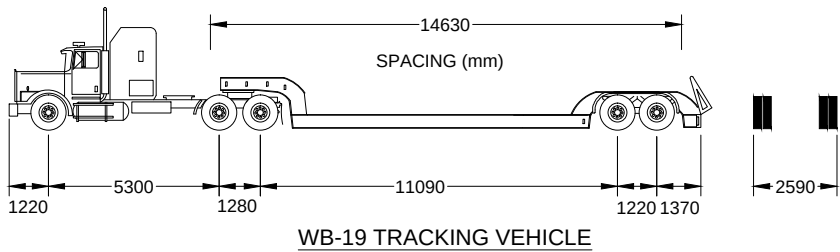
- 5.1. MINISTRY REPRESENTATIVE TO BE ON-SITE FOR THE FOLLOWING PHASES AND CONTRACTOR REQUIRES APPROVAL PRIOR TO CONTINUING TO THE NEXT PHASE:
- 5.1.1. PREPARATION OF FOUNDATION.
- 5.1.2. PLACEMENT OF RIPRAP.
- 5.1.3. REVIEW OF SUBSTRUCTURE PRIOR TO BEING COVERED.
- 5.1.4. REVIEW OF FINAL SUPERSTRUCTURE INSTALLATION.
- 5.2. CHECK REQUIRED BEARING DISTANCE AND DEPTH OF ACTUAL STRUCTURE PRIOR TO CONSTRUCTION. BOTTOM OF GIRDER ELEVATIONS GOVERNS.

6. BRIDGE DESIGN

- 6.1. CONFORM TO FOREST SERVICE BRIDGE DESIGN & CONSTRUCTION MANUAL AND SUBSEQUENT REVISIONS
- 6.2. LOADING: BCL-625 (63,732 KG G.V.W.) IN ACCORDANCE WITH MFLNRO STANDARD BRIDGE DESIGN VEHICLES - DWG. STD-EC-000-01 TO 02



- 6.3. HORIZONTAL ALIGNMENT TRACKING VEHICLE: LOW-BED WB-19m AASHTOM 2004



7. FURTHER DESIGN WORK

- 7.1. ALL COMPONENTS REQUIRE STRUCTURAL DESIGN
- 7.2. IF THE DEPTH OF THE GIRDERS IS 100mm DEEPER THAN IS SHOWN ON THE DRAWINGS THE PROFESSIONAL OF RECORD MUST BE ADVISED

8. CLEARING AND GRUBBING

- 8.1. REMOVE TREES, STUMPS, LOGS, BRUSH, SHRUBS, BUSHES, VINES, UNDERGROWTH, ROTTEN WOOD, DEAD PLANT MATERIAL, EXPOSED BOULDERS AND DEBRIS WITHIN AREAS DESIGNATED ON DRAWINGS.
- 8.2. REMOVE STUMPS AND TREE ROOTS BELOW FOOTINGS, SLABS, AND PAVING.
- 8.3. DISPOSE OF CLEARED AND GRUBBED MATERIAL OFF SITE DAILY TO DISPOSAL AREAS ACCEPTABLE TO AUTHORITY HAVING JURISDICTION.

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		BRITISH COLUMBIA		MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS SOUTHERN ENGINEERING GROUP	
SITE #: N2-038		STRUCTURE #: N2-038A			
FSR: FINDLAY-LAVINGTON FSR		CBR km: 12.6km			

REV	DATE	REVISIONS	INITIAL	DRAWING TITLE: GENERAL NOTES 1	
				DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
0	07/06/17	ISSUED FOR REVIEW			Pg 1



PROFESSIONAL SEAL

9. RIPRAP AND GRANULAR MATERIAL

9.1.RIPRAP SHALL BE SUPPLIED AND PLACED IN ACCORDANCE WITH THE MINISTRY "BRIDGE DESIGN AND CONSTRUCTION MANUAL". SOURCES FOR GRAVEL AND RIPRAP SHALL BE APPROVED BY THE COORDINATING REGISTERED PROFESSIONAL PRIOR TO SOURCE DEVELOPMENT. PERMITS FROM OTHER REGULATORY AGENCIES MAY ALSO BE REQUIRED. FOLLOWING THE REMOVAL OF MATERIAL FROM AN APPROVED SITE, SIDE SLOPES MUST BE DRESSED TO THE NATURAL ANGLE OF REPOSE OF THE MATERIAL, BUT IN NO CASE GREATER THAN 45 DEGREES, UNLESS THE MATERIAL IS SOLID ROCK.

9.2.RIPRAP GRADATION AND THICKNESS SHOWN ON DRAWINGS.

10. FOOTING EXCAVATIONS

- 10.1. EXCAVATIONS FOR ALL FOOTINGS SHALL BE KEPT FREE OF WATER DURING CONSTRUCTION. FOR EXCAVATION IN MATERIAL OTHER THAN ROCK, CARE SHALL BE TAKEN NOT TO DISTURB THE BOTTOM OF THE EXCAVATION.
- 10.2. WHERE FOUNDATION MATERIALS ENCOUNTERED DO NOT MEET THE DESIGN ASSUMPTIONS SHOWN ON THE DRAWINGS OR IN THE CONSTRUCTION SPECIFICATIONS, THE PROFESSIONAL OF RECORD SHALL BE CONSULTED PRIOR TO INSTALLATION OF FOUNDATIONS. THE COORDINATING REGISTERED PROFESSIONAL SHALL BE RESPONSIBLE TO STIPULATE MEASURES TO MEET DESIGN REQUIREMENTS AND CONSULT THE BRIDGE DESIGN ENGINEER AS REQUIRED. THE PROFESSIONAL OF RECORD SHALL INCLUDE THE PRESCRIBED MEASURES IN THE CERTIFICATION DOCUMENT.

11. BACKFILLING

- 11.1. INSPECTION: DO NOT COMMENCE BACKFILLING UNTIL FILL MATERIAL AND SPACES TO BE FILLED HAVE BEEN INSPECTED AND APPROVED BY THE MFLNRO REPRESENTATIVE.
- 11.2. REMOVE SNOW, ICE, CONSTRUCTION DEBRIS, ORGANIC SOIL AND STANDING WATER FROM SPACES TO BE FILLED.
- 11.3. LATERAL SUPPORT: MAINTAIN EVEN LEVELS OF BACKFILL AROUND STRUCTURES AS WORK PROGRESSES, TO EQUALIZE EARTH PRESSURES.
- 11.4. BACKFILL MATERIAL: CLEAN SAND AND GRAVEL WITH A MAXIMUM AGGREGATE SIZE OF 100mm AND A MAXIMUM FINES CONTENT (SILTS CLAY PARTICLES) OF 10%.
- 11.5. PLACING: PLACE BACKFILL, FILL MATERIAL IN 300mm LIFTS. ADD WATER AS REQUIRED TO ACHIEVE SPECIFIED DENSITY.
- 11.6. COMPACTION OF SUBGRADE: FILL EXCAVATED AREAS WITH SELECTED SUBGRADE MATERIAL. EACH LAYER OF MATERIAL COMPACTED TO 90% ASTM D698. COMPACT EXISTING SUBGRADE UNDER FOOTING AND APPROACHES TO 90% ASTM D698. REINFORCED SOIL TO BE COMPACTED TO A MINIMUM OF 95% MODIFIED PROCTOR (ASTM D-1557).
- 11.7. SHOT ROCK MATERIAL WILL REQUIRE AN IMPORTED SURFACING LAYER FOR FINAL GRADING.
- 11.8. BACKFILL TO BE 150mm MINUS WITHIN 1.0 METER OF ABUTMENTS.

12. GRADING

- 12.1. GRADE SO THAT WATER WILL DRAIN AWAY FROM THE BRIDGE APPROACHES TO CATCH BASINS AND OTHER DISPOSAL AREAS APPROVED BY THE MFLNRO REPRESENTATIVE.
- 12.2. CONSTRUCT APPROACH FILLS TO LINES AND GRADES SHOWN ON DRAWINGS.

13. SITE CLEANUP

- 13.1. CLEANUP OF THE SITE MUST BE COMPLETED IMMEDIATELY FOLLOWING CONSTRUCTION. THIS SHALL INCLUDE THE PICKUP AND REMOVAL OF ALL EQUIPMENT, MATERIALS, TRASH, EQUIPMENT REFUSE AND CONSTRUCTION DEBRIS, AND CLEANING THE BRIDGE GIRDERS, DECKS AND BEARINGS TO THE SATISFACTION OF THE PROFESSIONAL OF RECORD.

14. ENVIRONMENTAL MANAGEMENT PLAN

- 14.1. AGENCY APPROVED PRACTICES AND REQUIREMENTS OR A SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN THE FOLLOWING GUIDELINES SHALL BE FOLLOWED.
- 14.2. CONSTRUCTION SHALL BE CARRIED OUT IN SUCH A MANNER AS TO ENSURE WATER QUALITY IS MAINTAINED BY KEEPING SOIL EROSION AND RUN-OFF TO A MINIMUM DURING INCLEMENT WEATHER AND BY TAKING MEASURES TO PREVENT SEDIMENTATION, LEACHATE, FRESH CONCRETE AND DEMOLITION AND CONSTRUCTION DEBRIS FROM ENTERING THE WETTED PERIMETER, INCLUDING THE FOLLOWING:
- 14.3. MACHINES THAT ENTER THE WATER MUST NOT HAVE FLUID LEAKS;

- 14.4. BRIDGE GIRDERS AND DECK COMPONENTS SHALL BE THOROUGHLY CLEANED JUST PRIOR TO LAUNCHING OR ERECTION;
- 14.5. EXCAVATIONS SHALL BE ISOLATED FROM RUNNING WATER USING TEMPORARY SEDIMENT CONTAINMENT METHODS; SEDIMENT LADEN WATER SHALL BE PUMPED OUT OF THE CONTAINMENT AREAS TO THE BUSH WHERE SEDIMENT WILL SETTLE AND FILTER PRIOR TO ENTERING ANY WATERCOURSE, PRIOR TO BACKFILLING OR REMOVAL OF CONTAINMENT MEASURES. IF NECESSARY, A SETTLING AREA SHALL BE CONSTRUCTED TO PREVENT SEDIMENT-LADEN WATER RETURNING TO THE STREAM;
- 14.6. ALL CROSSINGS OR ENCROACHMENT BY EQUIPMENT ON THE WETTED PERIMETER SHALL BE FOLLOWING AGENCY APPROVED PRACTICES AND REQUIREMENTS OR A SITE SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN;
- 14.7. ANY UNDUE DISTURBANCE TO THE STREAM CHANNEL OR BANKS AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE CORRECTED TO THE SATISFACTION OF THE REGULATORY AGENCY AND MFLNRO REPRESENTATIVE.
15. ESTIMATED EARTHWORKS VOLUMES
- 15.1. EXCAVATION INCLUDING SUBEXCAVATION ON EXISTING BRIDGE APPROACH: 1,050m³
- 15.2. BRIDGE APPROACH FILL REQUIRED (INCLUDES ABOVE EXCAVATION VOLUME): 990m³
- 15.3. ROADWAY SURFACING: 400m³
- 15.4. RIP RAP: 500m³
- 15.5. NOTE THE ABOVE VOLUMES ARE ESTIMATES ONLY AND DO NOT ACCOUNT FOR UNEXPECTED CONDITIONS. THE MINISTRY WILL NOT BE HELD ACCOUNTABLE FOR THEM. BIDDERS ARE TO UNDERTAKE THEIR OWN INDEPENDENT VOLUME ESTIMATING.
- 15.6. EXISTING RIP-RAP PREVIOUSLY INSTALLED POST THE 2013 FLOOD EVENT IS OVERSTEEPENED, BUT IS TO BE LEFT IN PLACE. THIS EXISTING RIP-RAP IS NOT A CRITICAL COMPONENT OF THIS DESIGN.

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BRITISH COLUMBIA



MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS
SOUTHERN ENGINEERING GROUP

SITE #: N2-038

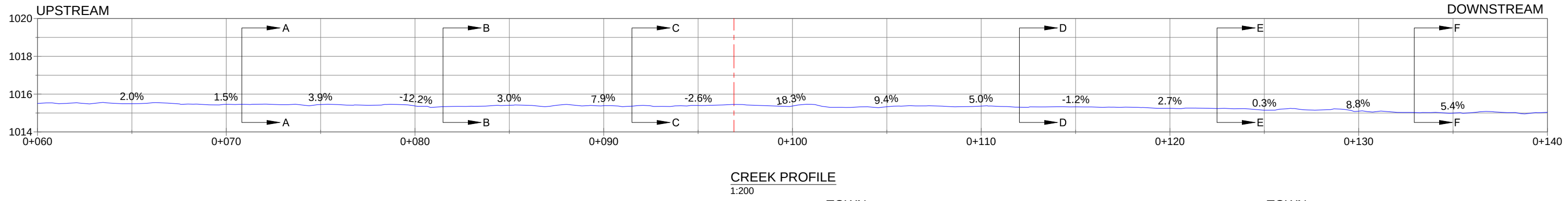
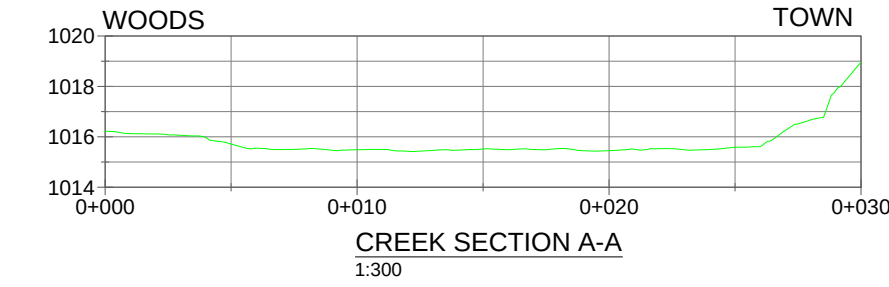
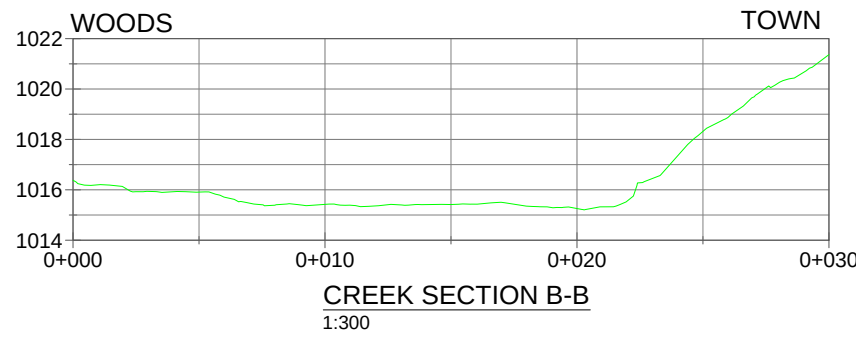
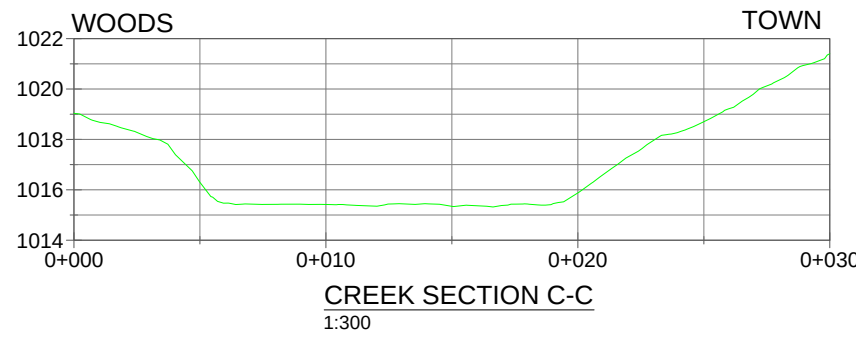
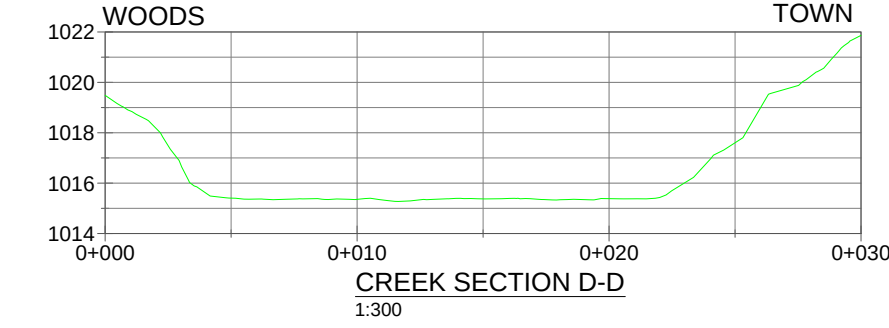
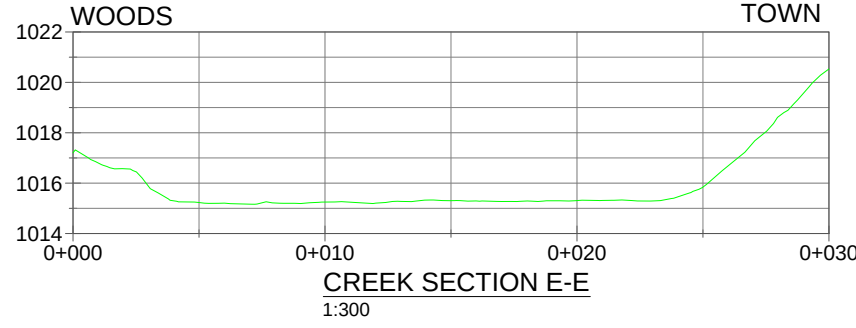
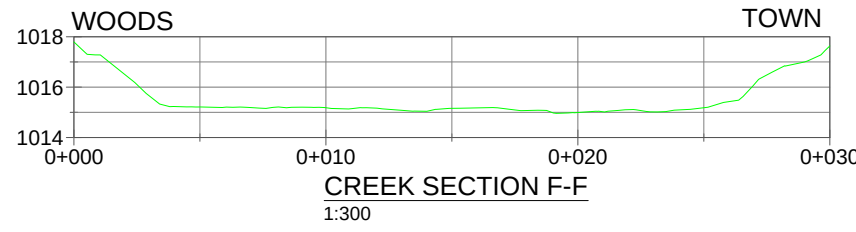
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FSR: FINDLAY-LAVINGTON FSR

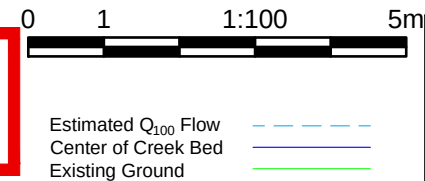
CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL	DRAWING TITLE: GENERAL NOTES 2		
0	07/06/17	ISSUED FOR REVIEW		DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----	
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG	Pg 2





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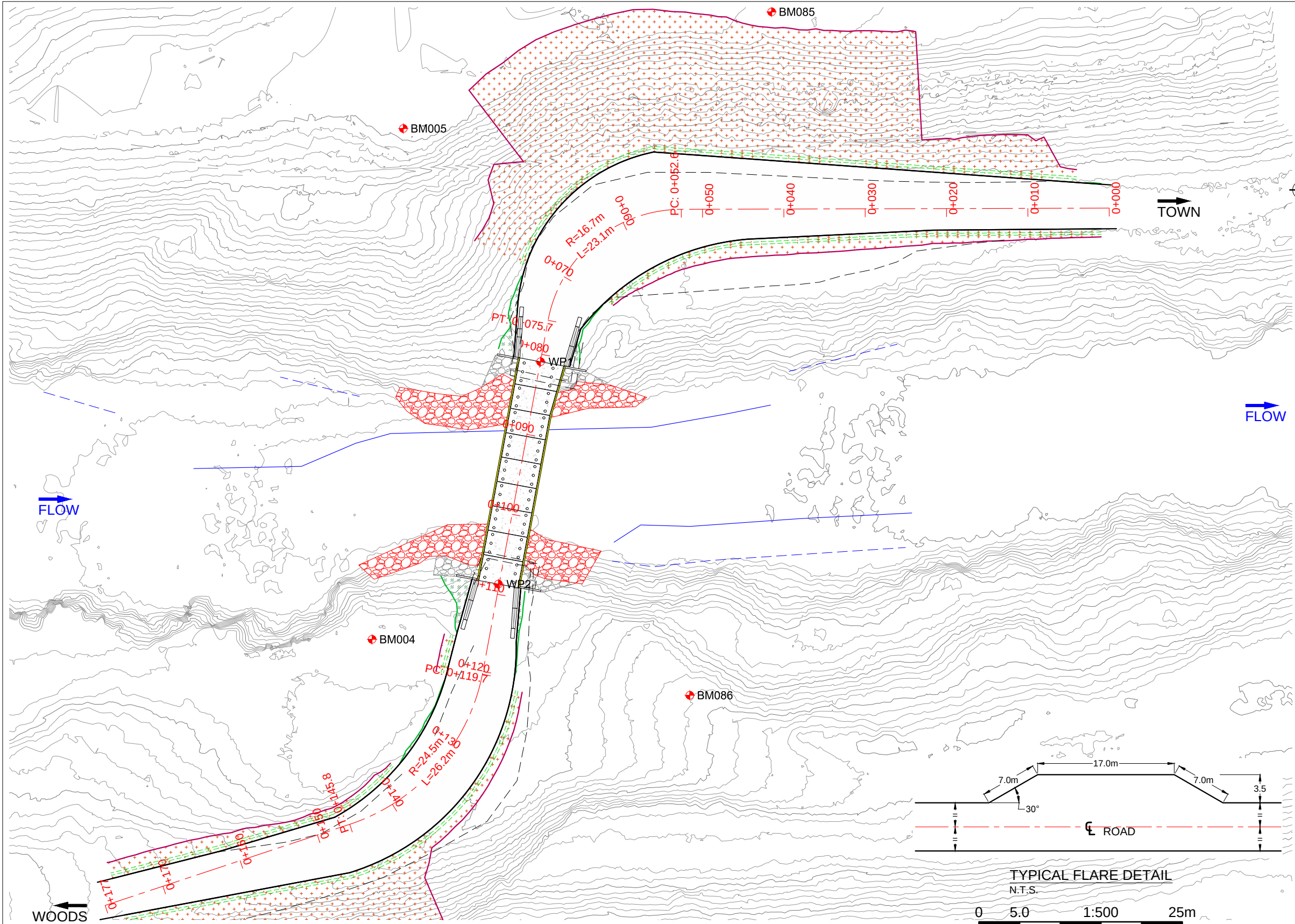
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FSR: FINDLAY-LAVINGTON FSR

STRUCTURE #: N2-038A
CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL
0	07/06/17	ISSUED FOR REVIEW	

DRAWING TITLE: EXISTING STRUCTURE PROFILE VIEW	
DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
Pg 4	

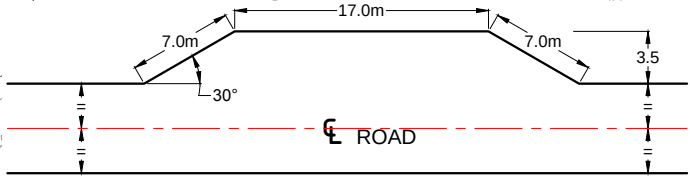




LOCATION TABLE (LOCAL COORDINATES)			
DESCRIPTION	EASTING (X)	NORTHING (Y)	ELEVATION (Z)
BM004	573737.371	5553815.400	1021.436
BM005	573741.213	5553878.225	1032.705
BM085	573786.491	5553892.572	1031.652
BM086	573776.430	5553808.523	1024.057
WP1	573758.084	5553849.542	1021.534
WP2	573752.905	5553822.196	1021.534

LAYOUT SCHEDULE	
BM005 TO WP 1	33.276 m
BM085 TO WP 1	51.561 m
BM004 TO WP 1	39.933 m
BM004 TO WP 2	16.956 m
BM086 TO WP 2	27.210 m
BM005 TO WP 2	57.236 m
WP 1 TO WP 2	27.832 m
WP 1 & 2 ARE ϵ AT TOP OF BRIDGE DECK AND END OF THE BRIDGE (ALL DISTANCES ARE HORIZONTAL)	

EXTENT OF RIPRAP	
LEFT BANK - UPSTREAM SIDE	7.6 m
LEFT BANK - DOWNSTREAM SIDE	8.8 m
RIGHT BANK - UPSTREAM SIDE	6.5 m
RIGHT BANK - DOWNSTREAM SIDE	8.8 m
MEASURED UPSTREAM OR DOWNSTREAM FROM ROAD CENTERLINE. (ALL DISTANCES ARE HORIZONTAL)	



- Existing Edge of Road
- Existing Centerline of Road
- Ditch
- Top of Bank
- Bottom of Bank
- Present Water on Date of Survey
- High Water Observed in Field
- Toe of Design Fill
- Top of Design Cut
- Design Edge of Road
- Design Centerline of Road



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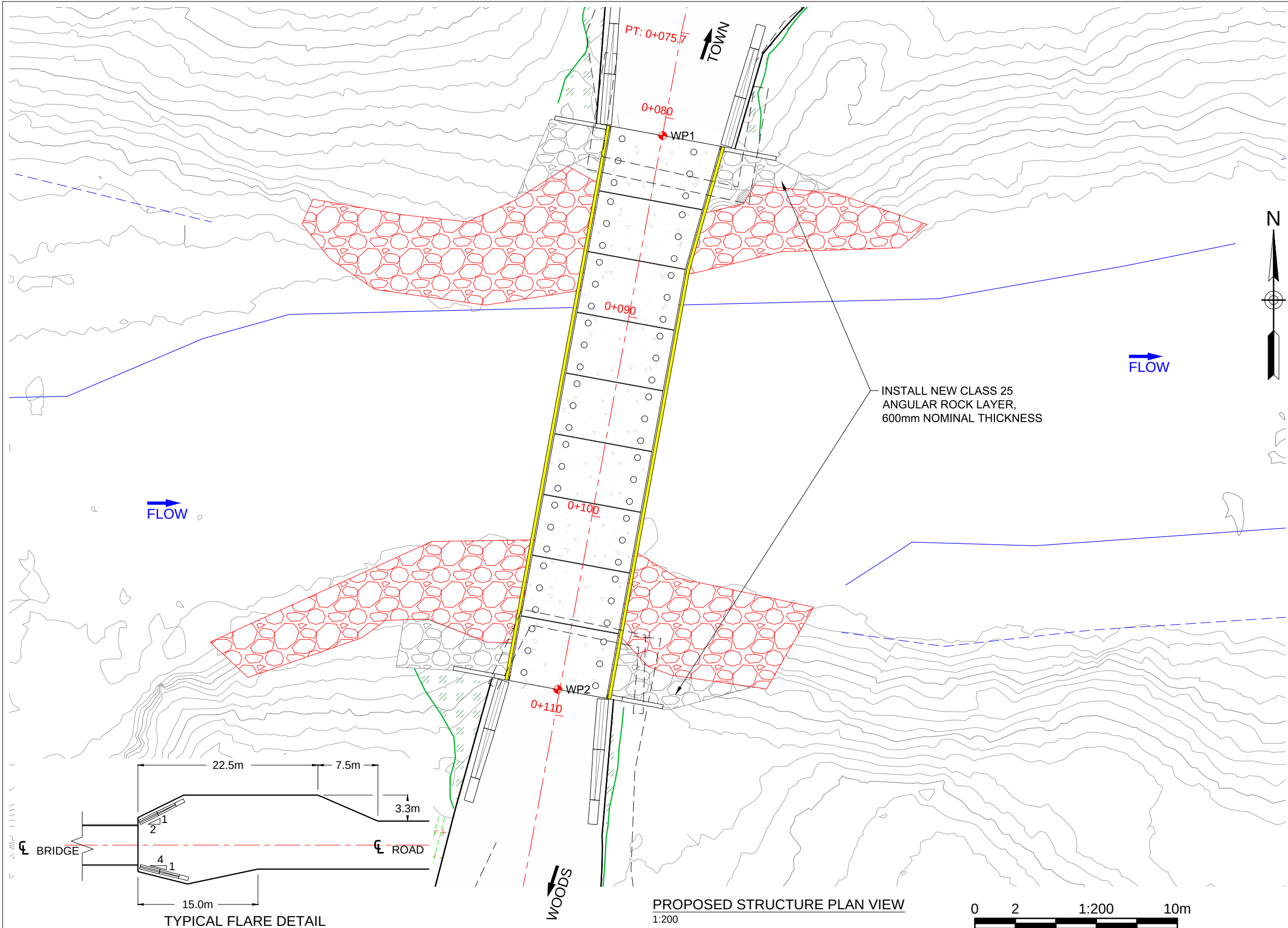
STRUCTURE #: N2-038A
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REV	DATE	REVISIONS	INITIAL
0	07/06/17	ISSUED FOR REVIEW	

DRAWING TITLE: PROPOSED ROAD PLAN VIEW	
DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
	Pg 5

2017-06-21

PROFESSIONAL SEAL



LOCATION TABLE (LOCAL COORDINATES)			
DESCRIPTION	EASTING (X)	NORTHING (Y)	ELEVATION (Z)
BM004	573737.371	5553815.400	1021.436
BM005	573741.213	5553878.225	1032.705
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- Existing Edge of Road
Existing Centerline of Road
Ditch
Top of Bank
Bottom of Bank
Present Water on Date of Survey
High Water Observed in Field
Toe of Design Fill
Top of Design Cut
Design Edge of Road
Design Centerline of Road
-



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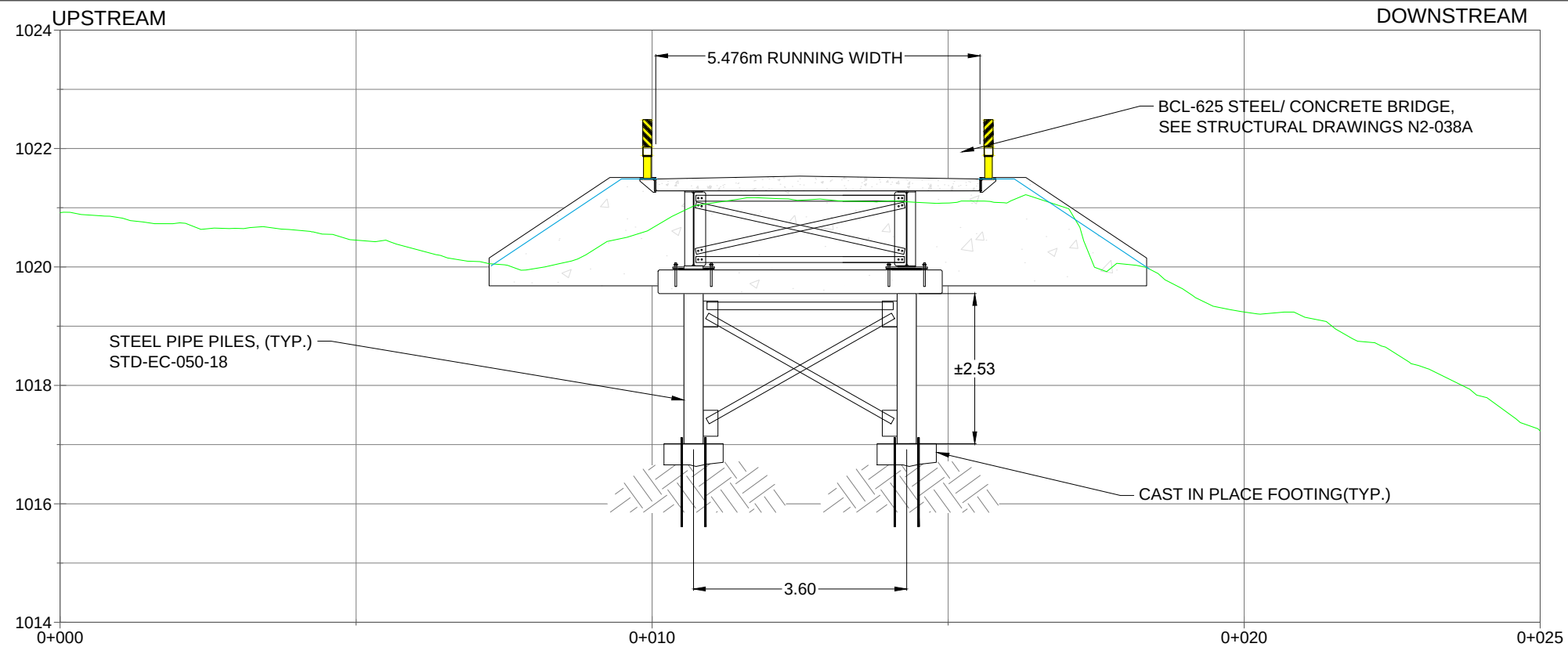


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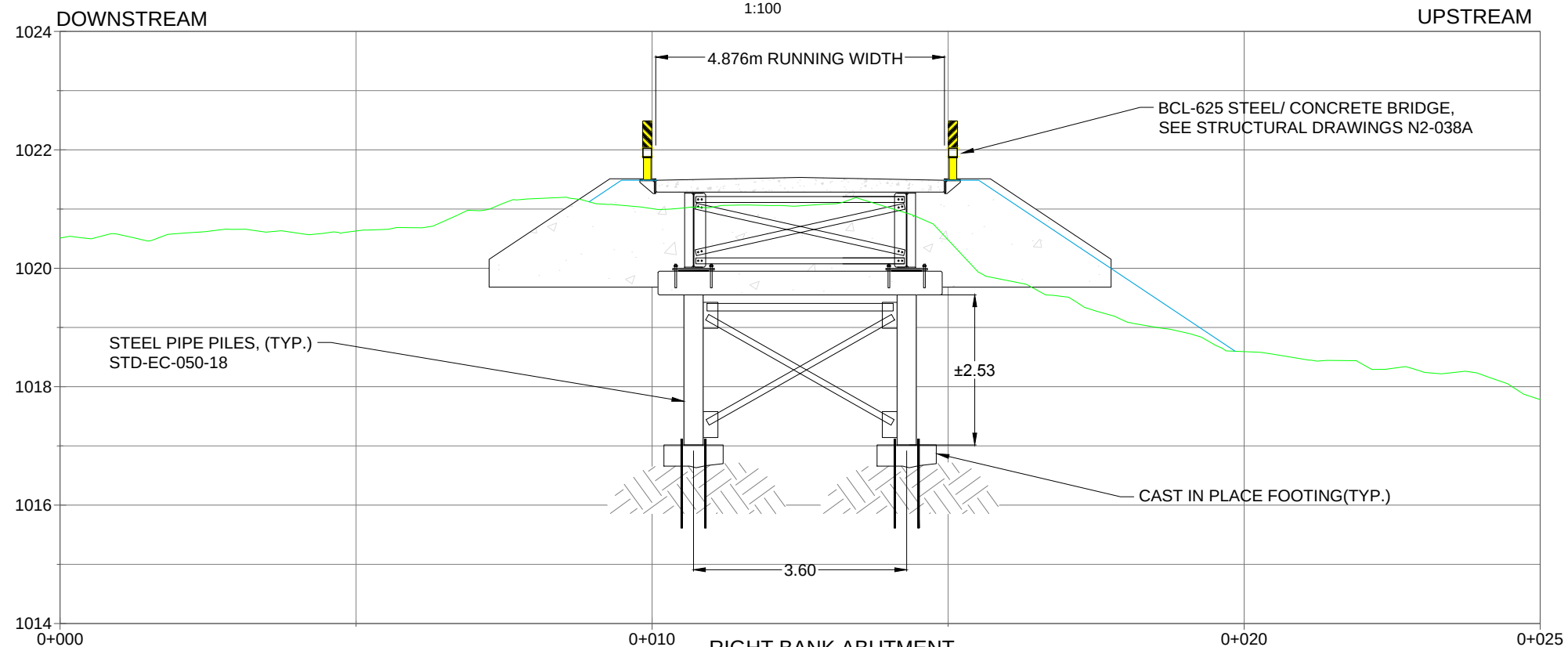
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REV	DATE	REVISIONS	INITIAL	DRAWING TITLE: PROPOSED STRUCTURE PLAN VIEW	
				DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
0	07/06/17	ISSUED FOR REVIEW			Pg 5



LEFT BANK ABUTMENT
1:100



RIGHT BANK ABUTMENT
1:100

Estimated Q_{100} Flow
Center of Creek Bed
Design Grade Existing
Ground Limit of
Excavation

0 1 1:100 5m

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DRAWING TITLE: PROPOSED ABUTMENT VIEW

DESIGN ENGINEER:
DREW ALWAY P.ENG

REVIEWED BY:

FILE NUMBER
11250-55-N2-038

DRAWING NUMBER:
N2-038A.DWG

Pg

7



2017-06-21

PROFESSIONAL SEAL



FROM DOWNSTREAM VIEW



FROM UPSTREAM VIEW



LEFT ABUTMENT



LEFT BANK APPROACH



RIGHT BANK ABUTMENT

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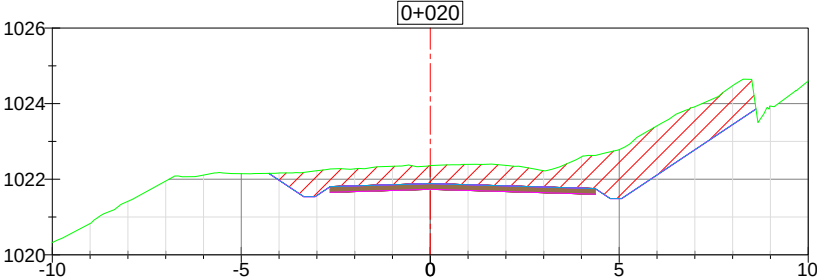
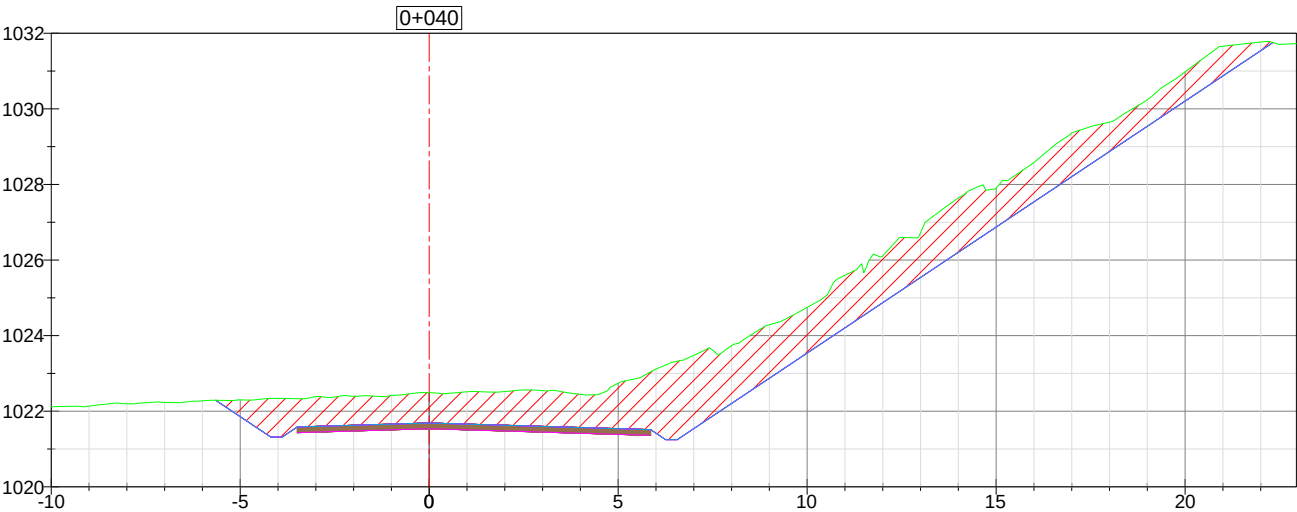
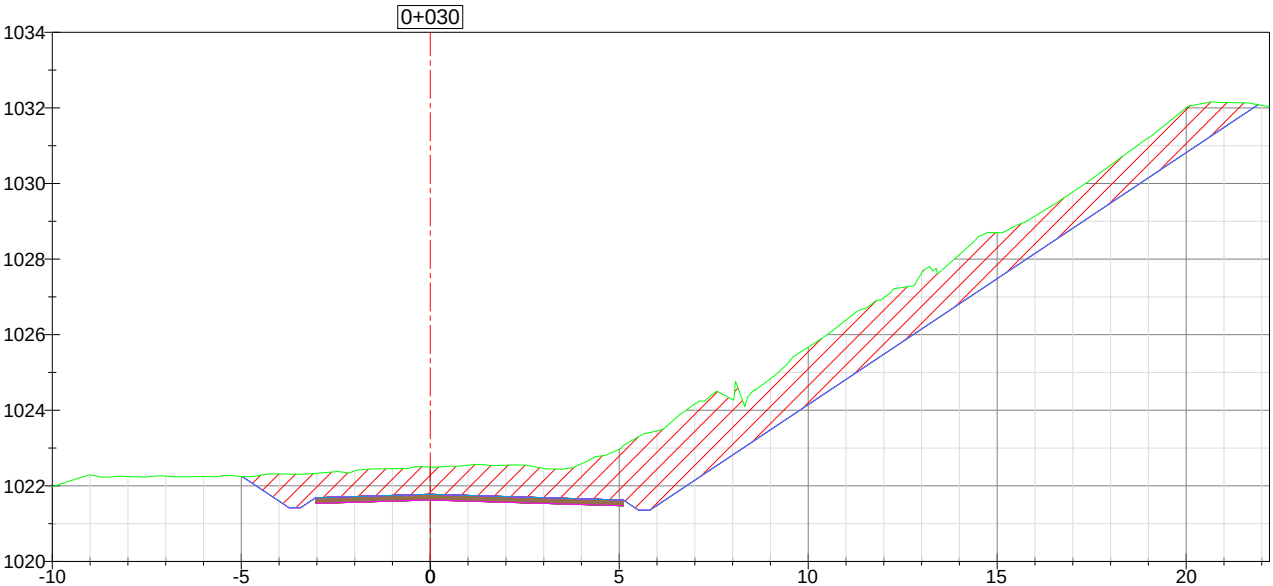
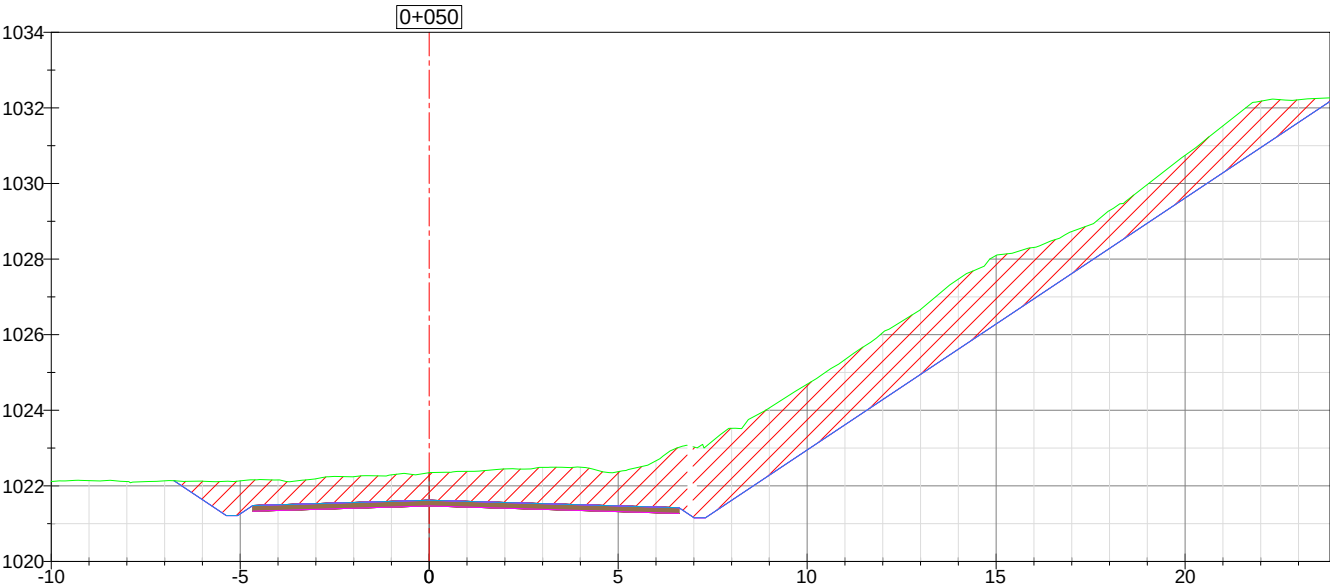
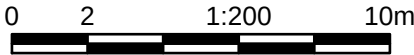
REV	DATE	REVISIONS	INITIAL
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DRAWING TITLE: EXISTING STRUCTURE PHOTOS	
DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
	Pg 8



2017-06-21

PROFESSIONAL SEAL



Design Grade
Existing Ground

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SITE #: N2-038
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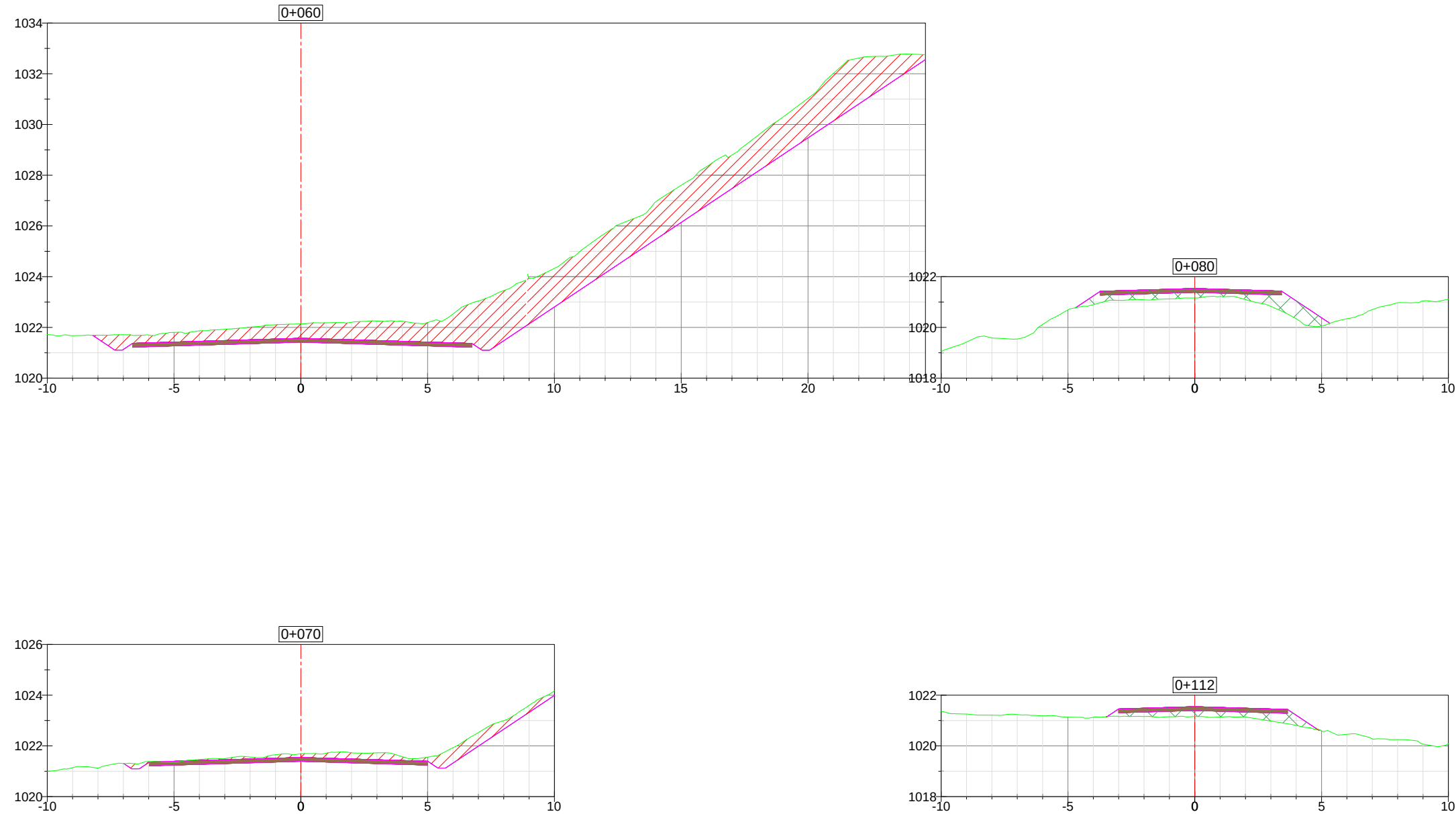
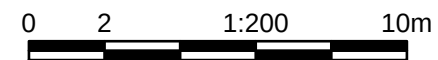
STRUCTURE #: N2-038A
CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL	DRAWING TITLE: PROPOSED ROAD SECTIONS	
				DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
0	07/06/17	ISSUED FOR REVIEW			Pg 9



2017-06-21

PROFESSIONAL SEAL



Design Grade
Existing Ground

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SITE #: N2-038
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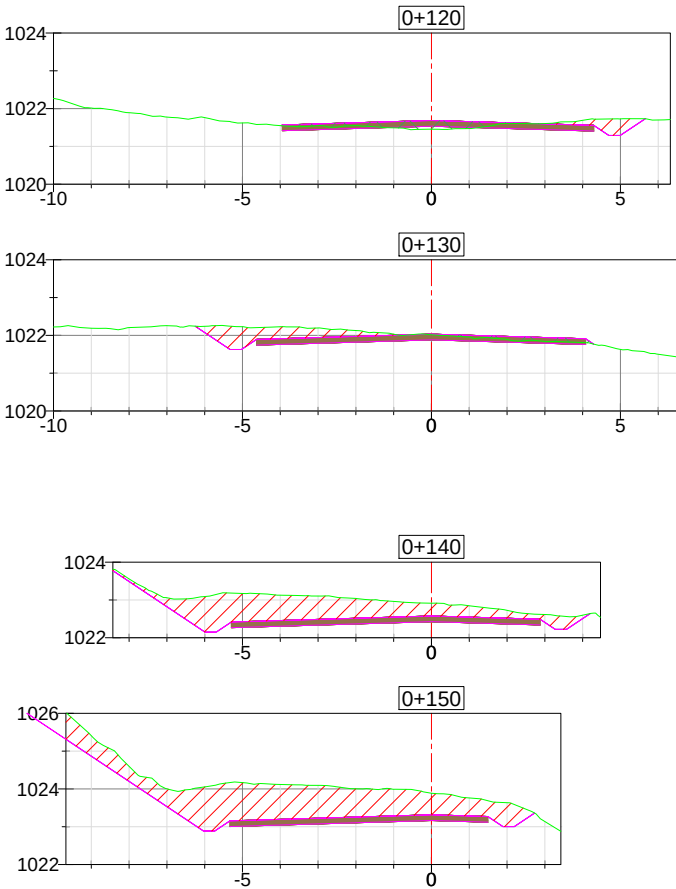
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				DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----	
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG	Pg 10
0	07/06/17	ISSUED FOR REVIEW				

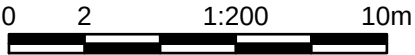


2017-06-21

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Estimated Total Volume Table				
Station	Fill Volume (m³) In Place	Cut Volume (m³) In Bank	Cumulative Fill Vol (m³) In Place	Cumulative Cut Vol (m³) In Bank
0+020	0	0	0	0
0+030	0	186	0	186
0+040	0	293	0	479
0+050	0	319	0	798
0+060	0	355	0	1153
0+070	0	170	0	1323
0+080	15	12	15	1335
0+112	0	0	15	1335
0+120	14	1	29	1336
0+130	5	9	35	1346
0+140	1	32	36	1378
0+150	0	69	36	1447



Design Grade
Existing Ground

ISSUED FOR
TENDER

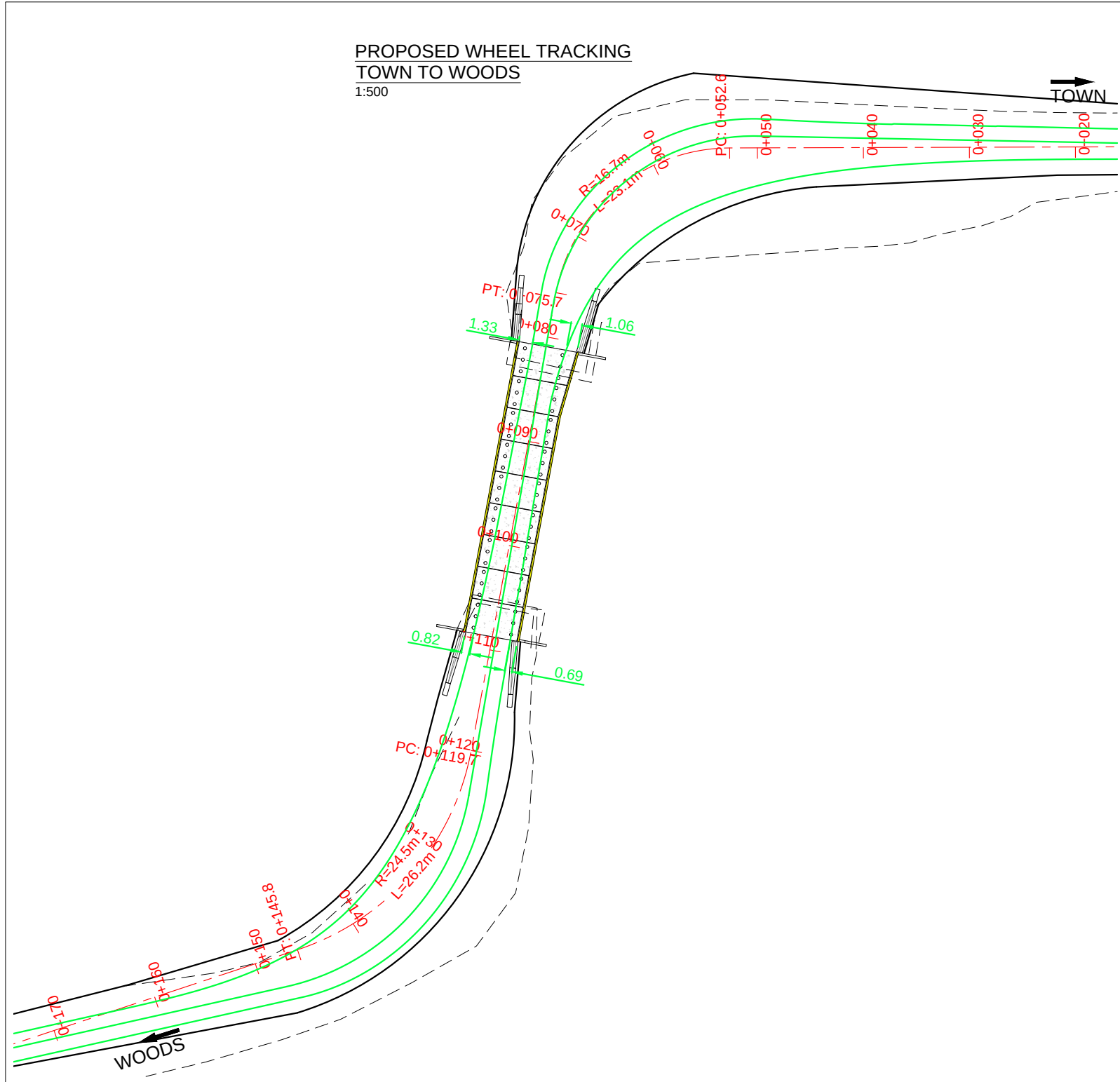
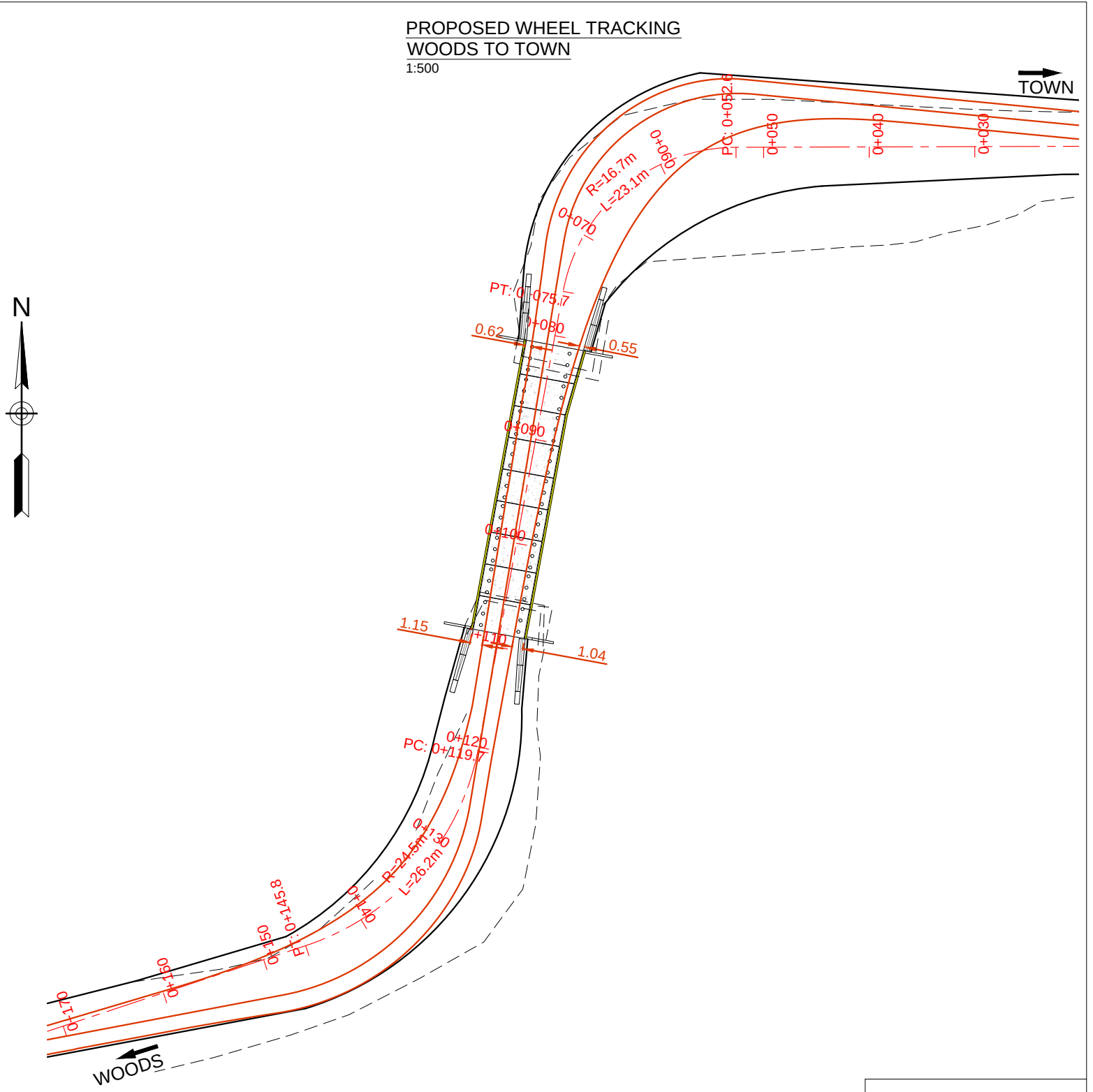
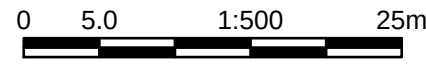
 **BRITISH COLUMBIA**
MINISTRY OF FORESTS, LANDS AND
NATURAL RESOURCE OPERATIONS
SOUTHERN ENGINEERING GROUP

SITE #: N2-038
FSR: FINDLAY-LAVINGTON FSR

STRUCTURE #: N2-038A
CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL	DRAWING TITLE: PROPOSED ROAD SECTIONS	
				DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
				FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
0	07/06/17	ISSUED FOR REVIEW			Pg 11





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SITE #: N2-038
FSR: FINDLAY-LAVINGTON FSR

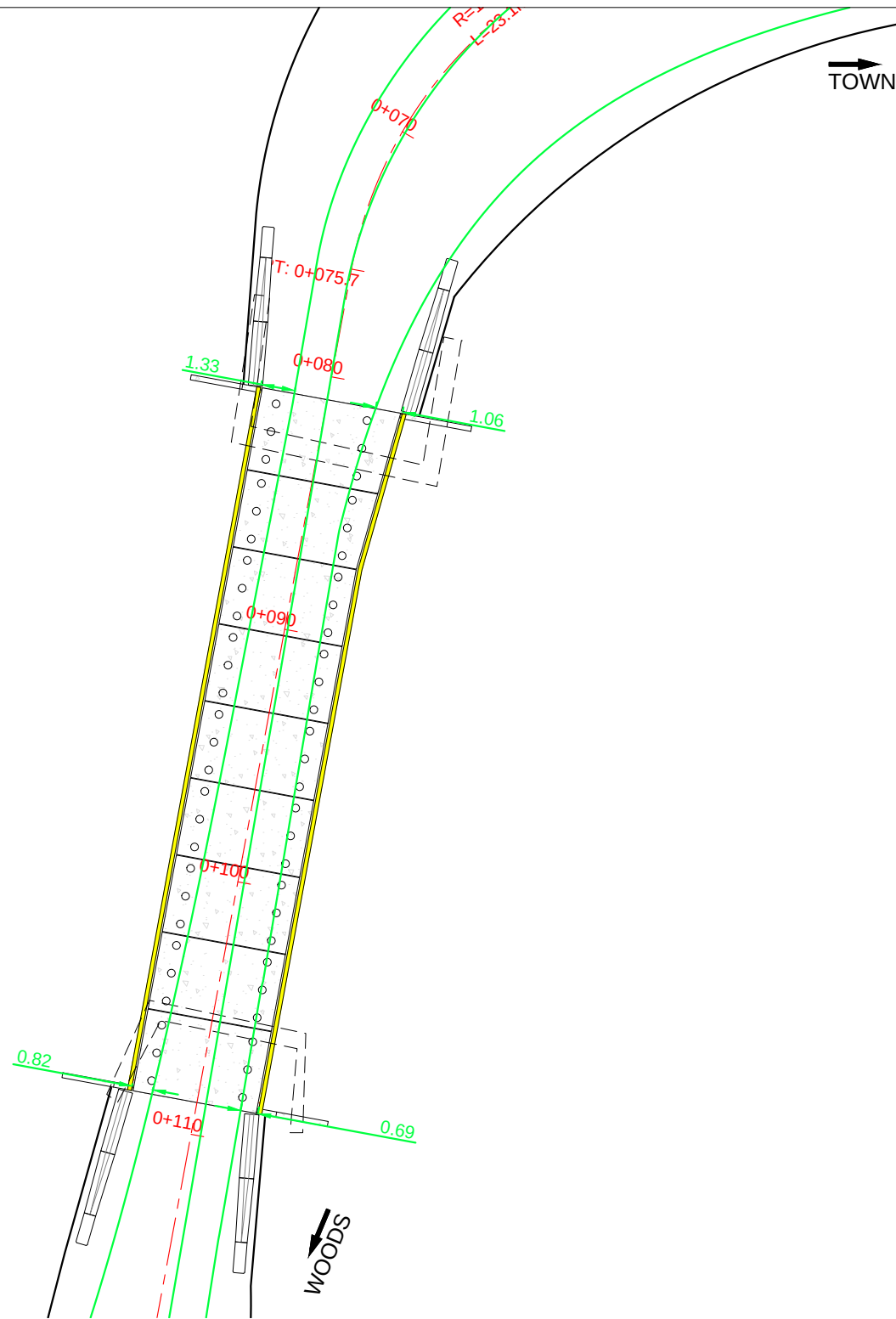
STRUCTURE #: N2-038A
CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL
0	07/06/17	ISSUED FOR REVIEW	

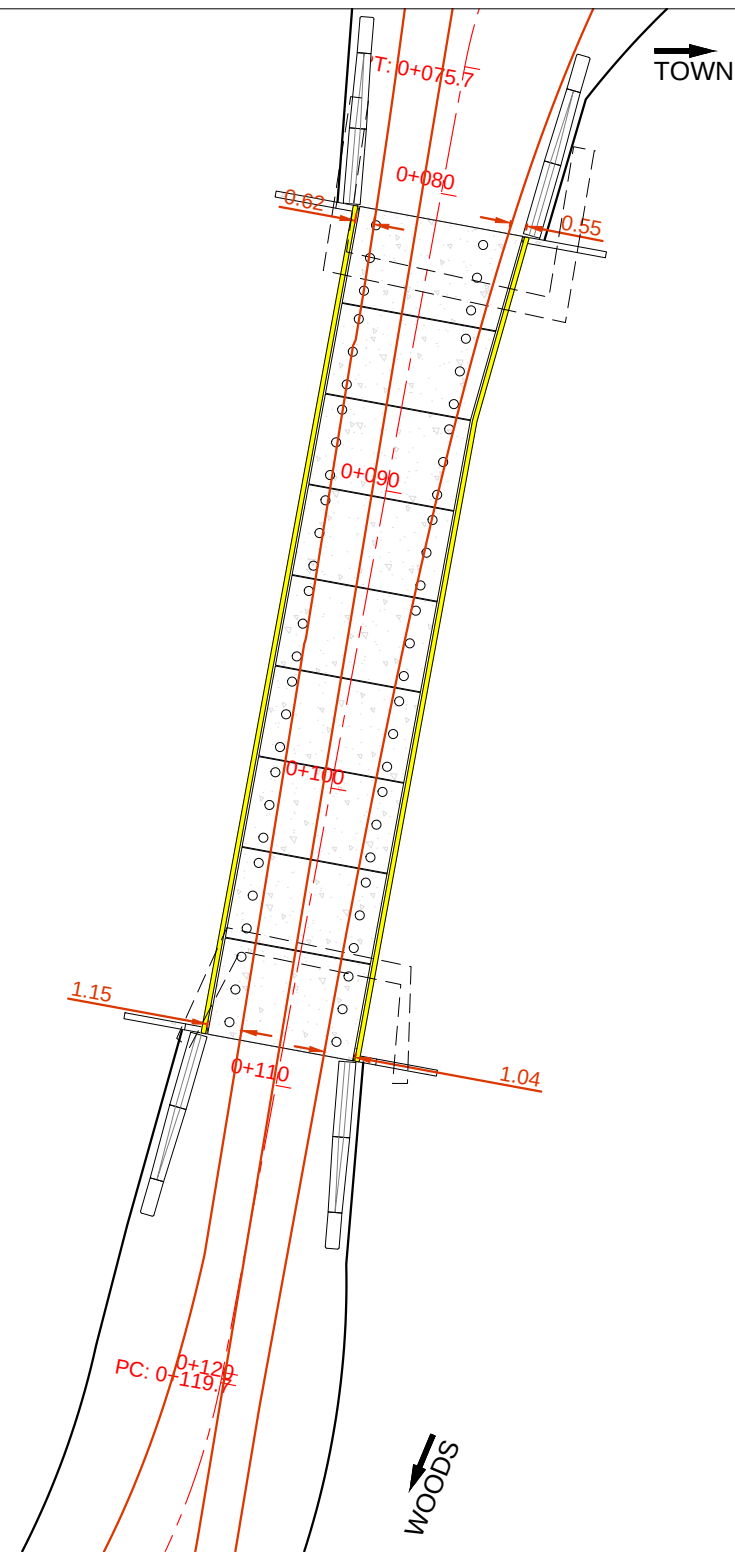
DRAWING TITLE: PROPOSED VEHICLE VEHICLE TRACKING	
DESIGN ENGINEER: DREW ALWAY P.ENG	REVIEWED BY: ----
FILE NUMBER 11250-55-N2-038	DRAWING NUMBER: N2-038A.DWG
Pg 12	

Vehicle Envelope Woods to Town
Vehicle Envelope Town to Woods
Design Edge of Road
Design Centerline of Road

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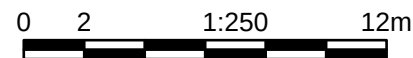


PROPOSED WHEEL TRACKING
TOWN TO WOODS
1:250



PROPOSED WHEEL TRACKING
WOODS TO TOWN
1:250

- Vehicle Envelope Woods to Town
- Vehicle Envelope Town to Woods
- Design Edge of Road
- Design Centerline of Road



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BRITISH
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NATURAL RESOURCE OPERATIONS
SOUTHERN ENGINEERING GROUP

SITE #: N2-038

STRUCTURE #: N2-038A

FSR: FINDLAY-LAVINGTON FSR

CBR km: 12.6km

REV	DATE	REVISIONS	INITIAL
0	07/06/17	ISSUED FOR REVIEW	

DRAWING TITLE: PROPOSED VEHICLE VEHICLE TRACKING

DESIGN ENGINEER:
DREW ALWAY P.ENG

REVIEWED BY:

FILE NUMBER
11250-55-N2-038

DRAWING NUMBER:
N2-038A.DWG

Pg

13



2017-06-21

PROFESSIONAL SEAL