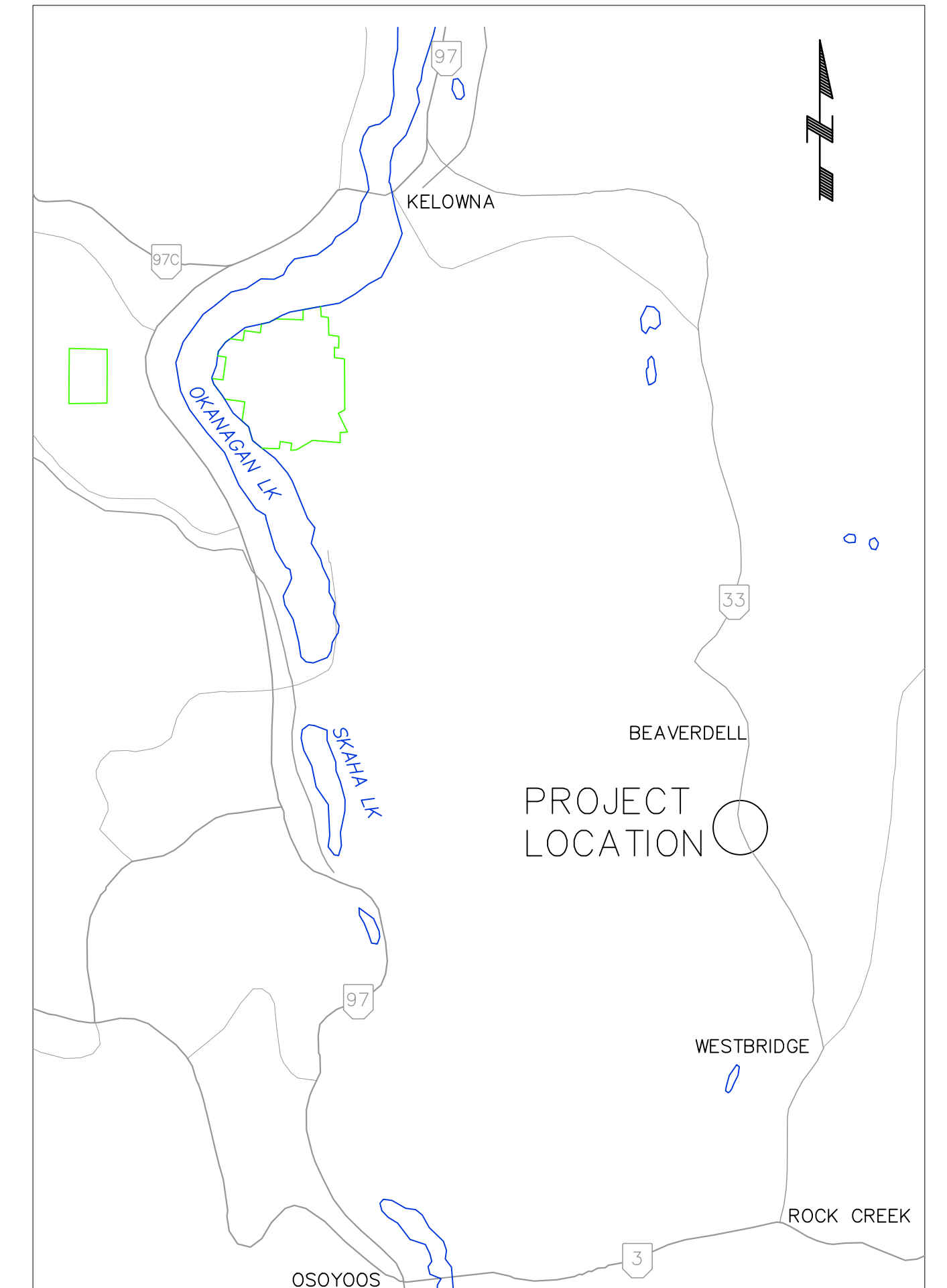




RECREATION SITES AND TRAILS BC

PROJECT No. P10443A01

KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS



KEY PLAN
N.T.S.

LIST OF DRAWINGS		
DWG. No	REV	TITLE
00	–	COVER AND KEY PLAN
01	A	GENERAL NOTES
02	A	GENERAL ARRANGEMENT AND SECTIONS
03	A	UNDERMINING REPAIR SECTION AND DETAILS
04	A	EROSION CONTROL AND SLOPE STABILIZATION PLAN
05	A	EROSION CONTROL AND SLOPE STABILIZATION SECTIONS
06	A	RETAINING WALL DETAILS
07	A	EROSION CONTROL AND SLOPE STABILIZATION PLAN (ALTERNATIVE SLOPE STABILIZATION)
08	A	EROSION CONTROL AND SLOPE STABILIZATION SECTIONS (ALTERNATIVE SLOPE STABILIZATION)
09	A	PHOTOS

GENERAL NOTES:

1. ELEVATIONS AND DIMENSION OF EXISTING BRIDGE ARE BASED ON SURVEY BY VAST RESOURCE SOLUTIONS TAKEN OCTOBER 2021 AND FIELD MEASUREMENTS TAKEN DECEMBER 2022 AND ARE APPROXIMATE ONLY.
2. TOPOGRAPHY BASED ON LIDAR INFORMATION PROVIDED BY THE MINISTRY OF FORESTS RECIEVED ON MARCH 3, 2023.
3. ALL DIMENSIONS ARE IN MILLIMETRES (mm) AND ELEVATIONS ARE IN METERS (m).
4. CRITICAL REFERENCE DIMENSIONS ARE TO BE CONFIRMED IN THE FIELD.
5. WEST KETTLE RIVER CONTAINS SENSITIVE FISH HABITAT. THE CONTRACTOR IS RESPONSIBLE FOR TAKING APPROPRIATE MEASURES TO PROTECT THE QUALITY AND LIMIT THE DISTURBANCE TO FISH HABITAT DURING CONSTRUCTION IN ACCORDANCE WITH THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP).
6. EXISTING BRIDGE DESIGN IS BY OTHERS.
7. LOCATIONS OF UNDERGROUND UTILITIES THAT MAY BE AFFECTED SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORK.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE EXISTING BRIDGE DURING EXECUTION OF THE WORK. ANY DAMAGE CAUSED TO THE EXISTING BRIDGE DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
9. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL SUBMIT 'AS-BUILT' DRAWINGS WITH CLEARLY MARKED CHANGES FROM THE DESIGN DRAWINGS.

CONCRETE:

1. CONCRETE MIXES SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:

CLASSIFICATION	MINIMUM COMPRESSIVE STRENGTH @ 28 DAYS (MPa)	NOMINAL MAXIMUM SIZE OF COARSE AGGREGATE	AIR CONTENT (%)	SLUMP (mm)	MAXIMUM W/Cm RATIO BY MASS
ABUTMENT AND PIER SCOUR REPAIR CONCRETE	30	20	5 ± 1	150 ± 20	0.45

2. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 20 mm CHAMFER UNLESS NOTED OTHERWISE.
3. WHERE CONCRETE IS BONDED TO EXISTING CONCRETE, THE SURFACE SHALL BE THOROUGHLY CLEANED AND ROUGHENED.
4. REINFORCING STEEL SHALL BE STAINLESS STEEL AND SHALL CONFORM TO ASTM A276 AND ASTM A955M, MINIMUM GRADE 420.
5. SPECIFIED CONCRETE COVER AND TOLERANCES TO REINFORCING STEEL SHALL BE 60 ± 10.
6. CONTRACTOR SHALL STRICTLY ADHERE TO MANUFACTURER'S RECOMMENDATIONS AND PROCEDURES FOR ALL CONCRETE AND EPOXY ADHESIVE PRODUCTS.
7. ALL ORGANIC MATERIALS AND DEBRIS SHALL BE REMOVED FROM WITHIN THE UNDERMINED AREA DOWN TO COMPETENT GROUND. THE GROUND SURFACE SHALL BE EXAMINED AND ACCEPTED BY A QUALIFIED GEOTECHNICAL ENGINEER PRIOR TO INFILLING THE AREA WITH CONCRETE.

CREEK DIVERSION:

1. REPAIR OF PIER UNDERMINING AND EXCAVATION/PLACEMENT OF RIPRAP BELOW THE HIGH WATER LEVEL, AS DETERMINED BY THE ENVIRONMENTAL MONITOR, SHALL BE CARRIED OUT IN ISOLATION OF STREAM FLOWS. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING APPROPRIATE FLOW DIVERSION WORKS FOR THE DURATION OF INSTREAM WORK.
2. TEMPORARY DIVERSION WORKS SHALL BE DESIGNED, SIGNED, AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER TO SAFELY PASS THE 10-YEAR RETURN PERIOD FLOOD DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL SUBMIT THE PROPOSED CREEK DIVERSION DESIGN FOR REVIEW AT LEAST 14 DAYS BEFORE EXECUTING THE WORK.
3. A FISH SALVAGE SHALL BE CONDUCTED IN ACCORDANCE WITH THE CEMP PRIOR TO COMMENCEMENT OF WORK. DEWATERING PUMPS SHALL BE FITTED WITH FISH SCREENS TO PREVENT ENTRAPMENT OF FISH.

EXCAVATION:

1. ALL EXCAVATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA, "INDUSTRIAL HEATH AND SAFETY REGULATIONS", OF THE CANADIAN CONSTRUCTION SAFETY CODE.
2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 72 HOURS BEFORE COMMENCING EXCAVATION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING THE CONSTRUCTION IN A SEQUENCE THAT MINIMIZES GROUND MOVEMENT OF THE SLOPES ABOVE THE EXCAVATIONS.
4. VERTICAL SOIL CUTS SHALL NOT BE ALLOWED.
5. DURING PERIODS OF HEAVY OR CONSISTENT RAINS OR SNOW THE CONTRACTOR SHALL COVER THE TEMPORARY SLOPE WITH A POLY TARP TO MINIMIZE THE AMOUNT OF WATER ON THE TEMPORARY SLOPE OVERNIGHT. THE CONTRACTOR SHALL MAKE AN EFFORT TO RE-USE THE TARP TO MINIMIZE MATERIAL WASTE.
6. ALL EXCAVATION SUPPORT SYSTEMS, IF ANY, SHALL BE REMOVED FROM SITE UPON COMPLETION OF THE WORK BY THE CONTRACTOR.

7. ALL EXCAVATION VOLUMES WILL BE MEASURED IN-BANK AT THE SOURCE.
8. ALL MATERIAL UNSUITABLE OR SURPLUS TO THE PROJECT SHALL BE REMOVED OFFSITE TO A DISPOSAL SITE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL ENSURE THAT THE DISPOSAL SITE COMPLIES WITH ALL FEDERAL, PROVINCIAL AND REGIONAL BYLAWS AND REGULATIONS.

TEMPORARY ACCESS:

1. THE CONTRACTOR SHALL RESPONSIBLE FOR PROVIDING SAFE TEMPORARY ACCESS ON THE STEEP SLOPES TO THEIR PERSONNEL IN ACCORDANCE WITH THE WORKERS' COMPENSATION BOARD OF BRITISH COLUMBIA, "INDUSTRIAL HEATH AND SAFETY REGULATIONS" AND OF THE CANADIAN CONSTRUCTION SAFETY CODE.
2. PROVIDE AND MAINTAIN TEMPORARY ACCESS ONLY AT APPROVED LOCATIONS.
3. THE CONTRACTOR SHALL SUBMIT TEMPORARY ACCESS DRAWINGS A MINIMUM OF 14 DAYS PRIOR TO THE WORK. THE DRAWINGS SHALL CLEARLY SHOW THE DETAILS AND LOCATIONS OF ALL REQUIRED TEMPORARY ACCESS WORKS.
4. UNLESS OTHERWISE APPROVED, ALL TEMPORARY ACCESS ROADS AND ASSOCIATED STRUCTURES SHALL BE REMOVED UPON COMPLETION OF THE WORK AND SITE RESTORED TO THE SATISFACTION OF THE ENGINEER.
5. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH TEMPORARY ACCESS REQUIRED TO COMPLETE THE WORK.

GRS WALL:

1. GENERAL

- 1.1 DESIGN

1. THE RETAINING WALL IS DESIGNED IN GENERAL ACCORDANCE WITH THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION (FHWA)'S PUBLICATION FHWA-NHI-10-024, DESIGN AND CONSTRUCTION OF MECHANICALLY STABILIZED EARTH WALLS AND REINFORCED SOIL SLOPES VOLUME 1 AND 2 AND CANADIAN FOUNDATION ENGINEERING MANUAL (4TH EDITION).

2. DESIGN SERVICE LIFE FOR GRS WALL IS 45 YEARS.

- 1.2 RESPONSIBILITIES

1. THE CONTRACTOR SHALL EMPLOY A SUPERVISOR AND PERSONNEL EXPERIENCED IN THE TYPE OF WORK DESCRIBED IN THIS SECTION.
2. WORK SHOULD BE CONDUCTED IN A WAY THAT PREVENTS ANY LOSS OF GROUND OR MOVEMENT OF ADJACENT TRAIL AND BRIDGE STRUCTURE. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY IN THE EVENT OF ANY NON-ELASTIC GROUND MOVEMENT SUCH AS, BUT NOT LIMITED TO, SLOUGHING BEYOND THE SPECIFIED EXCAVATION FACE, OR SLOPE FAILURE. IF DEEMED NECESSARY BY THE ENGINEER, THE SLOPE SHALL BE BACKFILLED WITH A BERM OF SOIL AND WORK STOPPED IN THE AREA.

- 1.3 SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT A DETAILED WORK PLAN INLCUDING SCHEDULING AND WORK SEQUENCING A MINIMUM OF 14 DAYS PRIOR TO COMMENCEMENT OF WORK TO BE REVIEWED BY THE ENGINEER.
2. THE CONTRACTOR SHALL SUBMIT A DETAILED QUALITY CONTROL PLAN A MINIMUM OF 14 DAYS PRIOR TO COMMENCING THE WORK, TO BE REVIEWED BY THE ENGINEER. THE QUALITY CONTROL PLAN SHALL DESCRIBE THE LENGTH OF GEOGRID, OVERLAP THICKNESS OF GEOGRID AND BASKETS, AND FREQUENCY AND METHODOLOGY OF COMPACTION TESTING FOR THE STRUCTURAL BACKFILL OF THE WALL.
3. THE CONTRACTOR SHALL SUBMIT THE NAME AND QUALIFICATIONS OF THE COMPACTION TESTERS AND FREQUENCY OF COMPACTION TESTING AS PART OF THE QUALITY CONTROL PLAN.
4. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH ALL PRODUCT SHEETS AND TECHNICAL SPECIFICATIONS OF THE CHOSEN PRODUCTS FOR REVIEW AND APPROVAL BY THE ENGINEER A MINIMUM OF 14 DAYS PRIOR TO START OF CONSTRUCTION.
5. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER SIEVE TESTS AND PROCTOR TEST DATA FOR THE STRUCTURAL BACKFILL FOR REVIEW AND APPROVAL A MINIMUM OF 14 DAYS PRIOR TO THE START OF CONSTRUCTION.

2. MATERIALS

- 2.1 STRUCTURAL BACKFILL

1. REINFORCED SOIL SHALL CONSIST OF SELECT GRANULAR SUB-BASE (SGSB) WITH PROPERTIES IN ACCORDANCE WITH THE BC MINISTRY OF TRANSPORTATION AND INFRASTRUCTURE (MOTI) 2020 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (SS) SECTIONS 202.04 AND 202.05 "SGSB".

- 2.2 FACING
(UNLESS OTHERWISE NOTED ON THE DRAWINGS)

1. WELDED WIRE MESH FACING SHALL BE 100 mm X 100 mm (4"X 4"), 4 GAUGE POST-FABRICATION HOT DIP GALVANIZED.
2. STEEL STRUTS SHALL BE 4 GAUGE, HOT DIPPED GALVANIZED AND SIZED TO FIT BY THE SUPPLIER.
3. HOT DIPPED GALVANIZING SHALL CONFORM TO CSA G164 AND HAVE A MINIMUM COATING THICKNESS OF 600 g/m².

4. FACING UNITS SHALL OVERLAP A MINIMUM OF 100 mm.

- 2.3 GEOGRID
(UNLESS OTHERWISE NOTED ON THE DRAWINGS)

1. GEOGRID SHALL BE AS NOTED ON THE DRAWINGS OR AN APPROVED EQUIVALENT.
2. IF THE CONTRACTOR ELECTS TO USE AN EQUIVALENT PRODUCT, THE CONTRACTOR SHALL PROVIDE ALL SPECIFICATIONS AND PRODUCT SHEETS OF THE PROPOSED EQUIVALENT PRODUCT A MINIMUM OF 14 DAYS PRIOR TO PROCUREMENT OF THE MATERIALS, FOR REVIEW AND APPROVAL BY THE ENGINEER.
3. GEOGRID SHALL BE PLACED END-TO-END OR AS PER MANUFACTURE'S RECOMMENDATIONS.

- 2.4 GEOTEXTILE

1. GEOTEXTILE AT THE GRS WALL FACING SHALL BE MIRAMESH GR OR APPROVED EQUIVALENT.
2. IF THE CONTRACTOR ELECTS TO USE AN EQUIVALENT PRODUCT, THE CONTRACTOR SHALL PROVIDE ALL SPECIFICATIONS AND PRODUCT SHEETS OF THE PROPOSED EQUIVALENT PRODUCT A MINIMUM OF 14 DAYS PRIOR TO PROCUREMENT OF THE MATERIALS, FOR REVIEW AND APPROVAL BY THE ENGINEER.

3. GEOTEXTILE SHALL OVERLAP A MINIMUM 600 mm.

- 2.5 LEVELING PAD

1. LEVELING PAD MATERIAL SHALL CONSIST OF 25 mm MINUS CRUSHED GRAVEL, 75 mm MINUS CRUSHED GRAVEL OR AN APPROVED EQUIVALENT.

3. CONSTRUCTION

- 3.1 BACKFILL AND COMPACTION

1. COMPACTION OF STRUCTURAL BACKFILL SHALL BE 95% STANDARD PROCTOR AND COMPACTED WITHIN 2% OF OPTIMAL MOISTURE CONTENT. STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS OF NO GREATER THAN 150 mm.
2. ONLY HAND-HELD POWER TAMPERS AND VIBRATORS MAY BE USED FOR BACKFILL COMPACTION WITHIN 750 mm OF BASKETS.

- 3.2 QUALITY CONTROL

1. THE CONTRACTOR SHALL CONDUCT COMPACTION TESTING ON EVERY LIFT AT SPACING OF 10 m OVER THE LENGTH OF GRS WALLS.
2. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH COMPACTION TESTING REPORTS FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF THE NEXT LIFT.
3. MATERIAL TESTING AND REPORTING SHALL BE AT NO COST TO ENGINEER.
4. THE CONTRACTOR SHALL PLACE AND INSTALL MATERIAL AS PER MANUFACTURE'S SPECIFICATION AND GUIDELINES.

- 3.3 GEOGRID

1. TRACKED EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON ANY GEOGRID. A MINIMUM LIFT THICKNESS OF 150 mm OF STRUCTURAL BACKFILL IS REQUIRED FOR OPERATION OF TRACKED EQUIPMENT OVER THE GEOGRID. THE CONTRACTOR SHALL MINIMIZE TURNING OF TRACKED EQUIPMENT TO PREVENT THE TRACKS FROM DISPLACING THE FILL AND GEOGRID. THE CONTRACTOR SHALL FOLLOW MANUFACTURE'S RECOMMENDATIONS FOR OPERATING TRACKED EQUIPMENT OVER THE GEOGRID AND GEOTEXTILE.

2. GEOGRID SHALL BE INSTALLED ACCORDING TO THE DRAWINGS.

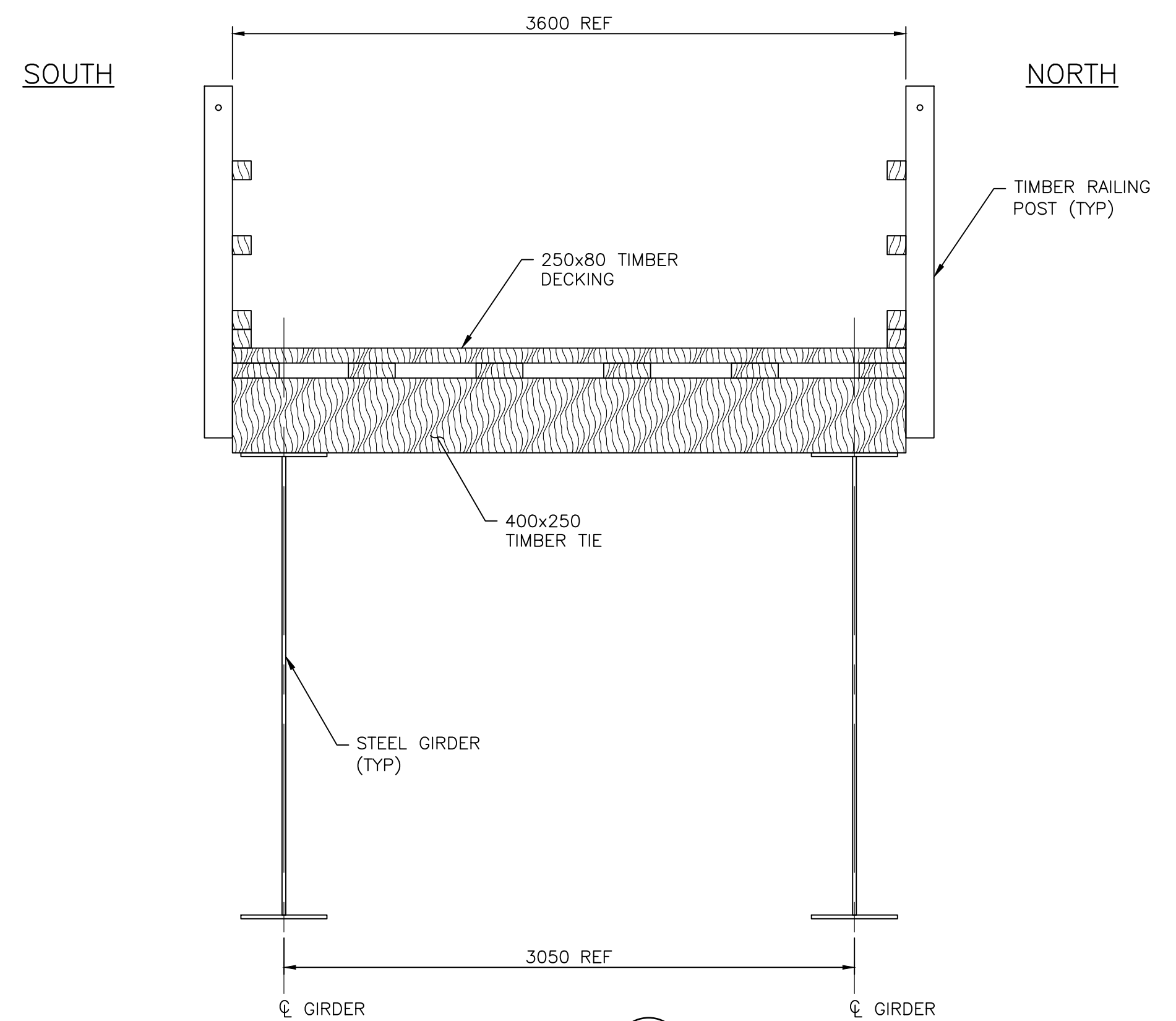
- 3.4 FIELD REVIEW

1. FIELD INSPECTIONS DURING GRS WALL CONSTRUCTION SHALL WILL BE PROVIDED BY THE ENGINEER TO REVIEW THE SUBSURFACE CONDITIONS EXPOSED IN THE CUTS AND TO CONFIRM THAT ACTUAL SOIL CONDITIONS ARE SIMILAR TO THOSE ASSUMED IN THE DESIGN OF THE GRS SYSTEM. THE CONTRACTOR SHALL NOT COMMENCE PLACEMENT OF LEVELING COURSE AND FIRST BASKET LAYER PRIOR TO APPROVAL OF BEARING SURFACE BY THE ENGINEER.

RIPRAP:

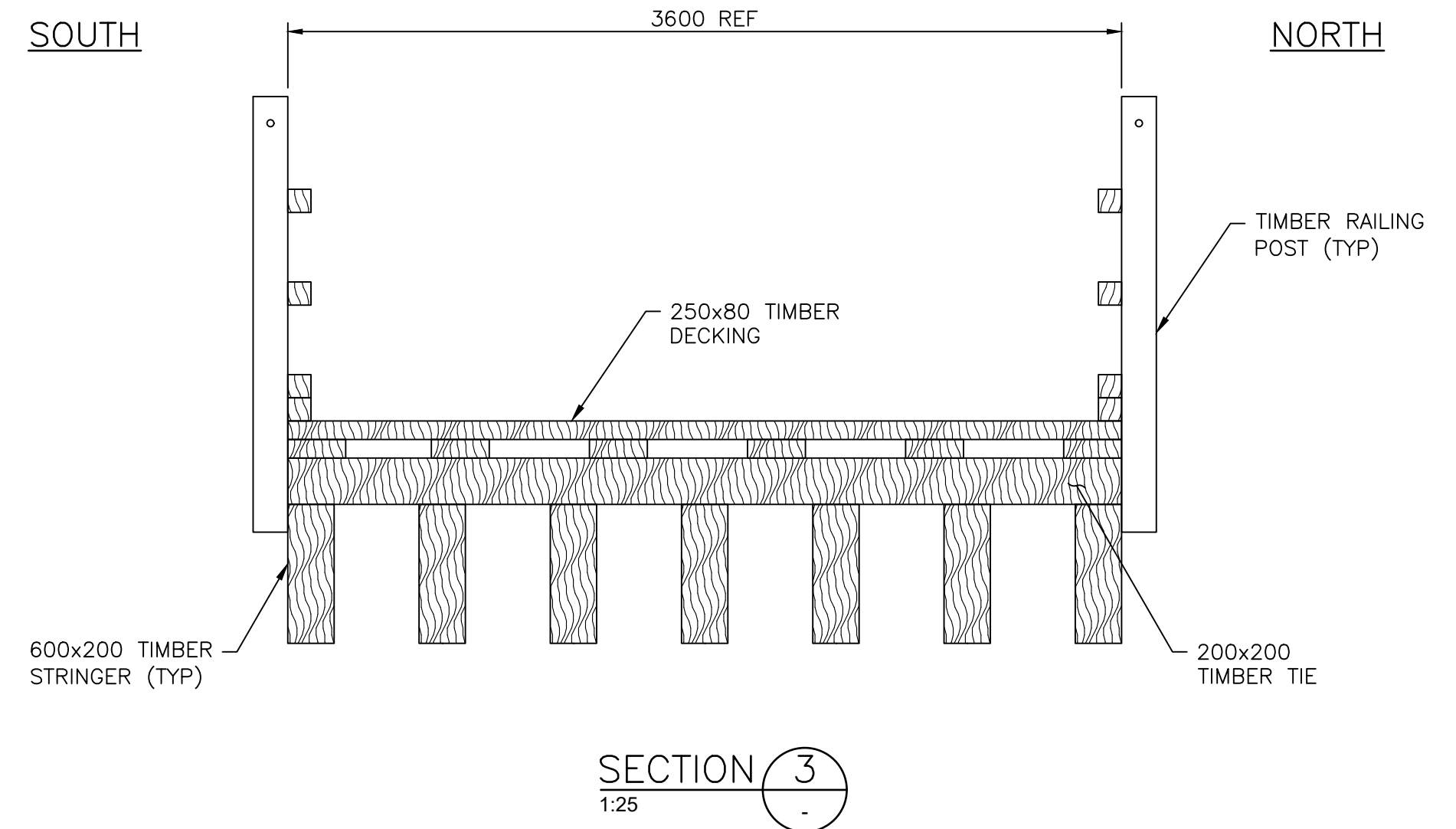
1. ROCK IS TO BE HARD, DURABLE, ABRASIVE RESISTANT AND NON-ACID GENERATING, FREE FROM SEAMS, CRACKS, LAMINATIONS, ORGANICS AND DEBRIS.
2. ROCK SOURCE TO BE APPROVED BY ENGINEER PRIOR TO PLACEMENT.
3. RIPRAP SHALL BE THE SIZE NOTED ON THE DRAWINGS WITH PROPERTIES IN ACCORDANCE WITH BC MOTI SS SECTION 205.04.
4. AREAS TO RECEIVE RIPRAP SHALL BE PREPARED AS PER MOTI SS SECTION 205.05. EXISTING RIPRAP LOCATED WITHIN THE CONSTRUCTION LIMITS SHALL BE SALVAGED AND STORED TO BE MIXED IN WITH THE SUPPLIED RIPRAP. FINAL ACCEPTANCE OF RE-USE OF MATERIAL IS AT THE SOLE DISCRETION OF THE ENGINEER.
5. ALL MATERIAL UNSUITABLE OR SURPLUS TO THE PROJECT SHALL BE REMOVED OFFSITE TO A DISPOSAL SITE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL ENSURE THAT THE DISPOSAL SITE COMPLIES WITH ALL FEDERAL, PROVINCIAL AND REGIONAL BYLAWS AND REGULATIONS.
6. PLACEMENT OF RIPRAP SHALL BE IN ACCORDANCE WITH MOTI SS SECTIONS 205.06, 205.07 AND 205.08.

			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	CLIENT	PROJECT			
														KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS			
														TITLE			
														KV-005 BRIDGE GENERAL NOTES			
			A	ISSUED FOR TENDER			2023-03-20	J.P.	M.C.	K.M.	K.G.						
			REVISION	DESCRIPTION OF REVISION			DATE (YYYY-MM-DD)	DRAWN	DESIGNED	CHECKED	APPROVED			SCALE			
															PROJECT NO.		
															P10443A01		
															DWG. NO.		
															01		
															REV.		
															A		



SECTION 2
1:25

NOTE: SUPERELEVATION NOT SHOWN



SECTION 1
1:100

NOTE: SUPERELEVATION NOT SHOWN

NOTES:

1. FOR GENERAL NOTES SEE DRAWING 01.

			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	CLIENT <div> BRITISH COLUMBIA Recreation Sites and Trails BC</div> <div> Klohn Crippen Berger BC PERMIT TO PRACTICE No. 1000171</div>	PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS				
										DRAWN:	J. PANG			TITLE				
										DESIGNED:	M. COVENEY			KV-005 BRIDGE GENERAL ARRANGEMENT AND SECTIONS				
										CHECKED:	K. MITCHELL							
										APPROVED:	K. GREINACHER							
			A	ISSUED FOR TENDER	2023-03-20	J.P.	M.C.	K.M.	K.G.						SCALE AS SHOWN PROJECT NO. P10443A01 DWG. NO. 02 REV. A			
			REVISION	DESCRIPTION OF REVISION	DATE (mm-dd-yy)	DRAWN	DESIGNED	CHECKED	APPROVED									

CANCEL PRINTS BEARING PREVIOUS REVISION

KCB-DWG-D-L

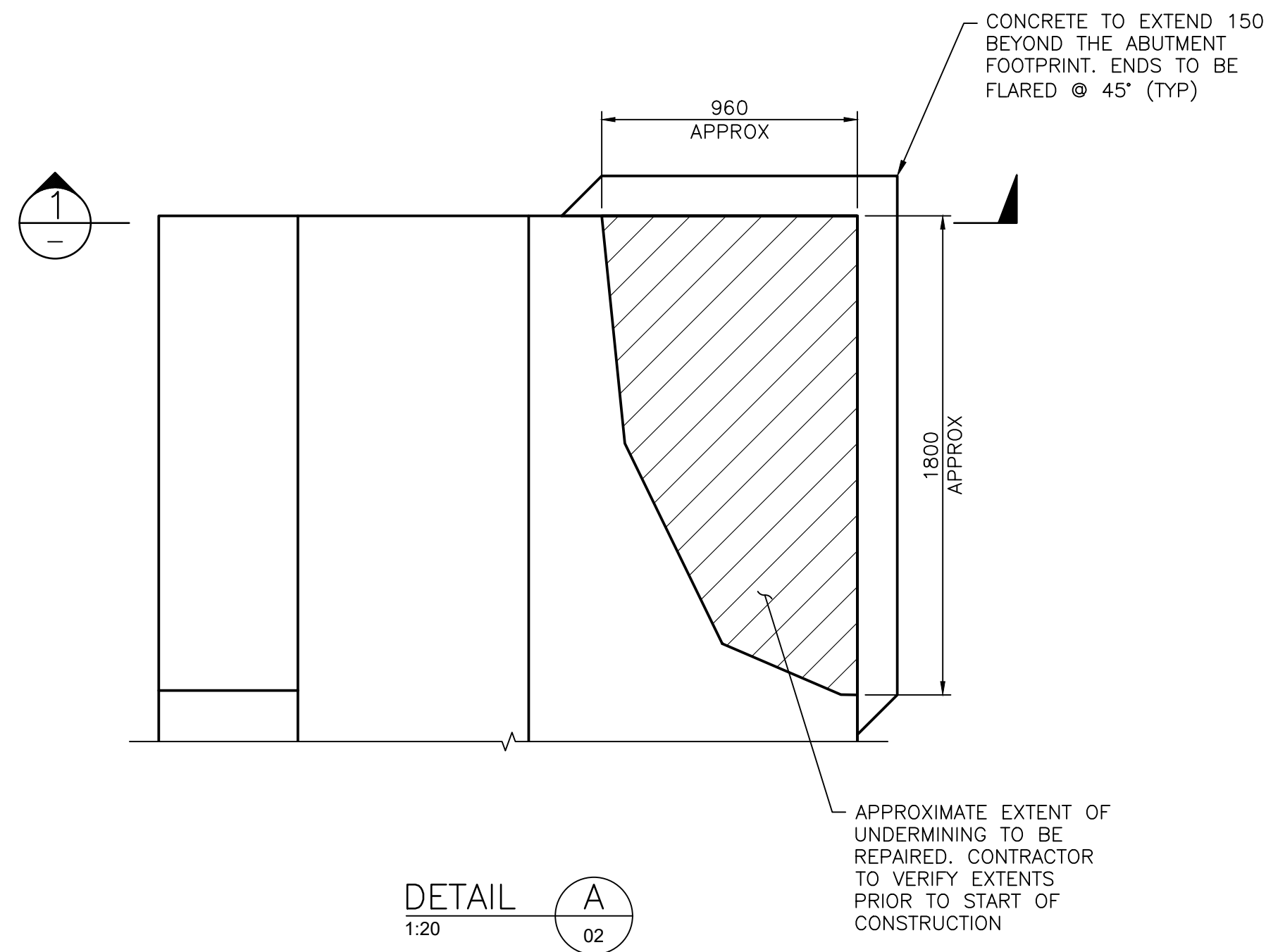
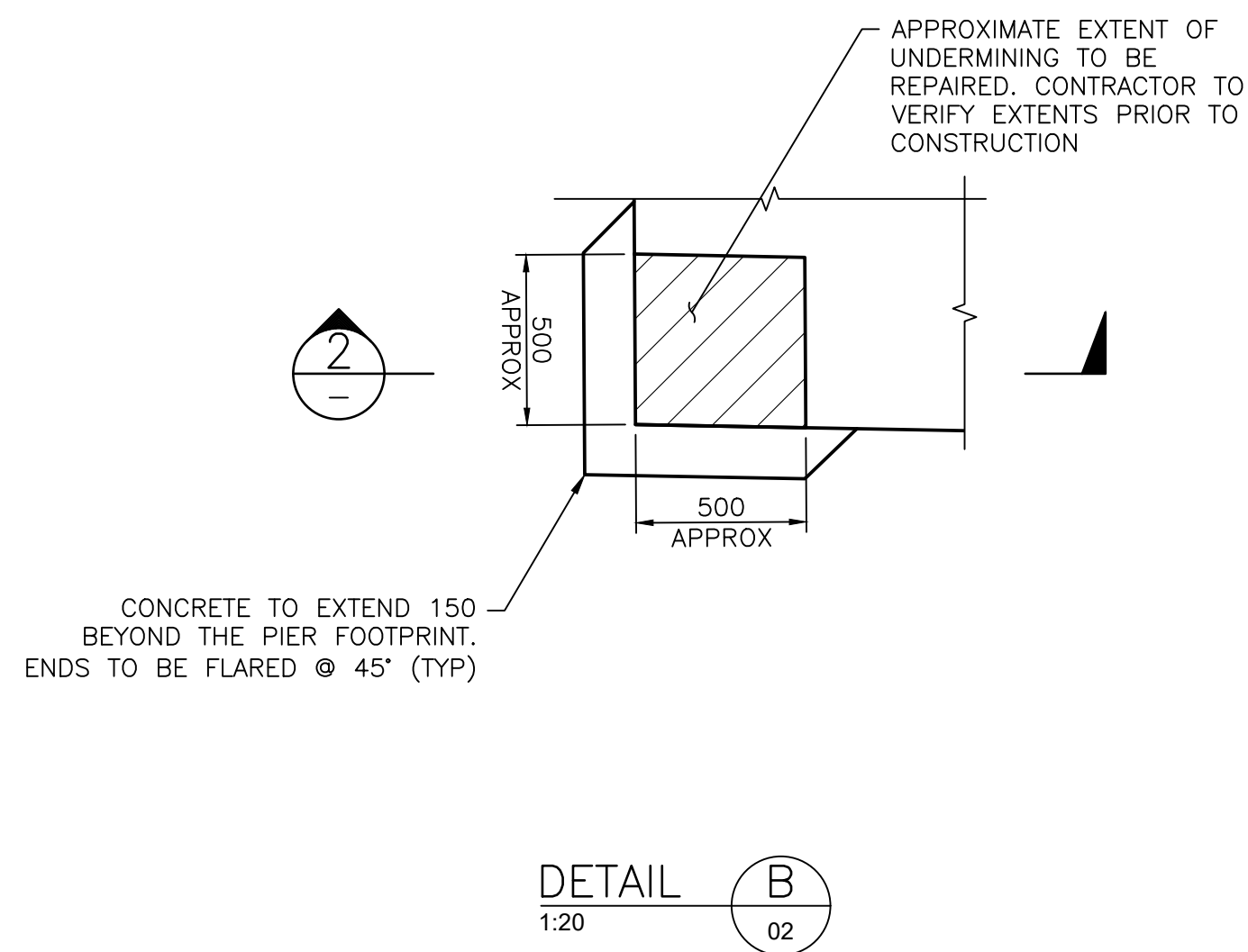
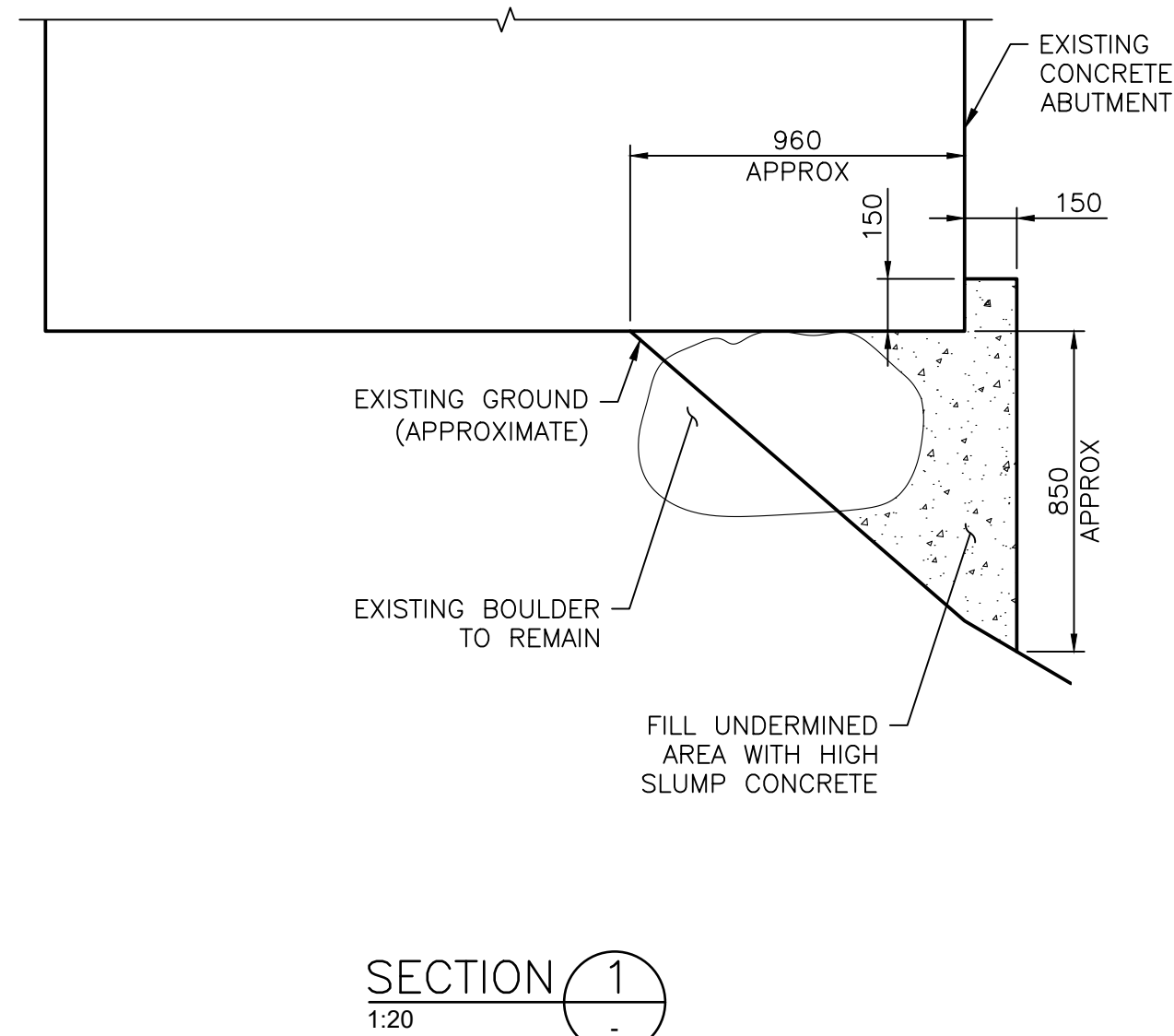
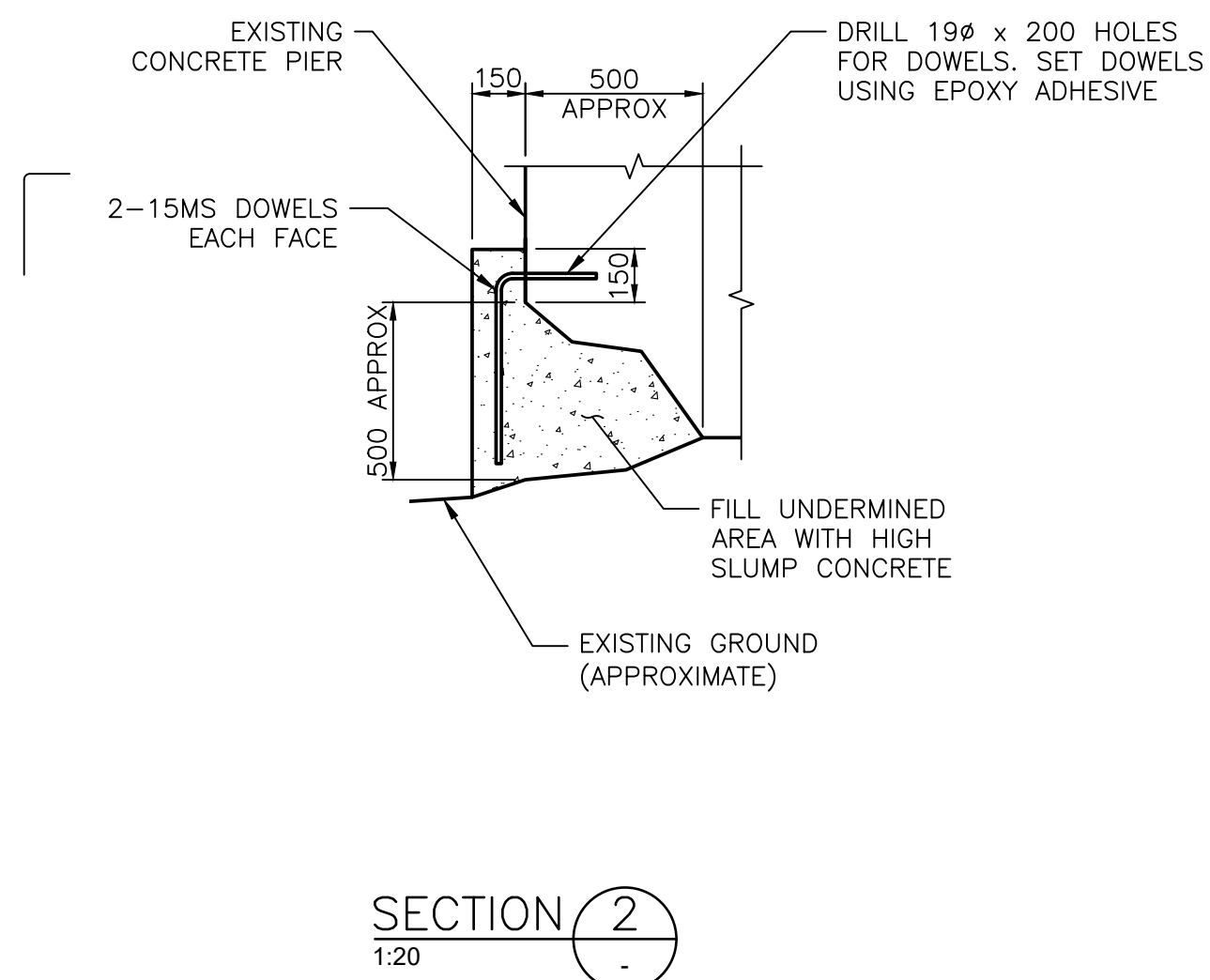
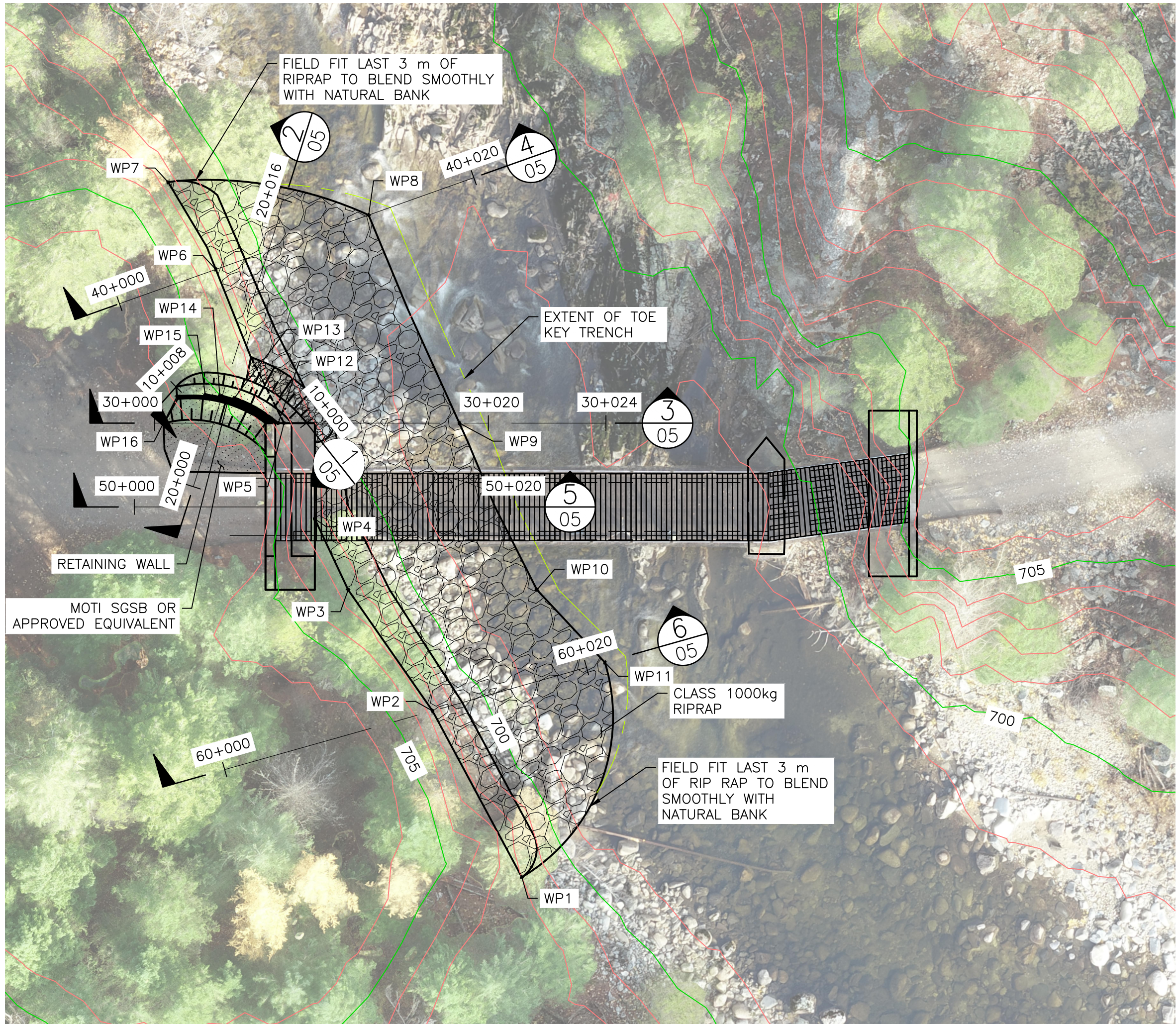


TABLE OF ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
ABUTMENT REPAIR CONCRETE	CUBIC METRES	1
PIER REPAIR CONCRETE	CUBIC METRES	0.2
DOWELS	EACH	4

			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	CLIENT   BC PERMIT TO PRACTICE No. 1000171	PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS			
										DRAWN:	J. PANG			TITLE KV-005 BRIDGE UNDERMINING REPAIR SECTIONS AND DETAILS			
										DESIGNED:	M. COVENEY						
										CHECKED:	K. MITCHELL						
										APPROVED:	K. GREINACHER						
A	ISSUED FOR TENDER	2023-03-20	J.P.	M.C.	K.M.	K.G.								SCALE AS SHOWN	PROJECT NO. P10443A01	DWG. NO. 03	REV. A
REVISION	DESCRIPTION OF REVISION	DATE (YYYY-MM-DD)	DRAWN	DESIGNED	CHECKED	APPROVED											



RIPRAP AND RETAINING WALL – PLAN
1:200

TABLE OF ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
EXCAVATION	CUBIC METRES	180
1000 kg RIPRAP	CUBIC METRES	640
150 MINUS ROCKFILL	CUBIC METRES	12
GRANULAR LEVELING PAD	CUBIC METRES	8
GRS RETAINING WALL	SQUARE METRES	11
SELECT GRANULAR SUB BASE	CUBIC METRES	15
CLASS 1 NON-WOVEN GEOTEXTILE	SQUARE METRES	500

RIPRAP WORKPOINT TABLE		
WORK POINT	NORTHING	EASTING
WP1	5461311.083	351998.568
WP2	5461321.104	351999.121
WP3	5461328.940	351998.644
WP4	5461333.090	351999.095
WP5	5461338.283	352000.352
WP6	5461347.148	352001.513
WP7	5461352.428	352001.767
WP8	5461345.380	352009.956
WP9	5461333.425	352008.312
WP10	5461323.710	352007.214
WP11	5461318.538	352008.287

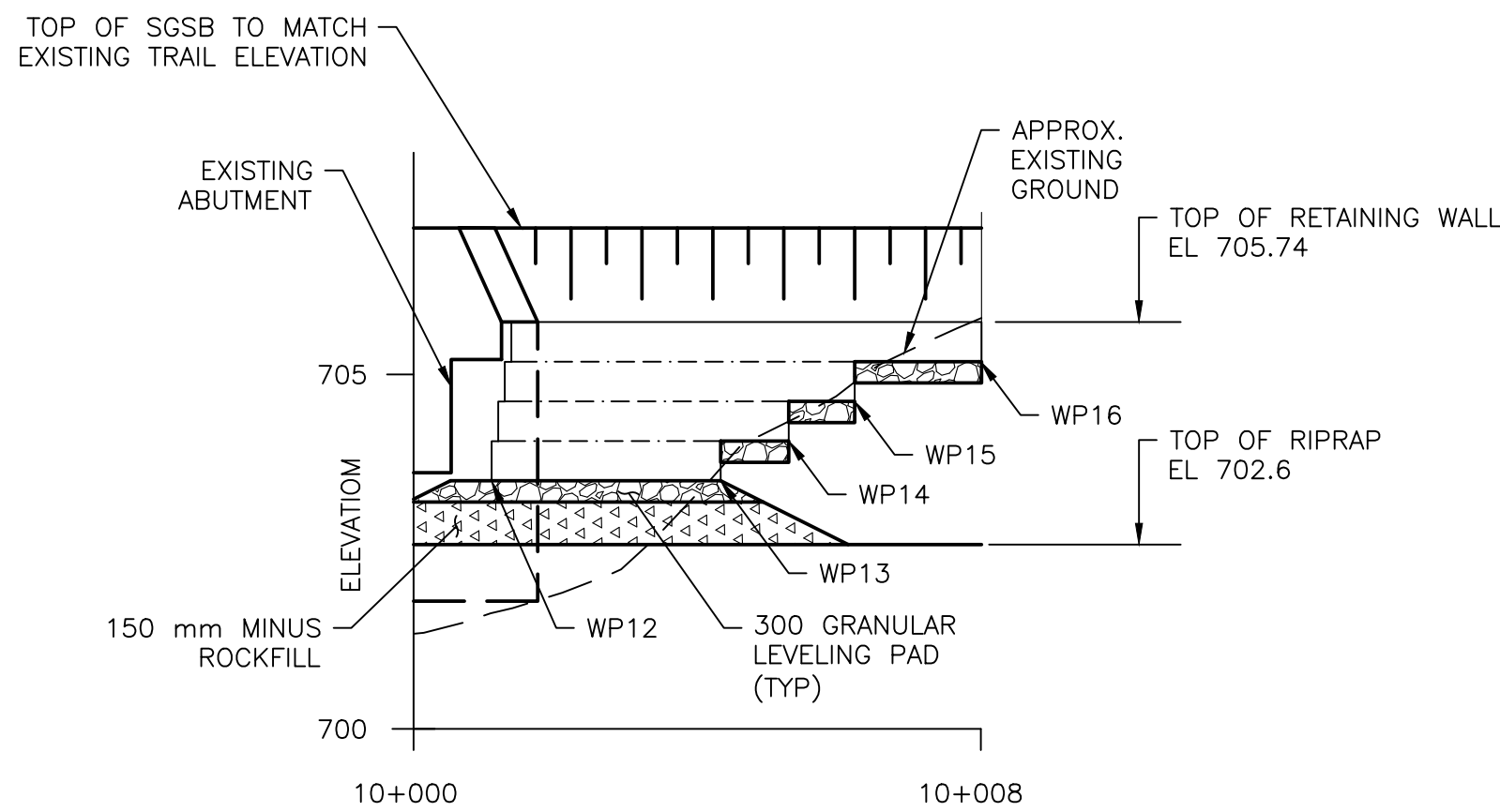
WALL WORKPOINT TABLE (SEE NOTE 3)			
WORK POINT	NORTHING	EASTING	ELEVATION
WP12	5461338.442	352000.091	703.500
WP13	5461340.805	351998.815	703.500
WP14	5461341.329	351998.207	704.060
WP15	5461341.765	351997.562	704.620
WP16	5461342.464	351996.244	705.180

NOTES:

- FOR GENERAL NOTES SEE DRAWING 01.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SURVEY AND CONFIRMING LAYOUT OF THE RIPRAP EXTENTS AND RETAINING WALL LOCATION.
- STATIONS AND ELEVATIONS PROVIDED FOR GRS WALL ARE APPROXIMATE. FINAL INSTALLED LOCATION AND EXTENTS SUBJECT TO SITE CONDITIONS ENCOUNTERED.

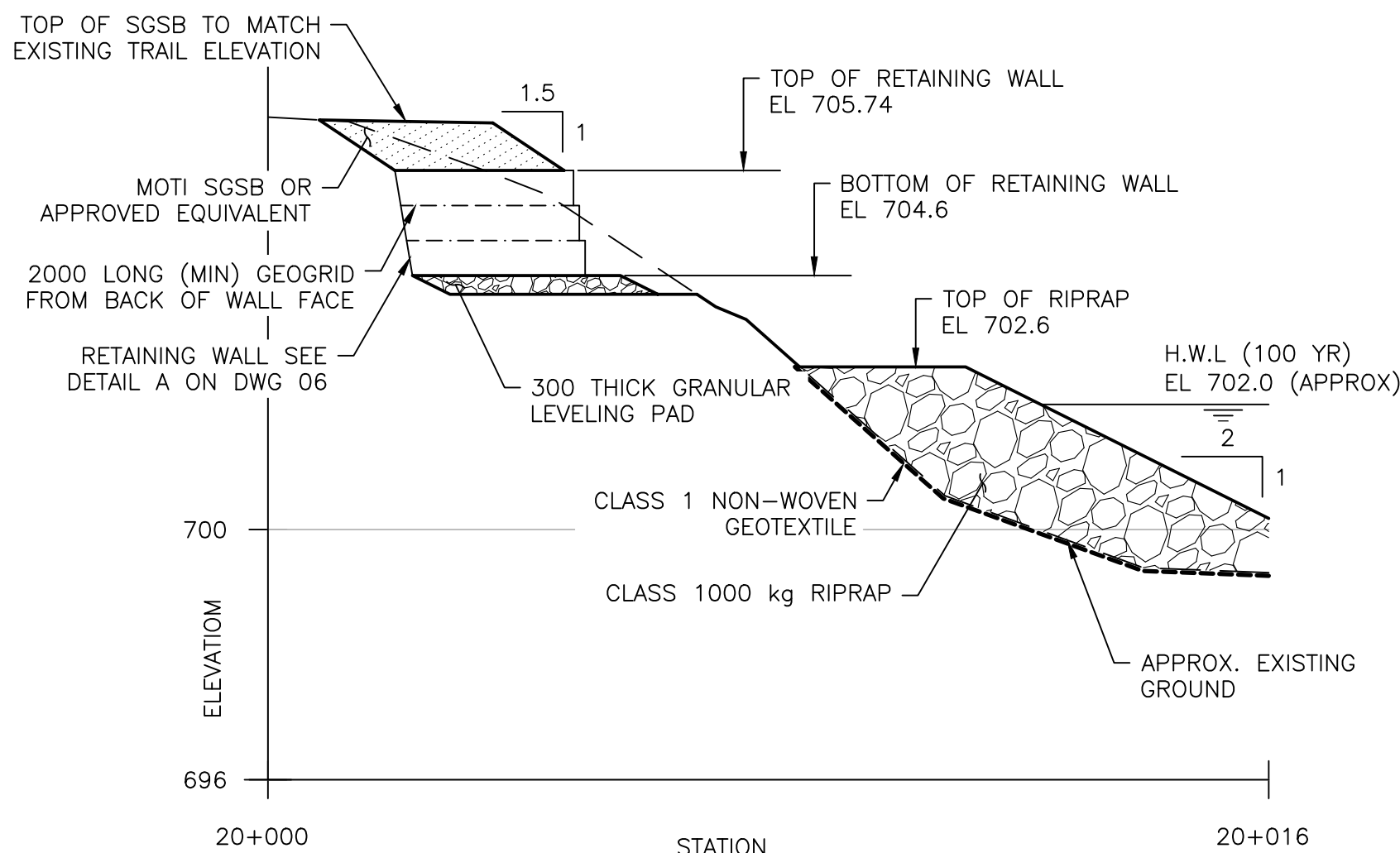
			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	<div>CLIENT</div> <div> Recreation Sites and Trails BC</div> <div> Klohn Crippen Berger BC PERMIT TO PRACTICE No. 1000171</div>	PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS			
										DRAWN:	J. PANG			TITLE KV-005 BRIDGE EROSION CONTROL AND SLOPE STABILIZATION PLAN			
										DESIGNED:	J. JOHNSON						
										CHECKED:	C. JOHNSON						
										APPROVED:	K. GREINACHER						
			A	ISSUED FOR TENDER		2023-03-20	J.P.	J.J.	C.J.	K.G.							
			REVISION	DESCRIPTION OF REVISION		DATE (MM-DD-YY)	DRAWN	DESIGNED	CHECKED	APPROVED							

CANCEL PRINTS BEARING PREVIOUS REVISION

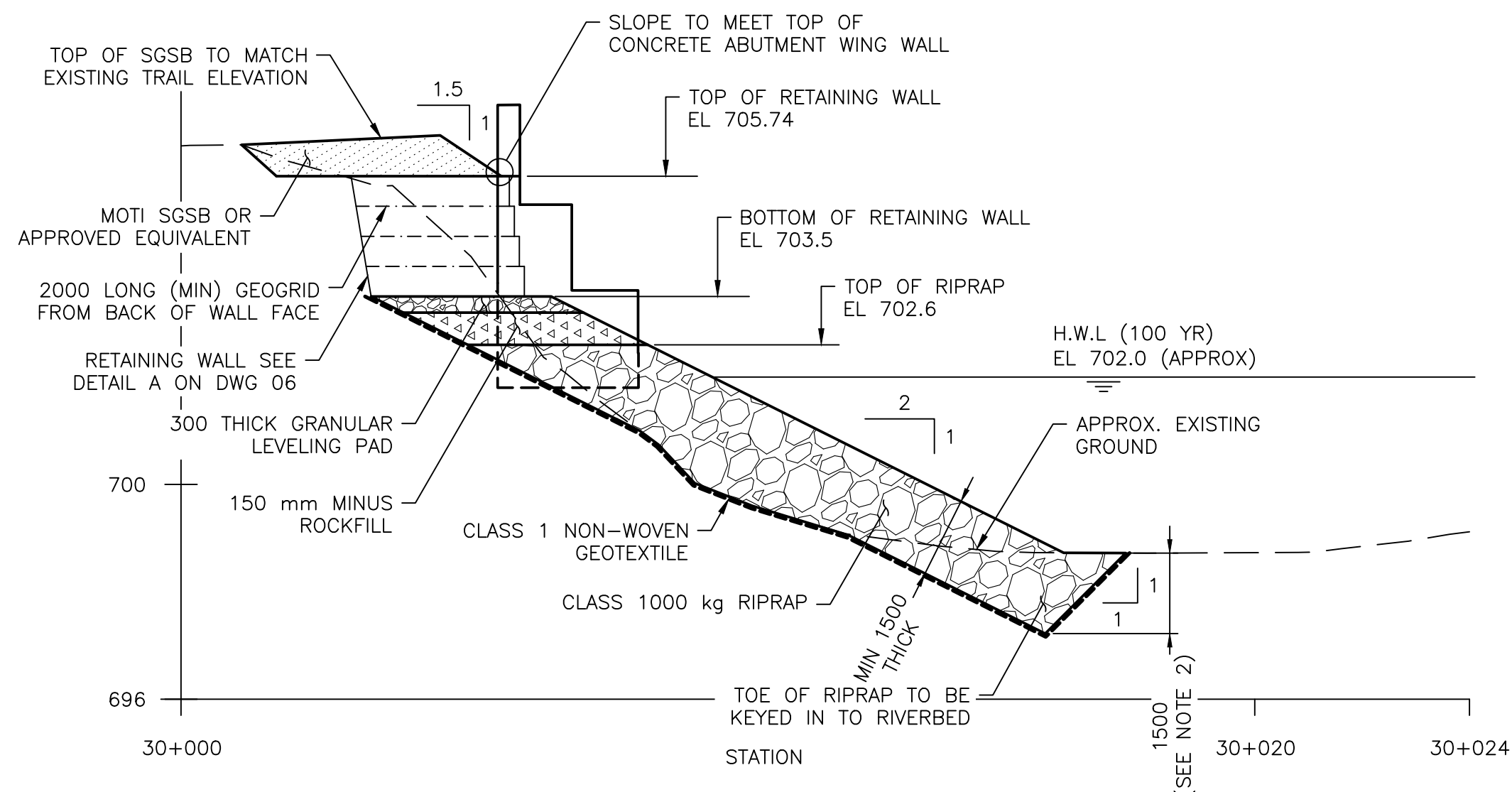


SECTION 1
1:100 04

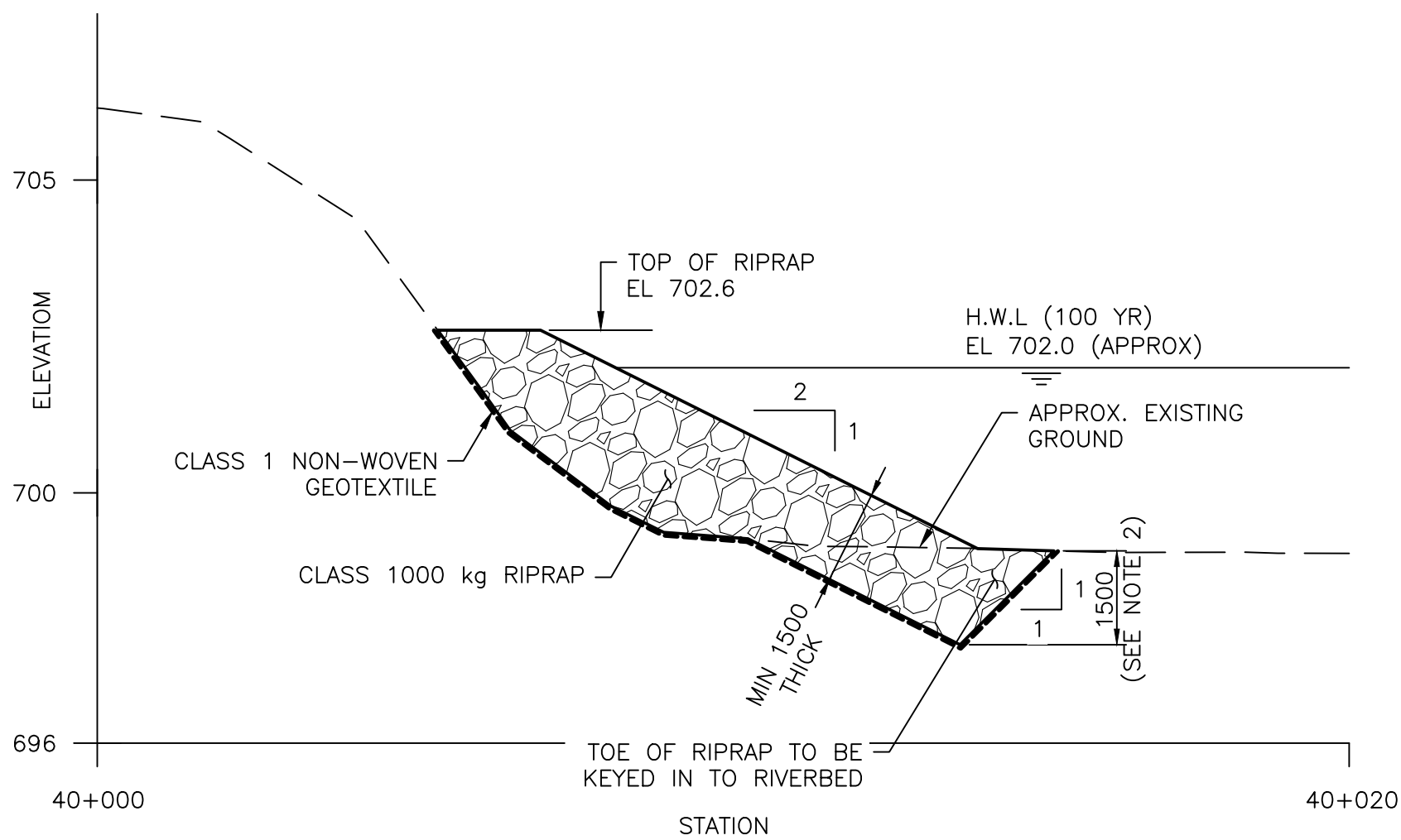
EXPANDED VIEW



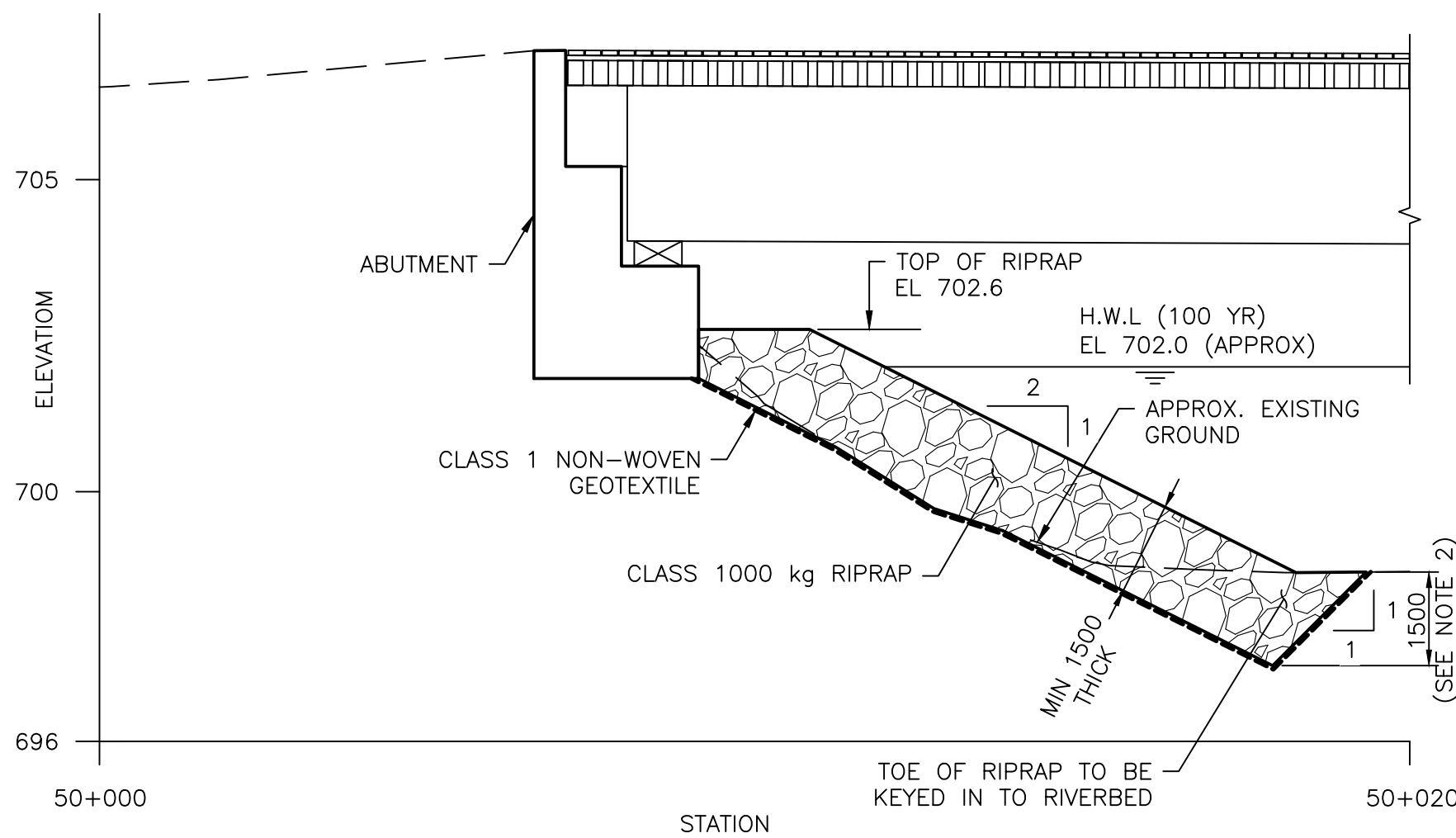
SECTION 2
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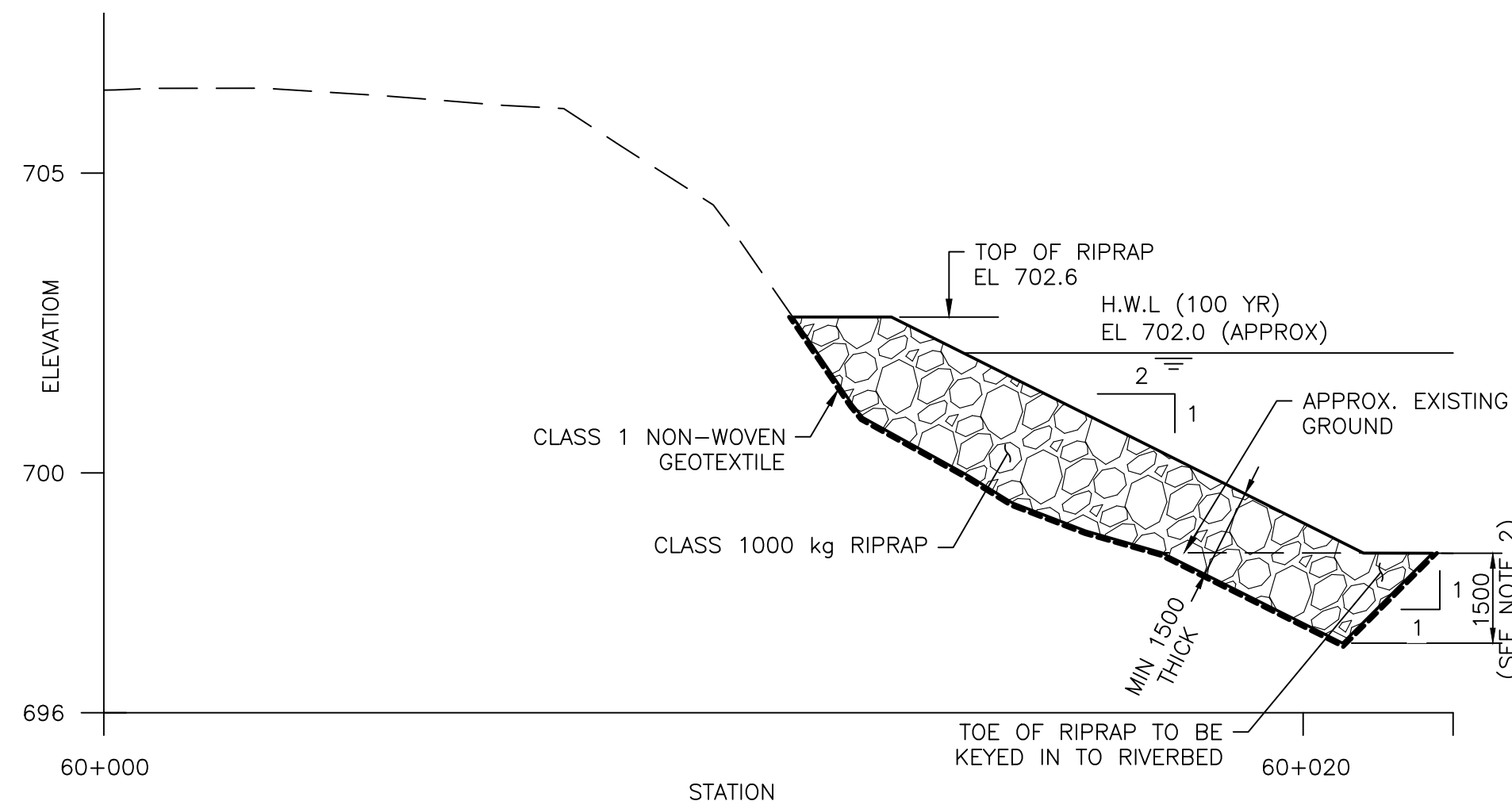
SECTION 3
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SECTION 4
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SECTION 5
1:100 04



SECTION 6
1:100 04

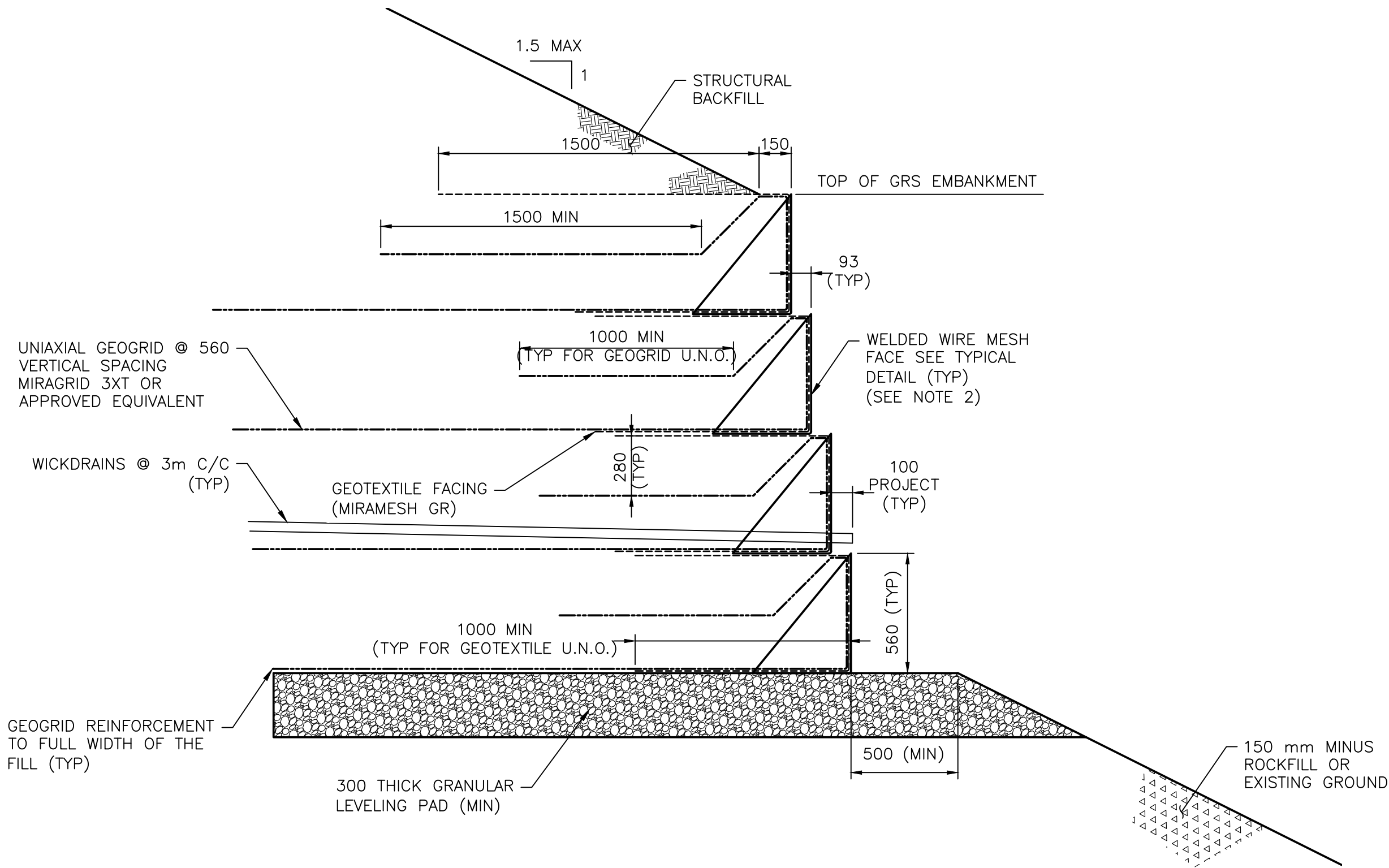
NOTES:

- FOR GENERAL NOTES SEE DRAWING 01.
- THE KEY TRENCH IS NOT REQUIRED IN AREAS OF RIVERBED WHERE BEDROCK ENCOUNTERED.
- RIPRAP MAY BE SHIFTED TOWARDS THE BANK AT TIME OF CONSTRUCTION WITH APPROVAL FROM THE ENGINEER. GENERAL RIPRAP CONFIGURATION, INCLUDING TOP ELEVATION, MINIMUM THICKNESS, AND TOE KEY, SHALL MEET THE REQUIREMENTS SHOWN ON THE DRAWINGS.
- ALL PERMANENT EXCAVATIONS AND DISTURBED SLOPES SHALL BE GRADED TO NO STEEPER THAN 1.5H:1V.

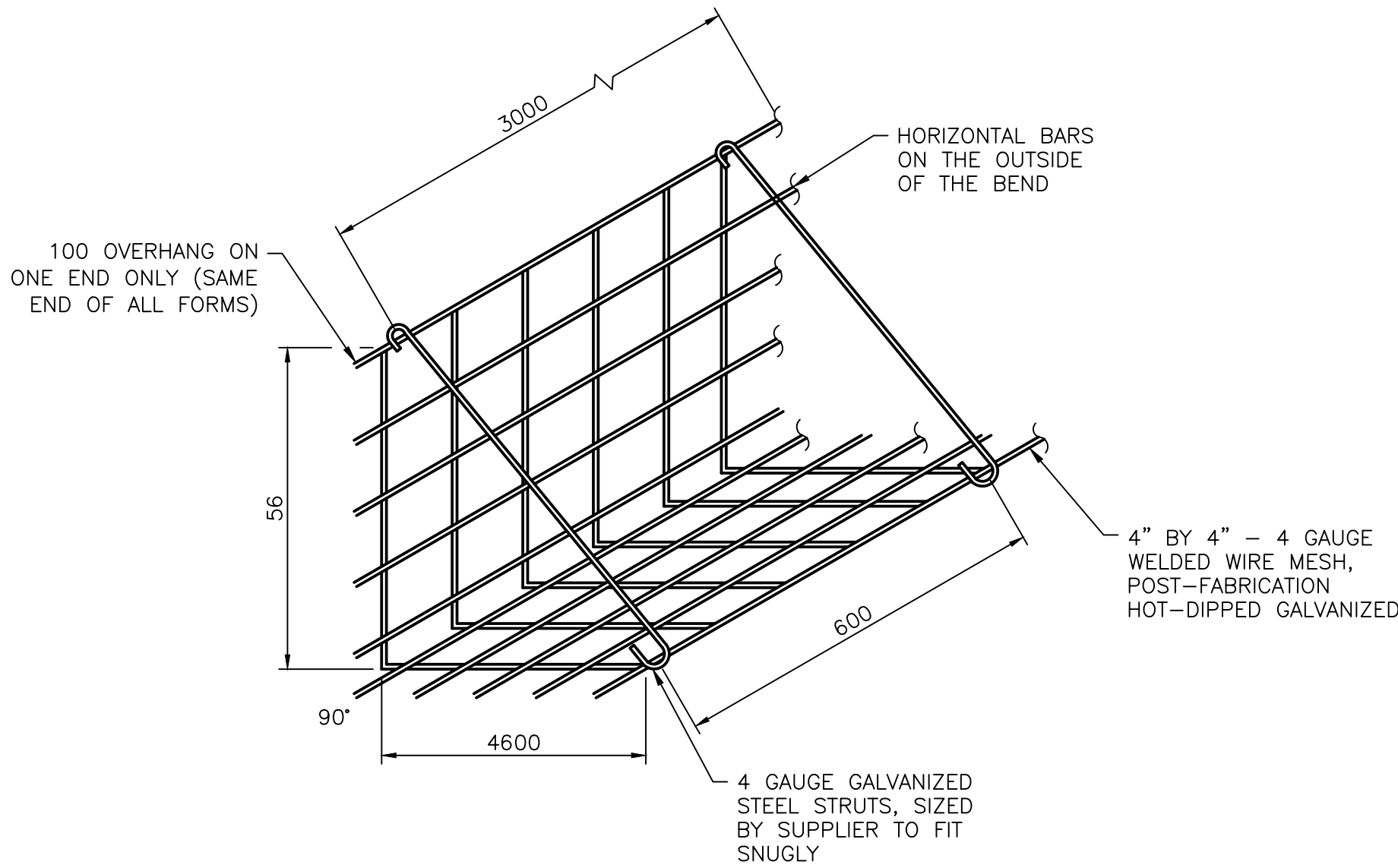
				DRAWING REVISIONS							ORIGINAL ISSUE		<div>AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.</div>	<div>CLIENT</div> <div></div>		PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS				
											DRAWN:	J. PANG		TITLE KV-005 BRIDGE EROSION CONTROL AND SLOPE STABILIZATION SECTIONS						
											DESIGNED:	J. JOHNSON								
											CHECKED:	C. JOHNSON								
											APPROVED:	K. GREINACHER								
A	ISSUED FOR TENDER		2023-03-20	J.P.	J.J.	C.J.	K.G.													
REVISION	DESCRIPTION OF REVISION	DATE (mm-mm-dd)	DRAWN	DESIGNED	CHECKED	APPROVED											SCALE AS SHOWN	PROJECT NO. P10443A01	DWG. NO. 05	REV. A

CANCEL PRINTS BEARING PREVIOUS REVISION

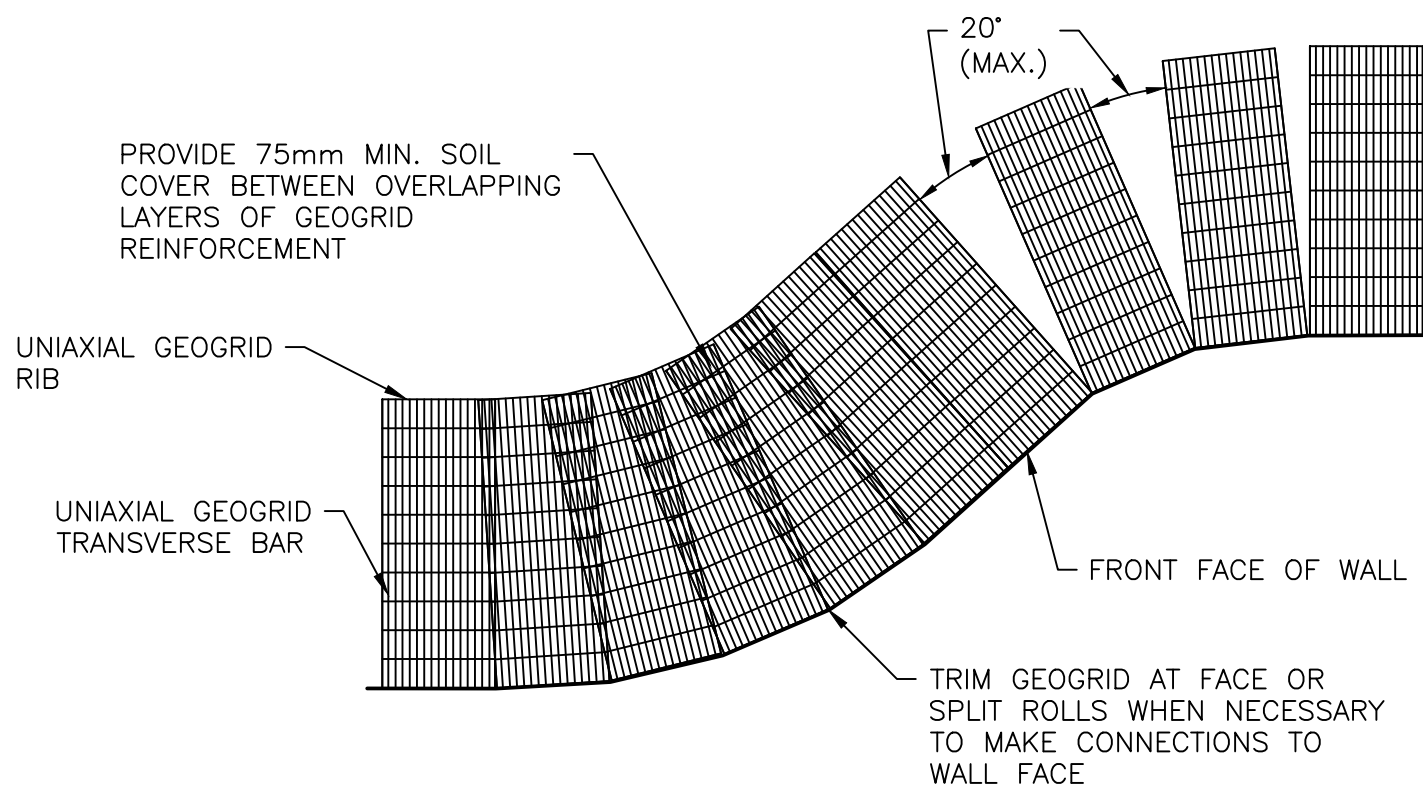
- NOTES:
- FOR GENERAL NOTES SEE DRAWING 01.
 - GRS RETAINING WALL FACING COULD BE DESIGNED BY A PROPRIETARY SUPPLIER TO BE A STONE FACE OR VEGETATED FACE OPTION.



GRS RETAINING WALL DETAIL A
1:20



TYPICAL WELDED WIRE MESH FACE DETAIL
N.T.S.

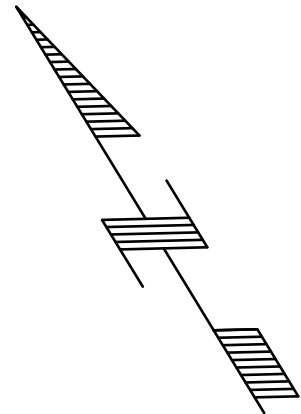
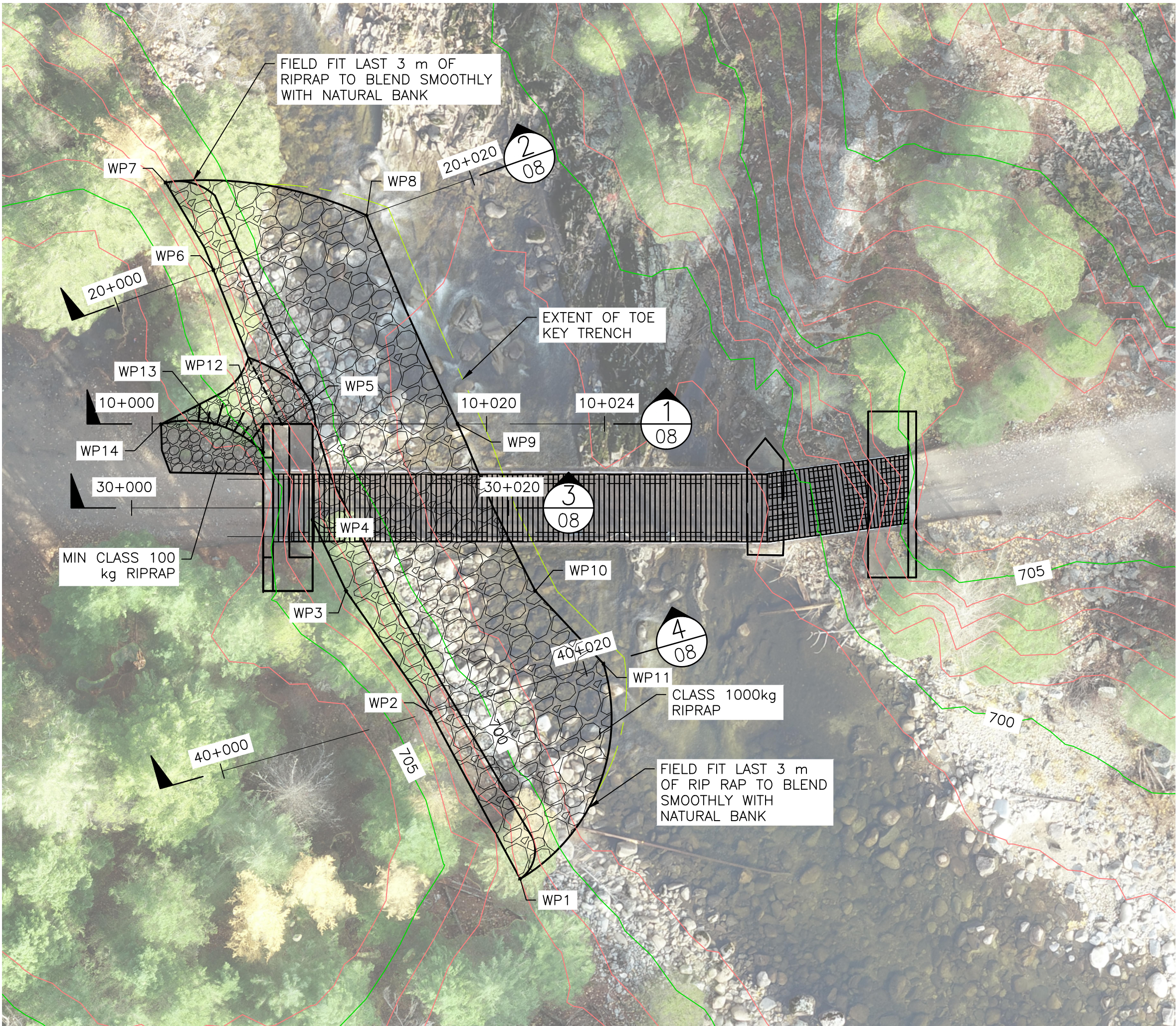


GEOGRID PLACEMENT ON CURVES DETAIL — PLAN VIEW
N.T.S.

			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	<div>CLIENT</div> <div></div> <div></div> <div>BC PERMIT TO PRACTICE No. 1000171</div>	PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS			
									DRAWN:	J. PANG	TITLE						
									DESIGNED:	M. CORMIER							
									CHECKED:	C. JOHNSON							
									APPROVED:	A. PORT							
A	ISSUED FOR TENDER		2023-03-20	J.P.	M.C.	C.J.	A.P.				KV-005 BRIDGE RETAINING WALL DETAILS						
REVISION	DESCRIPTION OF REVISION		DATE (mm-mm-dd)	DRAWN	DESIGNED	CHECKED	APPROVED				SCALE AS SHOWN	PROJECT NO. P10443A01	DWG. NO. 06	REV. A			

CANCEL PRINTS BEARING PREVIOUS REVISION

KCB-DWG-D-L



RIPRAP AND PLACED ROCK FILL SLOPE — PLAN
1:200

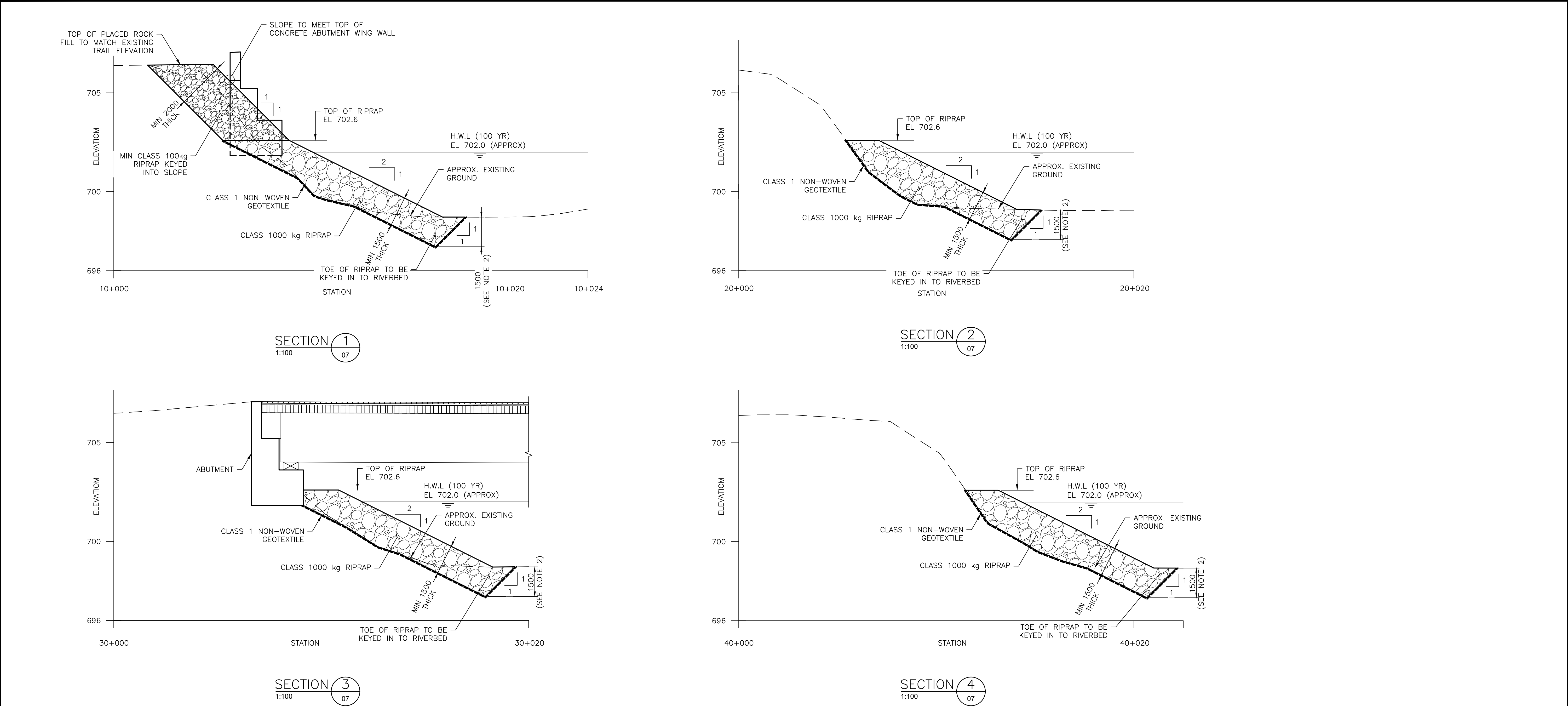
TABLE OF ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
EXCAVATION	CUBIC METRES	150
1000 kg RIPRAP	CUBIC METRES	640
PLACED ROCK FILL (MIN. 100 kg RIPRAP)	CUBIC METRES	50
CLASS 1 NON-WOVEN GEOTEXTILE	SQUARE METRES	500

RIPRAP WORKPOINT TABLE		
WORK POINT	NORTHING	EASTING
WP1	5461311.083	351998.568
WP2	5461321.104	351999.121
WP3	5461328.940	351998.644
WP4	5461333.090	351999.095
WP5	5461338.283	352000.352
WP6	5461347.148	352001.513
WP7	5461352.428	352001.767
WP8	5461345.380	352009.956
WP9	5461333.425	352008.312
WP10	5461323.710	352007.214
WP11	5461318.538	352008.287

TOP OF SLOPE WORKPOINT TABLE		
WORK POINT	NORTHING	EASTING
WP12	5461337.499	351998.712
WP13	5461340.142	351997.306
WP14	5461341.606	351994.877

- NOTES:
- FOR GENERAL NOTES SEE DRAWING 01.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SURVEY AND CONFIRMING LAYOUT OF THE RIPRAP EXTENTS AND FILL SLOPE LOCATION.

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										DRAWN:	J. PANG			TITLE KV-005 BRIDGE EROSION CONTROL AND SLOPE STABILIZATION PLAN (ALTERNATIVE SLOPE STABILIZATION)			
										DESIGNED:	J. JOHNSON						
										CHECKED:	C. JOHNSON						
										APPROVED:	K. GREINACHER						
			A	ISSUED FOR TENDER		2023-03-20	J.P.	J.J.	C.J.	K.G.							
			REVISION	DESCRIPTION OF REVISION		DATE (MM-MM-DD)	DRAWN	DESIGNED	CHECKED	APPROVED							



- NOTES:
- 1. FOR GENERAL NOTES SEE DRAWING 01.
 - 2. THE KEY TRENCH IS NOT REQUIRED IN AREAS OF RIVERBED WHERE BEDROCK ENCOUNTERED.
 - 3. RIPRAP MAY BE SHIFTED TOWARDS THE BANK AT TIME OF CONSTRUCTION WITH APPROVAL FROM THE ENGINEER. GENERAL RIPRAP CONFIGURATION, INCLUDING TOP ELEVATION, MINIMUM THICKNESS, AND TOE KEY, SHALL MEET THE REQUIREMENTS SHOWN ON THE DRAWINGS.
 - 4. ALL PERMANENT EXCAVATIONS AND DISTURBED SLOPES SHALL BE GRADED TO NO STEEPER THAN 1.5H:1V.

			DRAWING REVISIONS							ORIGINAL ISSUE		AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA, STATEMENTS, CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.	CLIENT 	PROJECT KETTLE VALLEY RAIL TRAIL BRIDGE ASSESSMENT AND REPAIRS			
										DRAWN:	J. PANG			TITLE KV-005 BRIDGE EROSION CONTROL AND SLOPE STABILIZATION SECTIONS (ALTERNATIVE SLOPE STABILIZATION)			
										DESIGNED:	J. JOHNSON						
										CHECKED:	C. JOHNSON						
										APPROVED:	K. GREINACHER						
			A	ISSUED FOR TENDER			2023-03-20	J.P.	J.J.	C.J.	K.G.		 BC PERMIT TO PRACTICE No. 1000171	SCALE AS SHOWN			
			REVISION	DESCRIPTION OF REVISION			DATE (YYYY-MM-DD)	DRAWN	DESIGNED	CHECKED	APPROVED						



PHOTO 1: OVERVIEW OF BRIDGE LOOKING DOWNSTREAM. REFERENCES TO "RIGHT" AND "LEFT" SIDES OF THE BRIDGE ARE AS SEEN LOOKING DOWNSTREAM



PHOTO 2: OVERVIEW OF BRIDGE LOOKING UPSTREAM



PHOTO 3: EROSION AT THE "RIGHT" BANK AND UNDERMINING AT THE ABUTMENT ON THE UPSTREAM SIDE OF BRIDGE



PHOTO 4: UNDERMINING AT THE "RIGHT" ABUTMENT

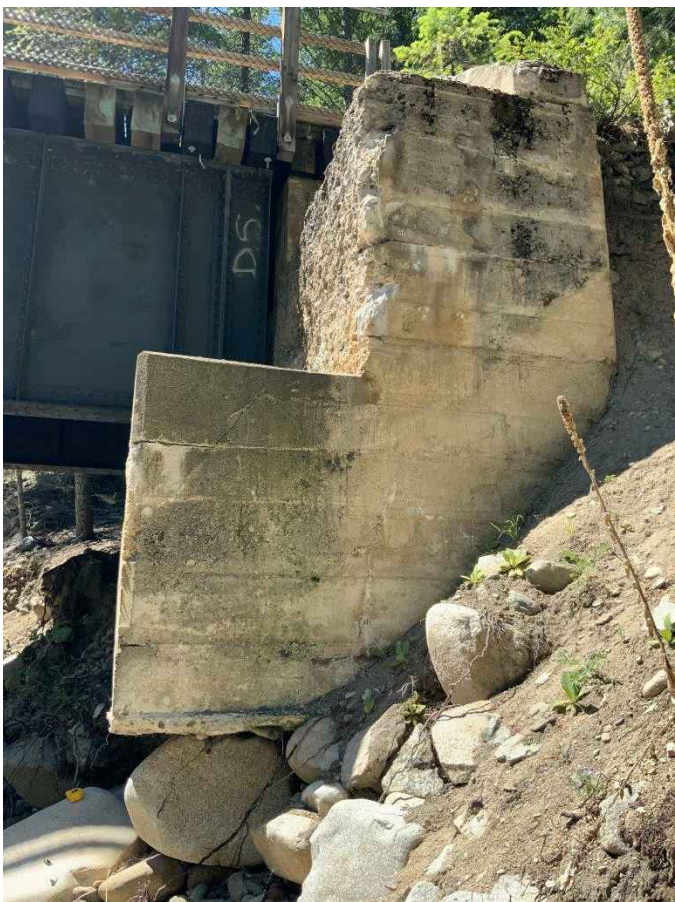


PHOTO 5: UNDERMINING AT THE "RIGHT" ABUTMENT



PHOTO 6: EROSION AT THE "RIGHT" BANK UPSTREAM OF BRIDGE



PHOTO 7: EROSION AT THE "RIGHT" BANK DOWNSTREAM OF BRIDGE



PHOTO 8: UNDERMINING AT THE DOWNSTREAM CORNER OF PIER

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										DRAWN:	J. PANG			TITLE KV-005 BRIDGE PHOTOS					
										DESIGNED:	M. COVENEY								
										CHECKED:	K. MITCHELL								
										APPROVED:	K. GREINACHER								
			A	ISSUED FOR TENDER	2023-03-20	J.P.	M.C.	K.M.	K.G.										
			REVISION	DESCRIPTION OF REVISION	DATE (MM-DD-YY)	DRAWN	DESIGNED	CHECKED	APPROVED										
														SCALE AS SHOWN	PROJECT NO. P10443A01	DWG. NO. 09	REV. A		