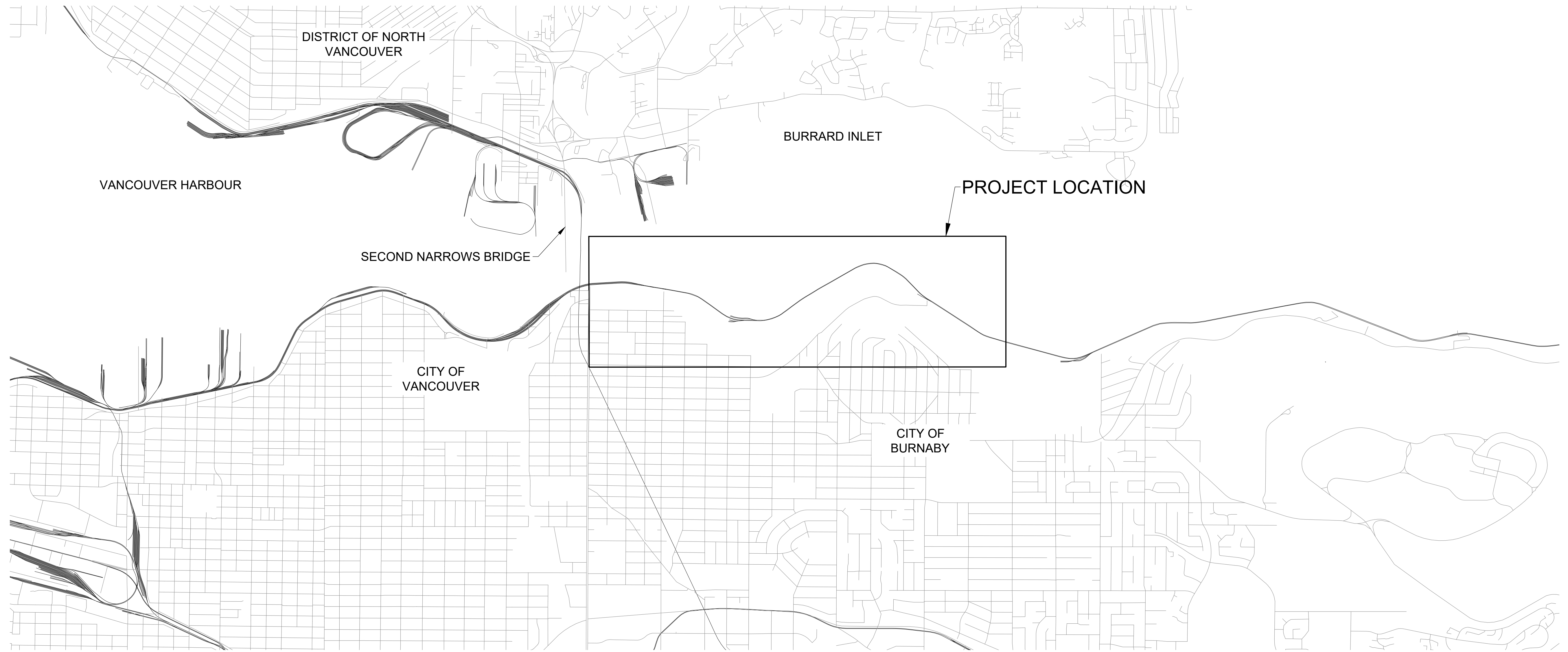
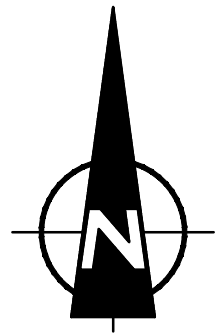


CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K09 EXTENSION
WESTERN REGION - VANCOUVER DIVISION
REISSUED FOR 30% DESIGN REVIEW



MILE 123.07 TO MILE 124.17 CASCADE SUBDIVISION
EXTENSION



ENGINEERING PROJECTS - WEST



PROJECT No: H362379
H362379-GA-100-S0-0000 REV C

MARCH 19, 2021

NOT FOR CONSTRUCTION



SITE LOCATION PLAN

30 m 0 1:3000 150 m

	ZONE 1 (11+140 TO 11+753)	ZONE 2 (10+713 TO 11+140)	ZONE 3 (10+000 TO 10+713)
TRACK LENGTH (ft)	2,011	1,401	2,339
FILL (RIPRAP AND ROCKFILL) ABOVE HWM (m3)	11,566	335	15,687
FILL (RIPRAP AND ROCKFILL) BELOW HWM (m3)	9,915	0	13,024
LENGTH (ft) / TYPE OF RETAINING STRUCTURE	NONE	328 TWall	NONE
LENGTH (ft) / TYPE OF BRIDGE STRUCTURE	NONE	43 CANTILEVER UTILITY BRIDGE	NONE

K09 CAPACITY MEASUREMENTS		
FROM DUMPER TO EXISTING SWT PT DERAIL (ft)	FROM EXISTING SWT PT DERAIL (MILE 124.174) TO 10ft WEST OF PROPOSED SWT PT DERAIL (MILE 123.141) (ft)	TOTAL CAPACITY (ft)
4,168	5,427	9,595

Mor 17, 2021, 4:40pm
 Login name: KIM79037
 Drawing Name: C:\pwworking\hatch\kim79037\0693850\H362379-CA-100-S0-0001.dwg

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

DESIGNED BY: T.I. DATE: 19-03-21	DRAWN BY: S.K. DATE: 19-03-21
CHECKED BY: J.C. DATE: 19-03-21	PROJECT MANAGER: K.M.M. DATE: 19-03-21
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:3000

PROFESSIONAL SEALS

No.	DATE	REVISION	BY
C	19-03-21	REISSUED FOR 30% DESIGN REVIEW - ZONE MAP INCLUDED	T.I.
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.

CP

ENGINEERING PROJECTS - WEST

VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION



**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K9 TRACK EXTENSION
SITE LOCATION PLAN**

DWG. BY:	CHK BY: KMM	OFFICE FILE:
MANAGER - DESIGN:	SCALE:	DATE:
M.FAVREAU DIR. PROJECT SERVICES WEST	H362379-GA-100-S0-0001	Rev. C

DRAWING LIST			
PLAN NO.	DESCRIPTION	REVISION	DATE
H360165-GA-100-S0-0000	COVER SHEET	C	19/03/2021
H360165-GA-100-S0-0001	SITE LOCATION PLAN	C	19/03/2021
H360165-GA-100-S0-0002	DRAWING LIST	C	19/03/2021
H360165-GA-100-S0-0003	ABBREVIATIONS, LEGEND, AND NOTES	B	29/01/2021
H360165-RW-100-S0-0001	PROPOSED K9 TRACK EXTENSION, TYPICAL FILL SECTION	B	29/01/2021
H360165-RW-100-S0-0011	PROPOSED K9 TRACK EXTENSION, PLAN AND PROFILE STA. 10+000 TO 10+350	C	19/03/2021
H360165-RW-100-S0-0012	PROPOSED K9 TRACK EXTENSION, PLAN AND PROFILE STA. 10+350 TO 10+700	B	19/03/2021
H360165-RW-100-S0-0013	PROPOSED K9 TRACK EXTENSION, PLAN AND PROFILE STA. 10+700 TO 11+050	B	19/03/2021
H360165-RW-100-S0-0014	PROPOSED K9 TRACK EXTENSION, PLAN AND PROFILE STA. 11+050 TO 11+400	C	19/03/2021
H360165-RW-100-S0-0015	PROPOSED K9 TRACK EXTENSION, PLAN AND PROFILE STA. 11+400 TO 11+764.421	C	19/03/2021
H360165-RW-100-S0-0016	PROPOSED CROSSEOVERS, PLAN AND PROFILE	C	19/03/2021
H360165-RW-100-S0-0017	PROPOSED PARKLAND TRACKS, PLAN AND PROFILE	A	13/11/2020
H360165-CV-100-S0-0001	PROPOSED K9 TRACK EXTENSION, TYPICAL CULVERT SECTION	B	29/01/2021
H360165-CV-100-S0-0003	PROPOSED K9 TRACK EXTENSION, RAINBOW CREEK BOX CULVERT AND SECTION	B	19/03/2021
H360165-SR-100-S0-0001	PROPOSED K9 TRACK EXTENSION, BRIDGE GENERAL ARRANGEMENT & SECTIONS	A	13/11/2020
H360165-SR-100-S0-0002	PROPOSED K9 TRACK EXTENSION, BRIDGE ELEVATION VIEWS	A	13/11/2020
H360165-SR-100-S0-0003	PROPOSED K9 TRACK EXTENSION, T WALL SECTION	A	13/11/2020

NOT FOR CONSTRUCTION

Mor 17, 2021, 4:42pm Login name: KIM79037
 Drawing Name: C:\pwworking\kim79037\p0693850\H362379-GA-100-S0-0002.dwg

 <p>METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DESIGNED BY: T.I. DATE: 19-03-21</td> <td>DRAWN BY: S.K. DATE: 19-03-21</td> </tr> <tr> <td>CHECKED BY: S.H. DATE: 19-03-21</td> <td>PROJECT MANAGER: K.M.M. DATE: 19-03-21</td> </tr> <tr> <td>HATCH PROJECT No: H362379</td> <td>DWG SCALE(FULL SIZE): N.T.S.</td> </tr> </table>	DESIGNED BY: T.I. DATE: 19-03-21	DRAWN BY: S.K. DATE: 19-03-21	CHECKED BY: S.H. DATE: 19-03-21	PROJECT MANAGER: K.M.M. DATE: 19-03-21	HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): N.T.S.	<p>PROFESSIONAL SEALS</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>No.</td> <td>DATE</td> <td>REVISION</td> <td>BY</td> </tr> <tr> <td>C</td> <td>19-03-21</td> <td>REISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> <tr> <td>B</td> <td>29-01-21</td> <td>REISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> <tr> <td>A</td> <td>13-11-20</td> <td>ISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> </table>	No.	DATE	REVISION	BY	C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.	 <p>ENGINEERING PROJECTS - WEST</p>	<p>VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION</p> <p style="text-align: center;">CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION DRAWING LIST</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DWG. BY:</td> <td>CHK BY: KMM</td> <td>OFFICE FILE:</td> </tr> <tr> <td>MANAGER - DESIGN:</td> <td>DATE:</td> <td>SCALE:</td> </tr> <tr> <td>M.FAVREAU DIR. PROJECT SERVICES WEST</td> <td>H362379-GA-100-S0-0002</td> <td>Rev. C</td> </tr> </table>	DWG. BY:	CHK BY: KMM	OFFICE FILE:	MANAGER - DESIGN:	DATE:	SCALE:	M.FAVREAU DIR. PROJECT SERVICES WEST	H362379-GA-100-S0-0002	Rev. C
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M.FAVREAU DIR. PROJECT SERVICES WEST	H362379-GA-100-S0-0002	Rev. C																																	

ABBREVIATIONS

&	AND	MS	STAINLESS STEEL BARS
@	AT	MW	WELDABLE GRADE BARS
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION	N	NORTHING
APPROX	APPROXIMATE	N/A	NOT APPLICABLE
AVE	AVENUE	NB	NORTH BOUND
¢	CENTRELINE	NF	NEAR FACE
C/C	CENTRE TO CENTRE	NIC	NOT IN CONTACT
C/W	COMPLETE WITH	No.,#	NUMBER, NUMBERS
CLR	CLEAR	NTS	NOT TO SCALE
COL	COLUMN	OC	ON CENTRE
CONC	CONCRETE	OD	OUTSIDE DIAMETER
CONST	CONSTRUCTION	OPP	OPPOSITE
CONT	CONTINUOUS	%	PER CENT
CONTD	CONTINUED	PERF	PERFORATED
Dc	DEGREE OF CURVE	PERP	PERPENDICULAR
DIA.Ø	DIAMETER	PF	POINT OF FROG
DWG	DRAWING	PL	PLATE
E	EASTING	PROJ	PROJECTION
EB	EASTBOUND	PROP	PROPOSED
EA	EACH	PS	POINT OF SWITCH
EF	EACH FACE	PT	POINT
EG	EXEMPLI GRATIA (FOR EXAMPLE)	QTY	QUANTITY
EL, ELEV	ELEVATION	R	RADIUS
EOP	EDGE OF PAVEMENT	RBM	RAILBOUND MANGANESE
EQ	EQUAL	RD	ROAD
ET	END OF TRACK	REF	REFERENCE
EW	EACH WAY	REINF	REINFORCING
EX, EXIST	EXISTING	REQD	REQUIRED
EXP	EXPANSION	REV	REVISION
FA	FAR FACE	RH	RIGHT HAND
FIN	FINISHED	R/W	RIGHT-OF-WAY
FIN GR	FINISHED GRADE	SB	SOUTH BOUND
FS	FINISHED SURFACE	SD	STORM DRAIN
FT	FOOT OR FEET	SGL	SINGLE
FTG	FOOTING	SGM	SELF-GUARDED MANGANESE
GALV	GALVANIZED	SHLD	SHOULDER
GRP	GROUP	SHT	SHEET
HS	HIGH STRENGTH	SPCS	SPACES
HWY	HIGHWAY	SS	STAINLESS STEEL
ID	INSIDE DIAMETER	ST	STREET
IJ	INSULATED JOINT	STA	STATION
IN	INCH OR INCHES	STD	STANDARD
INT DIAP	INTERMEDIATE DIAPHRAGM	SW	SWITCH
INV	INVERT	TBD	TO BE DETERMINED
JT	JOINT	TC	TRACK CENTRES
KPH	KILOMETRES PER HOUR	TEMP	TEMPORARY
lb	POUND	THEO	THEORETICAL
LG	LONG	THK	THICK
LONGIT	LONGITUDINAL	TO	TURNOUT
LH	LEFT HAND	T/R	TOP OF RAIL ELEVATION
LST	LAST SWITCH TIE	TRK	TRACK
m	METRE, METRES	TYP	TYPICAL
mm	MILLIMETRE, MILLIMETRES	UNO	UNLESS NOTED OTHERWISE
MAX	MAXIMUM	U/S	UNDERSIDE
MB	EPOXY COATED BARS	VERT	VERTICAL
MF	MID FACE	WB	WESTBOUND
MFX	MFX BAR	W/	WITH
MG	GALVANIZED BARS	W/O	WITHOUT
MH	MANHOLE	WP	WORK POINT
MIN	MINIMUM	X-ING, XING	CROSSING
MK	MARK	X-OVER	CROSSOVER
mph	MILES PER HOUR		

TRACK ALIGNMENT HORIZONTAL

Δ	TOTAL CENTRAL ANGLE OF CIRCULAR CURVE
BP	ALIGNMENT START
BC	BEGINNING OF CURVE
CS	POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL
Ea	ACTUAL SUPERELEVATION
EC	END OF CURVE
EP	ALIGNMENT END
Eu	UNBALANCED SUPERELEVATION
Lc	TOTAL LENGTH OF CIRCULAR CURVE
Ls	TOTAL LENGTH OF SPIRAL
PI	POINT OF INTERSECTION OF TWO TANGENTS
PITO	POINT OF INTERSECTION OF TURNOUT
R	RADIUS
SC	POINT OF CHANGE FROM SPIRAL TO CIRCULAR CURVE
ST	POINT OF CHANGE FROM SPIRAL TO TANGENT
T	TANGENT LENGTH
TS	POINT OF CHANGE FROM TANGENT TO SPIRAL
V	CIVIL DESIGN SPEED

TRACK ALIGNMENT VERTICAL

BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
LVC	LENGTH OF VERTICAL CURVE (BVCS TO EVCS)
PVI	POINT OF INTERSECTION OF TWO PROFILE TANGENTS

LEGEND

	EXISTING TRACK		EXISTING STORM MANHOLE/CATCHBASIN
	NEW TRACK		EXISTING SANITARY MANHOLE
	TRACK TO BE REMOVED		EXISTING VALVE
	REALIGNED TRACK		EXISTING ELECTRICAL/COMMUNICATION POLE
	EXISTING TURNOUT		EXISTING GUY WIRE
	PROPOSED POWERED SWT TURNOUT		MANHOLE
	PROPOSED HANDTHROW SWT		CATCH BASIN
	PROPOSED SWT PT DERAIL		FIRE HYDRANT
	PROPOSED SWT PT DERAIL		POWER POLE
	EXISTING SWT PT DERAIL		LAMP STANDARD
	EXISTING DITCH		TRAFFIC SIGNAL
	LIMIT OF GRADING		UTILITY BOX
	CP RIGHT OF WAY		ELECTRICAL BOX
	EXISTING CULVERT		GUARD POST
	PROPOSED CULVERT EXTENSION		SIGN POST
	EXISTING CHAINLINK FENCE		GUY WIRE
	EXISTING TOP OF SLOPE		WATER VALVE
	EXISTING TOE OF SLOPE/BALLAST		GAS VALVE
	EXISTING LOCK BLOCK WALL/ RETAINING WALL		STAND PIPE
	PROPOSED WALL		TRAVERSE STATION
	PROPOSED SUBDRAIN		
	FLOW DIRECTION		
	EXISTING FIBRE OPTIC CABLE		
	EXISTING OVERHEAD LINE		
	EXISTING OIL PIPE		
	EXISTING WATER PIPE		
	EXISTING SANITARY FORCEMAIN		
	EXISTING STORM PIPE		
	EXISTING UNKNOWN PIPE		
	EXISTING CABLES		
	EXISTING COMBINE SANITARY SEWER		
	CP SIGNALS CABLE		

GENERAL NOTES

- ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED
- DRAWING IS IN UTM COORDINATES, ZONE 10N. SURVEY COMPLETED BY UNDERHILL GEOMATICS LTD. DATED ON 07/03/2020.
- THE EXISTENCE, LOCATION AND ELEVATION OF UTILITIES AND/OR CONCEALED STRUCTURES AT THE PROJECT SITE ARE NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE, LOCATION AND ELEVATION OF ALL SUCH UTILITIES AND/OR STRUCTURES AND IS RESPONSIBLE FOR NOTIFYING THE APPROPRIATE COMPANY, DEPARTMENT OR PERSON(S) OF ITS INTENTION TO CARRY OUT ITS OPERATIONS.
- UNLESS OTHERWISE NOTED, ALL UTILITY ADJUSTMENTS WILL BE PERFORMED BY OTHERS. THE CONTRACTOR AND UTILITY OWNERS WILL BE REQUIRED TO COOPERATE WITH EACH OTHER IN ORDER TO EXPEDITE THE WORK REQUIRED BY THIS CONTRACT.
- THE CONTRACTOR WILL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION OF THIS PROJECT. IN THE EVENT THAT SPECIAL EQUIPMENT IS REQUIRED TO WORK OVER AND AROUND THE UTILITIES, THE CONTRACTOR WILL BE REQUIRED TO FURNISH SUCH EQUIPMENT. THE COST OF PROTECTING UTILITIES FROM DAMAGE AND FURNISHING SPECIAL EQUIPMENT WILL BE INCLUDED IN THE PRICE BID FOR OTHER TERMS OF CONSTRUCTION.
- CONTRACTOR MUST MAINTAIN POSITIVE DRAINAGE AT ALL TIMES. DRAINAGE MUST NOT BE DIRECTED OFF-SITE UNLESS INDICATED ON THE PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MAINTAINING, & REMOVING ANY TEMPORARY FACILITIES NECESSARY TO ACCESS THE SITE, INCLUDING, BUT NOT LIMITED TO, FENCES, GATES, CULVERTS, GRANULAR, SILT FENCES, & TRAFFIC CONTROL DEVICES.
- ALL ACCESS WAYS MUST BE MAINTAINED TO A LEVEL THAT WILL PERMIT PASSAGE BY CP MAINTENANCE AND ENGINEERING VEHICLES AT ALL TIMES. CONTRACTOR MUST ERECT SITE SIGNAGE AS DIRECTED BY ENGINEER.
- THE CONTRACTOR MUST LIMIT MOVEMENT OF CONSTRUCTION TRAFFIC TO WITHIN THE CONSTRUCTION LIMITS. ANY AND ALL DAMAGE TO EXISTING FACILITIES (INCL. BUT NOT LIMITED TO FENCES, PAVEMENT, CULVERTS, ETC.) WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.
- THE CONTRACTOR MUST NOT REMOVE OR ADJUST ANY FENCES, NOR ENTER ADJACENT PROPERTIES WITHOUT THE APPROVAL OF THE ENGINEER.
- ALL RAILWAY SIGNS (EX. MILE MARKERS, SPEED SIGNS, EQUIPMENT DETECTOR SIGN, ETC.) THAT MUST BE REMOVED SHALL BE RE-INSTALLED OR STORED IMMEDIATELY, ALL TO THE SATISFACTIONS OF THE ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING ACCESS TO THE SITE INCLUDING THE INSTALLATION AND MAINTENANCE OF TEMPORARY GATES AT ALL CONSTRUCTION ACCESSES COMPETE WITH 2 SET OF LOCKS (ONE CONTRACTOR SET AND ONE PROVIDED TO CP).
- THE CONTRACTOR IS ADVISED THAT THERE ARE FIBRE OPTIC AND SIGNAL CABLES WITHIN THE MAINLINE RAIL CORRIDOR AND WITHIN THE CONSTRUCTION LIMITS. SPECIAL CARE MUST BE TAKEN TO ENSURE THAT THE CABLES ARE MARKED AND PROTECTED PER REQUIREMENTS (AS DESCRIBED IN THE SPECIFICATIONS).

TRACKWORK NOTES

- TRACK CENTRES LISTED ON DRAWINGS ARE NOMINAL DIMENSIONS. FOR EXACT TRACK LAYOUT REFER TO TRACK ALIGNMENT DATA.
- TRACK CURVES ARE DEFINED BY CHORD DEFINITION.
- NEW RAIL SHALL BE 136b RE CONTINUOUS WELDED RAIL. ALL SPECIAL TRACK WORK AND ALL TRACK CURVES ARE TO BE PREMIUM HEAD-HARDENED RAIL. INTERMEDIATE STRENGTH RAIL TO BE USED ELSEWHERE.

UTILITY NOTES

- THE COLLECTION AND DEPICTION OF INFORMATION SHOWN ON THIS DRAWINGS CONFORMS TO THE PROVISIONS OF CI/ ASCE 38-02, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA.
- THE BASE MAP WAS CREATED BASED UNDERHILL SURVEY RECEIVED ON 07/03/2020, AND IS SHOWN IN GREY. EXISTING SUBSURFACE UTILITY INFORMATION WAS GATHERED VIA PLACING BC ONE CALL AND REQUESTING MARKUPS FROM NON-BC ONE CALL MEMERS SUCH AS TELUS. THEY ARE SHOWN IN GREY.
- THE UTILITY INFORMATION IS PROVIDED FOR DESIGN PURPOSES ONLY.
- CONTRACTORS ARE REQUIRED TO OBTAIN THEIR OWN LOCATE DATA PRIOR TO ANY EXCAVATION.
- ALL UTILITY INFORMATION SHALL BE VERIFIED AND CONFIRMED ON SITE BY THE CONTRACTOR.
- ALL MILEAGES ARE APPROXIMATE.
- UTILITY OWNERS TO BE CONSULTED PRIOR TO FINALIZATION OF RELOCATION STRATEGY.

UTILITY QUALITY LEVEL:

- THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS WAS COLLECTED IN ACCORDANCE TO CI-ASCE 38-02 (STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUB-SURFACE DATA).

	UTILITY-QLB	- QUALITY LEVEL "B"
	UTILITY-QLC	- QUALITY LEVEL "C"
	UTILITY-QLD	- QUALITY LEVEL "D"

- THE INFORMATION IS SHOWN BY QUALITY LEVEL, AS DEFINED BELOW;

QUALITY LEVEL "D" - INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS

QUALITY LEVEL "C" - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE INFORMATION

QUALITY LEVEL "B" - INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHOD TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE UTILITIES

QUALITY LEVEL "A" - PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES

INCREASED QUALITY

CURVE DATA	
Δ = 00°30'00"	← CHANGE IN BEARING (DEGREES-MINUTES-SECONDS)
Dc = 00°30'00"	← DEGREE OF CURVE (DEGREES-MINUTES-SECONDS)
Ls,in = 53.34m	← LENGTH OF SPIRAL IN (m)
Ls,out = 40.35m	← LENGTH OF SPIRAL OUT (m)
Lc = 55.42m	← LENGTH OF CURVE (m)
R = 3492.76m	← RADIUS OF CURVE (m)
Ea = 0.63"	← SUPERELEVATION (inch)
V = 20mph	← FREIGHT TRACK SPEED (mph)



METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED

DESIGNED BY: T.J. DATE: 29-01-21	DRAWN BY: S.K. DATE: 29-01-21
CHECKED BY: J.C. DATE: 29-01-21	PROJECT MANAGER: K.M.M. DATE: 29-01-21
HATCH PROJECT No: H362379	DWG SIZE(FULL SIZE): N.T.S.

PROFESSIONAL SEALS

B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.
No.	DATE	REVISION	BY

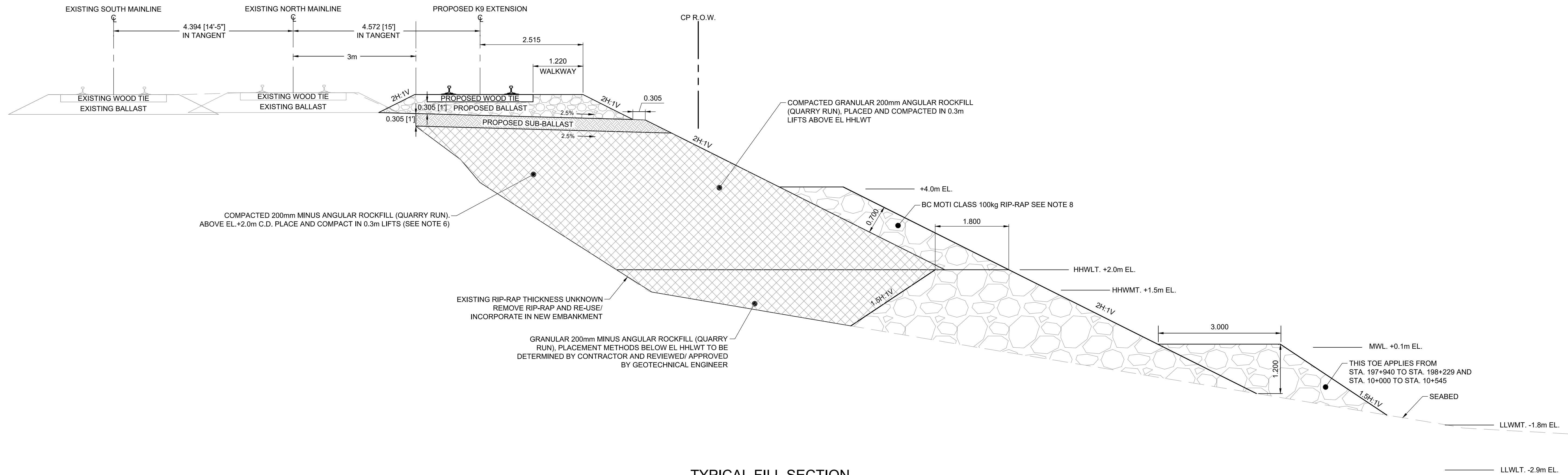


ENGINEERING PROJECTS - WEST

VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K9 TRACK EXTENSION
ABBREVIATIONS, LEGEND AND NOTES**

DWG. BY:	CHK BY:	KMM	OFFICE FILE:
MANAGER - DESIGN:		SCALE:	
M.FAVREAU DIR. PROJECT SERVICES WEST		DATE:	Rev.
		PLAN No.	B
		H362379-GA-100-S0-0003	



TYPICAL FILL SECTION

NOTES:

- EXISTING GROUND IS BASED ON UNDERHILL TOPOGRAPHIC SURVEY DRAWING V20008A-TOP002-U-R1, DATE: JULY 17, 2020.
- CONSTRUCTION OF THE EMBANKMENT WILL BE CARRIED OUT IN ACCORDANCE WITH AREMA GUIDELINES, IN PARTICULAR SECTION 1.3.7.5 PLACEMENT EMBANKMENT.
- CONSTRUCTION OF THE EMBANKMENT WILL BE CARRIED OUT IN GENERAL ACCORDANCE WITH MOTI STANDARD SPECIFICATIONS, IN PARTICULAR SECTION 201.36 ROCK EMBANKMENTS.
- ANY WEAK, DISTURBED, OR UNSUITED SOILS OR ORGANICS WITHIN EMBANKMENT FOOTPRINT TO BE COMPLETELY STRIPPED AND REPLACED WITH STRUCTURAL EMBANKMENT FILLS (APPROXIMATE 1.5m DEPTH, EAST OF PARKLAND REFINERY).
- NEW EMBANKMENT SHOULD BE KEYED INTO THE EXISTING EMBANKMENT SIDE SLOPE USING CUT IN STEPS OF NOT MORE THAN 0.3m VERTICALLY IMMEDIATELY BEFORE PLACEMENT OF EACH LIFT OF EMBANKMENT FILL.
- SURFACE WATER SHOULD BE PRACTICABLY DIRECTED AWAY FROM THE FOOTPRINT OF THE PROPOSED EMBANKMENT EXTENSION PRIOR TO CONSTRUCTION.
- FOR ABOVE HHWLT, FILL FOR THE NEW EMBANKMENT SHOULD BE PLACED IN LAYERS OF NO MORE THAN 0.3m THICKNESS AND COMPACTED TO 98% SPMD
- FOR LIFTS BELOW EL. 2.0m, EACH LAYER SHALL BE COMPACTED BY ROUTING THE LOADING CONSTRUCTION EQUIPMENT OVER THE ENTIRE WIDTH SUPPLEMENTED WITH ADDITIONAL COMPACTION EQUIPMENT, AS NECESSARY TO ENSURE COMPACTION IS A UNIFORM, STABLE EMBANKMENT IS ACHIEVED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- THE ROCKFILL SURFACE VOIDS SHALL BE FILLED AND SURFACE SHALL BE APPROVED BY ENGINEER PRIOR TO THE PLACEMENT OF SUB-BALLAST.
- THE TEMPORARY SLOPE EXCAVATION SHALL BE SPECIFIED BY CONTRACTOR. MAXIMUM ALLOWABLE TEMPORARY EXCAVATION SHALL NOT AFFECT RAILROAD ZONE OF INFLUENCE. CONTRACTOR MUST EXCAVATE SLOPE IN A SAFE WAY THAT DOES NOT COMPRISE THE INTEGRITY AND STABILITY OF EXISTING SLOPE AND CP MAIN NORTH TRACK.
- CONTRACTOR SHOULD ESTABLISH SURVEY LOCATIONS ALONG THE CP MAIN NORTH TRACK AND MONITOR FOR DEFECTS DAILY UNTIL THE COMPLETION OF THE SIDING TRACK BASED ON TECHNICAL SPECIFICATIONS.

DESIGN CRITERIA:

- TRAIN SURCHARGE PRESSURE = 106 kPa.
- WAVE LOADING = 1:100 YEAR RETURN PERIOD.
- STATIC AND REQUIREMENTS (FoS) IN ACCORDANCE WITH THE CANADIAN DAM ASSOCIATION (CDA 2007, 2013 Revision):
- STATIC - LONG TERM: 1.5
- | TIDES | VANCOUVER HARBOUR m CD | ELEVATIONS m GEODETTIC |
|-------|------------------------|------------------------|
| HHW | 5.6 | 2.6 |
| HHWLT | 5.0 | 2 |
| HHWMT | 4.5 | 1.5 |
| MWL | 3.1 | 0.1 |
| LLWMT | 1.2 | -1.8 |
| LLWLT | 0.1 | -2.9 |
| LLW | -0.3 | -3.3 |
- PEAK SURFACE CURRENT VELOCITIES:
- EBB TIDE = 2.5 kn (APPROX.)
- FLOOD TIDE = 1.5 kn (APPROX.)
- DATUM:
- ELEVATIONS ARE SHOWN IN GEODETTIC DATUM (U.N.O.)
- CHART DATUM IS 2.975m BELOW GEODETTIC DATUM

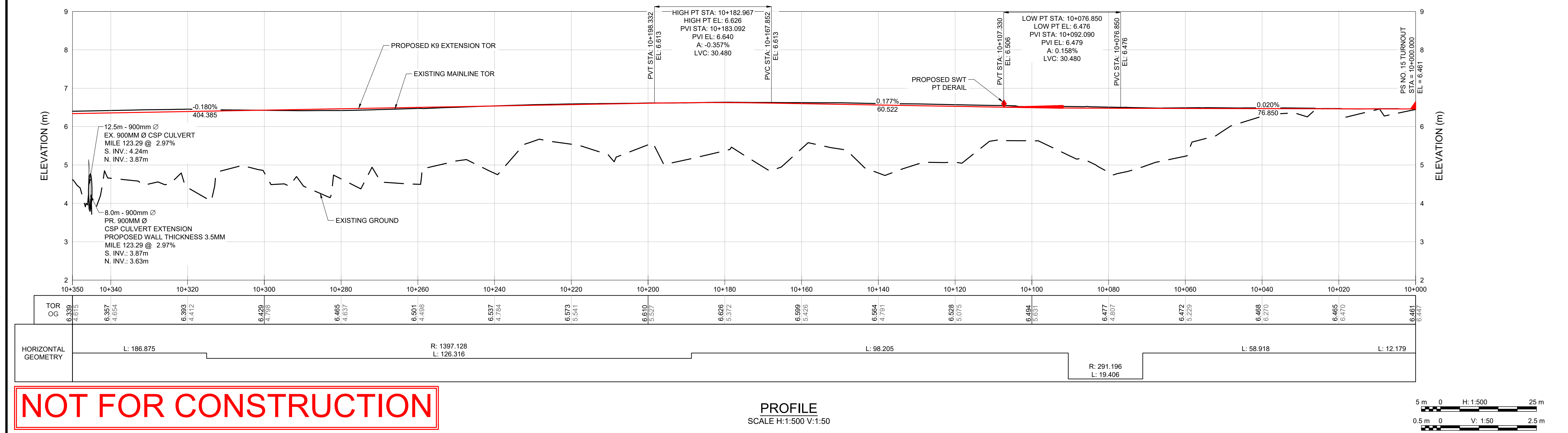
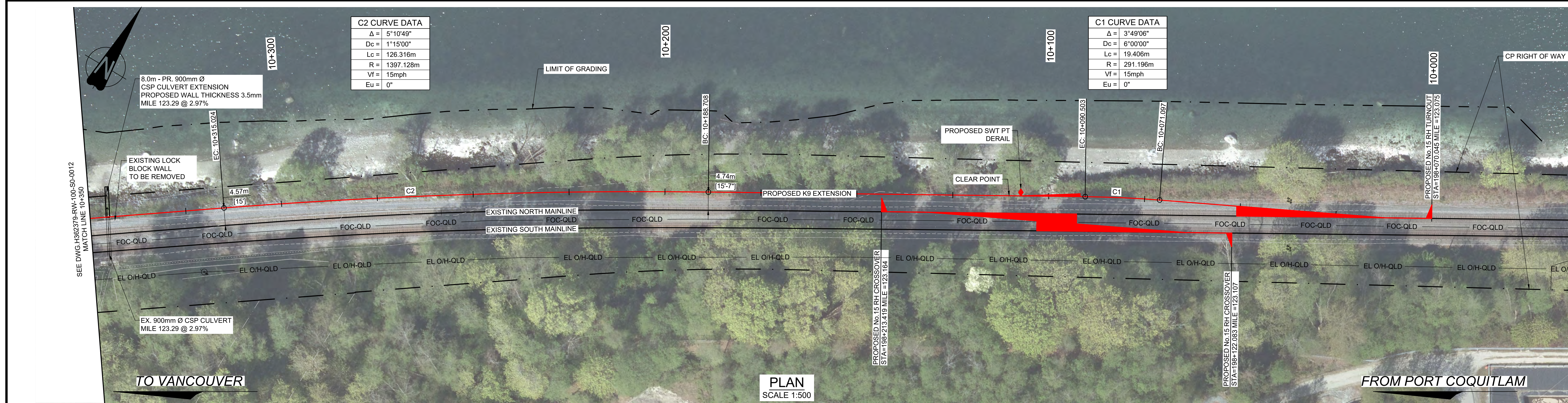
LEGEND:

- GRANULAR 200mm MINUS ANGULAR ROCKFILL (QUARRY RUN)
- RIP-RAP (BC MOTI CLASS 100 kg)
- SUB-BALLAST
- BALLAST

NOT FOR CONSTRUCTION

Mor 17, 2021, 4:34pm
 Login name: KIM79037
 Drawing Name: C:\pwworking\kim79037\p0693336\H362379-RW-100-S0-0001.dwg

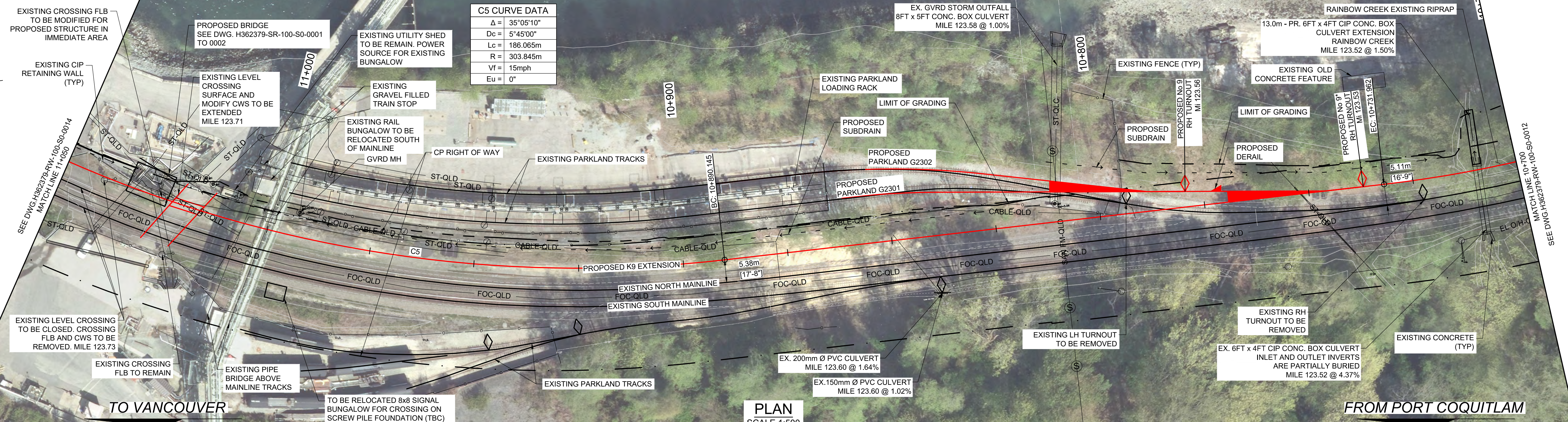
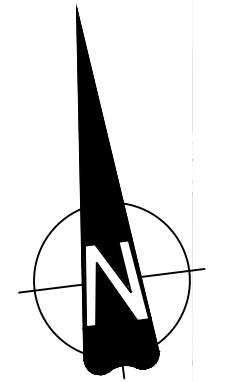
<p>METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED</p> <p>DESIGNED BY: T.I. DATE: 29-01-21 DRAWN BY: S.K. DATE: 29-01-21 CHECKED BY: J.C. DATE: 29-01-21 PROJECT MANAGER: K.M.M. DATE: 29-01-21</p> <p>HATCH PROJECT No: H362379 DWG SCALE(FULL SIZE): 1:50</p>	<p>PROFESSIONAL SEALS</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">No.</td> <td style="width: 15%;">DATE</td> <td style="width: 60%;">REVISION</td> <td style="width: 10%;">BY</td> </tr> <tr> <td>B</td> <td>29-01-21</td> <td>REISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> <tr> <td>A</td> <td>13-11-20</td> <td>ISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> </table>	No.	DATE	REVISION	BY	B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.	<p>ENGINEERING PROJECTS - EAST</p>	<p>VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION</p> <p>CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION TYPICAL FILL SECTION</p> <p>DWG. BY: T.I. CHK BY: S.K. OFFICE FILE: H362379-RW-100-S0-0001 SCALE: 1:50 MANAGER - DESIGN: M.FAVREAU DATE: 29-01-21 DIR. PROJECT SERVICES WEST H362379-RW-100-S0-0001</p> <p style="text-align: right;">Rev. B</p>
No.	DATE	REVISION	BY													
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.													
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.													



NOT FOR CONSTRUCTION

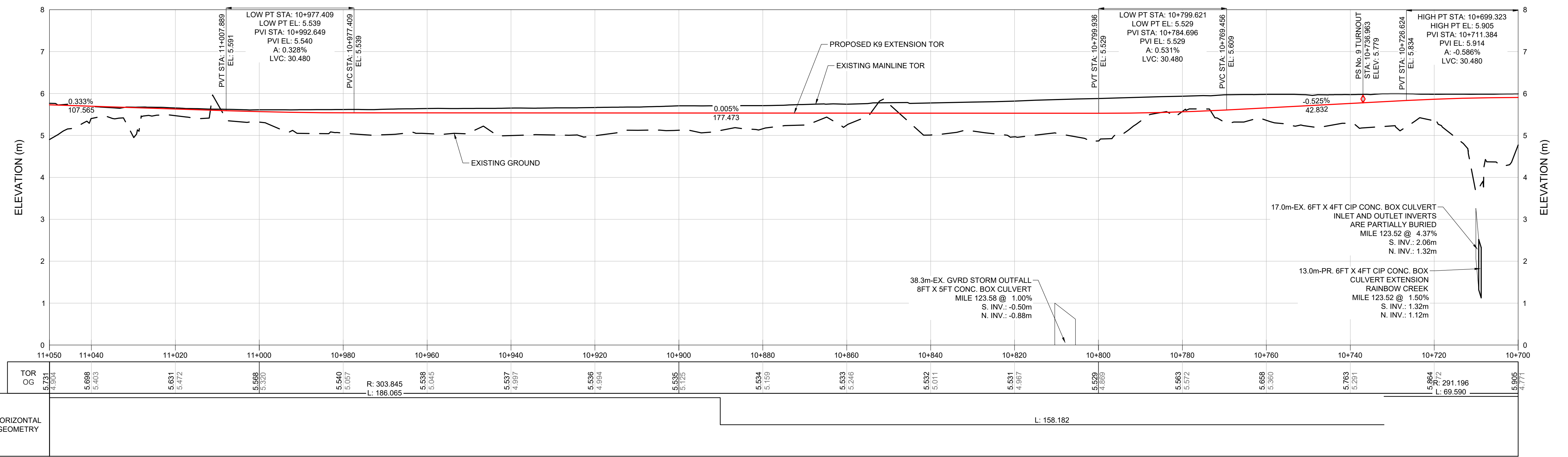
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 Drawing Name: C:\pwworking\kim79037\p0693336\H362379-RW-100-S0-0011 - 0016.dwg

<p>HATCH</p> <p>METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED</p> <p>DESIGNED BY: T.I. DATE: 19-03-21 CHECKED BY: J.C. DATE: 19-03-21 HATCH PROJECT No: H362379 DWG SCALE(FULL SIZE): 1:500</p>	PROFESSIONAL SEALS 	<table border="1" style="width:100%; border-collapse: collapse;"> <tr><td style="width:50%;">C</td><td style="width:50%;">19-03-21</td><td style="width:50%;">REISSUED FOR 30% DESIGN REVIEW</td><td style="width:50%;">T.I.</td></tr> <tr><td>B</td><td>29-01-21</td><td>REISSUED FOR 30% DESIGN REVIEW</td><td>T.I.</td></tr> <tr><td>A</td><td>13-11-20</td><td>ISSUED FOR 30% DESIGN REVIEW</td><td>T.I.</td></tr> <tr><td>No.</td><td>DATE</td><td>REVISION</td><td>BY</td></tr> </table>	C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.	No.	DATE	REVISION	BY	<p>ENGINEERING PROJECTS - EAST</p>	<p>VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION</p> <p>CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION PLAN AND PROFILE STA.10+000 TO 10+350</p> <p>DWG. BY: M.F. CHK BY: KMM OFFICE FILE: H362379-RW-100-S0-0011 MANAGER - DESIGN: M.FAVREAU DIR. PROJECT SERVICES WEST DATE: SCALE: PLAN No. Rev. C</p>
	C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.I.																
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.																	
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.																	
No.	DATE	REVISION	BY																	



C5 CURVE DATA

Δ =	35°05'10"
Dc =	5'45'00"
Lc =	186.065m
R =	303.845m
Vf =	15mph
Eu =	0°

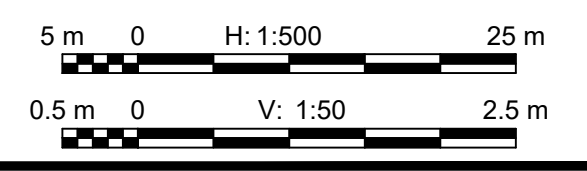


STATION	TOR	OG	HORIZONTAL GEOMETRY
11+050	5.731	4.904	
11+040	5.698	5.403	
11+020	5.631	5.472	
11+000	5.568	5.520	
10+980	5.540	5.057	R: 303.845 L: 186.065
10+960	5.538	5.045	
10+940	5.537	4.997	
10+920	5.536	4.994	
10+900	5.535	5.125	
10+880	5.534	5.159	
10+860	5.533	5.246	
10+840	5.532	5.011	
10+820	5.531	4.967	
10+800	5.529	4.869	L: 158.182
10+780	5.563	5.572	
10+760	5.668	5.360	
10+740	5.763	5.291	
10+720	5.864	4.772	
10+700	5.905	4.771	

NOT FOR CONSTRUCTION

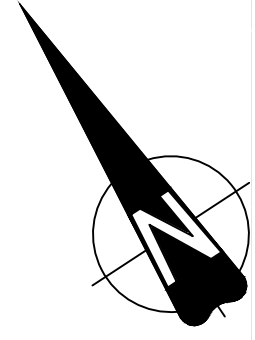
PROFILE
SCALE H:1:500 V:1:50

NOTE:
1. ASSUMED CLASS II SET BACK REQUIREMENT FOR FLAMMABLE LIQUID HANDLING OF MINIMUM 30FT FROM K9 TO PARKLAND UNLOADING TRACKS. THIS IS TO BE CONFIRMED WITH PARKLAND.

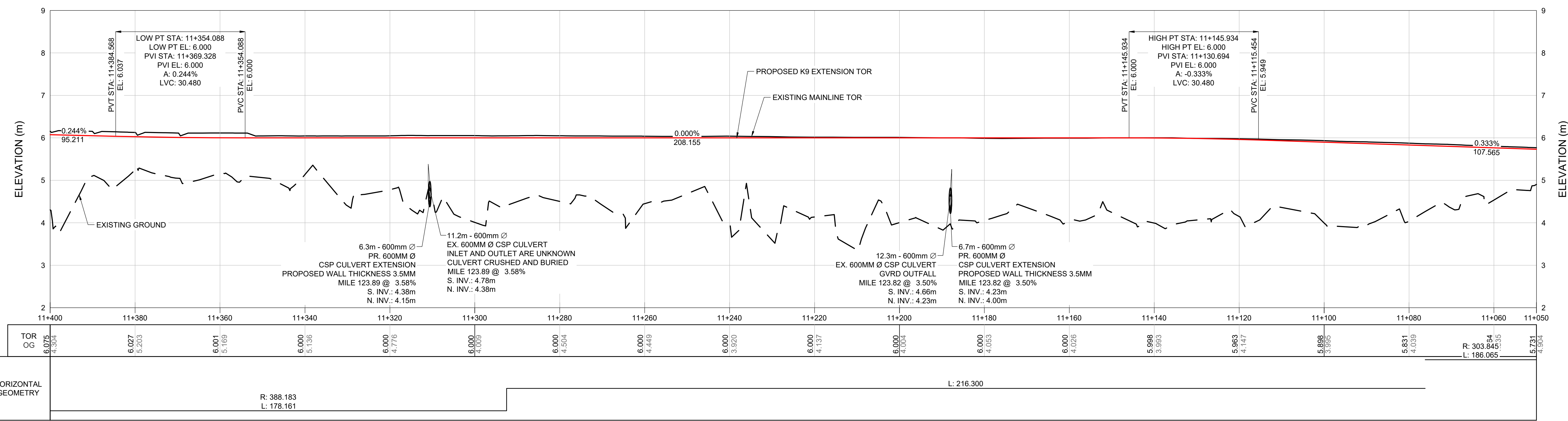


Mar 17, 2021, 4:30pm Login name: KIM79037
 Drawing Name: C:\pwworking\hatch\kim79037\0693336\H362379-RW-100-S0-0011 - 0016.dwg

 METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED DESIGNED BY: T.J. DATE: 19-03-21 CHECKED BY: J.C. DATE: 19-03-21 HATCH PROJECT No: H362379 DWG SCALE(FULL SIZE): 1:500	PROFESSIONAL SEALS		 ENGINEERING PROJECTS - EAST	VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION PLAN AND PROFILE STA.10+700 TO 11+050			
	DATE: 19-03-21 PROJECT MANAGER: K.M.M. DATE: 19-03-21	DATE: 19-03-21 PROJECT MANAGER: K.M.M. DATE: 19-03-21		DWG. BY: M.FAVREAU DIR. PROJECT SERVICES WEST	CHK. BY: M.FAVREAU DIR. PROJECT SERVICES WEST	OFFICE FILE: H362379-RW-100-S0-0013 SCALE: 1:500 DATE: 19-03-21 PLAN No. H362379-RW-100-S0-0013	Rev. B
	13-11-20 ISSUED FOR 30% DESIGN REVIEW	19-03-21 REISSUED FOR 30% DESIGN REVIEW		T.I. T.I. BY	T.I. T.I. BY	T.I. T.I. BY	T.I. T.I. BY

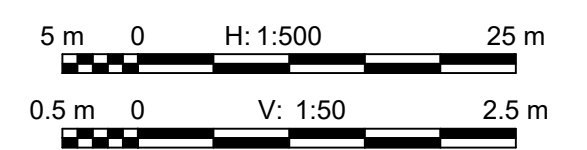


C6 CURVE DATA	
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Dc =	4°30'00"
Lc =	178.161m
R =	388.183m
Vf =	15mph
Eu =	0"



NOT FOR CONSTRUCTION

PROFILE
SCALE H:1:500 V:1:50



Mar 17, 2021, 4:30pm Login name: KIM79037
 Drawing Name: C:\pwworking\hatch\kim79037\h362379-RW-100-S0-0011 - 0016.dwg

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

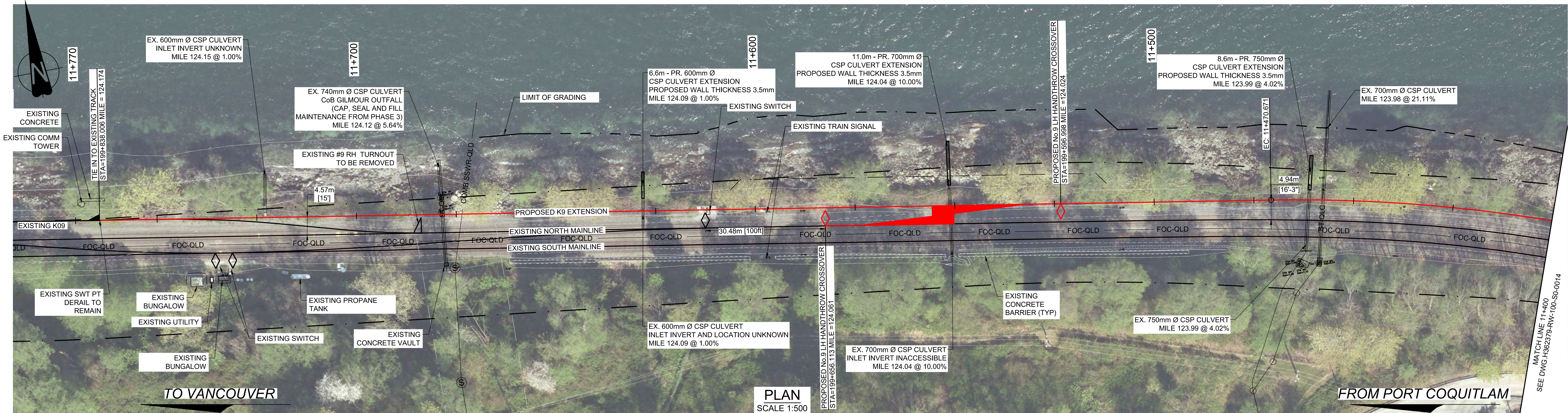
DESIGNED BY: T.J. DATE: 19-03-21	DRAWN BY: S.K. DATE: 19-03-21
CHECKED BY: J.C. DATE: 19-03-21	PROJECT MANAGER: K.M.M. DATE: 19-03-21
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:500

PROFESSIONAL SEALS			
No.	DATE	REVISION	BY

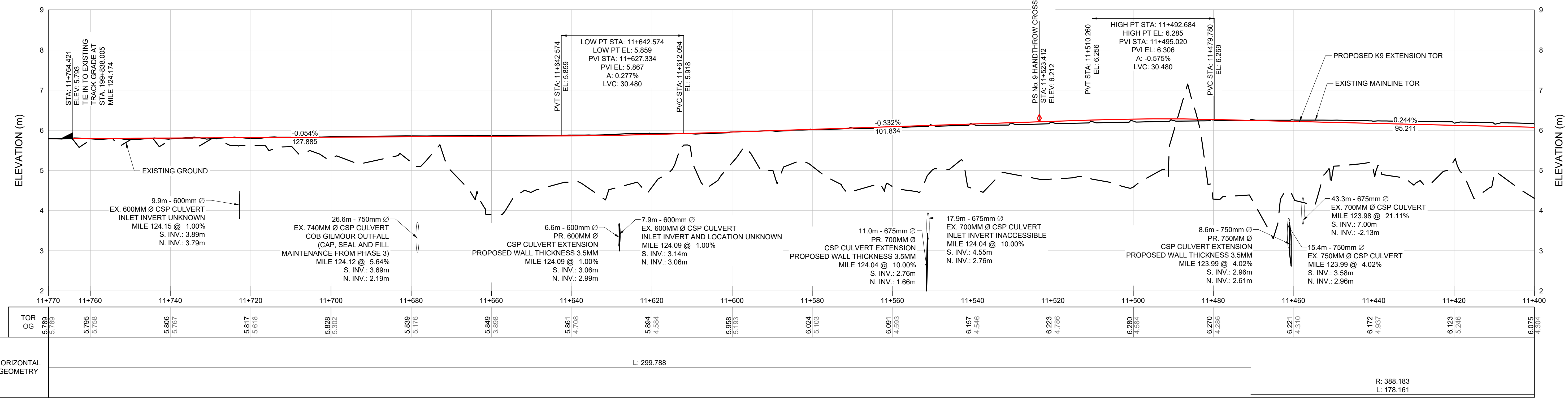
No.	DATE	REVISION	BY
C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.L.
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.L.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.L.

ENGINEERING PROJECTS - EAST

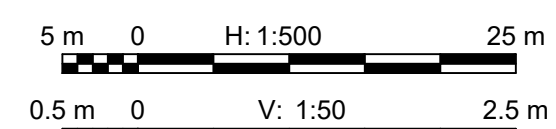
VANCOUVER DIVISION		MILE 123.07 TO 124.17 CASCADE SUBDIVISION	
CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION PLAN AND PROFILE STA.11+050 TO 11+400			
DWG. BY:	CHK BY: KMM	OFFICE FILE:	
MANAGER - DESIGN:		SCALE:	
M.FAVREAU DIR. PROJECT SERVICES WEST		DATE: PLAN No.	Rev. C
		H362379-RW-100-S0-0014	



PLAN
SCALE 1:500



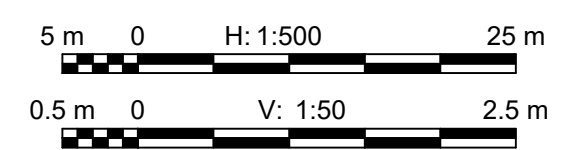
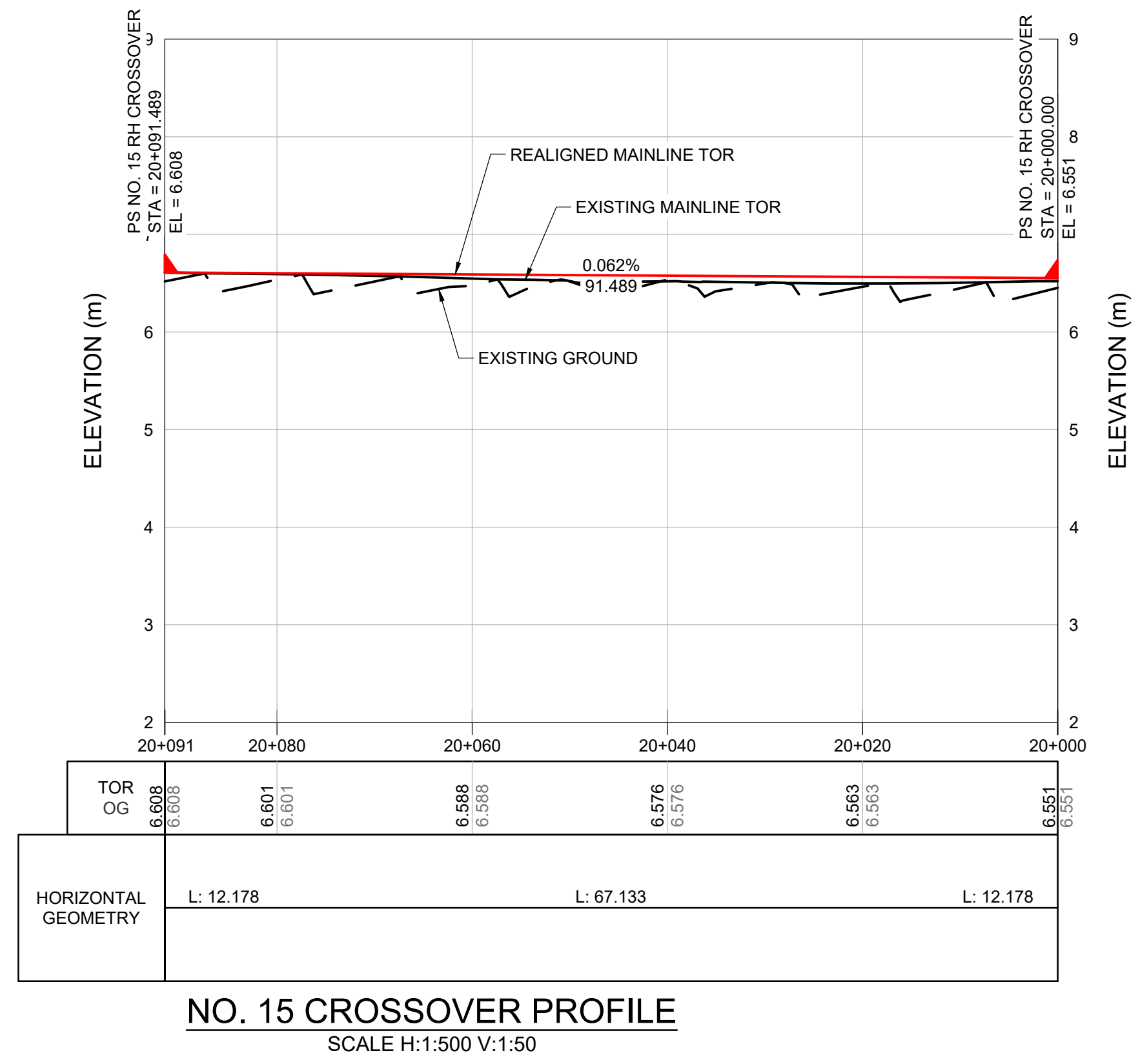
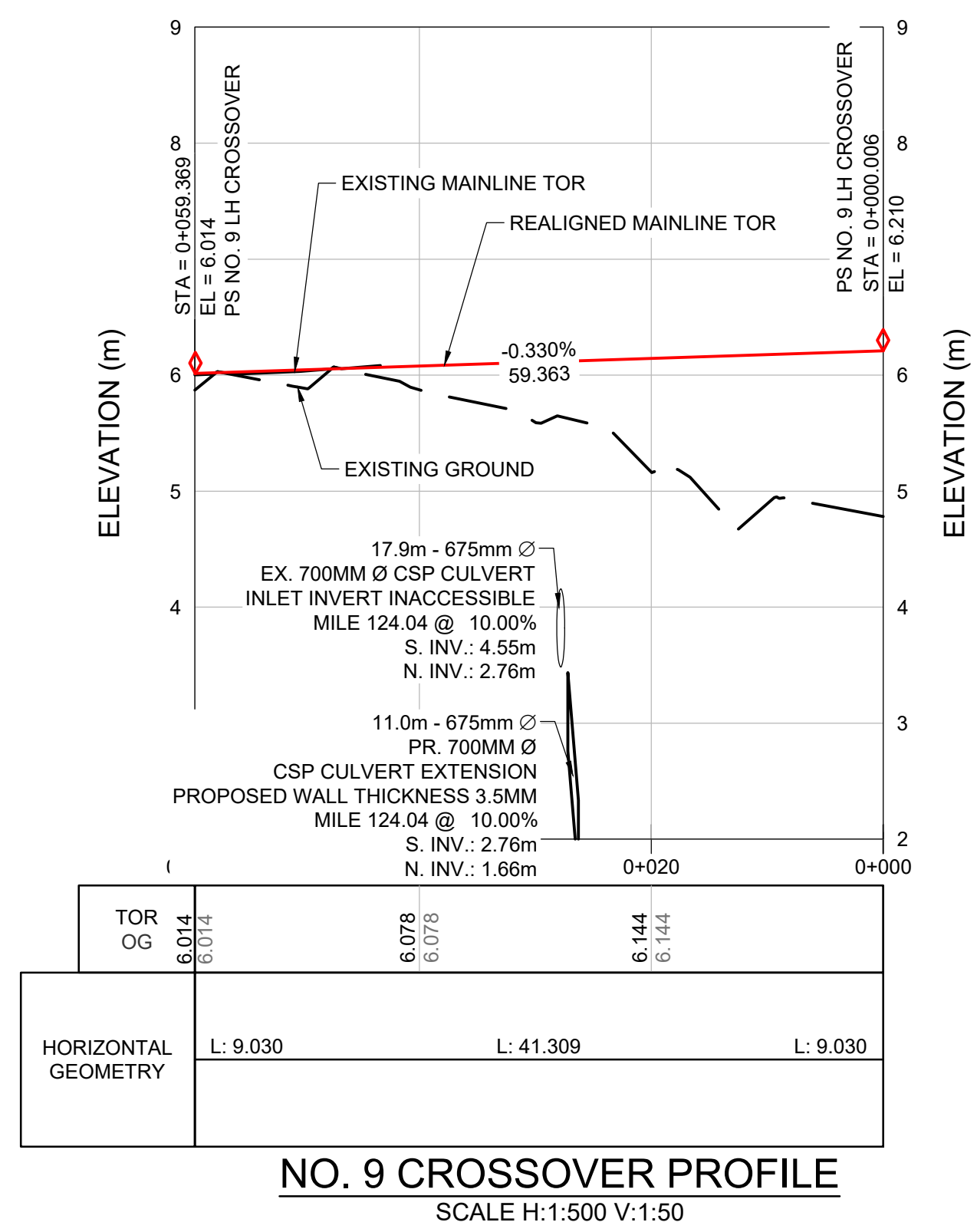
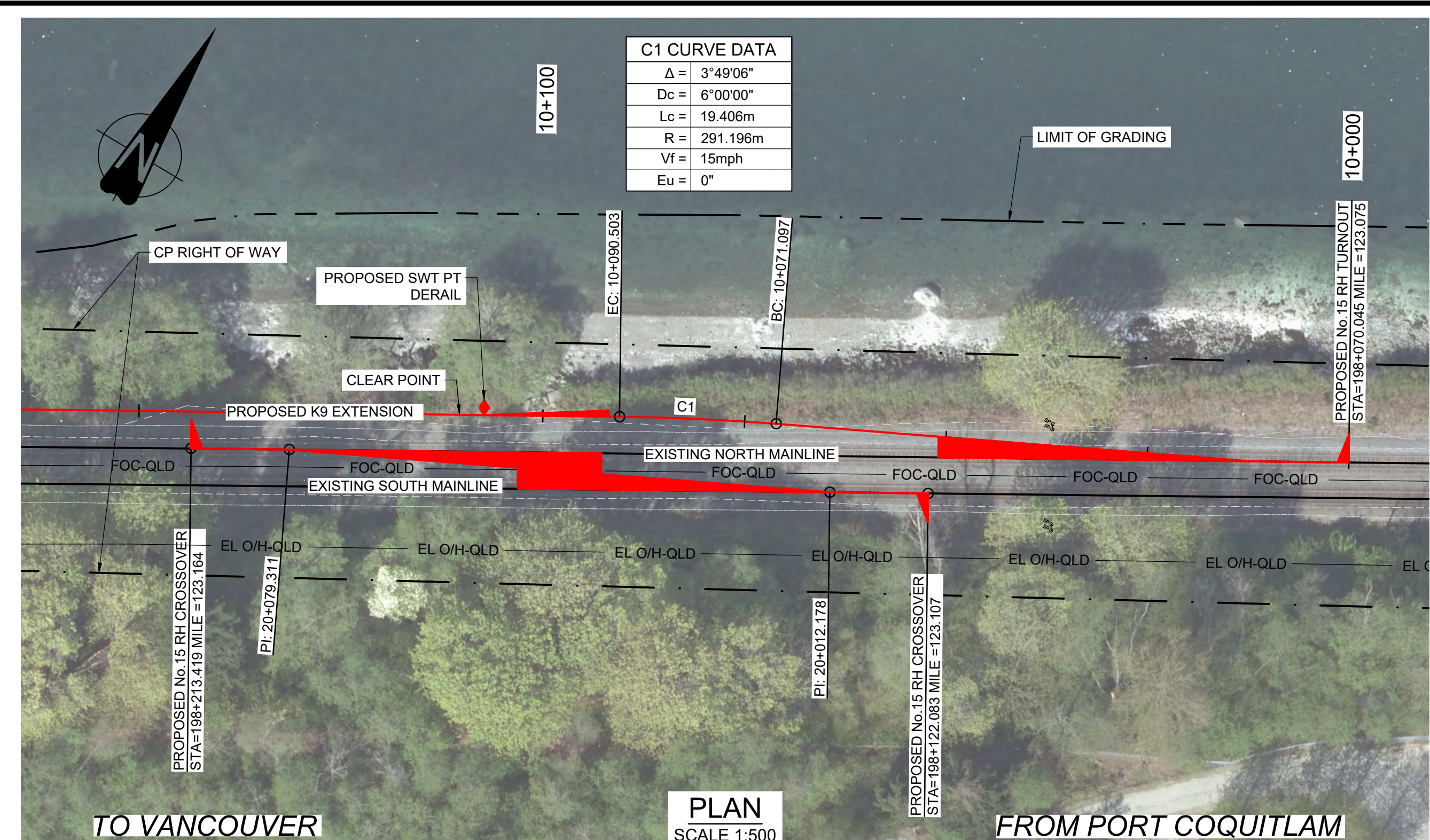
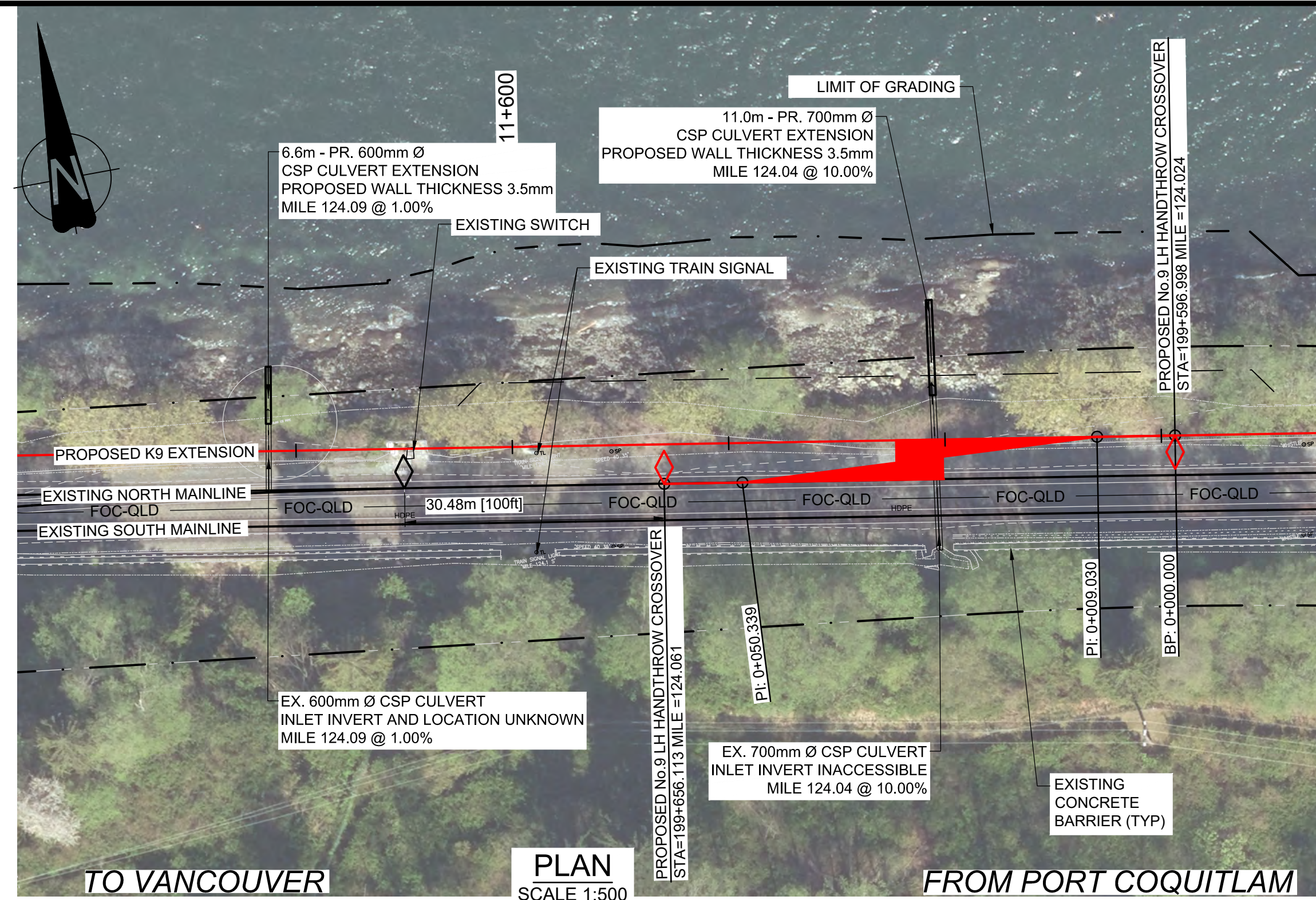
PROFILE
SCALE H:1:500 V:1:50



NOT FOR CONSTRUCTION

Mar 17, 2021, 4:31 pm Login name: KIM79037
 Drawing Name: C:\pwworking\kim79037\dwg\h362379-RW-100-S0-0011 - 0016.dwg

 HATCH METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED DESIGNED BY: T.J. DATE: 19-03-21 CHECKED BY: J.C. DATE: 19-03-21 HATCH PROJECT No: H362379 DWG SCALE(FULL SIZE): 1:500	PROFESSIONAL SEALS 	 ENGINEERING PROJECTS - EAST	VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION CASCADIA EAST EXTENSION - PHASE 4 PROPOSED K9 TRACK EXTENSION PLAN AND PROFILE STA.11+400 TO 11+764.421																										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">C</td> <td style="width: 50%;">19-03-21</td> <td style="width: 25%;">REISSUED FOR 30% DESIGN REVIEW</td> <td style="width: 10%;">T.I.</td> </tr> <tr> <td>B</td> <td>29-01-21</td> <td>REISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> <tr> <td>A</td> <td>13-11-20</td> <td>ISSUED FOR 30% DESIGN REVIEW</td> <td>T.I.</td> </tr> <tr> <td>No.</td> <td>DATE</td> <td>REVISION</td> <td>BY</td> </tr> </table>		C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.	A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.	No.	DATE	REVISION	BY	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">DWG. BY:</td> <td style="width: 25%;">CHK BY: KMM</td> <td style="width: 25%;">OFFICE FILE:</td> <td style="width: 25%;"></td> </tr> <tr> <td colspan="2">MANAGER - DESIGN:</td> <td>DATE:</td> <td>SCALE:</td> </tr> <tr> <td>M.FAVREAU DIR. PROJECT SERVICES WEST</td> <td></td> <td>H362379-RW-100-S0-0015</td> <td>Rev. C</td> </tr> </table>	DWG. BY:	CHK BY: KMM	OFFICE FILE:		MANAGER - DESIGN:		DATE:	SCALE:	M.FAVREAU DIR. PROJECT SERVICES WEST	
C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.I.																										
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.																										
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No.	DATE	REVISION	BY																										
DWG. BY:	CHK BY: KMM	OFFICE FILE:																											
MANAGER - DESIGN:		DATE:	SCALE:																										
M.FAVREAU DIR. PROJECT SERVICES WEST		H362379-RW-100-S0-0015	Rev. C																										



NOT FOR CONSTRUCTION

Mar 17, 2021, 4:31 pm Login Name: KIM79037
 Drawing Name: C:\pwworking\hatch\362379-RW-100-S0-0011 - 0016.dwg

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

DESIGNED BY: T.J. DATE: 19-03-21
 DRAWN BY: S.K. DATE: 19-03-21
 CHECKED BY: J.C. DATE: 19-03-21
 PROJECT MANAGER: K.M.M.
 DATE: 19-03-21

HATCH PROJECT No: **H362379**
 DWG SCALE(FULL SIZE): **1:500**

PROFESSIONAL SEALS

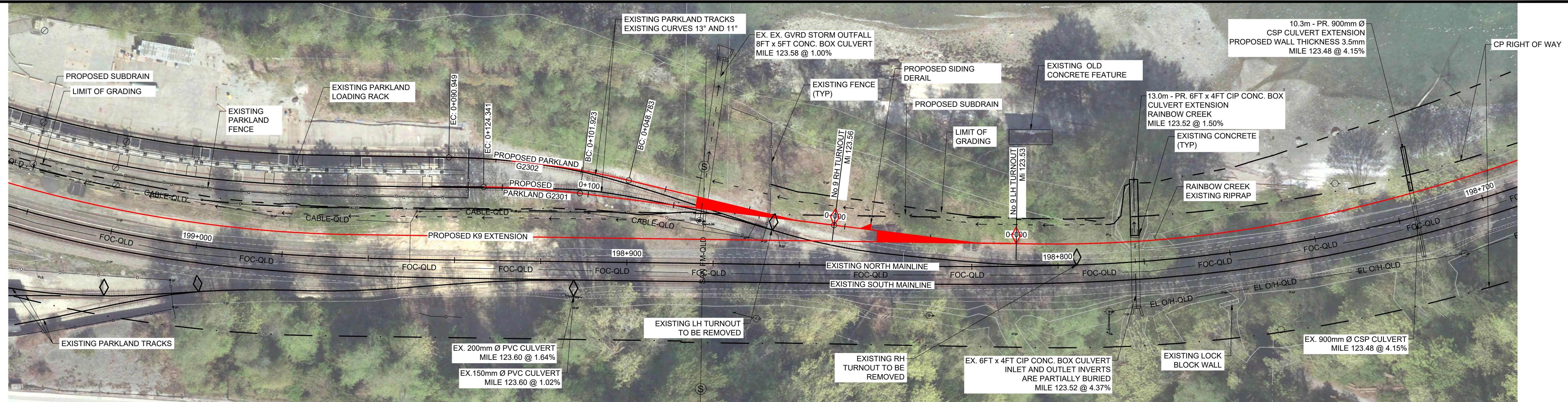
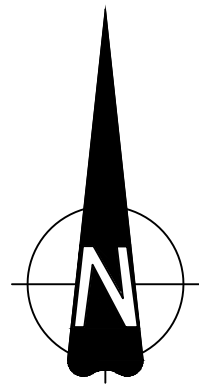
No.	DATE	REVISION	BY
C	19-03-21	REISSUED FOR 30% DESIGN REVIEW	T.J.
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.J.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.J.



VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED CROSSOVERS
PLAN AND PROFILE**

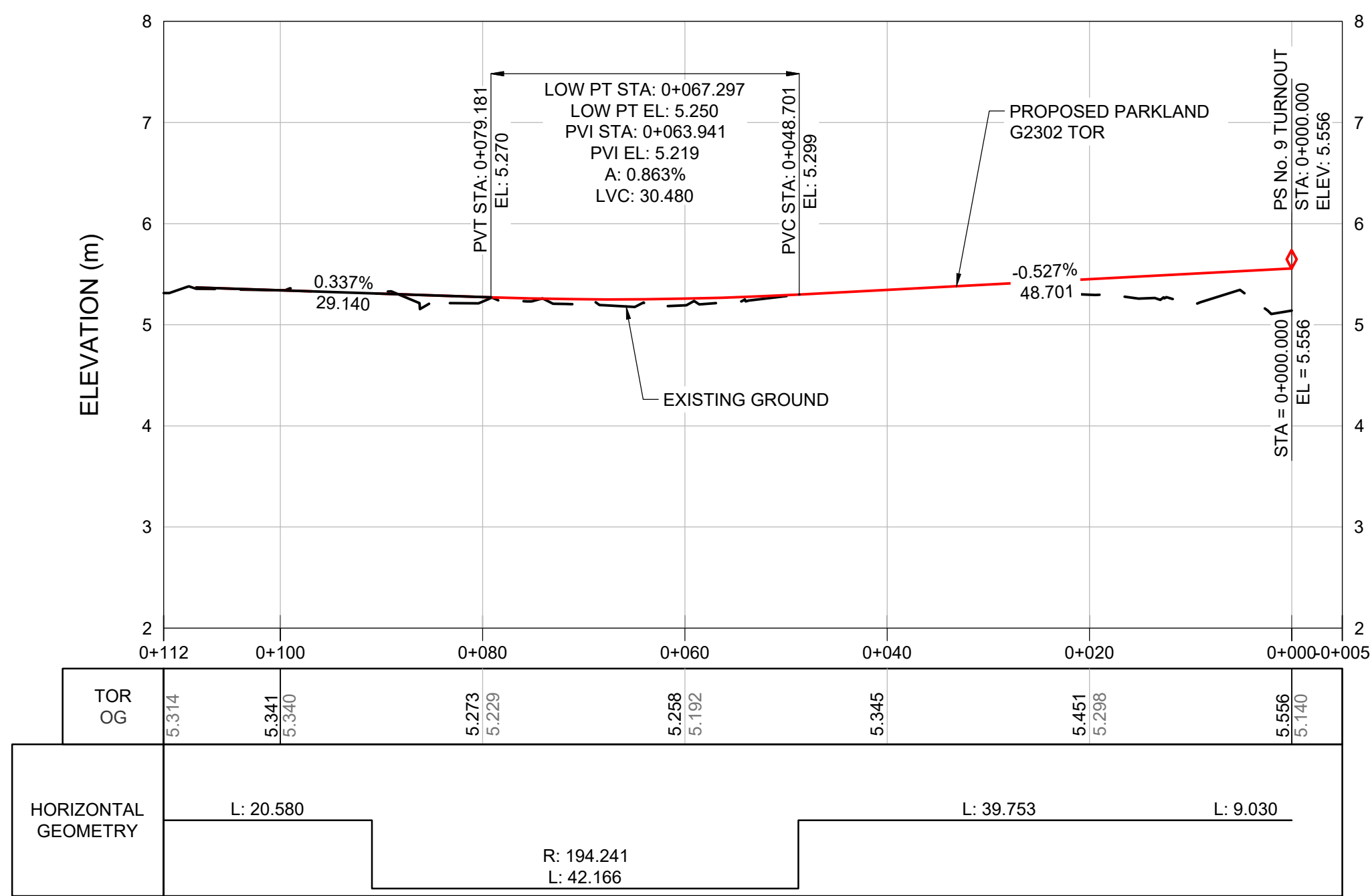
DWG. BY: M.F. DIR. PROJECT SERVICES WEST
 CHK BY: KMM
 OFFICE FILE: H362379-RW-100-S0-0016
 SCALE: Rev. C



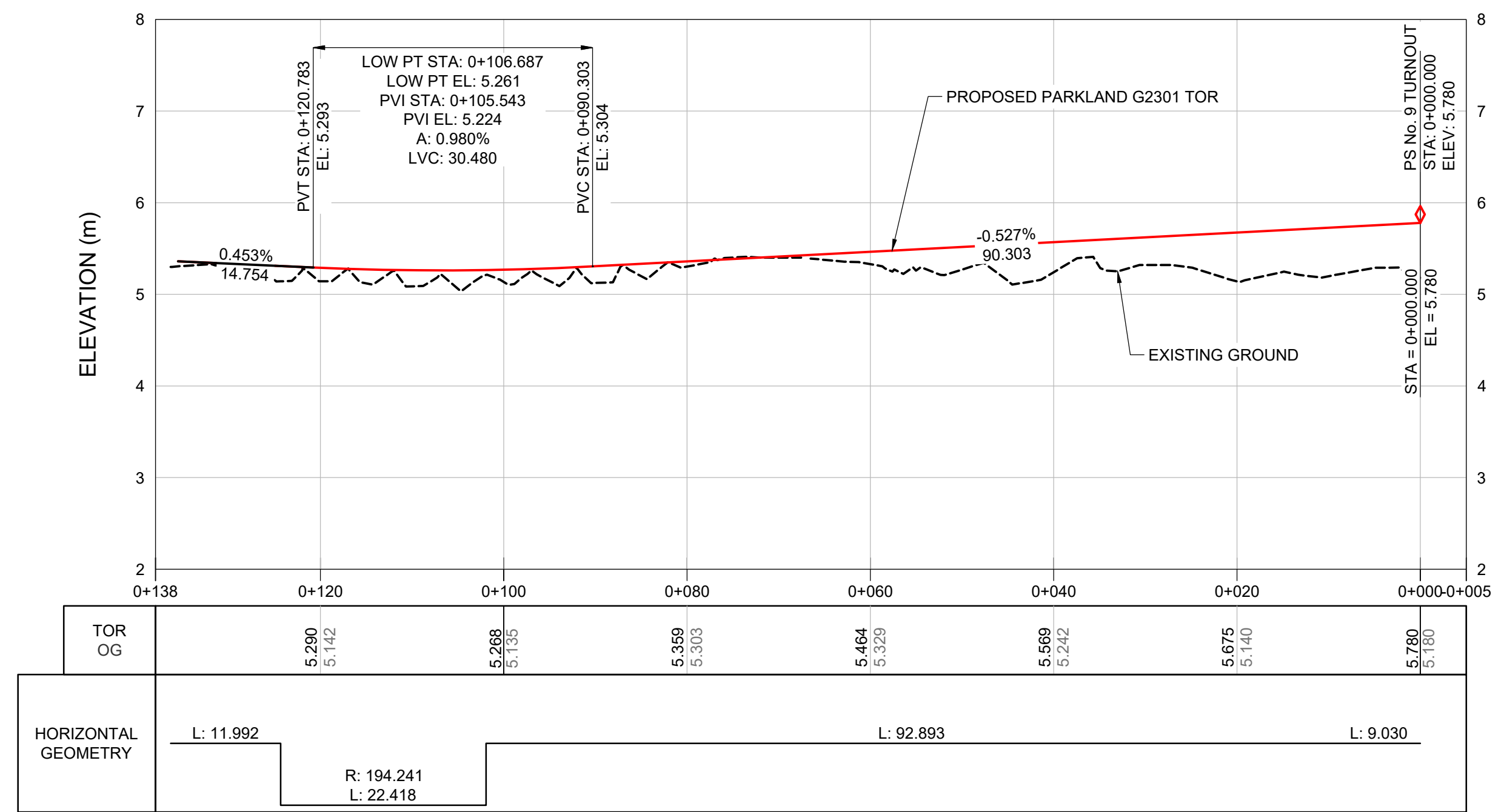
TO VANCOUVER

PLAN
SCALE 1:500

FROM PORT COQUITLAM

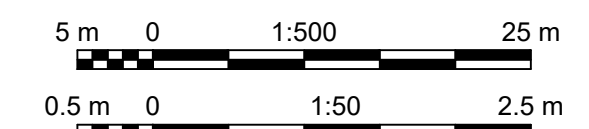


PROPOSED PARKLAND G2302 PROFILE
SCALE H:1:500 V:1:50



PROPOSED PARKLAND G2301 PROFILE
SCALE H:1:500 V:1:50

NOT FOR CONSTRUCTION



Mar 17, 2021, 4:33pm Login name: KIM79037
 Drawing Name: C:\pwworking\hatch\362379-RW-100-S0-0017.dwg

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

DESIGNED BY: T.J. DATE: 13-11-20	DRAWN BY: S.K. DATE: 13-11-20
CHECKED BY: J.C. DATE: 13-11-20	PROJECT MANAGER: K.M.M. DATE: 13-11-20
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:500

PROFESSIONAL SEALS

No.	DATE	REVISION	BY
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.L.

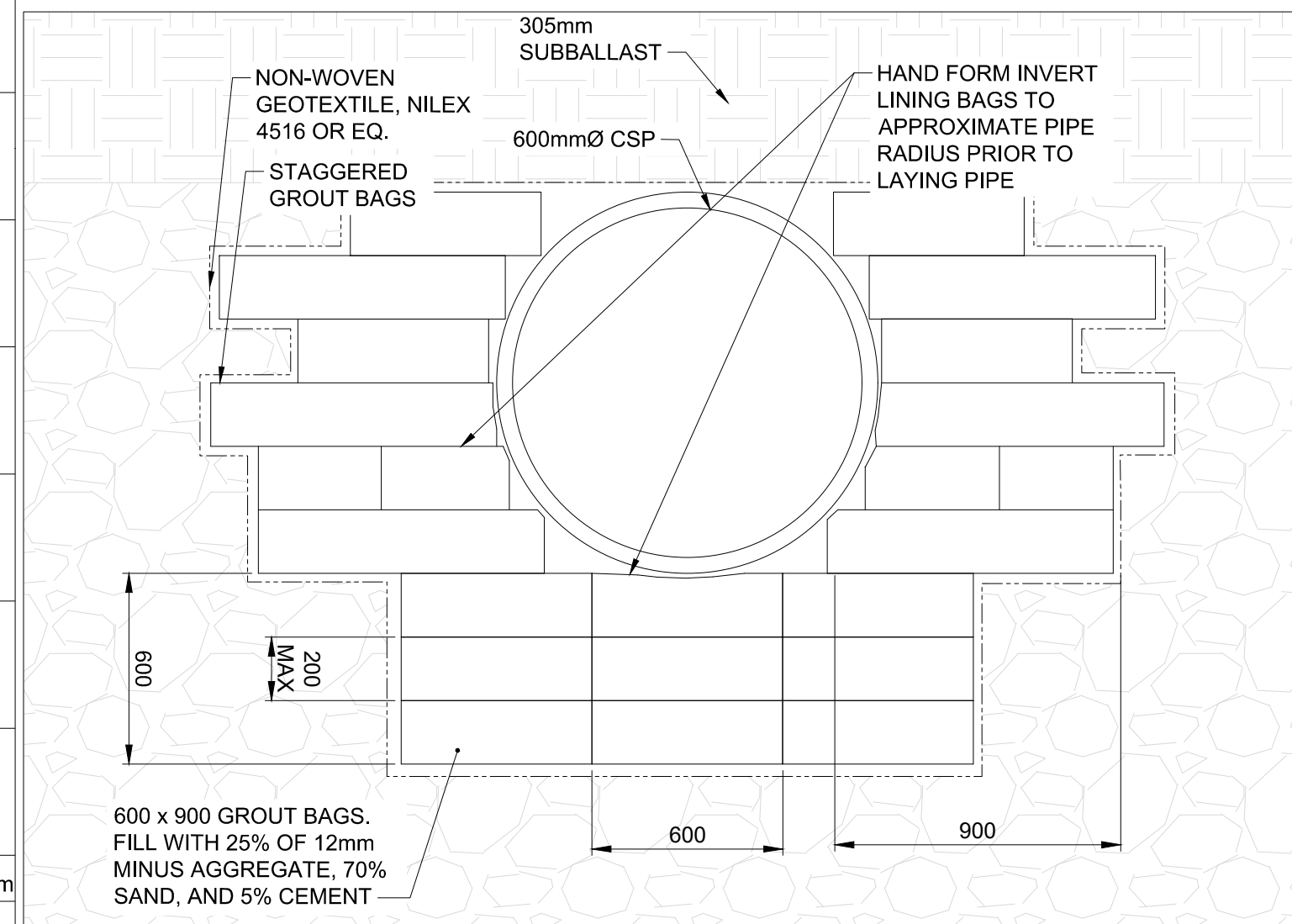
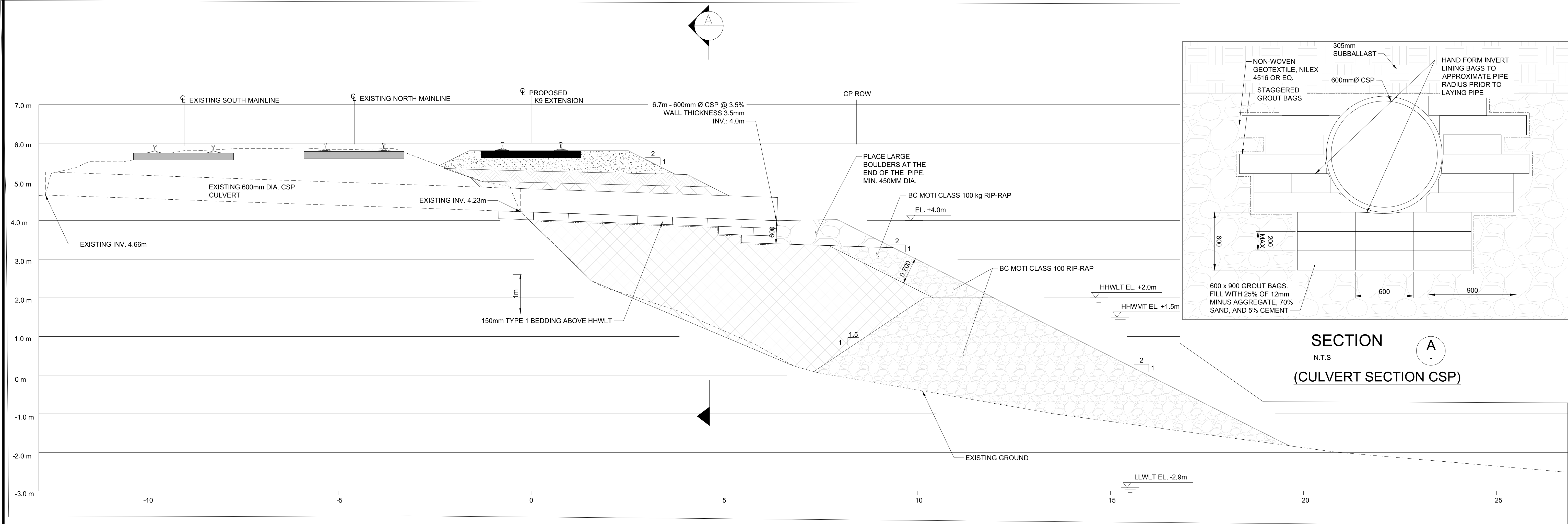
CP

ENGINEERING PROJECTS - EAST

VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED PARKLAND TRACKS
PLAN AND PROFILE**

DWG. BY:	CHK BY:	OFFICE FILE:
MANAGER - DESIGN:	DATE:	SCALE:
M.FAVREAU DIR. PROJECT SERVICES WEST	13-11-20	H362379-RW-100-S0-0017
	PLAN No.	Rev.
		A



SECTION A
N.T.S.
(CULVERT SECTION CSP)

STA. 11+053.594 CULVERT 8 - TYPICAL SECTION

NOT FOR CONSTRUCTION

Mar 17, 2021, 4:38pm Login name: KM79037 Drawing Name: C:\pwworking\hatch\km79037\0663629\H362379-CV-100-S0-0001.dwg

LEGEND:

- GRANULAR FILTER
- 200mm MINUS ANGULAR ROCKFILL (QUARRY RUN)
- RIP-RAP (BC MOTI CLASS 100 kg)
- SUB-BALLAST

Scale: 1:50

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

DESIGNED BY: T.I.	DRAWN BY: T.I.
DATE: 29-01-21	DATE: 29-01-21
CHECKED BY: J.C.	PROJECT MANAGER: K.M.M.
DATE: 29-01-21	DATE: 29-01-21

HATCH PROJECT No: **H362379** DWG SCALE(FULL SIZE): **1:50**

PROFESSIONAL SEALS

No.	DATE	REVISION	BY
B	29-01-21	REISSUED FOR 30% DESIGN REVIEW	T.I.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.

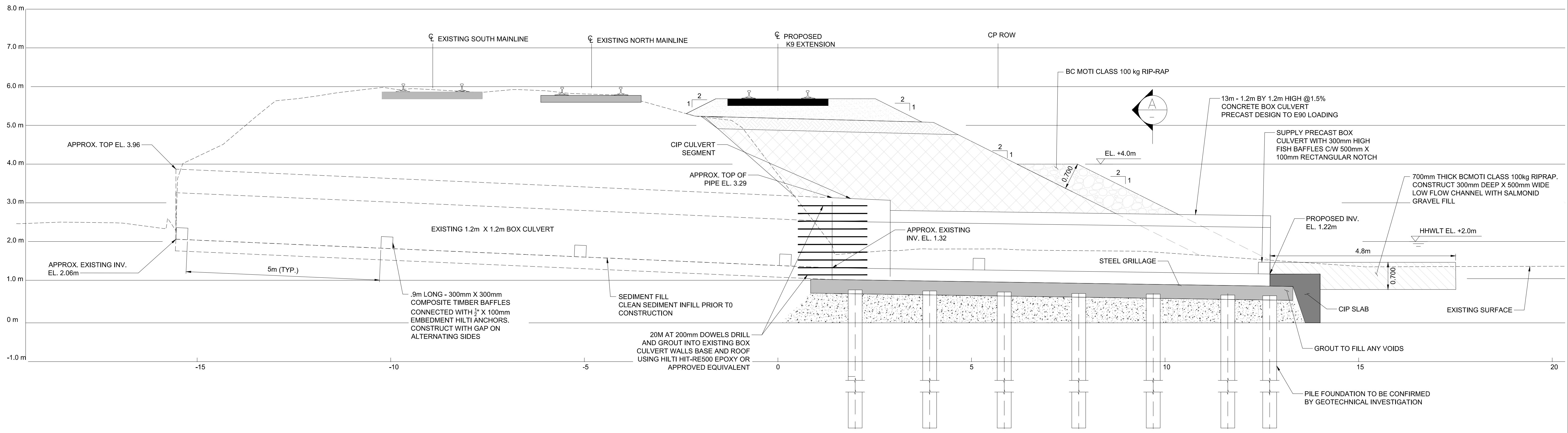
CP

ENGINEERING PROJECTS - WEST

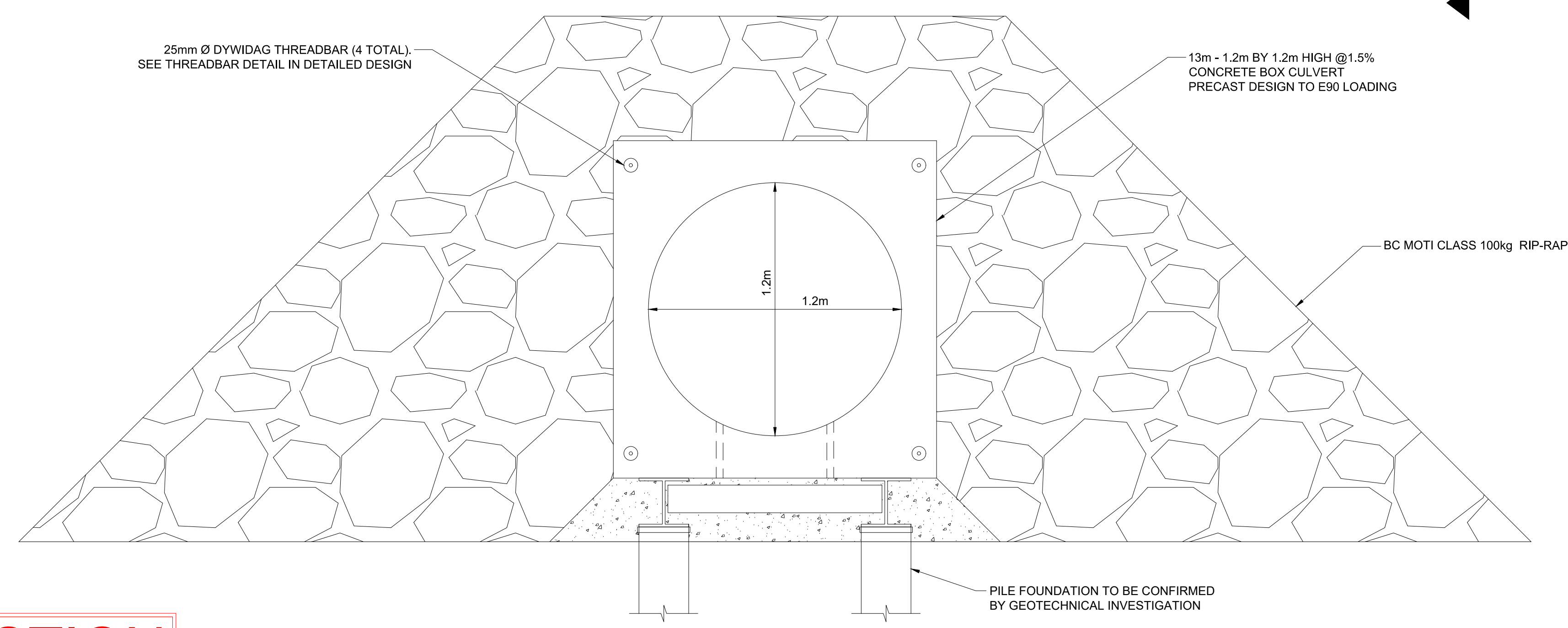
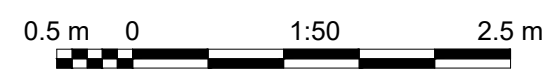
VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K9 TRACK EXTENSION
TYPICAL CULVERT SECTION**

DWG. BY: M.FAVREAU	CHK BY: DIR, PROJECT SERVICES WEST	OFFICE FILE: H362379-CV-100-S0-0001	SCALE: DATE: PLAN No.	Rev. B
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STA. 10+709.439 CULVERT 7 - RAINBOW CREEK BOX CULVERT



SECTION A (BOX CULVERT SECTION) N.T.S

NOT FOR CONSTRUCTION

LEGEND:	
	GRANULAR FILTER
	200mm MINUS ANGULAR ROCKFILL (QUARRY RUN)
	RIP-RAP (BC MOTI CLASS 100 kg)
	SUB-BALLAST

HATCH

METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED

DESIGNED BY: T.I.	DRAWN BY: T.I.
DATE: 19-03-21	DATE: 19-03-21
CHECKED BY: S.R.	PROJECT MANAGER: K.M.M.
DATE: 19-03-21	DATE: 19-03-21
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:50

PROFESSIONAL SEALS			

No.	DATE	REVISION	BY
B	19-03-21	ISSUED FOR 30% DESIGN REVIEW	T.I.
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	T.I.

CP

ENGINEERING PROJECTS - WEST

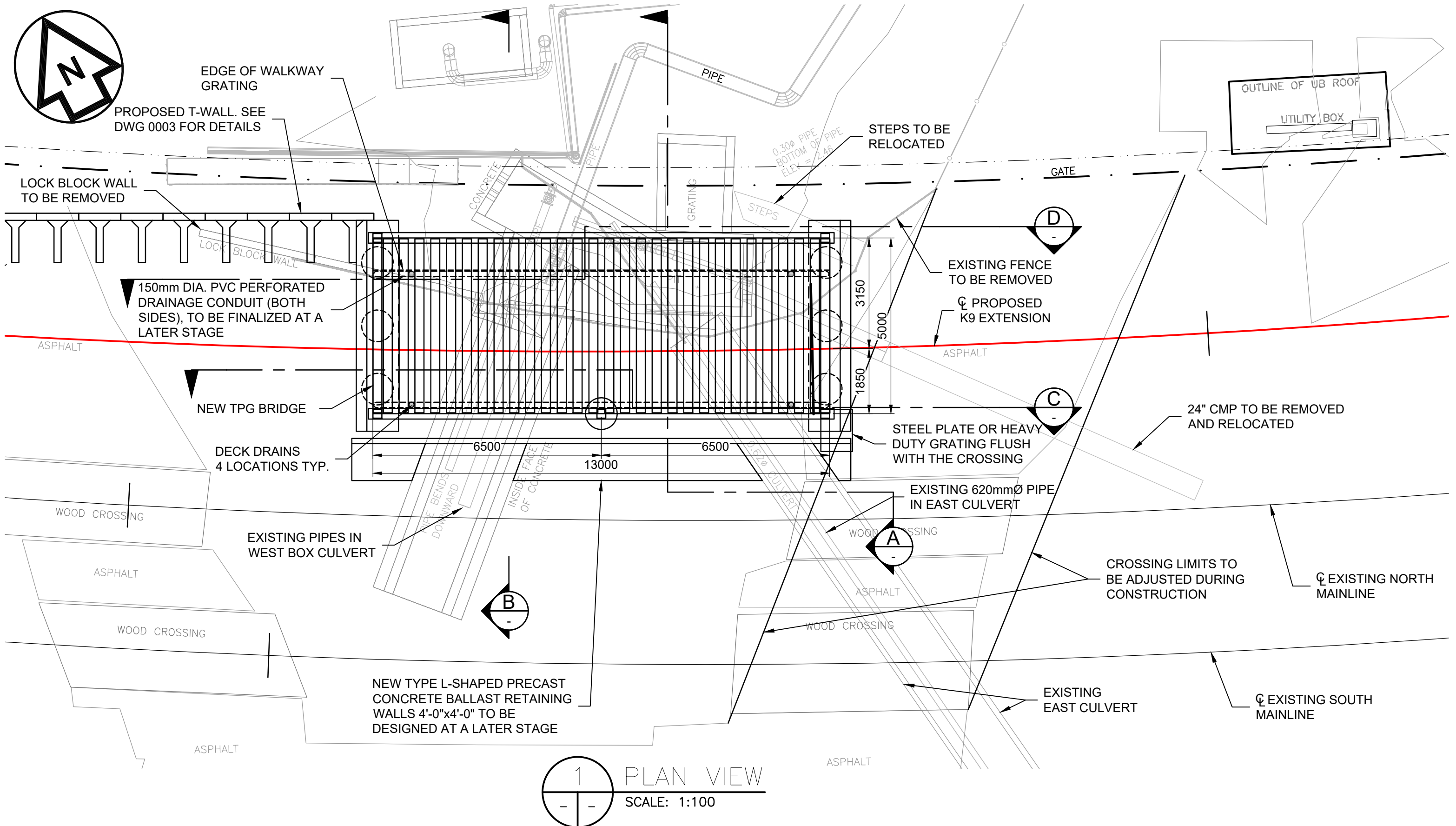
VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K9 TRACK EXTENSION
RAINBOW CREEK BOX CULVERT AND SECTION**

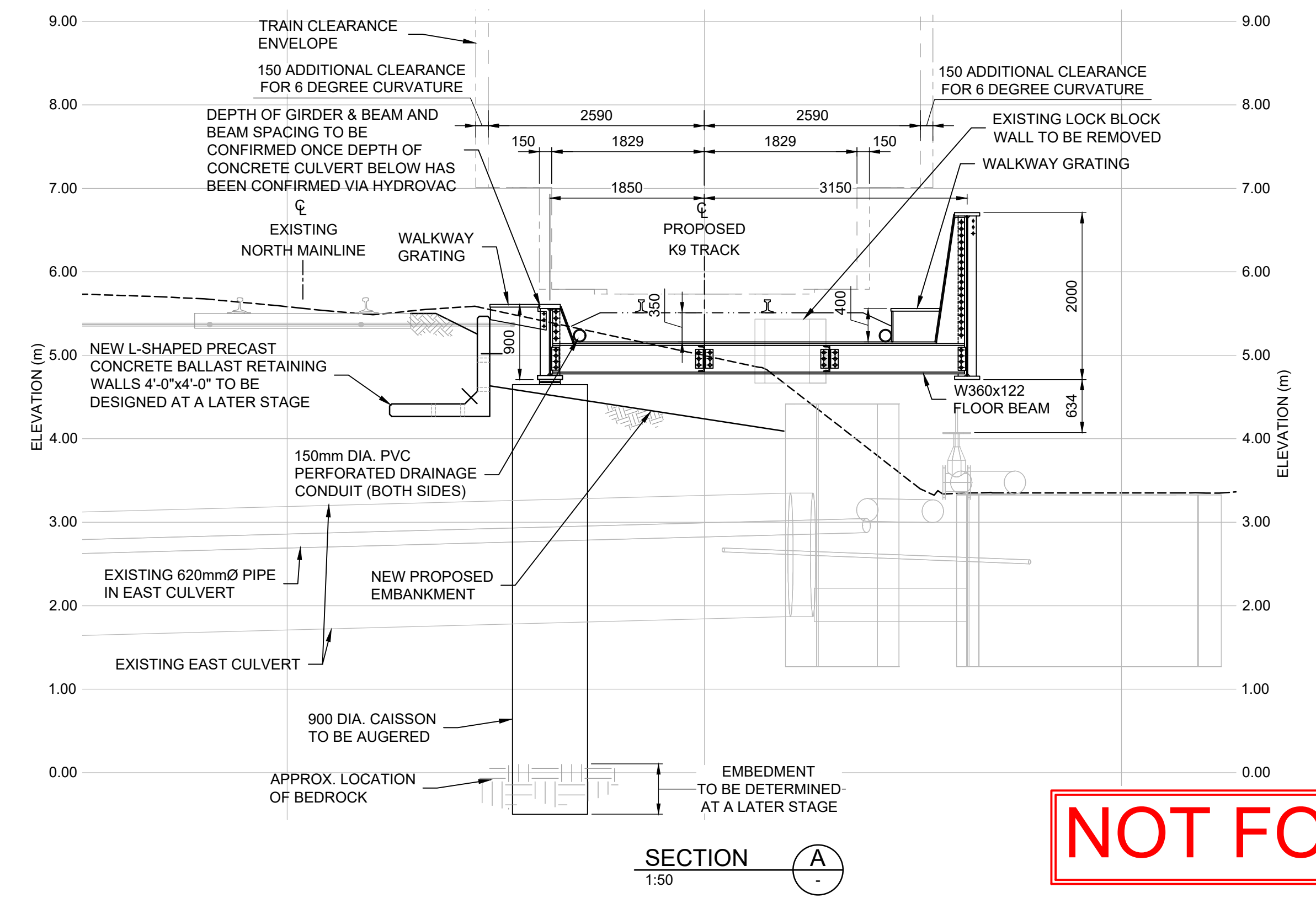
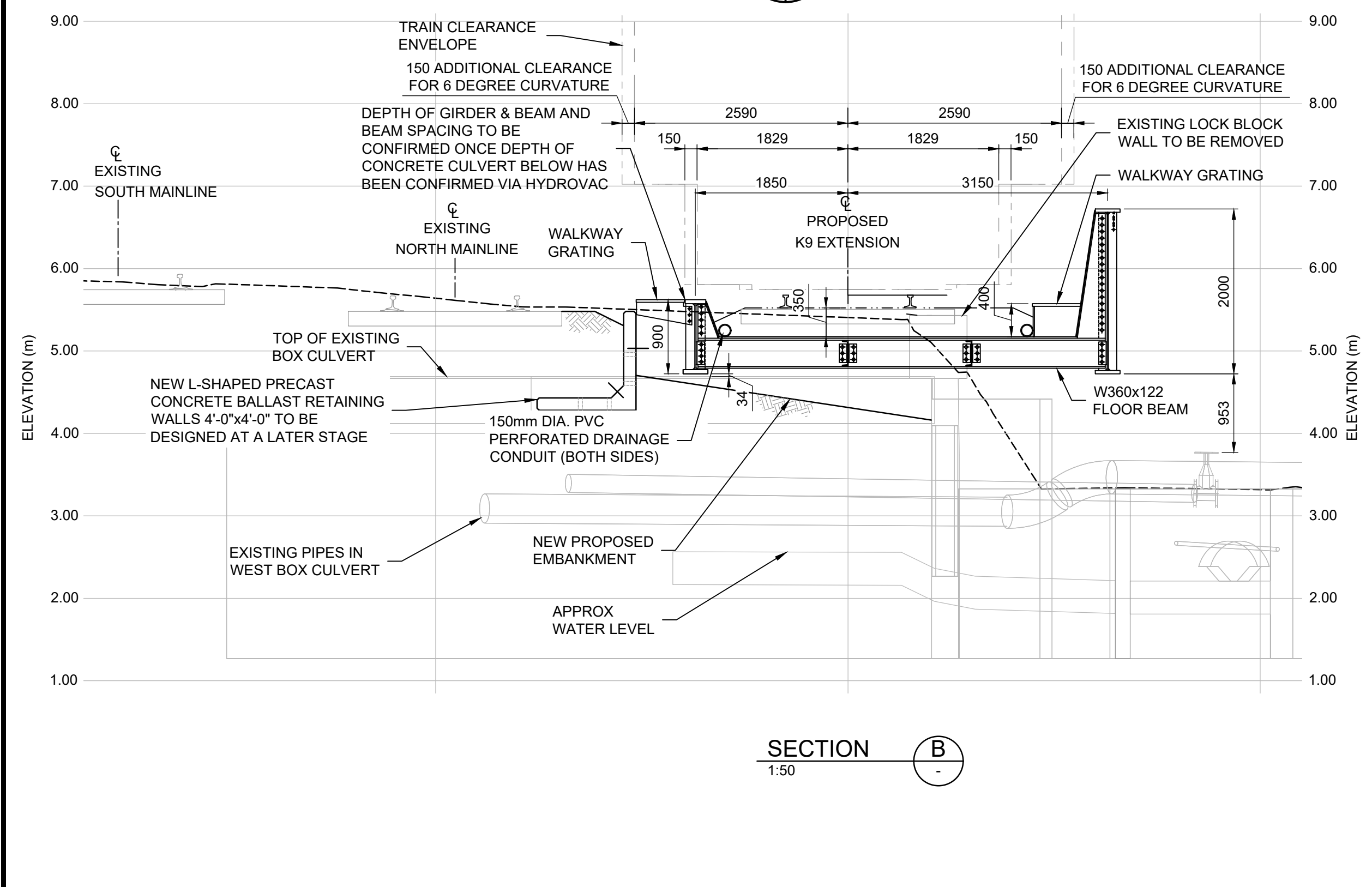
DWG. BY:	CHK BY:	OFFICE FILE:
MANAGER - DESIGN:	DATE:	SCALE:
M.FAVREAU	19-03-21	PLAN No.
DIR, PROJECT SERVICES WEST		H362379-CV-100-S0-0003

Rev. **B**

Mar 17, 2021, 4:37pm Login name: KM79037
 Drawing Name: C:\pwworking\hatch\hatch\190321\100-50-0003.dwg



- GENERAL NOTES:**
- LIVE LOAD: COOPER E90 + DIESEL IMPACT.
 - DESIGN COMPLETED IN ACCORDANCE WITH AREMA, CHAPTERS 8 AND 15 AS WELL AS CP REDBOOK OF TRACK AND STRUCTURES REQUIREMENTS 2019.
 - TRACK ALIGNMENT AND BASE OF RAIL AS SHOWN ON HATCH TRACK DRAWINGS FOUND IN THE CURRENT DRAWING PACKAGE.
 - NEAREST CROSSING: MILE POINT 123.71 OR 123.73
 - DIMENSIONS AND DETAILS ARE TO BE VERIFIED IN THE FIELD.
 - UTILITIES SHALL BE LOCATED AND CONFIRMED PRIOR TO CONSTRUCTION.
 - EXISTING STRUCTURES SHALL REMAIN IN PLACE UNLESS OTHERWISE NOTED.
- RAIL BRIDGE SPECIFICATIONS:**
- STRUCTURAL STEEL: CAN/CSA-G40.1 GRADE 350AT CAT. 5 FOR WEB PLATES AND FLANGES OF MAIN GIRDERS AND BEARING STIFFENERS; CAT. 3 FOR LIFTING BEAMS; GRADE 350A FOR DIAPHRAGMS, STIFFENERS, DECK PLATES AND ALL OTHER BRIDGE COMPONENTS.
 - CONCRETE: C.S.A. A23.1 AND A23.2-2014
 - REINFORCING STEEL: C.S.A. CAN3-G30.18-2014
 - WELDING: C.S.A. W59-18 AND AWS D1.5
 - GALVANIZATION: A.S.T.M. A123
 - METALLIZING: C.S.A. G189-1996
 - PAINTING: SEE PAINTING SPECIFICATION
 - HIGH STRENGTH BOLTS: ASTM A3125, M22 TYPE 3
 - ANCHOR BOLTS: ASTM F1554, GRADE 105 OR EQUIVALENT
 - NEOPRENE PADS: CONFORM TO AREMA CHAPTER 19 SECTION 1.6, ELASTOMERIC PADS, DUROMETER 60.



NOT FOR CONSTRUCTION

Mar 17, 2021, 4:17pm Login name: KIM79037
 Drawing Name: C:\pwworking\kim79037\p0693864\H362379-SR-100-S0-0002.dwg

HATCH

METRIC
DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
UNLESS OTHERWISE NOTED

DESIGNED BY: A.K. DATE: 13-11-20	DRAWN BY: R.G. DATE: 13-11-20
CHECKED BY: S.R. DATE: 13-11-20	PROJECT MANAGER: K.M.M. DATE: 13-11-20
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:50

PROFESSIONAL SEALS

No.	DATE	REVISION	BY
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	R.G.



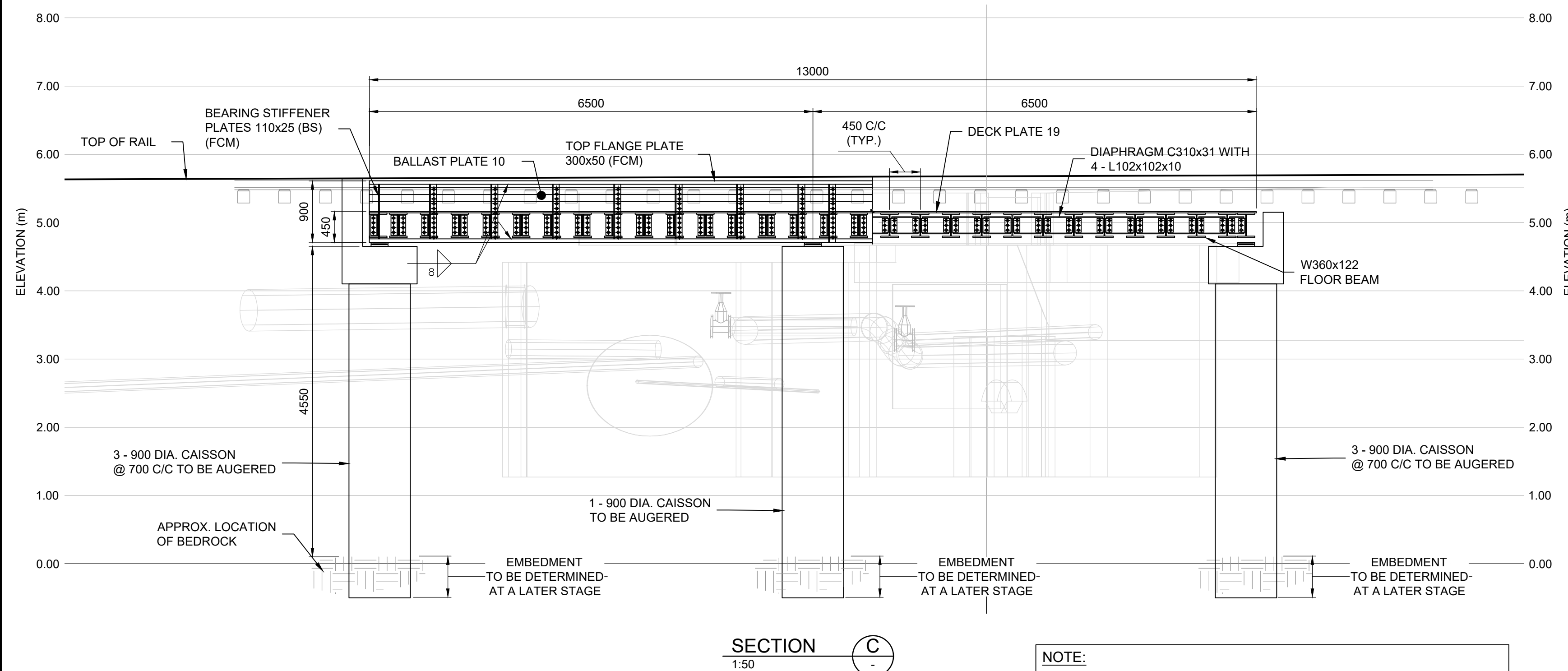
VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
PROPOSED K9 TRACK EXTENSION
BRIDGE GENERAL ARRANGEMENT & SECTIONS**

DWG. BY:	CHK BY:	OFFICE FILE:
MANAGER - DESIGN:	DATE:	SCALE:
M.FAVREAU DIR. PROJECT SERVICES WEST	13-11-20	H362379-SR-100-S0-0001
Rev.	A	

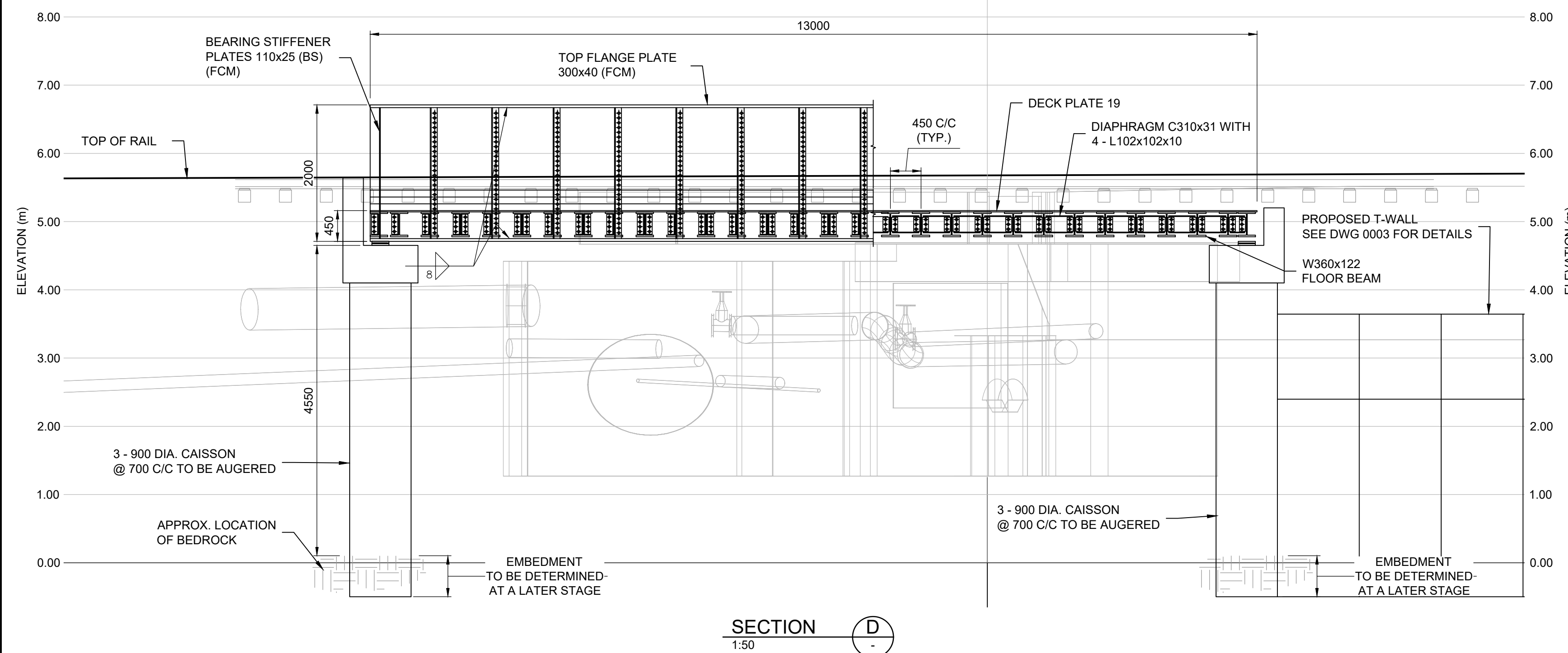
GENERAL NOTES:

1. FOR NOTES AND SPECIFICATIONS SEE DRAWING 0001.



SECTION C
1:50

NOTE:
ABUTMENT AND PIER CONFIGURATION TO BE CONFIRMED AT A LATER STAGE.



SECTION D
1:50

TABLE of STRESSES

MAIN GIRDER LENGTH 13.0m SPAN(c/c brgs)

TOP FLANGE PLATE:	" - "	AREA=	" - "
WEB PLATE:	" - "	AREA=	" - "
BTM FLANGE PLATE:	" - "	AREA=	" - "
Sx-x TOP=	" - "	Ix=	" - "
Sx-x BTM=	" - "		

	END REACTION (kN)	SHEAR STRESS (MPa)	BENDING MOMENT (kN.m)	BENDING STRESSES TOP FLANGE (MPa)
DEAD LOAD	" - "	" - "	" - "	" - "
LIVE LOAD E90	" - "	" - "	" - "	" - "
IMPACT (43.38%)	" - "	" - "	" - "	" - "
TOTAL GROUP "A"	" - "	" - "	" - "	" - "
ALLOWABLE STRESSES BENDING & SHEAR	" - "	" - "	" - "	" - "
RATIO: WORKING/ALLOW.	" - "	" - "	" - "	" - "

$$\frac{\Delta LL + I}{SPAN} = \frac{1}{\text{" - "}}$$

ALLOWABLE STRESS RANGE FOR FATIGUE CATEGORY "B" FOR N>2,000,000 CYCLES
 $S_{Rfat} = 110.30 \text{ MPa}$

MAXIMUM DESIGN STRESS RANGE AT BOTTOM FLANGE TO WEB WELD AT MIDSPAN.
 $\text{" - " } < S_{Rfat}$

TABLE of STRESSES

MAIN GIRDER LENGTH 13.0m SPAN(c/c brgs)

TOP FLANGE PLATE:	" - "	AREA=	" - "
WEB PLATE:	" - "	AREA=	" - "
BTM FLANGE PLATE:	" - "	AREA=	" - "
Sx-x TOP=	" - "	Ix=	" - "
Sx-x BTM=	" - "		

	END REACTION (kN)	SHEAR STRESS (MPa)	BENDING MOMENT (kN.m)	BENDING STRESSES TOP FLANGE (MPa)
DEAD LOAD	" - "	" - "	" - "	" - "
LIVE LOAD E90	" - "	" - "	" - "	" - "
IMPACT (43.38%)	" - "	" - "	" - "	" - "
TOTAL GROUP "A"	" - "	" - "	" - "	" - "
ALLOWABLE STRESSES BENDING & SHEAR	" - "	" - "	" - "	" - "
RATIO: WORKING/ALLOW.	" - "	" - "	" - "	" - "

$$\frac{\Delta LL + I}{SPAN} = \frac{1}{\text{" - "}}$$

ALLOWABLE STRESS RANGE FOR FATIGUE CATEGORY "B" FOR N>2,000,000 CYCLES
 $S_{Rfat} = 110.30 \text{ MPa}$

MAXIMUM DESIGN STRESS RANGE AT BOTTOM FLANGE TO WEB WELD AT MIDSPAN.
 $\text{" - " } < S_{Rfat}$

SPAN WEIGHT
 " - " Kg (" - " LBS)
 NOT INCLUDING BEARINGS OR WALKWAY.

NOT FOR CONSTRUCTION

Mar 17, 2021, 4:16pm Login name: KIM79037
 Drawing Name: C:\pwworking\kim79037\p0693864\H362379-SR-100-S0-0002.dwg



METRIC
 DIMENSIONS ARE IN METRES AND/OR MILLIMETRES
 UNLESS OTHERWISE NOTED

DESIGNED BY: A.K. DATE: 13-11-20	DRAWN BY: R.G. DATE: 13-11-20
CHECKED BY: S.R. DATE: 13-11-20	PROJECT MANAGER: K.M.M. DATE: 13-11-20
HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:50

PROFESSIONAL SEALS

THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF CANADIAN PACIFIC CLIENT AND IS ISSUED PURSUANT TO THE HATCH-CP ENGINEERING SERVICES AGREEMENT AND RELEVANT PURCHASE ORDER BETWEEN CLIENT AND HATCH CORPORATION (HATCH), UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING. HATCH DOES NOT ACCEPT AND DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR REVISION OF THIS DRAWING BY CLIENT, AND BY THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS RESERVED OR REFERENCED IN THIS DRAWING REMAIN THE PROPERTY OF HATCH.

No.	DATE	REVISION	BY
A	13-11-20	ISSUED FOR 30% DESIGN REVIEW	R.G.

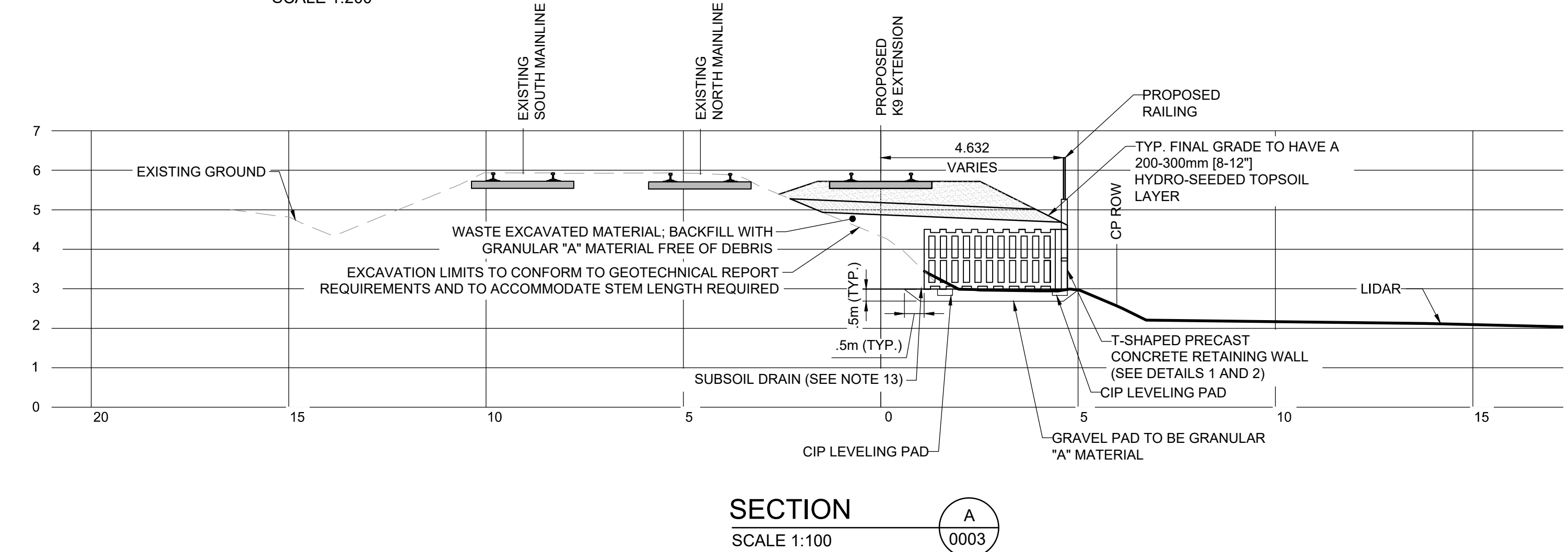
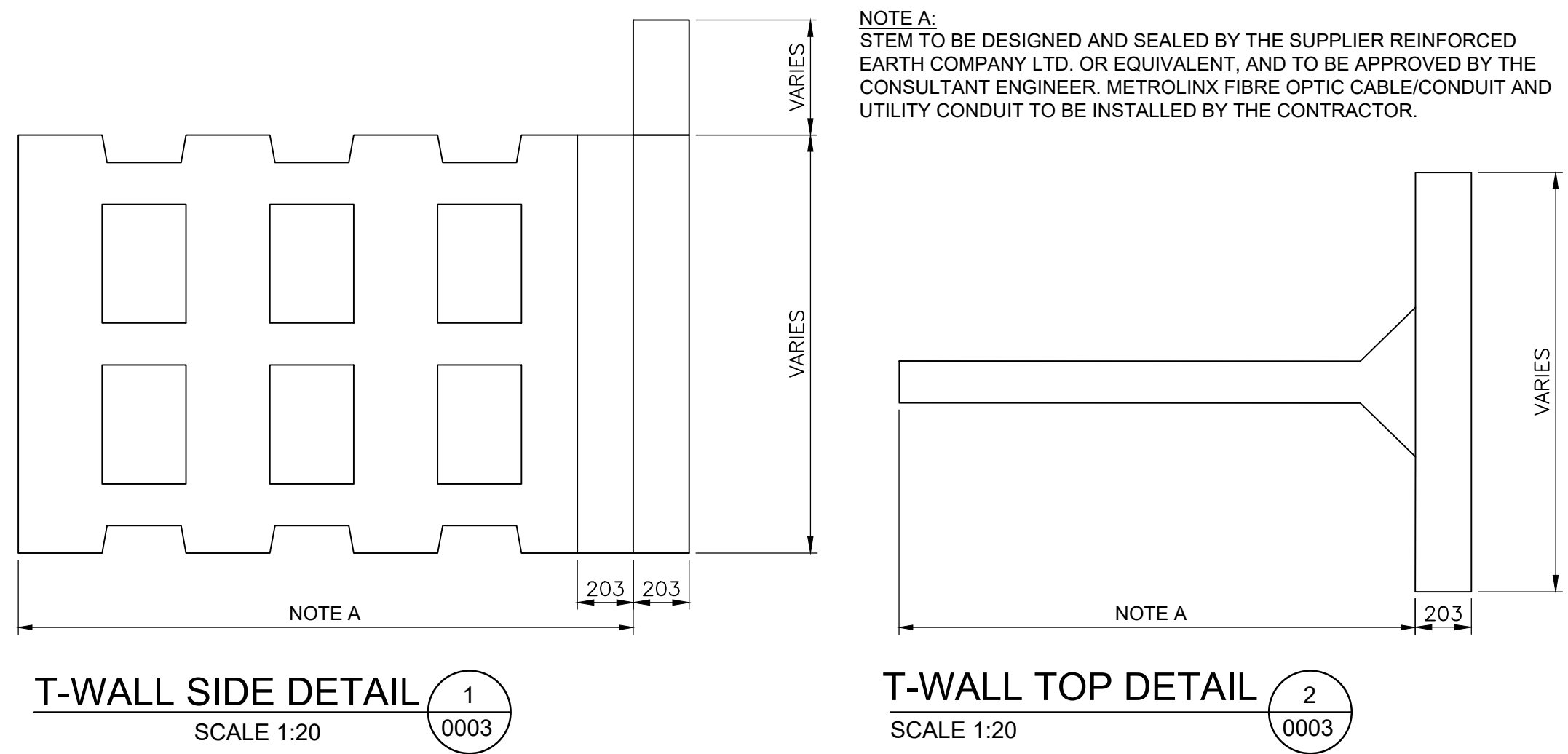
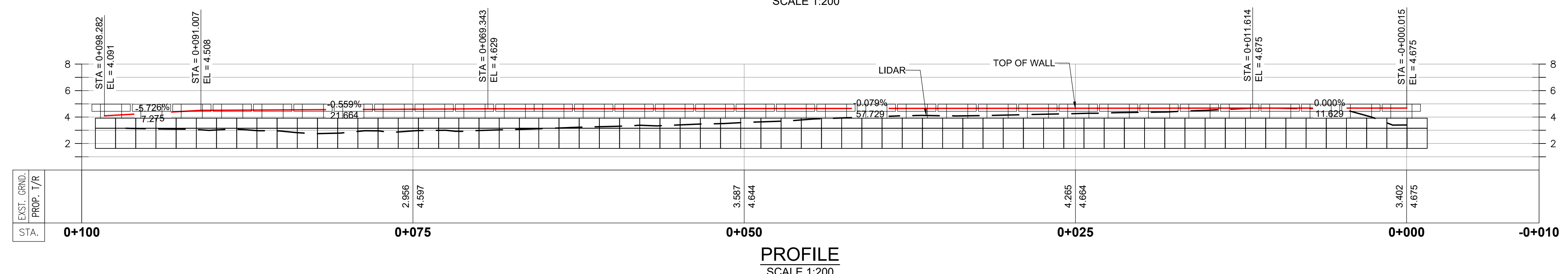
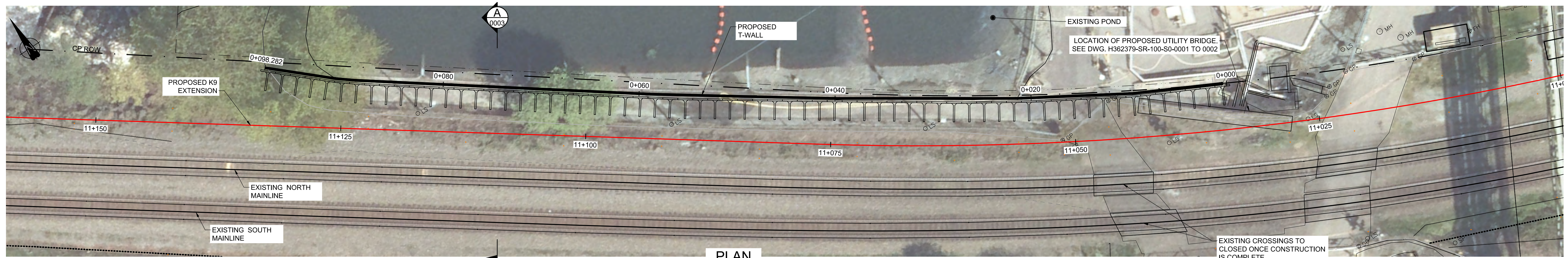


ENGINEERING PROJECTS - EAST

VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION

**CASCADIA EAST EXTENSION - PHASE 4
 PROPOSED K9 TRACK EXTENSION
 BRIDGE ELEVATION VIEWS**

DWG. BY:	CHK BY:	OFFICE FILE:
MANAGER - DESIGN:	DATE:	SCALE:
M.FAVREAU DIR. PROJECT SERVICES WEST	H362379-SR-100-S0-0002	Rev. A



NOTES:

- DESIGN AND WORKMANSHIP: AREMA (LATEST EDITION) CHAPTER 8 AND/OR 15 AND "METROLINX GENERAL GUIDELINES FOR RAILWAY BRIDGES AND STRUCTURES" (LATEST EDITION).
- T-WALL SHALL BE DESIGNED FOR A SERVICE LIFE OF 100 YEARS. THE GEOMETRY SHOWN IN THIS SET OF DRAWINGS IS AN ILLUSTRATION ONLY, FINAL CONFIGURATION IS AS PER THE DESIGNER AND MANUFACTURER RETAINED BY CP RAIL.
- RAILING SHALL BE OF HSS 48.3 O.D. X 3.81 CLASS C IN ACCORDANCE WITH C.S.A. STD G40.20 AND G40.21.
- MISC. STRUCTURAL STEEL SHALL BE OF 300W IN ACCORDANCE WITH CAN/CSA-G40.21-M98.
- ALL STEEL MATERIAL TO BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH CAN/CSA-G184-98.
- DESIGN LOAD FOR RAILING AS PER AREMA.
- LIVE LOAD COOPER E-90, FOR BOTH PERMANENT WALLS AND TEMPORARY SHORING.
- DEAD LOAD FOR EXISTING MATERIAL IS 21 kN/m².
- CONTRACTOR TO LOCATE ANY EXISTING UTILITIES BEFORE COMMENCEMENT OF THE WORK. CONTRACTOR TO PROTECT UTILITIES DURING CONSTRUCTION. FOR FIBRE OPTIC RELOCATION, SEE CIVIL DRAWINGS.

- CONTRACTOR IS RESPONSIBLE FOR ADHERING TO SAFE EXCAVATION PRACTICES AND TEMPORARY SHORING DESIGN, ENSURING THE EMBANKMENT STABILITY IS MAINTAINED DURING AND AFTER CONSTRUCTION, CONSIDERING EXISTING LOADS AND CONDITIONS.
- T-WALL SYSTEM IS TO BE DESIGNED BY REINFORCED EARTH COMPANY LTD. OR EQUIVALENT AND TO BE APPROVED BY THE CONSULTANT ENGINEER.
- CONTRACTOR TO DESIGN AND INSTALL TEMPORARY SHORING WHERE REQUIRED. DESIGN TO BE APPROVED BY THE ENGINEER. THE POSITION OF THE TEMPORARY SHORING IN THIS DRAWING IS AN ILLUSTRATION ONLY.
- CONTRACTOR TO PLACE SUBSOIL DRAIN BEHIND THE WALL, AT THE BASE OF THE GRANULAR FILL MATERIAL, THROUGHOUT THE LENGTH OF THE WALL. SUBSOIL DRAIN TO DRAIN OUT OF THE WALL AT A MINIMUM SLOPE OF 0.3%.
- CONTRACTOR TO INSTALL AT LEAST 900mm GEOTEXTILE BETWEEN VERTICAL JOINTS TO AVOID LEAKING OF MATERIAL.

NOT FOR CONSTRUCTION

Mar 17, 2021, 4:20pm Login Name: KIM79037 Drawing Name: C:\pwworking\hatch\kim79037\0693864\H362379-SR-100-S0-0003.dwg

<p>METRIC DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED</p>	DESIGNED BY: T.I. DATE: 13-11-20	DRAWN BY: T.I. DATE: 13-11-20	PROJECT MANAGER: K.M.M. DATE: 13-11-20	PROFESSIONAL SEALS	<p>ENGINEERING PROJECTS - EAST</p>	VANCOUVER DIVISION MILE 123.07 TO 124.17 CASCADE SUBDIVISION
	CHECKED BY: J.C. DATE: 13-11-20	HATCH PROJECT No: H362379	DWG SCALE(FULL SIZE): 1:500	THIS DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF CANADIAN PACIFIC CLIENT AND IS ISSUED PURSUANT TO THE HATCH-CP ENGINEERING SERVICES AGREEMENT AND RELEVANT PURCHASE ORDER BETWEEN CLIENT AND HATCH CORPORATION (PARTY), UNLESS OTHERWISE AGREED IN WRITING WITH CLIENT OR SPECIFIED ON THIS DRAWING. HATCH DOES NOT ACCEPT ANY LIABILITY OR RESPONSIBILITY ARISING FROM ANY USE OF OR RELIANCE ON THIS DRAWING BY ANY THIRD PARTY OR ANY MODIFICATION OR REVISION OF THIS DRAWING BY CLIENT, AND BY THIS DRAWING IS CONFIDENTIAL AND ALL INTELLECTUAL PROPERTY RIGHTS REMAIN THE PROPERTY OF HATCH.		MANAGER - DESIGN: M.FAVREAU DIR. PROJECT SERVICES WEST