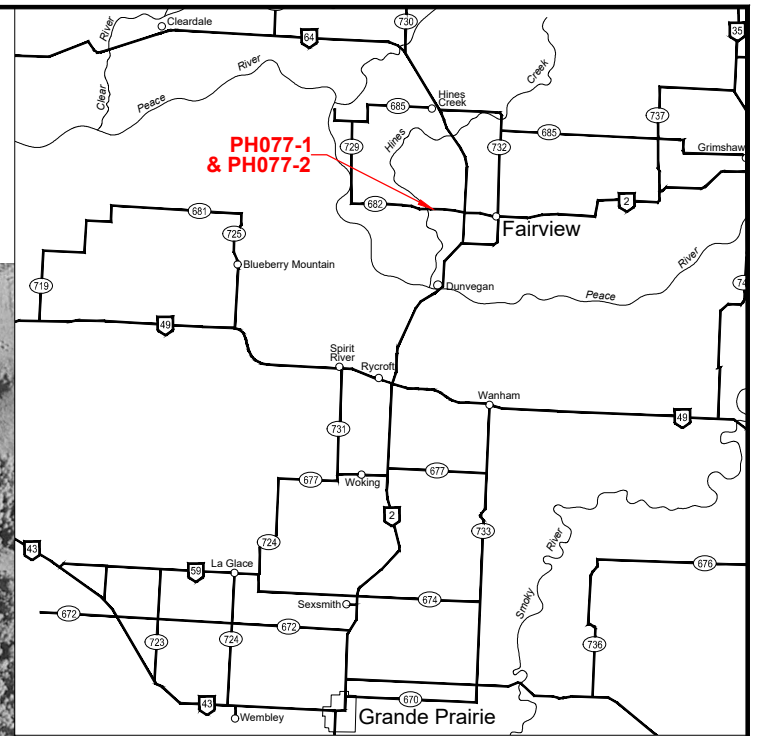
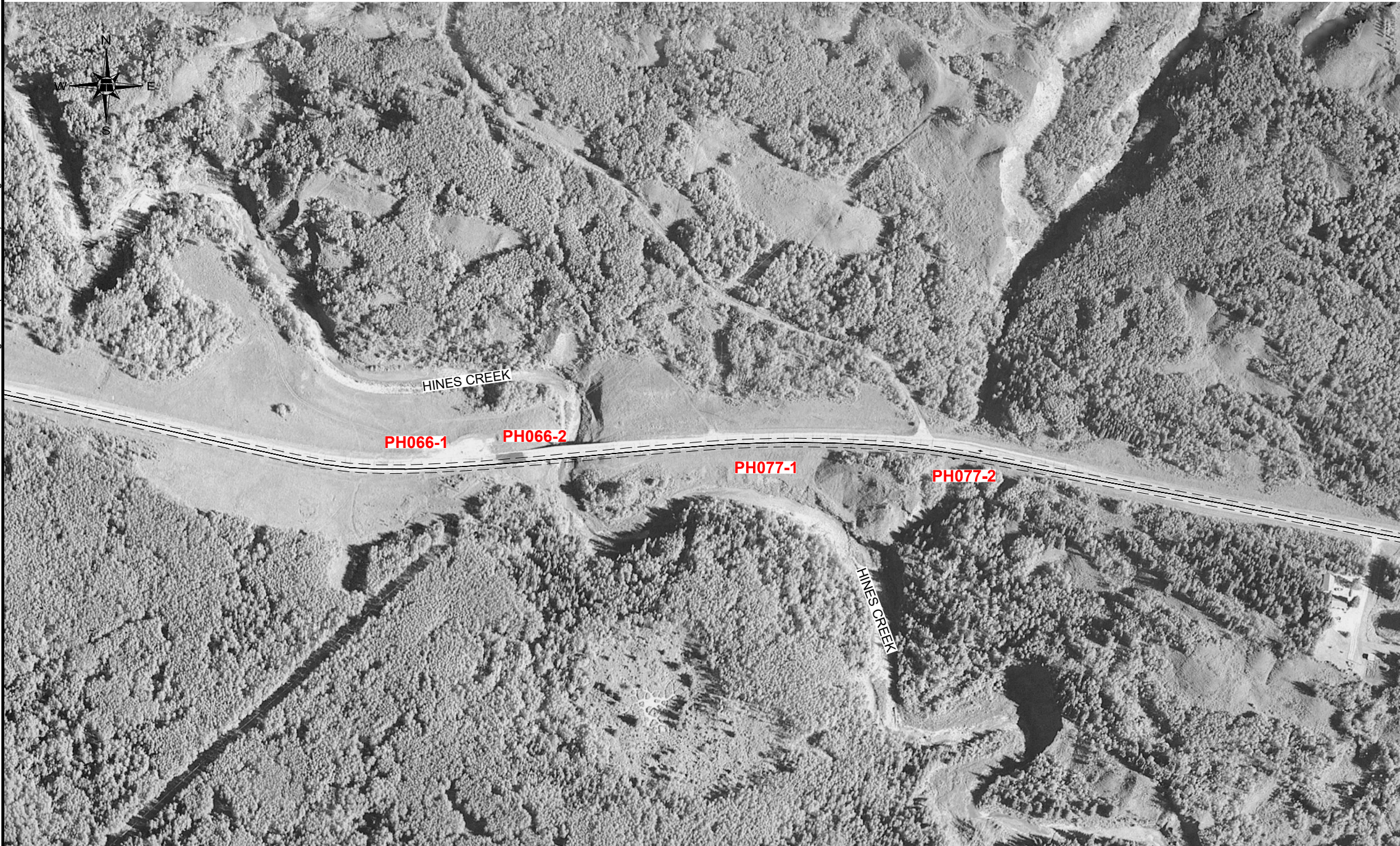


H:\13000\13351 Geohazard Assessment - Peace River\High Level (CON\0017602)\Drafting\2018\BDM\13351 PH077-1-1&-2.dwg - OVERALL - Dec. 05, 2018



KEY PLAN
SCALE 1:1 500 000

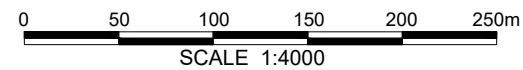
BASE AIRPHOTO TAKEN IN JULY 2, 2006 TO AUGUST 10, 2006



**PEACE REGION (PEACE RIVER/HIGH LEVEL)
PH077-1 & PH077-2 EAST SIDE OF HINES CREEK BRIDGE
HWY 682:02, km 12.6-12.7**

SITE LOCATION PLAN

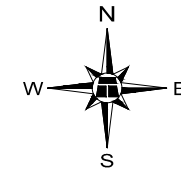
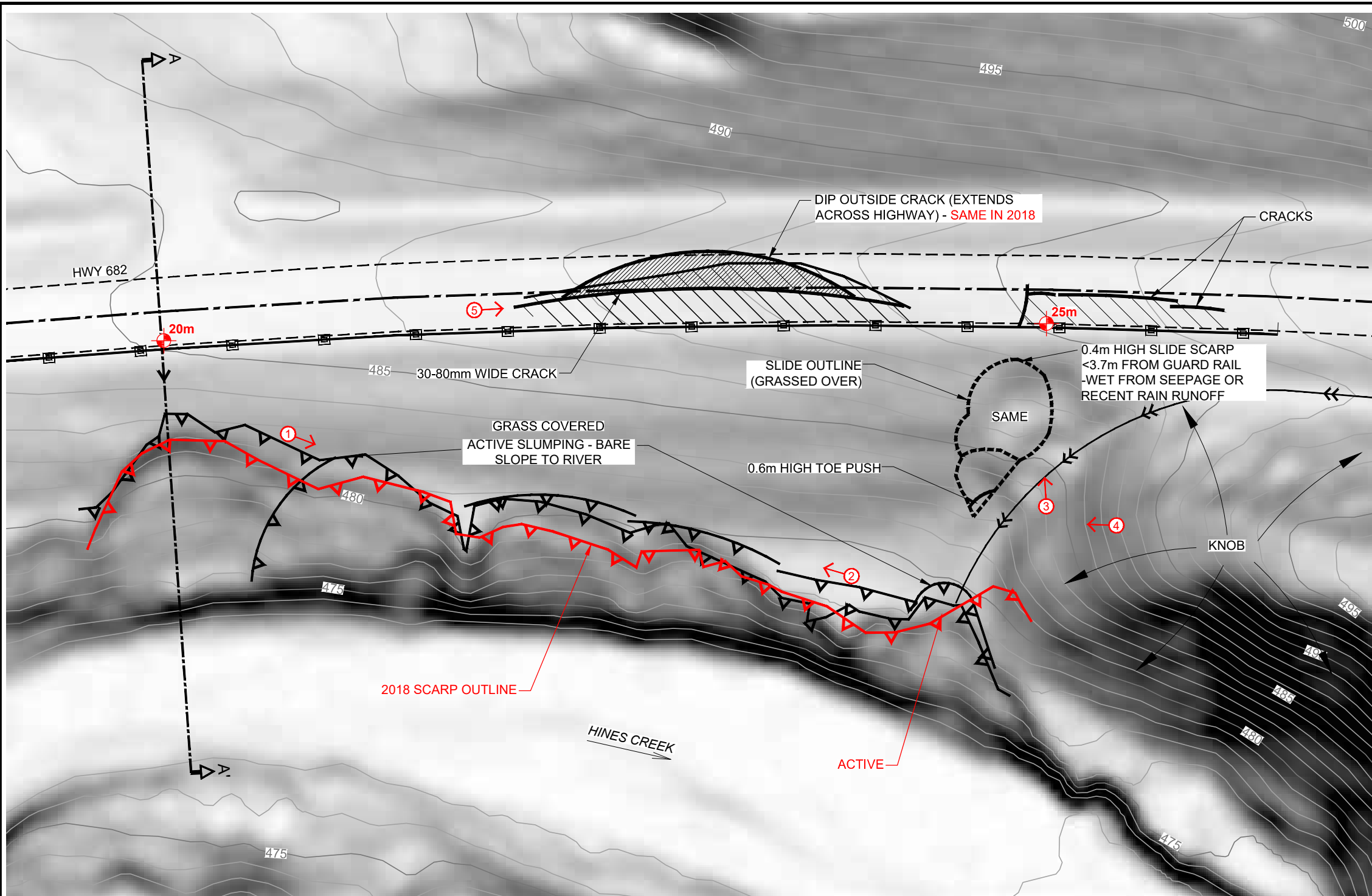
DWG No. 13351-PH077



DRAWN BY	ML
DESIGNED BY	BDM
APPROVED BY	DWP
SCALE	1:4000
DATE	MAY 16, 2018
FILE No.	13351



H:\13000\13351 Geohazard Assessment - Peace RiverHigh Level (CON0017602)\Drafting\2018\BDM\13351 PH077-1-1 & -2.dwg - PH077-1-1 - Dec. 05, 2018

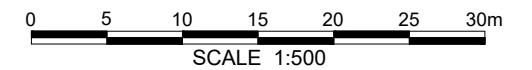


LEGEND

- APPROXIMATE GUARD RAIL LOCATION
- DITCH
- DIRECTION AND NUMBER OF PHOTO
- SLIDE SCARP
- PROPOSED SI / PIEZOMETER LOCATION
- 25m DEPTH OF THE TEST HOLE IN METRES

NOTES

1. MAY 16, 2018 OBSERVATIONS SHOWN IN RED.



BASE LIDAR FLOWN IN 2015

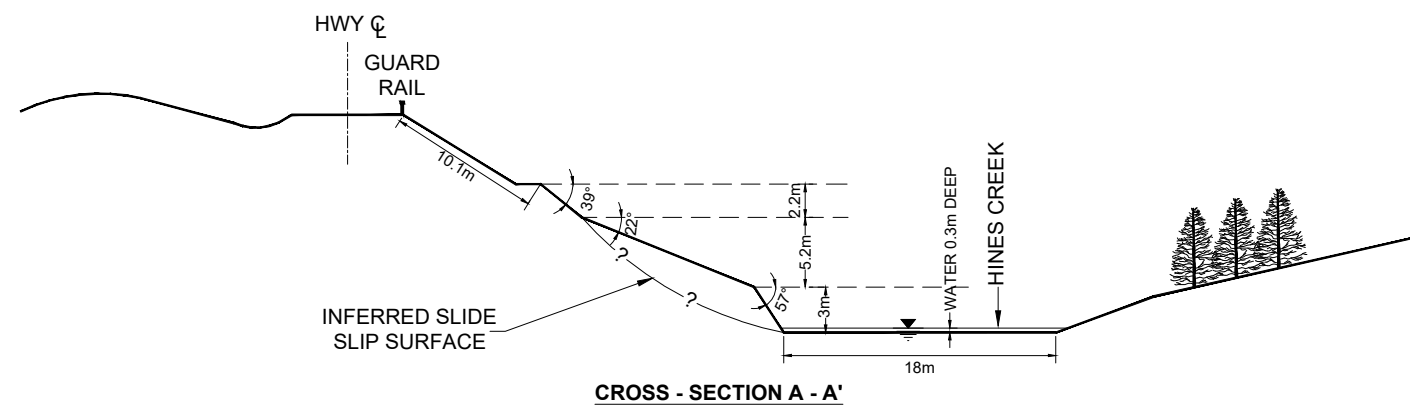


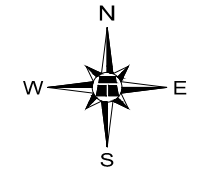
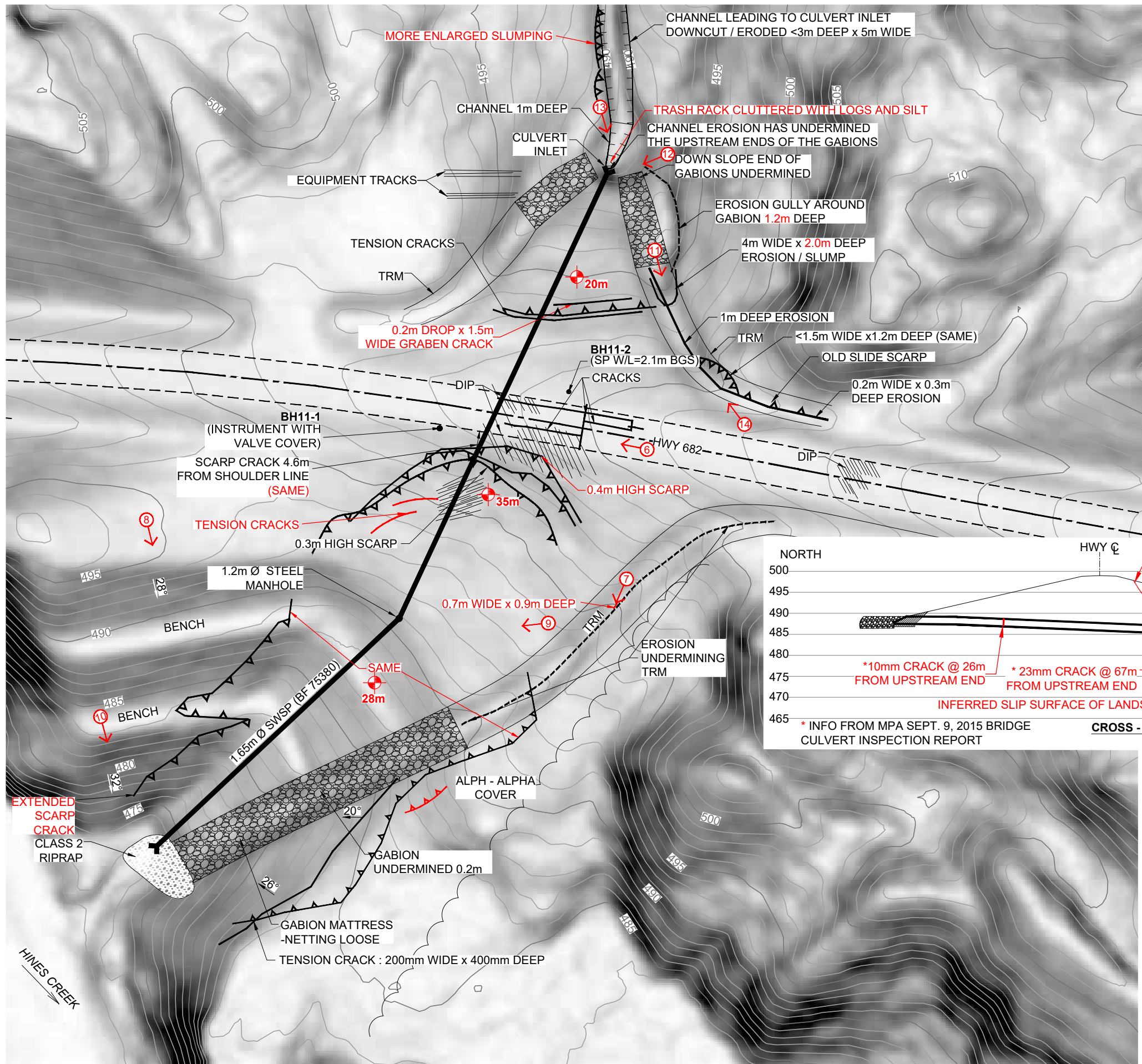
PEACE REGION (PEACE RIVER/HIGH LEVEL)

PH077-1: EAST SIDE OF HINES CREEK BRIDGE
 HWY 682:02, km 12.6~12.7
 2018 INSPECTION PLAN - SITE 1

DWG No. 13351-PH077-1-1

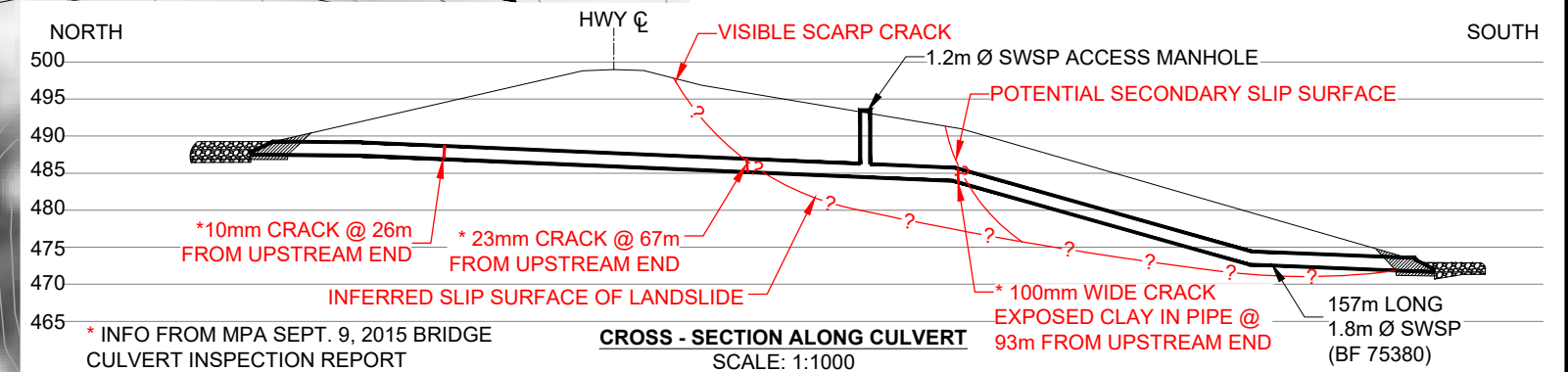
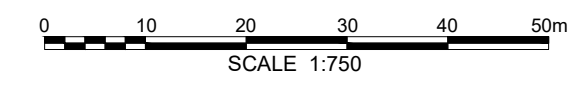
DRAWN BY	ML
DESIGNED BY	BDM
APPROVED BY	DWP
SCALE	1:500
DATE	MAY 16, 2018
FILE No.	13351





- LEGEND**
- SLIDE SCARP
 - APPROXIMATE TREE LINE
 - APPROXIMATE GUARD RAIL LOCATIONS
 - PHOTOGRAPH NUMBER, AND APPROXIMATE DIRECTION AND LOCATION
 - GABION MATTRESS
 - SETTLEMENT AREAS
 - PROPOSED SI / PIEZOMETER LOCATION
 - 25m** DEPTH OF THE TEST HOLE IN METRES

- NOTES**
1. GABIONS LACKING INTERMEDIATE BAFFLES AND LIDS NOT ADEQUATELY TIED.
 2. MAY 16, 2018 OBSERVATIONS SHOWN IN RED.



BASE LIDAR FLOWN IN 2015

Alberta

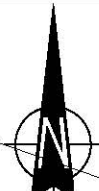
PEACE REGION (PEACE RIVER/HIGH LEVEL)

**PH077-2: EAST SIDE OF HINES CREEK BRIDGE
HWY 682:02, km 12.6~12.7
2018 INSPECTION PLAN - SITE 2**

DWG No. 13351-PH077-2-1

DRAWN BY	ML
DESIGNED BY	BDM
APPROVED BY	DWP
SCALE	1:750
DATE	MAY 16, 2018
FILE No.	13351

THURBER ENGINEERING LTD.



NE 35-81-5-6

CHAINAGE EQUATION
STA 21+575.9 @ REALIGNMENT =
STA 1+570.0 @ STREAMBED

PROVIDED SMOOTH TRANSITION
TO EXISTING BANKS (TYP)
CLASS 2 ROCK RIPRAP
PLACED 0.80 m THICK
(TYP BOTH ENDS)

PROVIDED A 6 m x 4 m (MIN)
FLAT PAD TO ACCOMMODATE
DRIFT REMOVAL

EXISTING 1.5 m Ø SPSP CULVERT
BY APPROX. 108 m INVERT LENGTH
GROUTED. EXPOSED ENDS REMOVED
PRIOR TO GROUTING

TOP OF BANK (TYP)
BOTTOM OF BANK (TYP)

NE 35-81-5-6

NOTE:
● INSTALL TYPE B RECP SOIL COVERING ON
ALL DISTURBED SLOPES WITH A LENGTH
OF 6.0 m OR GREATER

R 3
DRIFT
CATCHER

INSTALLED GABION MATTRESS
AS DIRECTED BY THE
CONSULTANT (TYP)

INSTALLED 1.8 m Ø SWSP CULVERT
BY 157.0 m INVERT LENGTH ON @
HWY 682:02 AT STATION 12+754.500

EXISTING GUARDRAIL
REMOVED AND DISPOSED
BOTH SIDES

TO HWY 729
HIGHWAY 682:02

△ EXISTING GUARDRAIL
REMOVED AND DISPOSED
BOTH SIDES

BH11-02
4" LHF
SKEW

CP 400

CP 1010

MANHOLE
EL 492.39

EXISTING STEEP BANKS
CUT BACK TO ENSURE
SAFE WORKING
CONDITIONS

BENCHES SLOPED AT
MINIMUM 3% IN THE
DIRECTION INDICATED FOR
DRAINAGE (TYP)

TYPE B RECP SOIL COVERING
PLACED ON BENCH SLOPES
(TYP)

HINES CREEK

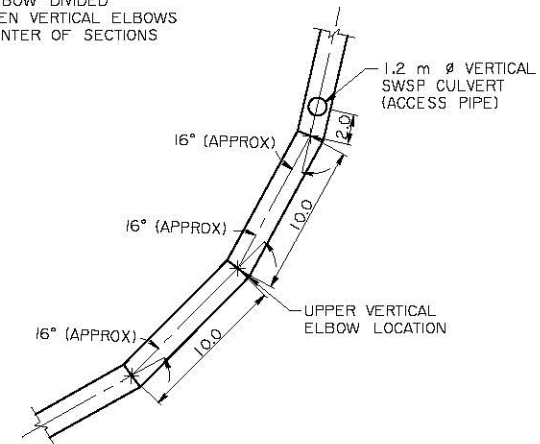
CHAINAGE EQUATION
STA 1+388.0 @ STREAMBED =
STA 21+388.0 @ REALIGNMENT

NOTE:
● ORGANIC AND SOFT/YIELDING MATERIALS
REMOVED FROM EXISTING SLOPE FAILURES
PRIOR TO BACKFILLING.

● HINES CREEK REMAIN UNDISTURBED

● ALL NECESSARY PRECAUTIONS TAKEN TO
ENSURE THAT MATERIAL DOES NOT
ENTER HINES CREEK

SITE PLAN
1:500



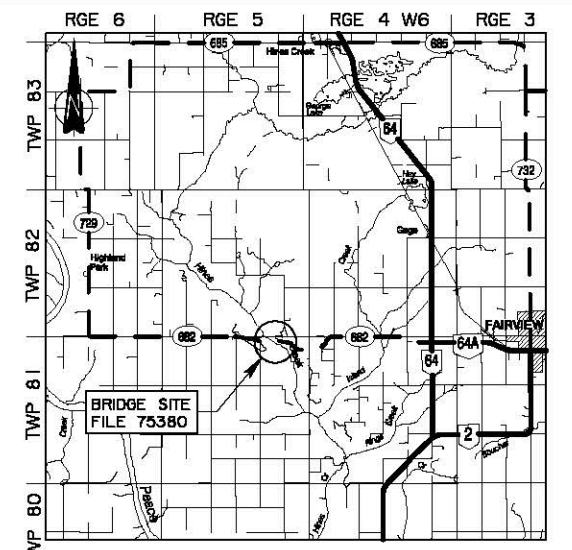
S
ELBOW
DETAIL
1:250

GENERAL NOTES

- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE
- SCALED DIMENSIONS ACCURATE ON FULL SIZE (22" x 34") DRAWING ONLY
- EXISTING ROAD STANDARD; RCU 209-110 (HWY 682:02)
- INSTALLED SWSP BY AUGURING AND JACKING THROUGH THE EXISTING ROAD FILL. BACKFILL OF CULVERT ENDS AND OTHER TYPICAL DETAILS SHALL BE IN ACCORDANCE WITH STANDARD DRAWING S-1418-03 AND SECTION 18 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS. REFER TO THE CURRENT VERSION OF THE BRIDGE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL DETAILS
- STRUCTURAL FIELD WELDING SHALL BE IN ACCORDANCE WITH SECTION 13.4 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS
- BEVEL ON THE PIPES SHALL BE CUT USING A MECHANICAL PIPE BEVELING MACHINE
- SPLICE WELD SHALL HAVE 2 OR MORE PASSES AS REQUIRED

CONSTRUCTION NOTES

- GEOTECHNICAL INVESTIGATION SHALL BE REFERENCED
- EXCAVATION SLOPES SHOULD BE 2:1 OR FLATTER UNLESS OTHERWISE NOTED
- FLATTER EXCAVATION SIDESLOPES MAY BE REQUIRED THROUGH SAND OR GRAVEL LAYERS
- PRIOR TO BACKFILL OVER ANY SLOPE 4:1 OR STEEPER, THE SLOPE SHALL BE BENCHED AS DIRECTED BY THE CONSULTANT
- STOCKPILES SHALL BE PLACED ON FLAT STABLE GROUND AND A MINIMUM OF 20 m FROM THE TOP OF ANY EXCAVATION, VALLEY, OR BANKS



SITE MAP
1:250 000
HIGHWAY 1 - 216
HIGHWAY 500 - 986
LOCAL ROADS

SURVEY BY

- WSP (GENIVAR Inc.) UNDER THE DIRECTION OF MR. MARK SCHWAB, MARCH 2010
- SURVEYED IN 3TM NAD 83 120° BASE LONGITUDE WITH A COMBINED SCALE FACTOR 0.99991101 USING CP 400

BENCH MARKS

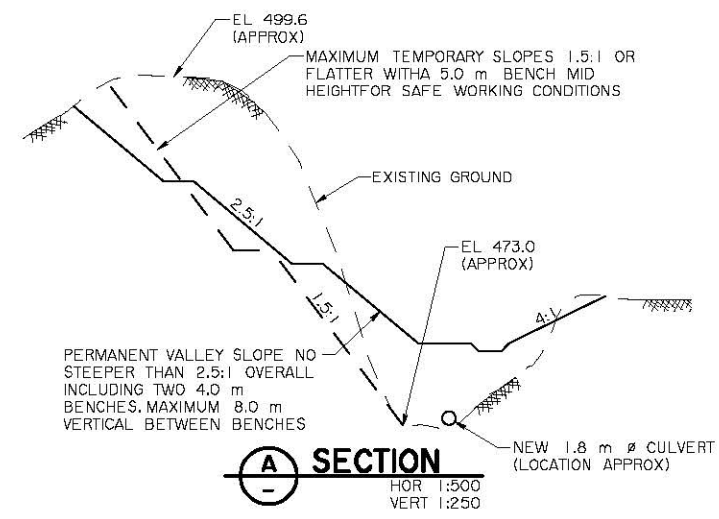
- FIP R15, IRON PIN, LOCATED 26.149 m RT OF ROAD ALIGNMENT AT STA 12+308.319 EL 492.476 - (N=6216360.116, E=83250.375)
- CP 400, IRON BAR, LOCATED 6.048 m RT OF ROAD ALIGNMENT AT STA 12+685.582 EL 493.511 - (N=6216414.703, E=83623.482)
- CP 1010, IRON BAR, LOCATED 11.423 m RT OF ROAD ALIGNMENT AT STA 12+725.811 EL 495.383 - (N=6216406.861, E=83662.872)

HYDROTECHNICAL SUMMARY

- TOTAL DRAINAGE AREA = 5 km²
- DESIGN DISCHARGE = 5.0 m³/s
- MEAN OUTLET VELOCITY AT PROPOSED CULVERT FOR DESIGN DISCHARGE = 2.8 m/s
- AVERAGE SURVEYED SLOPE OF STREAMBED IS 0.030 m/m

NEW STRUCTURE

- 1 - 1.8 m DIA SWSP CULVERT BY 157.0 m INVERT LENGTH ON @ HIGHWAY 682:02 LOCATED AT STATION 12+754.500. 12.7 mm WALL THICKNESS



SECTION A
HOR 1:500
VERT 1:250

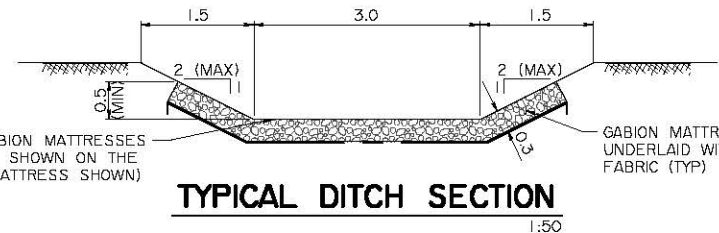
PERMANENT VALLEY SLOPE NO
STEEPER THAN 2.5:1 OVERALL
INCLUDING TWO 4.0 m
BENCHES. MAXIMUM 8.0 m
VERTICAL BETWEEN BENCHES

EL 499.6 (APPROX)
MAXIMUM TEMPORARY SLOPES 1.5:1 OR
FLATTER WITH A 5.0 m BENCH MID
HEIGHT FOR SAFE WORKING CONDITIONS

EXISTING GROUND

EL 473.0 (APPROX)

NEW 1.8 m Ø CULVERT
(LOCATION APPROX)



TYPICAL DITCH SECTION
1:50

DITCH LINED WITH GABION MATTRESSES
OR SOIL COVERING AS SHOWN ON THE
SITE PLAN (GABION MATTRESS SHOWN)

GABION MATTRESS (SIZE NO.10 AND 11)
UNDERLAID WITH GEOTEXTILE FILTER
FABRIC (TYP)



2014-05-23	AS RECORDED	PG
REV	DATE	REVISIONS

PERMIT TO PRACTICE
GENIVAR Inc.
NUMBER: P07841
APPLIED BY
KEVIN D. HENSHAW, P.ENG
JULY 10, 2014

DESIGNER
ORIGINAL DESIGN
COMPLETED BY:
KEVIN D. HENSHAW, P.ENG
JUNE 05, 2012
WSP Canada Inc.

FIELD REVIEW ENGINEER
PROFESSIONAL SEAL
APPLIED AND
SIGNED BY
MICHAEL B. BIRD, P.ENG
JULY 10, 2014

"THIS RECORD DRAWING INDICATES THAT THE CONSTRUCTED PRODUCT SUBSTANTIALLY COMPLIES WITH THE DESIGN DRAWINGS AND ALL APPROPRIATE CONTRACT PLANS AND SPECIFICATIONS"

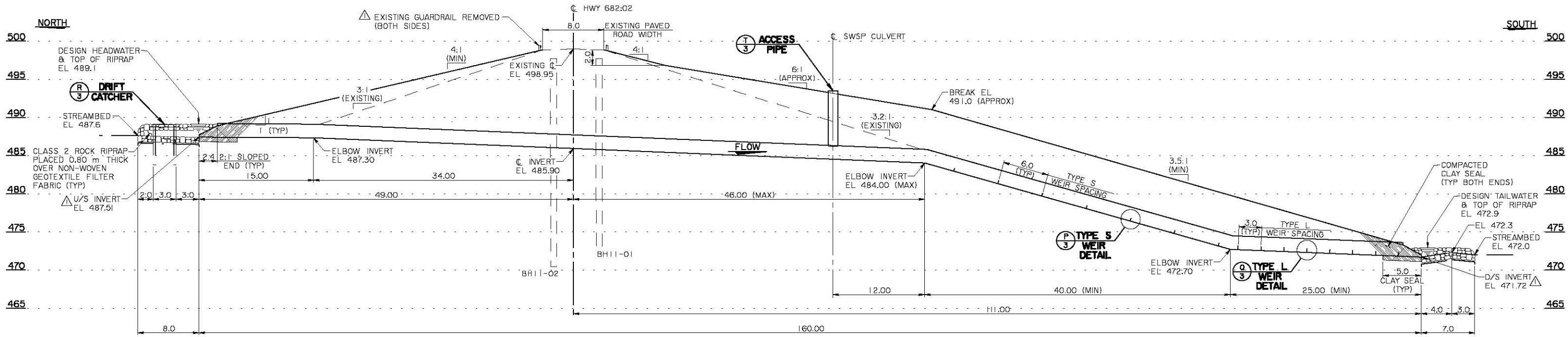
SHEET	DESCRIPTION	DRAWING
3	MISCELLANEOUS DETAILS	36853-C
2	INFORMATION SHEET	36852-C
1	GENERAL LAYOUT	36851-C
INDEX		

Government of Alberta Transportation

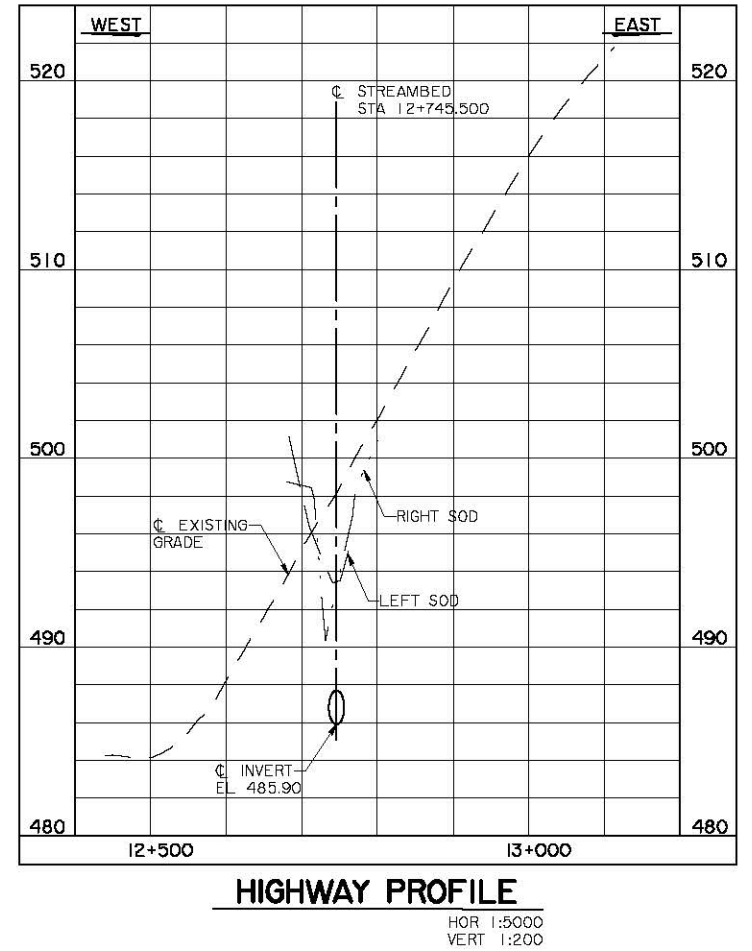
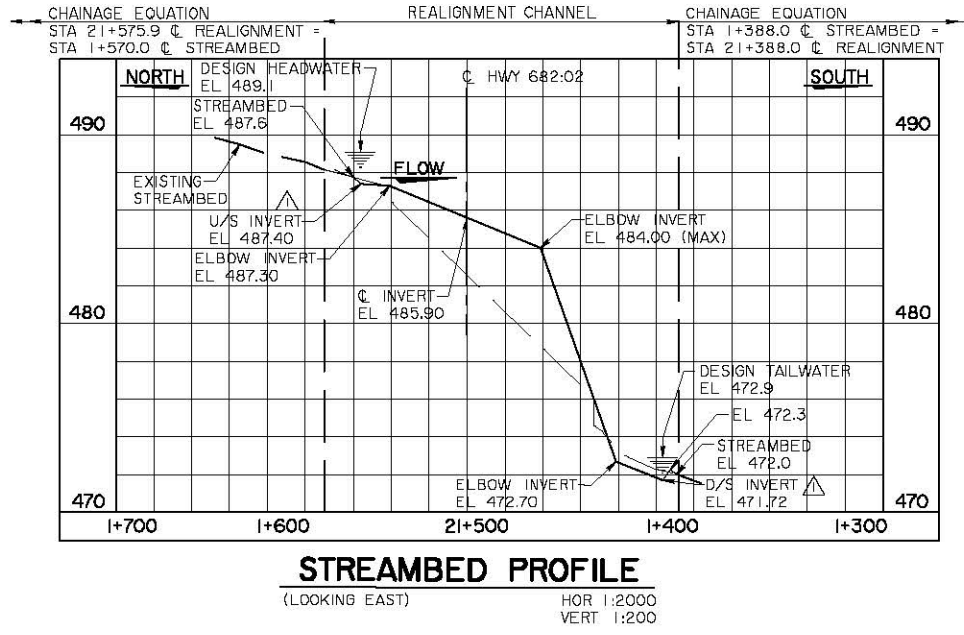
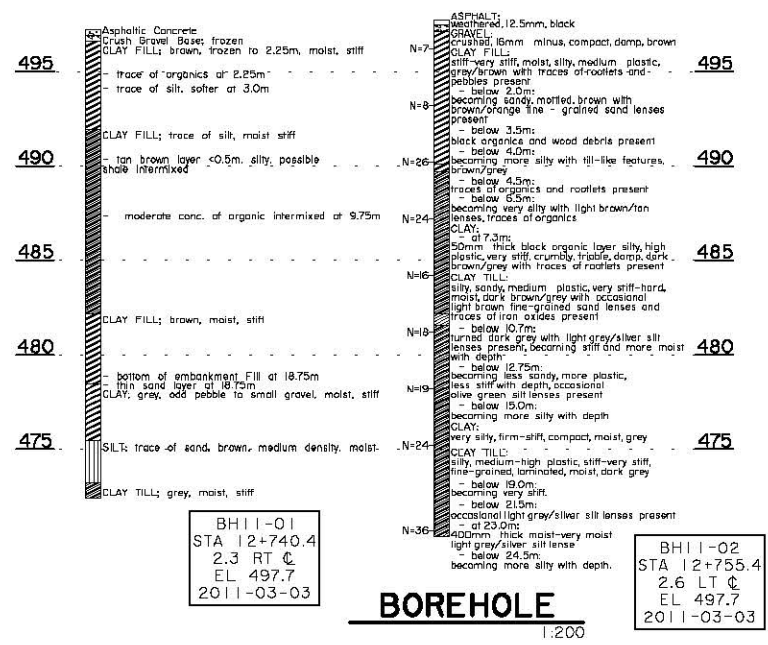
**WATERCOURSE CULVERT
ON HWY 682, 17 km W OF FAIRVIEW
GENERAL LAYOUT**

DEPARTMENT BAR CODE	DATE	STREAM	LOCATION	HIGHWAY	FILE	SHEET	DRAWING
	2012-06-05	WATERCOURSE	NW 35-81-5-6	682:02	75380	1 of 3	36851-C

S:\BRIDGES\2011\Projects\75380 - Ill-12704-00 Hines Creek on Hwy 682:02 near Fairview\Drawings\Issued for Record\36851-C.DWG
DRAWN: DK
CONTRACT: Ill-12704-00



LONGITUDINAL SECTION THROUGH CULVERT
 (ON 4° LHF SKEW TO C. HWY 682:02, TAKEN ON CULVERT AT STATION 12+754.500) 1:250



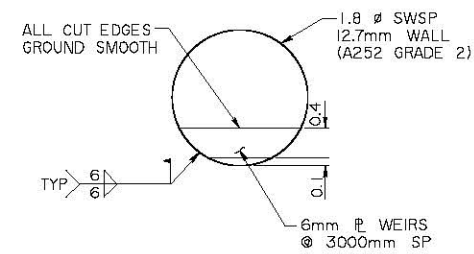
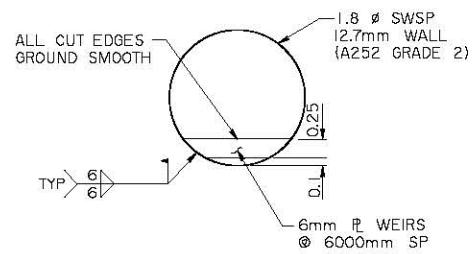
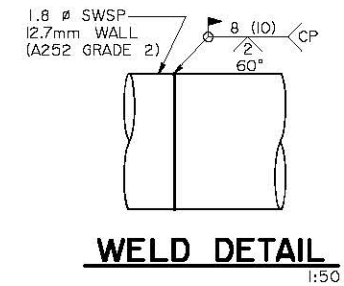
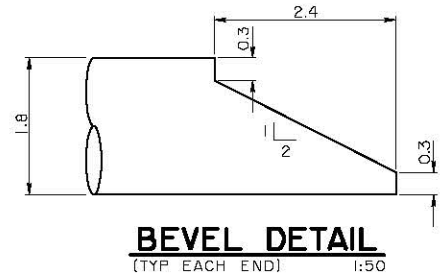
GEOTECHNICAL

• ALL GEOTECHNICAL INFORMATION PROVIDED FOR THIS PROJECT HAS BEEN COMPILED FOR ALBERTA TRANSPORTATION FOR DESIGN PURPOSES ONLY. WHILE IT IS BELIEVED TO CORRECTLY REPRODUCE OR SUMMARIZE OBSERVATIONS MADE DURING TESTING IT IS ONLY VALID FOR THE PRECISE LOCATION(S) SHOWN AND IS NOT TO BE CONSTRUED AS GUARANTEEING THE ACTUAL MATERIALS AND CONDITIONS EXISTING THROUGHOUT THE SITE. THE TESTING METHODS USED MAY NOT HAVE DETERMINED THE PRESENCE, ABSENCE OR EXTENT OF BOULDERS, HARD OR SOFT FORMATIONS, WATER TABLES, ARTESIAN CONDITIONS AND OTHER VARIABLES. IT IS THE RESPONSIBILITY OF OTHERS USING THIS INFORMATION TO ENSURE THAT IT IS ADEQUATE FOR THEIR PURPOSES, OR TO SUPPLEMENT IT WITH ADDITIONAL INFORMATION

THIS RECORD DRAWING INDICATES THAT THE CONSTRUCTED PRODUCT SUBSTANTIALLY COMPLIES WITH THE DESIGN DRAWINGS AND ALL APPROPRIATE CONTRACT PLANS AND SPECIFICATIONS

	PERMIT TO PRACTICE GENVAR Inc. NUMBER : P07841 APPLIED BY KEVIN D. HENSHAW, P.ENG JULY 10, 2014	DESIGNER ORIGINAL DESIGN COMPLETED BY: KEVIN D. HENSHAW, P.ENG JUNE 05, 2012 WSP Canada Inc.	FIELD REVIEW ENGINEER PROFESSIONAL SEAL APPLIED AND SIGNED BY MICHAEL B. BIRD, P.ENG JULY 10, 2014	Government of Alberta ■ Transportation						
	WATERCOURSE CULVERT ON HWY 682, 17 km W OF FAIRVIEW INFORMATION SHEET				DEPARTMENT BAR CODE DATE 2012-06-05	STREAM WATERCOURSE	LOCATION NW 35-81-5-6	HIGHWAY 682:02	FILE 75380	SHEET 2 OF 3

CONTRACT: 11-12704-00 DRAWING: 36852-C-00N
 S:\BRIDGES\2011\Projects\75380 - 11-12704-00 Hines Creek on Hwy 682:02 near Fairview\Drawings\Issued for Record\36852-C-00N

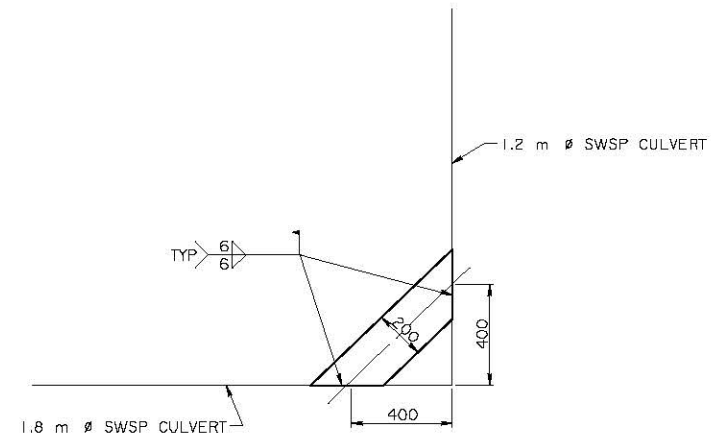


(P/2) TYPE S WEIR DETAIL 1:50

(Q/2) TYPE L WEIR DETAIL 1:50

WEIR NOTES:

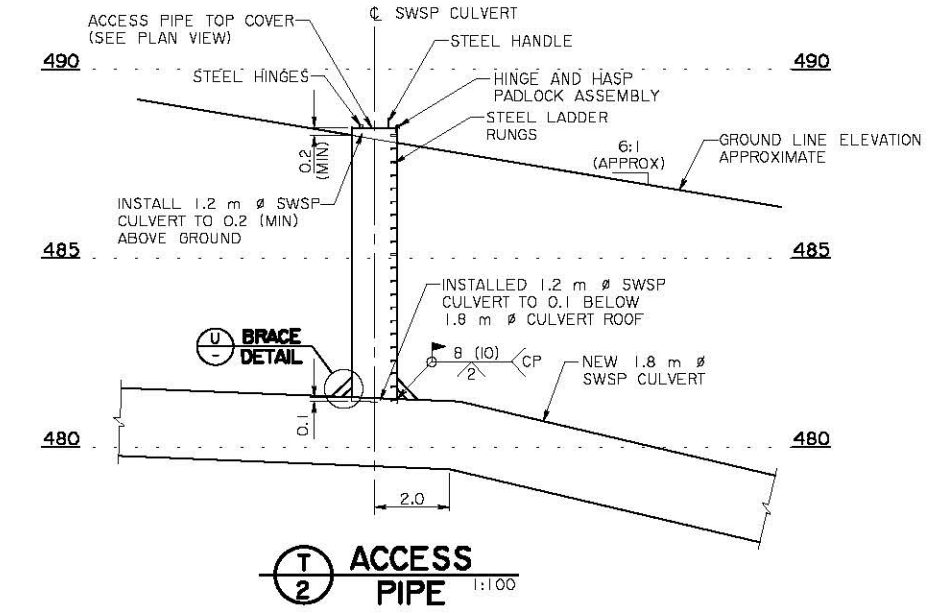
- TYPE L WEIRS TO BE USED FOR LOWER 25 m SECTION OF NEW CULVERT. TYPE S TO BE USED OTHERWISE
- WEIR SPACINGS ARE AS INDICATED ON THE LONGITUDINAL SECTION
- FIRST WEIR TO BE OFFSET 3.0 m FROM EACH CULVERT END



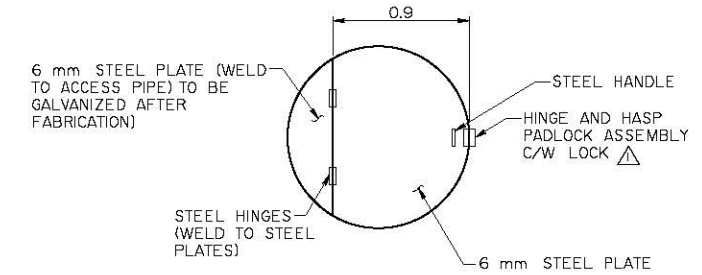
(U) BRACE DETAIL 1:15

BRACE NOTES:

- 4 PROVIDED (1 EACH SIDE)
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED
- BRACE SHAPE MODIFIED AS NECESSARY FOR CURVE IN 1.8 m \varnothing SWSP CULVERT
- 10 mm THICK 300W STEEL



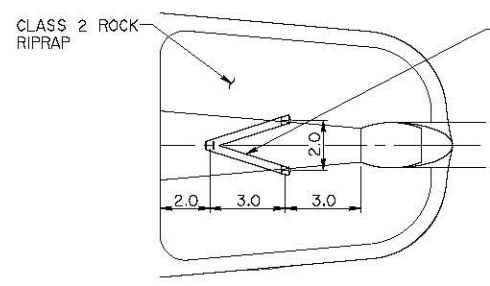
(T/2) ACCESS PIPE 1:100



ACCESS PIPE TOP COVER PLAN VIEW 1:25

ACCESS PIPE NOTES:

- ALL WELDS DEVELOPED THE FULL STRENGTH OF THE CONNECTED MEMBERS AND IS WATERTIGHT
- ALL STEEL HOT DIPPED GALVANIZED IN ACCORDANCE WITH A123 AND A153 AS APPLICABLE. DAMAGED GALVANIZING PAINTED WITH TWO COATS OF A.T. APPROVED PRODUCT
- THE LADDER AND TOP COVER OF THE ACCESS PIPE SATISFY ALL OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS



(R/2) DRIFT CATCHER 1:150

INSTALLED 3 - 5.0 m LONG HP 310 x 94 (PLAIN) PILES AS SHOWN. PILES TO BE INSTALLED THROUGH GEOTEXTILE AND SHALL EXTEND 3.0 m BELOW GROUND. WELD HP 310 x 94 CAP TO TOP OF PILES AS SHOWN. WELD CAP TO PILE ALL AROUND AT SPLICE.

ITEM	UNIT	ESTIMATE
EXCAVATION	m ³	15200
BACKFILL	m ³	13000
SURPLUS	m ³	2200
HEAVY ROCK RIPRAP - CLASS 2	m ³	124.6 Δ

QUANTITY ESTIMATE

- ALL ESTIMATED QUANTITIES ARE BASED ON IN-PLACE DIMENSIONS TO NEAT LINES SHOWN. IT IS THE RESPONSIBILITY OF OTHERS USING THIS INFORMATION TO ENSURE THAT IT IS ADEQUATE FOR THEIR PURPOSES OR TO SUPPLEMENT IT WITH ADDITIONAL INFORMATION

THIS RECORD DRAWING INDICATES THAT THE CONSTRUCTED PRODUCT SUBSTANTIALLY COMPLIES WITH THE DESIGN DRAWINGS AND ALL APPROPRIATE CONTRACT PLANS AND SPECIFICATIONS

	PERMIT TO PRACTICE GENVAR Inc NUMBER: P07641 APPLIED BY KEVIN D. HENSHAW, P.ENG JULY 10, 2014	ORIGINAL DESIGN COMPLETED BY: KEVIN D. HENSHAW, P.ENG JUNE 05, 2012 WSP Canada Inc.	PROFESSIONAL SEAL APPLIED AND SIGNED BY MICHAEL B. BIRD, P.ENG JULY 10, 2014	Government of Alberta ■ Transportation							
	WATERCOURSE CULVERT ON HWY 682, 17 km W OF FAIRVIEW MISCELLANEOUS DETAILS				DEPARTMENT BAR CODE	DATE 2012-06-05	STREAM WATERCOURSE	LOCATION NW 35-81-5-6	HIGHWAY 682:02	FILE 75380	SHEET 3 of 3

CONTRACT: 11-12704-00 DRAWING: DK
 S:\BRIDGES\2011\Project\N75380 - 11-12704-00 Hines Creek on Hwy 68202 near Fairview\Drafting\Issued for Record\36853-C.DWG

Bridge Culvert Inspection				
Bridge File Number	75380 -2 Bridge Culvert		Form Type	CUL1
Year Built	2014		Lot No.	1
Bridge or Town Name	FAIRVIEW		Inspector Name	Russel Vanderschaaf
Located Over	TRIBUTARY TO HINES CK, 8.10.80.5, WATERCRS-ST		Inspector Class	BR CLS A
Located On	682:02 C1 12.746		Assistant Name	
Water Body Cl./Year			Assistant Class	
Navigabil. Cl./Year			Inspection Date	04-Sep-2015
Legal Land Location	NE SEC 35 TWP 81 RGE 5 W6M		Arrive Time	11:28
Longitude, Latitude	-118:39:22, 56:04:08		Depart Time	12:30
Road Authority	Alberta Transportation (AIT)		Data Entry By	Dallas Coppens
Contract Main. Area	CMA04		Data Entry Date	14-Oct-2015
Clear Roadway/Skew	8.6 / -11 deg. (LHF)		Reviewer Name	Tom Carey
AADT/Year	230 / 2014 (A)		Review Date	13-Oct-2015
Road Classification	RCU-209-110		Dept. Reviewer Name	Steve Pasquan
Detour Length (km)			Dept. Review Date	18-Dec-2015
			Follow-Up By	

Bridge Culvert Information

Number of Culverts	1							
Pipe #	Barrel	Span	Rise (or Dia.)	Type	Length	Corr. Profile	Pl./Slab Thickness	Shape
1	MAIN	-	1800	SSP	157		12.7	ROUND
Special Features	BARREL ELBOW							
Special Features Comment								

Utilities (Located at)

Utility Attachments				
Telephone	2 Telus lines approx. 10m S of CL.		Gas	
Power	Atco electric, 15m N of CL.		Municipal	
Others			Problem (Y/N)	No
Remarks				

Approach Road / Embankment

	Last	Now	Explanation of Condition
Horizontal Alignment	5	5	Interseccion 15m West of culvert.
Vertical Alignment	6	4	No passing, steep grade.
Roadway Width (m)	8.600		Bump over pipe
Embankment	8	8	Measured on North side.
Sideslope (:1)	4.0		Measured from road centerline.
(Height of Cover(m) : 11.3)			
Guardrail (Y/N)	No		
Approach Road / Embankment General Rating	5	4	

Upstream End

Culvert Component	Last	Now	Explanation of Condition
Direction	N		
End Treatment (Concrete, Steel, Others, None)	STEEL		
Headwall	X	X	
Collar	X	X	
Wingwalls	X	X	
(Shape :)			
Cutoff Wall	X	X	

Upstream End				
Culvert Component		Last	Now	Explanation of Condition
Bevel End		9	9	
Heaving (mm)				
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	450			
Scour Protection		8	8	Gabion mattresses (0.3m thick) leading to rock riprap.
(Type : RIP RAP)				
(Avg. Rock Size(mm) : 500)				
Scour/Erosion		8	8	
Beavers (Y/N)	Yes			
Upstream End General Rating		8	8	
Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 1 , Primary Span, Location Code: MAIN , Span (mm): , Rise (mm): 1800 , Type: SSP)				
Barrel Last Accessible Date	04-Sep-2015			
Special Features				
Special Feature		9	9	Drift catcher
(Type : BARREL ELBOW)				
Special Feature				
(Type :)				
Roof		N	2	4m u/s of access pipe 86m from u/s end
Measured Rise (mm)	1367			
Measured At Ring No.				
Sag (mm)	433			
Percent Sag	24			
Sidewall		6	2	4m u/s of access pipe 86m from u/s end
Measured Span (mm)	2172			
Measured At Ring No.				
Deflection (mm)	372			
Percent Deflection	21			
Floor		9	3	Steel plate wiers welded to the floor on the d/s 60m of culvert. 100mm gap in floor ~93m from u/s end
Bulge (mm)	0			
Measured At Ring No.				
Abrasion (Y/N)	No			
Circumferential Seams		X	2	10mm crack between pipe sections - 23m from u/s end - photo
Separation (mm)	100			
Longitudinal Seams		X	X	23mm crack between pipe sections - 67m from u/s end - photo
Total No. of Cracked Rings				100mm cracks between pipe sections - 93m from u/s
Total No. of Rings with Two Cracked Seams				Pipe sections - 93m from u/s end moving in.
Min. Remaining Steel Between Cracks (mm)				
Proper Lap (Y/N)				
Longitudinal Stagger (Y/N)				
Coating		9	9	d/s direction
Corrosion By Soil (Y/N)	No			
Corrosion By Water (Y/N)	No			
Camber POS/ZERO/NEG	ZERO			
Ponding (Y/N)	No			

Bridge Culvert Barrel				
Culvert Component		Last	Now	Explanation of Condition
(Pipe # : 1, Primary Span, Location Code: MAIN, Span (mm): , Rise (mm): 1800, Type: SSP)				
Fish Passage Adequacy		5	5	
Baffle		9	9	
(Type :)				
Waterway Adequacy		5	5	Icing not preventing water to flow during site visit - April 1, 2014 d/s portion of pipe 1/3 full of silt
Icing (Y/N)	Yes			
Silting (Y/N)	Yes			
Drift (Y/N)	No			
Barrel General Rating		9	2	
Downstream End				
Culvert Component		Last	Now	Explanation of Condition
Direction		S		
End Treatment (Concrete, Steel, Others, None)	STEEL			
Headwall		X	X	
Collar		X	X	
Wingwalls		X	X	
(Shape :)				
Cutoff Wall		X	X	
Bevel End		9	9	
Heaving (mm)				
Invert Above/Below Stream Bed	BELOW			
Above/Below (mm)	450			
Scour Protection		8	8	
(Type : RIP RAP)				
(Avg. Rock Size(mm) : 500)				
Scour/Erosion		8	8	
Beavers (Y/N)	Yes			
Downstream End General Rating		8	8	
Structure Usage				
		Last	Now	Explanation of Condition
Channel (U/S and D/S)				
Alignment		9	9	
Bank Stability		8	8	
HWM (m below Top of Culvert)				
Drift (Y/N)	Yes			
Channel Bottom Degrading/Aggrading	AGGRADING			
Beavers (Y/N)	Yes			
(Fish Compensation Measure 1 : NONE)				
(Fish Compensation Measure 2 : NONE)				
Channel General Rating		8	9	

Maintenance Recommendations							
Inspector Recommendations	Year	Inspector Comments	Department Comments	Target Year	Est. Cost	Cat #	
SHOTCRETE REPAIRS							
PLACE ADDITIONAL RIP RAP							
REMOVE DRIFT ACCUMULATION							
INSTALL CONCRETE/STEEL LINING							
INSTALL STRUTS							
INSTALL CONCRETE COLLAR/CUTOFF							
REPAIR SEAMS	2015	Re-weld cracked circumferential seams - H					
OTHER ACTION	2015	Repair deflection near access hole - H and complete engineer review and level 2 inspection					
OTHER ACTION							
OTHER ACTION							
OTHER ACTION							
OTHER ACTION							
Structural Condition Rating (Last/Now) (%)	100.0/22.2	Sufficiency Rating (Last/Now) (%)	82.5/38.6	Est. Repl. Yr	2064	Maint. Req. (Y/N)	Yes
Special Comments for Next Inspection	Reduce inspection cycle to every 6 months. Notified David Morrison of low rating on Sept 9, 2015		Department Comments				
Maintenance Reviewed By			Date			Estimated Total	0
Proposed Long-Term Strategy							
On 3-Year Program (Y/N)							
Proposed Action							
Previous Inspector's Name	Michael Bird		Previous Assistant's Name				
Next Inspection Date	04-Dec-2018		Previous Inspection Date	01-Apr-2014			
Inspection Cycle (Default) (months)	39						
Comment							



Looking west



Looking east at downstream end



Looking north (upstream end)



Looking east (downstream end)



View of typical deflection 3 m d/s from access hole

100 mm crack along circumferential seam approx. 93 m from u/s end



View of typical deflection looking u/s from access hole



View of typical deflection looking at access hole



10 mm crack along circumferential seam approx. 26.3 m from u/s end



23 mm crack along circumferential seam approx. 67 m from u/s end



100 mm crack along circumferential seam approx. 93 m from u/s end

View of typical deflection looking u/s from d/s elbow



100 mm crack along
circumferential seam approx.
93 m from u/s end