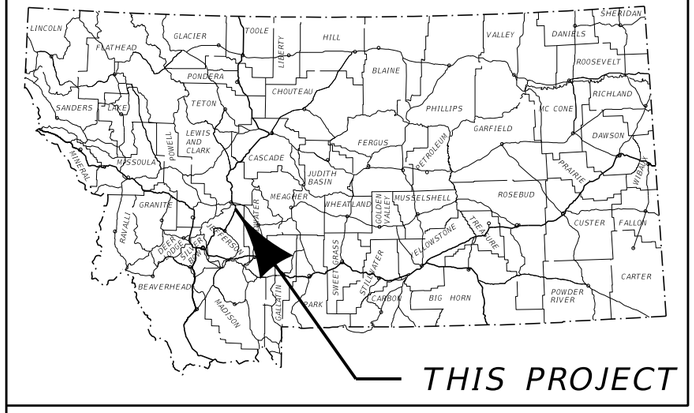
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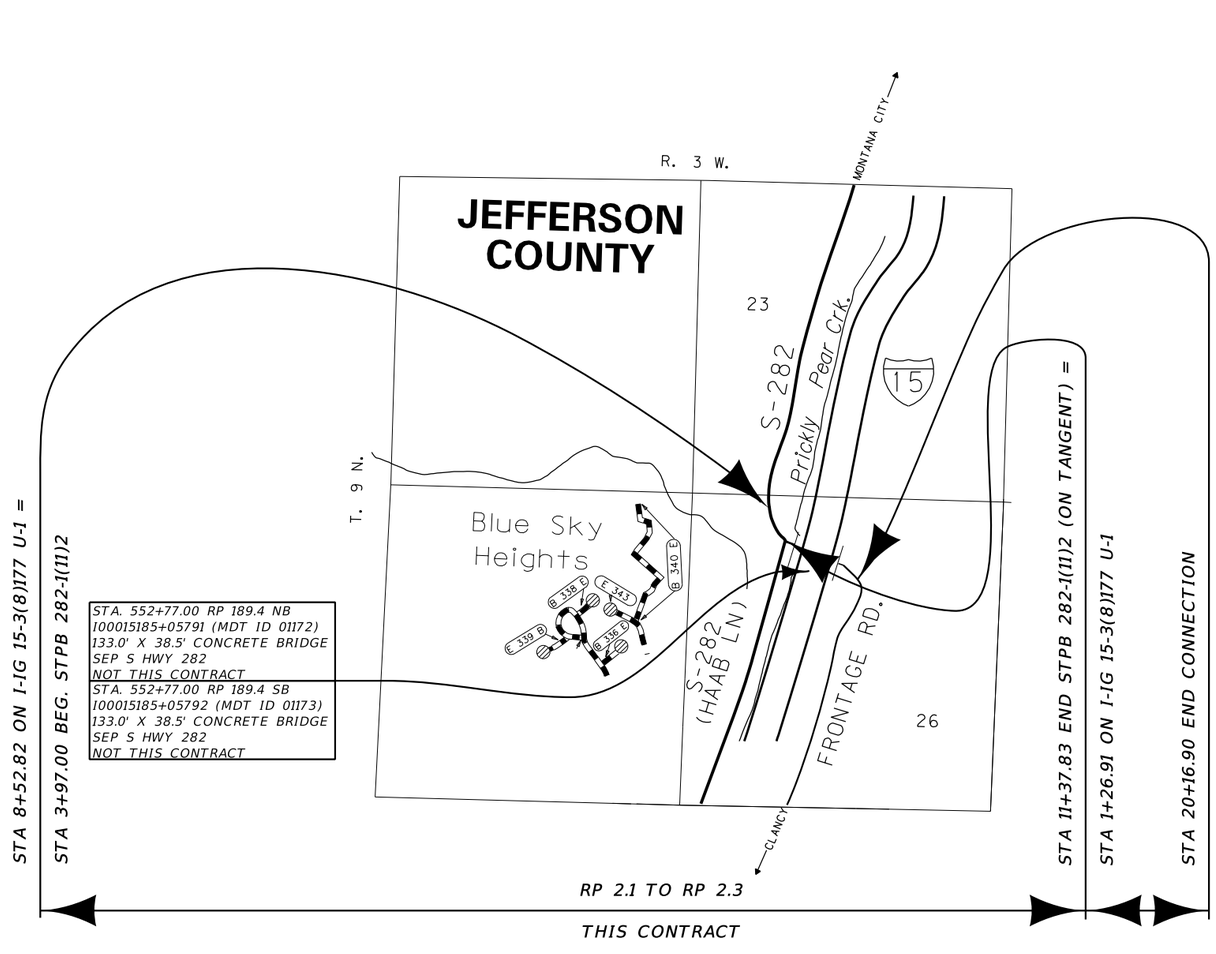
MONTANA DEPARTMENT OF TRANSPORTATION

STPB 282-1(11)2
CULVERT REPLACEMENT
S-282 CULVERT-PRICKLY PEAR CRK
JEFFERSON COUNTY

LENGTH 0.1 MILE

PROJECT DESIGN DATA		
PRESENT 2023	A.D.T. =	2,240
LETTING 2024	A.D.T. =	2,270
DESIGN 2044	A.D.T. =	3,120
	D.H.V. =	470
	TRUCKS =	1.1 %
	V. =	40 MPH
	18 KIP ESAL'S =	13 DAILY
	GROWTH RATE =	1.6 % ANNUALLY

SURFACING SOURCES - CONTRACTOR FURNISHED



ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	STPB 282-1(12)2
I.C.	
P. E.	STPB 282-1(10)2

MONTANA
DEPARTMENT OF TRANSPORTATION

MALCOLM "MACK" LONG
DIRECTOR OF TRANSPORTATION

APPROVED BY:

HIGHWAYS ENGINEER

DocuSigned by:
Damian Krings
354C32D8BEB041E...

MONTANA DAMIAN KRINGS 12113PE LICENSED PROFESSIONAL ENGINEER

2/5/2024
DATE

3 2	MONTANA Department of Transportation	C:\DGN\9684000rdtl001.dgn	DESIGNED BY J. BERAN	8/18/2023	ROAD PLANS
		11/7/2023	REVIEWED BY R. BARBULA	8/23/2023	
		10:35:15 AM CPS - U5198	CHECKED BY T. JOHNSON	10/2/2023	UPN 9684000

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NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ. YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (S & C)	= 0.75 GAL. PER SQ. YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ. YARD
COVER	= 25 LBS. PER SQ. YARD

SOILS INFORMATION

SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION. THE LOCATION OF GEOTECHNICAL BORINGS IS SHOWN ON THE PLAN VIEW WITH THE FOLLOWING SYMBOL:

BORING NUMBER

(GEOTECHNICAL BORING)

UTILITIES

CALL THE UTILITIES UNDERGROUND LOCATION CENTER (811) OR OTHER NOTIFICATION SYSTEM FOR THE MARKING AND LOCATION OF ALL LINES AND SERVICES BEFORE EXCAVATING. ALL CLEARANCES OR DEPTHS PROVIDED FOR UTILITIES ARE FROM EXISTING GROUND LINE.

PUBLIC LAND SURVEY MONUMENTS

ALL MONUMENTS TO BE REMOVED AND RELOCATED OR RESET BY STATE FORCES.

DO NOT DISTURB

SWIMMING HOLE BOULDER WALL AT CULVERT OUTLET
MINING CLAIM MONUMENT ADJACENT TO PRICKLY PEAR CRK

MISC. TO BE MOVED OR REMOVED BY OTHERS

ALL PRIVATELY OWNED SIGNS TO BE REMOVED BY OWNER.

WETLANDS

WETLANDS EXIST ADJACENT TO THE ROADWAY AND MAY EXIST BEYOND THE PROJECT LIMITS. WETLAND AREAS AND PERMANENT WETLAND IMPACT AREAS WITHIN THE PROJECT LIMITS HAVE BEEN DELINEATED AND ARE SHOWN ON THE PLANS. ANY ACTION IMPACTING WETLAND AREAS OUTSIDE OF THE PERMANENT IMPACT AREAS SHOWN IS THE RESPONSIBILITY OF THE CONTRACTOR.



DELINEATED WETLAND AREAS

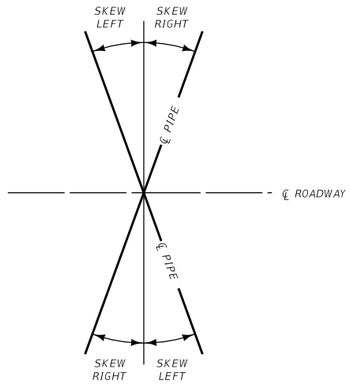


PERMANENT WETLAND IMPACTED AREAS

WETLAND DELINEATION TABLE

WETLAND DESIGNATION	STATION		WETLAND AREA (acres)		REMARKS
	FROM	TO	DELINEATED AREA	PERMANENT IMPACTED AREA	
WL-3A	5+23	5+70	0.008	0.000	RT. - NO IMPACTS
WL-3B	5+27	5+41	0.013	0.000	LT. - NO IMPACTS
WL-1	9+73	9+90	0.003	0.000	LT. - NO IMPACTS
WL-2B	10+67	10+70	0.006	0.001	LT. - TRACE IMPACTS
WL-2A	11+05	11+30	0.002	0.000	RT. - NO IMPACTS
TOTAL			0.03	0.00	

SKEW DIAGRAM



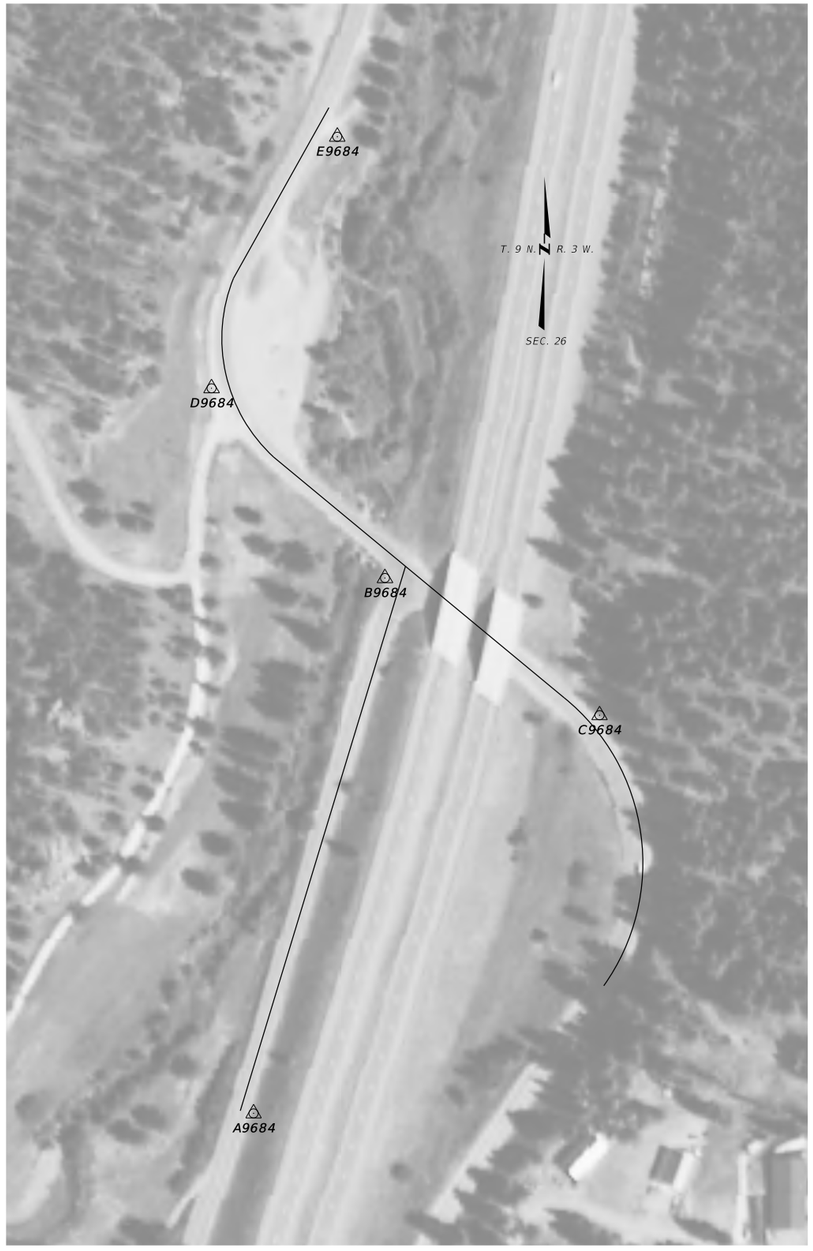
CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN THE UNIT PRICE BID FOR UNCL. EXC.

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CONTROL DIAGRAM

SCALE: N/A



CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
A9684	833,474.278	1,352,279.199	4108.82	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "A9684" FLUSH WITH THE GROUND. THE MONUMENT IS ON HAAB LN, 0.144 MI SOUTH FROM INTERSECTION WITH FRONTAGE ROAD MT-282, 6.2' W OF THE EXISTING R/W FENCE AND 6.0' E FROM THE EOP, 29.5' N OF DELINEATOR. SET LATH 3' E OF CAP WITH FLAGGING.
B9684	834,180.981	1,352,452.677	4099.63	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "B9684" FLUSH WITH THE GROUND. THE MONUMENT IS ON FRONTAGE RD MT-282 IN SW QUAD OF INTERSECTION WITH HAAB LN. 31.4' N FROM S END OF GUARD RAIL, 13.3' S OF DELINEATOR AT MM 2.253. SET LATH 3' W OF CAP WITH FLAGGING.
C9684	833,999.829	1,352,735.984	4105.57	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "C9684" FLUSH WITH THE GROUND. THE MONUMENT IS ON FRONTAGE RD MT-282 AT MM 2.317. 18.6' N OF PTW, 14.6' W OF SIGN, 5.1' NE OF END OF GUARD RAIL. SET LATH 3' W OF CAP WITH FLAGGING.
D9684	834,431.457	1,352,223.675	4104.53	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "D9684" FLUSH WITH THE GROUND. THE MONUMENT IS ON FRONTAGE RD MT-282 AT MM 2.192. 24.8' W OF PTW, 18.1' N OF SIGN, 34.1' NW OF MAILBOX CLUSTER. SET LATH 3' W OF CAP WITH FLAGGING.
E9684	834,763.609	1,352,389.698	4096.68	SET MDT 2" CONTROL CAP ON 5/8" X 30" REBAR STAMPED "E9684" FLUSH WITH THE GROUND. THE MONUMENT IS ON FRONTAGE RD MT-282 AT MM 2.120. 18.8' E OF EOP, 142' N OF GRAVEL PARKING AREA, 46.2' S OF DELINEATOR. SET LATH 3' E OF CAP WITH FLAGGING.

NOTE:
THIS PROJECT IS ON THE MONTANA COORDINATE SYSTEM NAD83-2011.
NORTHING AND EASTING COORDINATES ARE EXPRESSED IN UNITS OF INTERNATIONAL FEET AND ELEVATIONS ARE IN UNITS OF U.S. SURVEY FEET.

DIMENSIONS SHOWN ON THE PLANS ARE GRID. ALL SURVEY AND STAKING REQUIRE THE USE OF A COMBINATION SCALE FACTOR (CSF) TO CONVERT GRID DIMENSIONS TO GROUND DIMENSIONS (GRID DISTANCE / CSF = GROUND DISTANCE).
THE CSF FOR THIS PROJECT IS 0.999236729.

BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM NAD 83-2011

LEVEL DATUM SOURCE

ELEVATIONS ARE DERIVED FROM DIFFERENTIAL LEVELS HOLDING THE ELEVATIONS AT NGS BENCHMARK L437

CENTERLINE ALIGNMENT COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
3+97.00	PC	834,798.043	1,352,370.844	BEGIN PROJECT
4+30.01	PI	834,767.889	1,352,357.411	
4+63.00	PT	834,738.667	1,352,342.056	
6+21.52	PC	834,599.550	1,352,266.051	
7+97.89	PI	834,444.774	1,352,181.491	
9+16.74	PT	834,331.895	1,352,317.005	
9+50.00	POT	834,310.607	1,352,342.561	BEGIN RECONSTRUCTION
9+51.01	POT	834,310.002	1,352,343.270	
11+37.83	POT	834,190.392	1,352,486.882	END RECONSTRUCTION, BEGIN PTW CONNECTION
18+66.55	PC	834,043.905	1,352,662.742	
20+16.90	PC	833,928.618	1,352,757.893	END PTW CONNECTION

GPK NAME: JOB684.GPK CHAIN NAME: S282_CL PROFILE NAME: VA_282_DIGOUT

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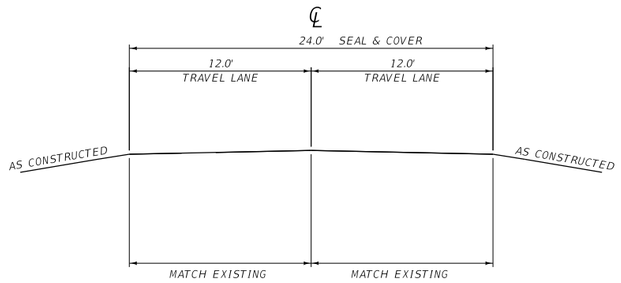
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TYPICAL SECTION NO. 1

S-282 MAINLINE/X-22925

3+97.00 TO 6+50.00
6+50.00 TO 7+00.00 TRANS. TYP. NO. 1 TO TYP. NO. 2

CONNECT TO PTW
20+16.90 ONLY



QUANTITIES			
UNIT	AGGREGATE COVER	UNIT	BITUMINOUS MATERIAL EMULSIFIED ASPHALT SEAL
AREA square feet		square yards PER STATION	267
cubic yards PER STATION		tons PER STATION	0.48
tons PER STATION		gals. PER STATION	
square yards PER STATION	267		

* FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	3:1
10' - 15'	2:1
OVER 15'	1.5:1

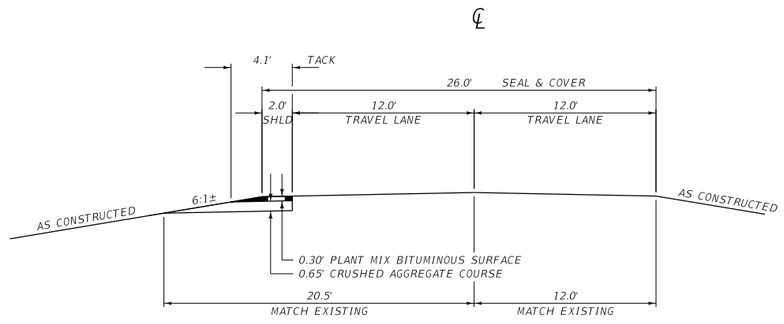
* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 2

S-282 MAINLINE/X-22925

7+00.00 TO 9+50.00 THEN TYP. NO. 3

CONNECT TO PTW
18+57.52 TO 19+66.90
19+66.90 TO 20+16.90 TRANS. TYP. NO. 2 TO TYP. NO. 1



QUANTITIES						
UNIT	AGGREGATE COVER	AGGREGATE PLANT MIX	AGGREGATE CR. AGG. COURSE	UNIT	BITUMINOUS MATERIAL EMULSIFIED ASPHALT SEAL	BITUMINOUS MATERIAL EMULSIFIED ASPHALT TACK*
AREA square feet		0.92	4.10	square yards PER STATION	289	46
cubic yards PER STATION		3.4	15.2	tons PER STATION	0.52	
tons PER STATION		6.6		gals. PER STATION		2
square yards PER STATION	289					

*BASED ON 1 APPLICATION

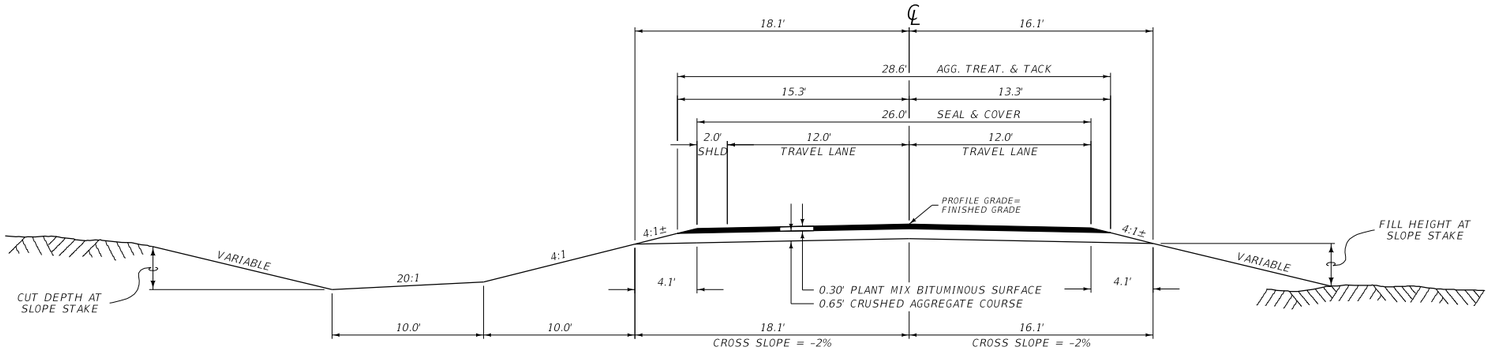
3	MONTANA Department of Transportation	C:\DGN\9684000rdtyp001.dgn	DESIGNED BY J. BERAN	8/18/2023	ROAD PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		11/7/2023	REVIEWED BY				
		10:35:53 AM CPS - U5198	CHECKED BY		JEFFERSON COUNTY	UPN 9684000	4

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TYPICAL SECTION NO. 3

S-282 MAINLINE

9+50.00 TO 11+27.52 THEN TYP. NO. 4



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE		EMULSIFIED ASPHALT SEAL	AGG. TREATMENT	EMULSIFIED ASPHALT TACK*	
AREA square feet		8.19	20.41	square yards PER STATION	289	318	636	
cubic yards PER STATION		30.3	75.6	tons PER STATION	0.52			
tons PER STATION		58.4		gals. PER STATION			32	
square yards PER STATION	289							

*BASED ON 2 APPLICATIONS

* FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

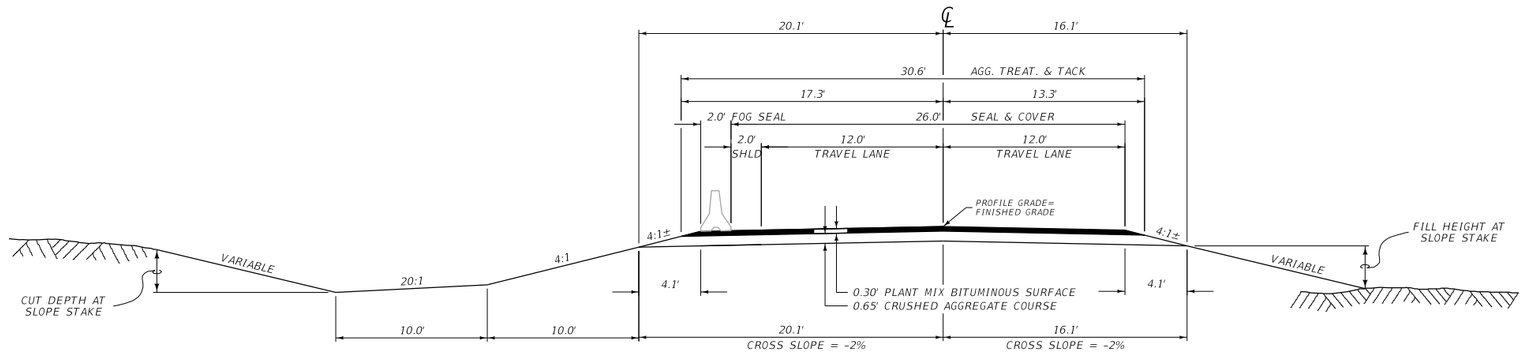
* BACK SLOPES	
0' - 5'	5:1
5' - 10'	3:1
10' - 15'	2:1
OVER 15'	1.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 4

S-282 MAINLINE

11+27.52 TO 11+37.83 THEN TYP. NO. 5



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			
	COVER	PLANT MIX	CR. AGG. COURSE		EMULSIFIED ASPHALT SEAL	AGG. TREATMENT	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA square feet		8.79	21.71	square yards PER STATION	289	340	680	22
cubic yards PER STATION		32.6	80.4	tons PER STATION	0.52			
tons PER STATION		62.8		gals. PER STATION			34	2
square yards PER STATION	289							

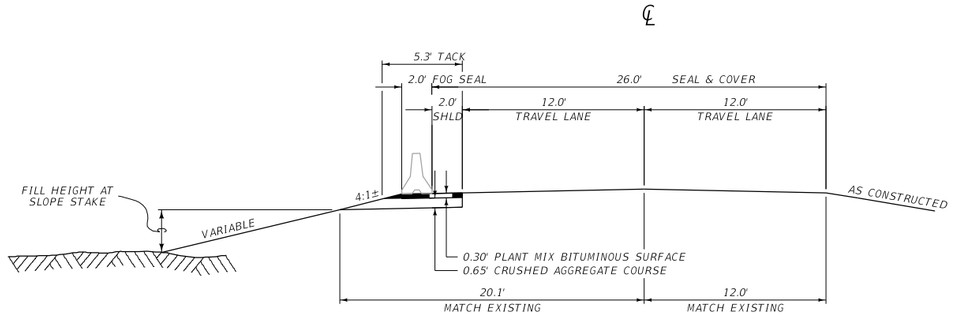
*BASED ON 2 APPLICATIONS

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TYPICAL SECTION NO. 5

S-282 MAINLINE/X-22925

CONNECT TO PTW
11+37.83
11+40.58 BK. = 16+40.58 AH. EQUATION
TO 18+57.52 THEN TYP. NO. 2



QUANTITIES							
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX	CR. AGG. COURSE		EMULSIFIED ASPHALT SEAL	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA square feet		1.40	4.36	square yards PER STATION	289	59	22
cubic yards PER STATION		5.2	16.1	tons PER STATION	0.52		
tons PER STATION		10.0		gals. PER STATION		3	2
square yards PER STATION	289						

*BASED ON 1 APPLICATION

* FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	3:1
10' - 15'	2:1
OVER 15'	1.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

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SUMMARY

SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE sq. yards COVER TYPE 1	AGGREGATE tons COMM. MIX PG 58V-34	AGGREGATE cu. yards CRUSHED AGG. COURSE	BITUMINOUS MATERIAL tons EMULSIFIED ASPHALT CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT FOG SEAL	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
S-282														
3+97.00	6+50.00	253.00	253.00				676			1.2				TYP. NO. 1
6+50.00	7+00.00	50.00	50.00				139	2	4	0.3	1			TRANS. TYP. NO. 1 TO TYP. NO. 2
7+00.00	9+50.00	250.00	250.00				723	17	38	1.3	5			TYP. NO. 2
9+50.00	11+27.52	177.52	177.52				513	104	134	0.9	57		565	TYP. NO. 3
11+27.52	11+37.83	10.31	10.31				30	6	8	0.1	4	1	35	TYP. NO. 4
						ADDITIONAL SURFACING	1,541	41	98	2.8	21	4	112	
TOTAL		740.83	740.83	~	~		3,622	170	282	6.6	88	5	712	

* CONNECT TO PTW

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE sq. yards COVER TYPE 1	AGGREGATE tons COMM. MIX PG 58V-34	AGGREGATE cu. yards CRUSHED AGG. COURSE	BITUMINOUS MATERIAL tons EMULSIFIED ASPHALT CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT FOG SEAL	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
X-22925														
11+37.83														
11+40.58 BK.	16+40.58 AH.				500.00	EQUATION								
	18+57.52	719.69	219.69				635	22	35	1.1	7	4		** TYP. NO. 5
18+57.52	19+66.90	109.38	109.38				316	7	17	0.6	2			** TYP. NO. 2
19+66.90	20+16.90	50.00	50.00				139	2	4	0.3	1			** TRANS. TYP. NO. 2 TO TYP. NO. 1
18+57.52	19+54.40					GUARDRAIL WIDENING			2					*
S-282														
9+04.53	9+65.03					OTS WIDENING			12					*
9+65.03	11+27.52					GUARDRAIL WIDENING			7					* NO GUARDRAIL WIDENING 10+25 TO 10+56
10+66.59	11+37.83					APPROACH TIE-IN	77	10	21	0.1	11		112	* RT. HAAB LANE
11+37.83	17+28.93					APPROACH	374			0.7				* RT. HAAB LANE, SEAL & COVER ONLY
SUBTOTAL		~	~	~	~		1,541	41	98	2.8	21	4	112	

* MEASURED ON CADD
** CONNECT TO PTW

CULVERTS

STATION	linear feet RCB 20' X 10'	END SECTIONS LEFT	END SECTIONS RIGHT	linear feet REMOVE PIPE CULVERT	cu. yards CULVERT EXCAVATION #	cu. yards FOUND-ATION MATERIAL	cu. yards GRANULAR BEDDING MATERIAL	cu. yards CULVERT INFILL	cu. yards SPECIAL BACKFILL	cu. yards CONCRETE - CLASS GENERAL	sq. yards GEOTEXT. STAB.	linear feet HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
5+34													2° RT.	24 x 45.4 CSP	USE AS IS, WL - 3A & 3B
10+71				139.7										DOUBLE 12"-10" S X 8"-4" R SSPA	
10+73	90	2:1 SLOPE	2:1 SLOPE		2,332	173	87	149	1,640	16.2	3,506	4.5	21° LT.		
12+60														12 X 50.9 CSP	USE AS IS, 22.1' LT., S-282/HAAB LN.
12+72													3° LT.	24 X 47.8 CSP	USE AS IS, S-282/HAAB LN.
18+70														24 X 76.6 CSP	USE AS IS, X-22925/FRONTAGE RD.
TOTAL	90	~	~	139.7	~	173	87	149	1,640	16.2	3,506	~	~	~	

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SUMMARY

GUARDRAIL

STATION		linear feet				each				REMARKS
		REMOVE GUARDRAIL		MGS GUARDRAIL ##		MASH W-BEAM TERMINAL SECTION		BRIDGE APPROACH SECTION TYPE 1		
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
NEW RAIL										
9+30.65	11+27.52			# 137.5		1		1		TIE INTO NEW BARRIER RAIL (S-282)
18+57.52	19+41.90			# 25.0		1		1		TIE INTO NEW BARRIER RAIL (X-22925)
REMOVE RAIL										
8+63.13	11+35.16		296.9							INCLUDES OTS & 25' IRT
9+30.14	11+27.52	201.9								INCLUDES OTS & 50' IRT
18+57.91	19+44.60	89.4								INCLUDES OTS (X-22925)
SUBTOTAL		291.3	296.9	162.5	~	2	~	2	~	
TOTAL		588.2		162.5		2		2		

INCLUDES GUARDRAIL HEIGHT TRANSITION OVER 25' FROM MGS RAIL TO BRIDGE APPROACH SECTION
PROVIDE HALF POST SPACING FROM 10+25 TO 10+56 WHERE GUARDRAIL WIDENING IS OMITTED

CONCRETE BARRIER RAIL

STATION		each		REMARKS
		REMOVE CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL #	
FROM	TO			
11+27.52				
11+40.58 BK.	16+40.58 AH.			
	18+57.52	23	23	LT.
TOTAL		23	23	

INSTALL ALL CONCRETE BARRIER RAIL WITH A TYPE 1 ANCHOR

GRADING

STATION		cu. yards			REMARKS
		UNCL. EXC.	EXCESS EXC.	EMB.+	
6+50.00					
		481		258	S-282
20+16.90					
		152			ADDITIONAL GRADING
TOTAL		633	# 375	# 258	

FOR INFORMATION ONLY

* ADDITIONAL GRADING

STATION		cu. yards			REMARKS
		INCL. IN ROADWAY		ADD. UNCL. EXC.	
		UNCL. EXC.	EMB.+		
FROM	TO				
6+50.00	9+50.00		4	74	SHOULDER WIDENING CONN. TO PTW
11+37.83	18+57.52		3	44	BARRIER RAIL WIDENING
18+57.52	20+16.90		1	34	GUARDRAIL WIDENING CONN. TO PTW
9+50.00	20+16.90		45		TOPSOIL REPLACEMENT
TOTAL		~	~	152	

* MEASURED ON CADD

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICATION #	FINAL APPLICATION	TOTAL
STRIPING - WHITE PAINT	gallon	162		162
STRIPING - YELLOW PAINT	gallon	162		162
WORDS & SYMBOLS - WHITE PAINT	gallon	1		1
STRIPING - WHITE EPOXY	gallon		108	108
STRIPING - YELLOW EPOXY	gallon		108	108
WORDS & SYMBOLS - WHITE EPOXY	gallon		1	1
TEMPORARY STRIPING	linear feet			312
FINAL SWEEP AND BROOM	course mile			0.2

BASED ON 2 APPLICATIONS

RUMBLE STRIPS

STATION		miles	gals	REMARKS
		RUMBLE STRIPS CENTERLINE TYPE 1	EMULSIFIED ASPHALT FOG SEAL #	
FROM	TO			
9+50.00	11+06.09	0.1	4	LOW QUANTITY, 0.03 MI OF CLRS
TOTAL		0.1	~	

FOR INFORMATION ONLY, INCLUDE IN THE COST OF RUMBLE STRIPS

FENCING

STATION		linear feet	each		linear feet	REMARKS
		FARM FENCE TYPE WF4-3BS-16W	FARM FENCE PANEL		FARM GATE	
			SINGLE	DOUBLE		
FROM	TO		FW	FW	TYPE G2	
8+60.71	8+70.28				16	
8+70.28	10+74.35	250	3	1		
TOTAL		250	3	1	16	

* REVEGETATION

STATION		lump sum	cu. yards	acres		sq. yards	REMARKS
		REVEGETATION	TOPSOIL SALVAGING & PLACING	SEED	CONDITION SEEDBED	EROSION CONTROL BLANKET	
FROM	TO						
9+50.00	20+16.90	1	45	0.21	0.21	233	
TOTAL		1	# 45	# 0.21	# 0.21	# 233	

* SEE SPECIAL PROVISIONS
# FOR INFORMATION ONLY

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HYDRAULIC DATA SUMMARY *

STATION	STREAM NAME (IF NAMED)	DRAINAGE AREA (mi^2)	SIZE/TYPE STRUCTURE (1) (2) (5)	DESIGN FLOOD MAGNITUDE (cfs)	DESIGN FLOOD FREQUENCY (%)	DESIGN FLOOD H.W. ELEV. (ft)	BASE FLOOD (1%) MAGNITUDE (cfs)	BASE FLOOD (1%) H.W. ELEV. (ft)	OVERTOPPING FLOOD (3) (4) MAGNITUDE (cfs)	OVERTOPPING FLOOD (3) (4) APPROX. FREQUENCY (%)	OVERTOPPING FLOOD (3) (4) H.W. ELEV. (ft)	REMARKS (FLOOD OF RECORD), Qp(max), etc.) (6)
10+73	PRICKLY PEAR CREEK	192	20' S X10' R RCB	1,100	2	4095.70	1,410	4097.01	1740.00	1.0	4098.54	1981 PEAK FLOW 2300 CFS

NOTES: * H.W. ELEVATIONS SHOWN ARE BASED UPON PEAK FLOW ANALYSIS UNLESS NOTED IN REMARKS COLUMN.

(1) STRUCTURE SIZE OR TYPE AND RELATED HYDRAULIC DATA MAY NOT REFLECT CHANGES MADE DUE TO R/W OR OTHER CONSIDERATIONS (I.E. STOCKPASS ADDED, STRUCTURE SIZE OR TYPE CHANGED, ROAD GRADE CHANGED DURING CONSTRUCTION, ETC.)

(2) BRIDGE LENGTH SHOWN EQUALS THE WATER SURFACE WIDTH IN THE OPENING AT THE DESIGN H.W. ELEVATION MEASURED NORMAL TO FLOW.

(3) OVERTOPPING IS DEFINED AS FLOW OVER THE ROAD, FLOW THROUGH A SIGNIFICANT RELIEF STRUCTURE OR FLOW OVER THE BASIN DIVIDE WHICHEVER IS LOWER.

(4) FOR THOSE CROSSINGS NOTED BY Qp(max) IN THE REMARKS COLUMN OVERTOPPING DOES NOT OCCUR AND THE FLOOD MAGNITUDE LISTED CORRESPONDS TO THE FLOOD OF SECTION 650.115 (a)(1)(ii) OF FEDERAL-AID POLICY GUIDE; SUBCHAPTER G, PART 650, SUBPART A (DEC. 1991).
THE FLOOD SPECIFIED IS SUBJECT TO STATE-OF-THE-ART CAPABILITY TO ESTIMATE THE EXCEEDANCE PROBABILITY (PIPES 0.5%; BRIDGE 0.2%).

(5) HIGH WATER ELEVATIONS MAY VARY SLIGHTLY DEPENDING UPON THE PIPE OPTION SELECTED.

(6) PROCEDURE MEMORANDUM NO. 10, HYDRAULICS MANUAL CHAPTER 9 APPENDIX H.

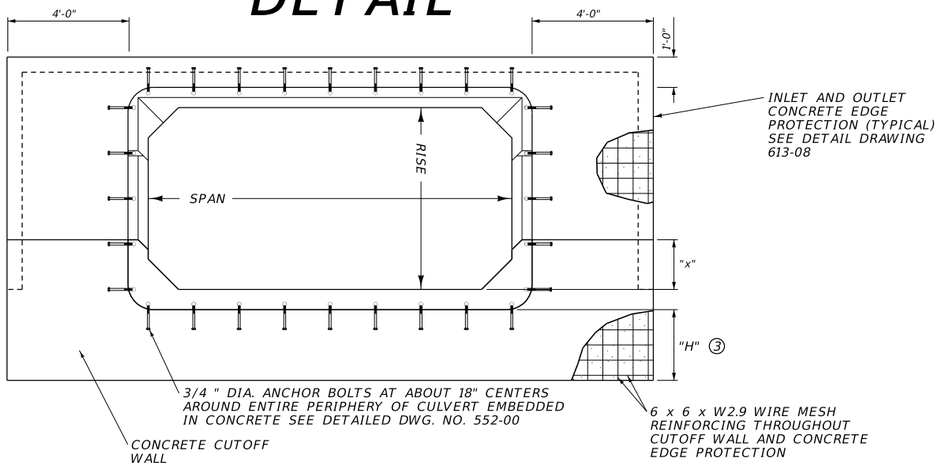
EXCEEDANCE PROBABILITIES

25 YEAR	4% CHANCE
50 YEAR	2% CHANCE
100 YEAR	1% CHANCE
200 YEAR	0.5% CHANCE
500 YEAR	0.2% CHANCE

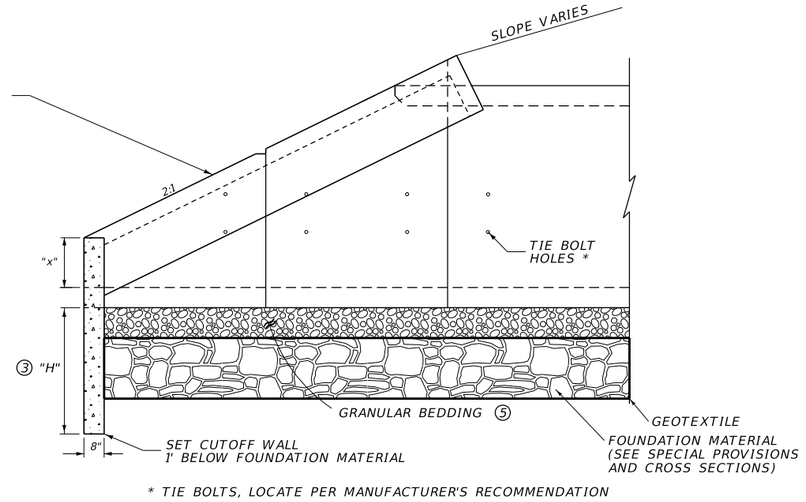
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DETAIL

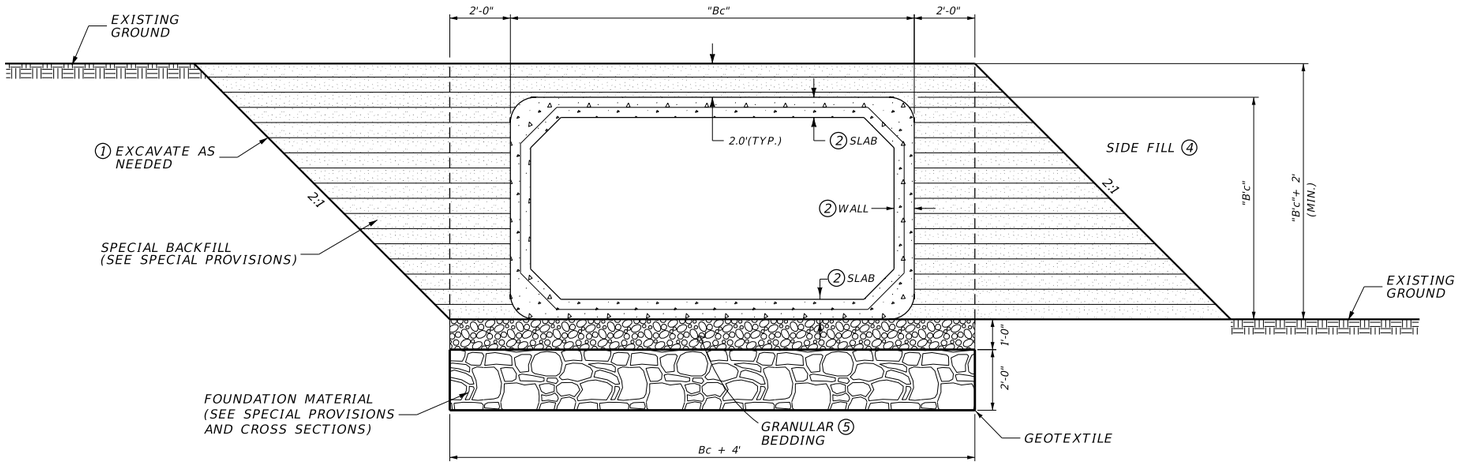


FRONT ELEVATION



* TIE BOLTS, LOCATE PER MANUFACTURER'S RECOMMENDATION

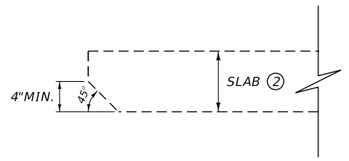
SIDE ELEVATION



EXCAVATION TYPICAL

BEDDING DETAIL

FILL TYPICAL



TOP BEVEL DETAIL

DIMENSIONS										
STATION	SPAN (ft.)	RISE (ft.)	LENGTH (ft.)	WALL (in.)	SLAB (in.)	"Bc" (ft.)	"x" (ft.)	"B'c" (ft.)	"H" (ft.)	COVER (ft.)
10+73	20	10	90	12	12	22.00	5.67	12.00	4	4.5

NOTE: INCLUDE REINFORCING MATERIAL, CUTOFF WALL, AND CONCRETE EDGE PROTECTION IN THE UNIT PRICE BID PER CUBIC YARD OF CLASS GENERAL CONCRETE.
INCLUDE ANCHOR BOLTS IN THE UNIT PRICE BID PER LINEAR FOOT OF CULVERT.
PROVIDE BOX CULVERTS MEETING ASTM C1577.
QUANTITIES ARE BASED ON THE DIMENSIONS IN THE TABLE.

NOTES:

① EXCAVATE A SUFFICIENT AMOUNT TO PROVIDE A SAFE WORKING ENVIRONMENT AND TO ALLOW ACHIEVEMENT OF ALL CULVERT INSTALLATION AND COMPACTION REQUIREMENTS. SLOPE, BENCH OR PROVIDE SHORING FOR ALL EXCAVATIONS IN ACCORDANCE WITH THE U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.

② FOR ESTIMATING QUANTITIES ONLY. ACTUAL DIMENSION TO BE DETERMINED BY PRECAST MANUFACTURER.

③ 3'-0" MIN. OR 1'-0" BELOW BOTTOM OF FOUNDATION MATERIAL IF SPECIFIED.

④ COMPACT AND PLACE SIDE FILL PER SECTION 603 AND 203.

⑤ SEE SECTION 701 OF THE STANDARD SPECIFICATIONS FOR GRANULAR BEDDING REQUIREMENTS. THE CONTRACTOR HAS THE OPTION OF USING A SAND CUSHION ABOVE THE GRANULAR BEDDING TO FACILITATE JOINING OF THE BOX CULVERT SECTIONS.

DETAIL

SLOPED END RCB

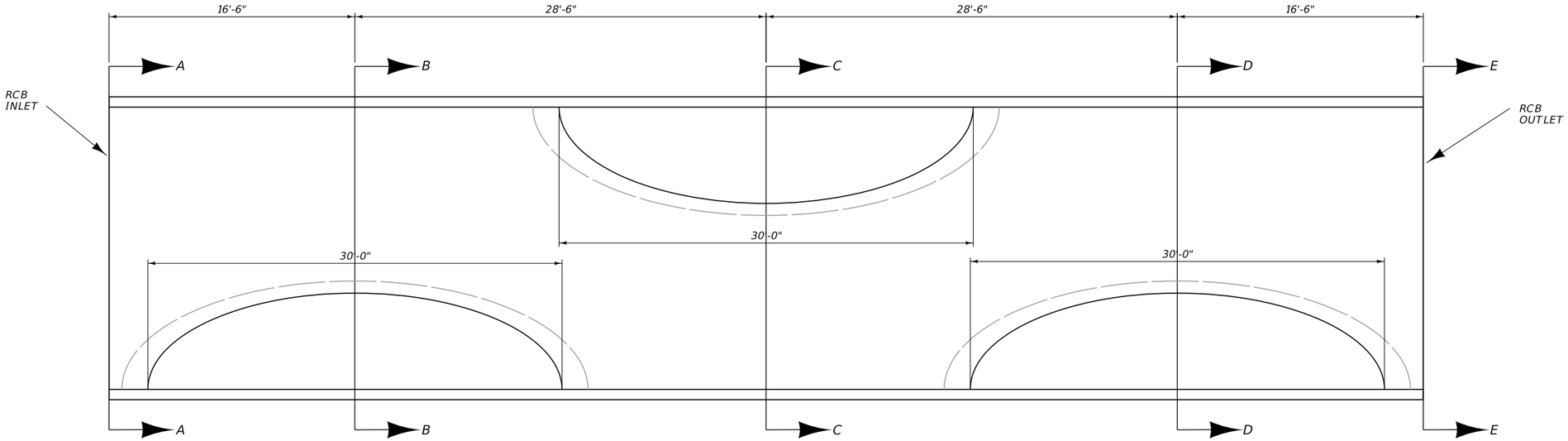
NO SCALE

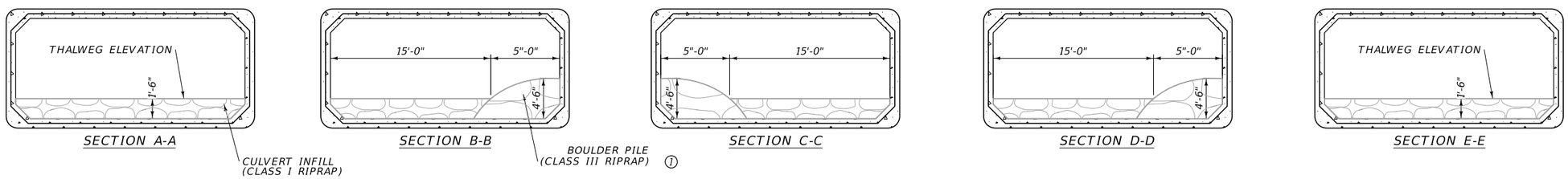
3	MONTANA Department of Transportation	C:\DGN\9684000rddet001.dgn	DESIGNED BY T. R. LITTLE	3/9/2023	ROAD PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		11/7/2023	REVIEWED BY		JEFFERSON COUNTY	UPN 9684000	10
		10:36:50 AM CPS - U5198	CHECKED BY				

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DETAIL





SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

CULVERT INFILL (CLASS I RIPRAP)

BOULDER PILE (CLASS III RIPRAP) (1)

NOTES:

(1) BOULDER PILES CONSIST OF CLASS III RIPRAP VARYING IN DIAMETER BETWEEN 24 AND 36 INCHES PLACED DIRECTLY ON THE BOX BOTTOM.

PILE RIPRAP TOTAL DIMENSIONS PER DETAIL

DO NOT PLACE BOULDER GROUPINGS DIRECTLY ON TOP OF RIPRAP-INFILL LAYER.

ENSURE BOULDERS ARE PARTIALLY BURIED AS DETAILED.

PLACEMENT OF BOULDER PILES ARE INCLUDED IN THE UNIT BID PRICE PER CUBIC YARD OF CULVERT-INFILL.

INFILL CLASS 1 RIPRAP AND BOULDER PILES PER CULVERT INFILL SPECIAL PROVISION

DETAIL

BOX CULVERT INFILL

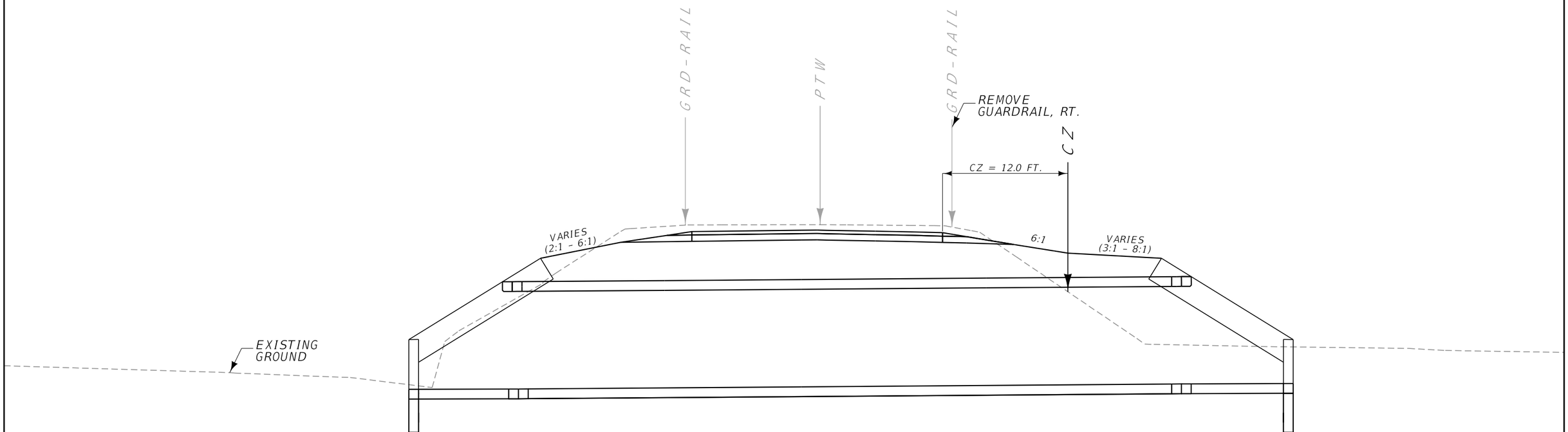
NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9684000rddet001.dgn	DESIGNED BY	T. R. LITTLE	3/9/2023	ROAD PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
		11/7/2023	REVIEWED BY					
		10:36:54 AM CPS - U5198	CHECKED BY			JEFFERSON COUNTY	UPN 9684000	11

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DETAIL



DETAIL

CULVERT SAFETY SLOPE & CLEAR ZONE (CROSS-SECTION SKEWED 21° LT.)

NO SCALE

2	MONTANA Department of Transportation	C:\DGN\9684000rddet001.dgn	DESIGNED BY	J. BERAN	9/1/2023	ROAD PLANS		S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
1		11/7/2023	REVIEWED BY						
		10:36:58 AM CPS - U5198	CHECKED BY			JEFFERSON COUNTY		UPN 9684000	12

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X = 1352549.204
Y = 834122.875

X-22925

X = 1352478.018
Y = 834163.336

S-282

X = 1352479.202
Y = 834181.172

30.0

I-15

X = 1352467.689
Y = 834151.897

R 50.0

X = 1352501.069
Y = 834144.135

SEAL & COVER ONLY

X = 1352457.012
Y = 834133.102

T. 9 N.
R. 3 W.
SEC. 26

HAAB LANE

X = 1352456.231
Y = 834087.368

X = 1352432.311
Y = 834095.672

DETAIL

HAAB LANE
STOP BAR GEOMETRICS

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9684000rddet002.dgn	DESIGNED BY	J. BERAN	8/22/2023	ROAD PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		11/7/2023	REVIEWED BY					
		10:37:13 AM CPS - U5198	CHECKED BY			JEFFERSON COUNTY	UPN 9684000	13

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T. 9 N., R. 3 W.
SEC. 26

PI =4+30.01
Δ =3° 42' 27" (RT)
R =1,020'
T =33.01'
L =66.00'
E =0.53'

PC 3+97.00
BEG. SEAL & COVER

PT 4+63.00

WL-3B

WL-3A

M 83-58-18

S 28° 38' 58" W

PC 6+21.52

PT 9+16.74

PI =7+97.89
Δ =78° 51' 23" (LT)
R =215'
T =176.37'
L =295.22'
E =63.20'

WL-2B

WL-1

10+00

POB 11+21.52

S 50° 12' 24" E

EX. R/W

WALLACE RD.

3+97.00
BEG. STPB 282-1(11)2
9+50.00
BEG. RECONSTRUCTION

10+71
DR. IN PLACE
REMOVE

10+73
NEW 20' X 10' RCB
SKEW 21° LT.

10+25
CONST. PMT. RT.
BEG. ACCELERATION

10+84.69
END ACCELERATION
CONST. PMT. RT.

WL-2A

S 14° 16' 40" W (S 28° 58' 40" W)
= 11+40.58 AH (X-229.35)

11+37.83
END STPB 282-1(11)2
BEG. PTW CONNECTION

18+62.66
FIBER OPTIC
UNKNOWN DEPTH

18+96.31
FIBER OPTIC
UNKNOWN DEPTH

19+22.91
FIBER OPTIC
UNKNOWN DEPTH

20+00

WL-2B
DELINEATED AREA = 0.006 ACRES
IMPACTED = 0.001 ACRES

I-15 NORTH

I-15 SOUTH

15

HAAB LN.

PC 18+66.55

PI =19+56.18
Δ =25° 02' 32" (RT)
R =404'
T =89.63'
L =176.39'
E =9.83'

PC 20+42.94

20+16.90
END CONNECTION TO PTW

SWIMMING HOLE BOULDER WALL AT CULVERT OUTLET
DO NOT DISTURB

MINING CLAIM MONUMENT ADJACENT TO PRICKLY PEAR CRK.
DO NOT DISTURB

4,103.17

10+50.00
EL.4,102.35

4,100.31

-0.820%

-2.321%

120' VC

+27.52 — +57.52
NEW CONCRETE BARRIER RAIL LT.

+30.65 — +27.52
NEW MGS GUARDRAIL LT.

+57.52 — +41.90
NEW MGS GUARDRAIL LT.

4110
4100
4090
4080
4070

5+00 10+00 11+00 17+00 20+00

3	MONTANA Department of Transportation	C:\DGN\9684000rdplp001.dgn	DESIGNED BY J. BERAN	8/18/2023	ROAD PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		11/7/2023	REVIEWED BY				
		10:37:24 AM CPS - U5198	CHECKED BY		JEFFERSON COUNTY	UPN 9684000	14

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SUMMARY
SIGNING & DELINEATION QUANTITIES

MATERIAL	TOTAL	UNIT
SIGNS-SHEET ALUMINUM-REFLECTIVE SHEETING(IV)		SQ. FOOT
SIGNS-SHEET ALUMINUM-REFLECTIVE SHEETING(XI)	234.3	SQ. FOOT
SIGNS-ALUMINUM SHEET INCREMENT SHEETING (IV)		SQ. FOOT
SIGNS-ALUMINUM SHEET INCREMENT SHEETING (XI)	77.0	SQ. FOOT
OVERLAY-SHEET ALUMINUM		SQ. FOOT
POSTS-STEEL "U"		POUNDS
POLES-TREATED WOOD-4" DIA.	154	LINEAR FT.
POLES-TREATED WOOD-5" DIA.	136	LINEAR FT.
DELINEATOR-DESIGN A	13	EACH
DELINEATOR-DESIGN C	33	EACH
DELINEATOR-DESIGN D	2	EACH
REMOVE SIGNS	10	EACH
REMOVE SIGNS-GUIDE	2	EACH
RETRO-REFL STRIP-RED 4X60	2	EACH
RETRO-REFL STRIP-YL 4X60	2	EACH

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SIGN LOCATION AND SPECIFICATIONS

REF. POINT	RAMP NO.	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	RSFO	REMARKS
HWY-282 SOUTH MAINLINE																														
RP 2.114 RT		W1-3 W13-1	36x36 24x24	FY	XI									9.0 4.0															RSFO	LEFT CURVE 25 MPH SUPPLEMENTAL
RP 2.152 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.167 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.182 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.197 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.212 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.214 RT		W2-2R	30x30	FY	XI	10-0		4"DIA. POLE		13-4		5-0	3-6	6.3			14							1						REPLACE=W2-2R INTERSECTION WARNING
RP 2.223 LT		N7-1	USE AS IS																											N7-1 = REPLACE 5-0' BEHIND GAURDRAIL
		N7-1p	36x12	XI	XI									3.0										1						REPLACE=N7-1P MT CITY STORE
RP 2.229 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 2.238 RT		G282-2a	84x48	XI	XI	20-0		5"DIA. POLES		X=18-2 Y=18-8		7-0	3-6		28.0			20 20					X		1					BLUE SKY HEIGHTS FOREST PARK ESTATES
RP 2.248 LT		W1-7a	72x42	FY	XI	5-0		5"DIA. POLES		12-9 12-9		5-0	3-6		21.0			14 14					X	1						REPLACE=TWO-DIRECTION LARGE ARROW
RP 2.250 LT		W4-4P	48x24	FY	XI	5-0		5"DIA. POLES		12-9 12-9		5-0	3-6	8.0				14 14											NEW	CAUTION=TRAFFIC FROM RIGHT WHEN FLASHING
EXTENDED SIGNING FOR HWY-282 SOUTH																														
RP 9.572 RT		W1-3 W13-1	36x36 24x24	FY	XI									9.0 4.0															RSFO	RSFO=RIGHT CURVE 25 MPH SUPPLEMENTAL
RP 9.587 RT		W8-1	30x30	FY	XI	10-0		4"DIA. POLE		12-4		5-0	3-0	6.3			14							1						REPLACE= W8-1 BUMP SIGN
RP 9.616 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.632 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.644 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.656 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.672 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.687 RT		(2) W1-8	24x30	FY	XI									10.0															RSFO	(2) W1-8 CHEVRONS
RP 9.679 LT		W8-1	30x30	FY	XI	10-0		4"DIA. POLE		12-4		5-0	3-0	6.3			14							1						REPLACE= W8-1 BUMP SIGN
RP 9.696 RT		W2-2L	30x30	FY	XI			4"DIA. POLE		12-4		5-0	3-0	6.3			14							1						REPLACE= W2-2L INTERSECTION WARNING
RP 9.724 LT		R2-1	24x30	XI	XI	10-0		4"DIA. POLE		12-4		5-0	3-0	5.0			14													R2-1=SPEED LIMIT(50) USE AS IS
RP 9.724 RT		R2-1	24x30	XI	XI	10-0		4"DIA. POLE		12-4		5-0	3-0	5.0			14													R2-1=SPEED LIMIT(55) USE AS IS
RP 9.730 RT		G282-9a	84X48	XI	XI	20-0	3-0	5"DIA. POLES		X=18-2 Y=18-8		7-0	3-6		28.0			20 20								1				BLUE SKY HEIGHTS FOREST PARK ESTATES

X = STANDARD BREAKAWAY DEVICE:
-FOR WOOD POST SEE DETAILED DRAWING 619-20.
-FOR STRUCTURAL STEEL SEE DETAILED DRAWING 619-13.

FY = TYPE XI FLUORESCENT YELLOW SHEETING REQUIRED.

RSFO = REPLACE SIGN FACE ONLY

BBR = BACKBRACING REQUIRED:
-FOR WOOD POST 2"x 4" REQ'D.
-FOR STRUCTURAL STEEL
2"x 2"x ¼" ANGLE IRON REQ'D.

Adopt-A-Highway Signing

Contractor will confirm that the group name on the sign(s) currently existing at the time of construction corresponds to the group name on the sign(s) shown in plans. If name is different, Field Project Manager will contact Traffic & Safety Bureau Signing Section with correct name and a new sign design will be provided.

3	MONTANA Department of Transportation	C:\DGN\9684000sisum001.dgn	DESIGNED BY: STEVEN MORANO	09/20/2023	SIGNING PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/23/2023	CHECKED BY: NATHAN STYREN	06/30/2023	JEFFERSON COUNTY	UPN 9684000	S2
1		8:06:08 AM CPS - U7498					

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SIGN LOCATION AND SPECIFICATIONS

REF. POINT	RAMP NO.	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS: REMOVE	SIGNS: RESET	GUIDE: REMOVE	GUIDE: RESET	RSFO	REMARKS
HAAB LANE																													
RP 2.232 RT		D3	REMOVE																					1					D3-1 = REMOVE HAAB LANE
RP 2.232 LT		R1-1	36X36	XI	XI	6-0		4"DIA. POLE		12-8		5-0	3-0	9.0			14												NEW = R1-1 1-RETRO REFL STRIP-RED 4X60
RP 2.235 RT		R1-1	36X36	XI	XI	6-0		4"DIA. POLE		12-8		5-0	3-0	9.0			14							1					REPLACE = R1-1 1-RETRO REFL STRIP-RED 4X60
		D3-1 D3-1	36X10 36X10	XI	XI									2.5 2.5															NEW = (2) D3 HAAB LANE
RP 2.262 LT		R2-1	24X30	XI	XI	10-0		4"DIA. POLE		12-4		5-0	3-0	5.0			14							1					REPLACE = R2-1 SPEED LIMIT(45)
RP 2.282 RT		W3-1a	30X30	XI	FY	10-0		4"DIA. POLE		13-4		5-0	3-0	6.3			14							1					REPLACE = W3-1a 1-RETRO REFL STRIP-YL 4X60
RP 2.282 LT		W3-1a	30X30	XI	FY	10-0		4"DIA. POLE		13-4		5-0	3-0	6.3			14												NEW = W3-1a 1-RETRO REFL STRIP-YL 4X60
													TOTALS	234.3	77.0		154	136					10		2			

FY = TYPE XI FLUORESCENT YELLOW SHEETING REQUIRED.

RSFO = REPLACE SIGN FACE ONLY

BBR = BACKBRACING REQUIRED:
-FOR WOOD POST 2"x 4" REQ'D.
-FOR STRUCTURAL STEEL
2"x 2"x ¼" ANGLE IRON REQ'D.

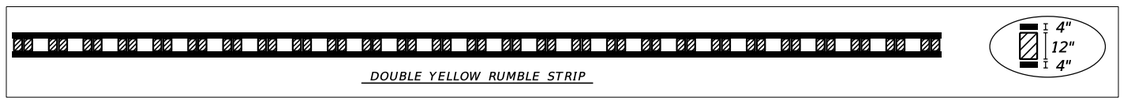
DELINEATION TABLE		
	DESIGN "A"	13
	DESIGN "B"	___
	DESIGN "C"	33
	DESIGN "D"	2
	DESIGN "E"	___
	DESIGN "F"	
	DESIGN "G"	___
	DESIGN "H"	___
	DESIGN "J"	___
	DESIGN "BJ"	___
	DESIGN "GJ"	___
		___

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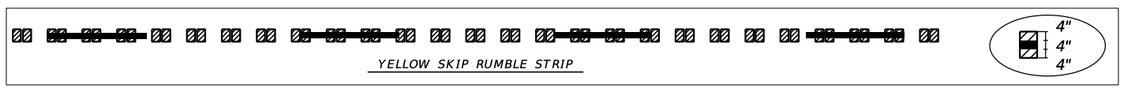
AWARD COPY

DETAILS

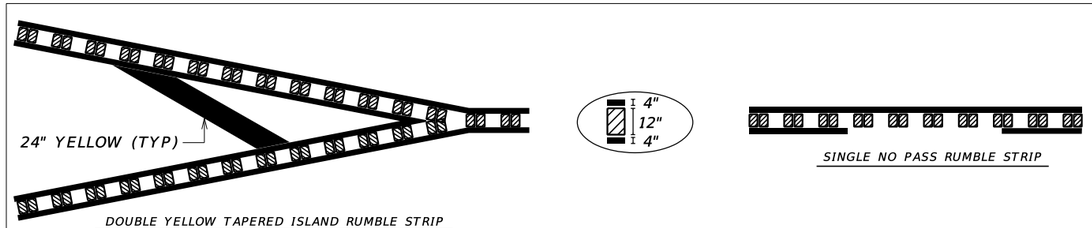
TYPICAL
RURAL CENTERLINE PAVEMENT MARKINGS AND RUMBLE STRIPS.
SEE ROAD DESIGN PLANS FOR RUMBLE STRIP QUANTITY (IF USED)



DOUBLE YELLOW RUMBLE STRIP

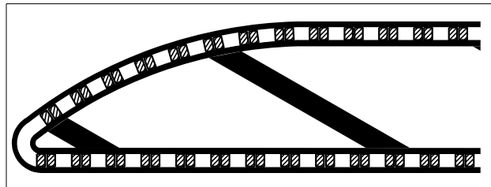


YELLOW SKIP RUMBLE STRIP

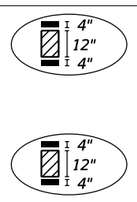


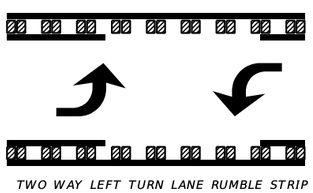
DOUBLE YELLOW TAPERED ISLAND RUMBLE STRIP

SINGLE NO PASS RUMBLE STRIP

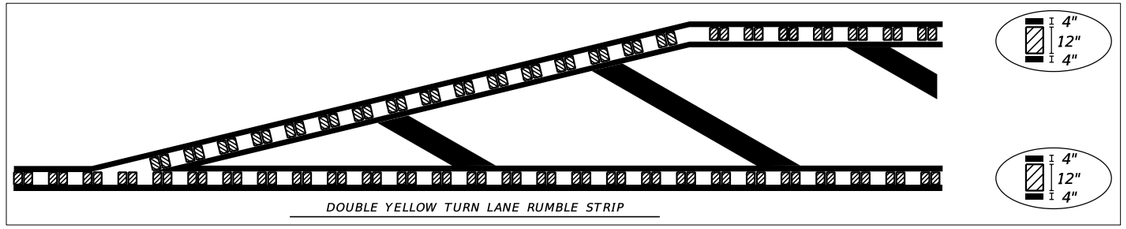


DOUBLE YELLOW BULLNOSE ISLAND RUMBLE STRIP

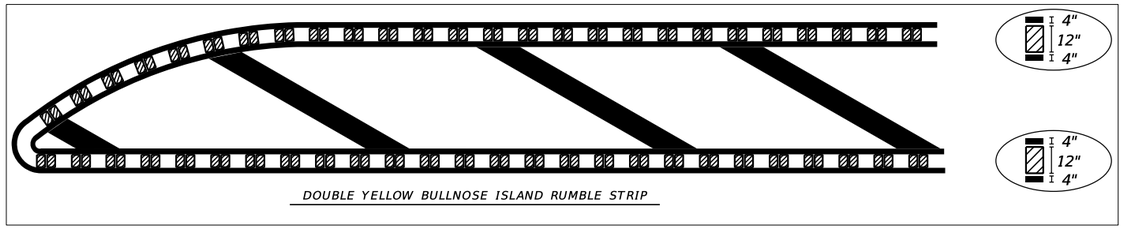




TWO WAY LEFT TURN LANE RUMBLE STRIP



DOUBLE YELLOW TURN LANE RUMBLE STRIP

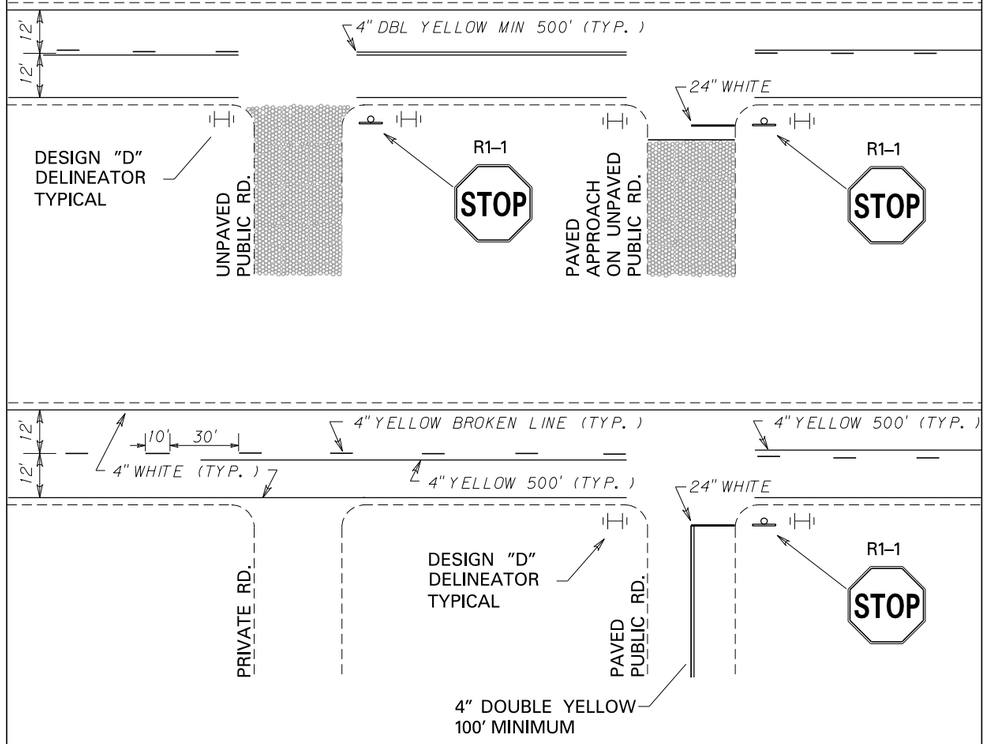


DOUBLE YELLOW BULLNOSE ISLAND RUMBLE STRIP

PMQ / CENTERLINE
RUMBLE STRIP DETAIL
DESIGNED BY NMS 01/2022
REVIEWED BY SDR 01/2022

TYPICAL RURAL
PAVEMENT MARKINGS

NO SCALE



NOTE: FINAL CENTERLINE CONFIGURATION AND NO PASSING ZONES TO BE DETERMINED BY THE PROJECT MANAGER.

ALL PAVEMENT MARKINGS TO BE EPOXY UNLESS OTHERWISE SPECIFIED.

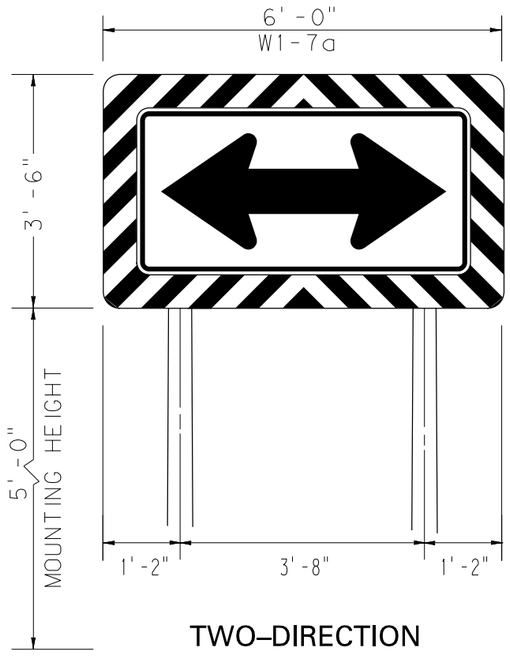
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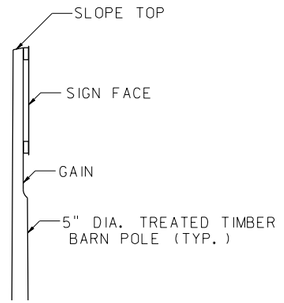
1. *SEE CENTERLINE RUMBLE STRIPS DTL. DWG. NO. 411-05 FOR ADDITIONAL INFORMATION.*
2. *ALL PAVEMENT MARKINGS ARE TO CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND "STANDARD HIGHWAY SIGNS" PUBLICATIONS, FROM THE FEDERAL HIGHWAY ADMINISTRATION.*
3. *SEE CENTERLINE PAVEMENT MARKINGS FOR RURAL HIGHWAYS MEMO DATED JUNE 18, 2019 FOR APPLICATION METHODOLOGY*

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DETAILS





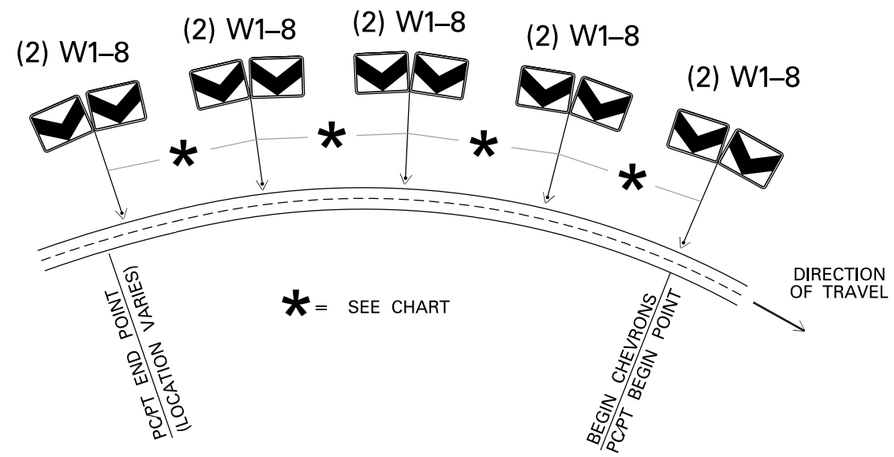
NOTE: MOUNT 60"x30" W1-7 TWO-DIRECTION ARROW DESIGN ON 72"X42" ALUMINUM INCREMENT WITH 6" WIDE DIAGONAL BORDER AROUND THE PERIMETER. DIAGONAL STRIPES ARE 3" IN WIDTH APPLIED AT A 45 DEGREE ANGLE.

NOTE: DETERMINE POLE LENGTHS IN THE FIELD TO COMPLY WITH MOUNTING HEIGHTS AND EMBEDMENT DEPTHS.

TWO–DIRECTION LARGE ARROW

CHEVRON PLACEMENT DETAIL

(GUIDANCE ONLY)



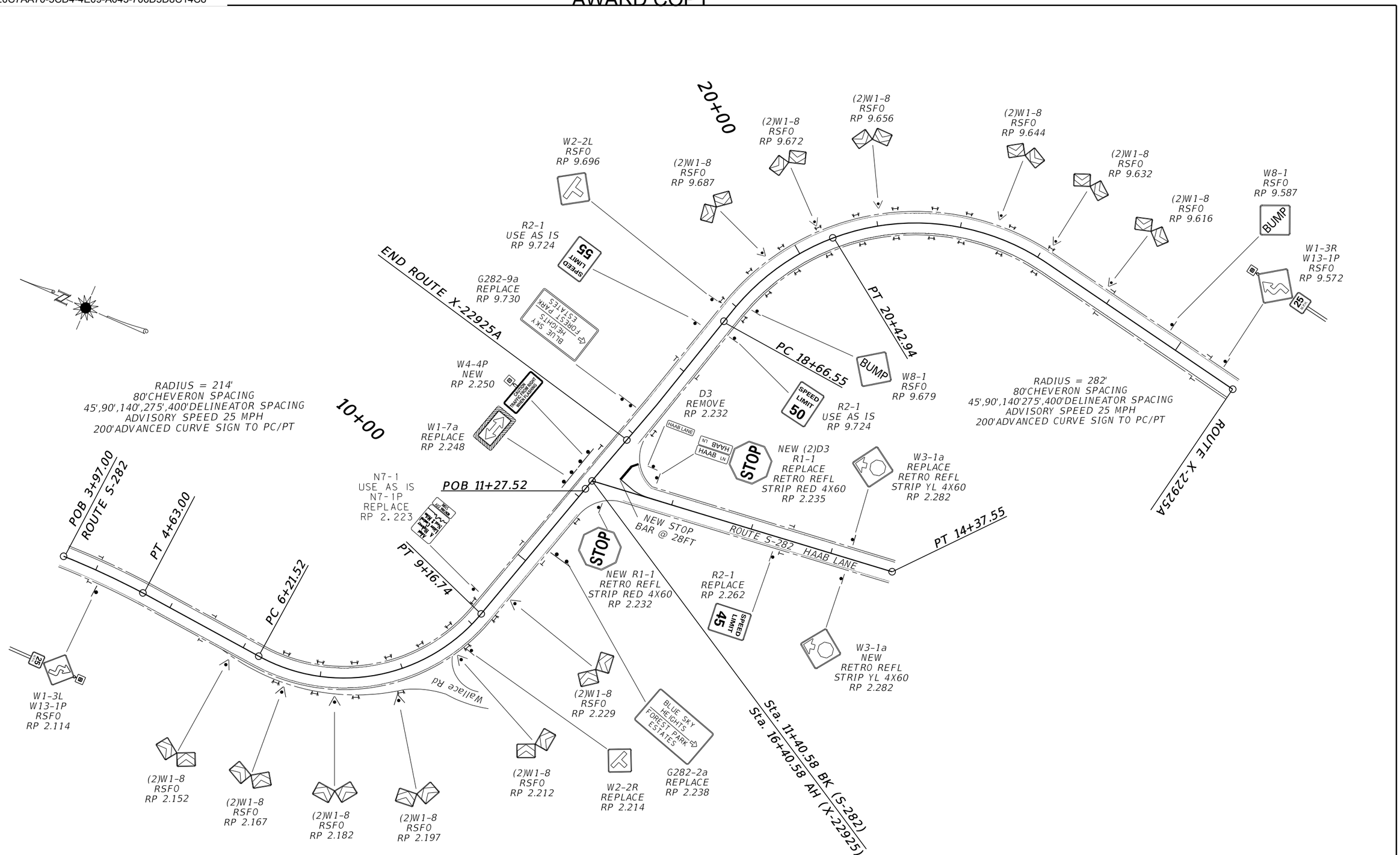
CURVE RADIUS	SIGN SPACING		R.P. CONVERSION
< 200′	40′	=	.008 +–
200′ – 400′	80′	=	.015 +–
401′ – 700′	120′	=	.023 +–
701′ – 1250′	160′	=	.030 +–
> 1250′	200′	=	.038 +–

1) SEE SPEC SHEET FOR CHEVRON PLACEMENT

2) USE BEGINNING OF CURVE LOCATION AS REFERENCE POINT TO INSTALL CHEVRONS (BEGIN POINT – ALWAYS ON OUTSIDE OF CURVE IN DIRECTION OF TRAVEL)

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3	MONTANA Department of Transportation	C:\DGN\9684000sipln001.dgn	DESIGNED BY:	STEVEN MORANO	09/20/2023	SIGNING PLANS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/23/2023						
1		8:06:30 AM CPS - U7498	CHECKED BY:	NATHAN STYREN	06/30/2023	JEFFERSON COUNTY	UPN 9684000	S6

DocuSign Envelope ID: E0C7AA70-5CD4-4E09-A043-706D5D8C14C8

ELECTRICAL QUANTITY SUMMARY

ITEM NO.	MATERIAL	TOTAL	UNIT
616343920	CONDUIT-PLASTIC 2 IN	905	LNFT
616783007	PULL BOX-COMPOSITE TYPE 2	6	EACH
617000000	FOUNDATION-CONCRETE	1.50	CUYD
617033212	CABLE-COPPER 3AWG12-600V	335	LNFT
617123110	CONDUCTOR COPPER AWG10-600V	905	LNFT
617333100	SERVICE ASSEMBLY	1	EACH
617483110	SIG-TRAF 1 COLOR-1 WAY 12	1	EACH
617673200	SIG STANDARD TYPE 1-200	2	EACH
617763500	DETECTOR RADAR/PRESENCE	1	EACH
617903100	CONTROL UNIT	1	EACH

DETAILS

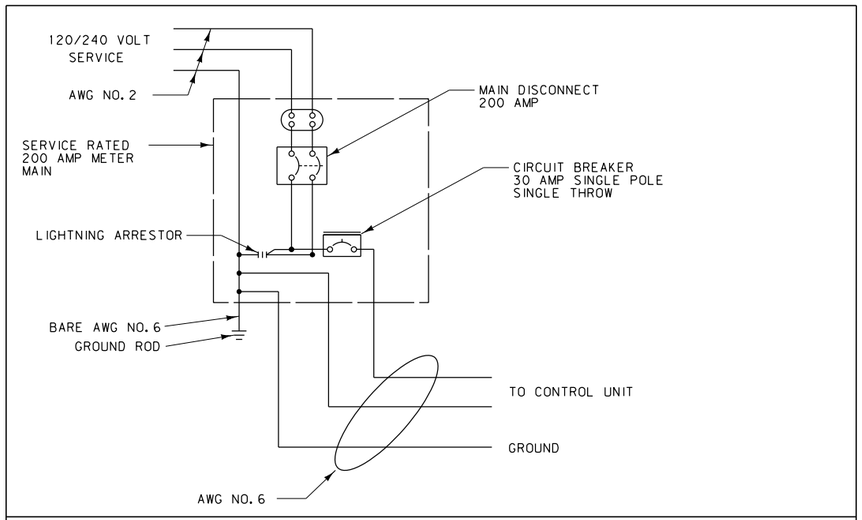
THE CONTROL UNIT WILL CONSIST OF THE EQUIPMENT NEEDED FOR THE RADAR DETECTOR TO ACTIVATE THE WARNING BEACON ON S-282 FOR A PRE DETERMINED AMOUNT OF TIME AND THEN EITHER TIME OUT OR EXTEND TIME DUE TO ANOTHER VEHICLE DETECTION. THE SYSTEM WILL WARN VEHICLES ON HAAB LANE THAT S-282 TRAFFIC IS APPROACHNG THE INTERSECTION FROM THE RIGHT.

THE CABINET WILL HAVE A HINGED LOCKABLE DOOR. THREE KEYS SHALL BE TURNED OVER TO THE ENGINEER.

SEE SUBSECTION 703.07.1 FOR FLASHER UNIT REQUIREMENTS.

THE TIMER WILL BE CAPABLE OF TIMING AT LEAST 90 SECONDS.

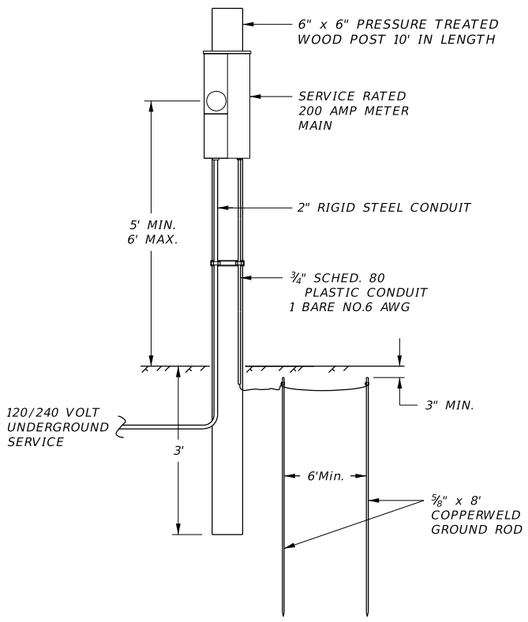
THE CABINET WILL BE LARGE ENOUGH TO CONTAIN THE CIRCUIT BREAKERS, FLASHER UNIT, RELAYS, TIMER AND WIRING, RADAR DETECTOR BACKPLATE, POWER SUPPLY AND ANY MISCELLANEOUS EQUIPMENT NECESSARY TO MAKE THIS A FUNCTIONING UNIT.



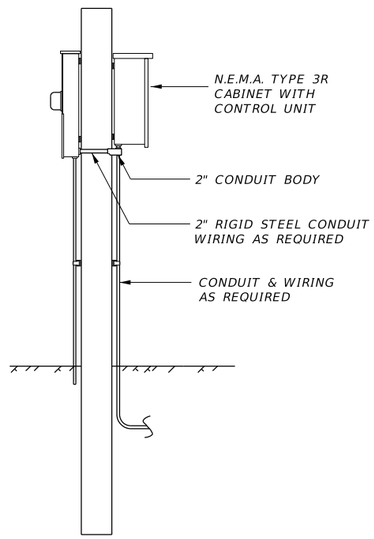
SERVICE ASSEMBLY WIRING DIAGRAM

QUANTITY SUMMARY

NO SCALE



FRONT

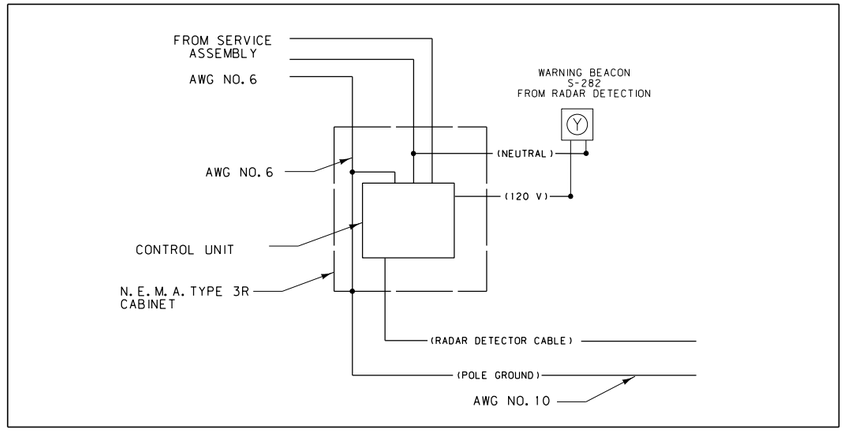


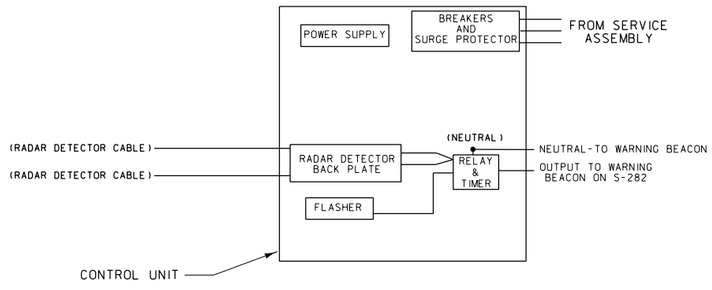
SIDE

UNDERGROUND SERVICE ASSEMBLY DETAIL

UNDERGROUND SERVICE ASSEMBLY DETAIL

NO SCALE





CONTROL UNIT

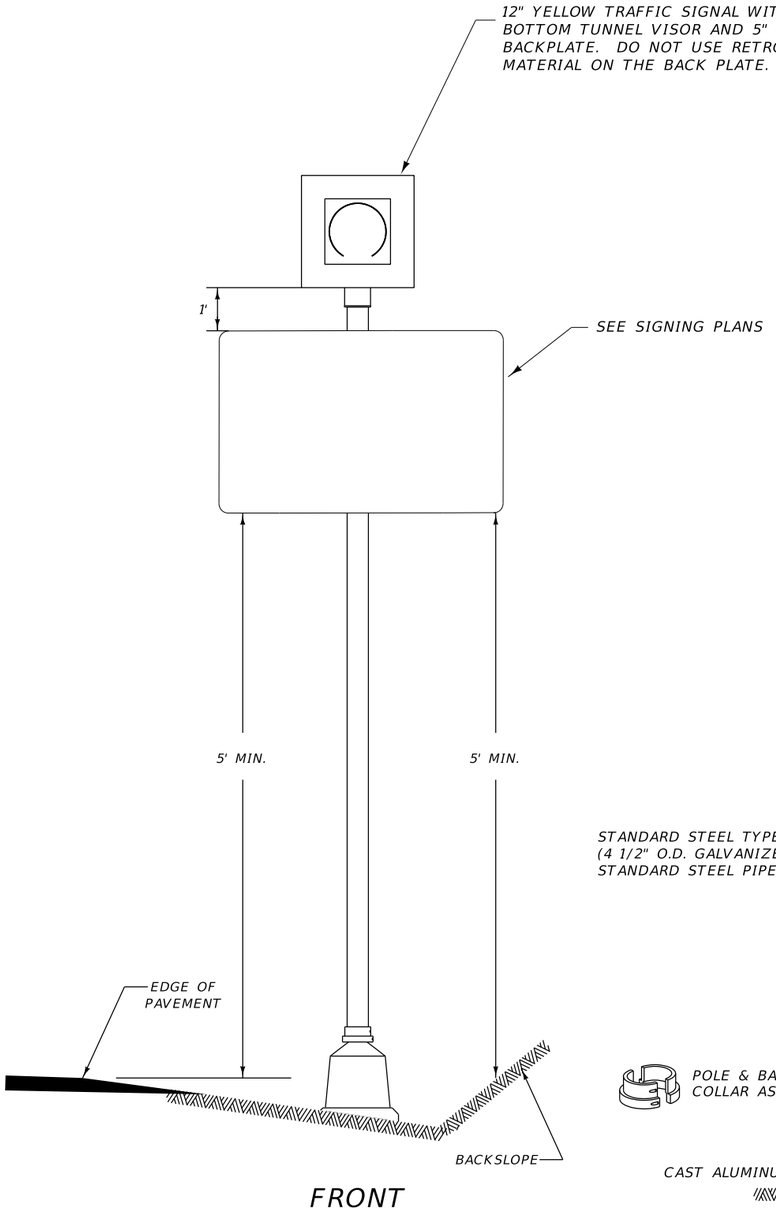
NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9684000eldet001.dgn	DESIGNED BY	Joe DeGroat	12/2022	ELECTRICAL PLANS	S-282 CULVERT - PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/31/2023	REVIEWED BY	Dan Cunningham	12/2022			
1		7:51:06 AM CPS - U7325	CHECKED BY			JEFFERSON COUNTY	UPN 9684000	SHEET E1

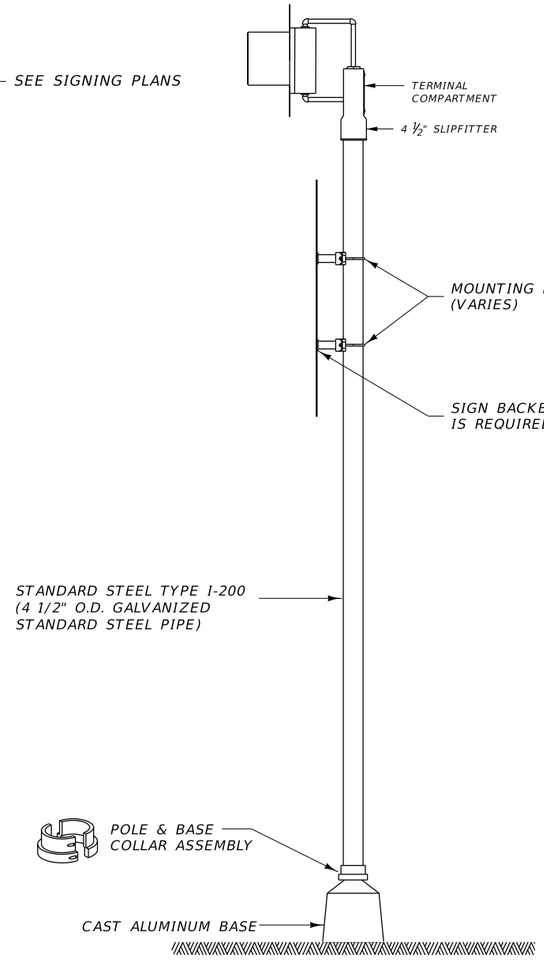
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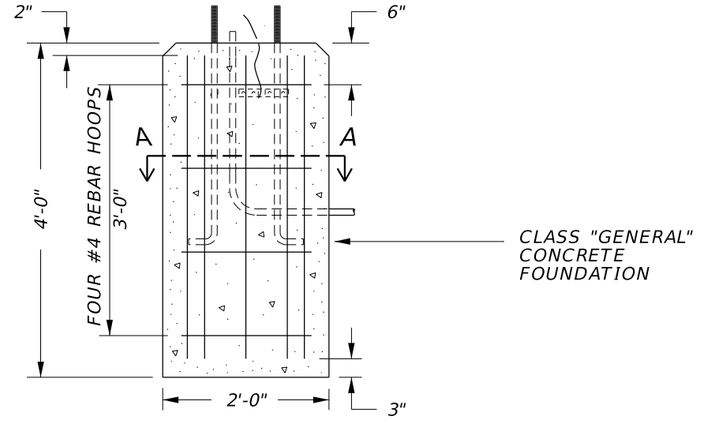
DETAILS

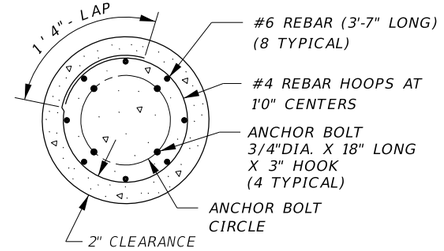


FRONT



RIGHT





SECTION A-A

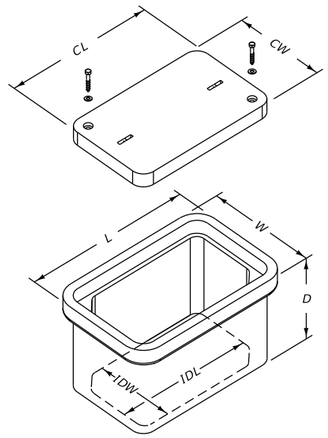
TYPE 1-200 FOUNDATION

WARNING BEACON
NO SCALE

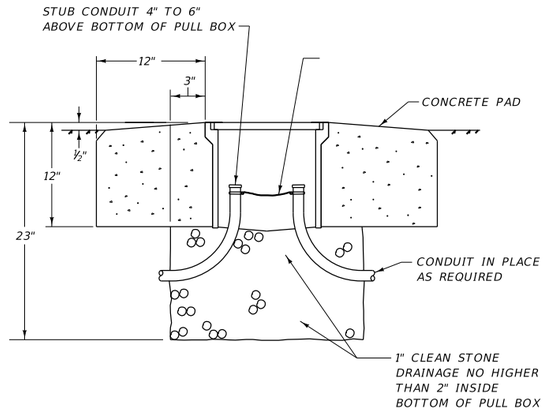
3	MONTANA Department of Transportation	C:\DGN\9684000eldet001.dgn	DESIGNED BY	Joe DeGroat	12/2022	ELECTRICAL PLANS		S-282 CULVERT - PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/31/2023	REVIEWED BY	Dan Cunningham	12/2022				
1		7:51:09 AM CPS - U7325	CHECKED BY			JEFFERSON COUNTY		UPN 9684000	SHEET E2

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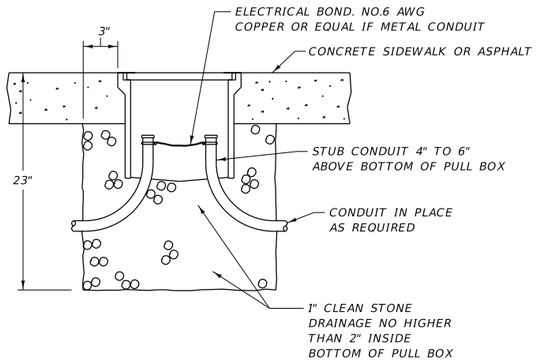
DETAILS



PULL BOX - COMPOSITE MINIMUM DIMENSIONS		
TYPE 1	TYPE 2	TYPE 3
L = 20"	L = 25"	L = 32"
W = 13"	W = 15"	W = 19"
D = 12"	D = 12"	D = 12"
I D L = 17"	I D L = 21"	I D L = 28"
I D W = 10"	I D W = 11"	I D W = 15"
C L = 18"	C L = 23"	C L = 30"
C W = 11"	C W = 13"	C W = 17"



PULL BOX INSTALLED IN DIRT



PULL BOX INSTALLED IN A SIDEWALK OR ASPHALT

PULL BOX - COMPOSITE

TYPE 1, 2 & 3

NO SCALE PB2

REVISED: 15-APR-2014

3	MONTANA Department of Transportation	C:\DGN\9684000eldet001.dgn		Joe DeGroat	12/2022	ELECTRICAL PLANS		S-282 CULVERT - PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/31/2023		Dan Cunningham	12/2022				
1		7:51:12 AM CPS - U7325				JEFFERSON COUNTY		UPN 9684000	SHEET E3

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NEW WARNING BEACON - SEE SIGNING PLANS, SEE SHEET E2. LOCATION SHOWN IS APPROXIMATE AND WILL BE STAKED BY THE ENGINEER.

NEW TYPE 2 COMPOSITE PULL BOX

NEW TYPE 2 COMPOSITE PULL BOX

NEW TYPE 2 COMPOSITE PULL BOX

NEW SERVICE AND CONTROL UNIT

NEW TYPE 2 COMPOSITE PULL BOX

NEW TYPE 2 COMPOSITE PULL BOX

NEW TYPE 2 COMPOSITE PULL BOX

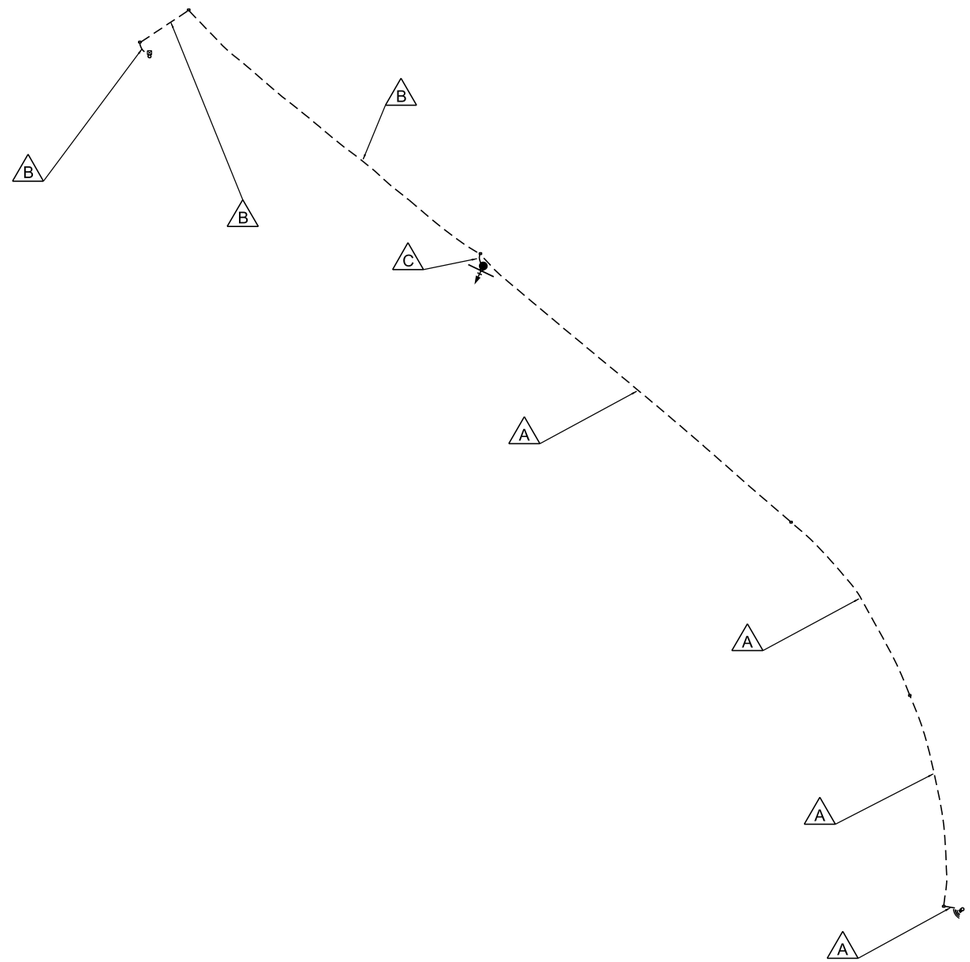
NEW 20 FT STANDARD STEEL TYPE I-200 AND NEW RADAR/PRESENCE DETECTOR LOCATION TO BE STAKED IN FIELD BY THE ENGINEER

3	MONTANA Department of Transportation	C:\DGN\9684000elpln001.dgn	DESIGNED BY	Joe DeGroat	12/2022	ELECTRICAL PLANS	S-282 CULVERT - PRICKLY PEAR CRK	STPB 282-1(11)2
2		10/31/2023	REVIEWED BY	Dan Cunningham	12/2022			
		7:51:25 AM CPS - U732	CHECKED BY			JEFFERSON COUNTY	UPN 9684000	SHEET E4

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CONDUIT AND WIRE SCHEDULE

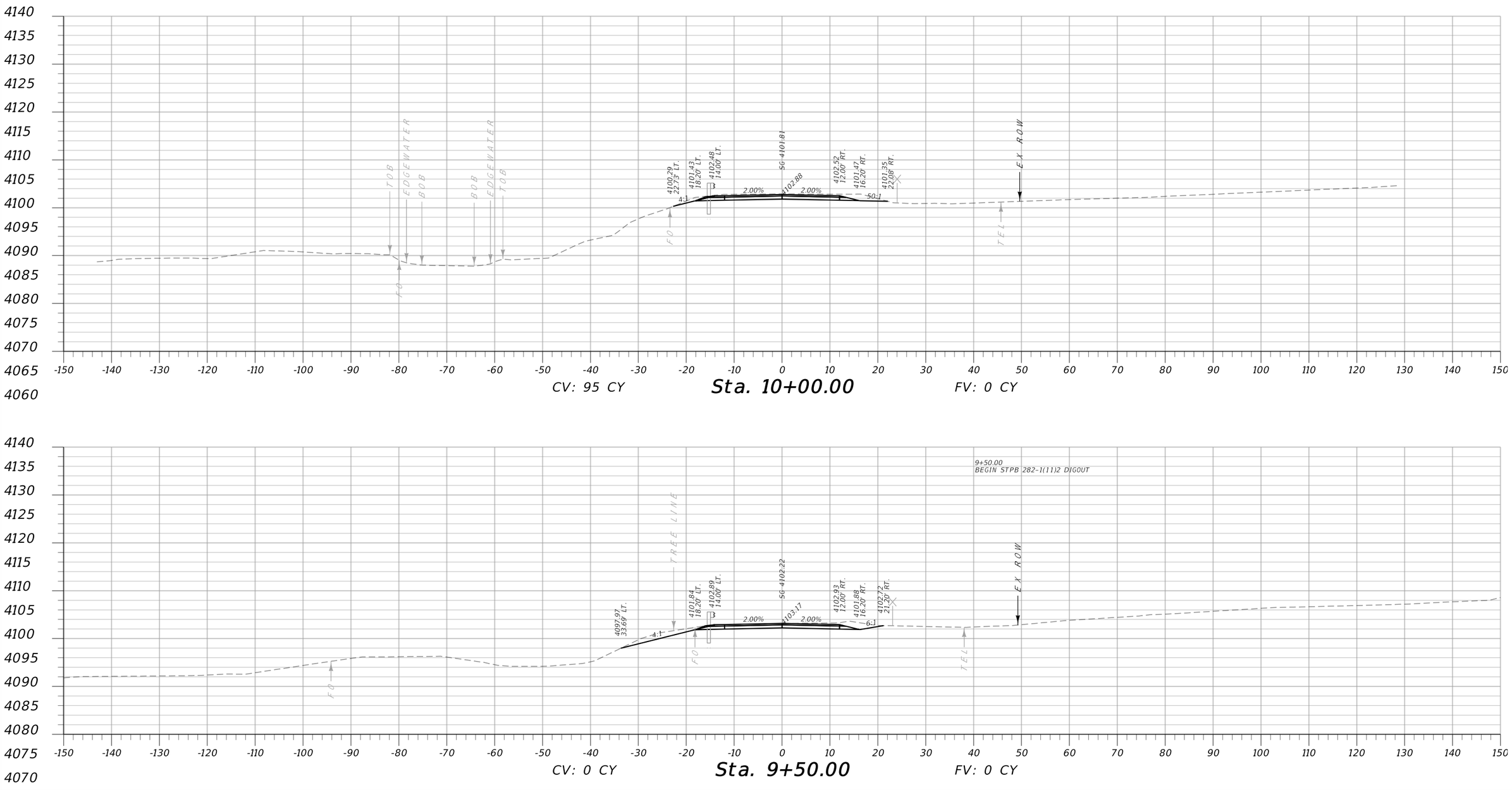
A
NEW 1 OF 1 1/2" PLASTIC CONDUIT
NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)
NEW 1 OF RADAR DETECTOR CABLE

B
NEW 1 OF 2" PLASTIC CONDUIT
NEW 1 OF 3 AWG NO. 12 SIGNAL CABLE (BEACON)
NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)
NEW 1 OF RADAR DETECTOR CABLE

C
NEW 1 OF 2" PLASTIC CONDUIT
NEW 1 OF 3 AWG NO. 12 SIGNAL CABLE (BEACON)
NEW 1 OF AWG NO. 10 CONDUCTOR (GROUND)

DocuSign Envelope ID: E0C7AA70-5CD4-4E09-A043-706D5D8C14C8

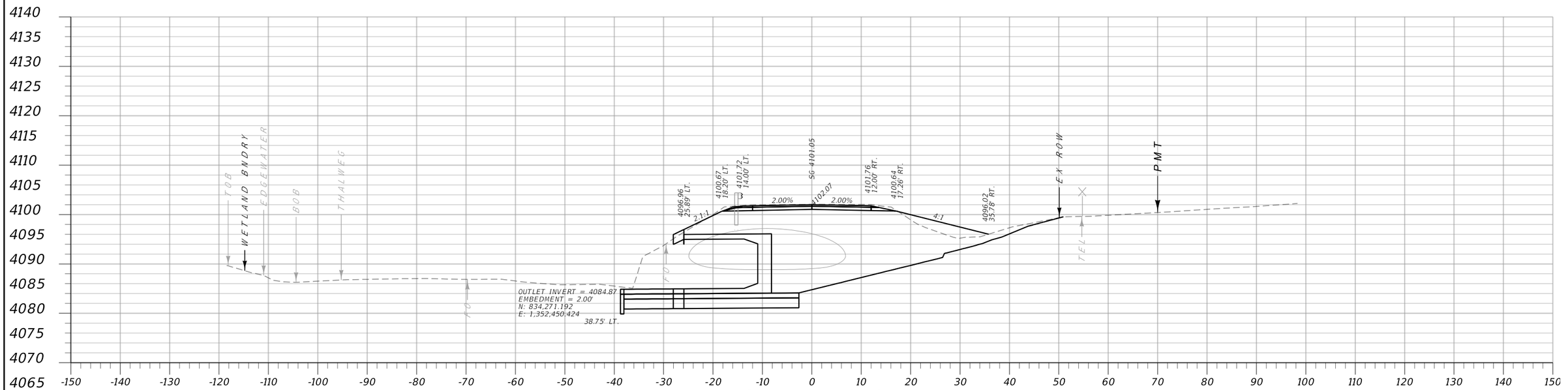
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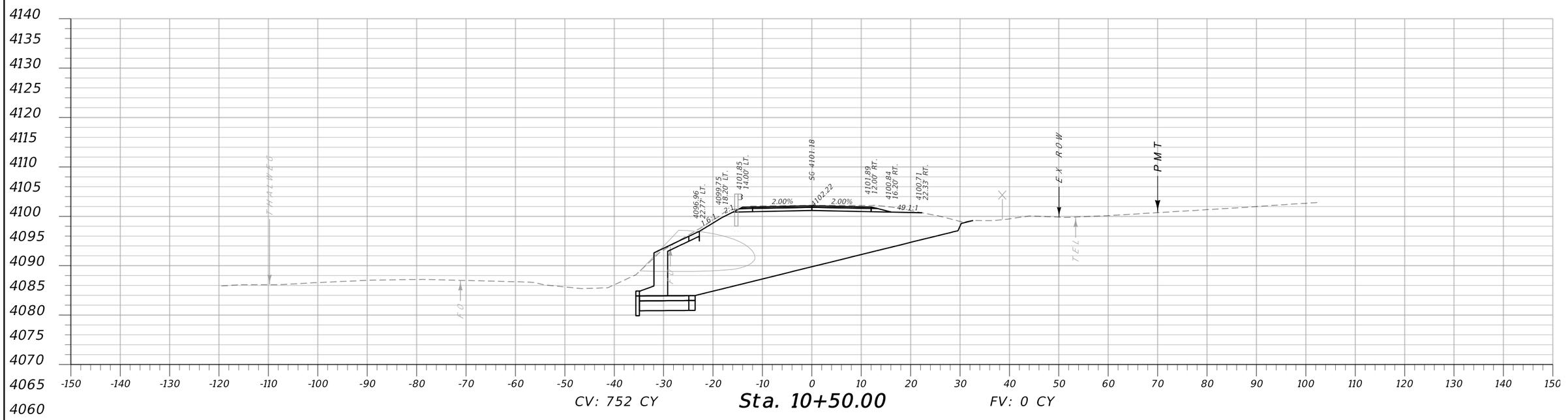


MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY	J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS	S-282 CULVERT-PRICKLY PEAR CRK / STPB 282-1(11)2
	10/11/2023	REVIEWED BY	R. BARBULA	8/23/2023		
	12:57:50 PM CPS - U5198	CHECKED BY	T. JOHNSON	10/2/2023	JEFFERSON COUNTY	UPN 9684000 / SHEET 1

DocuSign Envelope ID: E0C7AA70-5CD4-4E09-A043-706D5D8C14C8

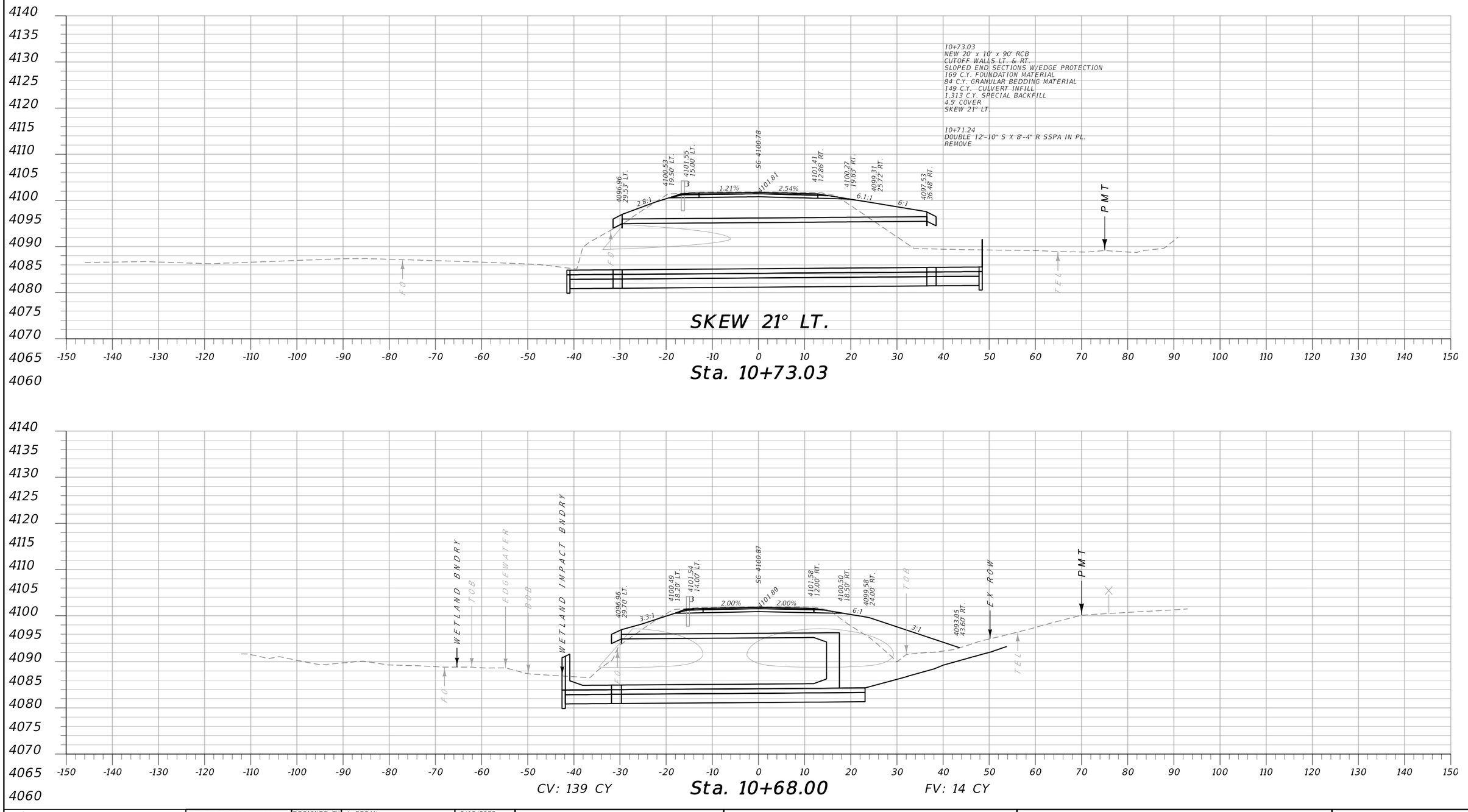
AWARD COPY





MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
	10/11/2023	REVIEWED BY				
	12:57:54 PM CPS - U5198	CHECKED BY		JEFFERSON COUNTY	UPN 9684000	SHEET 2

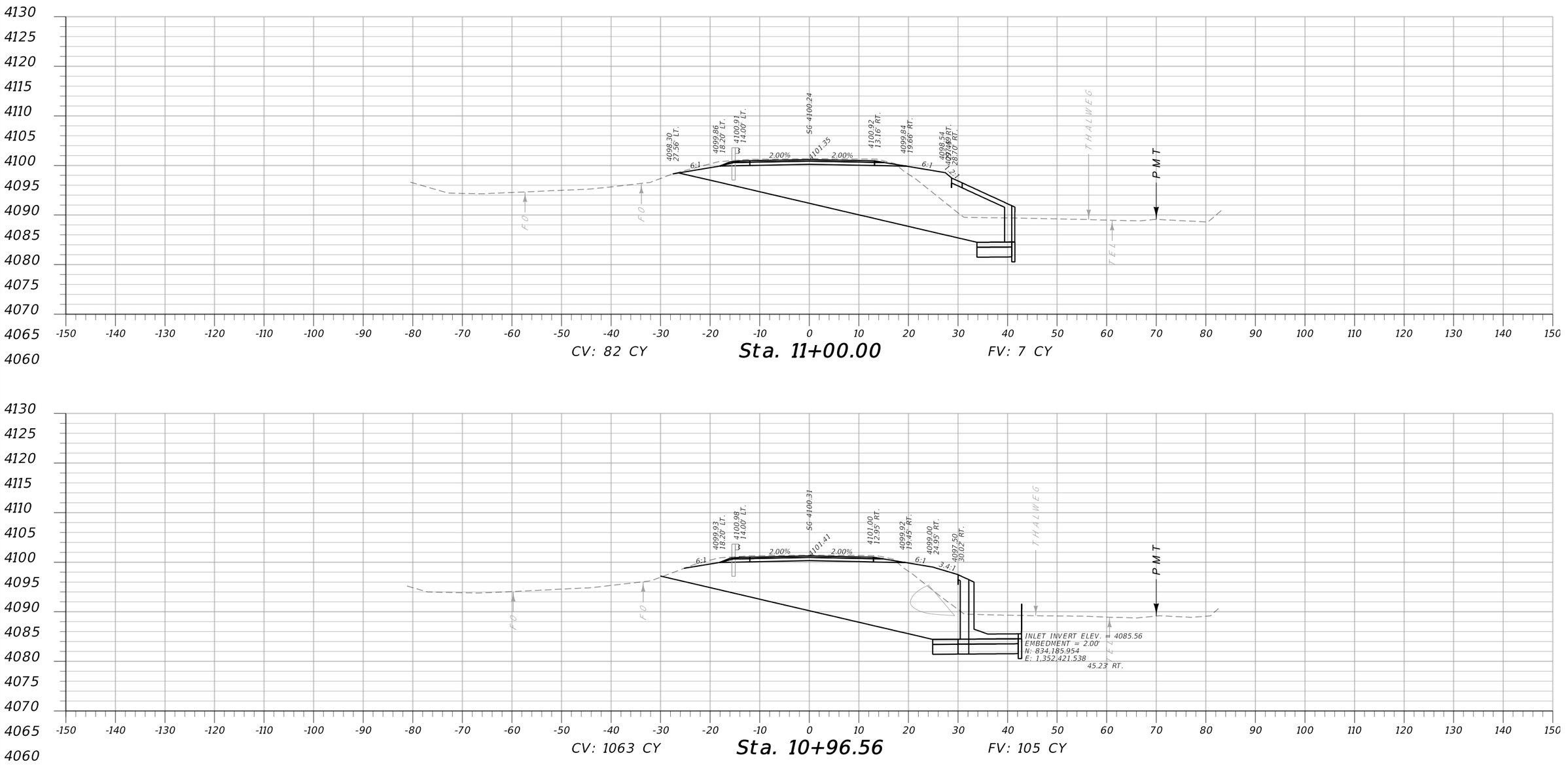
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MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
	10/11/2023	REVIEWED BY				
	12:57:57 PM CPS - U5198	CHECKED BY		JEFFERSON COUNTY	UPN 9684000	SHEET 3

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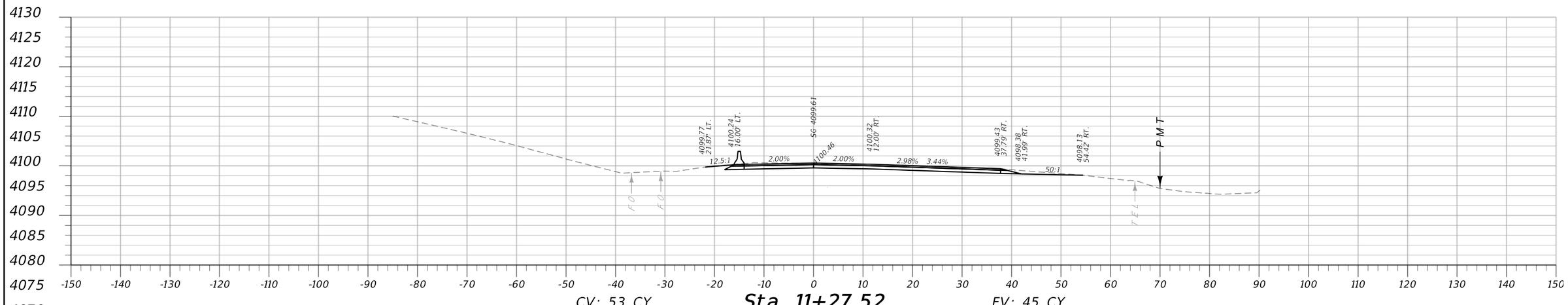
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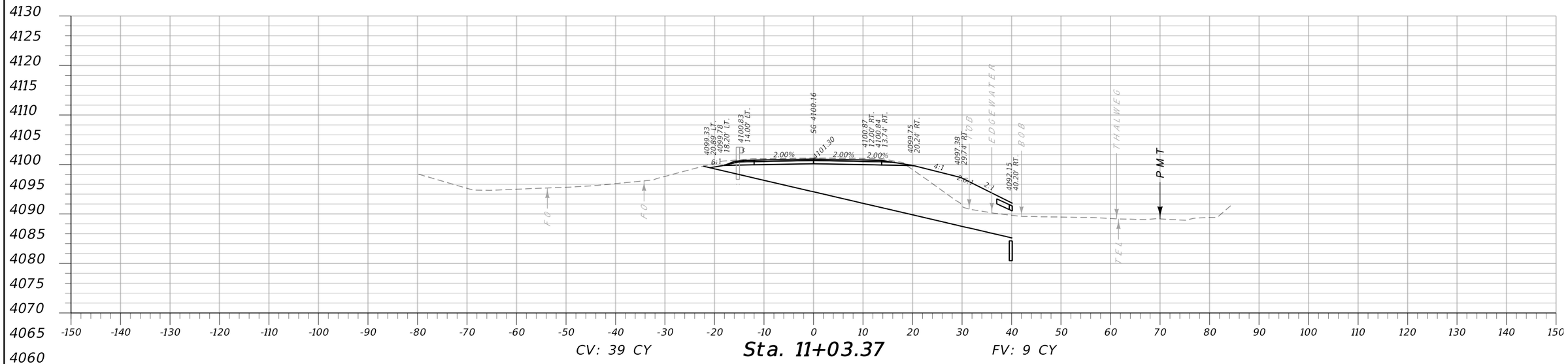
MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS		S-282 CULVERT-PRICKLY PEAR CRK / STPB 282-1(11)2
	10/11/2023	REVIEWED BY		JEFFERSON COUNTY		UPN 9684000 / SHEET 4
	12:58:01 PM CPS - U5198	CHECKED BY				

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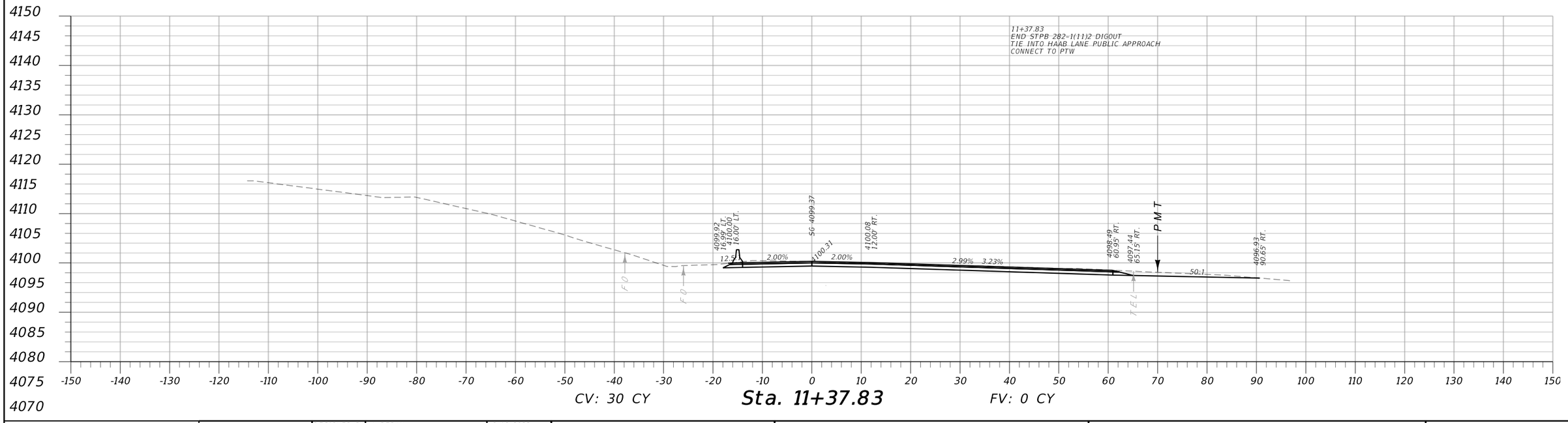
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CV: 39 CY **Sta. 11+03.37** FV: 9 CY

MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY	J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
	10/11/2023	REVIEWED BY					
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MONTANA Department of Transportation	C:\DGN\9684000rdlay001.dgn	DESIGNED BY	J. BERAN	8/18/2023	MAINLINE CROSS SECTIONS	S-282 CULVERT-PRICKLY PEAR CRK	STPB 282-1(11)2
	10/11/2023	REVIEWED BY					
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