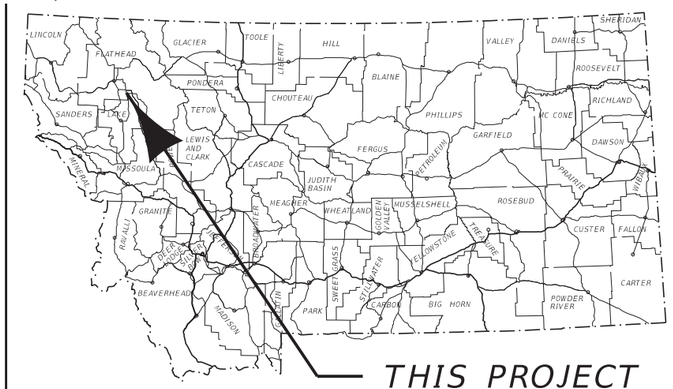
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MONTANA DEPARTMENT OF TRANSPORTATION

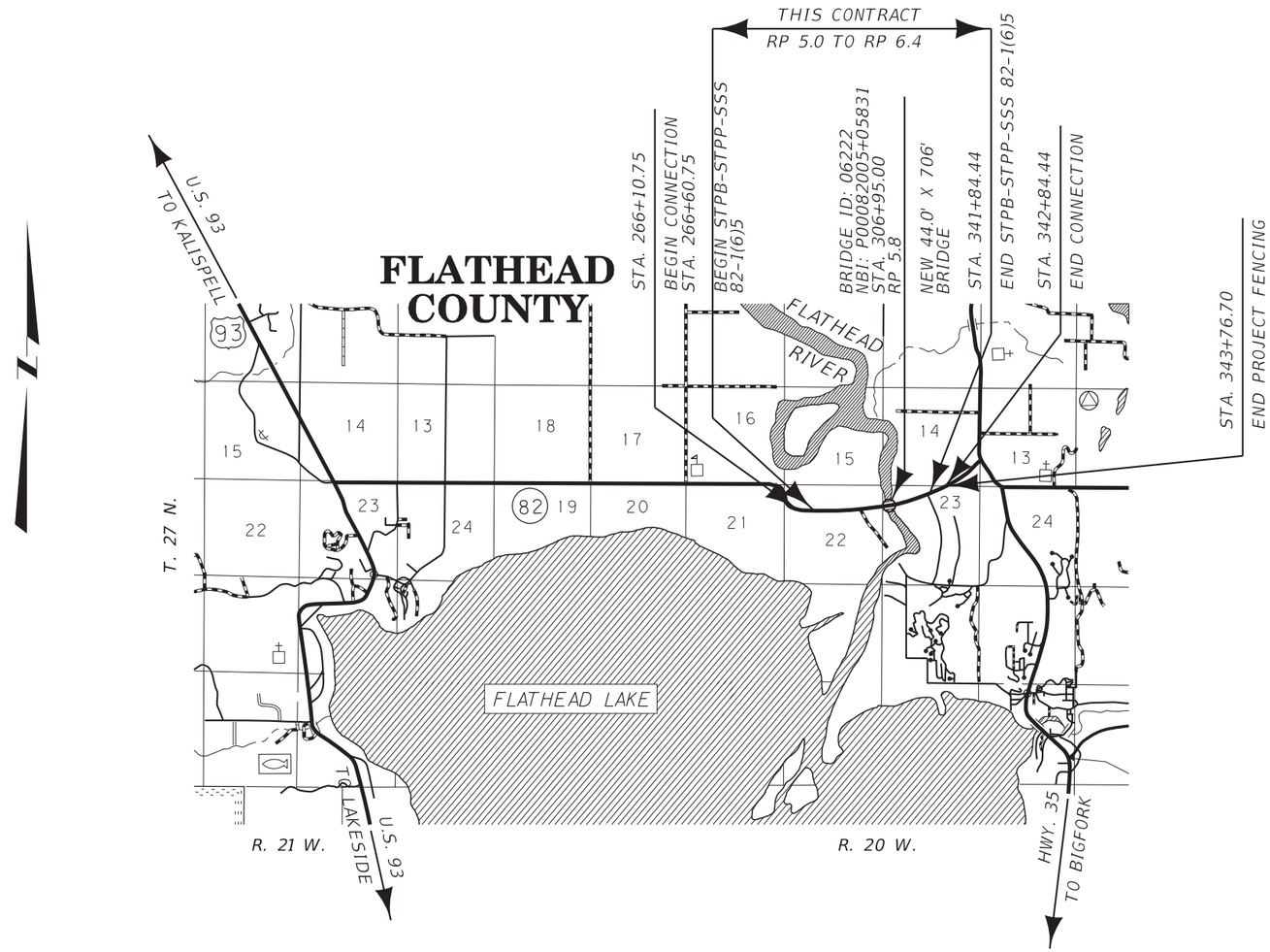
FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5
GRADE, GRAVEL, PL. MIX SURF. & STRUCTURE
FLATHEAD RIVER - 3 M NW BIGFORK
FLATHEAD COUNTY



PROJECT DESIGN DATA		
PRESENT	2019	A.A.D.T. = 8,460
LETTING	2022	A.A.D.T. = 8,770
DESIGN	2042	A.A.D.T. = 11,130
		D.H.V. = 1,170
		TRUCKS = 4.3%
		V. = 55
		18 KIP ESAL'S = 132 DAILY
		ANNUAL GROWTH RATE = 1.2%

LENGTH 1.4 MILES

SURFACING SOURCES –
CONTRACTOR FURNISHED



PLANS PREPARED BY
MORRISON-MAIERLE, INC. 1 ENGINEERING PLACE P.O. BOX 6147 HELENA, MT 59604 PHONE (406) 442-3050

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	STPB 82-1(11)5
I.C.	STPB 82-1(12)5
P. E.	BR-STPB 82-1(5)5

MORRISON-MAIERLE, INC.

APPROVED BY:

Signed by: Bryan Vanderloos 6/16/2025
54F31500FD4941F... DATE

MONTANA
BRYAN E. VANDERLOOS
40784PE
LICENSED
PROFESSIONAL ENGINEER

MONTANA
DEPARTMENT OF TRANSPORTATION

RECIEVED BY: CONSULTANT DESIGN ENGINEER

DocuSigned by: Kelly Williams 6/16/2025
EF7F5DDAB5A7471... DATE

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdtl2025.dgn	DESIGNED BY			ROAD PLANS
2		5/1/2025	REVIEWED BY			UPN 6850000
		1:14:30 PM bvanderloos	CHECKED BY			

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BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COLD MILLING	= 3500 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT BINDER - GRADE S - 1/2" AGG.	= 5.5% OF PL.MIX BIT.SURF.
HYDRATED LIME	= 1.4% OF PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ASPHALT SURFACES)	= 0.025 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (S & C)	= 0.075 GAL. PER SQ.YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD

GUARDRAIL SALVAGE

SALVAGE THE REMOVED RAIL TO MDT MAINTENANCE. TO ARRANGE DELIVERY CONTACT: JUSTUN JUELFS (OFFICE) 406-751-2010

NOTES

CLEARING AND GRUBBING

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

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 FROM	STATION TO	WETLAND AREA (acres) DELINEATED AREA	WETLAND AREA (acres) PERMANENT IMPACTED AREA	REMARKS
W-1-20	313+83	318+96	3.520	0.613	RT
W-2-20	322+30	326+33	0.763	0.140	RT
W-3A-20	313+41	313+70	0.014	0.000	RT
W-3B-20	314+03	314+48	0.009	0.000	RT
W-3C-20	314+76	315+28	0.017	0.000	RT
TOTAL			4.32	0.75	

#AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

COLD MILLING

THIS PROJECT IS EXPECTED TO PRODUCE APPROX. 598 CUBIC YARDS OF MILLINGS. THESE MILLINGS BECOME THE PROPERTY OF THE CONTRACTOR AND ANY COSTS INCURRED IN DISPOSAL ARE INCLUDED IN THE UNIT BID PRICE FOR COLD MILLING.

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)

MAILBOXES & MAILBOX TURNOUTS

REMOVE ALL MAILBOXES AND REPLACE. PROVIDE TEMPORARY MAILBOXES. INCLUDE THE COST OF REMOVAL AND TEMPORARY MAILBOXES IN THE COST OF OTHER ITEMS.

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.

APPROACHES

CONSTRUCT APPROACHES TO A 24' FINISHED TOP ON A 34' SUBGRADE UNLESS NOTED OTHERWISE IN THE PLANS.

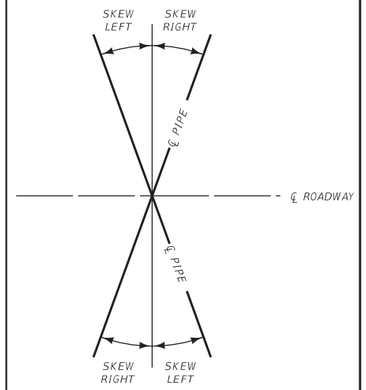
PROVIDE THE FOLLOWING SURFACING:
0.20' PLANT MIX BITUMINOUS SURF.
0.60' CRUSHED AGGREGATE COURSE

PLANT MIX SURFACE ALL PUBLIC APPROACHES TO R/W.

APPROACHES (FOR INFORMATION ONLY)

STATION	TYPE	linear feet WIDTH	linear feet RADIUS LEFT	linear feet RADIUS RIGHT	linear feet LENGTH, C.L. TO R/W	EXISTING SURFACING	feet PMS THK.	feet CAC THK.	PROPOSED SURFACE	tons PLANT MIX SURF. GR. S - MISC.	tons ASPHALT BINDER MSCR PG58H-34	gals EMULSIFIED ASPHALT TACK	cu. yards CRUSHED AGG. COURSE	sq. yards AGG. TREAT.	REMARKS
HIGHWAY 82															
287+60	PRIVATE	20.0	40.0	40.0	90.6	GRAVEL	0.20	0.60	PAVE TO R/W	31	1.8	13	54	249	LT SEE DETAIL
293+40	PRIVATE	24.0	40.0	40.0	105.0	GRAVEL	0.20	0.60	PAVE TO R/W	39	2.2	16	66	304	LT SEE DETAIL
324+89	PRIVATE	40.0	25.0	25.0	67.3	PAVED	0.20	0.60	PAVE TO CONNECTION	49	2.7	19	101	364	LT SEE DETAIL
329+99	PRIVATE	40.0	40.0	25.0	130.3	GRAVEL	0.20	0.60	PAVE TO CONNECTION	55	3.1	22	93	435	LT SEE DETAIL
335+57	PRIVATE	40.0	40.0	40.0	130.0	GRAVEL	0.20	0.60	PAVE TO CONNECTION	63	3.5	25	105	499	LT SEE DETAIL
OLDENBURG ROAD															SEE ADD. SURFACING FRAME FOR QUANTITIES
602+06	PRIVATE	10.0	25.0	35.0		GRAVEL	0.20	0.60	PAVE TO CONNECTION	10	0.6	4	18	80	LT SEE DETAIL
603+76	PRIVATE	40.0	70.0	30.0		GRAVEL	0.20	0.60	PAVE TO CONNECTION	43	2.4	17	71	330	LT SEE DETAIL
603+76	PUBLIC														RT BY OTHERS
GUNNER LANE															SEE ADD. SURFACING FRAME FOR QUANTITIES
HANGING ROCK DRIVE															SEE ADD. SURFACING FRAME FOR QUANTITIES
SUBTOTAL										290	16.3	116	508	2,261	

SKEW DIAGRAM



3 / 1	MONTANA Department of Transportation	..\6850000\rd\6850000rdtl.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY				
		2:19:51 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	2

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CENTERLINE COORDINATE TABLE

HIGHWAY 82 CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
266+10.75	POT	1,433,990.748	837,607.897	BEGIN CONNECTION
266+60.75	POT	1,433,987.847	837,657.813	BEGIN PROJECT
293+24.46	PC	1,433,833.340	840,317.042	
297+39.26	PI	1,433,809.280	840,731.138	
301+50.60	PT	1,433,877.511	841,140.282	
303+42.20	POT	1,433,909.027	841,329.268	BRIDGE END
310+47.80	POT	1,434,025.093	842,025.256	BRIDGE END
314+24.79	PC	1,434,087.106	842,397.113	
319+49.94	PI	1,434,173.490	842,915.113	
324+68.49	PT	1,434,397.126	843,390.268	
341+84.44	POT	1,435,127.864	844,942.853	END PROJECT
342+84.44	POT	1,435,170.449	845,033.332	END CONNECTION

HANGING ROCK DRIVE CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
400+00.00	POB	1,434,301.084	843,697.420	BEGIN HANGING ROCK DR RECONSTRUCTION
400+66.11	PC	1,434,363.388	843,719.543	
401+48.45	PI	1,434,440.981	843,747.095	
402+15.88	POC	1,434,509.598	843,714.684	END HANGING ROCK DR RECONSTRUCTION
402+22.33	PT	1,434,515.480	843,712.031	
402+52.27	POE	1,434,542.566	843,699.283	

OLDENBURG RD CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
600+00.00	POB	1,433,269.275	840,629.105	
601+78.54	POT	1,433,416.346	840,527.880	BEGIN OLDENBURG RD RECONSTRUCTION
604+66.78	PC	1,433,653.784	840,364.458	
605+34.92	PI	1,433,709.909	840,325.829	
605+98.12	PT	1,433,777.944	840,329.497	
606+20.25	POT	1,433,800.046	840,330.685	END OLDENBURG RD RECONSTRUCTION
606+52.73	POE	1,433,832.478	840,332.438	

GUNNER LN CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
12+00.00	POB	1,434,121.334	842,475.273	BEGIN GUNNAR LN RECONSTRUCTION
12+97.79	PI	1,434,217.381	842,456.897	
14+00.00	PT	1,434,316.989	842,433.975	END GUNNAR LN RECONSTRUCTION
14+50.00	POE	1,434,365.715	842,422.762	

SWALE RECONSTRUCTION CENTERLINE COORDINATE TABLE

STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
700+00.00	POB	1,434,016.228	842,914.097	BEGIN SWALE RECONSTRUCTION
703+09.44	PC	1,434,073.438	843,218.205	
703+24.50	PI	1,434,076.221	843,233.000	
703+36.54	PT	1,434,064.446	843,242.380	
703+51.51	POE	1,434,052.742	843,251.705	END SWALE RECONSTRUCTION

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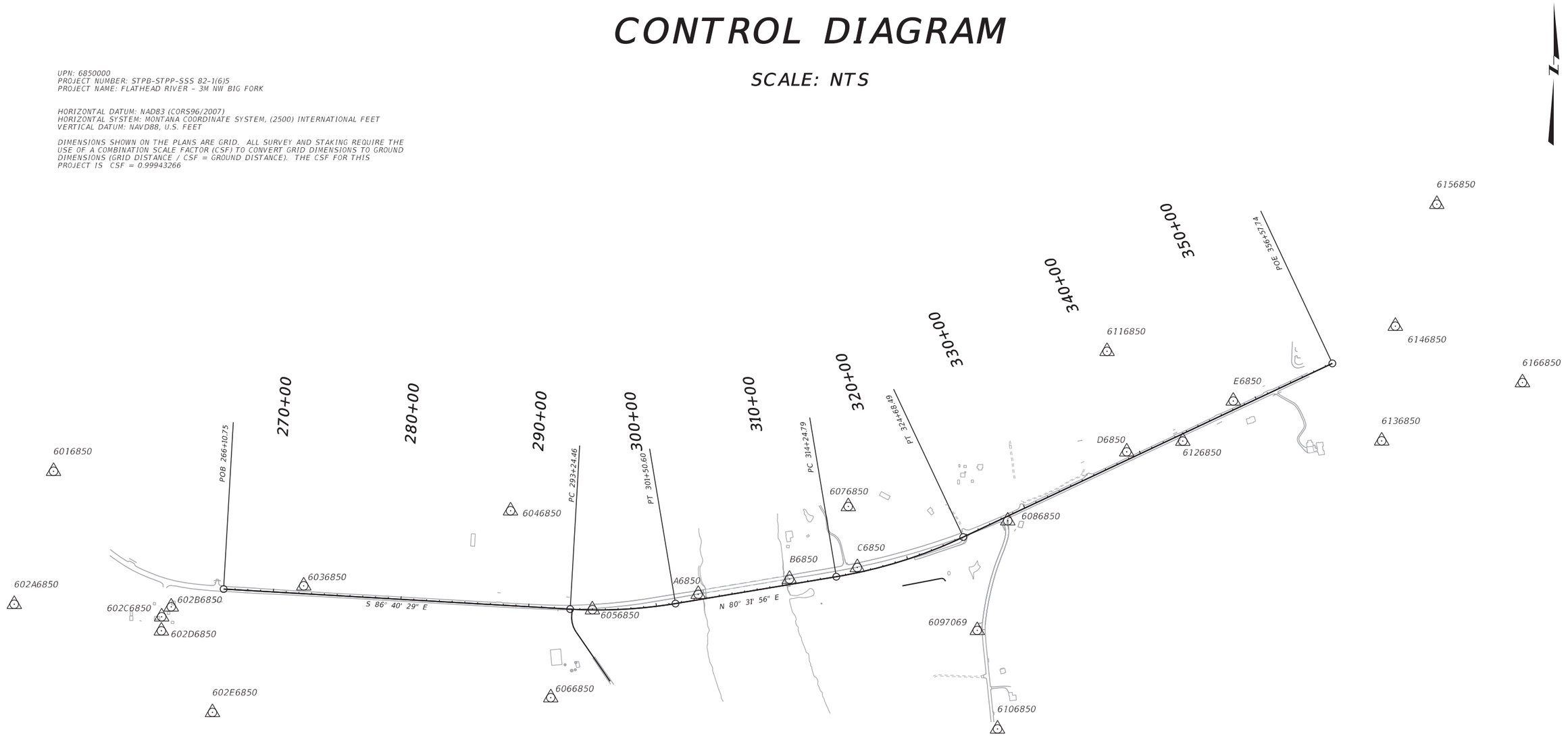
CONTROL DIAGRAM

SCALE: NTS

UPN: 6850000
PROJECT NUMBER: STPB-STPP-SSS 82-1(6)5
PROJECT NAME: FLATHEAD RIVER - 3M NW BIG FORK

HORIZONTAL DATUM: NAD83 (CORS96/2007)
HORIZONTAL SYSTEM: MONTANA COORDINATE SYSTEM, (2500) INTERNATIONAL FEET
VERTICAL DATUM: NAVD88, U.S. 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 CSF = 0.99943266



BEARING SOURCE

GRID -- MONTANA COORDINATE SYSTEM (NAD83-CORS96/2007)

LEVEL DATUM SOURCE

NAVD 88

3	MONTANA Department of Transportation	..\6850000\rd\6850000rdtrv.dgn	DESIGNED BY			ROAD PLANS		FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY						
		2:20:26 PM bvanderloos	CHECKED BY			FLATHEAD COUNTY		CSF = 0.99943266 UPN 6850000	4

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CONTROL ABSTRACT

CONTROL ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
6016850	1,434,911.331	836,277.505	2,902.01	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6016850/2009 THE POINT IS LOCATED 23 FEET WEST OF THE CENTERLINE OF FENNON WAY RD., 128 FEET NORTH OF THE CENTERLINE OF HWY. 82 AT MP 4.613. WITNESS POST SET 6 FEET WEST.
6026850				6026850/2009 THE POINT IS LOCATED 800 FEET SOUTH OF THE CENTERLINE OF A E-W ROAD THAT WAS THE OLD P.I. OF HWY. 82 THE POINT IS 40 FEET EAST OF AN EXTENSION OF A N-S FENCE LINE NEAR THE OLD HWY. 82 P.I., THE POINT IS LOCATED ON A SMALL ROUND KNOB IN A WHEAT FIELD. NO WITNESS POST SET AS THIS POINT WILL BE REMOVED AFTER PHOTOGRAMETRY VERIFICATION. ** MARK REPORTED AS DESTROYED BEFORE GPS SURVEY***
602A6850	1,433,871.118	835,970.214	2,902.61	602A6850 PHOTO ID POINT. BASE OF FENCE POST NORTHWEST OF 6026850. SEE PHOTO
602B6850	1,433,851.440	837,197.538	2,902.09	602B6850 PHOTO ID POINT. SE CORNER SIDEWALK NORTHEAST OF 6026850. SEE PHOTO
602C6850	1,433,773.286	837,122.676	2,899.46	602C6850 PHOTO ID POINT. BASE OF FENCE POST NORTHEAST OF 6026850. SEE PHOTO
602D6850	1,433,663.654	837,120.299	2,899.60	602D6850 PHOTO ID POINT. BASE OF FENCE POST NORTHEAST OF 6026850. SEE PHOTO
602E6850	1,433,025.689	837,519.654	2,901.22	602E6850 PHOTO ID POINT. BASE OF POWER POLE EAST OF 6026850. SEE PHOTO
6036850	1,434,015.351	838,233.140	2,897.35	SET5#8"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6036850/2009 THE POINT IS LOCATED 70 FEET NORTH OF THE CENTERLINE OF HWY. 82 AT MP 5.182 WITNESS POST SET 3 FEET NORTH.
6046850	1,434,602.294	839,849.948	2,903.04	SET5#8"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6046850/2009 THE POINT IS LOCATED 15 FEET WEST OF THE CENTERLINE APPROACH TO SLITERS PROPERTY AND 100' SOUTH OF A ROAD INTERSECTION. NO WITNESS POST SET.
6056850	1,433,829.308	840,489.763	2,905.85	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6056850/2009 THE POINT IS LOCATED 25 FEET SOUTH OF HWY. 82 AT MP. 5.62, 24 FEET EAST OF THE EAST BOUND ET2000. WITNESS POST SET 4 FEET NORTH.
6066850	1,433,140.749	840,164.167	2,897.80	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6066850/2009 AT INTERSECTION OLDENBURG ROAD GO NORTH ON OLDENBURG TO LARGE BARN ON WEST. THEN POINT IS LOCATED 20 FEET EAST OF THE CENTERLINE OF THE FARM ROAD AT THE EAST END OF A WHEAT FIELD AND 250 FEET SOUTH OF A LARGE HAY BARN. NO WITNESS POST SET.
6076850	1434635.912	842490.036	2,894.62	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6076850/2009 THE POINT IS LOCATED IN CATTAIL SWAMP. ACCESS POINT GO NORTH ON GUNNER ROAD TO FIRST "Y" POINT IS APPROXIMATELY N45E, 150 FEET. WITNESS POST SET 4 FOOT NORTHEAST.
6086850	1,434,524.069	843,736.726	2,962.34	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6086850/2009 THE POINT IS LOCATED AT S.E. CORNER INTERSECTION MT.HWY 82 & HANGING ROCK DRIVE. ALSO 35 FEET SOUTH OFTHE CENTERLINE OF HWY. 82 AT MP. 6.26, 20 FEET EAST OF THE CENTERLINE OF HANGING ROCK DR., 3 FEET WEST OF THE GUARDRAIL. WITNESS POST SET 3 FEET EAST.
6097069	1,433,667.137	843,498.197	2,897.82	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6097069/2009G THE POINT IS LOCATED 54 FEET SOUTH OF THE CENTERLINE OF HANGING ROCK DR. 48 FEET SOUTH OF THE FIRST APPROACH ON THE WEST FROM HWY.82 AND 15 FEET SOUTHEAST OF A FRENCH DRAIN INLET. WITNESS POST SET 3 FEET NORTH.
6106850	1,432,896.161	843,656.450	2,899.54	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6106850/2009 FROM INTERSECTION OF MT. HWY 82 & HANGING ROCK DRIVE GO SOUTH ON HANGING ROCK DR. THE POINT IS LOCATED 35 FEET EAST OF THE CENTERLINE OF HANGING ROCK DR., 23 FEET NORTH OF THE SOUTHERLY DRIVEWAY APPROACH TO THE THOMPSON RESIDENCE. NO WITNESS POST WAS SET.

CONTROL ABSTRACT (CONT.)

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
6116850	1,435,849.407	844,513.128	3,058.00	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6116850/2009 THE POINT IS LOCATED 1000 FEET UP DON TAYLORS DRIVE WAY, 30 FEET WEST OF THE CENTERLINE OF THE DRIVEWAY ON A SMALL KNOB. NO WITNESS POST SET.
6126850	1,435,146.972	845,105.252	3,041.65	SET⅜"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6126850/2009 THE POINT IS LOCATED 50FEET SOUTH OF THE CENTERLINE OF HWY. 82 AT MP.6.55 AND 13 FEET N.E. OF A GATE POST AND 25 FEET EAST OF A FARM FIELD APPROACH. WITNESS POST SET 3 FEET NORTHWEST.
6136850	1,435,149.297	846,659.933	3,098.24	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6136850/2009 THE POINT IS LOCATED 220 FEET WEST OF N-S WESTERLY FENCE LINE FOR A FARM FIELD LOCATED SOUTHWEST OF THE INTERSECTION OF HWY.2 AND HWY.82, THE POINT IS ON THE TOP OF A SMALL KNOB 50 FEET NORTH OF A PRIVATE DRIVING RANGE FAIRWAY. WITNESS POST SET 3 FOOT NORTH.
6146850	1,436,046.246	846,766.595	3,052.34	SET⅜"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6146850/2009 THE POINT IS LOCATED 50 FEET NORTH OF THE CENTERLINE OF HWY. 82 AT MP. 6.915 AND 33 FEET EAST OF THE CENTERLINE OF THE EASTERLY APPROACH TO A FRONTAGE ROAD. WITNESS POST SET 3 FEET NORTHWEST.
6156850	1,436,999.534	847,090.965	3,044.94	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6156850/2009 THE POINT IS LOCATED 35 FEET WEST OF THE CENTERLINE OF HWY. 35 AT MP. 34.076 AND 33 FEET SOUTH OF A FARM FIELD APPROACH. WITNESS POST SET 3 FEET NORTHWEST.
6166850	1,435,604.700	847,760.404	3,058.26	SET⅜"X30" REBAR WITH 2" MDT ALUM. CAP MARKED 6166850/2009 THE POINT IS LOCATED 18 FEET EAST OF THE CENTERLINE OF THE FRONTAGE ROAD FOR CROSSROAD CHURCH. 160 FEET SOUTH OF FRONTAGE ROAD APPROACH, POINT IS SET IN GRASS BOULEVARD IN FRONT OF CHURCH. FROM WHICH A LIGHT POLE BEARS N85E 21.7 FEET. NO WITNESS POST SET.
A6850	1,433,949.577	841,316.737	2,914.87	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED A6850/2009 LOCATED 18 FEET SOUTH OF CENTER LINE HWY.82 AT MILE POST 5.776 ALSO 20 FEET WEST OF THE FLATHEAD RIVER WESTBRIDGE ABUTMENT AND 3 FEET SOUTH OF SOUTH GUARD RAIL.. WITNESS POST SET 3 FEET SOUTH
B6850	1,434,067.616	842,030.542	2,915.07	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED B6850/2009 LOCATED 18 FEET SOUTH OF CENTER LINE HWY.82 AT MILE POST 5.904 ALSO 10 FEET EAST OF THE FLATHEAD RIVER EASTABUTMENT AND 3 FEET SOUTH OF SOUTH GUARD RAIL WITNESS POST SET 2 FEET NORTH
C6850	1,434,158.751	842,560.582	2,915.78	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED C6850/2009 LOCATED 18 FEET SOUTH OF CENTER LINE HWY.82 AT MILE POST 6.005 AND 2 FEET SOUTH OF SOUTH GUARD RAIL WITNESS POST SET 3 FEET N.E.
D6850	1,435,063.259	844,666.866	3,033.26	SET⅜"X30" REBAR WITH 2" MDT ALUM. CAP MARKED D6850/2009 LOCATED 70 FEET NORTH OF CENTER LINE HWY.82 AT MILE POST 6.441 ON TOP OF CUT BANK AT FENCE ANGLE BREAK. AND 3 FEET SOUTH OF R/W FENCE WITNESS POST SET 2.5 FEET EAST
E6850	1,435,460.952	845,499.615	3,068.20	SET⅝"X30" REBAR WITH 2" MDT ALUM. CAP MARKED E6850/2009 LOCATED 85 FEET NORTH OF CENTER LINE HWY.82 AT MILE POST 6.618 SET ON TOP OF CUT BANK 5 FEET SOUTH OF NORTH R/W FENCE WITNESS POST SET 3 FEET EAST

NOTE: STATE PLANE COORDINATES
HORIZONTAL COORDINATES ARE INTERNATIONAL FEET (NAD83-CORS96/2007)
ELEVATIONS ARE U.S. SURVEY FEET (NAVD88)

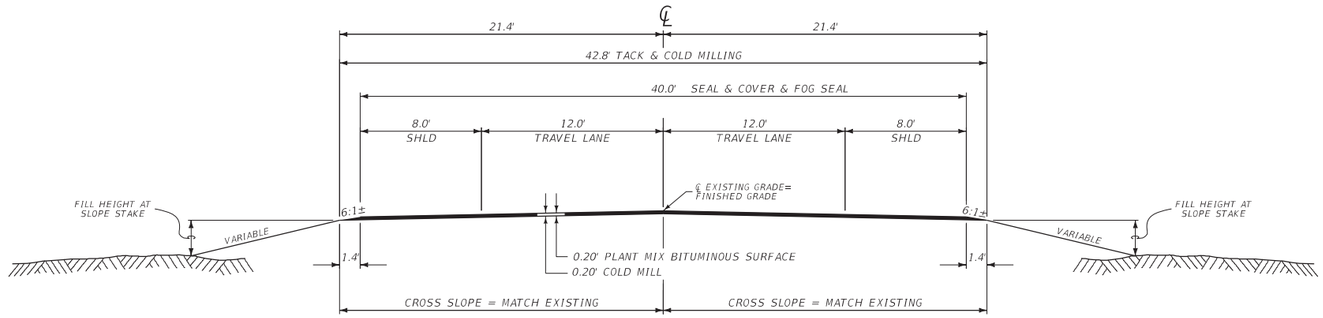
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Morrison Maierle

TYPICAL SECTION NO. 1

HIGHWAY 82

BEGIN CONNECTION



266+10.75 TO 266+60.75 FOR AHEAD STATION, SEE TYP. NO. 2

QUANTITIES								
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		8.27	SQUARE YARDS PER STATION		444		476	444
CUBIC YARDS PER STATION		30.6	TONS PER STATION	3.26	0.79			
TONS PER STATION		59.0	GALLONS PER STATION				24	33
SQUARE YARDS PER STATION	444							

* BASED ON 1 APPLICATION FOR THE OVERLAY SECTION

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

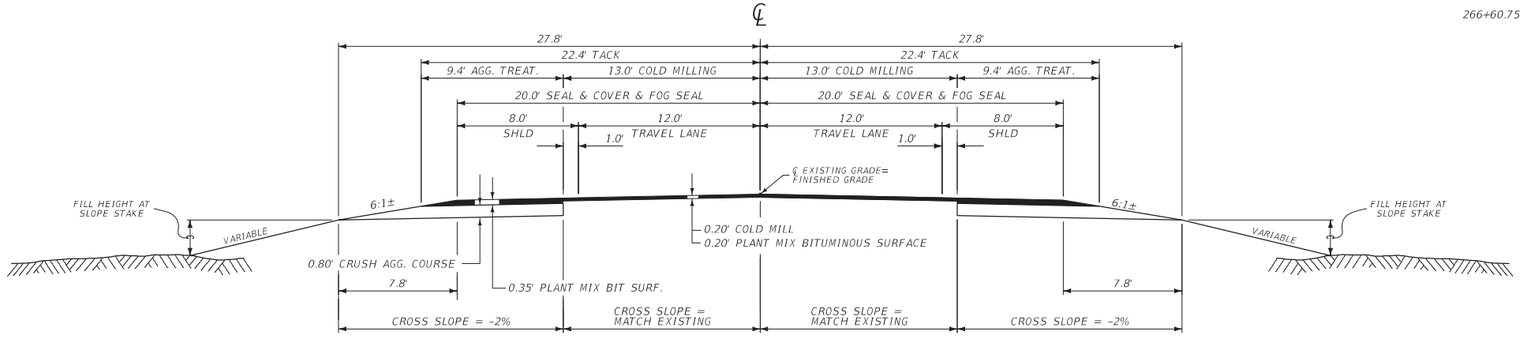
* SEE CROSS SECTIONS FOR DEVIATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 2

HIGHWAY 82



266+60.75 TO 286+50.00 FOR AHEAD STATION, SEE TYP. NO. 3

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		10.94	19.38	SQUARE YARDS PER STATION		444	209	707	444
CUBIC YARDS PER STATION		40.5	71.8	TONS PER STATION	4.30	0.79			
TONS PER STATION		78.1		GALLONS PER STATION				35	33
SQUARE YARDS PER STATION	444								

* BASED ON 2 APPLICATIONS FOR THE WIDENING SECTION AND 1 APPLICATION FOR THE OVERLAY SECTION

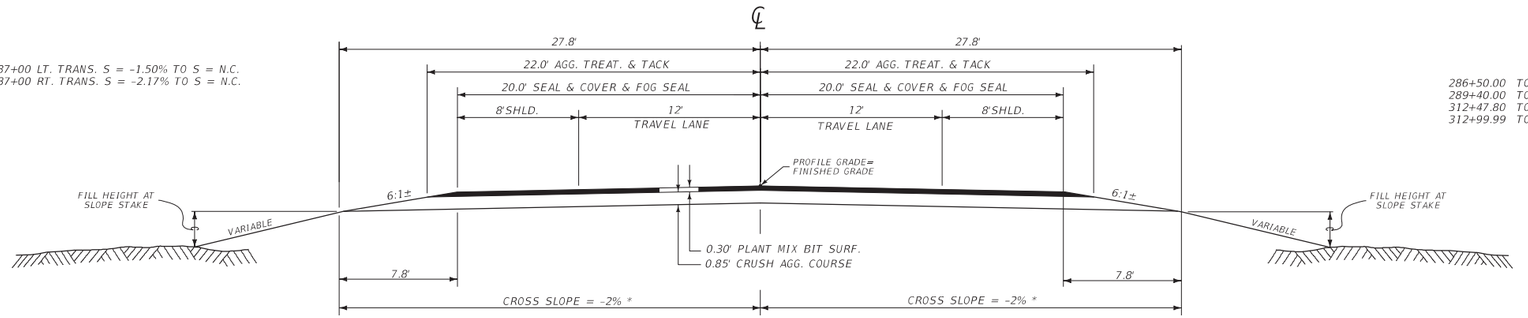
3	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp01.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY				
		2:21:01 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	6

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TYPICAL SECTION NO. 3

HIGHWAY 82



* 286+50 TO 287+00 LT. TRANS. S = -1.50% TO S = N.C.
286+50 TO 287+00 RT. TRANS. S = -2.17% TO S = N.C.

286+50.00 TO 289+40.00
289+40.00 TO 291+37.26 TRANS. TYP. NO. 3 TO TYP. NO. 4
312+47.80 TO 312+99.99
312+99.99 TO 314+55.99 TRANS. TYP. NO. 3 TO TYP. NO. 13

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		12.60	42.33	SQUARE YARDS PER STATION		444	489	978	444
CUBIC YARDS PER STATION		46.7	156.8	TONS PER STATION	4.95	0.79			
TONS PER STATION		90.0		GALLONS PER STATION				49	33
SQUARE YARDS PER STATION	444								

* BASED ON 2 APPLICATIONS

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

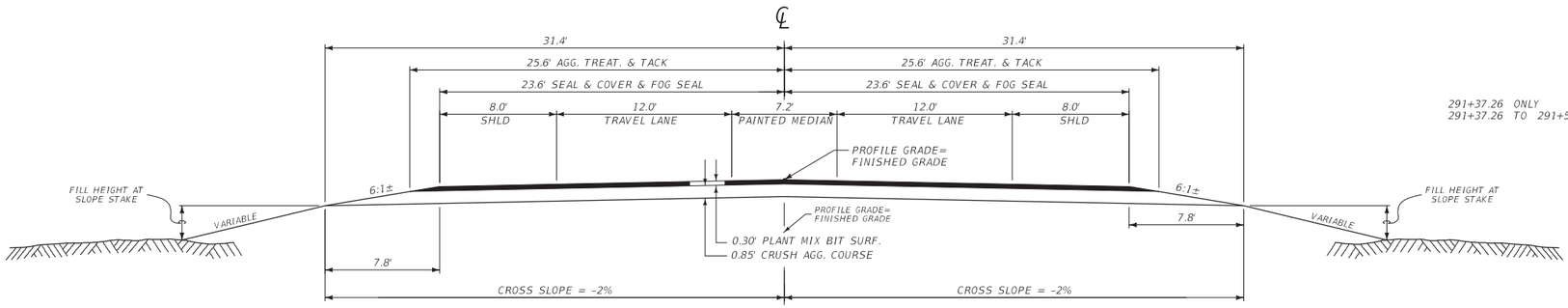
* SEE CROSS SECTIONS FOR DEVIATIONS

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 4

HIGHWAY 82



291+37.26 ONLY
291+37.26 TO 291+50.00 TRANS. TYP. NO. 4 TO TYP. NO. 5

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		14.76	48.45	SQUARE YARDS PER STATION		525	569	1138	525
CUBIC YARDS PER STATION		54.7	179.4	TONS PER STATION	5.80	0.94			
TONS PER STATION		105.4		GALLONS PER STATION				57	39
SQUARE YARDS PER STATION	525								

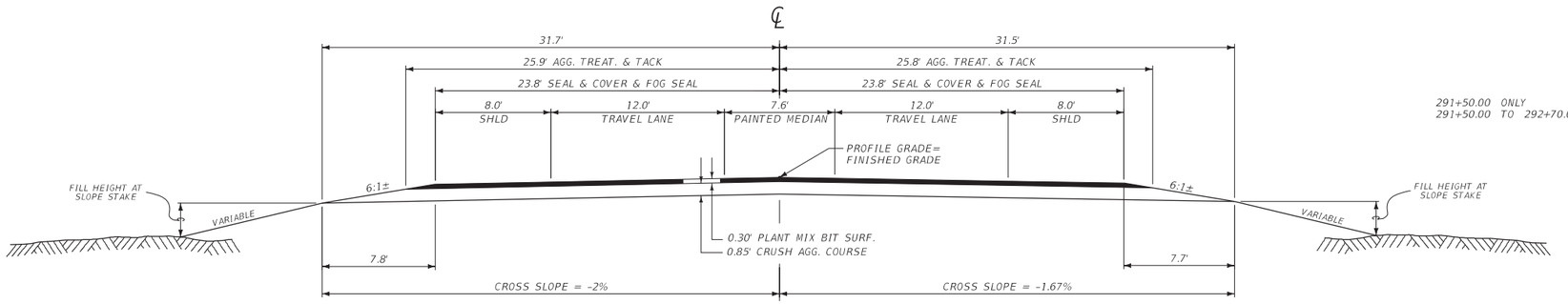
* BASED ON 2 APPLICATIONS

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TYPICAL SECTION NO. 5

HIGHWAY 82



291+50.00 ONLY
291+50.00 TO 292+70.00 TRANS. TYP. NO. 5 TO TYP. NO. 6

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		14.91	48.83	SQUARE YARDS PER STATION		529	575	1150	529
CUBIC YARDS PER STATION		55.2	180.9	TONS PER STATION	5.85	0.94			
TONS PER STATION		106.4		GALLONS PER STATION				58	40
SQUARE YARDS PER STATION	529								

* BASED ON 2 APPLICATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

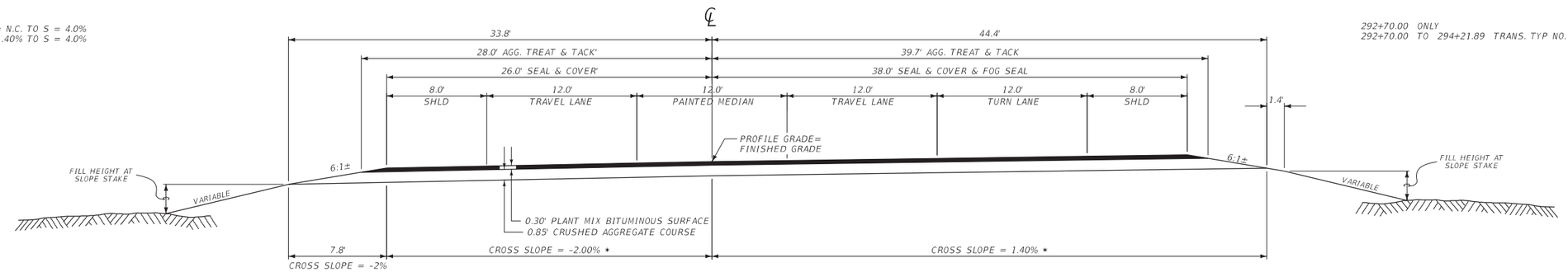
✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 6

HIGHWAY 82

* 292+93.26 TO 293+71.26 LT. TRANS. S = N.C. TO S = 4.0%
* 292+70.00 to 293+71.26 RT. TRANS. S = 1.40% TO S = 4.0%



292+70.00 ONLY
292+70.00 TO 294+21.89 TRANS. TYP NO. 6 TO TYP NO. 7

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		19.76	62.01	SQUARE YARDS PER STATION		711	753	1506	711
CUBIC YARDS PER STATION		73.2	229.7	TONS PER STATION	7.76	1.27			
TONS PER STATION		141.1		GALLONS PER STATION				75	53
SQUARE YARDS PER STATION	711								

* BASED ON 2 APPLICATIONS

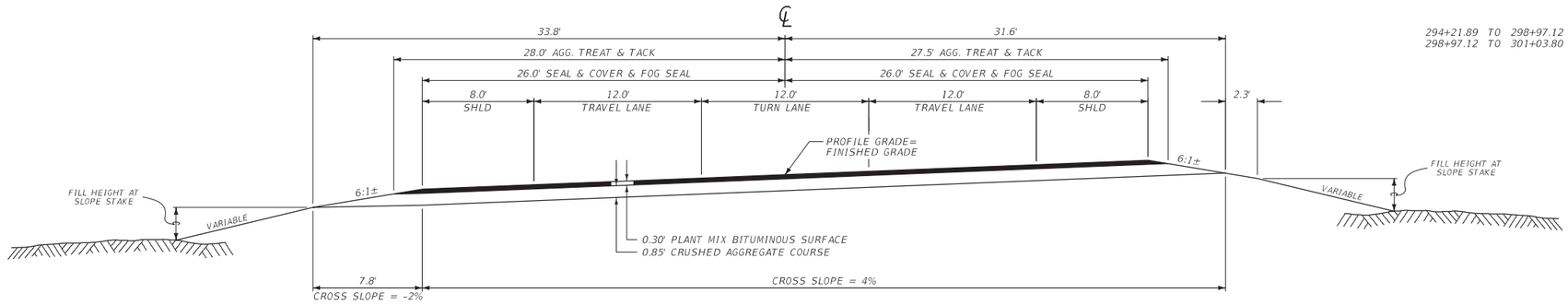
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1		4/16/2025	REVIEWED BY	FLATHEAD COUNTY	UPN 6850000	8
		2:21:03 PM bvanderloos	CHECKED BY			

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TYPICAL SECTION NO. 7

HIGHWAY 82



294+21.89 TO 298+97.12
298+97.12 TO 301+03.80 TRANS. TYP. NO.7 TO TYP. NO. 8

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		16.12	51.38	SQUARE YARDS PER STATION		578	617	1234	578
CUBIC YARDS PER STATION		59.7	190.3	TONS PER STATION	6.33	1.03			
TONS PER STATION		115.1		GALLONS PER STATION				62	43
SQUARE YARDS PER STATION	578								

* BASED ON 2 APPLICATIONS

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

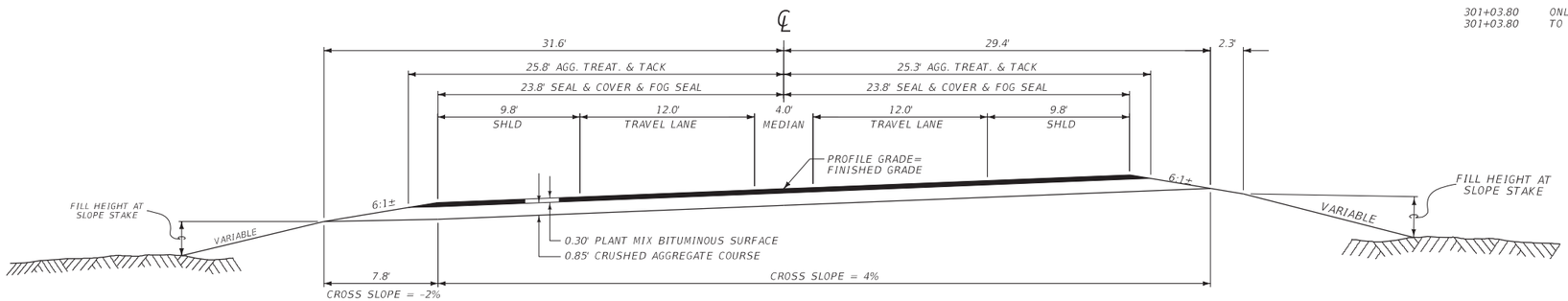
* SEE CROSS SECTIONS FOR DEVIATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 8

HIGHWAY 82



301+03.80 ONLY
301+03.80 TO 301+42.20 TRANS. TYP NO. 8 TO TYP NO. 9

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		14.81	47.64	SQUARE YARDS PER STATION		529	568	1136	529
CUBIC YARDS PER STATION		54.9	176.4	TONS PER STATION	5.82	0.94			
TONS PER STATION		105.8		GALLONS PER STATION				57	40
SQUARE YARDS PER STATION	529								

* BASED ON 2 APPLICATIONS

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp02.dgn	DESIGNED BY	ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
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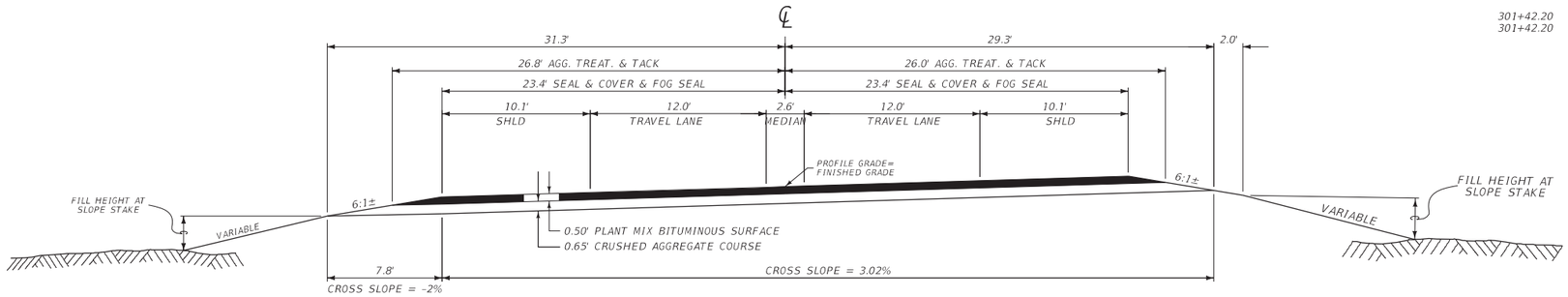
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TYPICAL SECTION NO. 9

HIGHWAY 82

301+42.20 ONLY
301+42.20 TO 302+75.40 TRANS. TYP NO. 9 TO TYP NO. 10



QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		24.90	36.83	SQUARE YARDS PER STATION		520	587	1761	520
CUBIC YARDS PER STATION		92.2	136.4	TONS PER STATION	9.77	0.93			
TONS PER STATION		177.7		GALLONS PER STATION				88	39
SQUARE YARDS PER STATION	520								

* BASED ON 3 APPLICATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

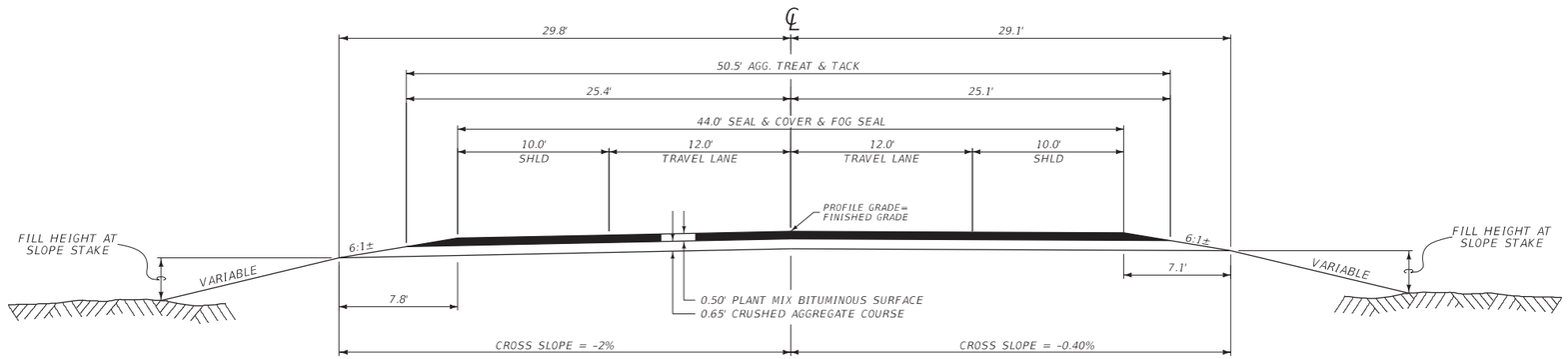
✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 10

HIGHWAY 82

302+75.40 ONLY
302+75.40 TO 303+37.80 TRANS. TYP NO. 10 TO TYP NO. 11



QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		23.63	35.56	SQUARE YARDS PER STATION		489	561	1683	489
CUBIC YARDS PER STATION		87.5	131.7	TONS PER STATION	9.28	0.87			
TONS PER STATION		168.7		GALLONS PER STATION				84	37
SQUARE YARDS PER STATION	489								

* BASED ON 3 APPLICATIONS

3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp02.dgn	DESIGNED BY	ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
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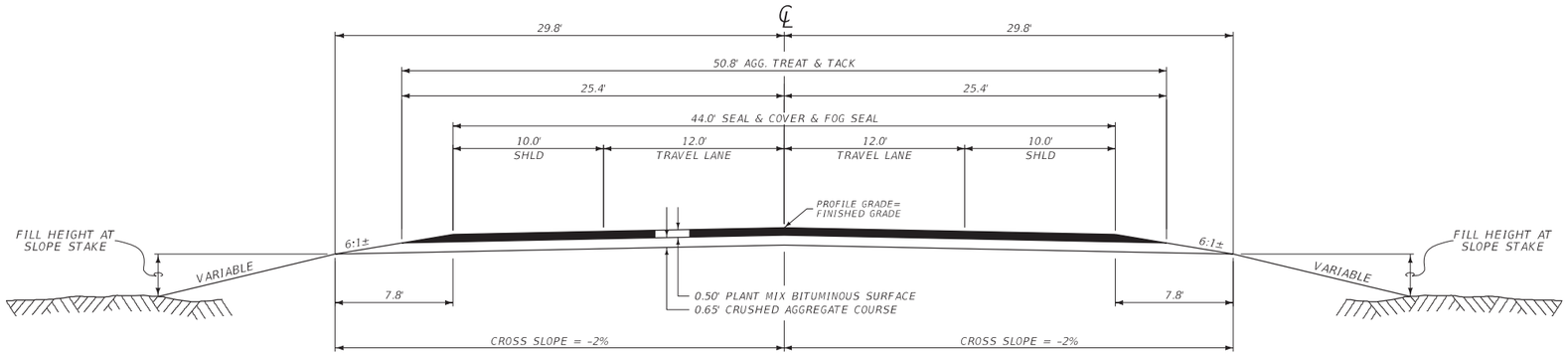
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TYPICAL SECTION NO. 11

HIGHWAY 82

303+37.80 TO 303+40.95 BE
310+49.05 BE TO 311+54.66
311+54.66 TO 312+04.66 TRANS. TYP NO. 11 TO TYP NO. 12



QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		23.70	35.88	SQUARE YARDS PER STATION		489	564	1693	489
CUBIC YARDS PER STATION		87.8	132.9	TONS PER STATION	9.31	0.87			
TONS PER STATION		169.2		GALLONS PER STATION				85	37
SQUARE YARDS PER STATION	489								

* BASED ON 3 APPLICATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

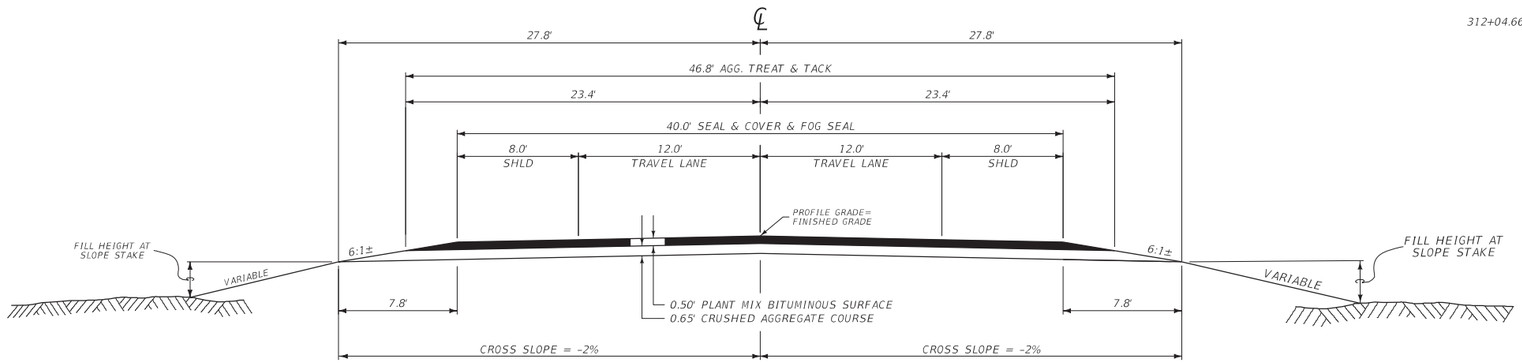
✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 12

HIGHWAY 82

312+04.66 TO 312+47.80 SEE TYP. NO. 3 FOR AHEAD STATION



QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		21.70	33.28	SQUARE YARDS PER STATION		444	520	1560	444
CUBIC YARDS PER STATION		80.4	123.3	TONS PER STATION	8.53	0.79			
TONS PER STATION		155.0		GALLONS PER STATION				78	33
SQUARE YARDS PER STATION	444								

* BASED ON 3 APPLICATIONS

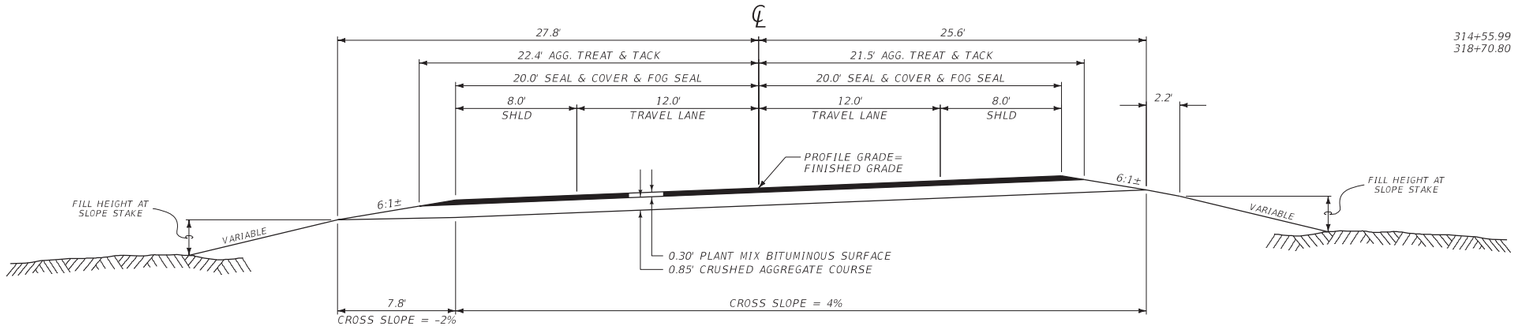
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1		4/16/2025	REVIEWED BY				
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TYPICAL SECTION NO. 13

HIGHWAY 82



314+55.99 TO 318+70.80
318+70.80 TO 321+22.76 TRANS. TYP NO. 13 TO TYP NO. 14

FOR QUANTITIES SEE TYPICAL NO. 3

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

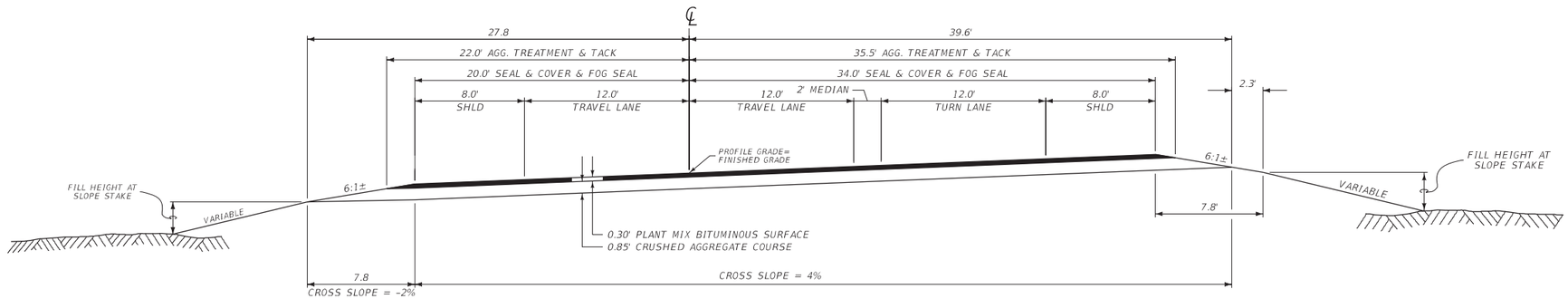
* FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 14

HIGHWAY 82

321+22.76 ONLY
321+22.76 TO 324+21.69 TRANS. TYP NO. 14 TO TYP NO. 15



QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		16.72	53.08	SQUARE YARDS PER STATION		600	639	1278	600
CUBIC YARDS PER STATION		61.9	196.6	TONS PER STATION	6.56	1.07			
TONS PER STATION		119.4		GALLONS PER STATION				64	45
SQUARE YARDS PER STATION	600								

* BASED ON 2 APPLICATIONS

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp03.dgn	DESIGNED BY			ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY					
		2:22:16 PM bvanderloos	CHECKED BY			FLATHEAD COUNTY	UPN 6850000	12

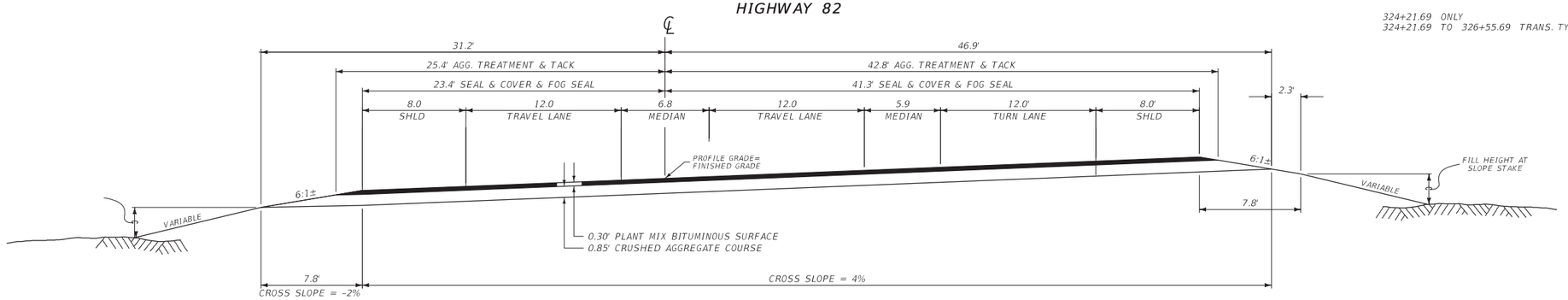
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TYPICAL SECTION NO. 15

HIGHWAY 82

324+21.69 ONLY
324+21.69 TO 326+55.69 TRANS. TYP NO. 15 TO TYP NO. 16



QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		19.94	62.18	SQUARE YARDS PER STATION		719	758	1516	719
CUBIC YARDS PER STATION		73.9	230.3	TONS PER STATION	7.83	1.28			
TONS PER STATION		142.4		GALLONS PER STATION				76	54
SQUARE YARDS PER STATION	719								

* BASED ON 2 APPLICATIONS

BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

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

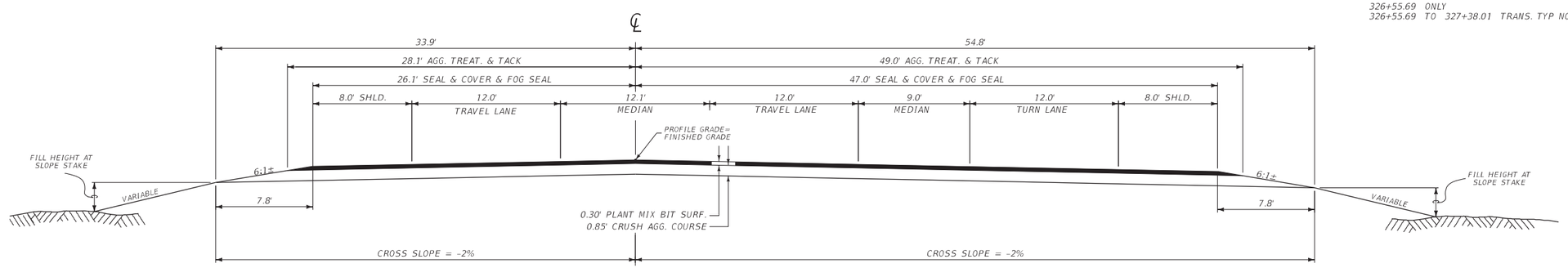
* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 16

HIGHWAY 82

END CONNECTION

326+55.69 ONLY
326+55.69 TO 327+38.01 TRANS. TYP NO. 16 TO TYP NO. 17



QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		22.53	70.46	SQUARE YARDS PER STATION		812	857	1714	812
CUBIC YARDS PER STATION		83.4	261.0	TONS PER STATION	8.84	1.45			
TONS PER STATION		160.8		GALLONS PER STATION				86	61
SQUARE YARDS PER STATION	812								

* BASED ON 2 APPLICATIONS

3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp05.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY				
		2:22:17 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	13

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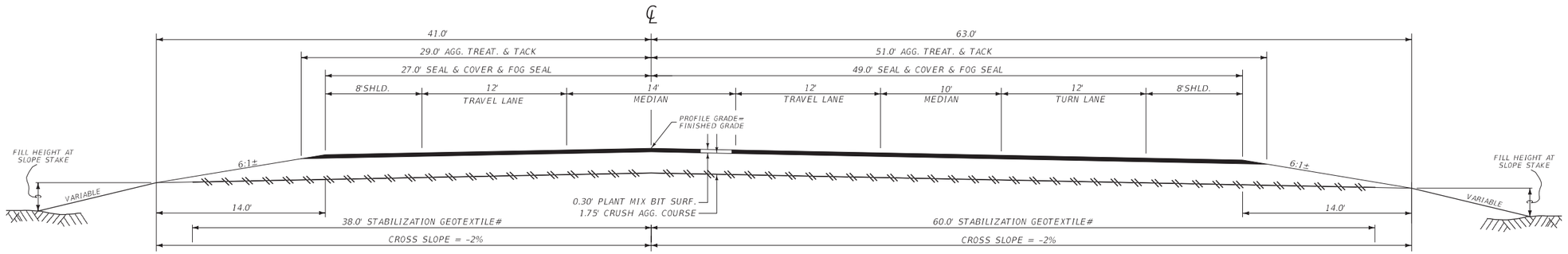
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TYPICAL SECTION NO. 17

HIGHWAY 82

\# STABILIZATION GEOTEXTILE QUANTITY IS INCLUDED IN THE GEOTEXTILE SUMMARY FRAME

327+38.01 ONLY
327+38.01 TO 328+63.44 TRANS. TYP. NO. 17 TO TYP. NO. 18



QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		23.40	161.0	SQUARE YARDS PER STATION		844	889	1,778	844
CUBIC YARDS PER STATION		86.7	596.3	TONS PER STATION	9.19	1.51			
TONS PER STATION		167.1		GALLONS PER STATION				89	63
SQUARE YARDS PER STATION	844								

* BASED ON 2 APPLICATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

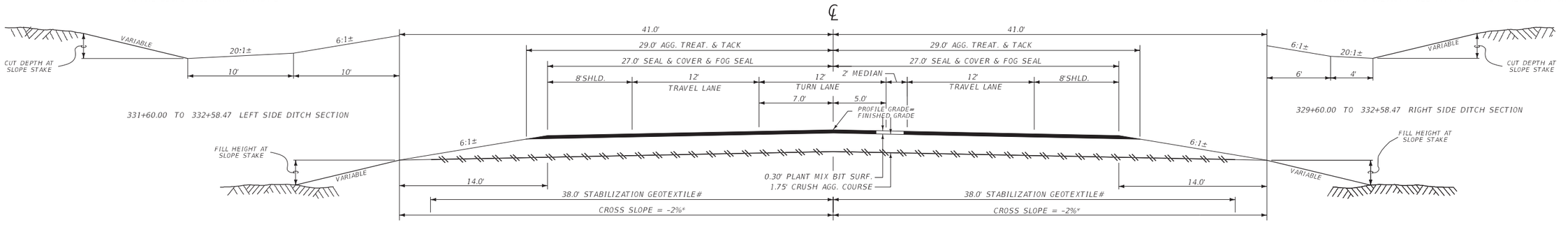
TYPICAL SECTION NO. 18

HIGHWAY 82

* 332+08.47 TO 332+58.47 LT. TRANS. S = N.C. TO S = -2.35%
332+08.47 TO 332+58.47 RT. TRANS. S = N.C. TO S = -1.74%

\# STABILIZATION GEOTEXTILE QUANTITY IS INCLUDED IN THE GEOTEXTILE SUMMARY FRAME

328+63.44 TO 332+58.47 SEE TYP. NO. 19 FOR AHEAD STATION



331+60.00 TO 332+58.47 LEFT SIDE DITCH SECTION

329+60.00 TO 332+58.47 RIGHT SIDE DITCH SECTION

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		16.82	122.59	SQUARE YARDS PER STATION		600	646	1292	600
CUBIC YARDS PER STATION		62.3	454.0	TONS PER STATION	6.61	1.07			
TONS PER STATION		120.1		GALLONS PER STATION				65	45
SQUARE YARDS PER STATION	600								

* BASED ON 2 APPLICATIONS

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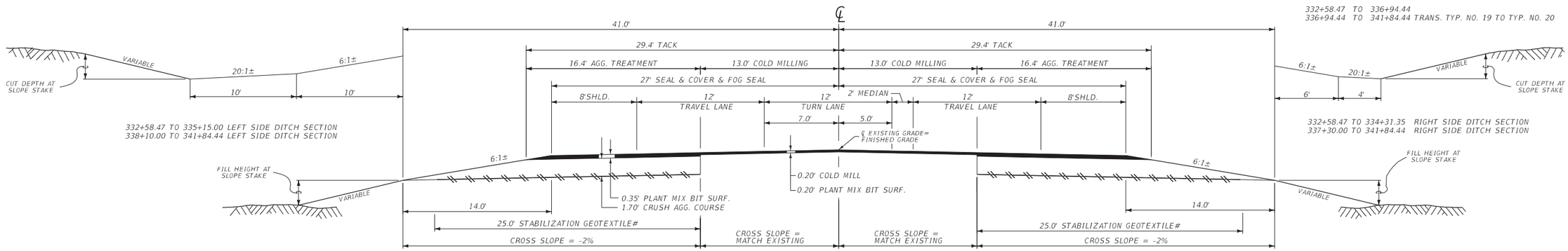
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TYPICAL SECTION NO. 19

HIGHWAY 82

\# STABILIZATION GEOTEXTILE QUANTITY IS INCLUDED IN THE GEOTEXTILE SUMMARY FRAME



QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		15.84	75.42	SQUARE YARDS PER STATION		600	364	1017	600
CUBIC YARDS PER STATION		58.7	279.3	TONS PER STATION	6.22	1.07			
TONS PER STATION		113.1		GALLONS PER STATION				51	45
SQUARE YARDS PER STATION	600								

* BASED ON 2 APPLICATIONS FOR THE WIDENING SECTION AND 1 APPLICATION FOR THE OVERLAY SECTION

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

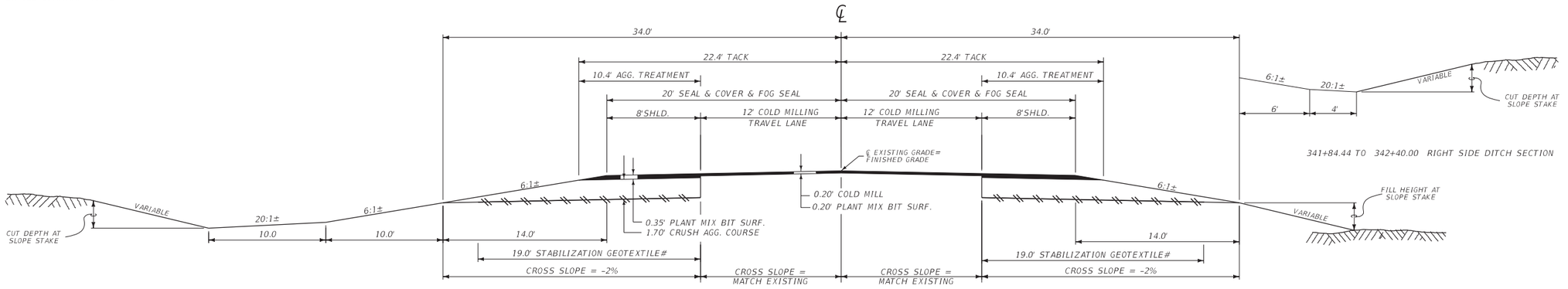
✱ FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 20

HIGHWAY 82

\# STABILIZATION GEOTEXTILE QUANTITY IS INCLUDED IN THE GEOTEXTILE SUMMARY FRAME



341+84.44 ONLY
341+84.44 TO 342+84.44 TRANS. TYP NO. 20 TO TYP NO. 21

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		11.24	55.06	SQUARE YARDS PER STATION		444	231	729	444
CUBIC YARDS PER STATION		41.6	203.9	TONS PER STATION	4.41	0.79			
TONS PER STATION		80.2		GALLONS PER STATION				36	33
SQUARE YARDS PER STATION	444								

* BASED ON 2 APPLICATIONS FOR THE WIDENING SECTION AND 1 APPLICATION FOR THE OVERLAY SECTION

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp02.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		5/14/2025	REVIEWED BY				
		3:01:27 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	15

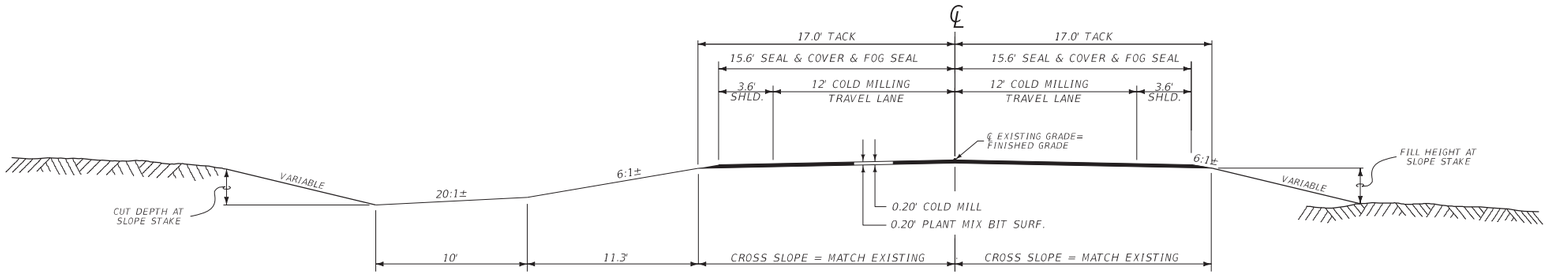
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TYPICAL SECTION NO. 21

HIGHWAY 82
END CONNECTION



342+84.44 ONLY END CONNECTION

QUANTITIES								
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL				
	COVER	PLANT MIX		ASPHALT BINDER	SEAL	AGG. TREAT.	EMULSIFIED ASPHALT TACK*	EMULSIFIED ASPHALT FOG SEAL
AREA SQUARE FEET		6.52	SQUARE YARDS PER STATION		347		377	347
CUBIC YARDS PER STATION		24.1	TONS PER STATION	2.56	0.62			
TONS PER STATION		46.5	GALLONS PER STATION				19	26
SQUARE YARDS PER STATION	347							

* BASED ON 1 APPLICATION

✱ BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

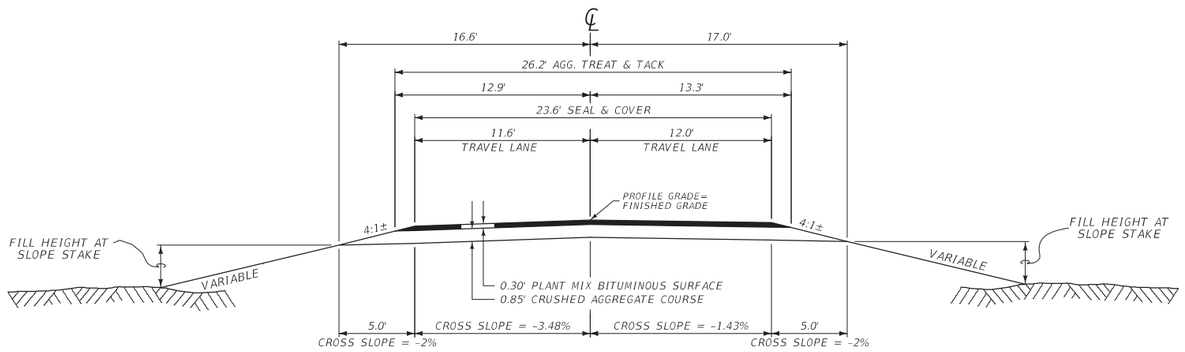
✱ FILL SLOPES	
0' - 10'	6:1
10' - 20'	4:1
20' - 30'	3:1
OVER 30'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

TYPICAL SECTION NO. 22

HANGING ROCK DRIVE

400+00.00 ONLY
400+00.00 TO 400+41.00 TRANS. TYP NO. 22 TO TYP NO. 24



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL		AGG. TREAT.	EMULSIFIED ASPHALT TACK*
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL		
AREA SQUARE FEET		7.46	25.38	SQUARE YARDS PER STATION		262	291	582
CUBIC YARDS PER STATION		27.6	94.0	TONS PER STATION	2.93	0.47		
TONS PER STATION		53.3		GALLONS PER STATION				29
SQUARE YARDS PER STATION	262							

* BASED ON 2 APPLICATIONS

3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp01.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY				
		2:22:55 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	16

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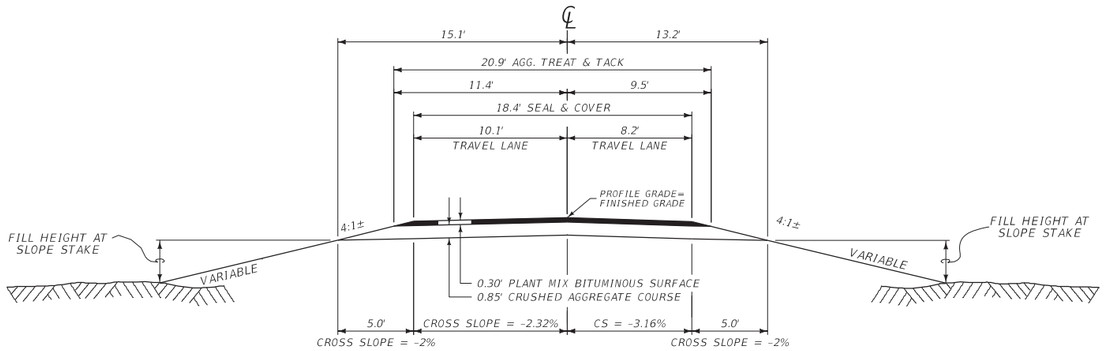
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TYPICAL SECTION NO. 23

OLDENBURG ROAD

601+78.54 ONLY
601+78.54 TO 602+25.12 TRANS. TYP NO. 23 TO TYP NO. 24



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL		AGG. TREAT.	EMULSIFIED ASPHALT TACK*
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL		
AREA SQUARE FEET		5.90	20.98	SQUARE YARDS PER STATION		204	233	466
CUBIC YARDS PER STATION		21.9	77.7	TONS PER STATION	2.32	0.36		
TONS PER STATION		42.1		GALLONS PER STATION				23
SQUARE YARDS PER STATION	204							

* BASED ON 2 APPLICATIONS

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

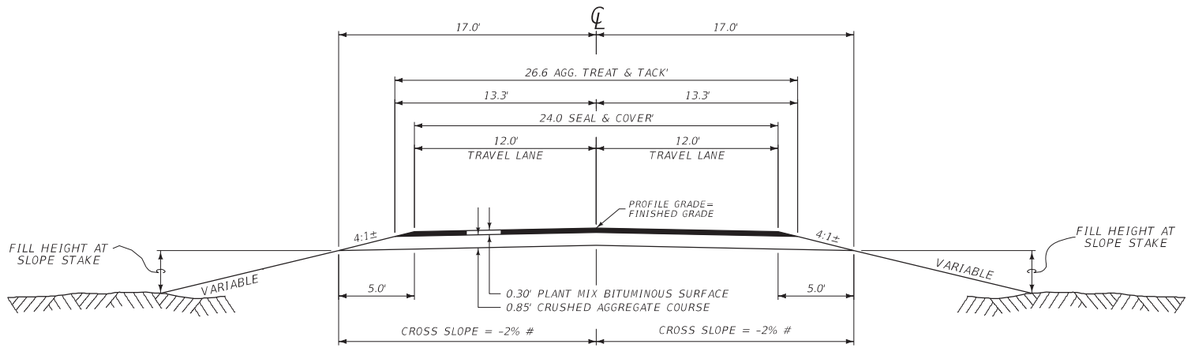
TYPICAL SECTION NO. 24

HANGING ROCK DRIVE
\# 400+66.11 TO 401+93.30 LT. TRANS. S = N.C. TO S = -5.41%
400+66.11 TO 402+15.88 RT. TRANS. S = N.C. TO S = 5.50%

OLDENBURG ROAD
\# 605+50.00 TO 606+15.00 LT. TRANS. S = N.C. TO S = -2.10%
605+50.00 TO 606+20.25 RT. TRANS. S = N.C. TO S = 1.65%

HANGING ROCK DRIVE
400+41.00 TO 402+15.88

OLDENBURG ROAD
602+25.12 TO 606+20.25



QUANTITIES								
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL		AGG. TREAT.	EMULSIFIED ASPHALT TACK*
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL		
AREA SQUARE FEET		7.59	25.76	SQUARE YARDS PER STATION		267	296	592
CUBIC YARDS PER STATION		28.1	95.4	TONS PER STATION	2.98	0.48		
TONS PER STATION		54.2		GALLONS PER STATION				30
SQUARE YARDS PER STATION	267							

* BASED ON 2 APPLICATIONS

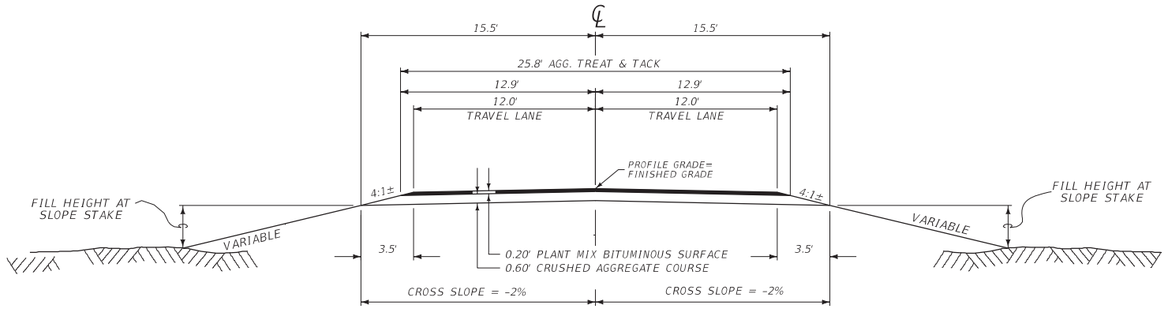
2	MONTANA Department of Transportation	...\6850000\rd\6850000rdtyp04.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
1		4/16/2025	REVIEWED BY				
		2:22:56 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	17

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TYPICAL SECTION NO. 25

GUNNER LN



12+00.00 TO 14+00.00

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL		AGG. TREAT.	EMULSIFIED ASPHALT TACK
	COVER	PLANT MIX	CRUSHED AGGREGATE COURSE		ASPHALT BINDER	SEAL		
AREA SQUARE FEET		4.98	17.04	SQUARE YARDS PER STATION			287	287
CUBIC YARDS PER STATION		18.4	63.1	TONS PER STATION	1.96			
TONS PER STATION		35.6		GALLONS PER STATION				14
SQUARE YARDS PER STATION								

* BACK SLOPES	
0' - 5'	5:1
5' - 10'	4:1
10' - 15'	3:1
15' - 20'	2:1
OVER 20'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

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

* SEE CROSS SECTIONS FOR DEVIATIONS

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SUMMARY

Morrison Maierle

GRADING

STATION		cu. yards			REMARKS
		UNCL. EXC.	UNCL. BORROW	EMB.+	
FROM	TO				
266+10.75	342+84.44	54,230		57,020	HIGHWAY 82
TOTAL		54,230	2,790	#57,020	

#FOR INFORMATION ONLY

ADDITIONAL GRADING

STATION		cu. yards INCL. IN ROADWAY		REMARKS
		UNCL. EXC.	EMB+	
FROM	TO			
HIGHWAY 82				
287+60		40	10	PRIVATE APPROACH LT
293+40		45	315	PRIVATE APPROACH LT
266+10.75	303+40.20		4,020	TOPSOIL REPLACEMENT
303+40.95	304+04.98	1,640	640	BRIDGE END GRADING
309+85.66	310+49.05	345	1,790	BRIDGE END GRADING
310+42.20	312+53.23		1,250	FAS LAGOON GRADING
324+89		5	480	PRIVATE APPROACH LT
329+99		10	360	PRIVATE APPROACH LT
335+57		40	335	PRIVATE APPROACH LT
310+49.80	342+84.44		3,925	TOPSOIL REPLACEMENT
HANGING ROCK DRIVE				
400+00.00	402+15.88	555	185	
400+00.00	402+15.88		45	TOPSOIL REPLACEMENT
OLDENBURG ROAD				
601+78.54	606+20.25	330	2,060	
601+78.54	606+20.25		155	TOPSOIL REPLACEMENT
602+06		30		PRIVATE APPROACH LT
603+76		90	5	PRIVATE APPROACH LT
GUNNER LANE				
12+00.00	14+00.00	155	1,850	
SWALE RECONSTRUCTION				
700+00.00	703+51.51	965	0	
TOTAL		~	~	

SPECIAL BORROW

STATION		cu. yards	REMARKS
		SPECIAL BORROW NEAT LINE	
FROM	TO		
HIGHWAY 82			
266+60.75	286+50.00	6,490	2' BELOW SURFACING (SEE DETAIL)
286+50.00	303+40.95	9,260	2' BELOW SURFACING (SEE DETAIL)
310+49.05	327+38.01	111,295	APPROACH EMBANKMENT FILL
300+84.08	303+40.20	3,190	SURCHARGE EMBANKMENT, SEE DETAIL
310+49.80	312+60.24	2,960	SURCHARGE EMBANKMENT, SEE DETAIL
TOTAL		133,195	

COLD MILLING *

STATION		sq. yards COLD MILLING #	REMARKS
FROM	TO	0.20 ft	
HIGHWAY 82			
266+10.75	266+60.75	223	TYP. NO. 1
266+60.75	286+50.00	5,747	TYP. NO. 2
332+58.47	336+94.44	1,260	TYP. NO. 19
336+94.44	341+84.44	1,362	TRANS. TYP. NO. 19 TO TYP. NO. 20
341+84.44	342+84.44	307	TRANS. TYP. NO. 20 TO TYP. NO. 21
TOTAL		8,899	

* SEE TYPICAL SECTIONS
#MILLING QUANTITIES HAVE BEEN REMOVED FROM EXCAVATION QUANTITIES

BRIDGE END BACKFILL

STATION		cu. yards BRIDGE END BACKFILL	REMARKS
FROM	TO	TYPE I	
HIGHWAY 82			
302+43	303+40.95	2,395	
310+49.05	311+53.48	1,970	
TOTAL		4,365	

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICATION #	FINAL APPLICATION	TOTAL
STRIPING - WHITE PAINT	gallon	112		112
STRIPING - YELLOW PAINT	gallon	112		112
WORDS & SYMBOLS - WHITE PAINT	gallon	18		18
WORDS & SYMBOLS - YELLOW PAINT	gallon	26		26
STRIPING - WHITE EPOXY	gallon		74	74
STRIPING - YELLOW EPOXY	gallon		74	74
WORDS & SYMBOLS - WHITE EPOXY	gallon		10	10
WORDS & SYMBOLS - YELLOW EPOXY	gallon		18	18
TEMPORARY STRIPING	feet		9,194	9,194

#BASED ON 2 APPLICATIONS.

REMOVE STRUCTURE

STATION	lump sum REMOVE STRUCTURE	REMARKS
307+05	1.0	BRIDGE ID 06222 / NBI P000820005+05831
TOTAL	1	

BLASTING CONSULTANT

STATION		lump sum	REMARKS
FROM	TO		
332+00 RT	338+50 RT	1	
TOTAL		1	

SITE MONITORING

STATION		lump sum	REMARKS
FROM	TO		
303+40.95	310+49.05	1	VIBRATION MONITORING CONSULTANT
TOTAL		1	

RUMBLE STRIPS

STATION		miles RUMBLE STRIPS		gals EMULSIFIED ASPHALT FOG SEAL #	REMARKS
		INTERMITTENT	CENTERLINE TYPE 3		
FROM	TO				
HIGHWAY 82					
266+10.75	303+40.95	14	0.7	182	
310+49.05	342+84.44	12	0.6	158	
SUBTOTAL		26	1.3	340	
TOTAL			1.3	~	

#FOR INFORMATION ONLY, INCLUDE IN THE COST OF RUMBLE STRIPS

FENCING

STATION		linear feet FARM FENCE			TEMP. FENCE*	each FARM FENCE PANEL				DEADMAN	linear feet FARM GATE		REMARKS
		TYPE F2-39WW	TYPE F3W-39WW	TYPE F6-W		SINGLE		DOUBLE					
FROM	TO					FW	FM	FW	FM		TYPE G2	TYPE G3	
287+41.75 LT	303+56.08 LT	1,614					4		4	6			ALTERNATE WOOD AND STEEL POSTS
287+60.00 LT												24	
293+40.00 LT												40	
326+53.67 LT	343+76.70 LT		1,723			5		5		10			PARCEL 12 & 17
329+99 LT												16	PARCEL 12 & 17
335+57 LT												16	PARCEL 12 & 17
343+12 LT											16		PARCEL 12 & 17
332+48.10 RT	342+75.00 RT			1,067	1,067		1		4	4			PARCEL 16/16CE BUILD CORNER BRACING WITH ROUND STEEL POSTS
TOTAL		1,614	1,723	1,067	1,067	5	5	5	8	20	16	96	

*TEMPORARY FENCE WILL TYPE F4M WITH METAL POSTS

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SUMMARY

SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE 2	AGGREGATE tons PLANT MIX SURF. GR. S -1 /2"	AGGREGATE tons PLANT MIX SURF. GR. S - MISC.	AGGREGATE cu. yards CRUSHED AGG. COURSE	AGGREGATE cu. yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL tons ASPHALT BINDER MSCR PG58H-34	BITUMINOUS MATERIAL tons SEAL CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT FOG SEAL	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
HIGHWAY 82																		
266+10.75	266+60.75	50.00	50.00			BEGIN CONNECTION		222	30				1.7	0.4	12	17		TYPICAL NO. 1
266+60.75	286+50.00	1989.25	1,989.25					8,833	1,554		1,429		85.6	15.8	697	657	4,158	TYPICAL NO. 2
286+50.00	289+40.00	290.00	290.00					1,288	261		455		14.4	2.3	143	96	1,419	TYPICAL NO. 3
289+40.00	291+37.26	197.26	197.26					956	193		332		10.7	1.8	105	72	1,044	TRANS. TYPICAL NO. 3 TO TYPICAL NO. 4
291+37.26	291+50.00	12.74	12.74					68	14		23		0.8	0.2	8	6	73	TRANS. TYPICAL NO. 4 TO TYPICAL NO. 5
291+50.00	292+70.00	120.00	120.00					744	149		247		8.2	1.4	80	56	797	TRANS. TYPICAL NO. 5 TO TYPICAL NO. 6
292+70.00	294+21.89	151.89	151.89					979	195		319		10.8	1.8	105	73	1,041	TRANS. TYPICAL NO. 6 TO TYPICAL NO. 7
294+21.89	298+97.12	475.23	475.23					2,747	547		905		30.1	4.9	295	205	2,933	TYPICAL NO. 7
298+97.12	301+03.80	206.68	206.68					1,144	229		379		12.6	2.1	123	86	1,225	TRANS. TYPICAL NO. 7 TO TYPICAL NO. 8
301+03.80	301+42.20	38.40	38.40					202	55		61		3.0	0.4	28	16	224	TRANS. TYPICAL NO. 8 TO TYPICAL NO. 9
301+42.20	302+75.40	133.20	133.20					672	231		179		12.7	1.2	115	51	772	TRANS. TYPICAL NO. 9 TO TYPICAL NO. 10
302+75.40	303+37.80	62.40	62.40					306	106		83		6.0	1.0	53	24	351	TRANS. TYPICAL NO. 10 TO TYPICAL NO. 11
303+37.80	303+40.95 BE	3.15	3.15					16	6		5		1.0	1.0	3	2	18	TYPICAL NO. 11
303+40.95 BE	310+49.05 BE	708.10			708.10	BRIDGE												
310+49.05 BE	311+54.66	105.61	105.61					517	179		141		10.0	1.0	90	40	596	TYPICAL NO. 11
311+54.66	312+04.66	50.00	50.00					234	82		65		5.0	1.0	41	18	271	TRANS. TYPICAL NO. 11 TO TYPICAL NO. 12
312+04.66	312+47.80	43.14	43.14					192	67		54		4.0	1.0	34	15	225	TYPICAL NO. 12
312+47.80	312+99.99	52.19	52.19					232	47		82		2.6	0.5	26	18	256	TYPICAL NO. 3
312+99.99	314+55.99	156.00	156.00					693	141		245		8.0	2.0	77	52	763	TRANS. TYPICAL NO. 3 TO TYPICAL NO. 13
314+55.99	318+70.80	414.81	414.81					1,842	374		651		21.0	4.0	204	137	2,029	TYPICAL NO. 13
318+70.80	321+22.76	251.96	251.96					1,316	264		446		15.0	3.0	143	99	1,422	TRANS. TYPICAL NO. 13 TO TYPICAL NO. 14
321+22.76	324+21.69	298.93	298.93					1,972	392		639		22.0	4.0	210	148	2,089	TRANS. TYPICAL NO. 14 TO TYPICAL NO. 15
324+21.69	326+55.69	234.00	234.00					1,792	355		575		20.0	4.0	190	135	1,890	TRANS. TYPICAL NO. 15 TO TYPICAL NO. 16
326+55.69	327+38.01	82.32	82.32					682	135		353		8.0	2.0	73	52	719	TRANS. TYPICAL NO. 16 TO TYPICAL NO. 17
327+38.01	328+63.44	125.43	125.43					906	181		659		10.0	2.0	97	68	963	TRANS. TYPICAL NO. 17 TO TYPICAL NO. 18
328+63.44	332+58.47	395.03	395.03					2,371	475		1,794		27.0	5.0	257	178	2,552	TYPICAL NO. 18
332+58.47	336+94.44	435.97	435.97					2,616	494		1,218		28.0	5.0	223	197	1,587	TYPICAL NO. 19
336+94.44	341+84.44	490.00	490.00					2,558	474		1,184		27.0	5.0	214	192	1,458	TRANS. TYPICAL NO. 19 TO TYPICAL NO. 20
341+84.44	342+84.44	100.00	100.00			END CONNECTION		396	64		102		4.0	1.0	28	30	116	TRANS. TYPICAL NO. 20 TO TYPICAL NO. 21
						ADDITIONAL SURFACING		2,432	603	290	1,551		49.7	4.3	418	4	5,635	
TOTAL		7,673.69	6,965.59	0.00	708.10		115	38,928	7,897	290	14,176	1,000	458.9	79.1	4,092	2,744	36,627	

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 2	AGGREGATE tons PLANT MIX SURF. GR. S - 1 /2"	AGGREGATE tons PLANT MIX SURF. GR. S - MISC.	AGGREGATE cu. yards CRUSHED AGG. COURSE	BITUMINOUS MATERIAL tons ASPHALT BINDER MSCR PG58H-34	BITUMINOUS MATERIAL tons SEAL CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT FOG SEAL	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
HIGHWAY 82																
302+19.34 LT	303+03.33 LT	83.99	83.99							8						GUARDRAIL WIDENING LT
300+94.00 RT	303+03.33 RT	209.33	209.33							18						GUARDRAIL WIDENING RT
303+02.90 LT	303+23.71 LT	20.81	20.81			EMBANKMENT PROTECTOR		3		2	0.2		1	1		EMBANKMENT PROTECTOR LT
303+02.90 RT	303+19.45 RT	16.55	16.55			EMBANKMENT PROTECTOR		2		2	0.1		1	1		EMBANKMENT PROTECTOR RT
310+67.02 LT	311+01.83 LT	34.81	34.81			EMBANKMENT PROTECTOR		3		2	0.2		1	1		EMBANKMENT PROTECTOR LT
310+67.02 RT	311+01.83 RT	34.81	34.81			EMBANKMENT PROTECTOR		3		2	0.2		1	1		EMBANKMENT PROTECTOR RT
311+01.41 LT	312+63.17 LT	161.76	161.76							19						GUARDRAIL WIDENING LT
HANGING ROCK DRIVE																
400+00.00	400+41.00	41.00	41.00				109	23		39	1.3	0.2	13		121	TRANS. TYPICAL NO. 22 TO TYPICAL NO. 24
400+41.00	402+15.88	174.88	174.88				467	95		167	5.3	0.9	53		518	TYPICAL NO. 24
OLDENBURG ROAD																
601+78.54	602+25.12	46.58	46.58				110	23		41	1.3	0.2	13		124	TRANS. TYPICAL NO. 23 TO TYPICAL NO. 24
602+25.12	606+20.25	395.13	395.13				1,055	215		377	11.8	1.9	119		1,170	TYPICAL NO. 24
GUNNER LANE																
12+00.00	14+00.00	200.00	200.00					72		127	4.0		28		574	TYPICAL NO. 25
APPROACHES									290	508	16.3		116		2,261	
PUBLIC APPROACH FILLETS							691	164		239	9.0	1.1	72		867	
SUBTOTAL		~	~	~	~		2,432	603	290	1,551	49.7	4.3	418	4	5,635	

MAILBOXES

STATION	each LARGE MAILBOXES	REMARKS
293+40	1	RT
315+08	2	LT
324+89	1	LT
329+99	1	LT
335+57	1	LT
TOTAL	6	

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SUMMARY

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CULVERTS (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS: CULVERT PIPE in	BASIC BID ITEMS: linear feet: LENGTH OF PIPE	BASIC BID ITEMS: linear feet: REMOVE PIPE CULVERT	BASIC BID ITEMS: cu. yards: FOUNDATION MATERIAL	BASIC BID ITEMS: cu. yards: RANDOM RIPRAP CLASS 1	BASIC BID ITEMS: each: MEDIAN INLET TYPE 2	BASIC BID ITEMS: sq. yards: GEOTEXT. STAB.	BASIC BID ITEMS: each: PLUG ENDS & ABANDON PIPE	PIPE OPTIONS in: STEEL - 2 2/3 X1 /2 CORR. CONCRETE # ALUMINUM - 2 2/3 x1 /2 CORR.	PIPE OPTIONS in: CLASS OR THK.	PIPE OPTIONS in: COATING *	END SECTIONS: LEFT	END SECTIONS: RIGHT	cu. yards: FOUNDATION MATERIAL	cu. yards: RANDOM RIPRAP CLASS 1	sq. yards: GEOTEXT. STAB.	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
318+69								1											6 X 825.0 PERF.	PLUG & ABANDON END AT STA. 322+13.80, 26.2 RT
325+50	24	128				1			~ 24 RCP ~	CL III	NONE	SQ.	FETS				7.3			DRAIN
326+20			80.0																24 X 80.0 CSP	
331+15			71.1																24 X 71.1 CMP	
331+26	24	100							~ 24 RCP ~	CL IV	NONE	FETS	FETS				1.2	30° RT		DRAIN
401+65	24	74							~ 24 RCP ~	CL III	NONE	FETS	FETS				2.8	18° LT		DRAIN
402+15	24		80.4																24 X 80.4 CMP	
TOTAL	~	~	231.5			1		1	~	~	~	~	~	~	~	~	~	~	~	

* SEE STANDARD SPEC. SEC. 709.05
#CLASS C WALL CONCRETE PIPE

SEEPAGE DRAIN SUMMARY

STATION FROM	STATION TO	linear feet: 6" CORR. POLYETHYLENE PIPE*	linear feet: 10" CORR. POLYETHYLENE PIPE*	cu. yards: DRAIN AGGREGATE	sq. yards: SUBSURFACE DRAINAGE GEOTEXTILE FILTER#
HIGHWAY 82					
324+50	324+50		118	16	105
SWALE RECONSTRUCTION					
700+00	703+51.51	352		50	313
TOTAL		352	118	66	418

*SEE DETAIL DRAWING #HIGH SURVIVABILITY, CLASS B

APPROACH PIPE (INCLUDED IN CULVERT SUMMARY RECAP)

STATION	BASIC BID ITEMS: CULVERT PIPE in	BASIC BID ITEMS: linear feet: LENGTH OF PIPE	BASIC BID ITEMS: linear feet: REMOVE PIPE CULVERT	PIPE OPTIONS in: STEEL - 2 2/3 x1 /2 CORR. 0.064 THK.	PIPE OPTIONS in: CONCRETE - CLASS III#	PIPE OPTIONS in: ALUMINUM - 2 2/3 x1 /2 CORR. 0.060 THK.	PIPE OPTIONS in: CORRU-GATED POLY-ETHYLENE PIPE	END SECTIONS: LEFT	END SECTIONS: RIGHT	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
HIGHWAY 82													
293+40	18	68			18	~	~	FETS	FETS	4.1			LT
335+57	18	82	61.0		18	~	~	FETS	FETS	2.6		24 x61.0 CMP	LT
TOTAL	~	~	61.0	~	~	~	~	~	~	~	~	~	

* COAT PIPE PER STANDARD SPEC. SEC. 709.04
#CLASS C WALL CONCRETE PIPE

CULVERT SUMMARY RECAP

BASIC BID	linear feet: NEW PIPE (TOTAL)	linear feet: REMOVE PIPE CULVERT	cu. yards: FOUNDATION MATERIAL	cu. yards: GRANULAR BEDDING MATERIAL	cu. yards: SPECIAL BACKFILL	cu. yards: CONCRETE - CLASS GENERAL	cu. yards: RANDOM RIPRAP CLASS 1	each: MEDIAN INLET TYPE 2	each: PLUG ENDS & ABANDON PIPE	sq. yards: GEOTEXT. STAB.
18" RCP	150									
24" RCP	302							1		
6" PERF. PIPE									1	
TOTAL	~	292.5						1	1	

GUARDRAIL

STATION FROM	STATION TO	linear feet: REMOVE GUARDRAIL LEFT	linear feet: REMOVE GUARDRAIL RIGHT	linear feet: MGS GUARDRAIL LEFT	linear feet: MGS GUARDRAIL RIGHT	linear feet: MGS GUARDRAIL LONG POSTS LEFT	linear feet: MGS GUARDRAIL LONG POSTS RIGHT	each: MASH W-BEAM TERMINAL SECTION LEFT	each: MASH W-BEAM TERMINAL SECTION RIGHT	each: MASH THRIE-BEAM BRIDGE APPROACH SECTION LEFT	each: MASH THRIE-BEAM BRIDGE APPROACH SECTION RIGHT	REMARKS
HIGHWAY 82												
295+00.00	303+60.00	860.0	860.0									
301 +26.75	303+23.71				125.0				1		1	
302+51 .84	303+23.71							1		1		
310+50.00	324+20.00		1,370.0									
310+50.00	314+99.75	490.0										
310+66.29	312+63.17			125.0				1		1		
310+66.29	327+28.79						1,625.0				1	CONNECTS TO NEW RAIL ON HANGING ROCK DR
315+16.62	324+35.00	944.0										
HANGING ROCK DRIVE												
400+73.78	401+87.60					100.0		1				INCL. 45' RADIUS
401+56.10	402+25.60	75.0	75.0									
SUBTOTAL		2,369.0	2,305.0	125.0	125.0	100.0	1,625.0	3	1	2	2	
TOTAL		4,674.0		250.0		1,725.0		4		4		

STONE COLUMNS

STATION FROM	STATION TO	cu. Yards: DRAIN AGGREGATE	sq. yards: SUBSURFACE DRAINAGE GEOTEXTILE FILTER#	linear feet: STONE COLUMNS	REMARKS
HIGHWAY 82					
303+07.72	303+55.68	409	613	2,178	
310+23.32	310+90.26	670	1,005	9,492	
TOTAL		1,079	1,618	11,670	

* SEE SPECIAL PROVISIONS
#HIGH SURVIVABILITY, CLASS B

COMPACTION GROUTING

STATION FROM	STATION TO	cu. Yards: CEMENT GROUT	linear feet: COMPACTION GROUT SET CASING LENGTH	REMARKS
HIGHWAY 82				
303+07.72	303+55.68	35	132	
310+23.32	310+90.26	758	2,893	
TOTAL		793	3,025	

* SEE SPECIAL PROVISIONS

ABANDON SPRING DEVELOPMENT

STATION	each: ABANDON WELL	REMARKS
326+50	1	SOUTHERN SPRING DEVELOPMENT RT.
326+57	1	NORTHERN SPRING DEVELOPMENT RT.
TOTAL	2	

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SUMMARY

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TOPSOIL & SEEDING

STATION FROM	STATION TO	cu. yards TOPSOIL SALVAGING & PLACING	cu. yards TOPSOIL - PLACE	acres SEED AREA NO. 1	acres SEED AREA NO. 2	acres SEED AREA NO. 3	acres FERTILIZER AREA NO. 1	acres FERTILIZER AREA NO. 2	CONDITION SEEDBED #	acres MULCH - COMPOST	REMARKS
HIGHWAY 82											
266+10.75	303+40.20	4,020		8.8		3.1	8.8		11.9		
310+49.80	342+84.44	3,925		3.0	1.7	2.0	3.0	1.7	5.0	1.7	
HANGING ROCK DRIVE											
400+00.00	402+15.88	45		0.2		0.1	0.2		0.3		
OLDENBURG ROAD											
601+78.54	606+20.25	155		0.1		0.3	0.1		0.4		
SWALE RECONSTRUCTION											
700+00.00	703+51.51	143		0.3			0.3		0.3		
TOTAL		8,288		12.4	1.7	5.5	12.4	1.7	~	1.7	

#-FOR INFORMATION ONLY

GEOTEXTILE

STATION FROM	STATION TO	sq. yards GEOTEXT. SEPARATION	sq. yards STABILIZATION GEOTEXTILE	REMARKS
HIGHWAY 82				
266+60.75	286+50.00		11,265	
286+50.00	303+40.95		14,810	
302+46.95	303+40.95	670		BRIDGE END BACKFILL
310+49.05	311+43.05	620		BRIDGE END BACKFILL
310+90.00	315+00.00		3,860	GEOGRID REINFORCED FILL
313+50.00	319+00.00		4,400	EMBANKMENT FOUNDATION TREATMENT
315+00.00	319+00.00		3,320	GEOGRID REINFORCED FILL
327+38.01	332+58.47		4,550	
332+58.47	342+84.44		5,005	
TOTAL		1,290	47,210	

PERMANENT EROSION CONTROL *

STATION FROM	STATION TO	sq. yards EROSION CONTROL BLANKET HIGH PERFORMANCE	sq. yards COIR EROSION CONTROL NET	REMARKS
HIGHWAY 82				
329+60.00 RT	342+30.00 RT	569		
331+60.00 LT	335+15.00 LT	394		
336+02.63 LT	342+84.44 LT	753		
SWALE RECONSTRUCTION				
700+00.00	703+51.51	1,180		
TOTAL		2,896		

*SEE DETAILS

RANDOM RIPRAP

STATION FROM	STATION TO	cu. yards RANDOM RIPRAP CL. 3	sq. yards GEOTEXTILE PERM. EROS. CNTRL. HIGH SURV. CLASS B	RIPRAP REVEGETATION	REMARKS
HIGHWAY 82					
303+64.42	304+03.75	698.5	661	661	
309+82.16	310+21.50	726.8	688	688	
TOTAL		1,425.3	1,349	1,349	

GEOGRID

STATION FROM	STATION TO	sq. yards BIAXIAL GEOGRID	sq. yards UNIAXIAL GEOGRID	REMARKS
HIGHWAY 82				
310+90.00	315+00.00		3,860	GEOGRID REINFORCED FILL
313+50.00	319+00.00	4,400		EMBANKMENT FOUNDATION TREATMENT
315+00.00	319+00.00	4,510	16,000	GEOGRID REINFORCED FILL
TOTAL		8,910	19,860	

MISCELLANEOUS ITEMS

STATION FROM	STATION TO	REMOVAL - LUMP SUM	LUMP SUM	EACH	REMARKS
303+40.95	310+49.05			1	WATERWAY PASSAGE AND SIGNING
325+70.00	347+60.00		1		TIMBER DECKING -SEE SPECIAL PROVISIONS
310+50.00	314+25.00	1			EX. FAS DECOMMISSIONING -SEE SPECIAL PROVISIONS
TOTAL		1	1	1	

CATTLE GUARD

STATION	each CATTLE GUARD LIGHT DUTY 16 ft	REMARKS
335+57	1	LT
TOTAL	1	

EMBANKMENT PROTECTORS

STATION FROM	STATION TO	linear feet EMBANKMENT PROTECTOR 18" LEFT	linear feet EMBANKMENT PROTECTOR 18" RIGHT	linear feet 4" CONCRETE CURB LEFT	linear feet 4" CONCRETE CURB RIGHT	cu. yards BANK PROTECTION TYPE 3	REMARKS
HIGHWAY 82							
303+02.90	303+23.71	85		28.0		3.0	22.5° elbow
303+02.90	303+19.45		79		23.0	3.0	22.5° elbow
310+67.02	311+01.83	86		42.0		3.0	22.5° elbow
310+67.02	311+01.83		51		42.0	3.0	22.5° elbow
SUBTOTAL		171	130	70.0	65.0		
TOTAL		301		135.0		12.0	

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HYDRAULIC DATA SUMARY *

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)
306+95	FLATHEAD RIVER	5,789	410 FOOT 4-SPAN BRIDGE	96,900	2	2896.80	113,000	2897.40	162,000	0.2	2899.10	Qp(max), OVERTOPPING DOES NOT OCCUR

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

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LEGEND



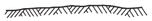
TOPSOIL WITH EROSION CONTROL BLANKET/MULCH COVER



RANDOM RIPRAP



FILTER MATERIAL NO. 2

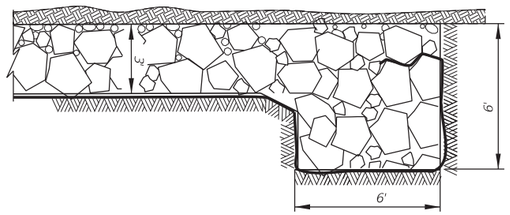


EXISTING GROUND

HIGH SURVIVABILITY PERMANENT EROSION CONTROL GEOTEXTILE, TYPE B



EXCAVATION



RIPRAP ABUTMENT PROTECTION TERMINATION AT LEADING AND TRAILING EDGES

NOTES:

FILL RIPRAP VOIDS WITH FILTER MATERIAL NO. 2 OR A MATERIAL OF SIMILAR GRADATION OBTAINED ON SITE TO PROVIDE A UNIFORM SURFACE FOR THE PLACEMENT OF TOPSOIL, AS APPROVED BY THE PROJECT MANAGER.

PLACE TOPSOIL WITH A MINIMUM THICKNESS OF 6".

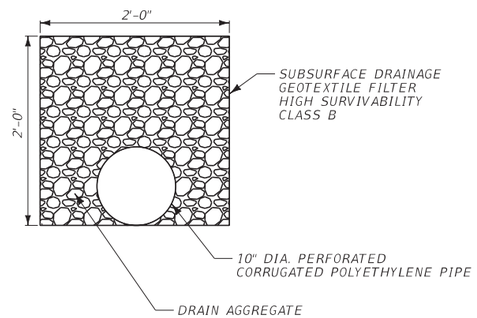
THIS DETAIL IS TO BE USED AS A VISUAL GUIDE FOR RIPRAP REVEGETATION. REFER TO THE PLAN SHEETS AND CROSS SECTIONS FOR GEOMETRIC CONFIGURATION OF THE RIPRAP LAYOUT.

REFER TO THE SPECIAL PROVISIONS FOR PLANTING AND SEEDING SPECIFICATIONS.

RIPRAP REVEGETATION TYPICAL

EMBANKMENT PROTECTION

MINIMUM T FOR:
CLASS III RIPRAP = 3'-0"



SEEPAGE DRAIN DETAIL

LOCATIONS:

HIGHWAY 82: STA 324+50
I.E. LT = 2934.12
O.E. RT = 2932.94

NOTES:

1. CONTRACTOR INSTALL RODENT GUARD ON THE DOWNSTREAM PIPE END. PAYMENT FOR RODENT GUARDS IS INCIDENTAL TO THE PRICE OF THE 10" DIAMETER CORRUGATED POLYETHYLENE DRAINAGE PIPE.

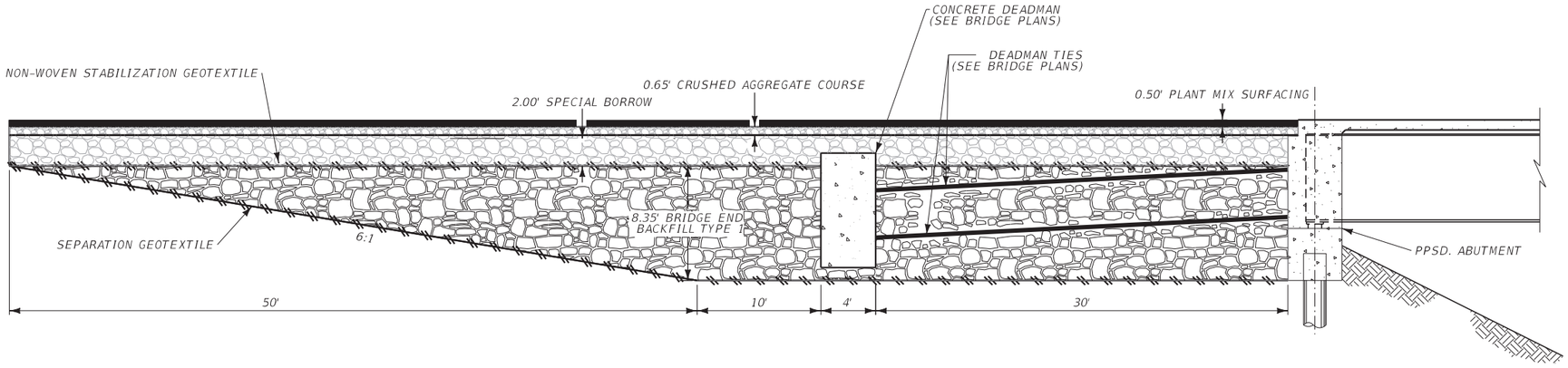
MISCELLANEOUS HYDRAULICS DETAILS

NOT TO SCALE

3 / 1	MONTANA Department of Transportation	..\6850000\rd\6850000rddet01.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY				
		2:26:12 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	24

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DETAIL



NOTE:

1. WEST APPROACH SHOWN, EAST APPROACH SIMILAR WITHOUT THE STABILIZATION GEOTEXTILE.
2. CONTRACTOR TO ENSURE COMPACTION AROUND DEADMAN ANCHOR, TIE BEAMS AND SHEAR KEY.

BRIDGE END BACKFILL DETAIL

NOT TO SCALE

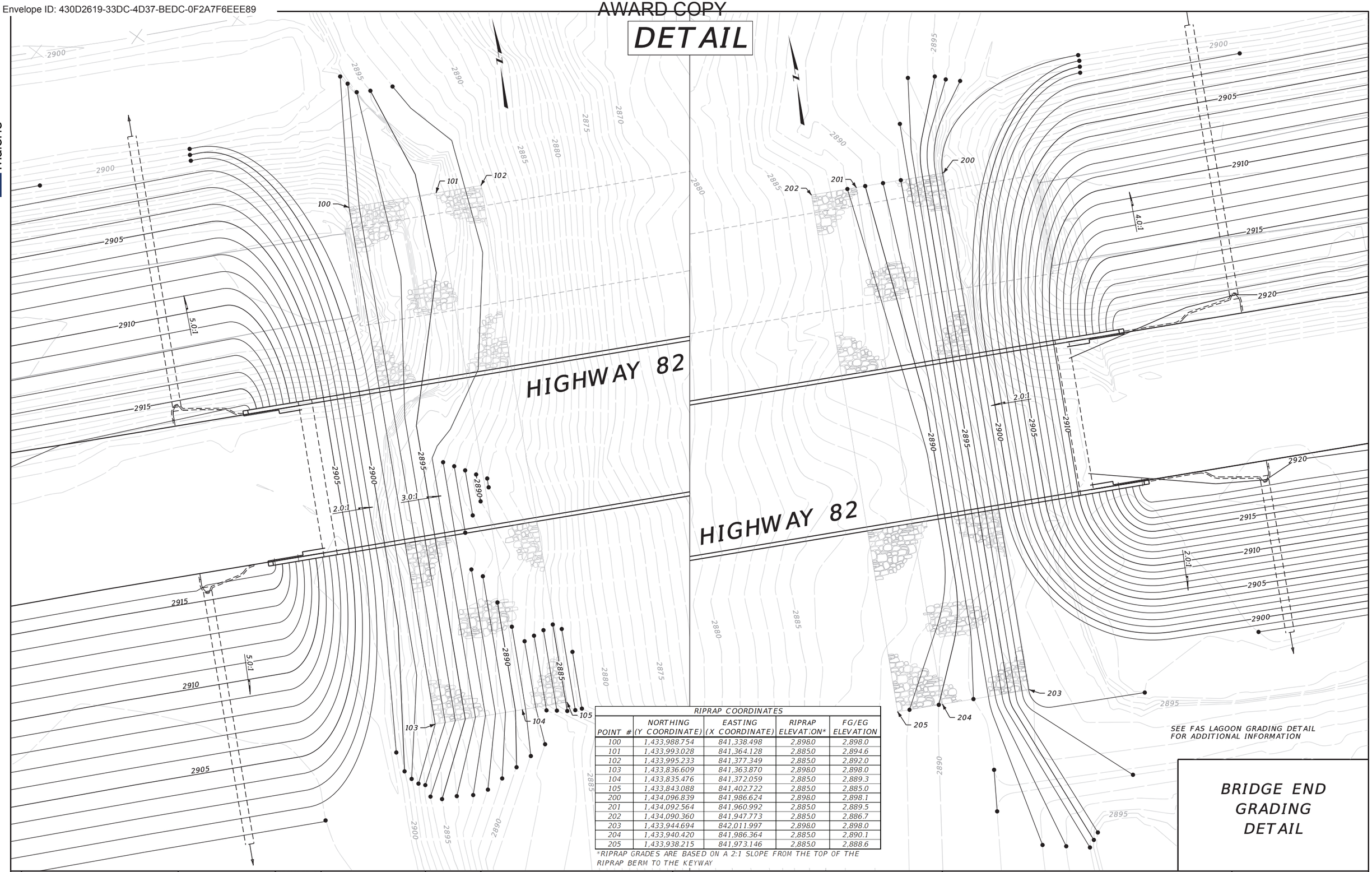
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AWARD COPY

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DETAIL



RIPRAP COORDINATES				
POINT #	NORTHING (Y COORDINATE)	EASTING (X COORDINATE)	RIPRAP ELEVATION*	FG/EG ELEVATION
100	1,433,988.754	841,338.498	2,898.0	2,898.0
101	1,433,993.028	841,364.128	2,885.0	2,894.6
102	1,433,995.233	841,377.349	2,885.0	2,892.0
103	1,433,836.609	841,363.870	2,898.0	2,898.0
104	1,433,835.476	841,372.059	2,885.0	2,889.3
105	1,433,843.088	841,402.722	2,885.0	2,885.0
200	1,434,096.839	841,986.624	2,898.0	2,898.1
201	1,434,092.564	841,960.992	2,885.0	2,889.5
202	1,434,090.360	841,947.773	2,885.0	2,886.7
203	1,433,944.694	842,011.997	2,898.0	2,898.0
204	1,433,940.420	841,986.364	2,885.0	2,890.1
205	1,433,938.215	841,973.146	2,885.0	2,888.6

*RIPRAP GRADES ARE BASED ON A 2:1 SLOPE FROM THE TOP OF THE RIPRAP BERM TO THE KEYWAY

SEE FAS LAGOON GRADING DETAIL FOR ADDITIONAL INFORMATION

BRIDGE END GRADING DETAIL

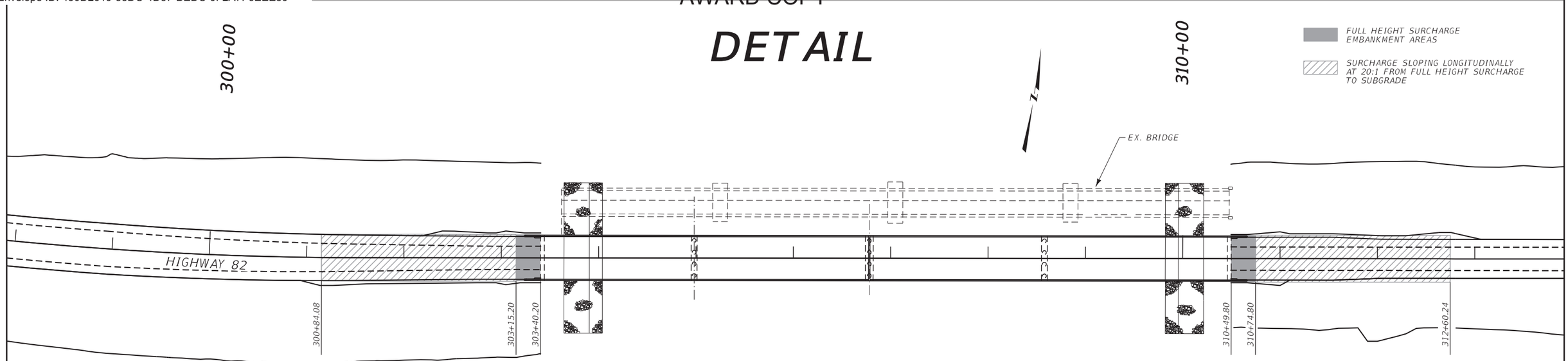
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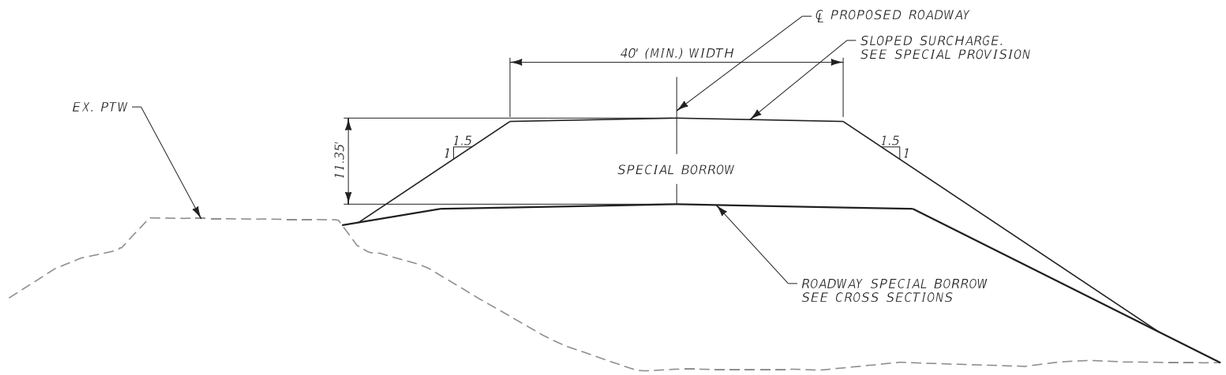
DETAIL

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SURCHARGE EMBANKMENT PLAN VIEW

SCALE: 1" = 100'



SURCHARGE EMBANKMENT SECTION VIEW

SCALE: 1" = 20'

SURCHARGE EMBANKMENT DETAILS

SCALE: SEE DETAIL FOR SCALE

3 / 2	MONTANA Department of Transportation	...\6850000\rd\6850000rddet02.dgn 4/16/2025 2:27:28 PM bvanderloos	DESIGNED BY REVIEWED BY CHECKED BY		ROAD PLANS FLATHEAD COUNTY		FLATHEAD RIVER - 3 M NW BIGFORK UPN 6850000	STPB-STPP-SSS 82-1(6)5 27

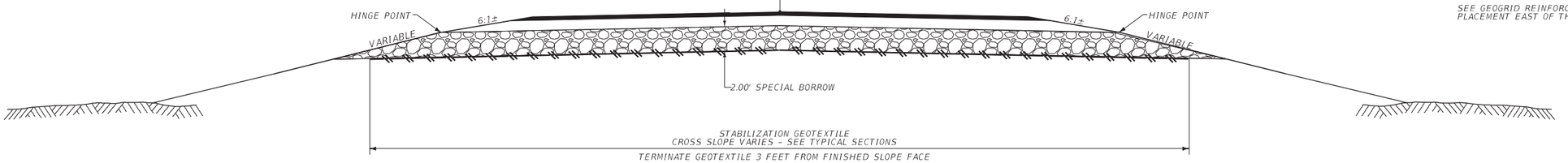
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DETAIL

℄ HIGHWAY 82 STA. 286+50.00 TO 303+40.95



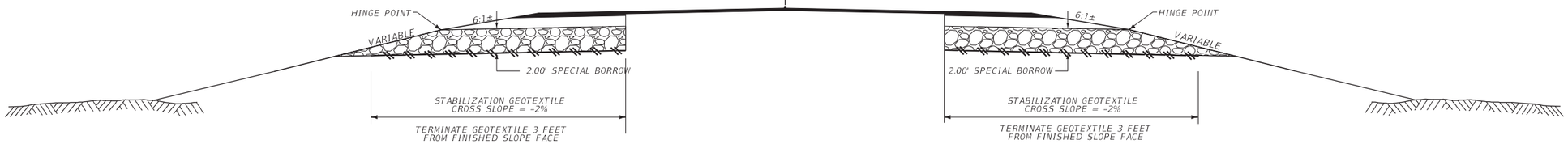
NOTE: PLACE SPECIAL BORROW UNDER ALL SECTIONS FOR MAINLINE.

EXCAVATION TO PLACE SPECIAL BORROW WILL BE PAID FOR AS UNCLASSIFIED EXCAVATION AND IS INCLUDED IN THE GRADING FRAME.

SEE GEOGRID REINFORCING DETAILS FOR GEOTEXTILE PLACEMENT EAST OF THE BRIDGE.

NON-WOVEN
STABILIZATION GEOTEXTILE
CROSS SLOPE = -2%

℄ HIGHWAY 82 STA. 266+60.75 TO 286+50.00



SPECIAL BORROW PLACEMENT DETAIL

NOT TO SCALE

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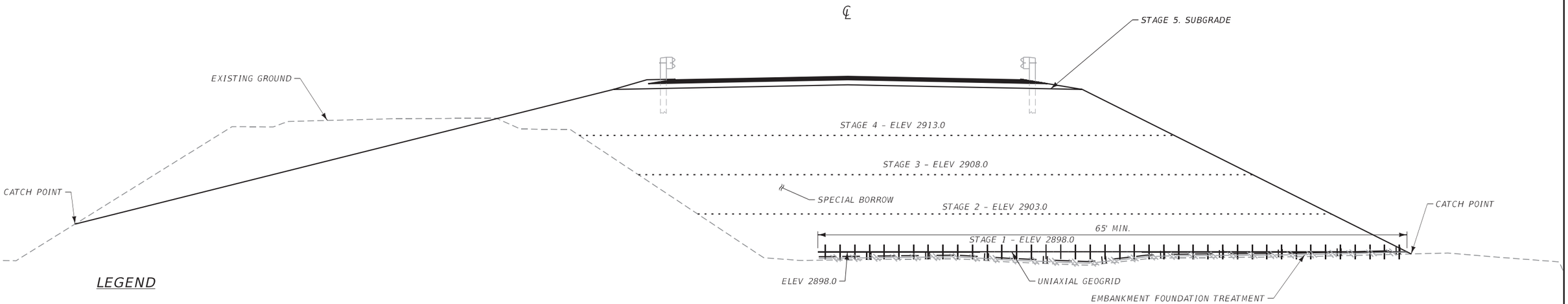
AWARD COPY

DETAIL

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NOTES:

1. PREPARE EMBANKMENT FOUNDATION IN ACCORDANCE WITH SPECIAL PROVISIONS.
2. SEE NEXT DETAIL DRAWING FOR FILL REINFORCEMENT REQUIREMENTS FROM STATION 315+00 to 319+00.



LEGEND

STAGE ELEVATION

STABILIZATION GEOTEXTILE

BIAXIAL GEOGRID

UNIAXIAL GEOGRID

PLANT MIX SURFACING

GEOGRID REINFORCED FILL: STA. 310+90.00 - 315+00.00

GEOGRID REINFORCED FILL DETAIL

NOT TO SCALE

2 1	MONTANA Department of Transportation	...\6850000\rd\6850000rddet02.dgn 4/16/2025 2:28:40 PM bvanderloos	DESIGNED BY REVIEWED BY CHECKED BY		ROAD PLANS FLATHEAD COUNTY		FLATHEAD RIVER - 3 M NW BIG FORK UPN 6850000	STPB-STPP-SSS 82-1(6)5 29

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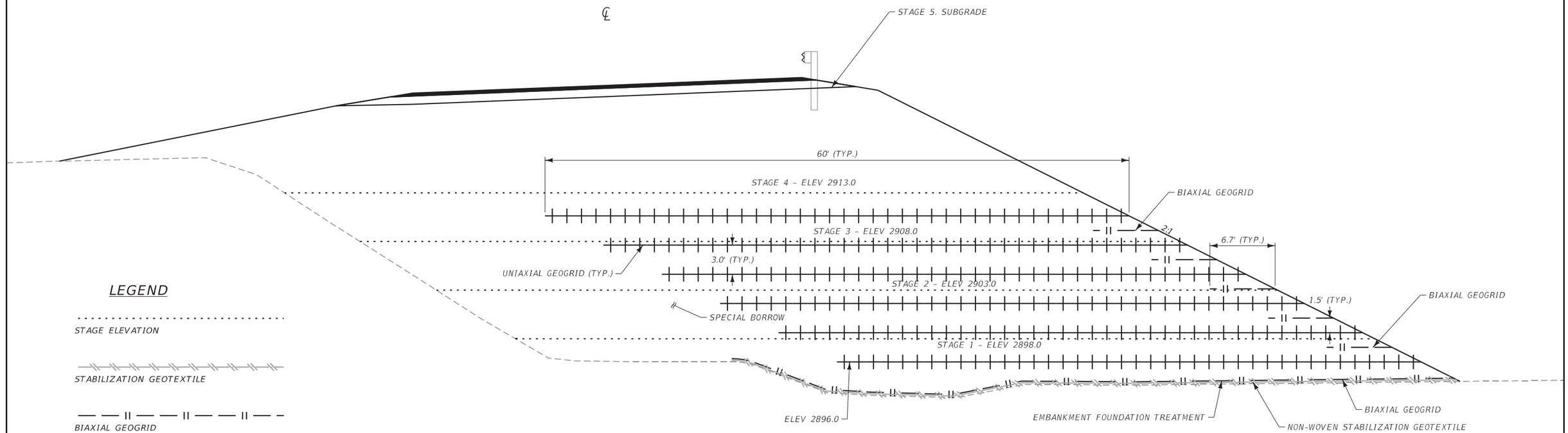
AWARD COPY

DETAIL

Morrison Maierle

NOTES:

1. PREPARE EMBANKMENT FOUNDATION IN ACCORDANCE WITH SPECIAL PROVISIONS.



LEGEND

STAGE ELEVATION

STABILIZATION GEOTEXTILE

BIAXIAL GEOGRID

UNIAXIAL GEOGRID

PLANT MIX SURFACING

GEOGRID REINFORCED FILL: STA. 315+00.00 - 319+00.00

GEOGRID REINFORCED FILL DETAIL

NOT TO SCALE

3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rddet02.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY				
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AWARD COPY

DETAIL

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700+00

POB 700+00.00

PROPOSED SWALE GRADING LIMITS

PROPOSED SWALE BOTTOM

PROPOSED PIPE CLEANOUT SEE DETAIL DRAWING

PROPOSED PIPE CLEANOUT SEE DETAIL DRAWING

N 79° 20' 45" E

SWALE CENTERLINE

W-1-20

W-1-20

W-1-20

PROPOSED SWALE BOTTOM

PROPOSED SWALE GRADING LIMITS

EXISTING R/W

POB STA. 700+00.00
BEGIN SWALE RECONSTRUCTION

PC 703+09.44

PI =703+24.50
Δ =62° 06' 41" (RT)
R =25'
T =15.05'
L =27.10'
E =4.18'

PT 703+36.54

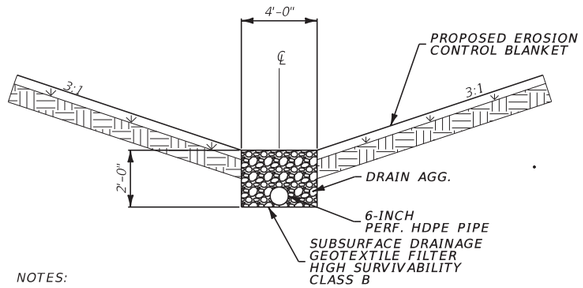
S 38° 32' 34" E

POE 703+51.51

CONNECT TO EX. PERF. PIPE CONTRACTOR VERIFY ELEV.

STA. 703+51.51
END SWALE RECONSTRUCTION

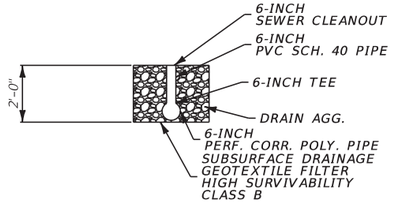
W-2-20



NOTES:

1. STRIP TOPSOIL TO A DEPTH OF 4-INCHES FROM THE SWALE CONSTRUCTION LIMITS AND STOCKPILE WITHIN PROJECT LIMITS.
2. ONCE SWALE IS CONSTRUCTED, PLACE SALVAGED TOPSOIL AND EROSION CONTROL BLANKET, HIGH-PERFORMANCE WITHIN THE SWALE GRADING LIMITS, AND SEED ALL DISTURBED AREAS.
3. WRAP ALL DRAIN AGGREGATE IN SUBSURFACE DRAINAGE GEOTEXTILE FILTER HIGH SURVIVABILITY, CLASS B.

SWALE RECONSTRUCTION TYPICAL SECTION - NTS



NOTES:

1. CONSTRUCTION OF THE CLEANOUTS IS INCIDENTAL TO THE COST OF THE 6-INCH CORR. POLY. PIPE.

SWALE CLEANOUT DETAIL - NTS

SWALE RECONSTRUCTION

2900

2,895.32

EX. GROUND PROFILE

PROPOSED CENTERLINE PROFILE

+0.560%

+2.065%

2,898.06

703+00.00

EL.2,897.00

700+00.00

703+51.51

HIGH PERFORMANCE EROSION CONTROL BLANKET
NEW 6" CORR. POLY. PIPE
DRAINAGE AGGREGATE
SUBSURFACE DRAINAGE GEOTEXTILE FILTER

2890

700 701 702 703 704 705

SWALE RECONSTRUCTION PLAN & PROFILE DETAIL

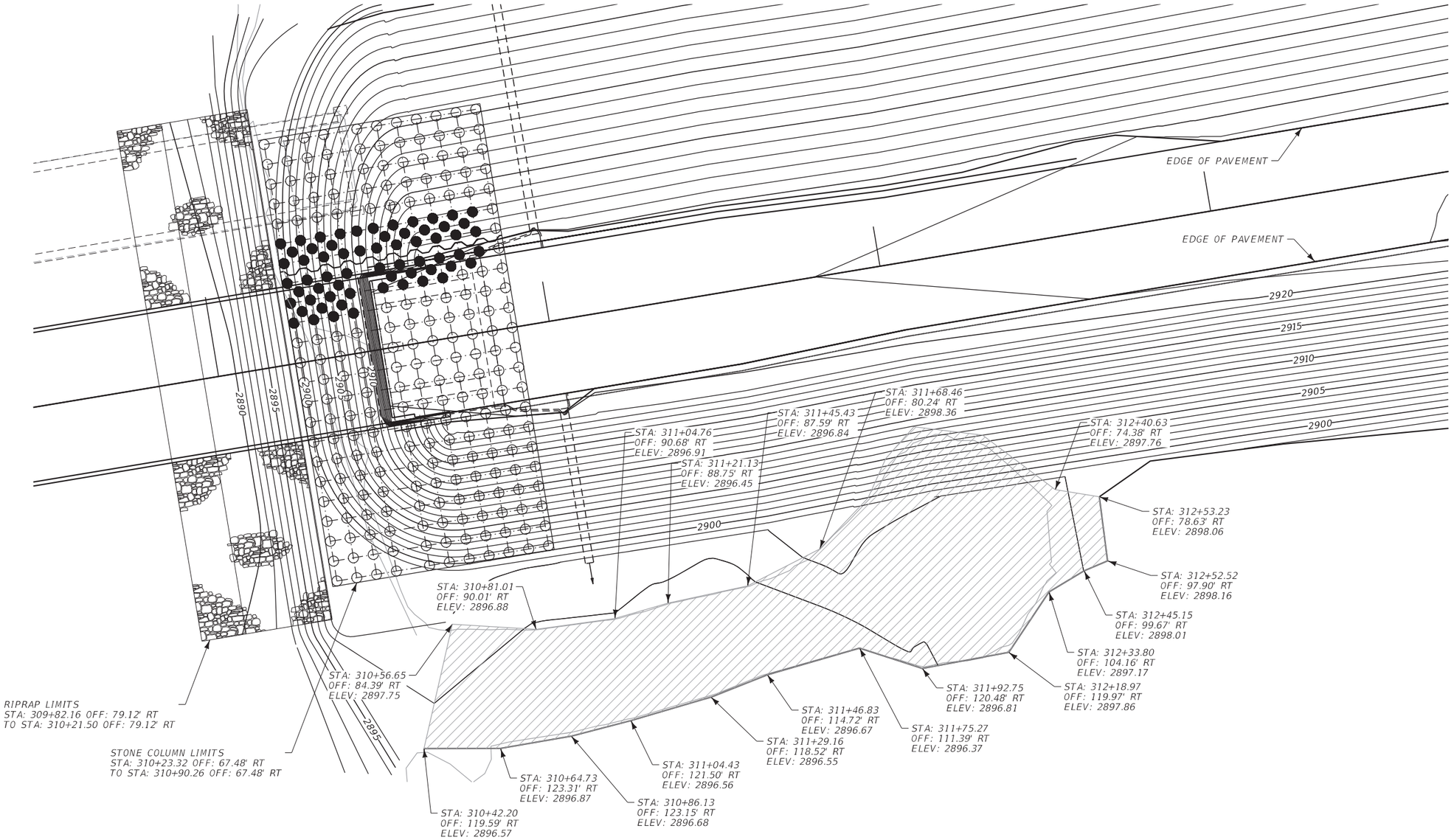
SCALE: 1" = 40'

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Docusign Envelope ID: 430D2619-33DC-4D37-BEDC-0F2A7F6EEE89

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DETAIL



FAS LAGOON GRADING DETAIL

SCALE: 1" = 6'

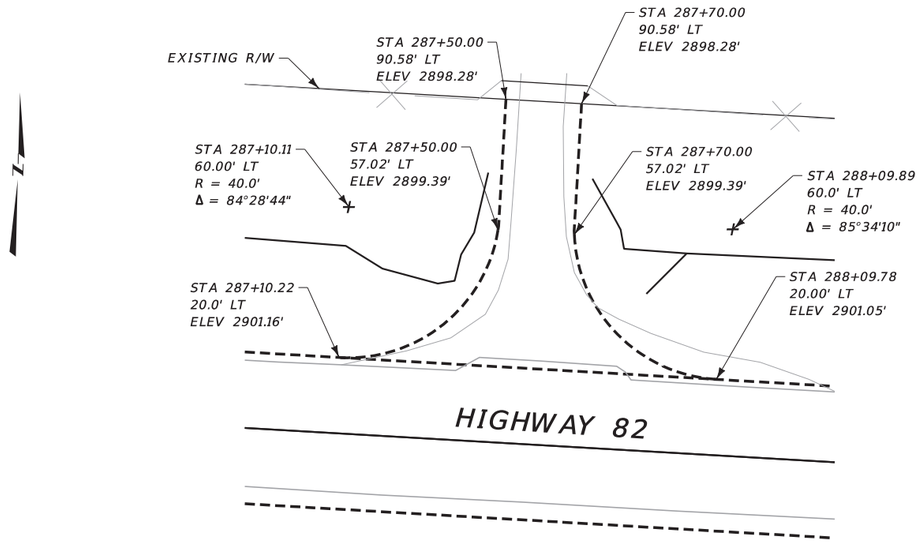
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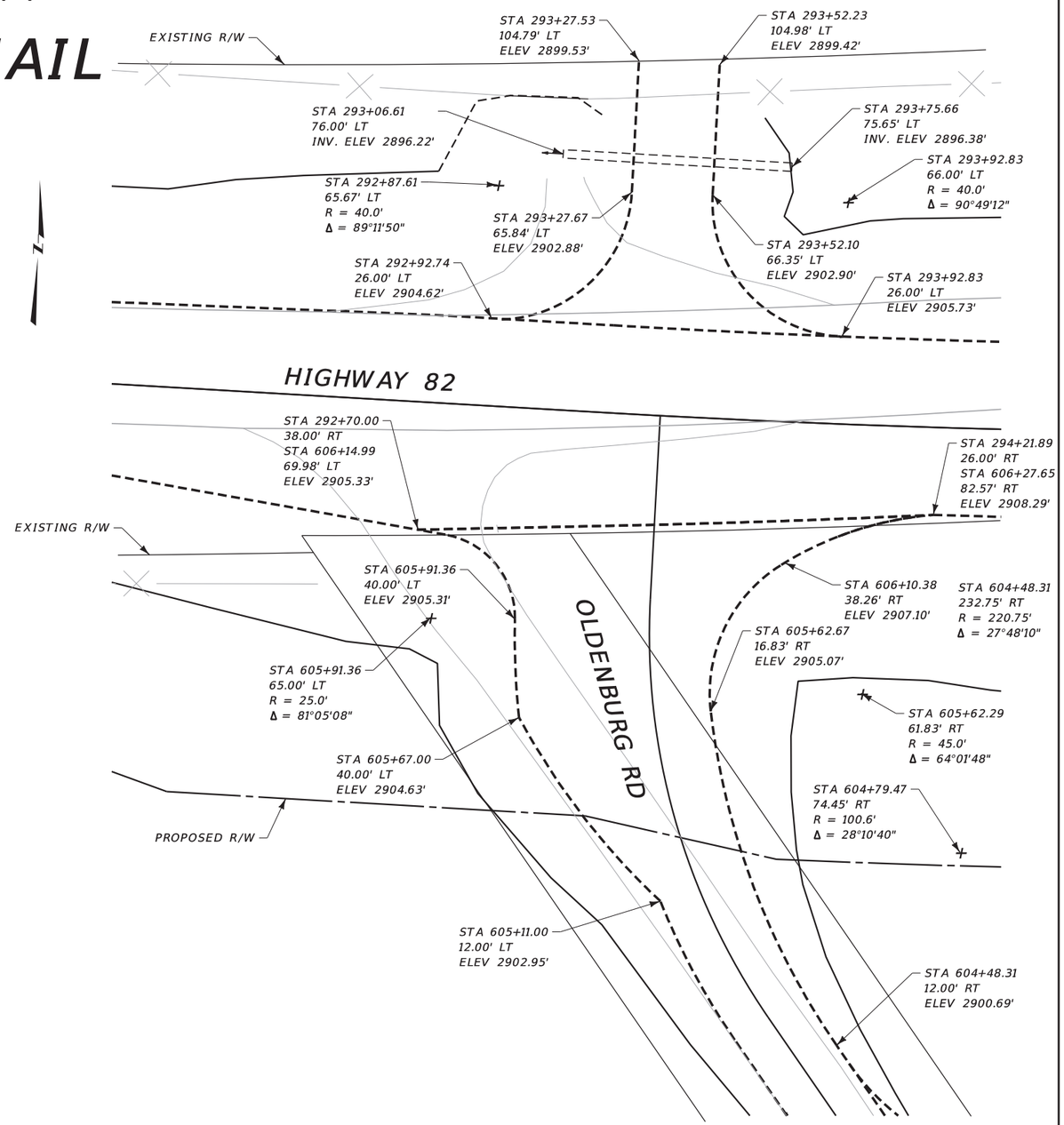
AWARD COPY

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DETAIL



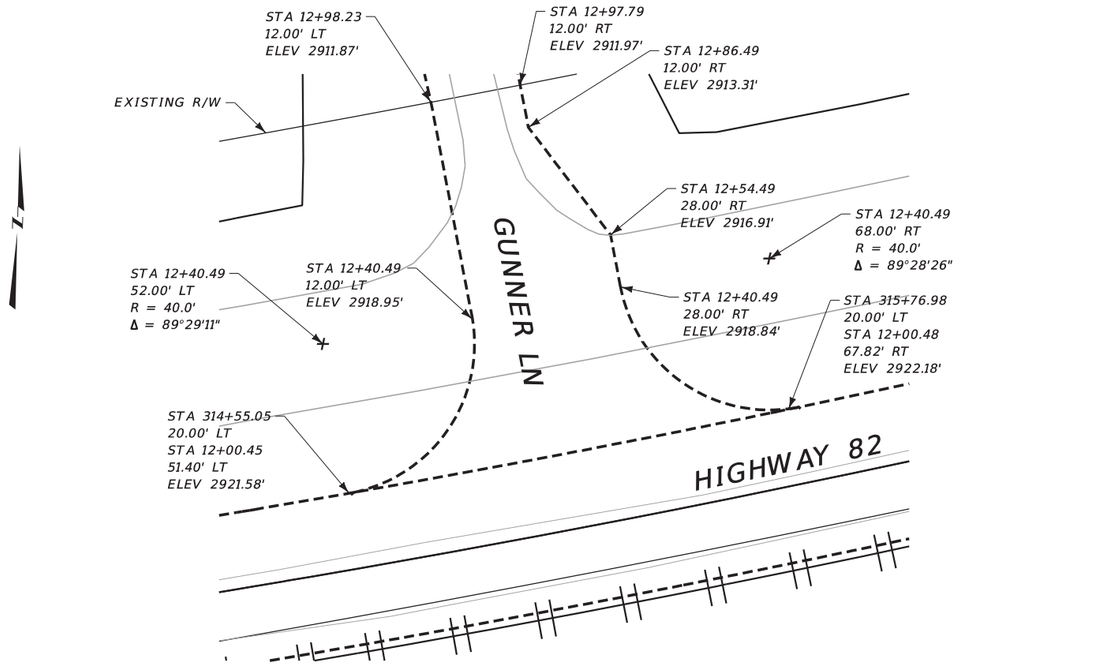
STA 287+60 LT



STA 293+40 RT*

STA 293+40 LT

* SEE OLDENBURG ROAD CROSS SECTIONS FOR FURTHER INFORMATION



STA 315+08 LT*

* SEE GUNNER LANE CROSS SECTIONS FOR FURTHER INFORMATION

APPROACH DETAILS

SCALE: 1" = 20'

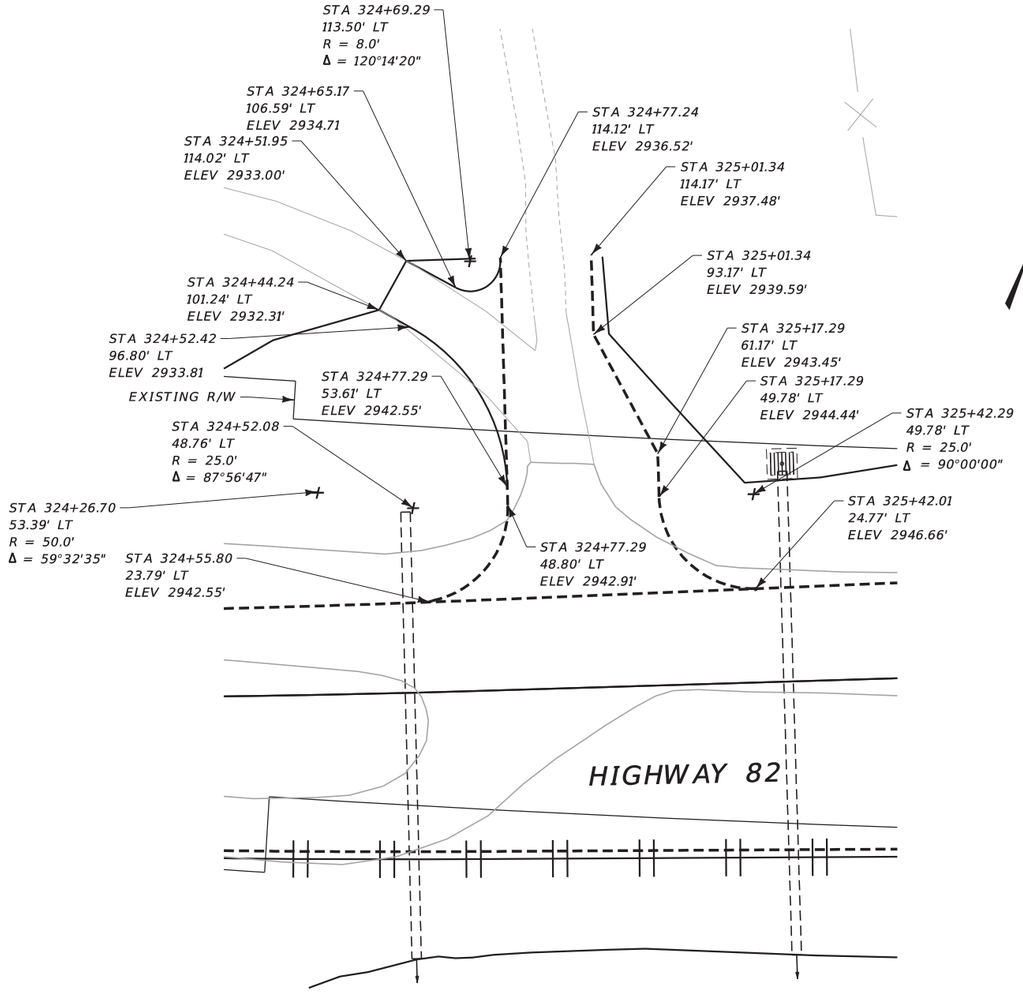
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2		4/16/2025	REVIEWED BY				UPN 6850000	33
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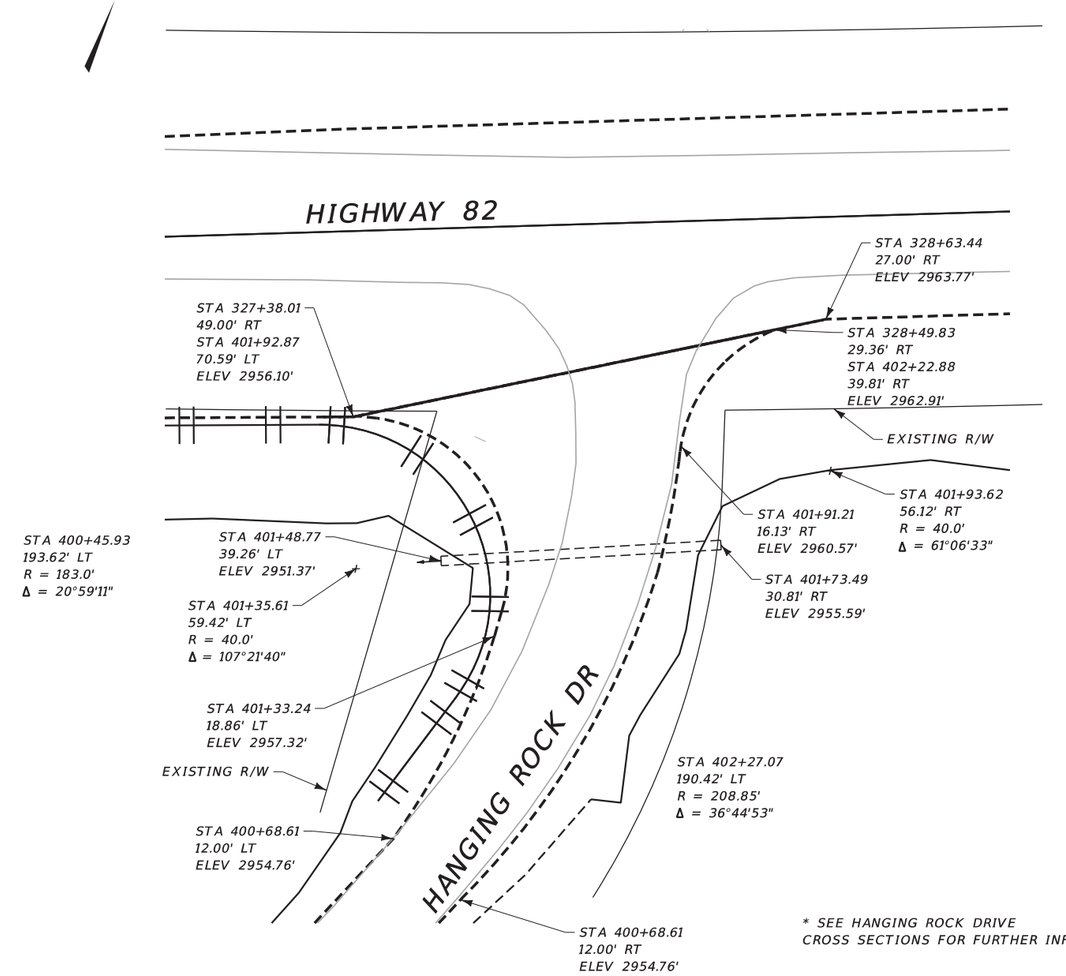
AWARD COPY

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DETAIL



STA 324+89 LT



* SEE HANGING ROCK DRIVE CROSS SECTIONS FOR FURTHER INFORMATION

STA 328+10 RT*

APPROACH DETAILS

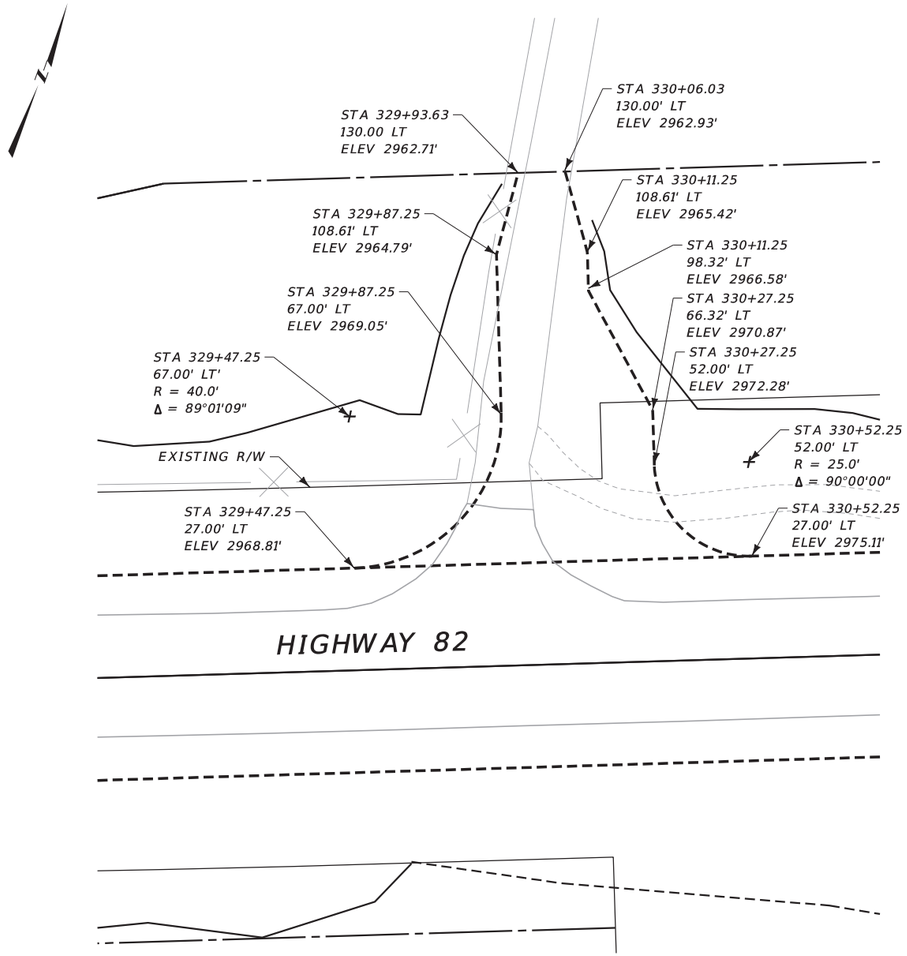
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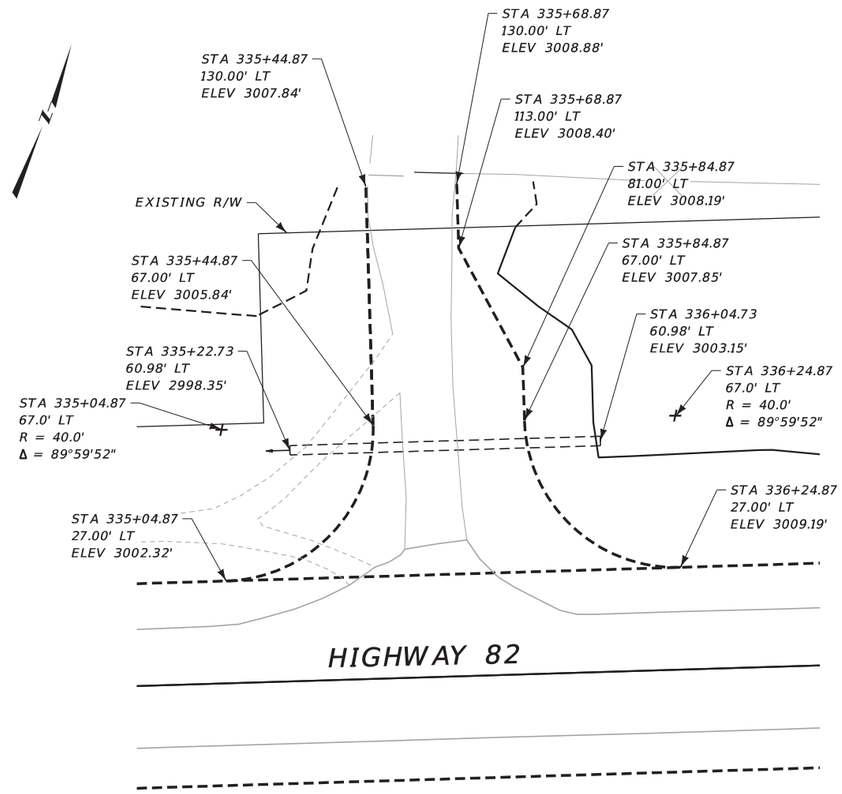
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Morrison Maierle

DETAIL



STA 329+99 LT



STA 335+57 LT

APPROACH DETAILS

SCALE: 1" = 20'

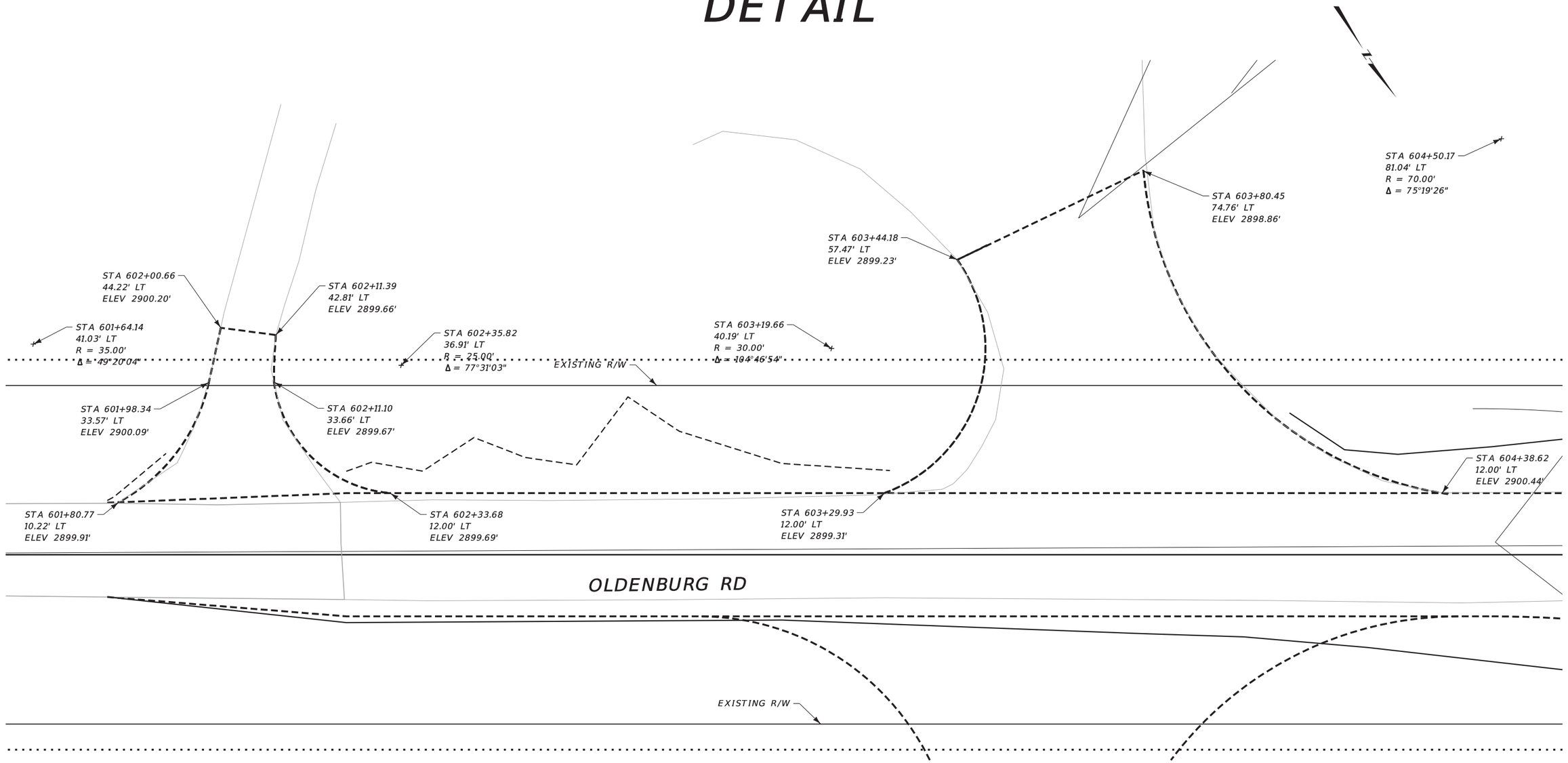
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DETAIL



STA 602+06 LT

STA 603+76 LT

STA 603+76 RT*

* 603+76 RT BY OTHERS

APPROACH DETAILS

SCALE: 1" = 20'

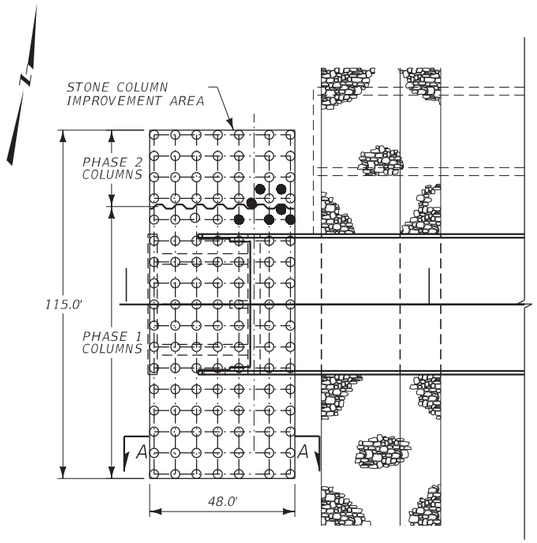
3 2	MONTANA Department of Transportation	...\6850000\rd\6850000rddet01.dgn 4/16/2025 2:31:22 PM bvanderloos	DESIGNED BY BZ MM REVIEWED BY CHECKED BY		ROAD PLANS FLATHEAD COUNTY		FLATHEAD RIVER - 3 M NW BIGFORK UPN 6850000	STPB-STPP-SSS 82-1(6)5 36

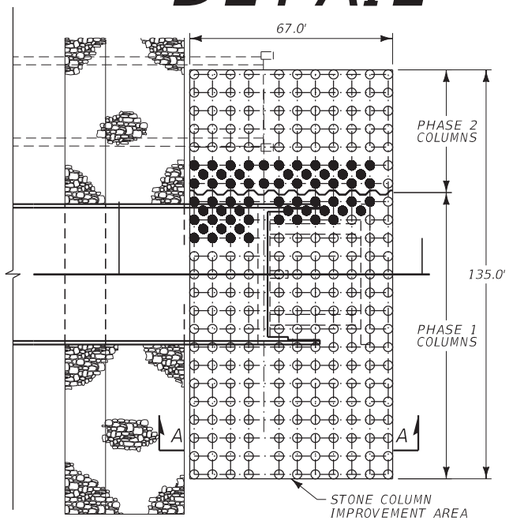
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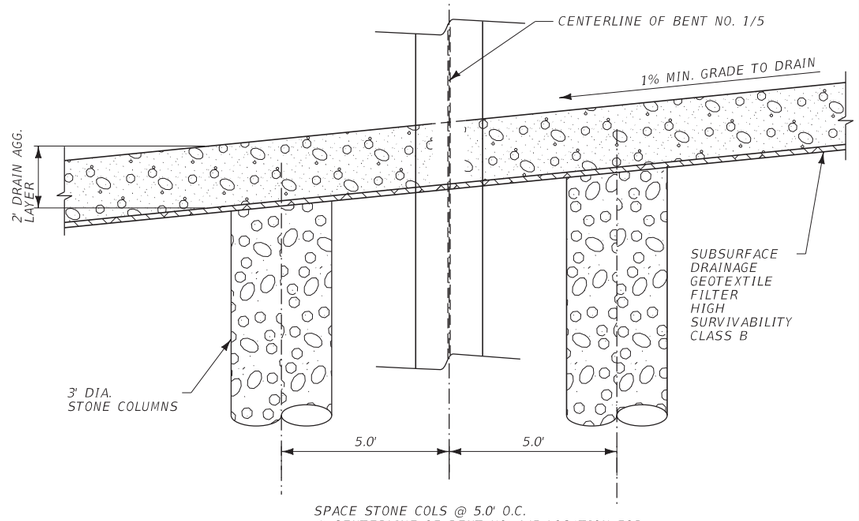
Morrison Maierle

DETAIL

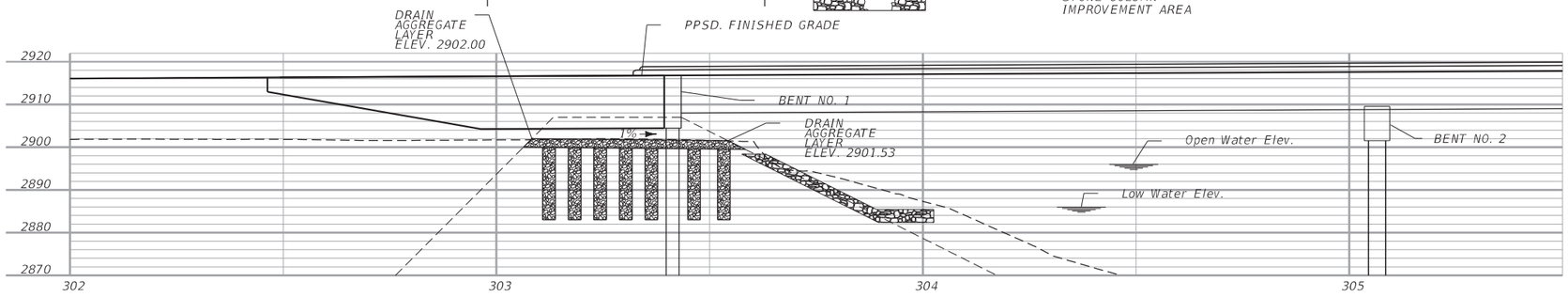




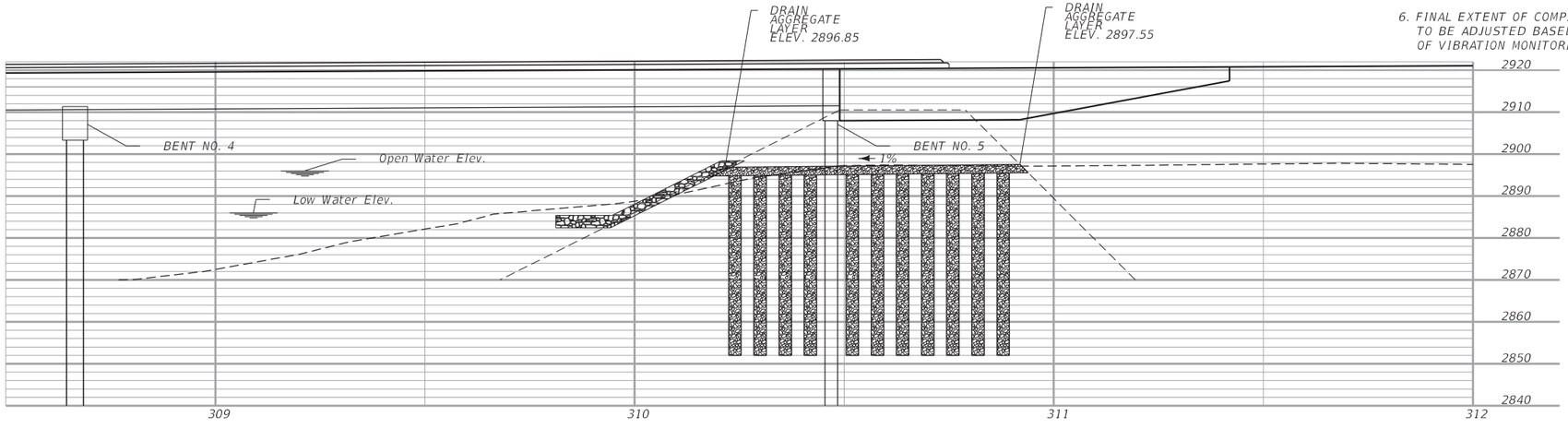
PLAN VIEW



SPACE STONE COLS @ 5.0' O.C.
@ CENTERLINE OF BENT NO. 1/5 LOCATION FOR
LENGTH OF STONE COLUMN TREATMENT



PROFILE VIEW BENT NO. 1



PROFILE VIEW BENT NO. 5

SECTION A-A

NO SCALE

NOTES:

1. QUANTITY OF COLUMNS FOR BENT NO. 1
   PHASE 1 = 92 COLUMNS
2. QUANTITY OF COLUMNS FOR BENT NO. 1
   PHASE 2 = 31 COLUMNS
3. QUANTITY OF COLUMNS FOR BENT NO. 5
   PHASE 1 = 187 COLUMNS
4. QUANTITY OF COLUMNS FOR BENT NO. 5
   PHASE 2 = 87 COLUMNS
5. STONE COLUMNS AS SHOWN WITH SOLID HATCHING ARE PLANNED FOR COMPACTION GROUTING. SEE SUMMARY FRAMES FOR COMPACTION GROUTING QUANTITIES.
6. FINAL EXTENT OF COMPACTION GROUTING TO BE ADJUSTED BASED ON RESULTS OF VIBRATION MONITORING.

STONE COLUMN DETAILS

2	MONTANA Department of Transportation	...\6850000\rd\6850000rddet01.dgn	DESIGNED BY		ROAD PLANS		FLATHEAD RIVER - 3 M NW BIG FORK	STPB-STPP-SSS 82-1(6)5
1		4/16/2025	REVIEWED BY				UPN 6850000	37
		2:31:57 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY			

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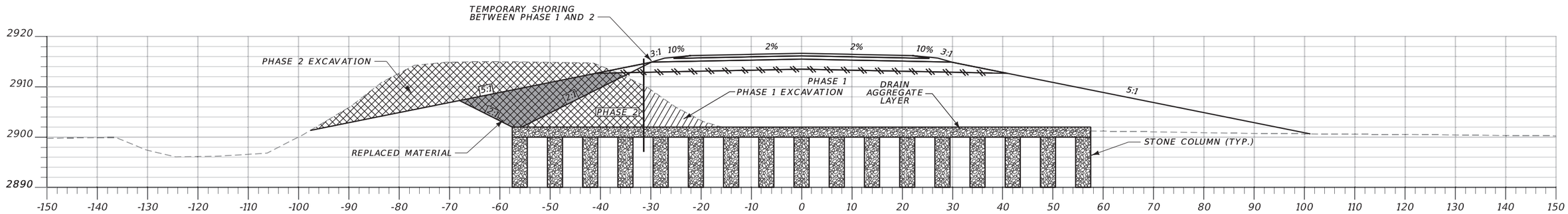
DETAIL

Morrison Maierle

NOTES:

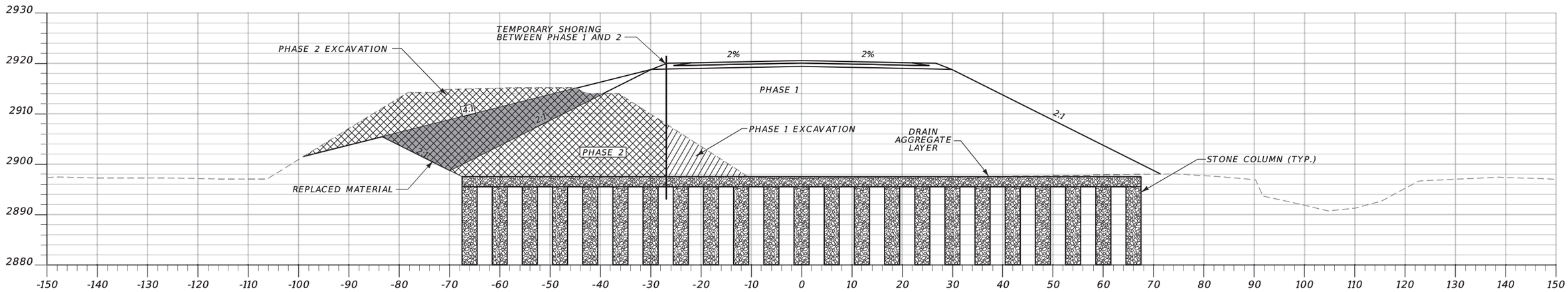
1. EXCAVATE EXISTING EMBANKMENT AND TIEBACK EXISTING SHORING IN OPPOSITE DIRECTION FOR PHASE 2.

2. USE SPECIAL BORROW FOR EMBANKMENT CONSTRUCTION TO END OF BRIDGE END BACKFILL ZONE.



Sta. 303+07.72

EMBEDMENT TIP ELEVATION = 2,883.00
(SEE SPECIAL PROVISIONS)



Sta. 310+90.00

EMBEDMENT TIP ELEVATION = 2,852.00
(SEE SPECIAL PROVISIONS)

STONE COLUMN DETAILS

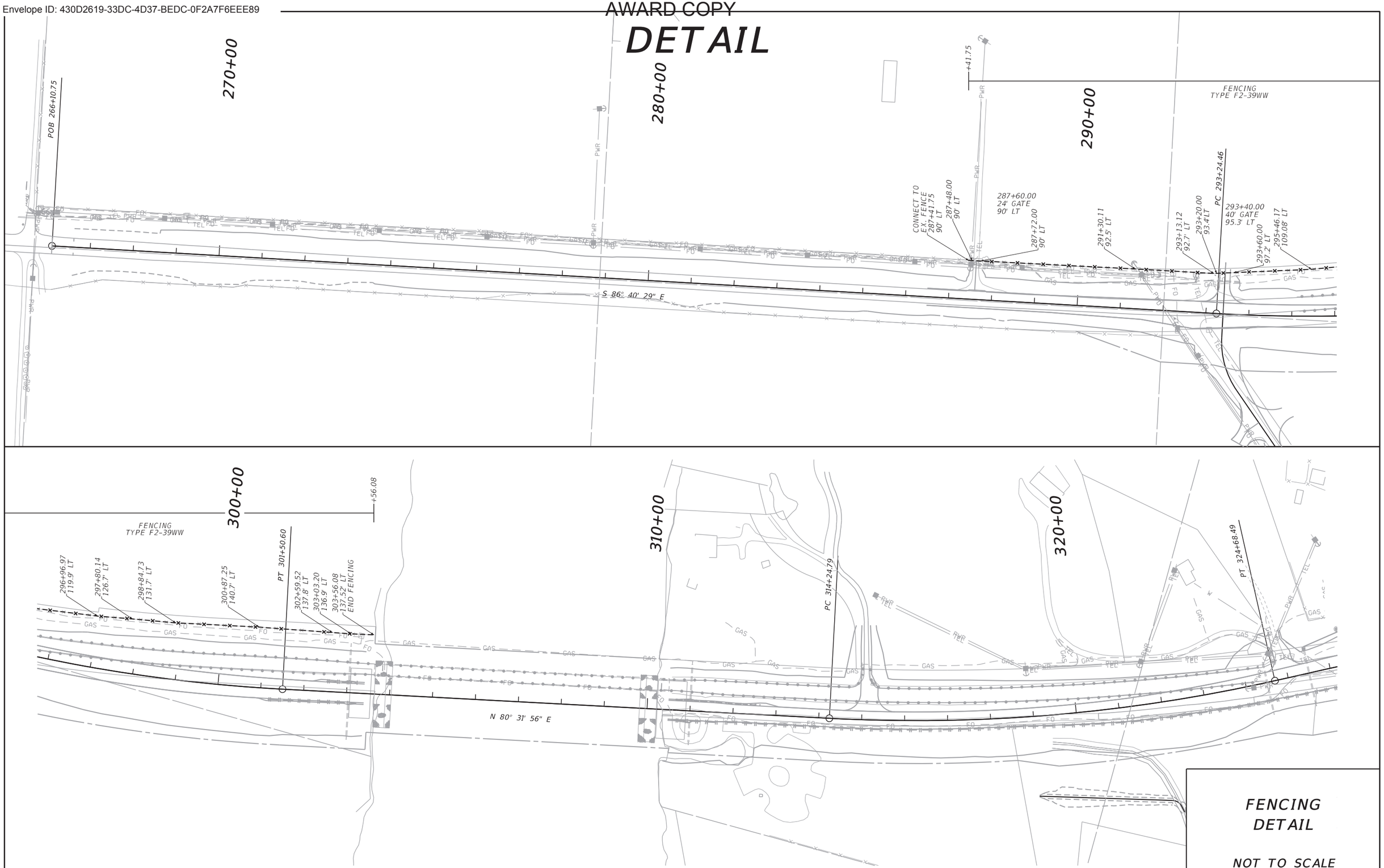
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DETAIL

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FENCING DETAIL

NOT TO SCALE

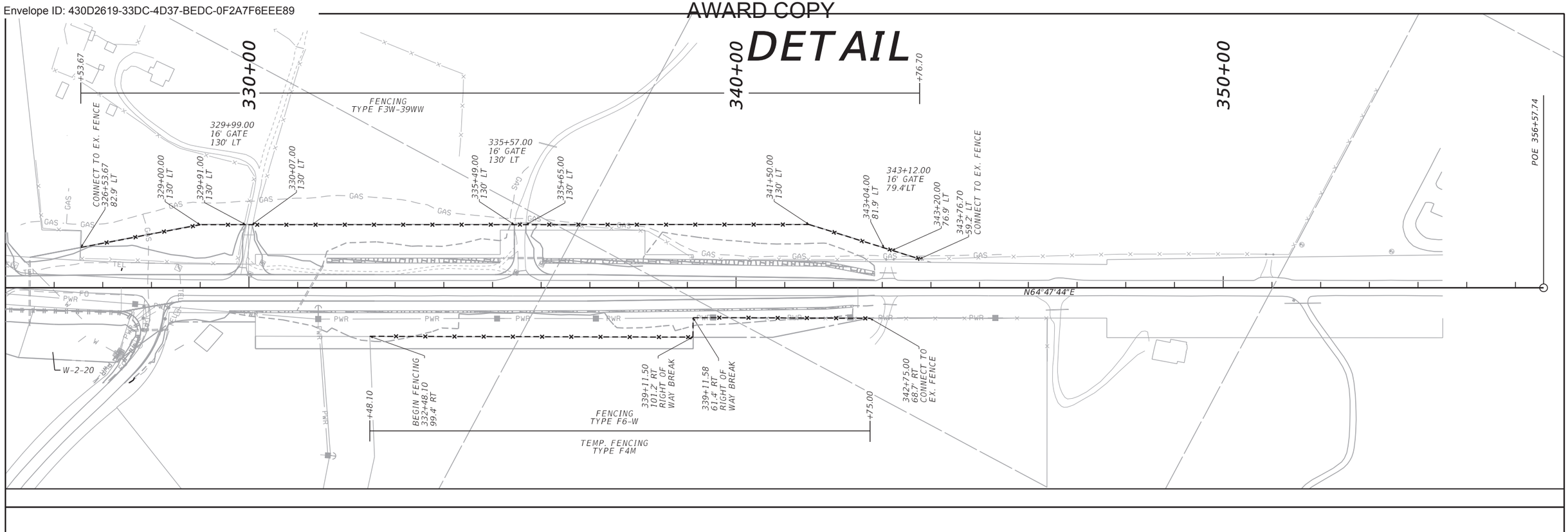
3	MONTANA Department of Transportation	...\6850000\rd\6850000rddet01.dgn	DESIGNED BY			ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		5/23/2025	REVIEWED BY					
		11:44:53 AM bvanderloos	CHECKED BY			FLATHEAD COUNTY	UPN 6850000	39

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DETAIL

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3 1	MONTANA Department of Transportation	...\6850000\rd\6850000rddet01.dgn 5/23/2025 12:07:41 PM bvanderloos	DESIGNED BY REVIEWED BY CHECKED BY		ROAD PLANS FLATHEAD COUNTY		FLATHEAD RIVER - 3 M NW BIGFORK UPN 6850000	STPB-STPP-SSS 82-1(6)5 40

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270+00

280+00

290+00

POB 266+10.75

STA. 266+10.75
BEGIN CONNECTION

POT STA. 266+60.75
BEGIN STPB-STPP-SSS 82-1(6)5

HIGHWAY 82

ST-1

SPC-1

SPC-2

S 86° 40' 29" E

SPC-3

ST-2

292+08.06
O.H. PWR. X-ING ℄
O.H. F.O. X-ING ℄
CLR. UNKNOWN

292+31.38
U.G. F.O. X-ING ℄
DEPTH UNKNOWN

292+93.86
U.G. TEL. X-ING ℄
DEPTH UNKNOWN

T. 27 N. R. 20 W.

PC 293+24.46

PI =297+39.26
Δ =12° 47' 35" (LT)
R =3,700'
T =414.79'
L =826.14'
E =23.18'
S =4%

R/W 290+00.00
60.04'
EX. R/W = R/W
BEG. ACQUISITION RT

R/W 292+00.00
120'

293+40
NEW 18" RCP APP. PIPE LT

R/W 293+24.46
120'

R/W 293+80.00
30'

OLDENBURG ROAD

HIGHWAY 82

287+60
PRIVATE APPROACH LT.

293+40
PRIVATE APPROACH LT.

295+00.00

286+50.00 TO 303+40.95
STABILIZATION GEOTEXTILE

286+50.00 TO 303+40.95
SPECIAL BORROW

REMOVE METAL
GUARDRAIL
LT & RT

266+60.75 TO 286+50.00
SPECIAL BORROW

266+60.75 TO 286+50.00
STABILIZATION GEOTEXTILE

286+50.00
EL.2,901.65

293+35.00
EL.2,905.81

294+50.00
EL.2,907.72

570' VC

-0.142%

+1.658%

290+50.00
EL.2,901.08

293+40
PUBLIC APPROACH W/ MAILBOX TURNOUT RT.
1-MAILBOX
OLDENBURG ROAD

2940 2930 2920 2910 2900 2890 2880 2870 2860

266 268 270 272 274 276 278 280 282 284 286 288 290 292 294 296

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdplp01.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY				
		2:33:15 PM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	41

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W-3A-20
DELINEATED = 0.014 ACRES
IMPACTED (PERM) = 0.000 ACRES

W-3B-20
DELINEATED = 0.009 ACRES
IMPACTED (PERM) = 0.000 ACRES

W-3C-20
DELINEATED = 0.017 ACRES
IMPACTED (PERM) = 0.000 ACRES

310+52.85
U.G. F.O. X-ING ℄
DEPTH UNKNOWN

W-1-20
DELINEATED = 3.520 ACRES
IMPACTED (PERM) = 0.613 ACRES

W-2-20
DELINEATED = 0.763 ACRES
IMPACTED (PERM) = 0.140 ACRES

324+23.02
O.H. PWR. X-ING ℄
CLR UNKNOWN

325+94.51
SPRING WATER X-ING ℄
DEPTH UNKNOWN

300+00

PT 301+50.60

303+60.06 R/W
156.94
EX. R/W=R/W
FND. R/W MON.
BEG. ACQUISITION LT.

303+60.06 R/W
116.96

FLATHEAD RIVER

310+00

310+21.39 R/W
116.96
R/W=EX.R/W
FND. R/W MON.

PC 314+24.79

T. 27 N.
R. 20 W.

PI =319+49.94
Δ =15° 44' 12" (LT)
R =3,800'
T =525.15'
L =1,043.70'
E =36.12'
S =4%

320+00

PT 324+68.49

325+50.00 R/W
62.70
EX. R/W=R/W

PI =297+39.26
Δ =12° 47' 35" (LT)
R =3,700'
T =414.79'
L =826.14'
E =23.18'
S =4%

HIGHWAY 82
N 80° 31' 56" E

GUNNER LN

STONE COLUMN PERIMETER

STONE COLUMN PERIMETER

R/W 301+50.60
130'

303+04.73 LT
NEW EMB. PROTECTOR
303+04.73 RT
NEW EMB. PROTECTOR

R/W 303+50.00
130'

R/W 303+50.00
90'

307+05
29.3' X 686'
BRIDGE IN PL. LT
REMOVE

306+95
NEW 44.0' X 706'
BRIDGE

311+00.00 LT
NEW EMB. PROTECTOR
311+00.00 RT.
NEW EMB. PROTECTOR

R/W =PROP. LINE
100'

R/W 314+24.79
100'

R/W =PROP. LINE
100'

R/W 316+00.00
120'

318+69 TO 322+14
(EX. SWALE)
PLUG ENDS & ABANDON
EX. 6" HDPE PERF. PIPE

R/W 324+49.99
120'

R/W 325+26.66
143.04'

324+50
NEW 10"
PERF. CORR.
POLY. PIPE
SEEPAGE DR.
SEE DETAIL

325+50
NEW 24" RCP DR.
W/ TYPE 2
W/ D INLET LT.
MED. INLET LT.

W-3A-20
W-3B-20
W-3C-20
W-1-20
W-2-20

HIGHWAY 82

REMOVE EX. GUARDRAIL LT & RT

NEW METAL GUARDRAIL LT

RIPRAP CL III PERMANENT EROSION CONTROL GEOTEXTILE RIPRAP REVEG.

4" CONCRETE CURB LT 18" EMB. PROT. TYPE 3 BANK PROT.

303+40.95 TO 310+49.05
WATERWAY PASSAGE AND SIGNING

300+84.08 TO 303+40.20
SURCHARGE EMBANKMENT

303+40.95 TO 304+04.98
BRIDGE END GRADING

302+46.95 TO 303+40.95
BRIDGE END BACKFILL

STA 303+40.95
ELEV. 2916.79

800' VC

4" CONCRETE CURB RT 18" EMB. PROT. TYPE 3 BANK PROT.

STONE COLUMNS, COMPACTION GROUT, DRAIN AGG. & SUBSURFACE DRAINAGE GEOTEXTILE HIGH SURV.

NEW METAL GUARDRAIL RT

STONE COLUMNS, COMPACTION GROUT, DRAIN AGG. & SUBSURFACE DRAINAGE GEOTEXTILE FILTER

NEW METAL GUARDRAIL LT

309+85.66 TO 310+49.05
BRIDGE END GRADING

STA 310+49.05
ELEV. 2920.34

310+49.05 TO 311+43.05
BRIDGE END BACKFILL

RIPRAP CL III PERMANENT EROSION CONTROL GEOTEXTILE RIPRAP REVEG.

4" CONCRETE CURB LT & RT 18" EMB. PROT. TYPE 3 BANK PROT.

310+42.20 TO 312+53.23
FAS LAGOON GRADING
310+50.00 TO 314+25.00
EX. FAS DECOMMISSIONING

310+49.80 TO 312+60.24
SURCHARGE EMBANKMENT

315+08
PUBLIC APPROACH W/
MAILBOX TURNOUT LT.
2-MAILBOXES
GUNNER LANE

310+49.05 TO 327+38.01
SPECIAL BORROW

REMOVE EX. GUARDRAIL LT

REMOVE EX. GUARDRAIL LT

EMBANKMENT FOUNDATION TREATMENT

GEOGRID REINFORCED FILL & SPECIAL BORROW

GEOGRID REINFORCED FILL & SPECIAL BORROW

REMOVE EX. GUARDRAIL RT

NEW METAL GUARDRAIL RT

319+00.83 TO 322+18.09
SWALE RECONSTRUCTION RT.
SEE DETAIL

1,250' VC

324+89
PRIVATE APPROACH W/
MAILBOX TURNOUT LT.
1-MAILBOX

325+70.00 TO 347+60.00
TIMBER DECKING

+1.658%
+0.500%
+0.500%
+6.008%

298+50.00
EL.2,914.34

302+56.00
EL.2,916.35

322+30.00
EL.2,926.25

324+35.00

+50

2950
2940
2930
2920
2910
2900
2890
2880
2870

296 298 300 302 304 306 308 310 312 314 316 318 320 322 324 326

3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rdplpf01.dgn	DESIGNED BY	ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
		4/16/2025	REVIEWED BY			
		2:33:17 PM bvanderloos	CHECKED BY	FLATHEAD COUNTY	UPN 6850000	42

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327+92.11
GAS X-ING ℄
DEPTH UNKNOWN

328+61.44
U.G., TEL. X-ING ℄
DEPTH UNKNOWN

326+36 85' LT
DO NOT DISTURB
EXISTING WELL

329+58 93' RT
DO NOT DISTURB
EXISTING WELL

330+00

340+00

350+00

T. 27 N. R. 20 W.

325+50.00 R/W
62.70'
EX.R/W=R/W

329+00.00 R/W
130'

341+50.00 R/W
130'

344+00.00 R/W
52.26'
R/W = EX. R/W
END ACQUISITION LT

POE 356+57.74

HIGHWAY 82 N64°47'44"E

W-2-20

HANGING ROCK DR

STA. 341+84.44
END STPB-STPP-SSS 82-1(6)5

STA. 342+84.44
END CONNECTION

R/W 342+75.00
61.88'
R/W = EX. R/W
END ACQUISITION RT

HIGHWAY 82

326+20
24" CSP IN PL.
REMOVE

326+50 RT
ABANDON SPRING
DEVELOPMENT

326+57 RT
ABANDON SPRING
DEVELOPMENT

R/W 328+40.00
70'

331+15
24" CMP IN PL.
REMOVE

R/W 330+13.32

331+26
NEW 24" RCP DR.
SKEW 30° RT.

335+57
NEW 18" RCP APP. PIPE LT.

335+57
24" CMP APP. PIPE IN PL. LT.
REMOVE

R/W 339+11.92
101.68'

R/W 340+75.00
101.68'

329+99
PRIVATE APPROACH W/
MAILBOX TURNOUT LT.
1-MAILBOX

335+57
PRIVATE APPROACH W/
MAILBOX TURNOUT LT.
1-MAILBOX

335+57
NEW CATTLE GUARD LT.

332+58.47
2,988.85

NEW METAL
GUARDRAIL RT

327+28.79

+25.63

329+60.00

HIGH PERFORMANCE EROSION
CONTROL BLANKET LT.

335+15.00

336+02.63

HIGH PERFORMANCE EROSION CONTROL BLANKET LT.

342+84.44

HIGH PERFORMANCE EROSION CONTROL BLANKET RT.

342+30.00

328+10
PUBLIC APPROACH RT.
HANGING ROCK DR

327+38.01 TO 332+58.47
STABILIZATION GEOTEXTILE

332+58.47 TO 342+84.44
STABILIZATION GEOTEXTILE

3040 3030 3020 3010 3000 2990 2980 2970 2960 2950

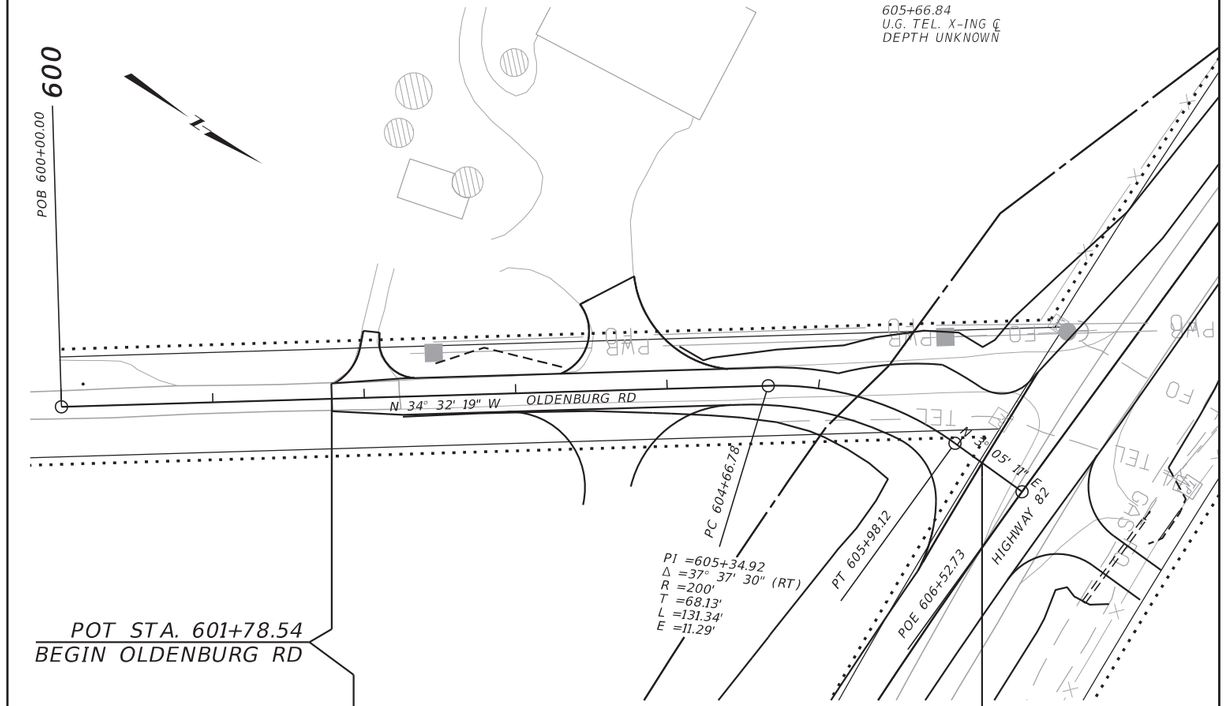
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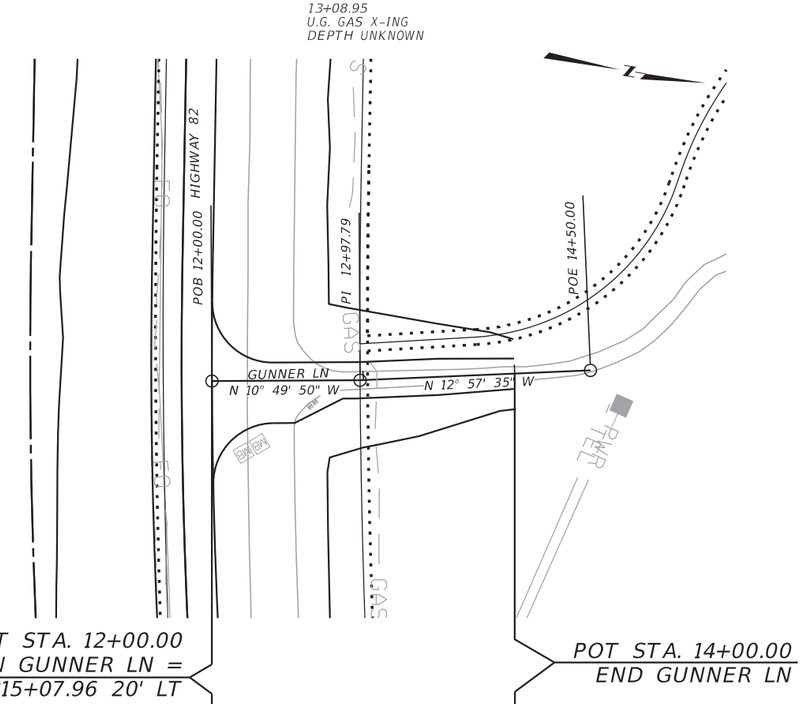
2	MONTANA Department of Transportation	...\6850000\rd\6850000rdplpt01.dgn	DESIGNED BY		ROAD PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
1		5/14/2025	REVIEWED BY				
		11:15:18 AM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	43

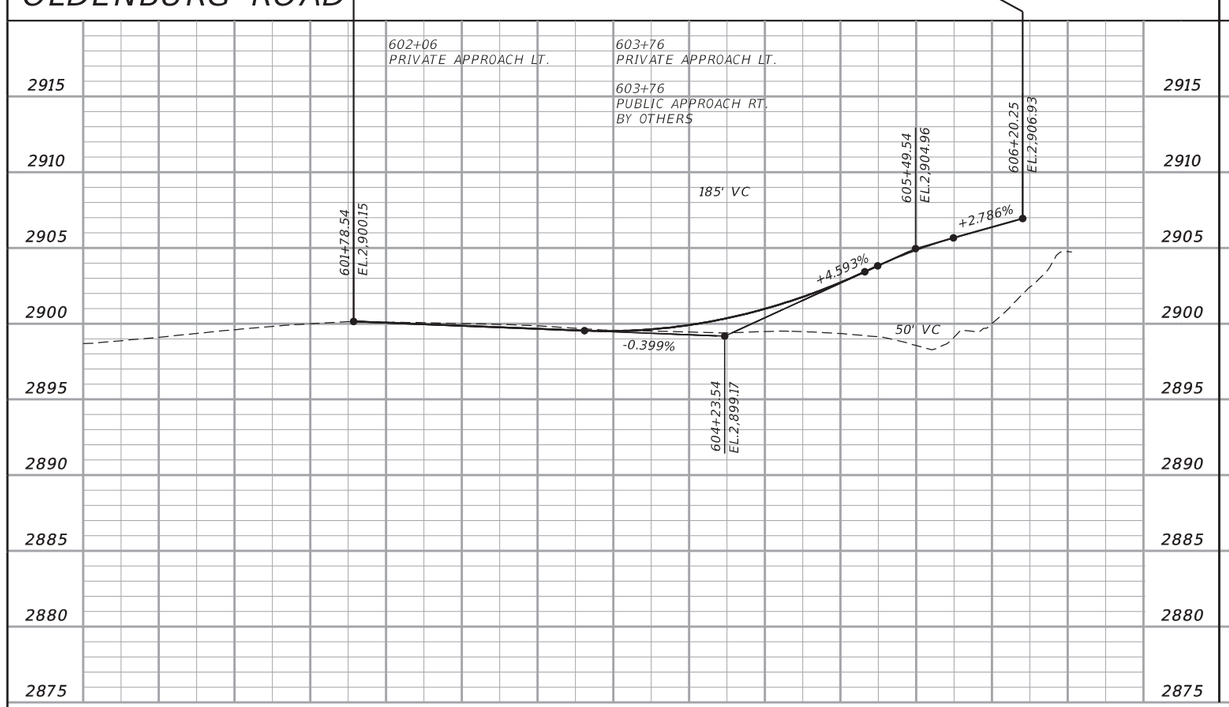
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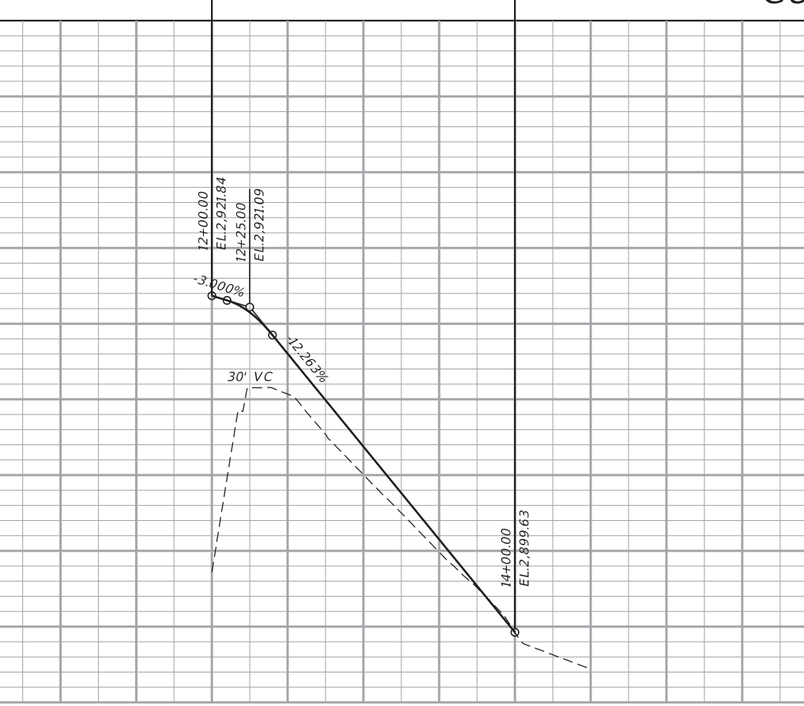
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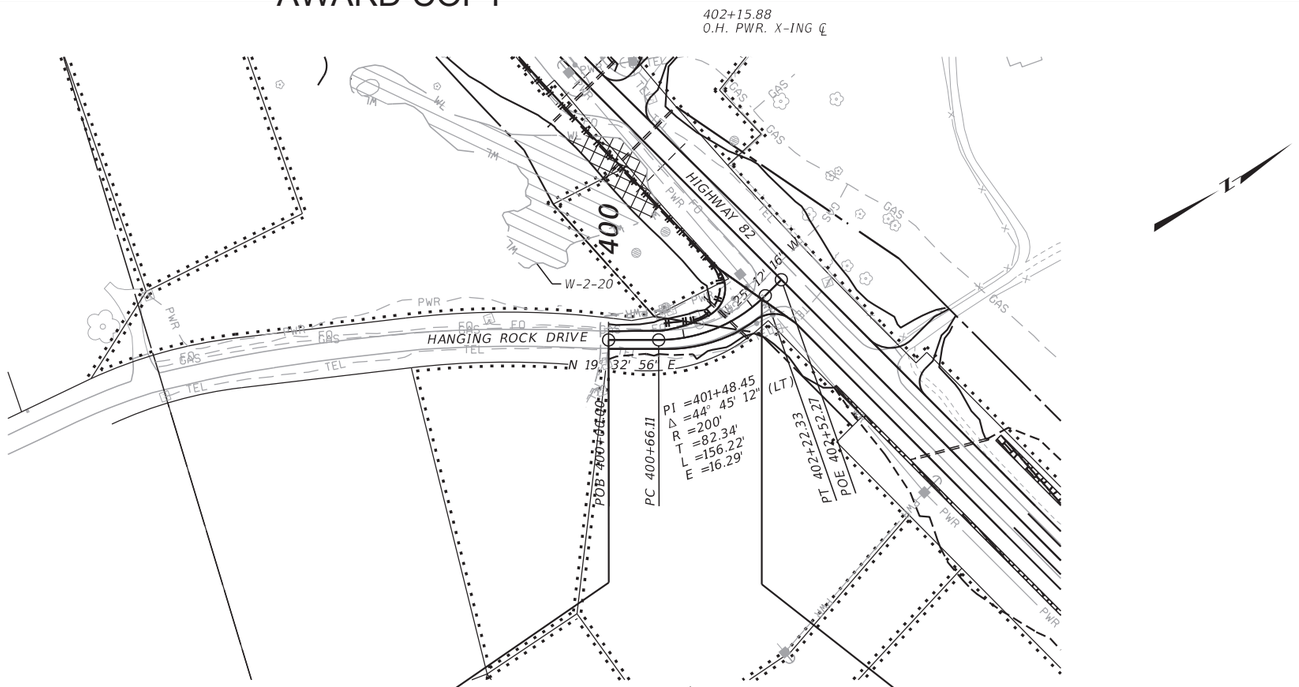


3 / 1	MONTANA Department of Transportation	...\6850000\rd\6850000rdplp01.dgn 4/16/2025 2:33:56 PM bvanderloos	DESIGNED BY REVIEWED BY CHECKED BY	ROAD PLANS FLATHEAD COUNTY	FLATHEAD RIVER - 3 M NW BIGFORK UPN 6850000	STPB-STPP-SSS 82-1(6)5 44

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POB STA. 400+00.00
BEGIN HANGING ROCK DR

STA. 402+15.88 END HANGING ROCK DR =
STA. 328+09.91, 36' RT OF ℄ HIGHWAY 82

HANGING ROCK DRIVE

2980 2970 2960 2950 2940 2930 2920 2910 2900

384 386 388 390 392 394 396 398 400 402 404 406 408 410 412

3	MONTANA Department of Transportation	...\6850000\rd\6850000rdplp05.dgn	DESIGNED BY	ROAD PLANS		FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY				
		2:34:32 PM bvanderloos	CHECKED BY	FLATHEAD COUNTY		UPN 6850000	45

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SUMMARY
SIGNING & DELINEATION QUANTITIES

MATERIAL	TOTAL	UNIT
SIGNS-ALUM REFL SHEET IV		SQ. FOOT
SIGNS-ALUM REFL SHEET XI	115.1	SQ. FOOT
SIGNS-ALUM SHEET INCR IV		SQ. FOOT
SIGNS-ALUM SHEET INCR XI	51.0	SQ. FOOT
OVERLAY-SHEET ALUMINUM		SQ. FOOT
POSTS-STEEL U SIGN	19	POUNDS
POLES-TREATED WOOD 4 IN	132	LINEAR FT.
POLES-TREATED WOOD 5 IN	52	LINEAR FT.
POLES-TREATED TIMBER-CLASS 4		LINEAR FT.
POLES-TREATED TIMBER-CLASS 3		LINEAR FT.
POSTS-TUBULAR STEEL		POUNDS
POSTS-TUBULAR STEEL-SQ-PERF		POUNDS
POSTS-STEEL STRUCTURAL SIGN	490	POUNDS
OVERHEAD STR/METAL-CANTILEVER		EACH
OVERHEAD STR/METAL-BRIDGE		EACH
HIGHWAY TRAFFIC STRIPING-WHITE		GAL.(S)
HIGHWAY TRAFFIC STRIPING-YELLOW		GAL.(S)
WORDS & SYMBOLS		GAL.(S)
DELINEATOR TYPE 1	42	EACH
REMOVE SIGNS	11	EACH
REMOVE SIGNS-GUIDE	2	EACH
RESET SIGNS		EACH
RESET SIGNS-GUIDE		EACH
FRANG SIGN POST BKWY- S4x7.7	4	EACH
FRANG SIGN POST BKWY-		EACH
SQ TUBLR SLIP BASE BKWY-3 IN		EACH

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SIGN LOCATION AND SPECIFICATIONS

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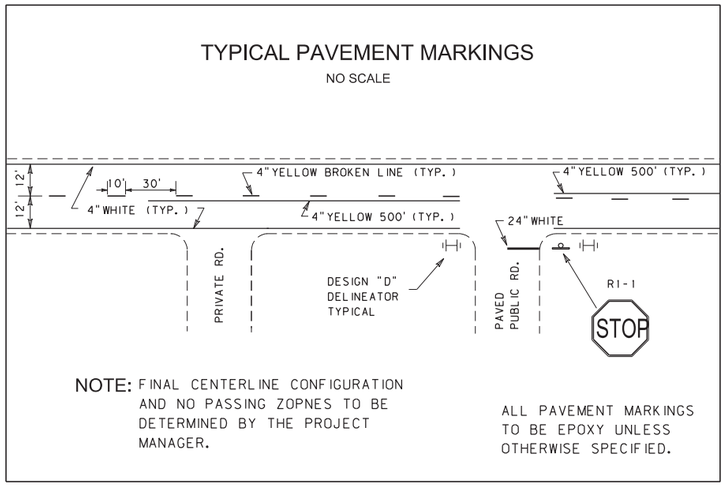
STATION	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	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	REMARKS
HIGHWAY 82																											
283+00 RT	FWP-6a	102x36			10-0	5-2	S4x7.7	x=15-5 y=16-4			7-0	3-6		25.5						245						NEW	FWP-6a = Sportsman's Bridge Fishing Access
288+28 LT	W14-3	36x48x48		-	10-0		4" DIA POLE	12-6			5-0	3-0	5.5			14							1			FY	NO PASSING ZONE
293+78 RT	D-3 D-3	42x12 42x12											3.5 3.5														D-3 = OLDENBURG RD D-3 = OLDENBURB RD
	R1-1	30x30			6-0		5" DIA POLE	12-0			5-0	3-6	5.2				12						1				STOP
295+00 RT	BY OTHERS	USE AS IS																									BY OTHERS = RIGHT ON HANGING ROCK GOLF CLUB W/ RIGHT ARROW
296+00 RT	W8-12b	36x36		-	10-0		4" DIA POLE	14-0			5-0	3-0	9.0			14							1				HINGED
299+50 LT	R3-8L	30x30			5-0		4" DIA POLE	11-6			5-0	3-0	6.3			12										NEW	ONLY ONLY
302+00 LT	FWP-6b	102x36			10-0	5-2	S4x7.7	x=15-5 y=16-4			7-0	3-6		25.5						245						NEW	FWP-6b = Sportsman's Bridge Fishing Access
303+00 RT	N6-2	42x18			2-0		4" DIA POLE	11-0			5-0		5.3			12							1				N6-2 = FLATHEAD RIVER
310+65 LT	N6-2	42x18			2-0		4" DIA POLE	11-0			5-0	3-0	5.3			12							1				N6-2 = FLATHEAD RIVER
314+88 LT	D-3 D-3	36x12 36x12											3.0 3.0														D-3 = GUNNER LN D-3 = GUNNER LN
	R1-1	30x30			6-0		5" DIA POLE	12-0			5-0	3-0	5.2				12						1				STOP
317+50 RT	(2)D10-1	10x18 10x18			4-0		2 LBS STEEL U	9-6			4-0	3-0	1.3 1.3								19		1				D10-1 = MILE 6 2 SIGNS MOUNTED BACK TO BACK
317+52 LT	W8-12b	36x36			10-0		4" DIA POLE	14-0			5-0	3-0	9.0			14										NEW	HINGED
318+71 RT	R3-8R	30x30			5-0		4" DIA POLE	11-6			5-0	3-0	6.3			12										NEW	ONLY ONLY
321+27 RT	W2-2R	REMOVE		-																			1				
325+15 RT	FWP SIGN	REMOVE																							1		BY OTHERS = FISHING ACCESS SPORTMANS' BRIDGE
328+42 RT	D-3 D-3	30x18 30x18											3.8 3.8														D-3 = HANGING ROCK DR D-3 = HANGING ROCK DR
	R1-1	30x30			6-0		5" DIA POLE	12-6			5-0	3-6	5.2				14						1				STOP
336+75 LT	BY OTHERS																										BY OTHERS = NEXT LEFT LEFT ARROW/GOLF CLUB
337+25 LT	R3-8L	30x30			10-0		4" DIA POLE	12-5			5-0	3-0	6.3			14										NEW	ONLY ONLY
339+16 LT	FWP SIGN	REMOVE																							1		BY OTHERS = FISHING ACCESS 1/4 MILE
RP 9.7 LT	R52-7	48x36			10-0		5" DIA POLE	13-6			5-0	3-6	12.0				14									NEW	COMPRESSION BRAKE MUFFLERS REQUIRED
OLDENBURG RD																											
603+00 LT	W14-2	30x30			10-0		4" DIA POLE	12-5			5-0	3-0	6.3			14							1				NO OUTLET
605+00 LT	R2-1(35)	24x30			10-0		4" DIA POLE	12-4			5-0	3-0	5.0			14							1				R2-1 = 35 SPEED LIMIT 35
TOTALS													115.1	51.0		132	52				490	19	11		2		

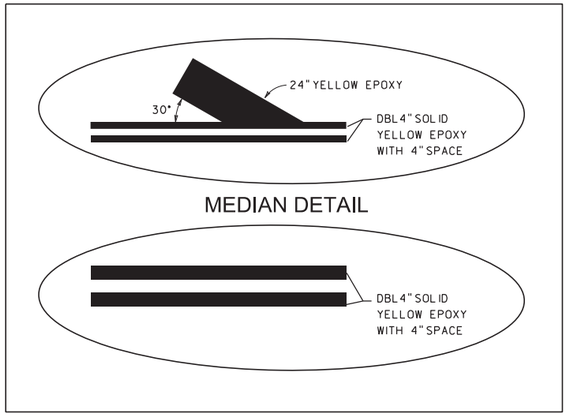
MOUNTING HEIGHT REQUIREMENTS:
MOUNTING HEIGHTS SHOWN REFER TO THE BOTTOM OF THE MAJOR PANEL. SEE DETAILED DRAWINGS 619-00 & 619-08.

DELINEATOR LEGEND		
⊣	DESIGN "A"	34
⊣|	DESIGN "B"	
⊣|⊢	DESIGN "C"	
⊣||⊢	DESIGN "D"	8
⊣|||⊢	DESIGN "E"	
⊢	DESIGN "F"	
≺	DESIGN "G"	
⊣▷	DESIGN "H"	
⊣×	DESIGN "J"	

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DETAILS





3	MONTANA Department of Transportation	...\6850000\si\6850000SISUMZ01.dgn			SIGNING PLANS		FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025						
1		11:44:32 AM bvanderloos			FLATHEAD COUNTY		UPN 6850000	S3

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270+00

280+00

290+00

N

POB 266+10.75

STA. 266+10.75
BEGIN CONNECTION

MATCH EXISTING

4" YELLOW RURAL SKIP STRIPE

4" SOLID WHITE STRIPE

HIGHWAY 82

S 86° 40' 29" E

POT STA. 266+60.75
BEGIN STPB-STPP-SSS 82-1(6)5

283+00
NEW
FWP-6a

Sportsman's Bridge
Fishing Access

STATION 288+28;
BEGIN 4" SOLID
DOUBLE YELLOW STRIPE

288+28
REPLACE
W14-3

NO PASSING ZONE

STA 289+40; 0.00' RT
BEGIN 55:1 TAPER

STA 291+50; 15.8' RT
BEGIN 10:1 TAPER

STA 292+70; 6.0' RT
END 55:1 TAPER

STA 292+70; 6.0' LT
END 55:1 TAPER

STA 292+70; 30.0' RT
END 10:1 TAPER

50'

6.0' R

PC 293+24.46

PI =297+39.26
Δ =12° 47' 35" (LT)
R =3,700'
T =414.79'
L =826.14'
E =23.18'
S =4%

STA 293+73;
6.00' LT
BEGIN 8"
SOLID WHITE

STA 293+73;
6.00' RT
BEGIN 4"
DOUBLE YELLOW

295+00
USE AS IS
BY OTHERS

293+78
REPLACE
(2)D-3
R1-1

605+00
REPLACE
R2-1

SPEED LIMIT 35

OLDENBURG RD

603+00
REPLACE
W14-2

STOP

NO OUTLET

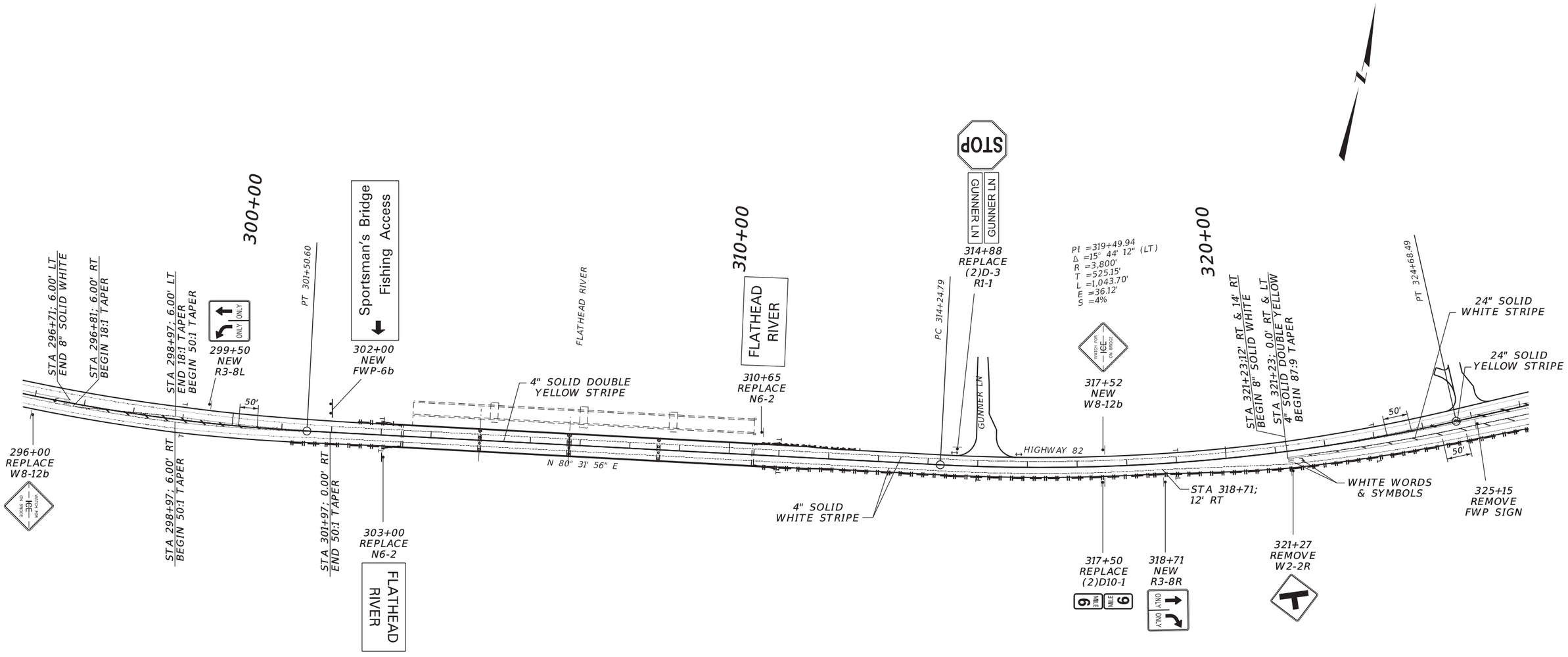
HWY 82

3	MONTANA Department of Transportation	..\6850000\si\6850000SIPLN01.dgn	DESIGNED BY LACEY R FORREY		SIGNING PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY				
1		11:46:34 AM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	S4

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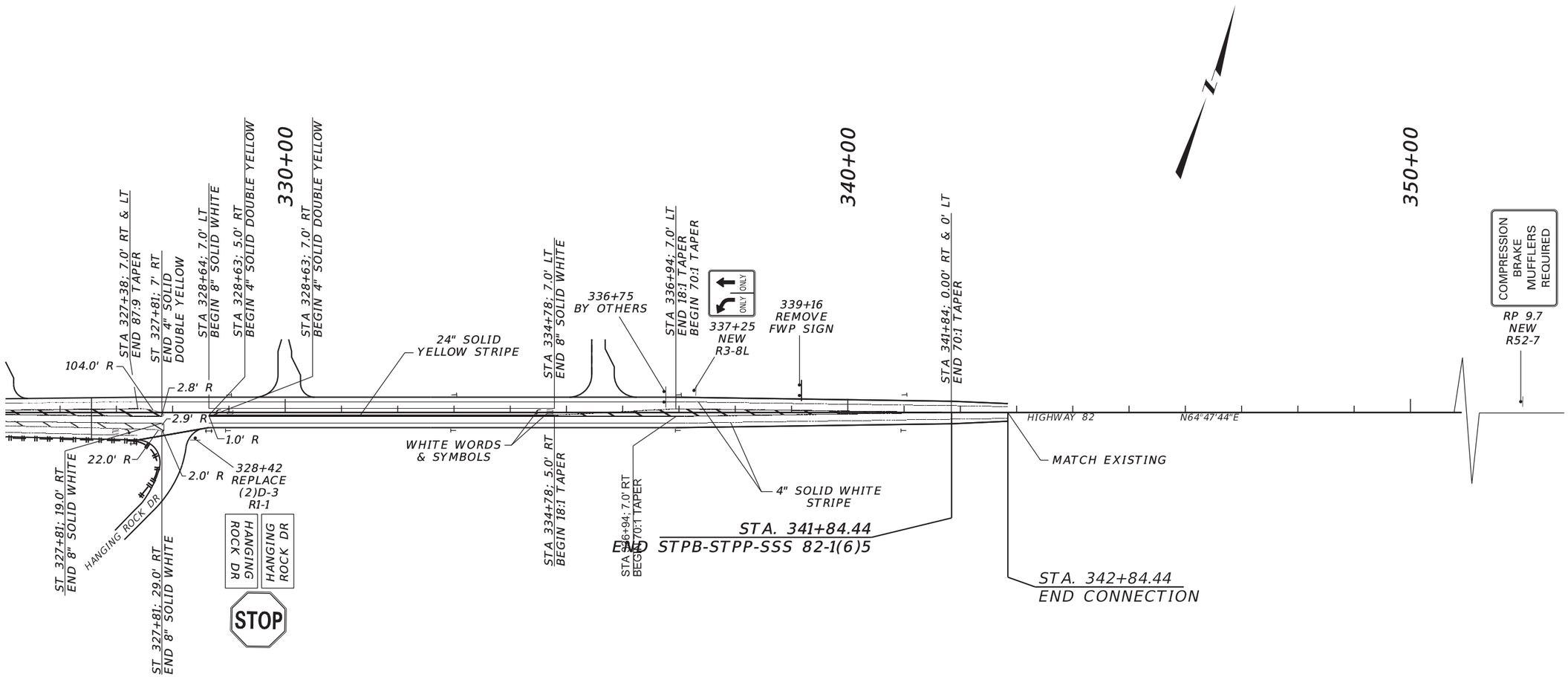
HWY 82

3	MONTANA Department of Transportation	...\6850000\si\6850000SIPLN01.dgn	DESIGNED BY	LACEY R FORREY		SIGNING PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY					
1		11:47:30 AM bvanderloos	CHECKED BY			FLATHEAD COUNTY	UPN 6850000	S5

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Morrison Maierle



HWY 82

3	MONTANA Department of Transportation	..\6850000\si\6850000SIPLN_Design	DESIGNED BY LACEY R FORREY		SIGNING PLANS	FLATHEAD RIVER - 3 M NW BIGFORK	STPB-STPP-SSS 82-1(6)5
2		4/16/2025	REVIEWED BY				
1		11:48:28 AM bvanderloos	CHECKED BY		FLATHEAD COUNTY	UPN 6850000	S6

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ASSOCIATED PROJECT AGREEMENT NUMBERS	
P. E.	BR 82-1(5)5

MONTANA DEPARTMENT OF TRANSPORTATION

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BRIDGE IDENTIFICATION		
MDT STR ID	EXISTING STR NBI NUMBER	NEW STR NBI NUMBER
06222	P000 82005+05831	000000202506222

BRIDGE PLANS AND QUANTITIES

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

FLATHEAD RIVER - 3 M NW BIGFORK

FLATHEAD COUNTY

Signed by: Charles Brisko
BY 738A2BCBE3EB455...
DATE 6/16/2025

MONTANA CHARLES E. BRISKO 17331PE LICENSED PROFESSIONAL ENGINEER

SCALES SHOWN ON BRIDGE PLAN SHEETS ARE FOR FULL SIZE (22 X 34) PRINTS REDUCED PRINTS ARE APPROXIMATELY ONE-HALF ORIGINAL SCALE

LIST OF DRAWINGS

SHEET NO.	DWG. NO.	TITLE
BRIDGE DRAWINGS		
B1	27899	LIST OF DRAWINGS
B2	27900	GENERAL NOTES & ESTIMATED QUANTITIES
B3	27901	GENERAL LAYOUT AT STA. 306+95.00
B4	27902	TYPICAL SECTION & DETAILS
B5	27903	FOOTING PLAN
B6	27904	LOG OF BORINGS
B7	27905	BENT NO. 1 & NO. 5
B8	27906	BENT NO. 1 & NO. 5 DETAILS - SHEET 1
B9	27907	BENT NO. 1 & NO. 5 DETAILS - SHEET 2
B10	27908	BENT NO. 1 & NO. 5 DETAILS - SHEET 3
B11	27909	PIER NO. 2 & NO. 4 PLAN AND ELEVATION
B12	27910	PIER NO. 2 & NO. 4 SECTIONS
B13	27911	PIER NO. 3 PLAN AND ELEVATION
B14	27912	PIER NO. 3 SECTIONS
B15	27913	BENT NO. 1, BENT NO. 5 & PIER NO. 3 FIXED BEARING DETAILS
B16	27914	PIER NO. 2 & NO. 4 BEARING DETAILS
B17	27915	PIER NO. 3 GUIDED DISC BEARING DETAILS
B18	27916	ERECTION PLAN
B19	27917	GIRDER ELEVATION
B20	27918	STEEL DETAILS
B21	27919	CAMBER DETAILS
B22	27920	INTERMEDIATE CROSS FRAME DETAILS
B23	27921	PIER NO. 2 & NO. 4 CROSS FRAME DETAILS
B24	27922	PIER NO. 3 DIAPHRAGM DETAILS
B25	27923	FIELD SPLICE DETAILS
B26	27924	MISCELLANEOUS STEEL DETAILS
B27	27925	SLAB PLAN
B28	27926	SLAB SECTION
B29	27927	SLAB DETAILS
B30	27928	MODULAR EXPANSION JOINT DETAILS
B31	27929	BARRIER COVER PLATE DETAILS
B32	27930	HANDRAIL DETAILS

DWG. NO.	TITLE
STANDARD DRAWINGS	
SBR-SS36 (APPROVED 09-27-18)	STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36"
SBR-SS36R (APPROVED 09-27-18)	STANDARD BRIDGE RAIL TYPE SINGLE SLOPE 36" REINFORCING
PSD (APPROVED 01-30-15)	STANDARD PILE SPLICE DETAILS AND PILE TIPS

SHEET NO. B1

LIST OF DRAWINGS

REVISED					CHECKED	DRAWN	DESIGNED
					11-03-22	12-20-15	12-15-15
					D.J.L.	D.A.D.	C.E.B.

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

UPN NUMBER 6850000

DRAWING NO. 27899

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GENERAL NOTES

FINISHED GRADE: Finished grade of bridge at centerline roadway is the same as the Profile Grade shown on Road Plans.

SPECIFICATIONS: The current version of the Standard and Supplemental Specifications for Road and Bridge Construction, adopted by the Montana Department of Transportation, apply.

The design was prepared in accordance with AASHTO LRFD Bridge Design Specifications, Ninth edition – 2020, with standard HL-93 loading.

DIMENSIONS: The dimensions shown are horizontal ground distances unless specified otherwise.

STRUCTURE EXCAVATION: Include structure excavation in the unit price bid for Concrete Class Structure at end bents.

EXISTING STRUCTURE: Remove existing structure (see Road Plans, Standard Specifications and Special Provisions).

STATE PLANE COORDINATES: Stations shown on the bridge plans are state plane grid stations based on (NAD 83-2011). Dimensions shown on the bridge plans are horizontal ground distances and not state plane grid distances. The combination scale factor (CSF) at this location is 0.99943266.

Horizontal ground distance x CSF = Grid Distance
Grid Distance/CSF = Distance to stake.

ABBREVIATIONS: N.F. denotes near face.
F.F. denotes fill face.
E.F. denotes each face.
W.P. denotes work point.
E.S. denotes each side.
F.S. denotes field splice.

MATERIALS

REINFORCING STEEL: Use new deformed type reinforcing steel meeting the requirements of AASHTO M 31 Grade 60 or ASTM Specification A706 Grade 60 as specified. Include all costs associated with furnishing and placing new reinforcing steel in the unit price bid for either Reinforcing Steel, Reinforcing Steel – Epoxy Coated or Reinforcing Steel – Seismic.

REINFORCING STEEL SUFFIX: The suffix E denotes epoxy coated reinforcing steel. The Suffix W denotes ASTM A706 reinforcing steel.

REINFORCING STEEL COVER: Unless specified otherwise on the drawings, provide 2" minimum concrete cover measured from the face of the concrete to the face of any reinforcing steel, except as noted below:

Bottom of Slab	1"
Top of Slab	2½"
Bottom of Abutment Caps	3"
Concrete Barriers & Curbs	1½"

Concrete cover to any tie bar is ½" less than what is listed above.

CAST IN PLACE CONCRETE: Unless otherwise approved or specified, use Concrete Class Structure for all substructure concrete and Concrete Class Structure Low Slump for all superstructure and barrier concrete.

CONCRETE STRENGTH: Use f'c = 4000 p.s.i. for Concrete Class Structure. Use f'c = 4000 p.s.i. for Concrete Class Structure Low Slump.

STRUCTURAL STEEL: All structural steel will be measured and paid for on the lump sum basis as set forth in the Standard Specifications. Use structural steel meeting the requirements of AASHTO M 270 Grade 50W for all girders plates, angle and stiffeners unless noted otherwise. Estimated weight = 1,365,100 lbs.

STRUCTURAL STEEL TEMPERATURE ADJUSTMENT: Dimensions shown on the plans assume an ambient temperature of 60°F. Correct length used in fabrication and construction 1/16" per 80 feet of beam length for every 10°F difference in temperature to allow for expansion and contraction.

STRUCTURAL STEEL CONNECTIONS: All bolted connections are slip critical. Provide fastener assemblies/components meeting the requirements of ASTM F3125 Grade A325 Type 3 unless noted otherwise. Install all bolts using direct tension indicators (DTI's) that indicate visual bump compression (Squirter). Use a Type 3 DuraSquirt DTI, manufactured to ASTM F959-23 specifications, produced/supplied by Applied Bolting Technology, and installed and inspected per their instructions meeting RCSC-20 Section 2.12. Sequence erection and use temporary erection bolts if necessary, to meet fastener manufacturer's installation and tensioning requirements, at no additional cost to the Department. Blast clean to SSPC-SP6 (Class B Faying Surface) all bolted contact surfaces. Exclude bolt threads from shear plane, unless noted otherwise.

ESTIMATED BRIDGE PLAN QUANTITIES

LOCATION	LENGTH IN FEET	TEMPORARY SHORING	CONCRETE-CLASS STRUCTURE	CONCRETE-CLASS DRILLED SHAFT	CONCRETE-CLASS STRUCTURE LOW SLUMP	EXPANSION JOINT - MODULAR	REINFORCING STEEL			STRUCTURAL STEEL-GIRDER	RE-DRIVE TEST PILE	DYNAMIC LOAD TEST	20" DIA x 1/2" STEEL PIPE PILE	
							REGULAR	EPOXY COATED	SEISMIC				FURNISH STEEL PILE	DRIVE STEEL PILE
	(FT)	(LS)	(YD^3)	(YD^3)	(YD^3)	(FT)	(LB)	(LB)	(LB)	(LS)	(EACH)	(EACH)	(LB)	(FT)
BENT NO. 1			142.7		53.0			49084			1	1	151281.0	1433.4
PIER NO. 2			85.3	153.9			15587		29679		1	1		
PIER NO. 3			107.4	153.9				18833	29679		1	1		
PIER NO. 4			85.3	153.9			15587		29679		1	1		
BENT NO. 5			142.8		53.2			49084			1	1	170512.0	1617.9
SUPERSTRUCTURE	706.0		8.0		900.9	46.0		259632		1.0				
PROJECT TOTAL	706.0	1.0	571.5	461.7	1007.1	46.0	31174	376633	89037	1.0	5	5	321793.0	3051.3

ESTIMATED BRIDGE PLAN QUANTITIES (CONT.)

LOCATION	48" DIA x 1" STEEL PIPE PILE			PILE CUTTING SHOE	ELASTOMERIC BEARING DEVICES	DISC BEARING	TRANSVERSE DECK GROOVING	BRIDGE RAIL-HAND RAIL	36 IN SS CONCRETE BARRIER RAIL - BR
	FURNISH STEEL PILE	* MISC ITEMS A - LNFT	** MISC ITEM - CUYD						
	(LB)	(FT)	(YD^3)	(EACH)	(EACH)	(EACH)	(YD^2)	(FT)	(FT)
BENT NO. 1				9	5				
PIER NO. 2	453942.0	754.8	90.3	4	5				
PIER NO. 3	485877.0	812.8	87.9	4	5	5			
PIER NO. 4	527820.0	920.1	98.1	4	5				
BENT NO. 5				9	5				
SUPERSTRUCTURE							3295.4	1478.0	1486.0
PROJECT TOTAL	1467639.0	2487.7	276.3	30	25	5	3295.4	1478.0	1486.0

* Drive 48" ∅ Steel Pipe Pile paid for as MISC ITEMS A-LNFT
** Soil removal from the 48" ∅ Steel Pipe Pile paid for as MISC ITEM-CUYD

SHEET NO. B2

GENERAL NOTES & ESTIMATED QUANTITIES

SCALE: None

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED	REVISED	REVISED	REVISED	CHECKED	11-03-22	D.J.L.
				DRAWN	02-21-21	D.A.D.
				DESIGNED	02-21-21	C.E.B.

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4/15/2025

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

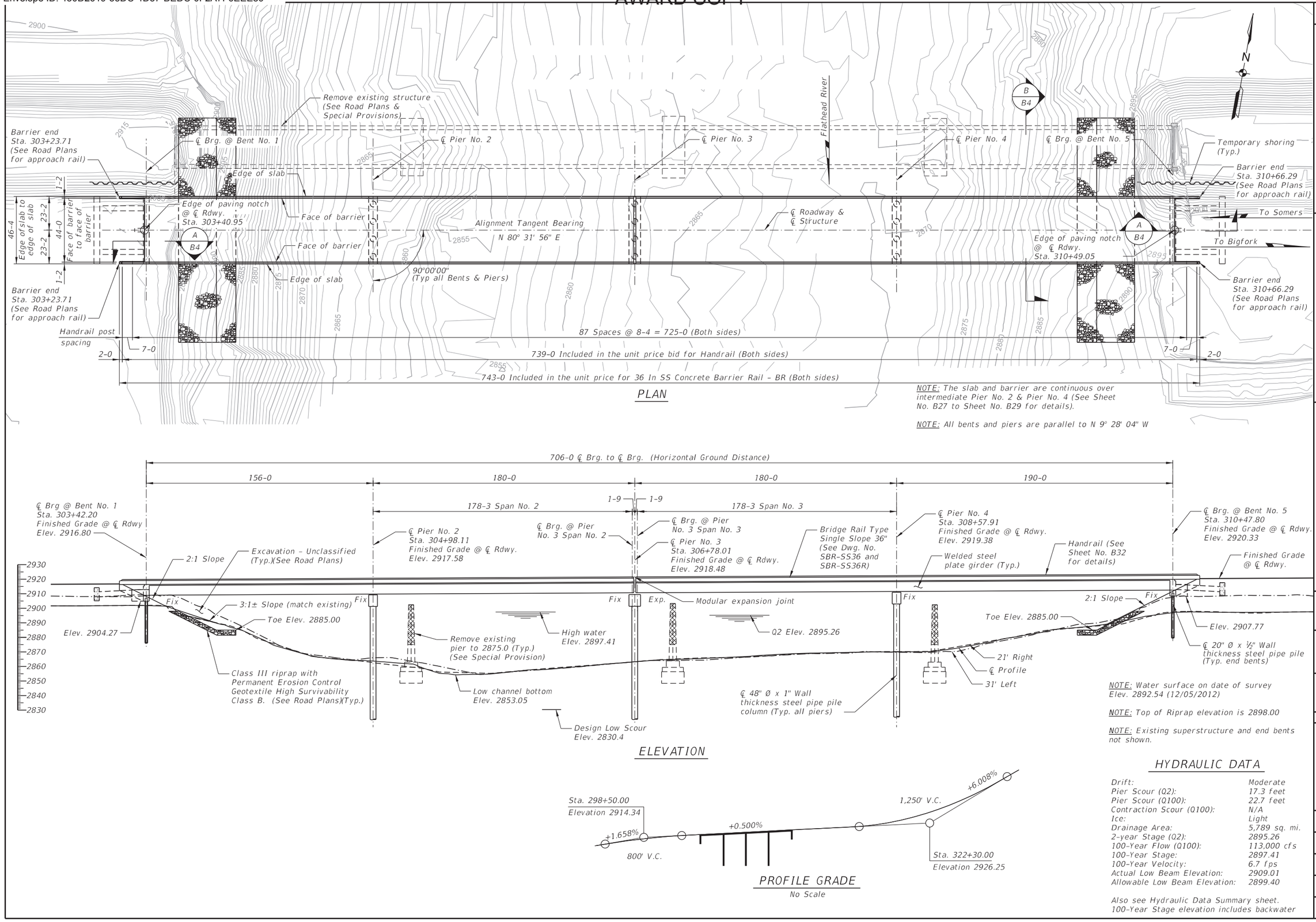
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PLAN

NOTE: The slab and barrier are continuous over intermediate Pier No. 2 & Pier No. 4 (See Sheet No. B27 to Sheet No. B29 for details).

NOTE: All bents and piers are parallel to N 9° 28' 04" W

ELEVATION

NOTE: Water surface on date of survey Elev. 2892.54 (12/05/2012)

NOTE: Top of Riprap elevation is 2898.00

NOTE: Existing superstructure and end bents not shown.

PROFILE GRADE

No Scale

HYDRAULIC DATA

Drift:	Moderate
Pier Scour (Q2):	17.3 feet
Pier Scour (Q100):	22.7 feet
Contraction Scour (Q100):	N/A
Ice:	Light
Drainage Area:	5,789 sq. mi.
2-year Stage (Q2):	2895.26
100-Year Flow (Q100):	113,000 cfs
100-Year Stage:	2897.41
100-Year Velocity:	6.7 fps
Actual Low Beam Elevation:	2909.01
Allowable Low Beam Elevation:	2899.40

Also see Hydraulic Data Summary sheet.
100-Year Stage elevation includes backwater

SHEET NO. B3

GENERAL LAYOUT

SCALE: 1" = 30'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED			
REVISED			
REVISED			
CHECKED	11-02-22	D.J.L.	
DRAWN	12-20-15	D.A.D.	
DESIGNED	12-15-15	C.E.B.	

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

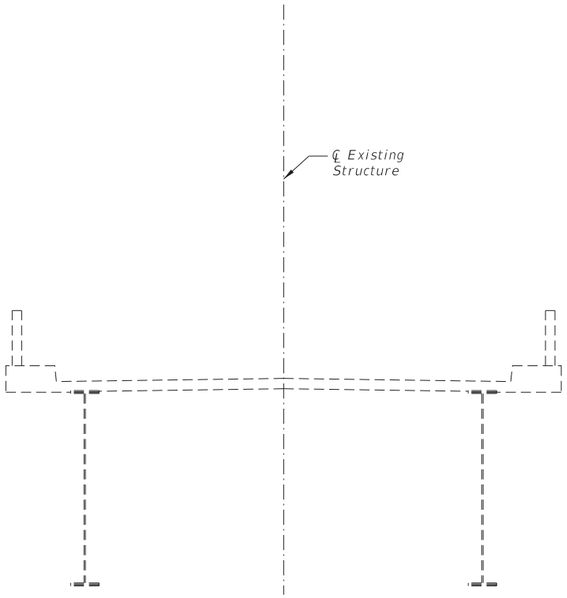
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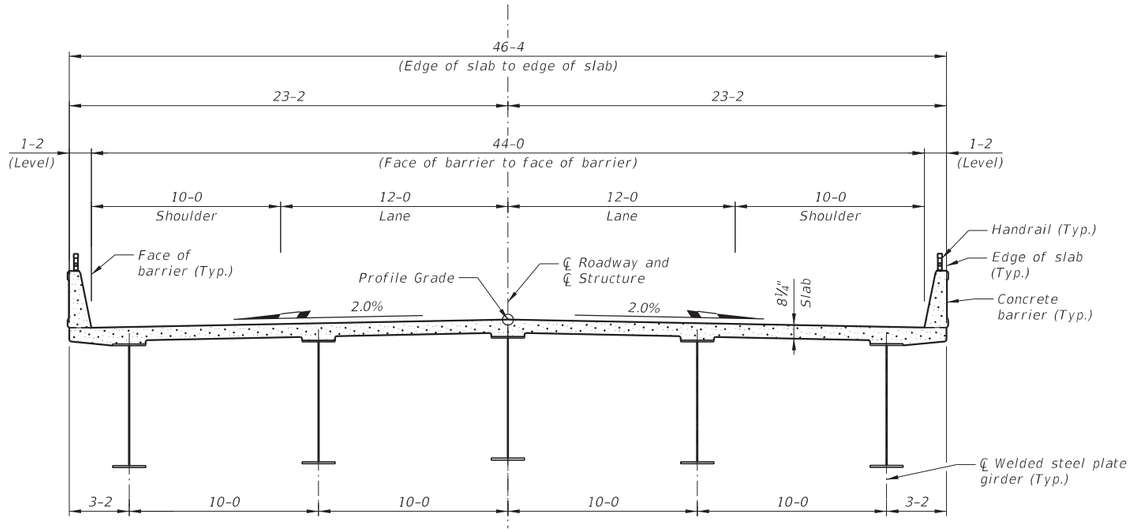
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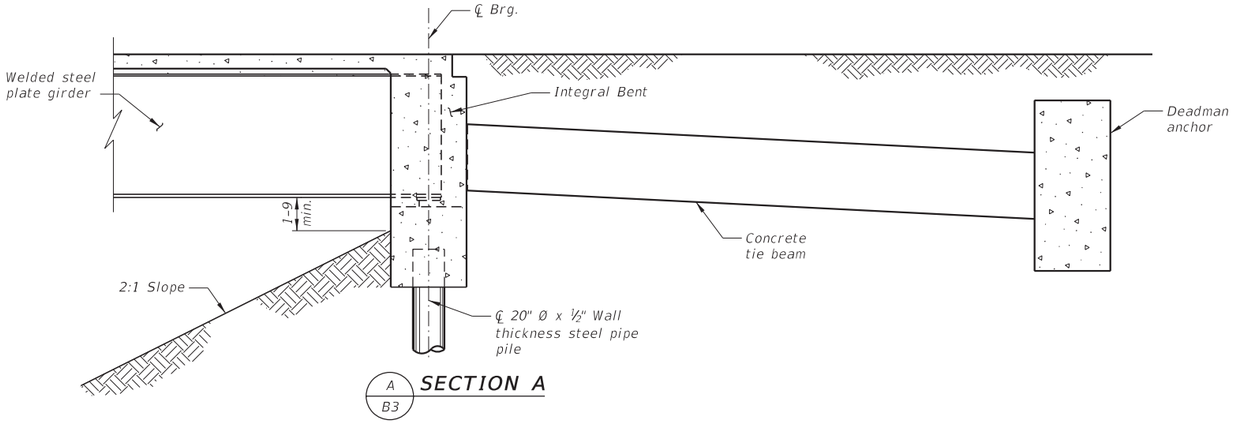
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B / B3 BRIDGE TYPICAL SECTION
(Ahead on line)



A / B3 SECTION A

SHEET NO.
B4

TYPICAL SECTION
& DETAILS

SCALE: ¼" = 1'-0"

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SSS 82-1(6)5

COUNTY
FLATHEAD

REVISED				CHECKED	11-02-22	D.J.L.
REVISED				DRAWN	01-21-21	D.A.D.
REVISED				DESIGNED	01-21-21	C.E.B.

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

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ROUTE
P-82A

REF POINT
05+0.830

MDT STR. ID
06222

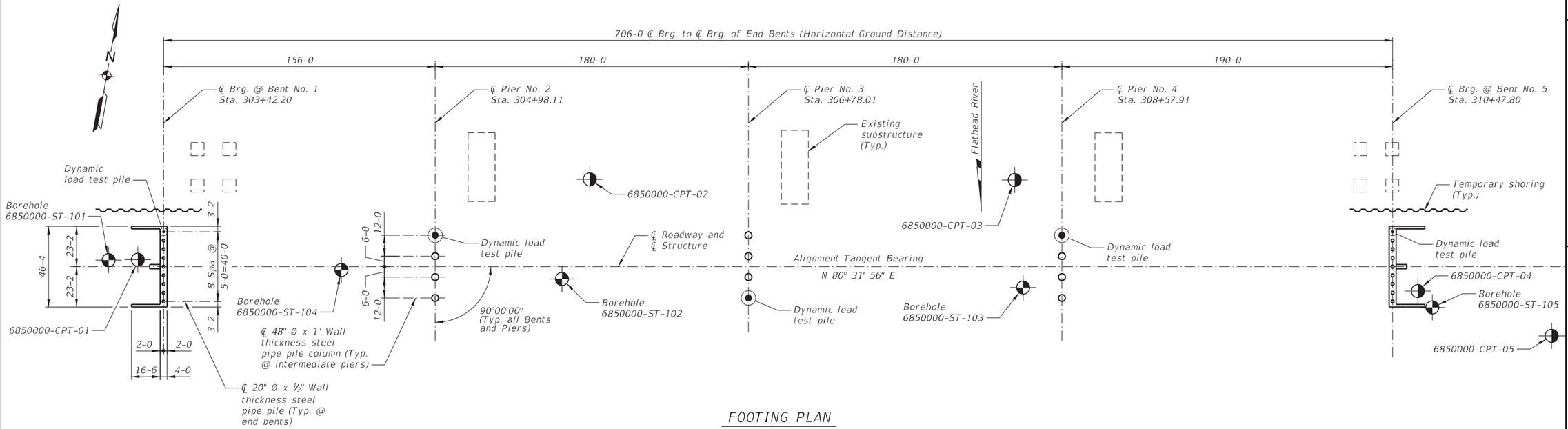
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27902

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FOOTING PLAN

PILE TABLE						
Location	Pile Type	Design Pile Tip Elevation	Estimated Pile Length	Required Minimum Pile Resistance During Driving	Pile Tip Treatment	Maximum Pile Reaction Under Strength I
Bent No. 1	20" Ø x ½"	2745.00	161.0 ft.	700 kips	Cutting Shoe	260 kips
Pier No. 2	48" Ø x 1"	2675.00	225.9 ft.	2500 kips	Cutting Shoe	1508 kips
Pier No. 3	48" Ø x 1"	2660.00	241.7 ft.	2600 kips	Cutting Shoe	1514 kips
Pier No. 4	48" Ø x 1"	2640.00	262.7 ft.	2600 kips	Cutting Shoe	1514 kips
Bent No. 5	20" Ø x ½"	2728.00	182.0 ft.	700 kips	Cutting Shoe	292 kips

NOTE: Contact the MDT Geotechnical Section at (406) 444-6281 if pile tip elevations deviate more than 1 foot from the elevation indicated.

NOTE: Required minimum pile resistance during driving at Bent No. 1 and Bent No. 5 is based on anticipated driving conditions.

NOTE: See Dwg. No. PSD for welded splices for steel pipe piles and pile tip weld details.

NOTE: Utilities not shown.

NOTE: Existing substructure locations are approximate. Verify size and location.

NOTE: Dimensions shown for Bent No. 1 are typical for Bent No. 5 unless noted otherwise.

NOTE: Dimensions shown for Pier No. 2 are typical for all piers.

NOTE: All bents and piers are parallel to N 9° 28' 04" W.

NOTE: See Sheet No. B6 for Summary of Log of Borings.

NOTE: See Special Provisions for CPT data.

NOTE: See Special Provisions for additional pile driving requirements

NOTE: Do not start driving service piles until the test pile analysis is complete, as directed by the Project Manager.

SHEET NO. B5

FOOTING PLAN

SCALE: 1" = 30'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED				CHECKED	D.J.L.	11-02-22
REVISED				DRAWN	D.A.D.	02-21-21
REVISED				DESIGNED	C.E.B.	02-21-21

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4/15/2025 10:28:14 AM

MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

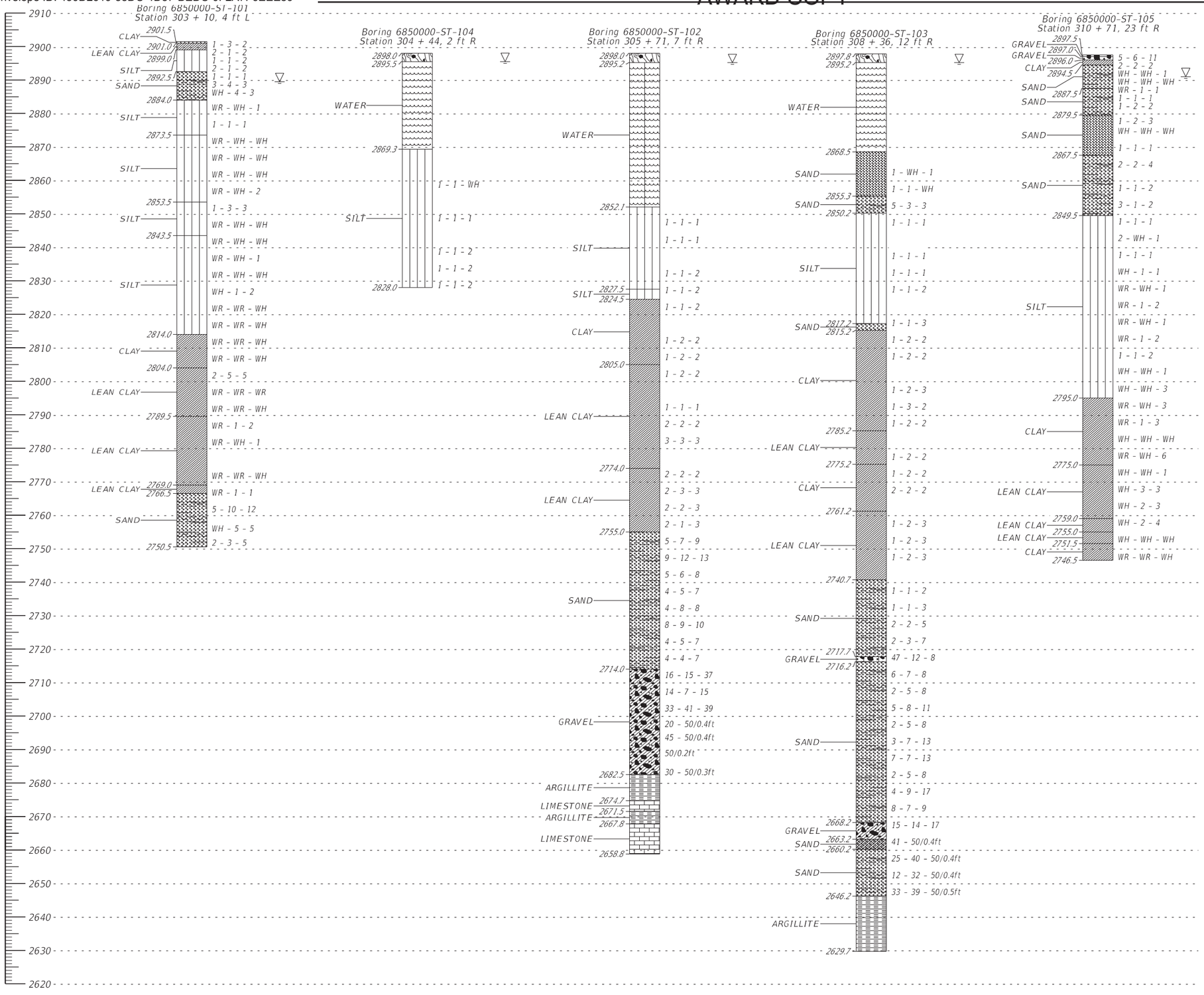
UPN NUMBER 6850000

DRAWING NO. 27903

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NOTES

SOILS AND FOUNDATION MATERIALS: The Footing Plan shows points where SK Geotechnical drilled boreholes.

The series of numbers on the Log of Borings shows the number of blows from a 140 pound hammer with a 30" drop required to drive a 2" split spoon sampler 6" (Standard Penetration Test). The length of the split spoon sampler is 18". The sampler length is measured as three 6" intervals. If the split spoon sampler did not penetrate 6" after 50 blows, the Log of Borings shows the measured penetration within that particular interval.

See the Special Provisions for original boring logs and additional subsurface information.

NOTE: See Sheet No. B5 for borehole locations.

SUMMARY OF LOG OF BORINGS

SHEET NO. B6

LOG OF BORINGS

SCALE: 1" = 15'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED	REVISED	REVISED	REVISED	CHECKED	11-04-22	D.J.L.		
				DRAWN	02-21-21	D.A.D.		
				DESIGNED	02-21-21	C.E.B.		

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MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

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ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

UPN NUMBER 6850000

DRAWING NO. 27904

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16-DM3~#5E U-bars Match to DM1~#9E (Typ.)

3" 7-DM2~#7E Hoops @ 12" ctrs. 9" 17-DM2~#7E Hoops @ 6" ctrs. 1-0 15-DM2~#7E Hoops @ 12" ctrs. 1-0 17-DM2~#7E Hoops @ 6" ctrs. 9" 7-DM2~#7E Hoops @ 12" ctrs. 3"

D B8

℄ Deadman anchor

5-DM4~#5E U-bars Lap to DM1~#9 (Typ.)

18-DM1~#9E

DM1~#9E E.F.

9-6 13-6 13-6 9-6

2-0 4-0 2-0

Face of barrier (Typ.)

F.F. Wingwall (Typ.)

3-6 (Typ.)

1-9 (Typ.) 1-9 (Typ.)

℄ Roadway and ℄ Structure

2-6

1-3 1-3

SK2~#5E

Shear key

See Sheet No. B8 for tie beam reinforcing

℄ Tie beam (Typ.)

N.F. Wingwall (Typ.)

℄ 2½" Ø Anchor bolt (See Sheet No. B15 for details) (Typ.)

℄ Girder (Typ.)

1-2½ 1-2½

SK4~#5E

SK1~#7E

SK3~#6E

6-0

Bearing (See Sheet No. B15 for details) (Typ.)

F.F. Bent diaphragm and cap

90°00'00" (Typ.)

See Sheet No. B9 for Tie Beam Connection Details

9" Paving notch

2-0 (Typ.)

1-2 (Typ.)

16-6

34-0

℄ Brg.

2-0 4-0 2-0

℄ Roadway @ ℄ Brg.

N.F. Bent diaphragm and cap

Step spacing and girder seat Elev.	8-2 Elev. C	10-0 Elev. D	10-0 Elev. E	10-0 Elev. D	8-2 Elev. C	
Girder spacing	3-2	10-0	10-0	10-0	10-0	3-2

46-4

PLAN

(Bent No. 1 back on line, Bent No. 5 ahead on line)

TABLE OF ELEVATIONS		
Elev.	Bent No. 1	Bent No. 5
A	2916.80	2920.33
B	2916.36	2919.89
C	2908.52	2912.02
D	2908.72	2912.22
E	2908.92	2912.42
F	2904.27	2907.77

5-AD6~#7E U-bars N.F. lap to C2~#7E & 5-AD7~#7E L-bars F.F. lap to C2~#7E

17-AD6~#7E U-bars N.F. lap to C2~#7E & 17-AD7~#7E L-bars F.F. lap to C2~#7E (Typ. between girders)

3-AD7~#7E L-bars F.F. lap to C4~#7E (Typ. each girder)

℄ Roadway and ℄ Structure

Reinforcing symmetrical about ℄ structure unless noted otherwise

Handrail (Typ.) See Sheet No. B32 for details

A B8 B B8 C B8

Finished grade @ ℄ Brg. Elev. B

AD8~#7E U-bar N.F. (Typ. each girder)

Finished grade @ ℄ Roadway @ ℄ Brg. Elev. A

Finished grade @ ℄ Brg. Elev. B

2-AD5~#5E Tie bars as shown (100 per end bent)

H B9

11-AD1~#8E U-bars @ about 8" ctrs. F.F.

3 C5~#8E

2 C5~#8E

C8~#6E (Typ. between piles)

C6~#7E U-bar lap with C2~#7E, C3~#7E, & C4~#7E as shown (Typ.)

AD1~#8E U-bar N.F.

AD3~#8E U-bar N.F. (Typ. between girders)

AD4~#8E L-bar N.F. (Typ. thru ext. girders)

AD2~#8E N.F. (Typ thru int. girders)

C1~#8E Bend top bar as shown to maintain cover

*C7~#5E Tie bar as shown (Typ.) (46 per end bent)

Elev. F (Level)

2-0 Embedment (Typ.)

℄ 20" Ø x ½" Wall thickness steel pipe pile

2" Cl. (Typ.)

6" 6" 6" 6"

7-C2~#7E U-bars @ 6" ctrs. (Typ. between piles)

5-C2~#7E U-bars @ 6" ctrs.

3-C3~#7E L-bars N.F.
3-C4~#7E L-bars F.F. (Typ. at piles under girders) (Rotate to provide 2" cl. at each pile)

3-C4~#7E L-bars N.F. and F.F. (Typ. at piles not under girders) (Rotate to provide 2" cl. at each pile)

ELEVATION

(Bent No. 1 back on line, Bent No. 5 ahead on line)

NOTE: Ensure compaction of Bridge End Backfill under and around deadman anchor, tie beam, and shear key.

*NOTE: Alternate placement of 90° end and 135° hooked end with each adjacent tie.

NOTE: Submit construction joint locations to project manager for approval.

NOTE: Pour end diaphragm as part of slab pouring sequence. See Sheet No. B29 for details.

NOTE: Slab reinforcing steel is omitted for clarity. See Sheet No. B27 thru Sheet No. B29 for details.

NOTE: Shift reinforcing steel to avoid anchor bolts, and provide 2" clear to pile in case of pile misplacements.

NOTE: Finish girder seats to elevations shown on this drawing.

NOTE: See Sheet No. B10 for Bill of Reinforcing.

NOTE: See Sheet No. B9 thru B10 for wingwall details.

NOTE: See Sheet No. B5 for pile layout and details.

SHEET NO. B7

BENT NO. 1 & NO. 5

SCALE: ⅜" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

		DESIGNED	04-01-22 C.E.B.
		DRAWN	04-01-22 D.A.D.
		CHECKED	09-15-22 J.D.M.
		REVISED	
		REVISED	
		REVISED	

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4/15/2025 10:28:58 AM

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

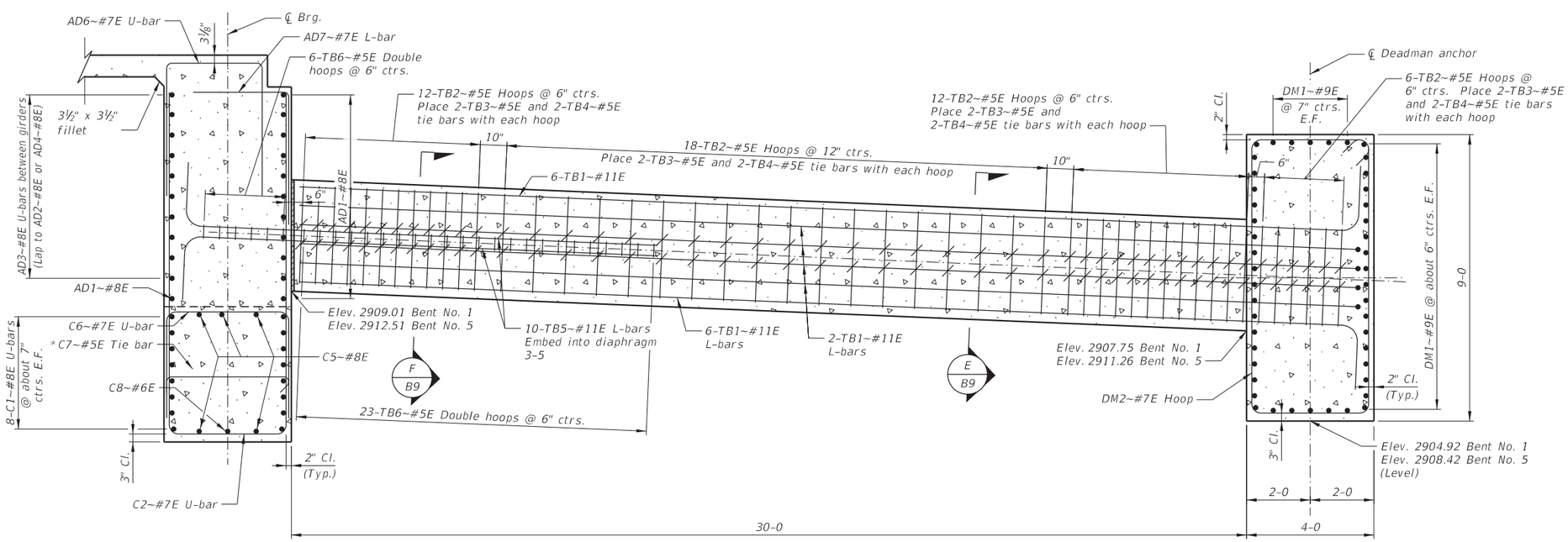
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DRAWING NO. 27905

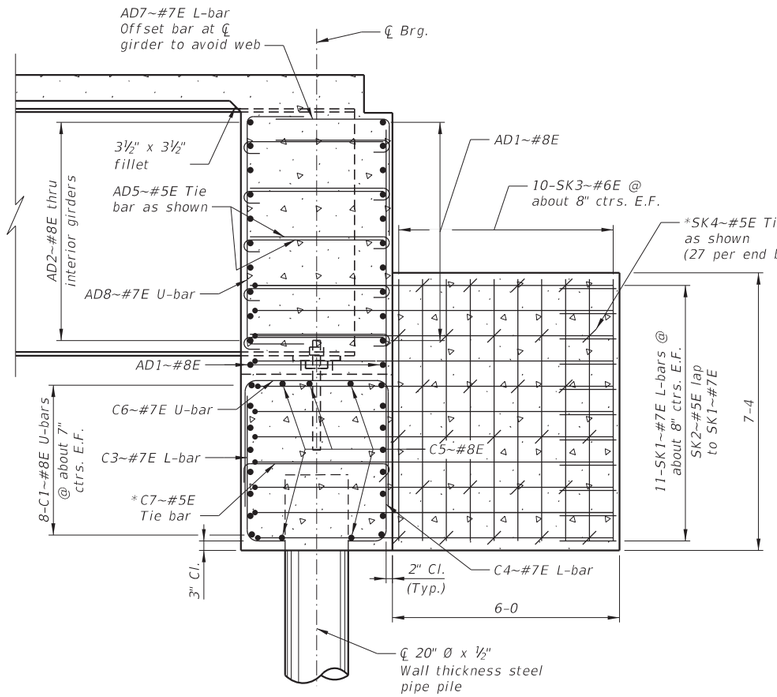
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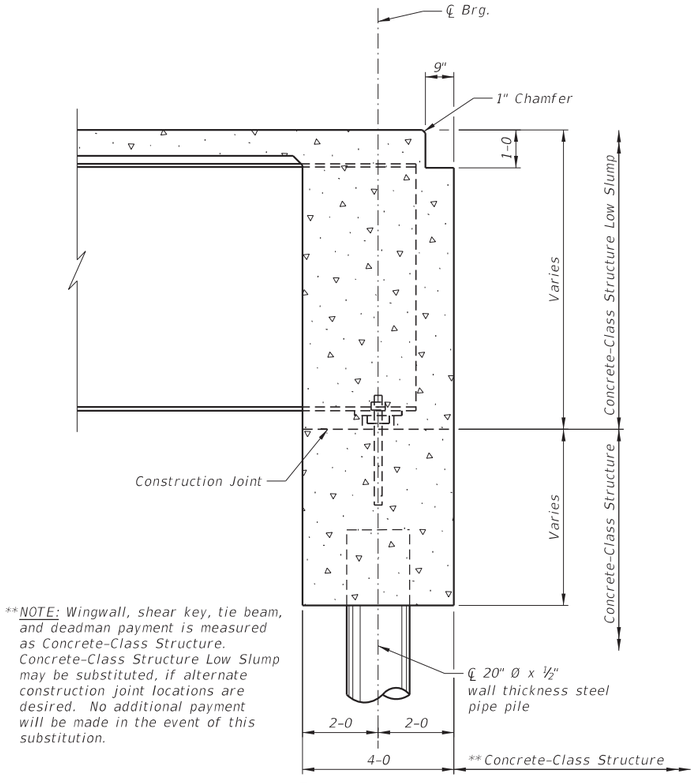
Morrison Maierle



A / B7 **SECTION A**
Scale ~ ½" = 1'-0"

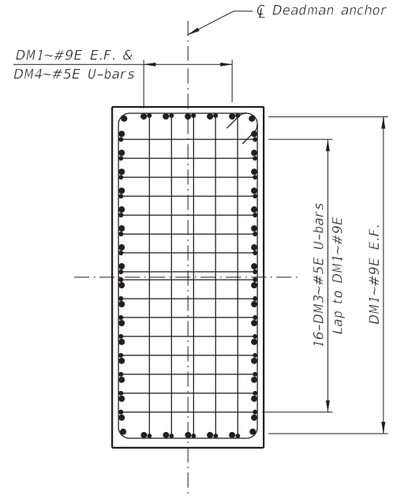


B / B7 **SECTION B**
Scale ~ ½" = 1'-0"



C / B7 **SECTION C**
Scale ~ ½" = 1'-0"

**NOTE: Wingwall, shear key, tie beam, and deadman payment is measured as Concrete-Class Structure. Concrete-Class Structure Low Slump may be substituted, if alternate construction joint locations are desired. No additional payment will be made in the event of this substitution.



D / B7 **VIEW D**
Scale ~ ½" = 1'-0"

NOTE: Ensure compaction of Bridge End Backfill under and around, deadman anchor, tie beam, and shear key.

*NOTE: Alternate placement of 90° end and 135° hooked end with each adjacent tie.

NOTE: Typical slab reinforcing not shown. See Sheet No. B27 thru Sheet No. B29 for details.

NOTE: See Sheet No. B10 for Bill of Reinforcing.

SHEET NO. B8

BENT NO. 1 & NO. 5
DETAILS - SHEET 1

SCALE: As noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SSS 82-1(6)5

COUNTY
FLATHEAD

	J.D.M.	09-16-22
	D.A.D.	04-05-22
	C.E.B.	04-05-22
REVISED	CHECKED	
REVISED	DRAWN	
REVISED	DESIGNED	

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4/15/2025

MONTANA DEPARTMENT OF TRANSPORTATION
BRIDGE BUREAU

ROUTE
P-82A

REF POINT
05+0.830

MDT STR. ID
06222

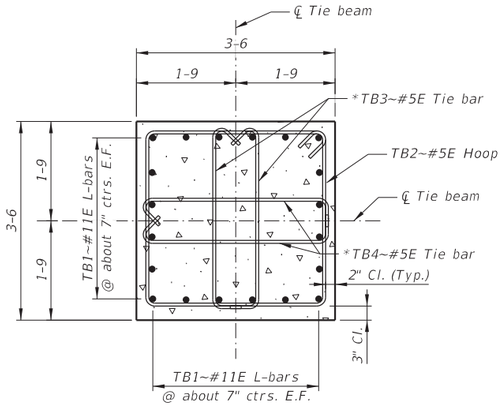
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DRAWING NO.
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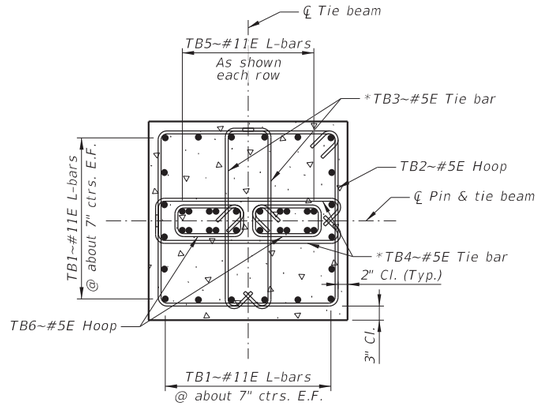
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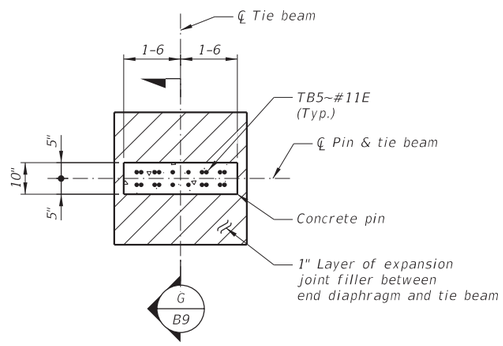
Morrison Maierle



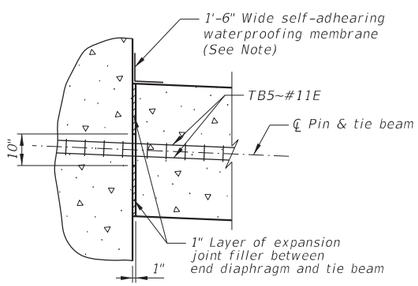
E / B8 **SECTION E**
Scale ~ ¾" = 1'-0"



F / B8 **SECTION F**
Scale ~ ¾" = 1'-0"

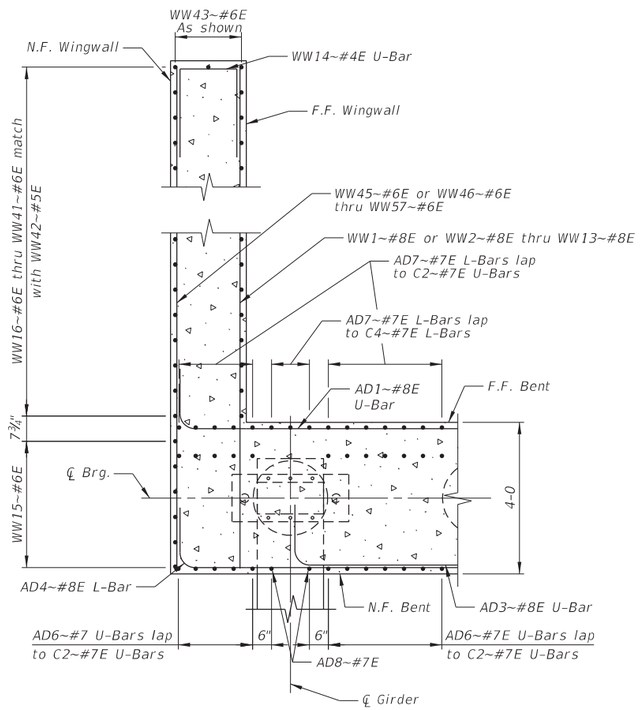


END VIEW



G / B9 **SECTION G**

TIE BEAM CONNECTION DETAILS
Scale ~ ½" = 1'-0"



H / B7, B10 **SECTION H**
Scale ~ ½" = 1'-0"
(Section thru abutment diaphragm
shown, cap sililar)

NOTE: Wrap the sides and top of tie beam to backwall connection with a 1'-6" wide self-adhering waterproofing membrane. Extend the membrane 9" each direction from the joint. Follow manufacturer's instructions for wrapping outside corners. See Special Provisions for additional self-adhering waterproofing membrane requirements.

NOTE: Use expansion joint filler in accordance with AASHTO M 153 Type I Sponge Rubber.

*NOTE: Alternate placement of 90° end and 135° hooked end with each adjacent tie.

NOTE: See Sheet No. B10 for Bill of Reinforcing.

SHEET NO.
B9

BENT NO. 1 & NO. 5
DETAILS - SHEET 2

SCALE: As noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SSS 82-1(6)5

COUNTY
FLATHEAD

REVISED					J.D.M.	
REVISED					D.A.D.	
REVISED					C.E.B.	
REVISED				09-19-22	CHECKED	
				04-12-22	DRAWN	
				04-12-22	DESIGNED	...\6850000\br\6850000BRBNT203.dgn

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU
4/15/2025 10:29:45 AM

ROUTE
P-82A

REF POINT
05+0.830

MDT STR. ID
06222

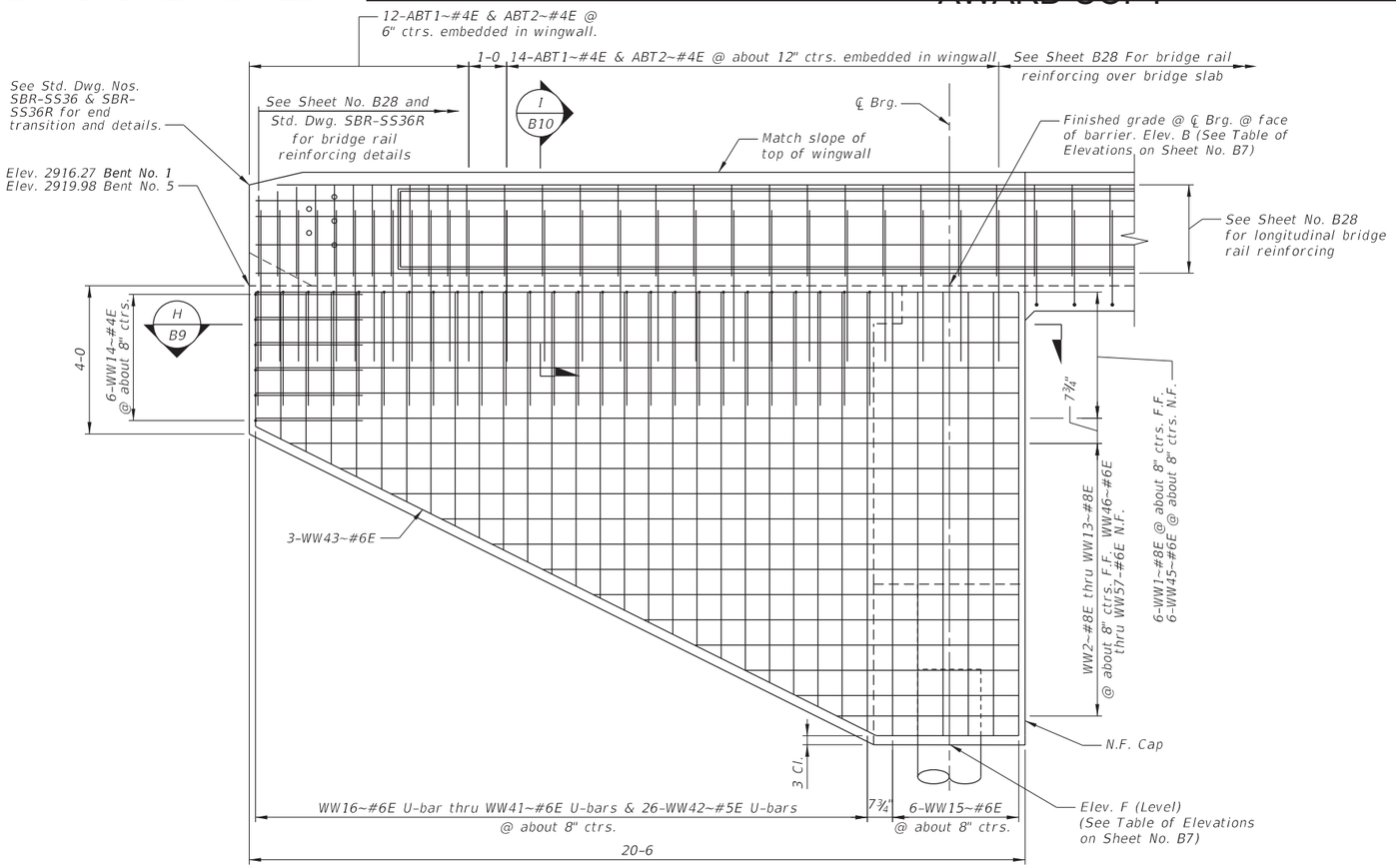
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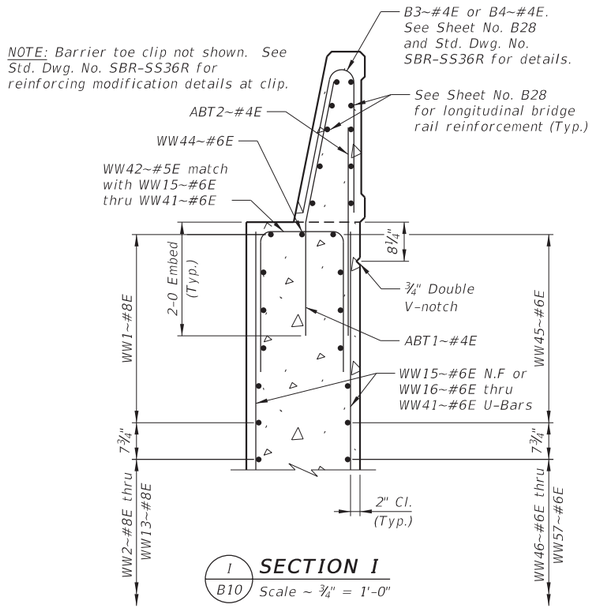
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Morrison Maierle



TYPICAL WINGWALL ELEVATION

Scale ~ ½" = 1'-0"

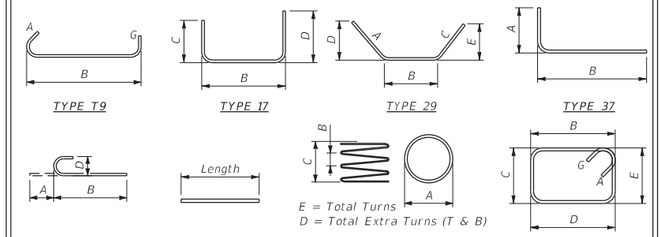


I / B10 SECTION I

Scale ~ ¾" = 1'-0"

BILL OF REINFORCING STEEL

FOR ONE BENT ONLY
(ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
C1	8E	16	17	48-6		45-10	1-4	1-4			
C2	7E	66	17	25-0		3-8	10-8	10-8			
C3	7E	15	37	5-0	3-10	1-2					
C4	7E	39	37	11-10	10-8	1-2					
C5	8E	5	STR	46-0							
C6	7E	93	17	10-4		3-8	3-4	3-4			
C7	5E	46	T9	4-7½	5½"	3-8				6"	
C8	6E	8	STR	3-0							
AD1	8E	12	17	48-6		45-10	1-4	1-4			
AD2	8E	30	STR	9-8							
AD3	8E	40	17	12-3		9-7	1-4	1-4			
AD4	8E	20	37	9-3	7-11	1-4					
AD5	5E	100	421	4-3	7"	3-8		5"			
AD6	7E	78	17	14-1		2-11	5-7	5-7			
AD7	7E	93	37	8-0	3-4	4-8					
AD8	7E	10	17	9-0		6-0	1-6	1-6			
TB1	11E	40	37	35-3	33-3	2-0					
TB2	5E	96	T1	13-5	5½"	3-2	3-1	3-2	3-1		
TB3	5E	192	T9	4-0½	5½"	3-1				6"	
TB4	5E	192	T9	4-1½	5½"	3-2				6"	
TB5	11E	40	37	16-10	14-10	2-0					
TB6	5E	116	T1	4-6	5½"	1-2½	7"	1-2½	7"	5½"	
DM1	9E	46	STR	45-8							
DM2	7E	63	T1	26-0	9"	3-8	8-7	3-8	8-7	9"	
DM3	5E	32	17	9-8¼		3-6¼	3-1	3-1			
DM4	5E	10	17	14-9		8-7	3-1	3-1			
SK1	7E	22	37	10-7	9-5	1-2					
SK2	5E	11	17	8-4		2-2	3-1	3-1			
SK3	6E	20	STR	6-11							
SK4	5E	27	T9	3-1½	5½"	2-2				6"	
WW1	8E	12	STR	20-2							
WW2	8E	2	STR	19-9							
WW3	8E	2	STR	18-5							
WW4	8E	2	STR	17-1							
WW5	8E	2	STR	15-9							
WW6	8E	2	STR	14-5							
WW7	8E	2	STR	13-1							
WW8	8E	2	STR	11-9							
WW9	8E	2	STR	10-5							
WW10	8E	2	STR	9-1							
WW11	8E	2	STR	7-9							
WW12	8E	2	STR	6-5							
WW13	8E	2	STR	5-1							
WW14	4E	12	17	5-6¾		1-6¾	2-0	2-0			
WW15	6E	12	STR	11-8							
WW16	6E	2	17	8-10		1-8	3-7	3-7			
WW17	6E	2	17	9-6		1-8	3-11	3-11			
WW18	6E	2	17	10-2		1-8	4-3	4-3			
WW19	6E	2	17	10-10		1-8	4-7	4-7			
WW20	6E	2	17	11-6		1-8	4-11	4-11			
WW21	6E	2	17	12-2		1-8	5-3	5-3			
WW22	6E	2	17	12-10		1-8	5-7	5-7			
WW23	6E	2	17	13-4		1-8	5-10	5-10			
WW24	6E	2	17	14-0		1-8	6-2	6-2			
WW25	6E	2	17	14-8		1-8	6-6	6-6			
WW26	6E	2	17	15-4		1-8	6-10	6-10			
WW27	6E	2	17	16-0		1-8	7-2	7-2			
WW28	6E	2	17	16-8		1-8	7-6	7-6			
WW29	6E	2	17	17-2		1-8	7-9	7-9			
WW30	6E	2	17	17-10		1-8	8-1	8-1			
WW31	6E	2	17	18-6		1-8	8-5	8-5			
WW32	6E	2	17	19-2		1-8	8-9	8-9			
WW33	6E	2	17	19-10		1-8	9-1	9-1			
WW34	6E	2	17	20-4		1-8	9-4	9-4			
WW35	6E	2	17	21-0		1-8	9-8	9-8			
WW36	6E	2	17	21-8		1-8	10-0	10-0			
WW37	6E	2	17	22-4		1-8	10-4	10-4			
WW38	6E	2	17	23-0		1-8	10-8	10-8			
WW39	6E	2	17	23-8		1-8	11-0	11-0			
WW40	6E	2	17	24-2		1-8	11-3	11-3			
WW41	6E	2	17	24-10		1-8	11-7	11-7			
WW42	5E	52	17	6-6		1-8	2-5	2-5			
WW43	6E	6	29	25-6	3-7	18-2	3-9	3-2½	1-7½		
WW44	6E	2	STR	20-2							
WW45	6E	12	STR	20-2							
WW46	6E	2	STR	19-9							
WW47	6E	2	STR	18-5							
WW48	6E	2	STR	17-1							
WW49	6E	2	STR	15-9							
WW50	6E	2	STR	14-5							
WW51	6E	2	STR	13-1							
WW52	6E	2	STR	11-9							
WW53	6E	2	STR	10-5							
WW54	6E	2	STR	9-1							
WW55	6E	2	STR	7-9							
WW56	6E	2	STR	6-5							
WW57	6E	2	STR	5-1							
ABT1	4E	52	See Dwg. No. SBR-SS36R for reinforcing details.								
ABT2	4E	52	See Dwg. No. SBR-SS36R for reinforcing details.								

BILL OF REINFORCING STEEL (CONTINUED)

FOR ONE BENT ONLY
(ALL DIMENSIONS ARE OUT TO OUT)

NOTE: The suffix E denotes epoxy coated reinforcing steel.

SHEET NO. B10

BENT NO. 1 & NO. 5
DETAILS - SHEET 3

SCALE: As noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SSS 82-1(6)5

COUNTY
FLATHEAD

REVISED		DRAWN	R.A.W.
REVISED		CHECKED	D.A.D.
REVISED		DESIGNED	C.E.B.
REVISED			

04-12-22
03-27-22
03-29-22
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MONTANA DEPARTMENT OF TRANSPORTATION
MDT
BRIDGE BUREAU

ROUTE
P-82A

REF POINT
05+0.830

MDT STR. ID
06222

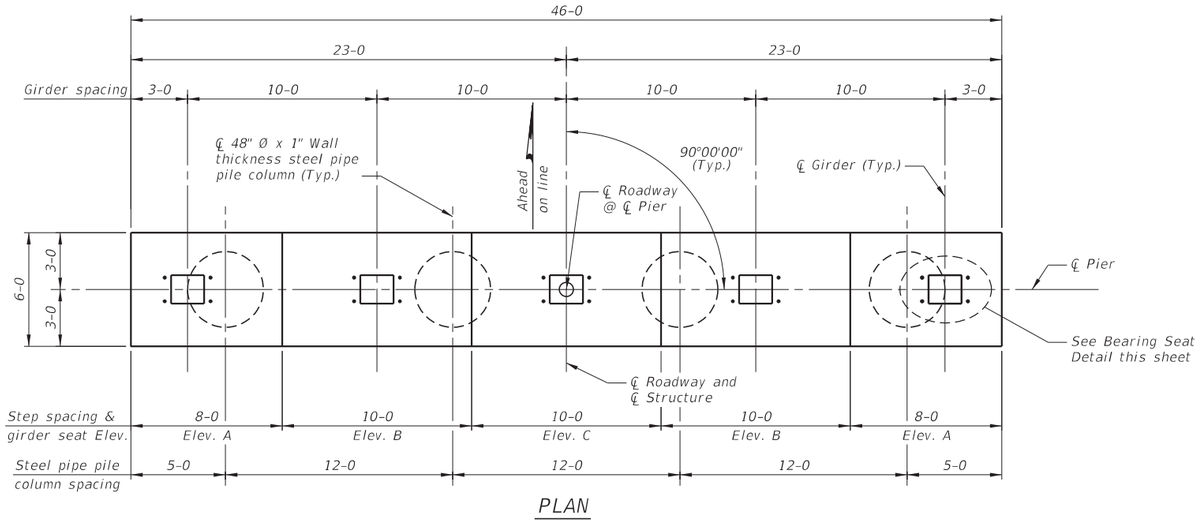
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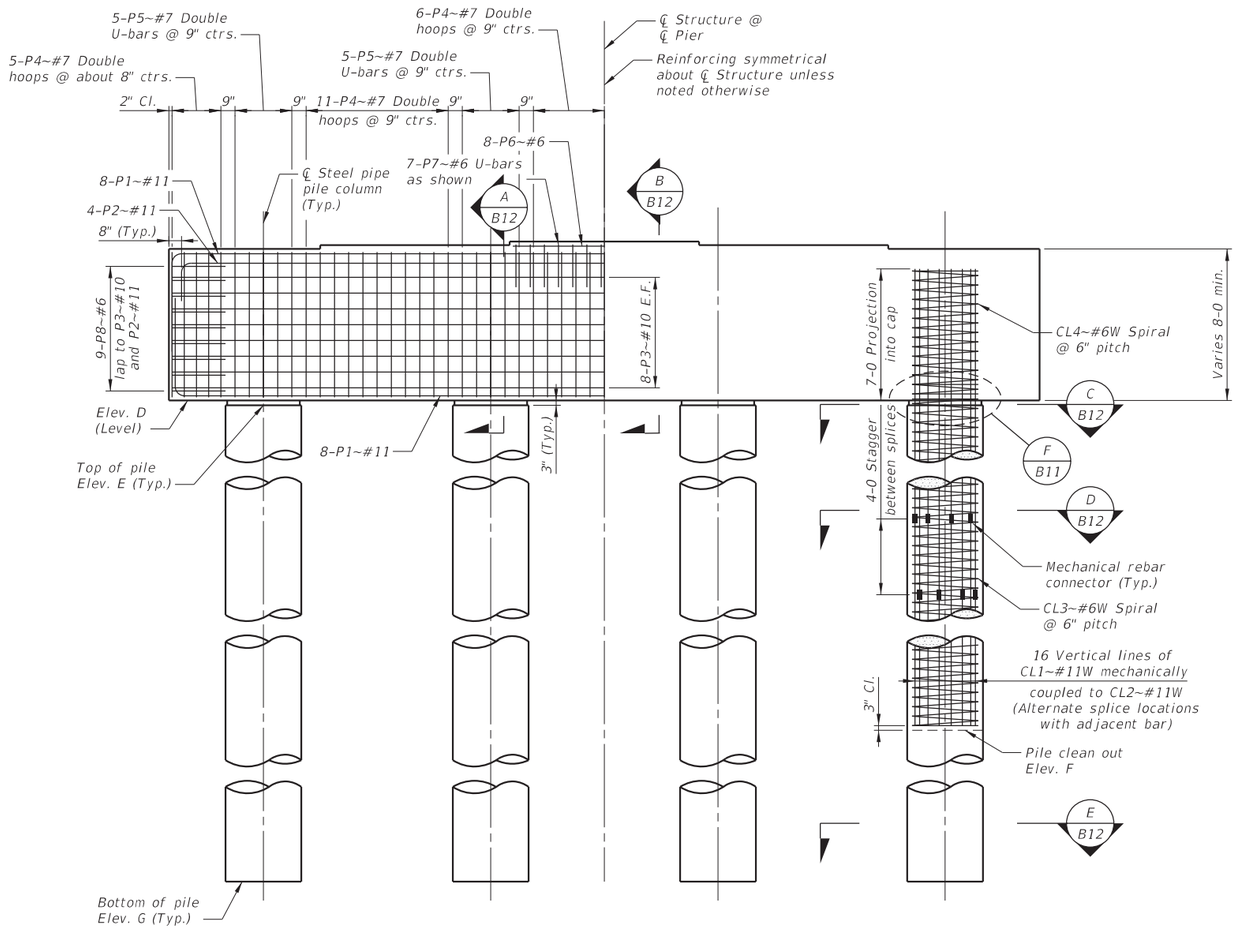
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Morrison Maierle

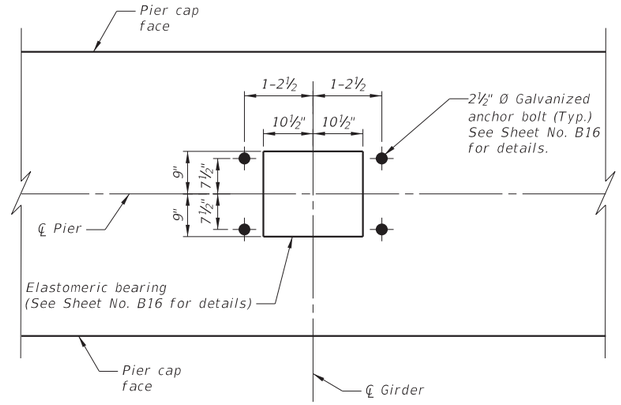


PLAN



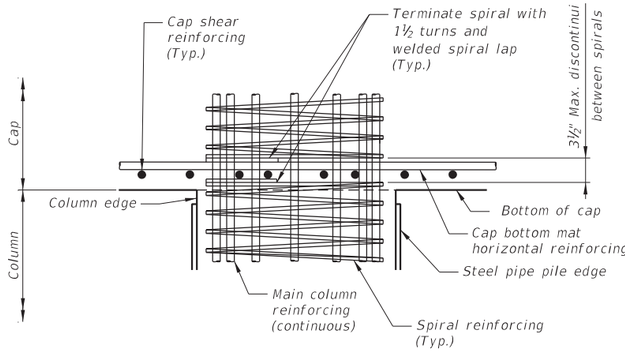
ELEVATION

(Ahead on line)



BEARING SEAT DETAIL

Scale ¾" = 1'-0"

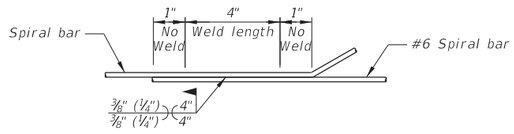


F
B11, B13

SPIRAL DISCONTINUITY DETAIL

No Scale

NOTE: Use a certified welder to weld according to AWS D1.4. Use filler material meeting the requirements of AWS A5.5.



SPIRAL LAP DETAIL

No Scale

TABLE OF ELEVATIONS		
Elev.	Pier No. 2	Pier No. 4
A	2909.12	2910.88
B	2909.32	2911.08
C	2909.52	2911.28
D	2901.12	2902.88
E	2900.87	2902.63
F	2810.87	2812.63
G	2675.00	2640.00

NOTE: Provide positive support for steel pipe pile column reinforcing to prevent settlement of reinforcing.

NOTE: Piers are tall and slender with limited lateral capacity until superstructure is complete. Stability of piers relies on fixity to end bents. Brace and/or shore as necessary during construction. Submit sealed stability analysis and/or bracing plan with erection plan. Include all costs associated with stability analysis and/or bracing plan in the unit bid price for Structural Steel-Girder.

NOTE: Mechanical splice in CL1~#11W and CL2~#11W bars is not permitted in the end region of columns (within 8-foot of cap bottom). Stagger all splices between adjacent bars 4'-0". Submit alternate splice locations/bar adjustments for approval.

NOTE: Orient vertical reinforcement in column as shown to allow for clearance of reinforcing in pier cap.

NOTE: See Special Provisions for additional 48" Ø x 1" wall thickness steel pipe pile column requirements.

NOTE: See Sheet No. B12 for Bill of Reinforcing Steel and additional pier details and notes.

NOTE: Finish girder seats level to the elevations shown.

NOTE: Adjust reinforcing steel to ensure reinforcing does not interfere with anchor bolt placement.

SHEET NO. B11

PIER NO. 2 & No. 4
PLAN AND ELEVATION

SCALE: ¼" = 1'-0" Except as noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SSS 82-1(6)5

COUNTY
FLATHEAD

REVISED				CHECKED	J.D.M.
REVISED				DRAWN	D.A.D.
REVISED				DESIGNED	C.E.B.
REVISED	08-26-22	03-29-22	03-29-22		

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE
P-82A

REF POINT
05+0.830

MDT STR. ID
06222

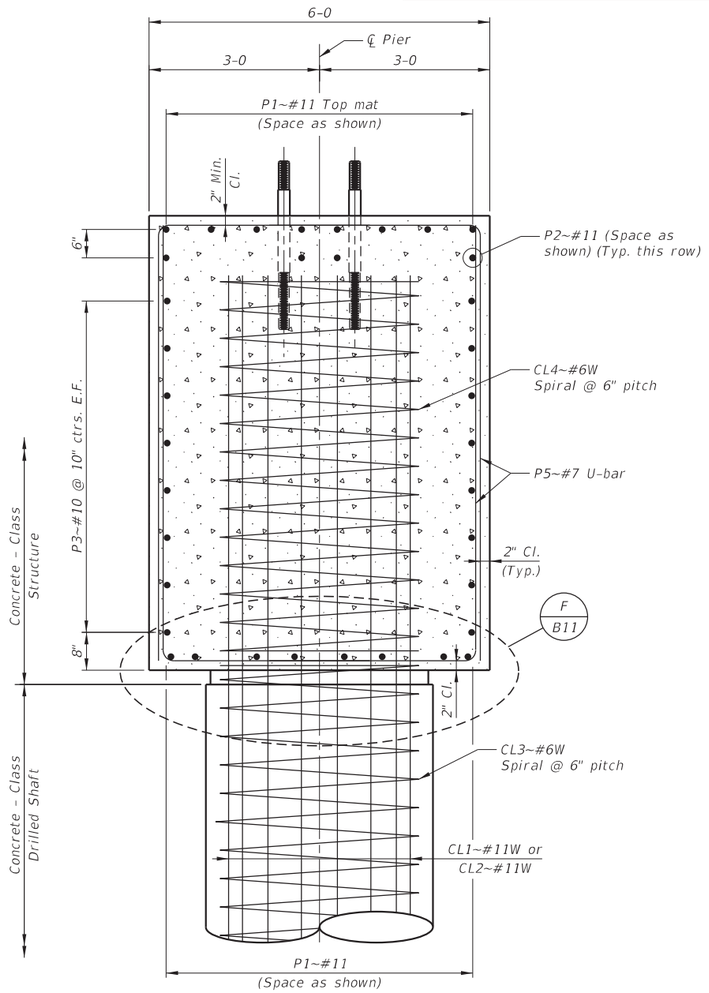
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DRAWING NO.
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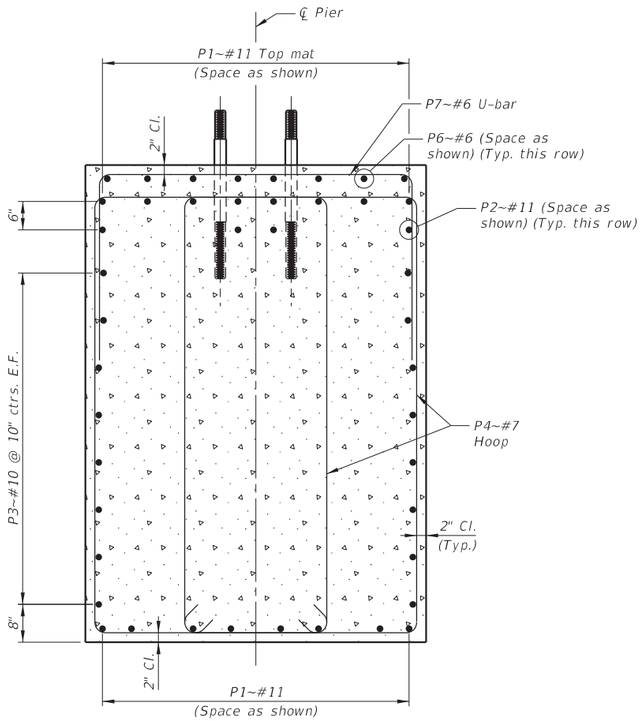
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Morrison Maierle



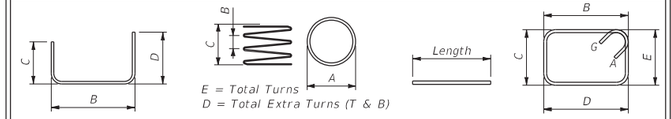
A B11 **SECTION A**



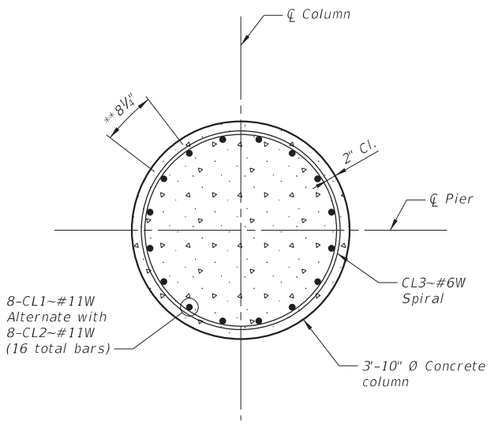
B B11 **SECTION B**

BILL OF REINFORCING STEEL

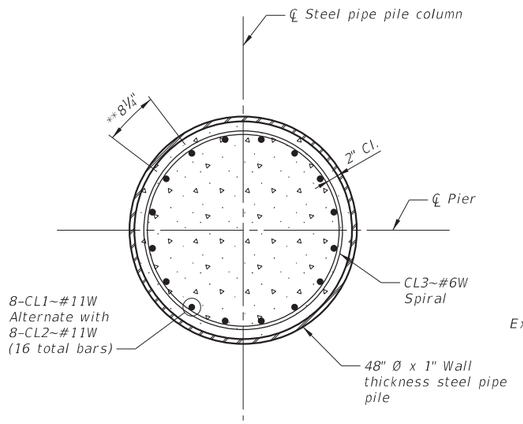
FOR ONE BENT ONLY
(ALL DIMENSIONS ARE OUT TO OUT)



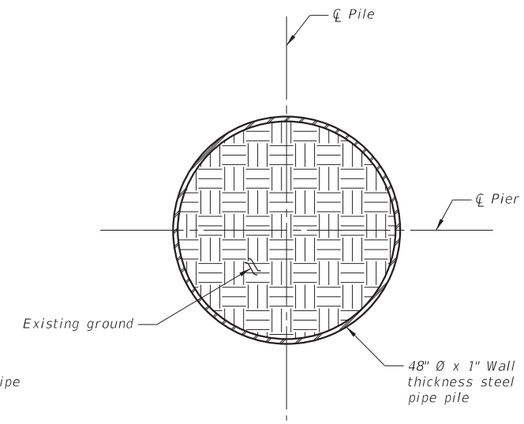
Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
P1	11	16	I7	55-8		45-8	5-0	5-0			
P2	11	4	I7	48-8		44-8	2-0	2-0			
P3	10	16	STR	45-8							
P4	7	86	T1	24-6	9"	3-10	7-8	3-10	7-8	9"	
P5	7	40	I7	21-0		5-8	7-8	7-8			
P6	6	8	STR	9-8							
P7	6	13	I7	11-4		5-8	2-10	2-10			
P8	6	18	I7	11-8		5-6	3-1	3-1			
ΔCL1	11W	32	STR	50-6							
ΔCL2	11W	32	STR	46-6							
CL3	6W	4	SP	2016-8	3-6	6"	90-2	3	183.4		
CL4	6W	4	SP	178-2	3-6	6"	6-7	3	16.2		



C B11, B13 **SECTION C**



D B11, B13 **SECTION D**



E B11, B13 **SECTION E**

**NOTE: Provide equal longitudinal reinforcing bar spacing. The spacing shown is measured along the outside of the spiral.

NOTE: Provide positive support for steel pipe pile column reinforcing to prevent settlement of reinforcing.

NOTE: See Sheet No. B11 for additional pier details and notes.

NOTE: Splice spirals by an approved mechanical connector or by welding in accordance with the Spiral Lap Detail shown on Sheet No. B11. Include all costs associated with splicing in the unit bid price for Reinforcing Steel-Seismic.

NOTE: Bars marked (Δ) are spliced using mechanical couplers. Bar length is sized to meet minimum clear cover requirements with no reduction in length for the coupler. Adjust length for mechanical coupler system used.

NOTE: The suffix W denotes ASTM A706 reinforcing steel.

NOTE: Terminate all spiral reinforcing by providing 1½ extra turns. Weld the tail per the Spiral Lap Detail shown on Sheet No. B11.

SHEET NO. B12

PIER NO. 2 & NO. 4 SECTIONS

SCALE: ¾" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED			CHECKED	08-26-22 J.D.M.
REVISED			DRAWN	03-27-22 D.A.D.
REVISED			DESIGNED	03-29-22 C.E.B.
REVISED				...\6850000\br\6850000BRBNTZ11.dgn

MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

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ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

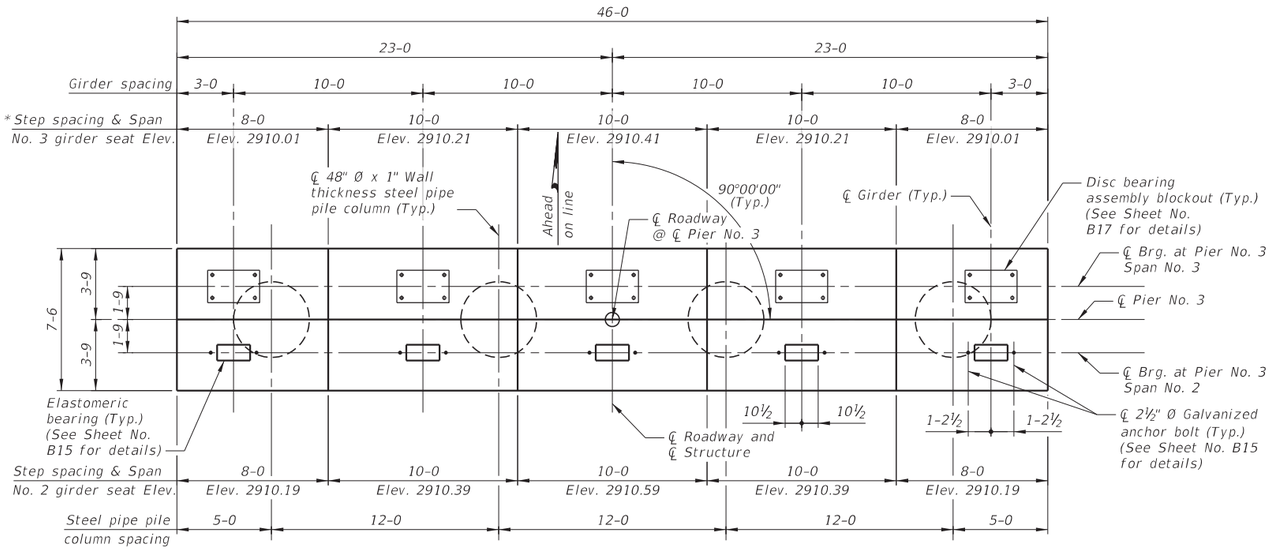
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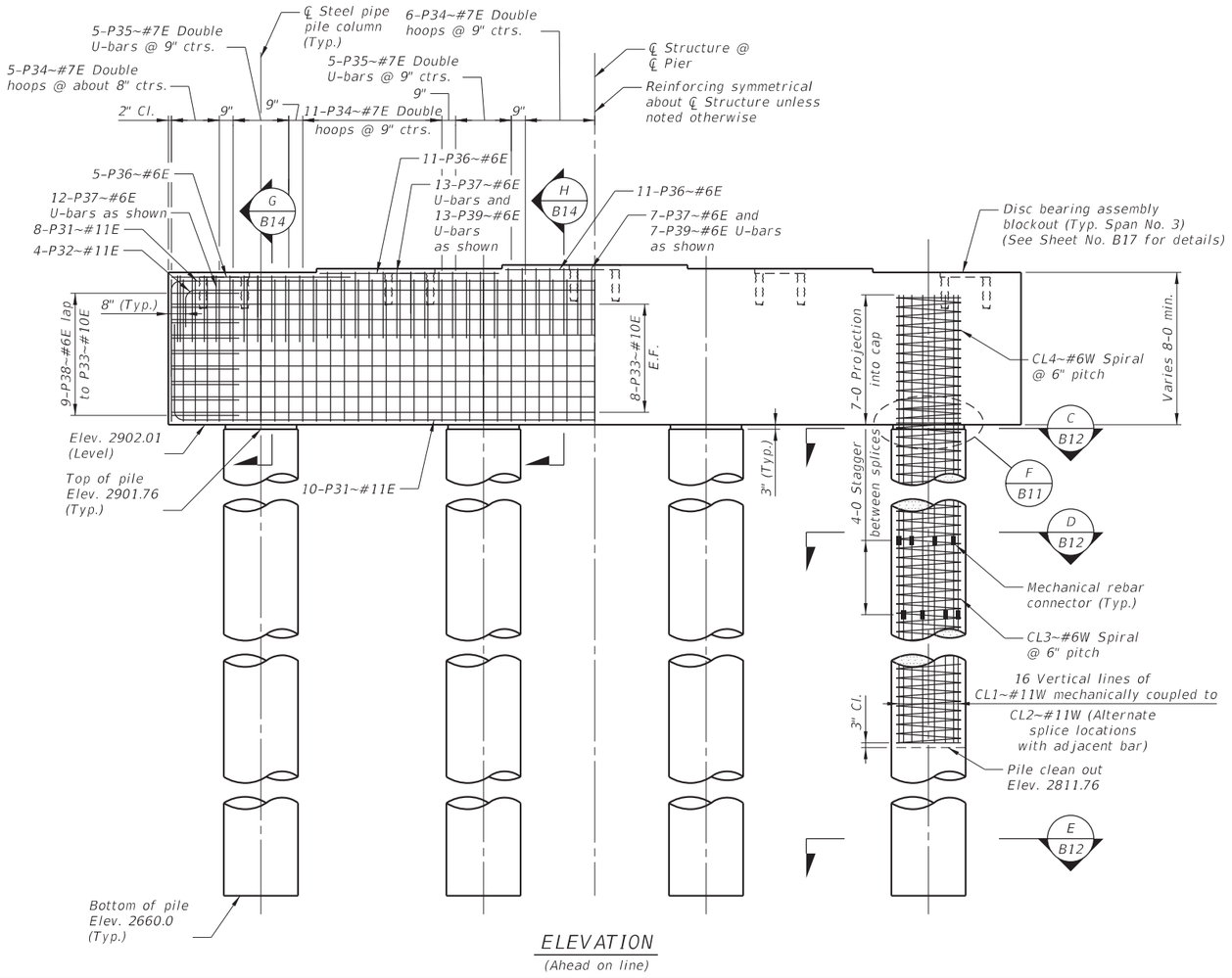
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PLAN



ELEVATION

(Ahead on line)

NOTE: Provide positive support for steel pipe pile column reinforcing to prevent settlement of reinforcing.

NOTE: Piers are tall and slender with limited lateral capacity until superstructure is completed. Stability of piers relies on fixity to end bents. Brace and/or shore as necessary during construction. Submit sealed stability analysis and/or bracing/shoring plan with erection plan. Include all costs associated with stability analysis and/or bracing plan in the unit bid price for Structural Steel-Girder.

*NOTE: Span No. 3 girder seat elevations shown on this sheet are approximate and are calculated using an estimated bearing height. Adjust girder seat elevations per manufacturers bearing heights to maintain finished roadway grade elevations. Submit all elevation adjustments with disc bearing shop drawing submittal. See Sheet No. B17 for bearing design details. Finish girder seats level to the adjusted elevations.

NOTE: Mechanical splice in CL1~#11W and CL2~#11W bars is not permitted in the end region of columns (within 8-foot of cap bottom). Stagger all splices between adjacent bars 4'-0". Submit alternate splice locations/ bar adjustments for approval.

NOTE: Orient vertical reinforcement in column as shown to allow for clearance of reinforcing in pier cap.

NOTE: See Special Provisions for additional 48" Ø x 1" wall thickness steel pipe pile column requirements.

NOTE: See Sheet No. B14 for Bill of Reinforcing Steel and additional pier details and notes.

NOTE: Adjust reinforcing steel to ensure reinforcing does not interfere with anchor bolt placement.

SHEET NO. B13

PIER NO. 3 PLAN AND ELEVATION

SCALE: ¼" = 1'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

						I.D.M.	
						D.A.D.	
						C.E.B.	
REVISED	REVISED	REVISED	REVISED	CHECKED	08-26-22		
				DRAWN	03-29-22		
				DESIGNED	03-29-22		

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ROUTE P-82A

REF POINT 05+0.830

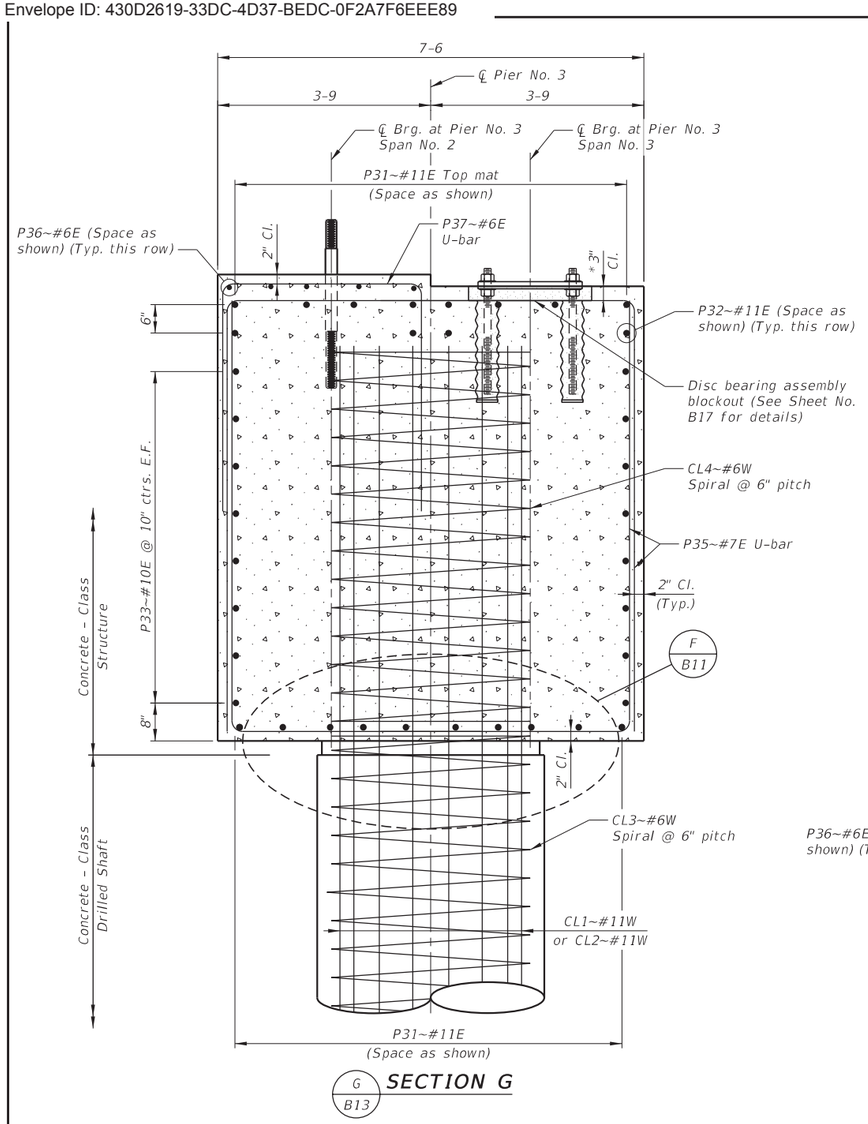
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UPN NUMBER 6850000

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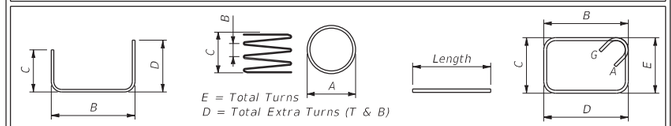


G B13 **SECTION G**

H B13 **SECTION H**

BILL OF REINFORCING STEEL

FOR ONE BENT ONLY
(ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	No.	Type	Length	A	B	C	D	E	G	N
P31	11E	18	17	56-0		45-8	5-2	5-2			
P32	11E	4	17	48-8		44-8	2-0	2-0			
P33	10E	16	STR	45-8							
P34	7E	86	T1	26-4	9"	4-10	7-7	4-10	7-7	9"	
P35	7E	40	17	22-4		7-2	7-7	7-7			
P36	6E	43	STR	9-8							
P37	6E	63	17	11-5		3-5	4-0	4-0			
P38	6E	18	17	14-4		7-0	3-8	3-8			
P39	6E	39	17	12-10		4-10	4-0	4-0			
ΔCL1	11W	32	STR	50-6							
ΔCL2	11W	32	STR	46-6							
CL3	6W	4	SP	2016-8	3-6	6"	90-2	3	183.4		
CL4	6W	4	SP	178-2	3-6	6"	6-7	3	16.2		

NOTE: Provide positive support for steel pipe pile column reinforcing to prevent settlement of reinforcing.

* *NOTE:* Coordinate Span No. 3 bearing seat elevation and bar placement with Bearing Sheet No. B17. Bearing height may change per manufacturer's design. Place reinforcement at the bottom of the blockout and provide 3" minimum clear cover. Reinforcement modifications may be necessary. Maintain bottom of cap elevation and Span No. 2 girder seat elevations. Clearly show all modifications on the bearing shop drawings.

NOTE: See Sheet No. B13 for additional pier details and notes.

NOTE: Splice spirals by an approved mechanical connector or by welding in accordance with the Spiral Lap Detail shown on Sheet No. B11. Include all costs associated with splicing in the unit bid price for Reinforcing Steel-Seismic.

NOTE: The suffix E denotes epoxy coated reinforcing.

NOTE: Bars marked (Δ) are spliced using mechanical couplers. Bar length is sized to meet minimum clear cover requirements with no reduction in length for the coupler. Adjust length for mechanical coupler system used.

NOTE: The suffix W denotes ASTM A706 reinforcing steel.

NOTE: Terminate all spiral reinforcing by providing 1½ extra turns. Weld the tail per the Spiral Lap Detail shown on Sheet No. B11.

Morrison Maierle

SHEET NO. B14

PIER NO. 3 SECTIONS

SCALE: 3/4" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED				
REVISED				
REVISED				
REVISED	CHECKED	08-26-22	J.D.M.	
	DRAWN	03-27-22	D.A.D.	
	DESIGNED	03-29-22	C.E.B.	

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MONTANA DEPARTMENT OF TRANSPORTATION MDT
BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

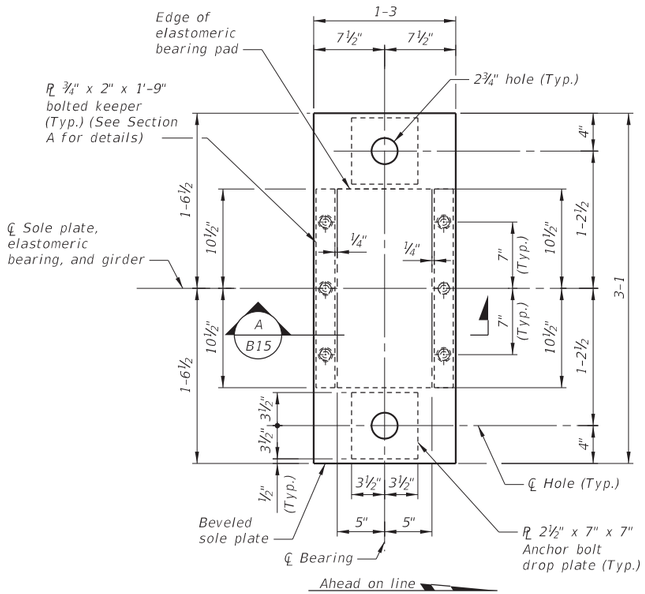
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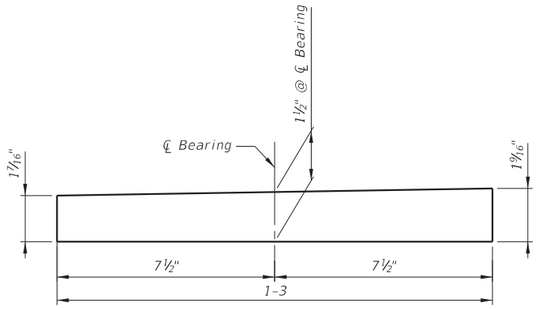
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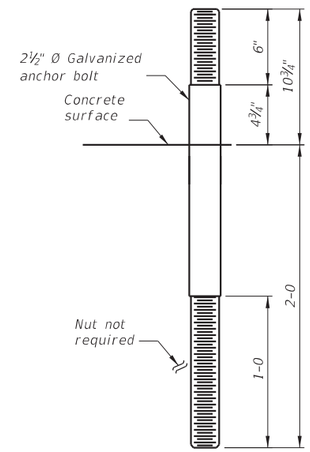
BENT NO. 1, BENT NO. 5 & PIER NO. 3 FIXED BEARING PLAN



(Ahead on line Bent No. 3, Pier No. 3 & Bent No. 5)

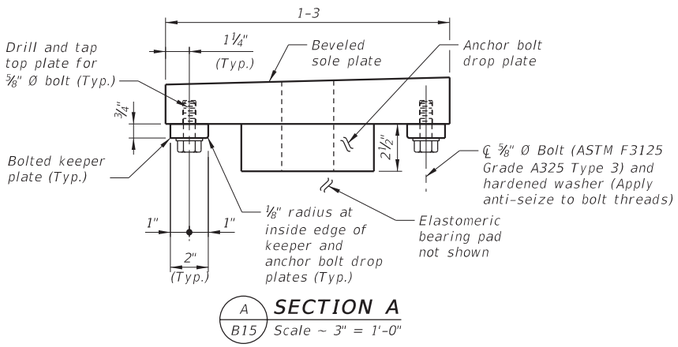
SOLE PLATE BEVEL DETAIL

No Scale



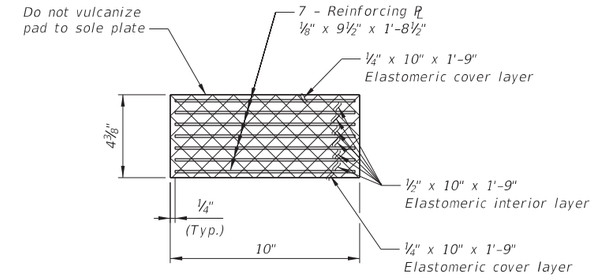
ANCHOR BOLT DETAIL

NO SCALE



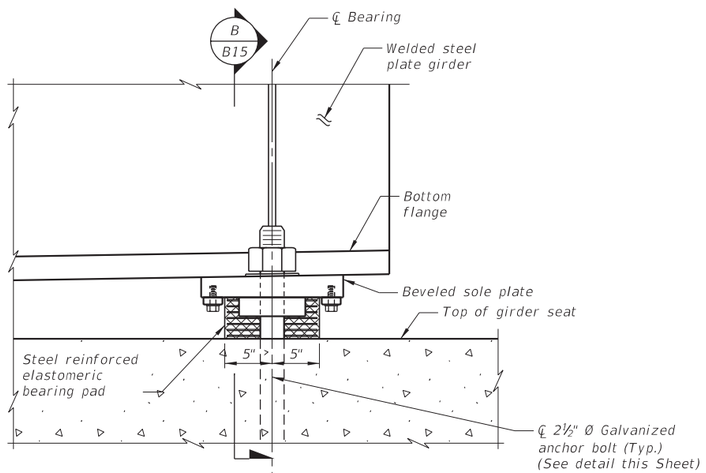
A / B15 SECTION A

Scale ~ 3" = 1'-0"



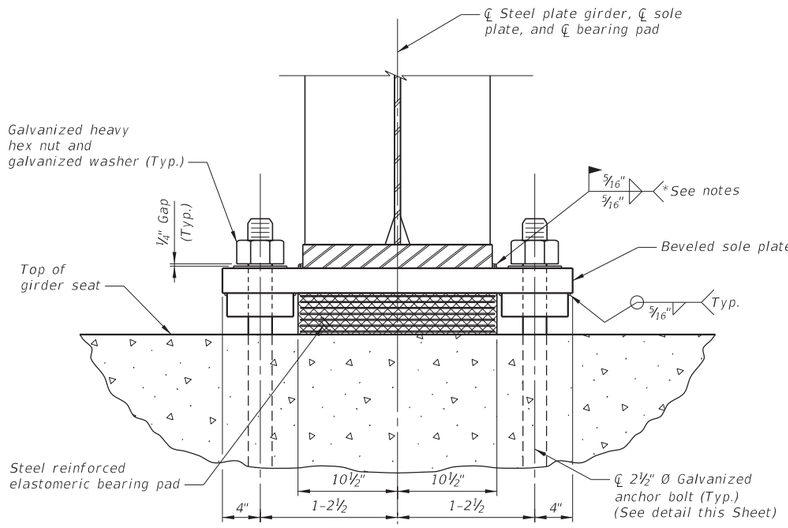
ELASTOMERIC BEARING PAD DETAIL

Scale ~ 3" = 1'-0"



BENT NO. 1, BENT NO. 5 & PIER NO. 3 FIXED BEARING SIDE VIEW

(Pier No. 3 shown, Bent No. 1 & Bent No. 5 similar)



B / B15 SECTION B

NOTE: Bond nut with Loctite or equal to prevent theft.

NOTE: Bevel sole plates to dimensions specified in the Sole Plate Bevel Detail. Mark sole plate prior to shipping. Make all marks permanent and visible after the bearing is installed. Include the bearing location on the bridge and a direction arrow that points ahead on line (up-station).

NOTE: Pad design based on AASHTO LRFD Bridge Design Specifications 9th Edition Subsection 14.7.5 (Method B design).

NOTE: Test elastomeric bearing pads according to AASHTO M251. Perform test based on an estimated DL+LL service design load of 235 kips.

NOTE: Use elastomer meeting the requirements of low temperature Grade 4, with a shear modulus of 150 psi ± 15 percent.

NOTE: Use structural steel meeting the requirements of AASHTO M270 Grade 50W for all plates.

* NOTE: See Standard Specifications for additional requirements governing the materials, welding, manufacturing, and placement of elastomeric bearing devices.

* NOTE: Use weld metal (electrodes) with atmospheric corrosion resistance similar to that of the base metal (See AWS D1.5). Maximum electrode size is 3/16". Prepare the weld surfaces and weld in accordance with AWS D1.5. All weld passes ⅛" maximum thickness.

NOTE: Use galvanized anchor bolts meeting the requirements of ASTM F1554 Grade 105.

NOTE: Clearly note adjustments to improve fabrication, fit-up or function on fabrication drawings.

SHEET NO. B15

BENT NO. 1, BENT NO. 5 & PIER NO. 3 FIXED BEARING DETAILS

SCALE: 1½" = 1'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED		
REVISED		
REVISED		
REVISED		
CHECKED	04-11-22	B.M.M.
DRAWN	03-01-22	D.A.D.
DESIGNED	02-28-22	C.E.B.

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

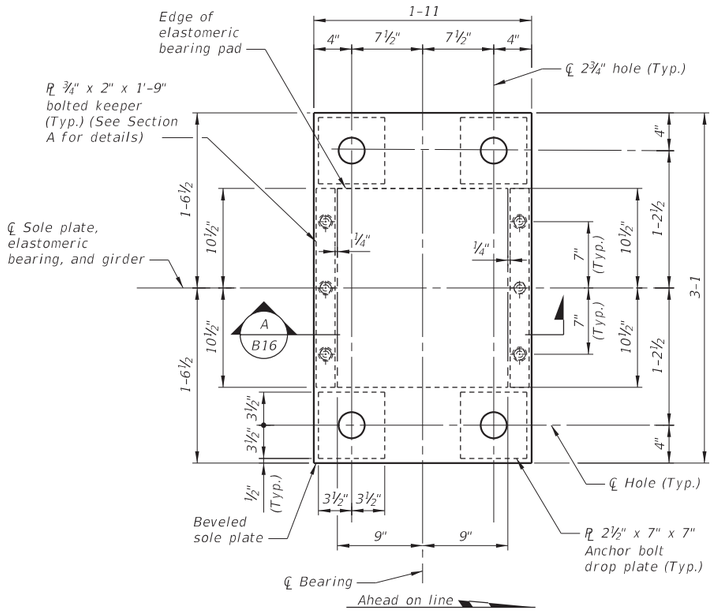
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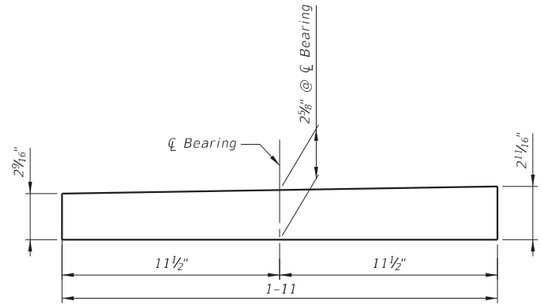
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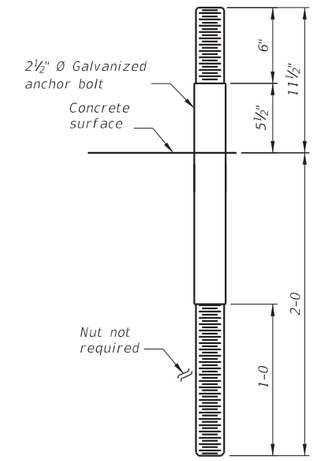


PIER NO. 2 & NO. 4 BEARING PLAN



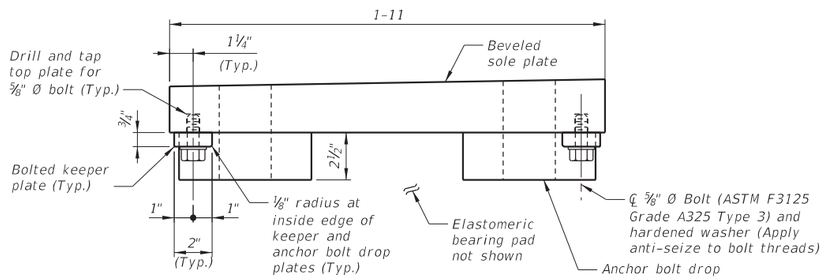
SOLE PLATE BEVEL DETAIL

No Scale



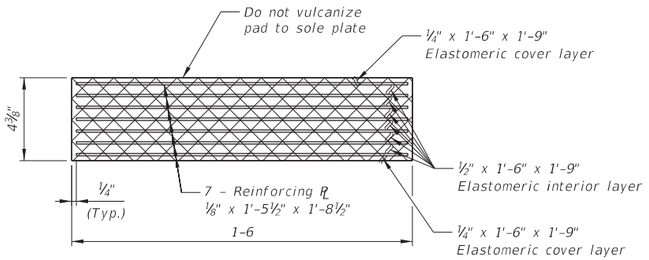
ANCHOR BOLT DETAIL

NO SCALE



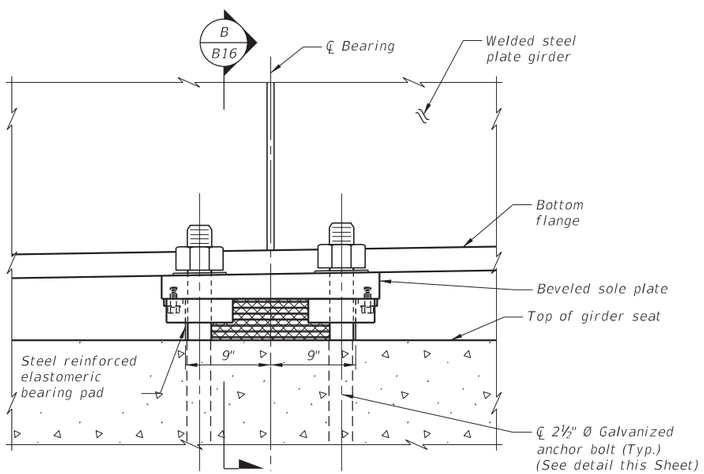
A / B16 SECTION A

Scale ~ 3" = 1'-0"



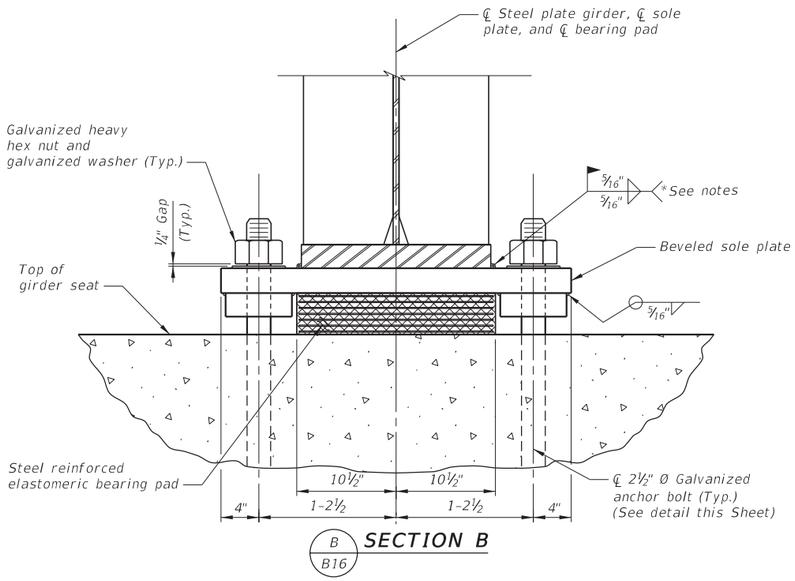
ELASTOMERIC BEARING PAD DETAIL

Scale ~ 3" = 1'-0"



PIER NO. 2 & NO. 4 BEARING SIDE VIEW

(Bent No. 3 shown, Bent No. 4 similar)



B / B16 SECTION B

NOTE: Bond nut with Loctite or equal to prevent theft.

NOTE: Bevel sole plates to dimensions specified in the Sole Plate Bevel Detail. Mark sole plate prior to shipping. Make all marks permanent and visible after the bearing is installed. Include the bearing location on the bridge and a direction arrow that points ahead on line (up-station).

NOTE: Pad design based on AASHTO LRFD Bridge Design Specifications 9th Edition Subsection 14.7.5 (Method B design).

NOTE: Test elastomeric bearing pads according to AASHTO M251. Perform test based on an estimated DL+LL service design load of 660 kips.

NOTE: Use elastomer meeting the requirements of low temperature Grade 4, with a shear modulus of 150 psi ± 15 percent.

NOTE: Use structural steel meeting the requirements of AASHTO M270 Grade 50W for all plates.

* NOTE: See Standard Specifications for additional requirements governing the materials, welding, manufacturing, and placement of elastomeric bearing devices.

* NOTE: Use weld metal (electrodes) with atmospheric corrosion resistance similar to that of the base metal (See AWS D1.5). Maximum electrode size is 3⁄16". Prepare the weld surfaces and weld in accordance with AWS D1.5. All weld passes ⅛" maximum thickness.

NOTE: Use galvanized anchor bolts meeting the requirements of ASTM F1554 Grade 105.

NOTE: Clearly note adjustments to improve fabrication, fit-up or function on fabrication drawings.

SHEET NO. B16

PIER NO. 2 & NO. 4 BEARING DETAILS

SCALE: 1½" = 1'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED			
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CHECKED	04-11-22	B.M.M.	
DRAWN	12-28-22	D.A.D.	
DESIGNED	12-26-22	C.E.B.	
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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

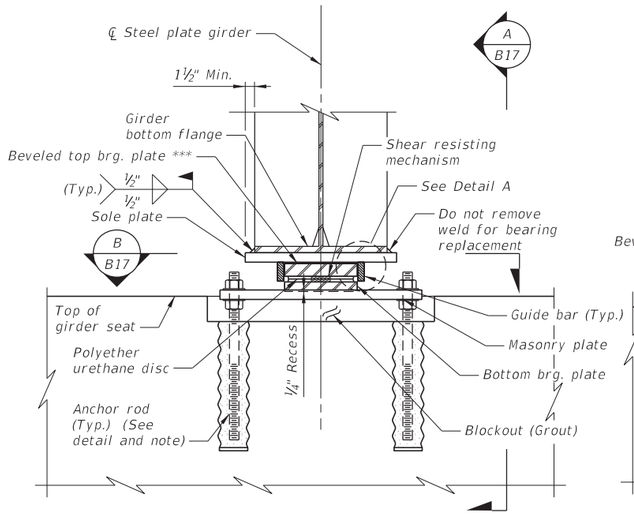
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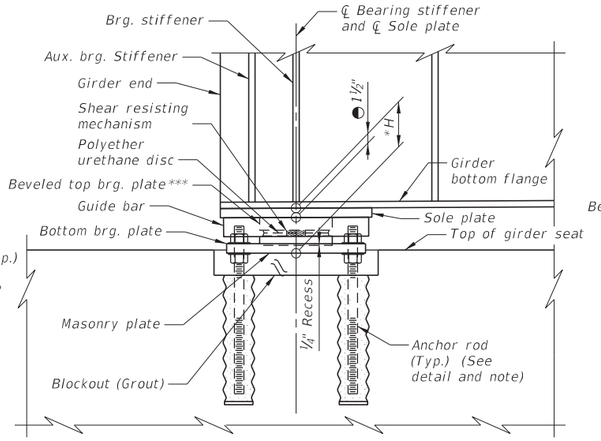
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Morrison Maierle



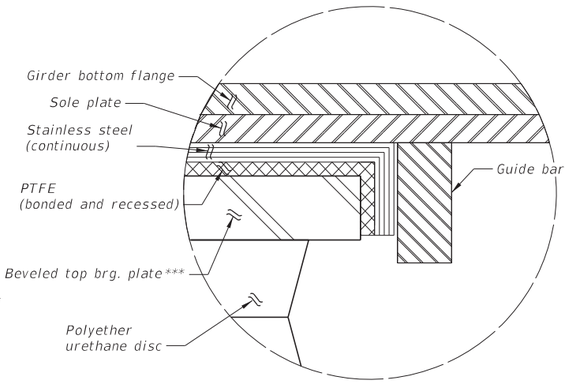
GUIDED BEARING AT PIER NO. 3

Scale ~ 1" = 1'-0"



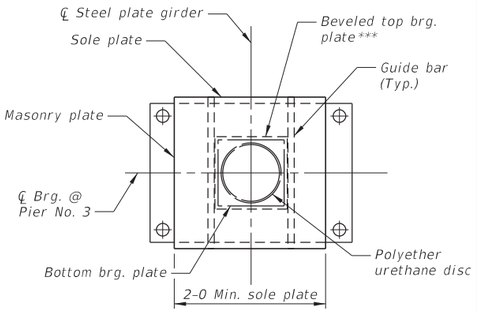
A B17 **SECTION A**

Scale ~ 1" = 1'-0"



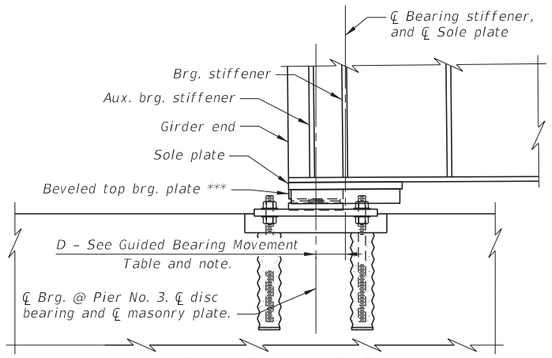
DETAIL A

No Scale

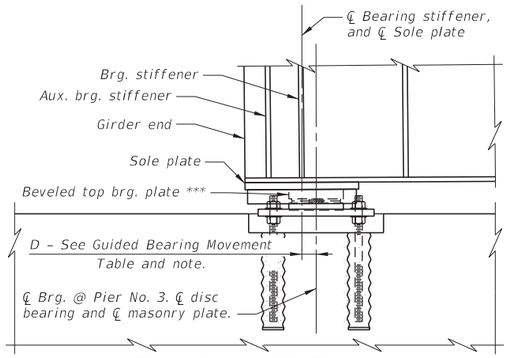


B B17 **SECTION B**

Scale ~ 1" = 1'-0"



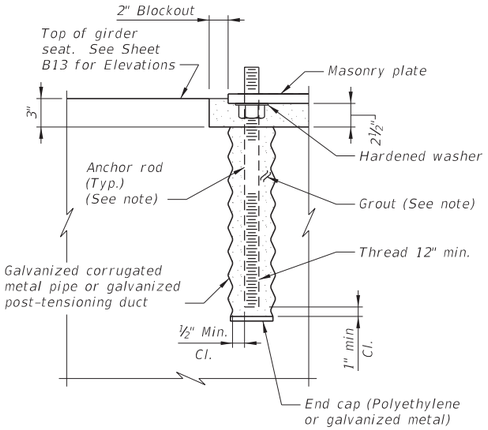
Drop (Below 60° F)



Rise (Above 60° F)

GUIDED BEARING SOLE PLATE SETTING DETAILS

Scale ~ ¾" = 1'-0"



ANCHOR ROD DETAIL

Scale ~ 1½" = 1'-0"

GUIDED BEARING MOVEMENT, Dim D (in)

Location	95° Drop	45° Rise	Total Movement
Pier No. 3	6¼"	3"	9¼"

NOTE: Movements shown include a 1.2 factor per AASHTO. Design temperature range is -35° F to 105° F with assumed setting temperature of 60° F.

GUIDED BEARING DESIGN PARAMETERS

LOCATION	**SERVICE LOAD COMBINATIONS		**FACTORED LOAD COMBINATIONS			LRFD 14.7.8.4	EXTREME EVENT I	*** LONGITUDINAL GRADE	* BEARING HEIGHT, H (IN)
	MINIMUM VERTICAL LOAD PER BEARING (KIPS)	MAXIMUM VERTICAL LOAD PER BEARING (KIPS)	MINIMUM VERTICAL LOAD PER BEARING (KIPS)	MAXIMUM VERTICAL LOAD PER BEARING (KIPS)	MINIMUM EFFECTIVE BEARING AREA UNDER MASONRY PLATE (SQ. INCHES)	0.15 X SERVICE REACTION SERVICE LATERAL LOAD PER BEARING (KIPS)	LATERAL LOAD PER BEARING (KIPS)		
Pier No. 3 Span No. 3	81	241	57	369	108	37	150	0.5%	8½

◓ NOTE: Provide minimum sole plate thickness shown if one plate is utilized above the PTFE. The minimum sole plate dimension is given to eliminate bending in the girder bottom flange. Increase sole plate dimension to protect bottom flange from bending as required by design. If two plates are utilized above the PTFE, provide a minimum total thickness of 2¼" and ensure a combined plastic section modulus of at least 0.6 in ³/in.

*** NOTE: Set bearings level. Design bearings to produce expansion movements which are parallel to the longitudinal bridge grade. This can be achieved by beveling the top bearing plate and sloping the bearing sliding surface to match the longitudinal bridge grade, or by other means proposed by the Manufacturer and approved by the Project Manager. Bearing designs which produce differential vertical joint movements are not permitted.

** NOTE: Loads are per AASHTO LRFD load combinations.

NOTE: Set masonry plates and anchor rods using flowable cementitious grout suitable for the intended use. Submit grout manufacturer data sheets and placement approach to Project Manager for approval prior to pouring cap concrete. See Special Provisions.

NOTE: Design and construct bearing assemblies to permit removal of bearing elements for repair or replacement. Suggested details for this allowance have been provided but the manufacturer may submit alternate details. See Special Provisions.

NOTE: Provide guided disc bearings with the total movement capacity, drop movement capacity, and rise movement capacity as outlined in the Guided Bearing Movement table. Provide the rise and drop sole plate location adjustment dimension (D) to keep the sole plate centered under the bearing stiffener for the applicable setting temperature range in accordance with the Guided Bearing Sole Plate Setting Details and Special Provisions. Clearly show the direction of the dimension D for both rise and drop on the shop drawings. The point of fixity to adjust sole plate location during setting for is ℄ Brg. @ Bent No. 1 and ℄ Brg. @ Bent No. 5.

NOTE: Furnish dimpled and lubricated PTFE which provides a maximum coefficient of friction of 0.020 at a temperature of 68° F. See Special Provisions for testing requirements.

NOTE: Thicken plates and size polyether urethane disc as required by manufacturer's design to provide minimum effective loaded area on concrete shown in table.

NOTE: This drawing is a schematic of the required disc bearings. Manufacturer is responsible for the design of the bearing devices. See Special Provisions.

* NOTE: The bearing height, H, assumed for detailing purposes is measured from the bottom of flange to the bottom of the masonry plate. Small differences in fabricated heights (± ¾") can be taken up by shifting the top of girder seat elevations for Span No. 3 with no modifications to reinforcing. Maintain bottom of cap elevations and Span No. 2 girder seat elevations shown on pier sheets. ¼" height deviations may be taken up in grout. Coordinate beam seat and reinforcement modifications with Pier Sheet No. B13 thru B14. Clearly show bearing heights and revised bearing seat and top of column elevations on bearing shop drawings.

NOTE: Design bearings to accommodate a factored bearing rotation of 0.018 radians plus an allowance for uncertainties of 0.005 radians.

NOTE: Number, size, length, and spacing of anchor rods are to be determined by the bearing manufacturer. Provide a minimum of four (4) 1½" diameter anchor rods per bearing. Embed rods 18" minimum into concrete. Use anchor rods meeting ASTM F1554 Grade 105. Increase size, embedment, and number as required by design. Coordinate with reinforcing steel placement.

NOTE: See Special Provisions for additional requirements.

SHEET NO. B17

PIER NO. 3 GUIDED DISC BEARING DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

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COUNTY FLATHEAD

REVISED						C.E.B.	07-19-22
REVISED						D.A.D.	03-15-22
REVISED						D.J.L.	03-15-22
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DESIGNED							

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

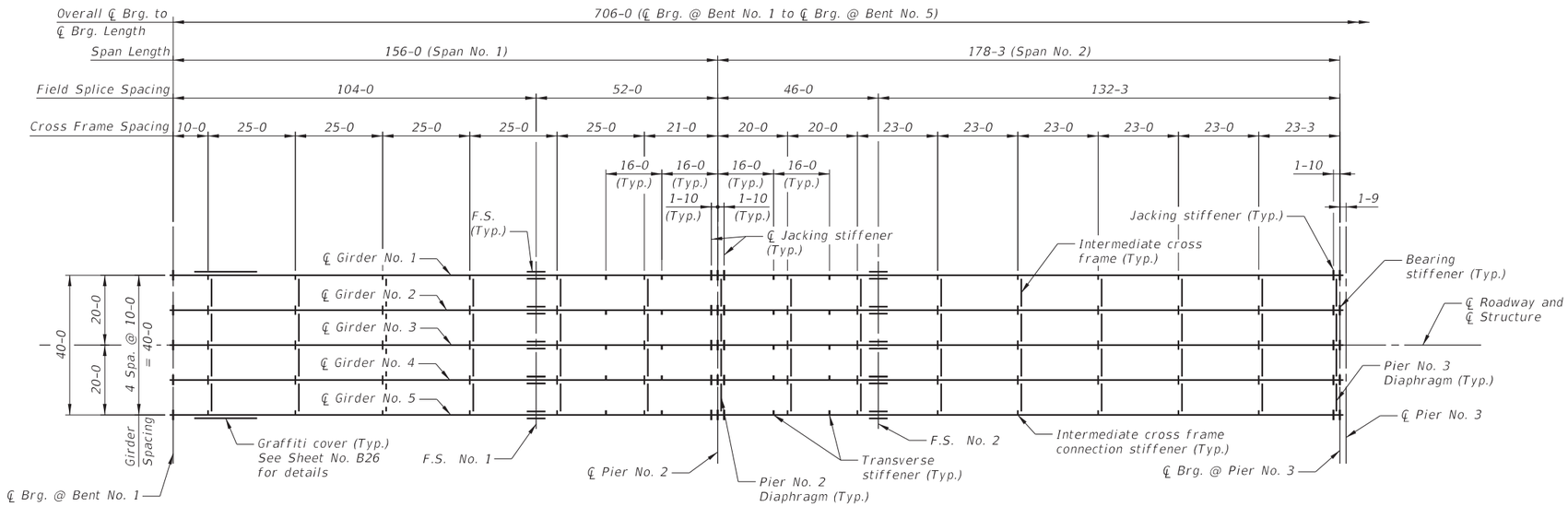
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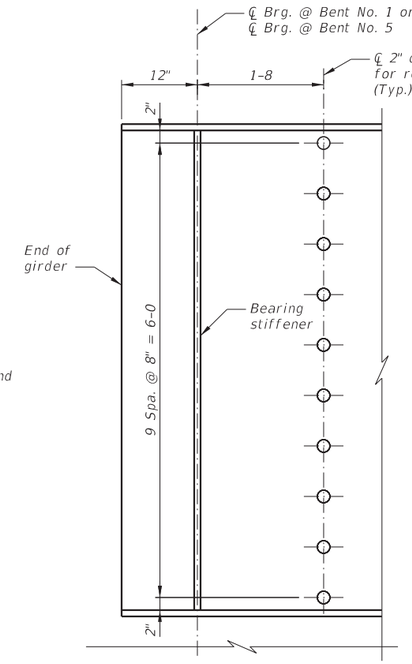
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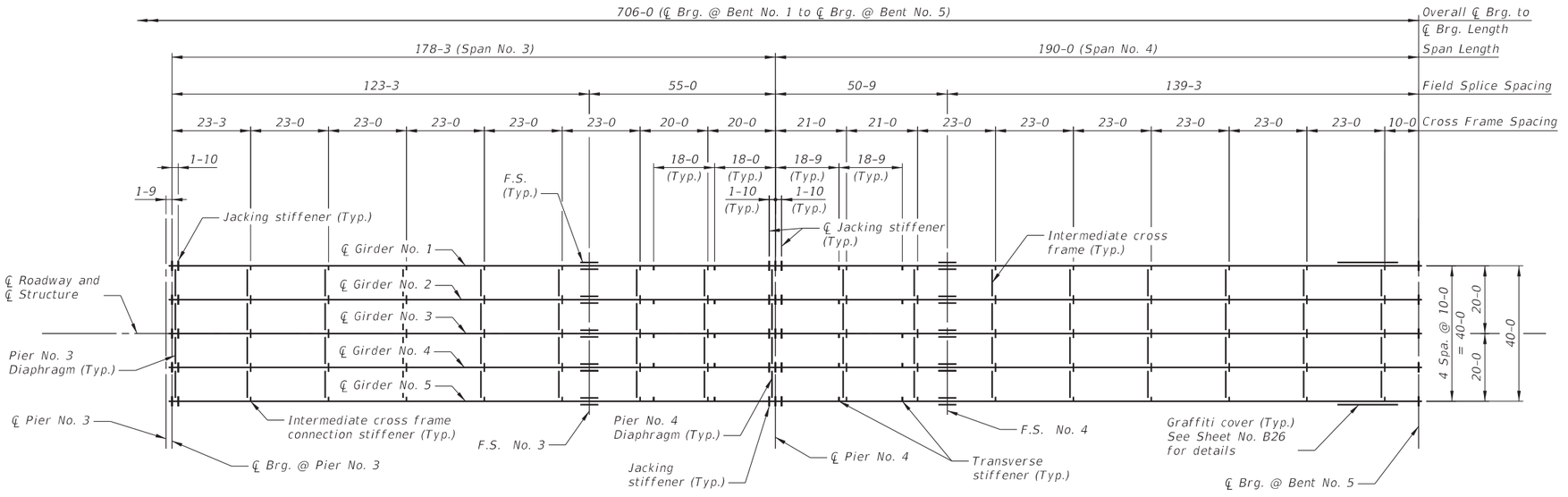
Morrison Maierle



FRAME NO. 1 ERECTION PLAN



A / B19 **DETAIL A**
(Shear studs not shown for clarity)
Scale ~ 1" = 1'-0"



FRAME NO. 2 ERECTION PLAN

NOTE: Auxiliary bearing stiffener not shown. See Sheet No. B19 for details.

NOTE: See Sheet No. B21 for camber details.

NOTE: See Sheet No. B19 for additional notes and requirements.

NOTE: See Sheet No. B20 for stiffener and girder details.

NOTE: See Sheet No. B19 for girder elevation.

NOTE: See Sheet No. B22 thru B24 for cross frame and diaphragm details.

NOTE: See Sheet No. B25 for field splice details.

NOTE: All cross frames, stiffeners and field splices are normal to ℄ Roadway.

NOTE: All longitudinal dimensions are along ℄ Girder.

SHEET NO. B18

ERECTION PLAN

SCALE: 1" = 20'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

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REVISED	CHECKED	06-27-22 J.M.
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	DESIGNED	11-15-21 C.E.B.

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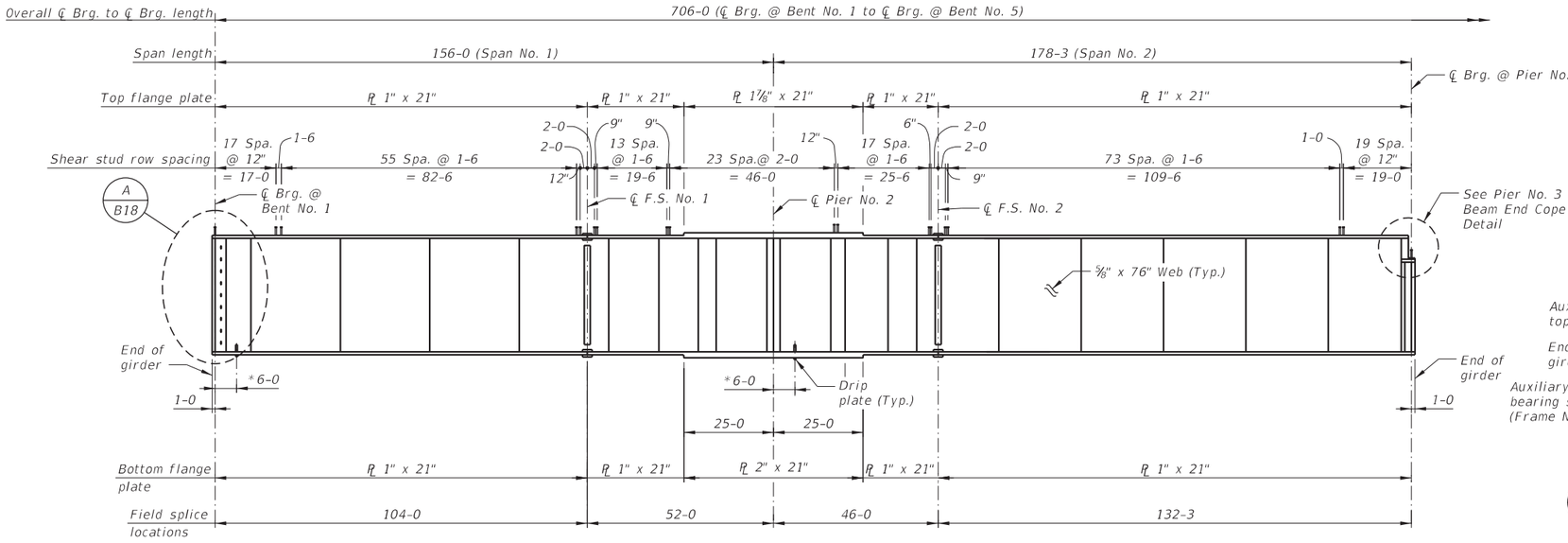
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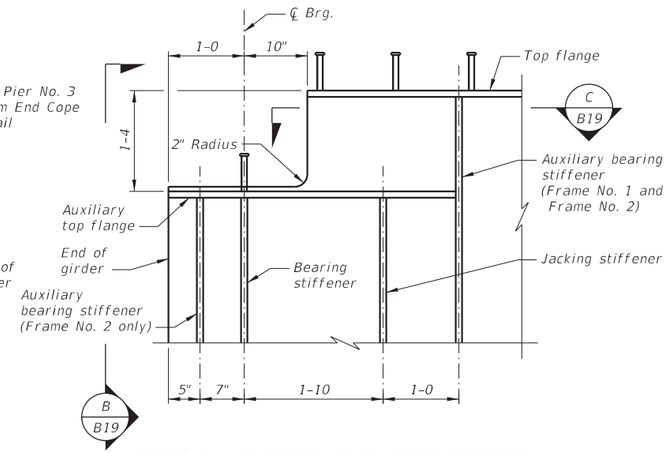
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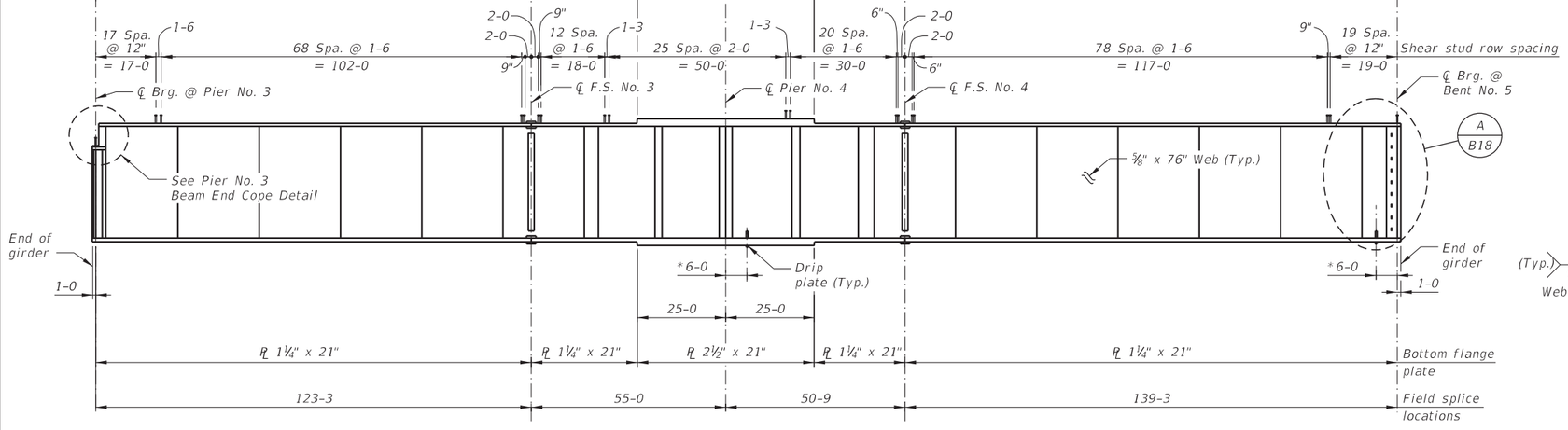
FRAME NO. 1 TYPICAL GIRDER ELEVATION



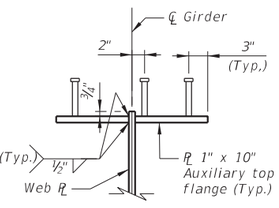
PIER NO. 3 BEAM END COPE DETAIL

No Scale

(Frame No. 2 shown. Frame No. 1 similar except as noted)

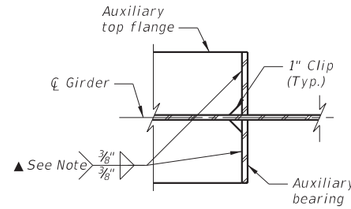


FRAME NO. 2 TYPICAL GIRDER ELEVATION



B B19 VIEW B

No Scale



C B19 SECTION C

No Scale

▲NOTE: Hold back welds at end per Stiffener Weld Termination Detail. See Sheet No. B20 for Stiffener Weld Detail.

NOTE: See Sheet No. B18 for Detail A.

NOTE: All flanges and webs in tension or reversal stress. Charpy test all flange and web plates.

NOTE: Stiffener spacings are not shown for clarity. See Sheet No. B18 for location.

NOTE: See Sheet No. B22 thru No. B24 for cross frame and diaphragm details.

NOTE: See Sheet No. B25 for field splice details.

NOTE: All dimensions along ℄ Girder unless noted otherwise.

NOTE: See Sheet No. B18 for erection plan, additional notes and requirements.

NOTE: Graffiti cover not shown. See Sheet No. B26 for details.

NOTE: Bearings not shown. See Sheet No. B15 thru No. B17.

NOTE: Dimensions shown are horizontal ground dimensions.

*NOTE: Provide drip plate at locations shown. See Sheet No. BXX for drip plate details.

NOTE: Do not locate shop web or flange splice within 15'-0" of ℄ Pier No. 2 or ℄ Pier No. 4.

NOTE: Paint 7'-0" of girder ends at Pier No. 3 including diaphragms and connection plates per Standard Specifications. Top coat color to match weathering steel.

SHEET NO. B19

GIRDER ELEVATION

SCALE: Horizontal ~ 1" = 20'-0" Vertical ~ ½" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

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REVISED			D.A.D.	02-25-22
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ROUTE P-82A

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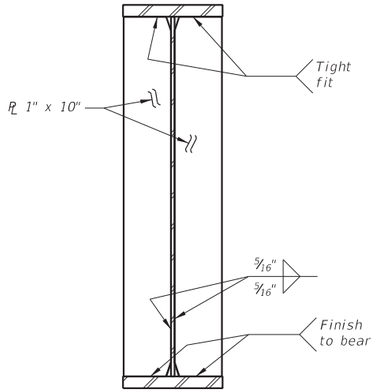
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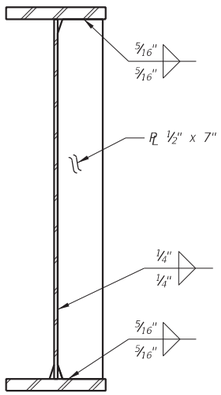
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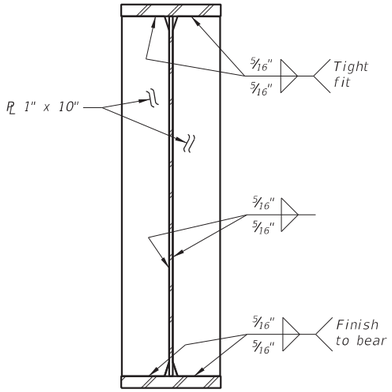
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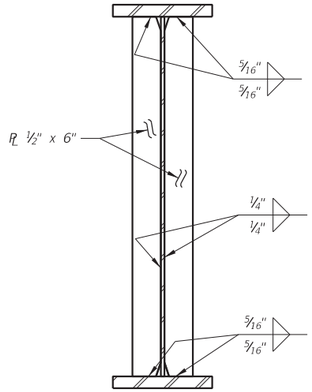
JACKING STIFFENER



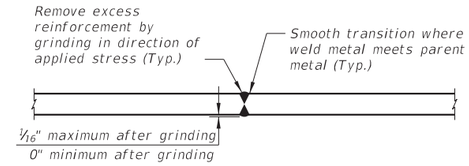
TRANSVERSE STIFFENER



BEARING STIFFENER

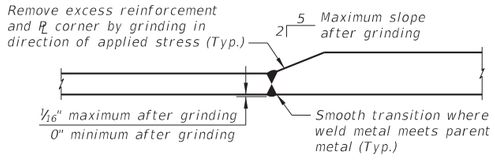


INTERMEDIATE CROSS FRAME CONNECTION STIFFENER



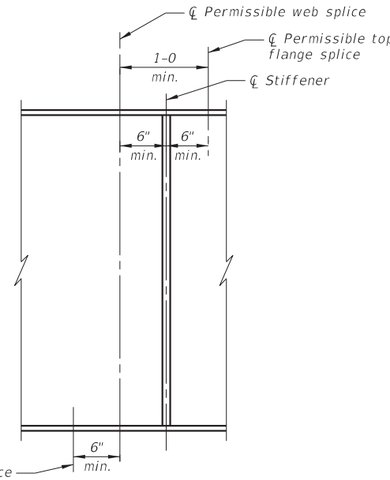
FLANGE SPLICE – EQUAL THICKNESS

No Scale



FLANGE SPLICE – UNEQUAL THICKNESS

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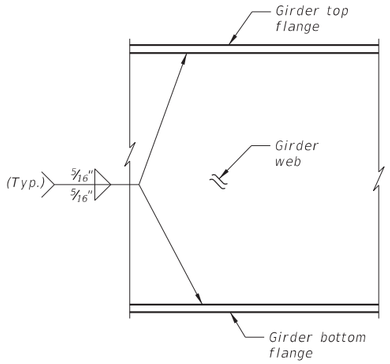


WEB/FLANGE SHOP SPLICE REQUIREMENTS

No Scale

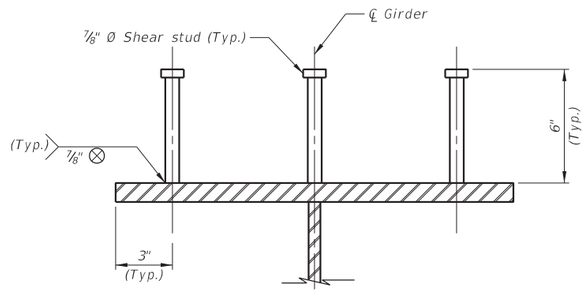
NOTE: Do not allow top flange shop splices, web shop splices and bottom flange shop splices to line up with each other.

NOTE: Minimum distance between any type of shop splice and stiffeners is 6-inches. Do not place shop splice within 3-feet of any field splice.



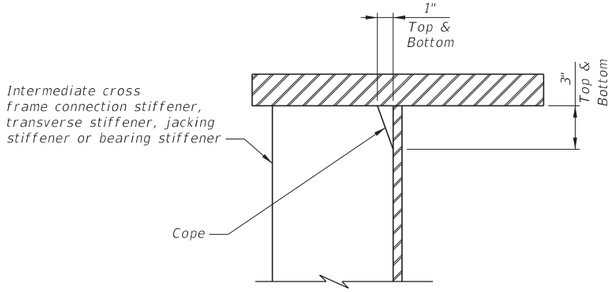
FLANGE TO WEB WELDING

No Scale



SHEAR STUD DETAIL

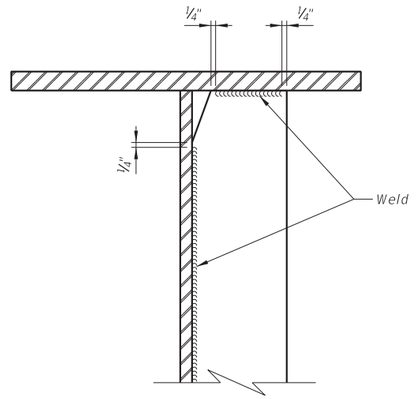
No Scale



TYPICAL STIFFENER COPE DETAIL

No Scale

NOTE: Cope top and bottom of all stiffeners.



STIFFENER WELD TERMINATION DETAIL

(Terminate all welds ¼" from plate edge or flange edge)
(Typical all stiffener welds)
No Scale

NOTE: Auxiliary bearing stiffeners match the bearing stiffeners for size and detail.

NOTE: Bolt holes in stiffeners not shown. See Sheet No. B22 thru No. B23 for cross frame connection details. See Sheet No. B24 for diaphragm details.

NOTE: Place bearing and jacking stiffeners on both sides of web. Place intermediate cross frame connection stiffeners as required to connect cross frames on inside face of exterior girders and both sides of interior girders. Place transverse stiffeners on inside face of exterior girders and one side of interior girders. Place all stiffeners normal to web.

NOTE: Fabricate bearing stiffeners and jacking stiffeners and girder ends to be vertical in their final in-place position after total dead load deflection. See Sheet No. B21 for dead load deflections.

NOTE: Fabricate intermediate cross frame connection stiffeners and transverse stiffeners perpendicular to top girder flange.

NOTE: Use shear studs meeting the requirements of AASHTO M169 Grades 1015-1020 and the mechanical requirements for type B studs in accordance with AWS D1.5.

NOTE: See Standard Specifications for Radiographic, Ultrasonic, and Mag Particle testing requirements.

SHEET NO. B20

STEEL DETAILS

SCALE: ¾" = 1'-0" Except as noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

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COUNTY FLATHEAD

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REVISED						
CHECKED	06-27-22	J.M.				
DRAWN	02-25-22	D.A.D.				
DESIGNED	01-12-22	C.E.B.				

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ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

UPN NUMBER 6850000

DRAWING NO. 27918

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FRAME NO. 1 TABLE OF CAMBER INFORMATION

LOCATION / SPAN PT		SPAN NO. 1 & SPAN NO. 2																					
		1.0	1.1	1.2	1.3	1.4	1.5	1.6	F.S.	1.7	1.8	1.9	2.0	2.1	2.2	F.S.	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
ALL GIRDERS	CROSS FRAME & GIRDER DEFLECTION	0.00	0.20	0.36	0.46	0.48	0.42	0.30	0.20	0.15	0.03	-0.03	0.00	0.19	0.47	0.67	0.91	1.11	1.30	1.34	1.21	0.92	0.50	0.00
	SLAB, HAUNCH, COMPOSITE DL & FWS DEFLECTION	0.00	0.70	1.27	1.60	1.66	1.46	1.06	0.72	0.56	0.10	-0.11	0.00	0.63	1.63	2.32	2.79	3.81	4.46	4.61	4.17	3.17	1.72	0.00
	TOTAL DEAD LOAD DEFLECTION	0.00	0.90	1.63	2.06	2.14	1.88	1.36	0.92	0.71	0.13	-0.14	0.00	0.82	2.10	2.99	3.50	4.92	5.76	5.95	5.38	4.09	2.22	0.00
	VERTICAL CURVE EFFECT DEFLECTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER DEFLECTION	0.00	0.90	1.63	2.06	2.14	1.88	1.36	0.92	0.71	0.13	-0.14	0.00	0.82	2.10	2.99	3.50	4.92	5.76	5.95	5.38	4.09	2.22	0.00

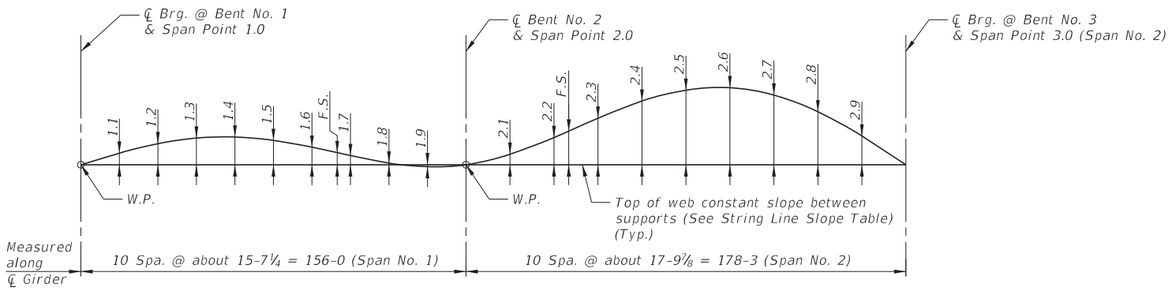
FRAME NO. 2 TABLE OF CAMBER INFORMATION

LOCATION / SPAN PT		SPAN NO. 3 & SPAN NO. 4																					
		3.0	3.1	3.2	3.3	3.4	3.5	3.6	F.S.	3.7	3.8	3.9	4.0	4.1	4.2	F.S.	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0
ALL GIRDERS	CROSS FRAME & GIRDER DEFLECTION	0.00	0.37	0.67	0.86	0.91	0.83	0.64	0.41	0.39	0.15	0.01	0.00	0.16	0.46	0.71	0.93	1.18	1.42	1.49	1.36	1.05	0.57	0.00
	SLAB, HAUNCH, COMPOSITE DL & FWS DEFLECTION	0.00	1.22	2.21	2.83	3.01	2.75	2.13	1.38	1.31	0.53	0.06	0.00	0.53	1.49	2.34	2.74	3.89	4.67	4.90	4.48	3.43	1.87	0.00
	TOTAL DEAD LOAD DEFLECTION	0.00	1.59	2.88	3.69	3.92	3.58	2.77	1.79	1.70	0.68	0.07	0.00	0.69	1.95	3.05	3.57	5.07	6.09	6.39	5.84	4.48	2.44	0.00
	VERTICAL CURVE EFFECT DEFLECTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	TOTAL CAMBER DEFLECTION	0.00	1.59	2.88	3.69	3.92	3.58	2.77	1.79	1.70	0.68	0.07	0.00	0.69	1.95	3.05	3.57	5.07	6.09	6.39	5.84	4.48	2.44	0.00

STRING LINE SLOPE TABLE (%)

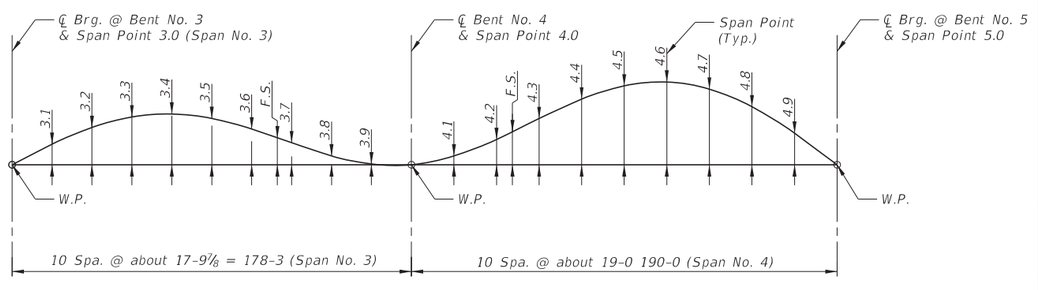
Girder No.	Span No. 1	Span No. 2	Span No. 3	Span No. 4
All Girders	0.500%	0.500%	0.500%	0.500%

NOTE: Measured at ground along ℄ Girder from ℄ Support to ℄ Support.



FRAME NO. 1 GIRDER CAMBER TABLE

No Scale

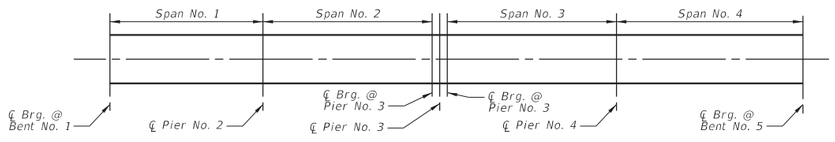


FRAME NO. 2 GIRDER CAMBER TABLE

No Scale

LRFD DESIGN INFORMATION TABLE (SERVICE LOADS)

D.L. = Dead Load
L.L. + IM = Live Load + Dynamic Load Allowance
(+) = Compression in top flange or downward deflection
(-) = Compression in bottom flange or upward deflection
Shear and Reactions in kips
Moment in ft-kips
Deflections in inches



		FRAME NO. 1										FRAME NO. 2									
		Span No. 1		Span No. 2		Bent No. 1		Pier No. 2		Pier No. 3		Span No. 3		Span No. 4		Pier No. 3		Pier No. 4		Bent No. 5	
		Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder	Interior Girder	Exterior Girder
Moment (ft-kips)	DL	2330	2126	3802	3468	0	0	-6749	-6160	0	0	3251	2969	4138	3779	0	0	-8335	-7617	0	0
	LL + IM	3039	3194	3437	3744	0	0	-3849	-3958	0	0	3566	4243	3777	4572	0	0	-4357	-5011	0	0
Reaction (kips)	DL					91	83	371	339	115	105					108	99	415	380	121	111
	LL + IM					126	100	268	214	131	105					132	117	282	249	135	119
Shear (kips)	DL					90	82	192	176	114	104					107	97	211	193	120	109
	LL + IM					126	100	157	125	131	105					132	117	162	143	135	119
Deflection (in)	LL + IM	13/16"	7/8"	1 3/16"	1 1/4"							1 1/4"	1 1/8"	1 5/16"	1 3/8"						

NOTE: The single-lane average daily truck traffic $(ADTT)_{SL}$ for a 75-year life is 500.

NOTE: Work Point (W.P.) is located at top of web @ ℄ support.

NOTE: Camber values shown were developed based on the slab pouring sequence shown on Sheet No. B29.

NOTE: Any deviation from the pouring sequence will result in changes to camber. Any changes to the pouring sequence will require written approval by the Project Manager. See Sheet No. B29 for additional requirements.

NOTE: Deflection, vertical curve effect and camber values are reported in inches. Negative values denote downward camber.

NOTE: Total dead load deflections have been increased to account for effects of creep and shrinkage of the concrete slab by utilizing 3 times the modular ratio, n, in stiffness calculations for permanent loads on the composite section.

NOTE: The total dead load deflections include future wearing surface of 10 psf.

SHEET NO. B21

CAMBER DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED	REVISED	REVISED	REVISED	CHECKED	DRAWN	DESIGNED
				J.M. 06-28-22	D.A.D. 02-27-22	C.E.B. 01-18-22

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

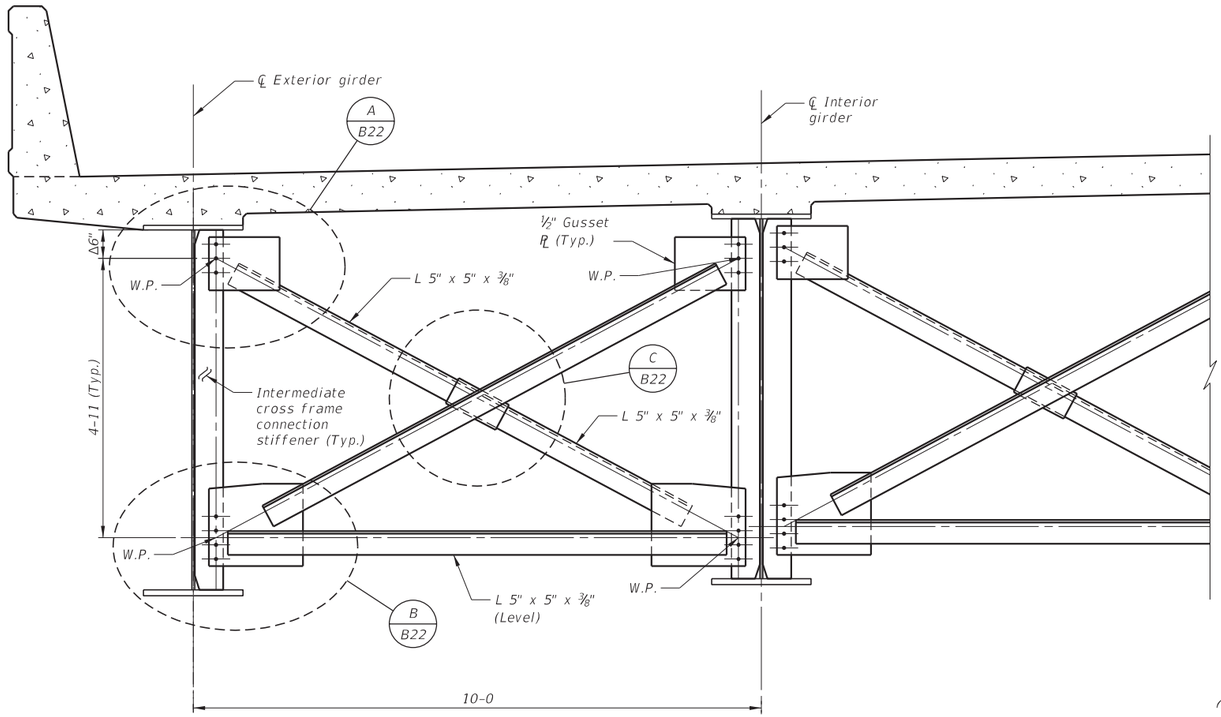
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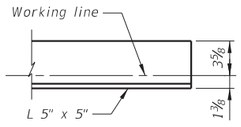
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Morrison Maierle



INTERMEDIATE CROSS FRAME

(Ahead on Line)
Scale ~ ¾" = 1'-0"



L 5" x 5" WORKING LINE DETAIL

Scale ~ 1½" = 1'-0"

ANGLE WELD TERMINATION DETAIL

(Terminate all welds ⅜" from plate edge)
(For cross frame connections)
Scale ~ 1½" = 1'-0"

DETAIL A

A / B22 Scale ~ 1½" = 1'-0"

DETAIL B

B / B22 Scale ~ 1½" = 1'-0"

DETAIL C

C / B22 Scale ~ 1½" = 1'-0"

** NOTE: Weld all sides of angle to plate. Hold back weld ¼-inch from edge of plate or angle.

Δ NOTE: Set Working Point at 6" from lower side of bay.

* NOTE: See this sheet for Angle Weld Termination Detail and L 5" x 5" Working Line Detail.

NOTE: Clearly note all adjustments to improve fit-up on fabrication drawings.

NOTE: Provide 1½" min. and 6" max. from ℄ bolt to edge of stiffener plate or gusset plate unless noted otherwise.

NOTE: Place all intermediate cross frames and connection stiffeners normal to ℄ girder.

NOTE: Use ⅞" Ø ASTM F3125 Grade A325 Type 3 High Strength fastener assemblies/components..

SHEET NO. B22

INTERMEDIATE CROSS FRAME DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

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REVISED		
CHECKED	J.M.	06-28-22
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DESIGNED	C.E.B.	01-05-22

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MONTANA DEPARTMENT OF TRANSPORTATION BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

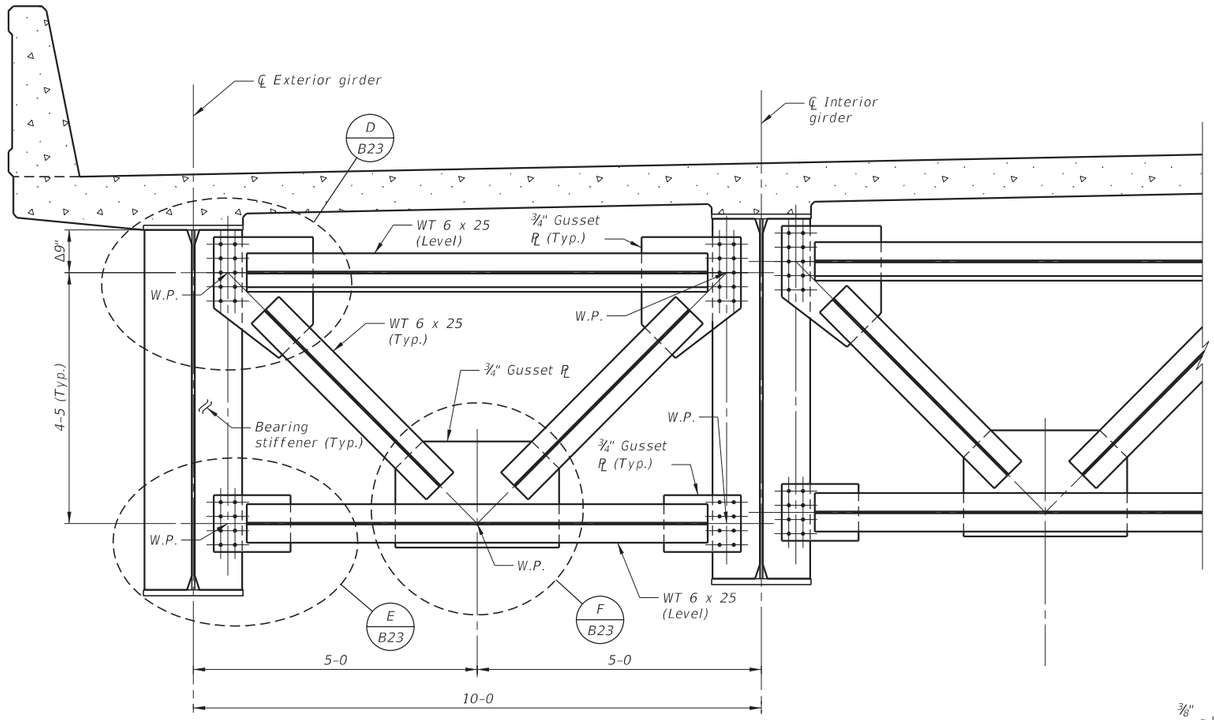
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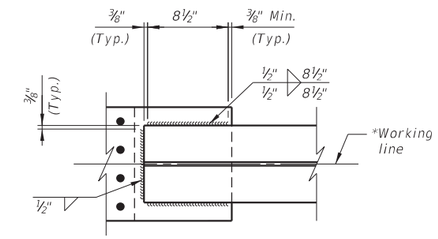
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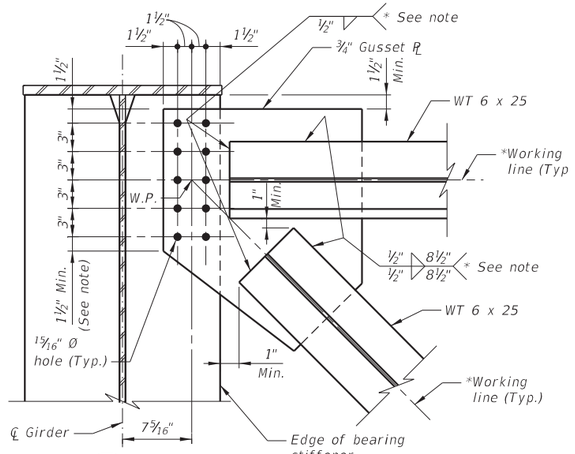
PIER NO. 2 & NO. 4 CROSS FRAME

(Ahead on Line)
Scale ~ ¾" = 1'-0"



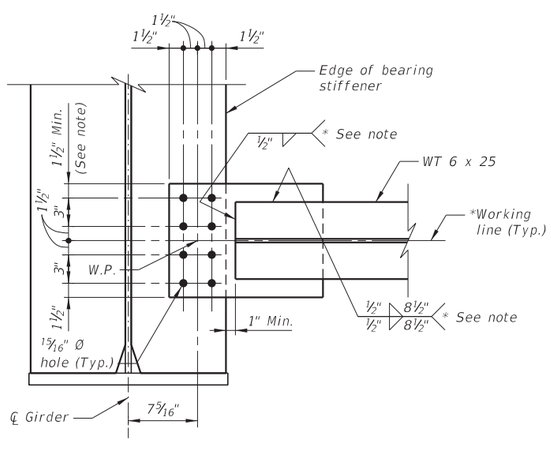
WT WELD TERMINATION DETAIL

(Terminate all welds ⅜" from plate edge)
(For cross frame connections)
Scale ~ 1½" = 1'-0"



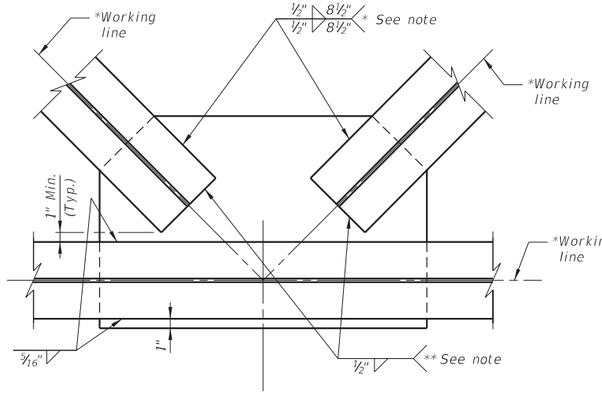
D B23 DETAIL D

Scale ~ 1½" = 1'-0"



E B23 DETAIL E

Scale ~ 1½" = 1'-0"



F B23 DETAIL F

Scale ~ 1½" = 1'-0"

** NOTE: Hold back weld ¼-inch from edge of plate or WT.

Δ NOTE: Set Working Point at 9" from lower side of bay.

* NOTE: See this sheet for WT Weld Termination Detail.

NOTE: Clearly note all adjustments to improve fit-up on fabrication drawings.

NOTE: Provide 1½" min. and 6" max. from ℄ bolt to edge of stiffener plate or gusset plate unless noted otherwise.

NOTE: Use ⅞" Ø ASTM F3125 Grade A325 Type 3 High Strength fastener assembly/components.

SHEET NO. B23

PIER NO. 2 & NO. 4 CROSS FRAME DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

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REVISED			
CHECKED	06-29-22	J.M.	
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DESIGNED	02-14-22	C.E.B.	

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

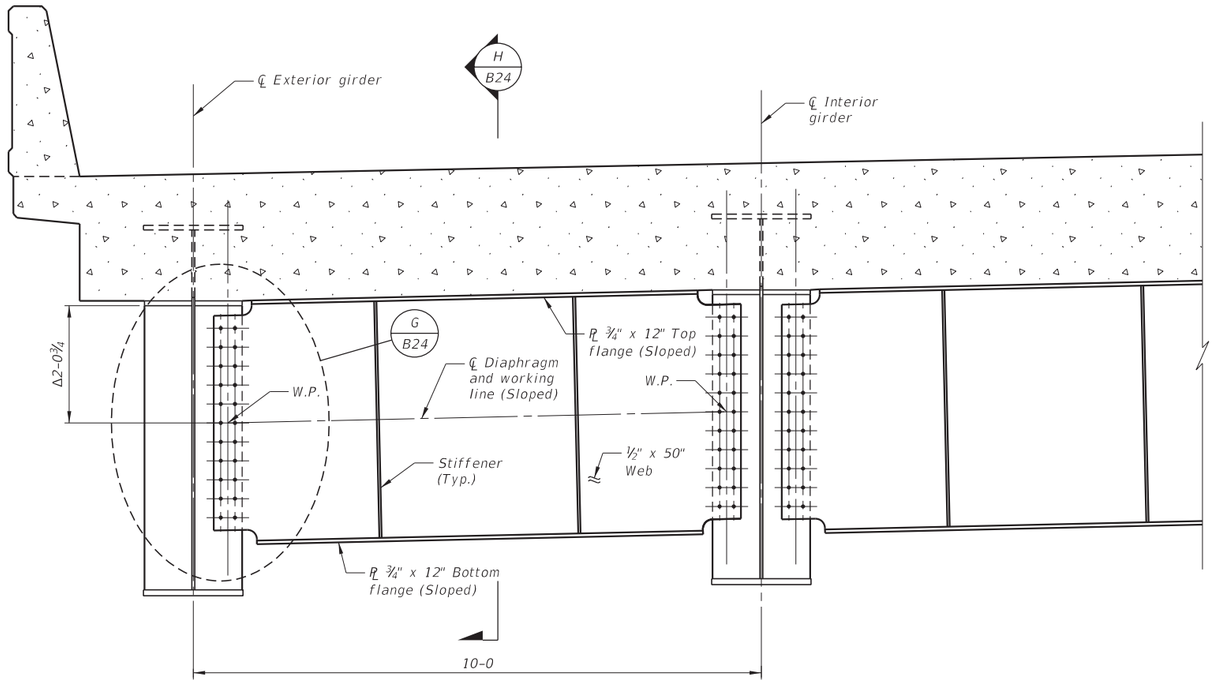
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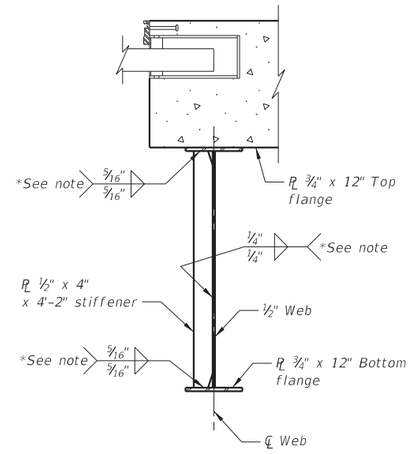
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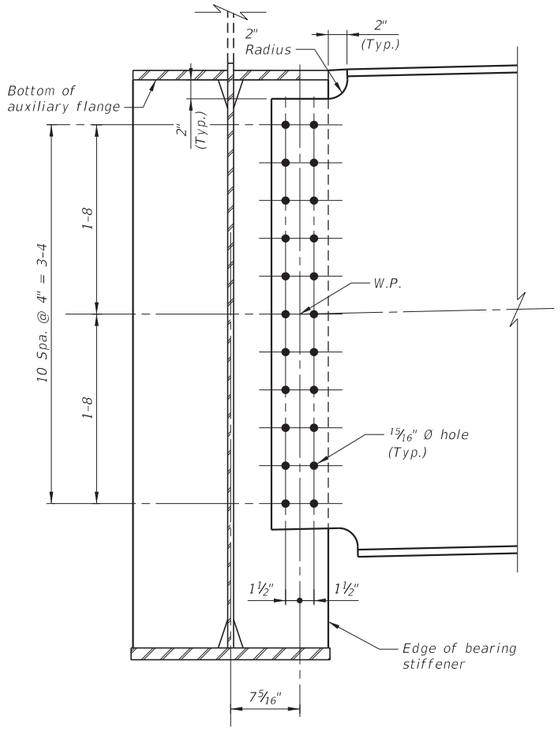


PIER NO. 3 DIAPHRAGM

(Ahead on Line)
Scale ~ ¾" = 1'-0"



H / B24 **SECTION H THRU DIAPHRAGM**
Scale ~ ¾" = 1'-0"



G / B24 **DETAIL G**
Scale ~ 1½" = 1'-0"

NOTE: Fabricate diaphragm stiffeners perpendicular to top diaphragm flange.

*NOTE: See Sheet No. B20 for Typical Stiffener Cope Detail, Stiffener Weld Termination Detail, and notes.

ΔNOTE: Set Working Point at 2'-0¾" from bottom of auxiliary flange.

NOTE: Clearly note all adjustments to improve fit-up on fabrication drawings.

NOTE: Provide 1½" min. and 6" max. from ℄ bolt to edge of stiffener plate or gusset plate unless noted otherwise.

NOTE: Use ⅞" Ø ASTM F3125 Grade A325 Type 3 High Strength fastener assemblies/components.

SHEET NO. B24

PIER NO. 3 DIAPHRAGM DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

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DRAWN	03-29-22	D.A.D.					
DESIGNED	03-24-22	C.E.B.					

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ROUTE P-82A

REF POINT 05+0.830

MDT STR. ID 06222

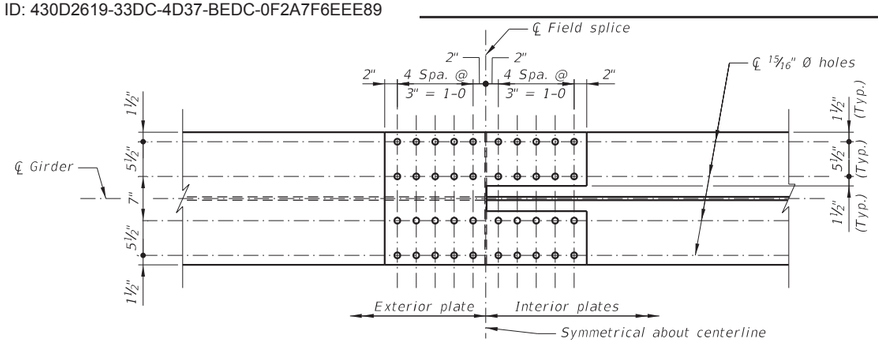
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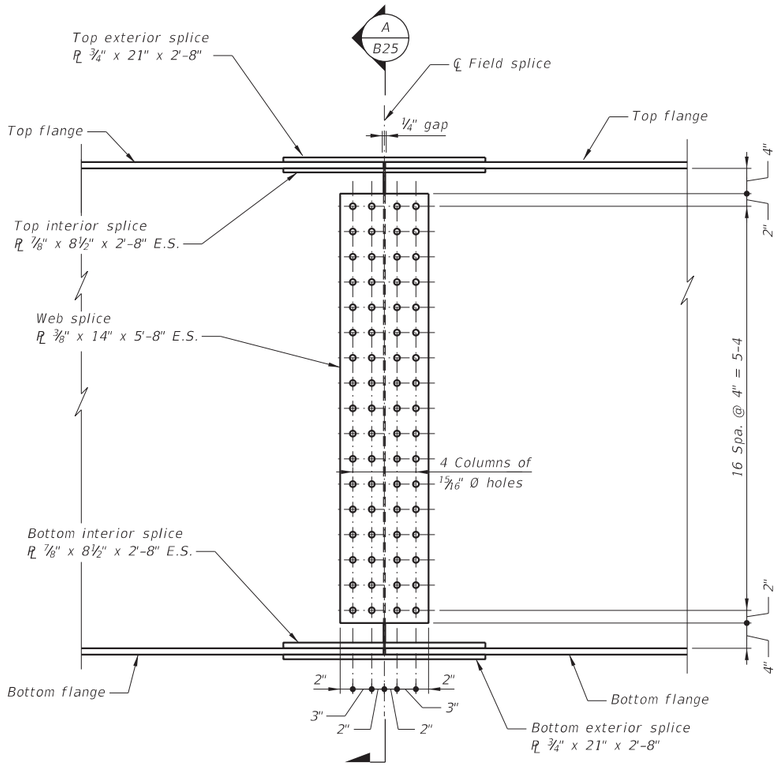
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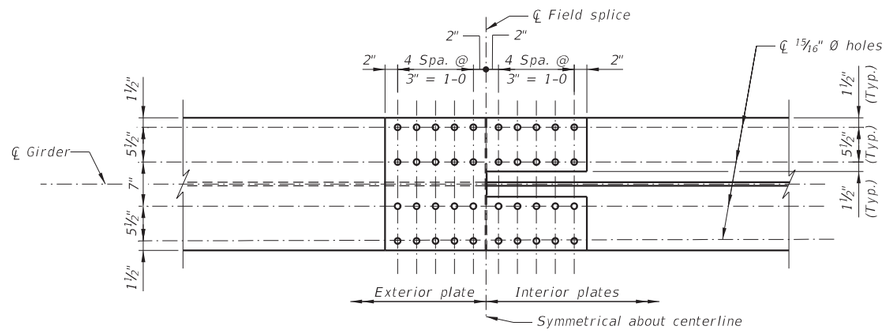
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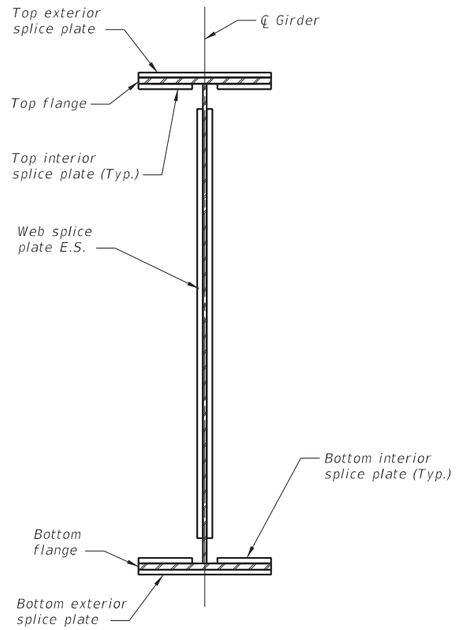
TOP FLANGE SPLICE



WEB SPLICE



BOTTOM FLANGE SPLICE



A B25 SECTION A

NOTE: Exclude bolt threads from shear plane at flange and web splice plates.

NOTE: Cut plates for splice plates from stock so that the direction of rolling will be parallel to the longitudinal axis of the girder. Show the direction of rolling for these plates on the shop drawings.

NOTE: Fabricate splices perpendicular to top girder flange.

NOTE: Use ⅞" Ø ASTM F3125 Grade A325 Type 3 High Strength fastener assemblies/components. See Standard Specifications.

SHEET NO. B25

FIELD SPLICE DETAILS

SCALE: 1" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

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REVISED			
REVISED			
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DRAWN	12-28-22	D.A.D.	
DESIGNED	12-25-22	C.E.B.	

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

REF POINT 05+0.830

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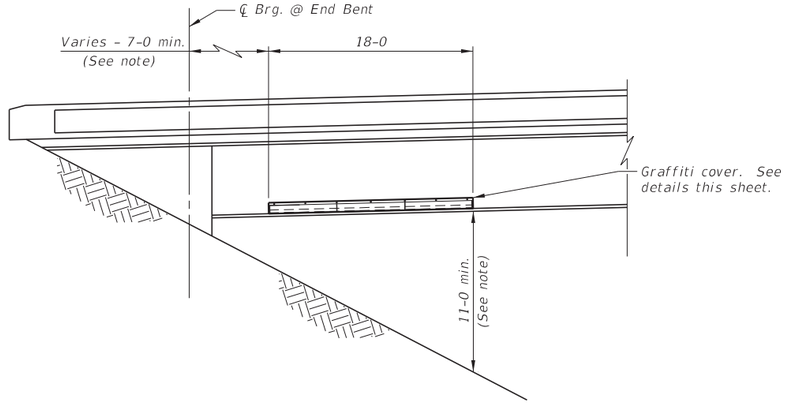
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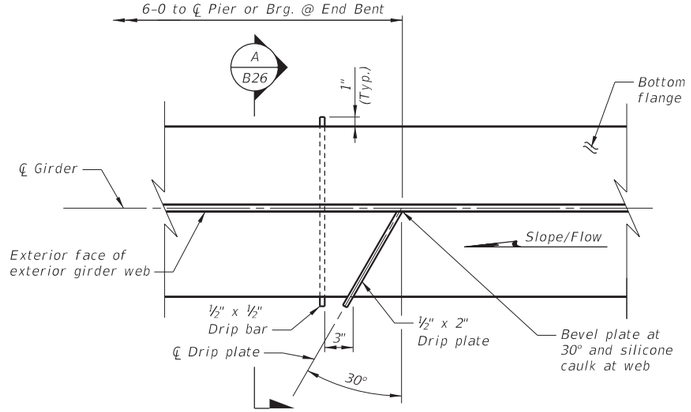
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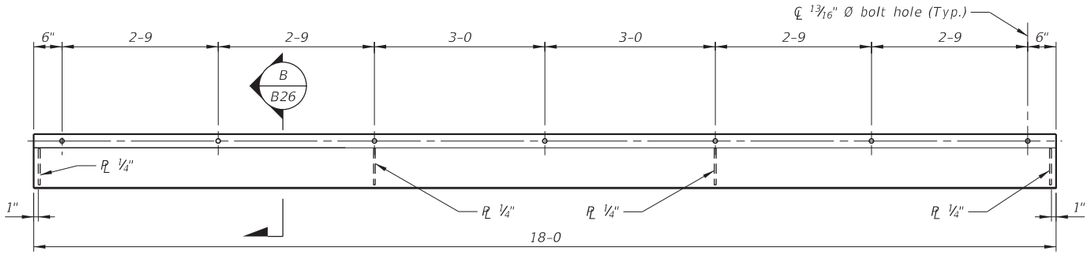
BRIDGE END GRAFFITI COVER ELEVATION

(Bent No. 1 shown, Bent No. 6 similar)
(Typ. at exterior faces of exterior girders at end bents)
No Scale



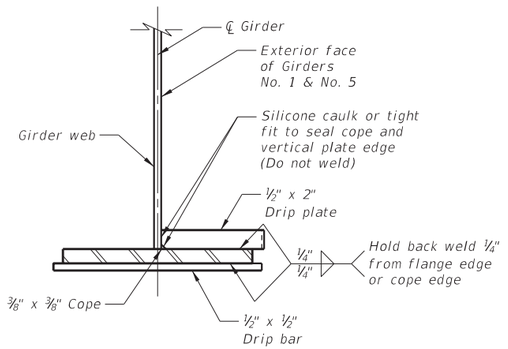
DRIP PLATE – PLAN

No Scale



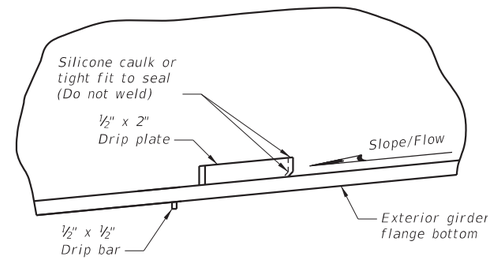
GRAFFITI COVER ELEVATION

Scale ~ ¾" = 1'–0"



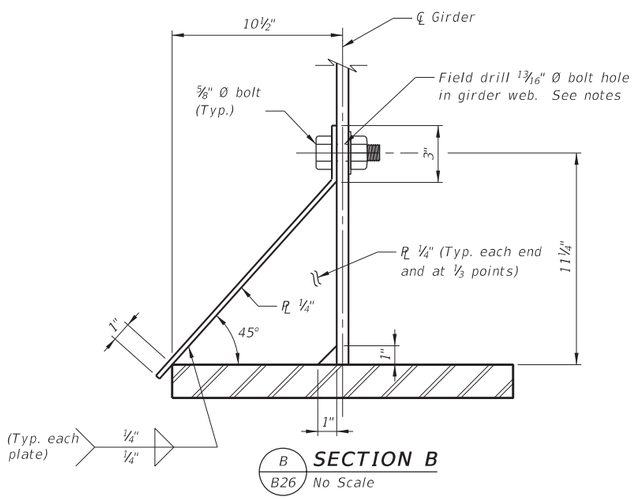
A
B26
SECTION A

No Scale



DRIP PLATE – SIDE VIEW

No Scale



B
B26
SECTION B

No Scale

GRAFFITI COVER DETAILS

NOTE: Use structural steel meeting the requirements of AASHTO M 270 Grade 50W. Use ⅝" Ø ASTM F3125 Grade A325 Type 3 fastener assembly/compnents for graffiti cover.

NOTE: Provide drip plates on outside of exterior girders on the upgrade side of all supports. See Sheet No. B19 for locations.

NOTE: Field locate the graffiti cover plate after abutment backslope regrading. Field drill holes in web for graffiti cover. Locate to provide 11–foot minimum clearance from bottom flange to ground. Coordinate location with Project Manager.

SHEET NO.
B26

MISCELLANEOUS STEEL DETAILS

SCALE: As noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB–STPP–SSS 82–1(6)5

COUNTY
FLATHEAD

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REVISED								
CHECKED	06–30–22	J.M.						
DRAWN	01–05–22	D.A.D.						
DESIGNED	01–05–22	C.E.B.						

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MONTANA DEPARTMENT OF TRANSPORTATION
MDT BRIDGE BUREAU

ROUTE
P–82A

REF POINT
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MDT STR. ID
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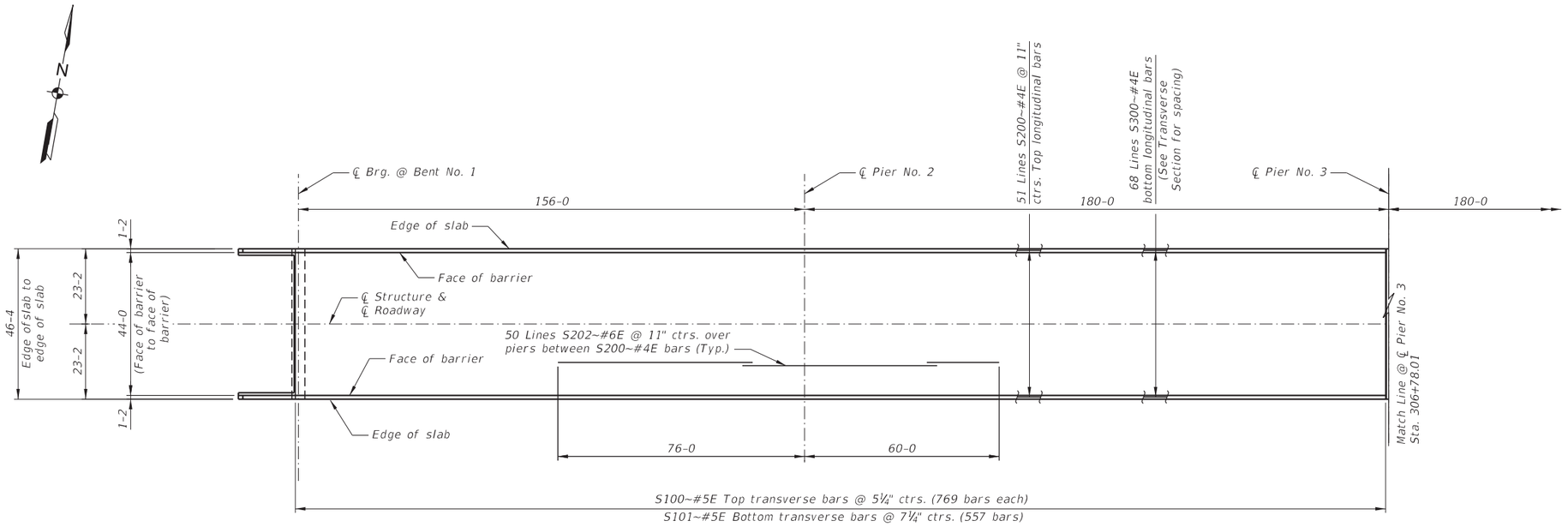
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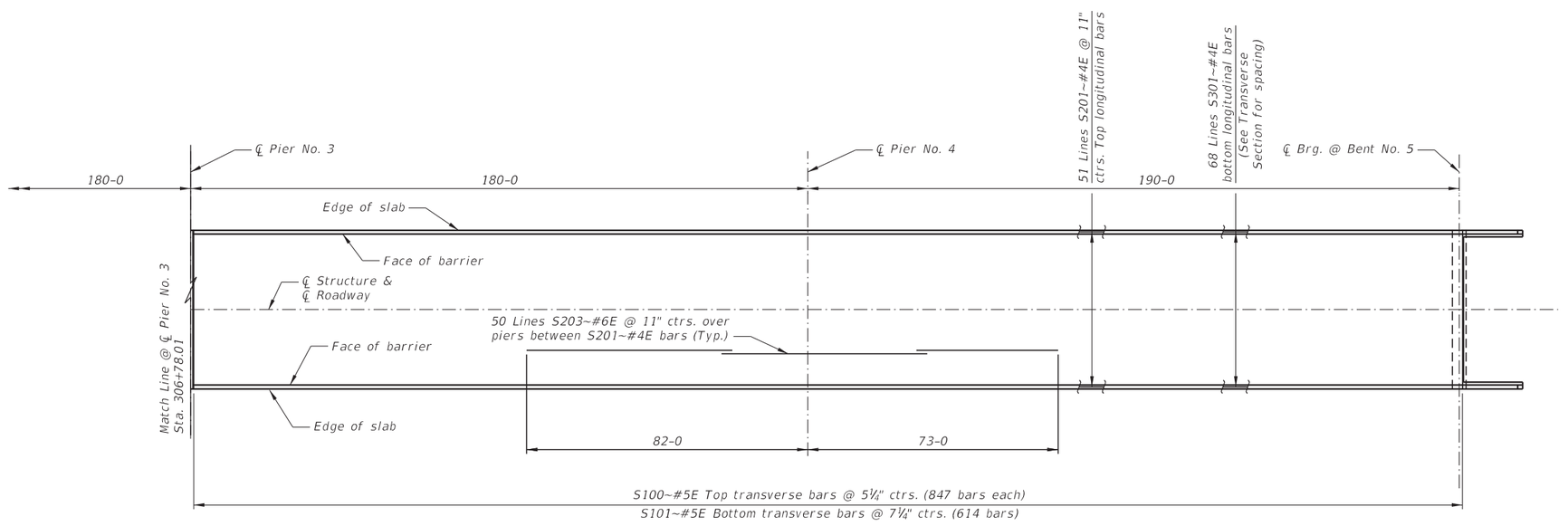
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SPAN NO. 1 AND NO. 2 PARTIAL SLAB REINFORCING STEEL PLACEMENT DIAGRAM



SPAN NO. 3 AND NO. 4 PARTIAL SLAB REINFORCING STEEL PLACEMENT DIAGRAM

NOTE: See Sheet No. B7 thru B10 for details of barrier reinforcing embedded into the wingwalls and abutments.

NOTE: 36" Single slope barrier reinforcing and details not shown. See Dwg. No. SBR-SS36 and SBR-SS36R for barrier details.

NOTE: See Sheet No. B28 for slab dead load deflection tables.

NOTE: See Sheet No. B28 for transverse section.

NOTE: See Sheet No. B29 for Bill of Reinforcing Steel and Slab Pouring Sequence.

NOTE: See Sheet No. B29 for thickened slab details.

NOTE: 4" additional per lap splice length has been provided for construction tolerances.
Lap #4E bars 1-11 minimum, 2-3 lap provided
Lap #5E bars 4-0 minimum, 4-4 lap provided
Lap #6E slab bars 2-10 minimum, 3-2 lap provided
Lap #6E barrier bars 4-0 minimum, 4-4 lap provided

SHEET NO. B27

SLAB PLAN

SCALE: 1" = 20'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

	REVISED	REVISED	REVISED	REVISED	CHECKED	C.E.B.
					DRAWN	D.A.D.
					DESIGNED	D.J.L.
					02-04-22	06-03-22

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ROUTE P-82A

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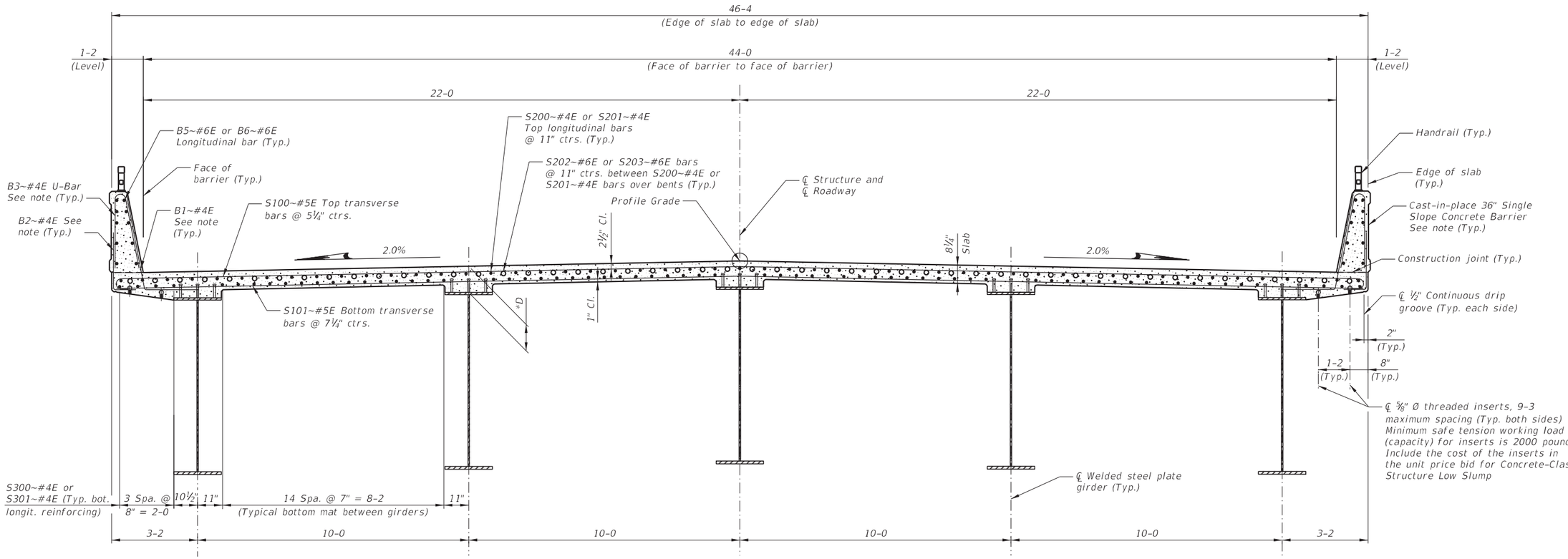
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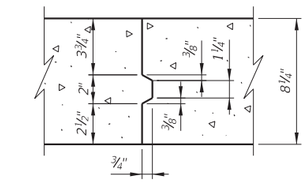
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TRANSVERSE SECTION

Scale ~ ½" = 1'-0"
(Ahead on line)

* NOTE: D = 11¾ from top of slab to top of web at ℄ Girder



SLAB CONSTRUCTION JOINT

No Scale

DEAD LOAD DEFLECTION TABLE

LOCATION / SPAN PT	SPAN NO. 1 & SPAN NO. 2																					
	1.0	1.1	1.2	1.3	1.4	1.5	1.6	F.S.	1.7	1.8	1.9	2.0	2.1	2.2	F.S.	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
ALL GIRDERS	0.00	0.70	1.27	1.60	1.66	1.46	1.06	0.72	0.56	0.10	-0.11	0.00	0.63	1.63	2.32	2.79	3.81	4.46	4.61	4.17	3.17	1.72	0.00

DEAD LOAD DEFLECTION TABLE

LOCATION / SPAN PT	SPAN NO. 3 & SPAN NO.4																					
	3.0	3.1	3.2	3.3	3.4	3.5	3.6	F.S.	3.7	3.8	3.9	4.0	4.1	4.2	F.S.	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0
ALL GIRDERS	0.00	1.22	2.21	2.83	3.01	2.75	2.13	1.38	1.31	0.53	0.06	0.00	0.53	1.49	2.34	2.74	3.89	4.67	4.90	4.48	3.43	1.87	0.00

NOTE: Use Dead Load Deflection Table to develop screed elevations. All values are in inches and do not include girder dead load deflections. See Sheet No. B21 for span point location.

NOTE: Values in table have been increased to account for the effects of creep and shrinkage of the concrete slab by using three times the modular ratio, n, in calculation of the transformed composite section properties for composite dead load deflections.

NOTE: Dead load deflections include incremental pouring effects for slab pouring sequence shown on Sheet No. B29.

NOTE: Verify D prior to casting deck. Contact Project Manager if D is not between 10¼" and 12¼".

NOTE: See Sheet No. B29 for Slab Pouring Sequence, thickened slab details and for Bill of Reinforcing.

NOTE: 36" Single slope barrier reinforcing and details not shown. See Dwg. No. SBR-SS36 and SBR-36R for details.

SHEET NO.
B28

SLAB SECTION

SCALE: As noted

BRIDGE OVER
FLATHEAD RIVER

AT STA.
306+95.00

FEDERAL AID PROJECT
STPB-STPP-SS 82-1(6)5

COUNTY
FLATHEAD

REVISED				C.E.B.	06-03-22
REVISED				O.A.D.	02-04-22
REVISED				D.J.L.	02-04-22
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MONTANA DEPARTMENT OF TRANSPORTATION
MDT
BRIDGE BUREAU

ROUTE
P-82A

REF POINT
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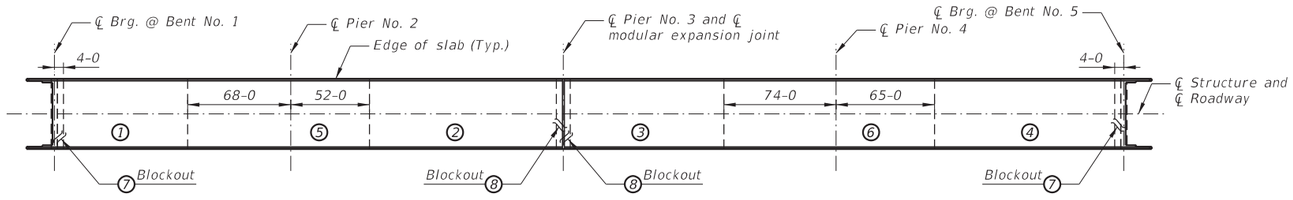
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SLAB POURING SEQUENCE

Scale ~ 1" = 50'-0"

NOTE: The numbers inscribed in the circle represent the sequence of placing sections of the slab. Place the slab section in the described sequence unless otherwise approved by the Project Manager.

NOTE: Cure concrete in Sequence 1 through Sequence 4 for seven days before placing next sequence.

NOTE: Sequences 1 and 2 can be poured concurrently or combined at the contractor's option. Seven day cure time is required following the pour (whether combined or not).

NOTE: Sequences 3 and 4 can be poured concurrently or combined at the contractor's option. Seven day cure time is required following the pour (whether combined or not).

NOTE: Sequences 5 and 6 can be poured concurrently or combined at the contractor's option, without cure time restrictions between the pours.

NOTE: Sequences 1, 2, 5 and 7 at Bent No. 1 may be poured prior to or after Sequences 3, 4, 6 and 7 at Bent No. 5 are poured at the contractor's option.

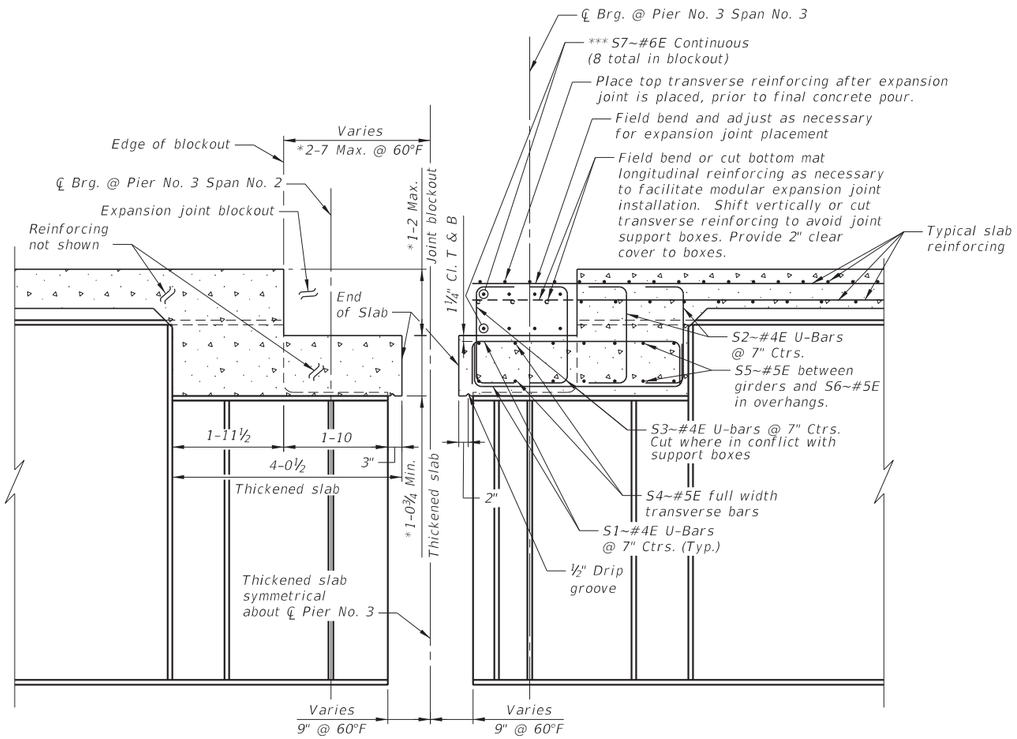


NOTE: Cast concrete in Sequence 8 (expansion joint blockout) after all slab pours are complete and modular expansion joint is set. Cure concrete in Sequence 7 for three days before placing Sequence 8. Sequence 8 varies with temperature. Make final adjustments to the expansion joint before placing Sequence 8. See Sheet No. B29 and Sheet No. B30 for thickened slab and expansion joint details.

NOTE: Cast concrete in Sequence 7 after Sequences 1, 5, and 2 have been poured for Frame No. 1 and after Sequences 3, 4, and 6 have been poured for Frame No. 2.

NOTE: Camber and dead load deflection values on Sheet No. B21 were developed based on the deck pouring sequence shown. Any deviation from this pouring sequence will result in changes to dead load deflections, camber, and elevations. If the contractor wishes to change the sequence, submit the revisions to the Project Manager for review and approval.

NOTE: Cure duration is independent of concrete strength. Cure durations will not be shortened.



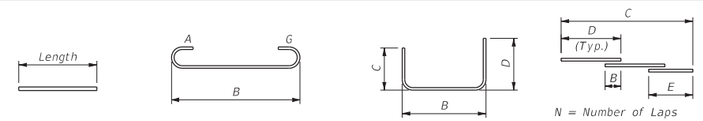
BLOCKOUT SECTION

Scale ~ ¾" = 1'-0"

***NOTE: Cut S7 reinforcing to facilitate expansion joint installation. Coat cut reinforcing with an approved protection coating.

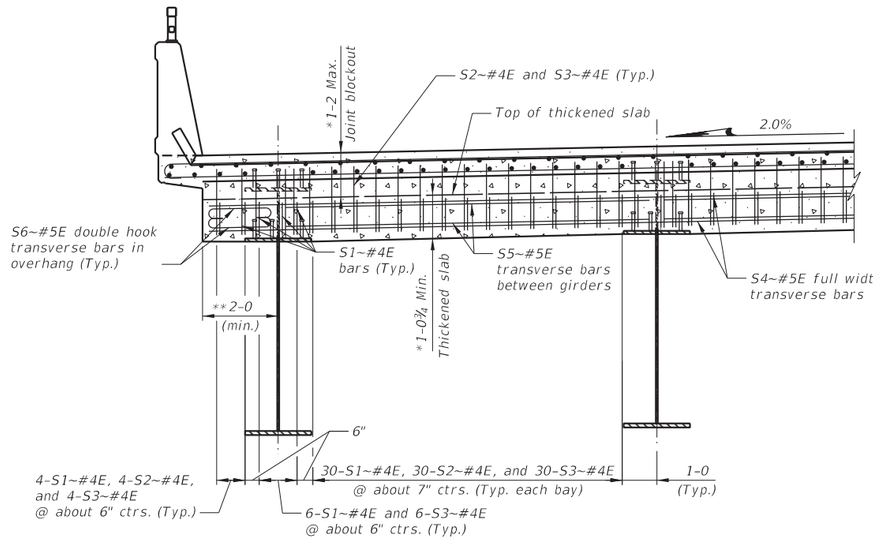
BILL OF REINFORCING STEEL

FOR ENTIRE BRIDGE SLAB (ALL DIMENSIONS ARE OUT TO OUT)



Mark	Size	Span No. 1 and Span No. 2 Bars	Span No. 3 and Span No. 4 Bars	Type	Length	A	B	C	D	E	G	N
S1	#4E	158	158	17	4-11		8"	3-7	8"			
S2	#4E	128	128	17	3-2		8"	1-10	8"			
S3	#4E	158	158	17	3-2		8"	1-10	8"			
S4	#5E	6	6	STR	43-8							
S5	#5E	32	32	STR	9-7							
S6	#5E	16	16	1	2-9	7"	1-7				7"	
S7	#6E	8	8	STR	46-0						7"	
S100	#5E	769	847	1	47-2	7"	46-0				7"	
S101	#5E	557	614	STR	46-0							
S200	#4E	51		27	354-5		2-3	336-5	40-0	34-5		8
S201	#4E		51	27	390-8		2-3	370-5	40-0	30-8		9
S202	#6E	50		27	142-4		3-2	136-0	60-0	22-4		2
S203	#6E		50	27	161-4		3-2	155-0	60-0	41-4		2
S300	#4E	68		27	354-5		2-3	336-5	40-0	34-5		8
S301	#4E		68	27	390-8		2-3	370-5	40-0	30-8		9
B1	#4E	678	746	28	5-0	See Dwg. No. SBR-SS36R						
B2	#4E	678	746	37	2-11¼	See Dwg. No. SBR-SS36R						
B3	#4E	726	794	33	5-9¼	See Dwg. No. SBR-SS36R						
B4	#4E	6	6	33	5-5¾	See Dwg. No. SBR-SS36R						
B5	#6E	20		27	379-8		4-4	353-8	60-0	19-8		6
B6	#6E		20	27	413-8		4-4	387-8	60-0	53-8		6

NOTE: The suffix E denotes epoxy coated reinforcing.



THICKENED SLAB EDGE AT PIER NO. 3 ELEVATION

Scale ~ ½" = 1'-0"

NOTE: The Expansion Joint Blockout Reinforcing Plan provides an example support box configuration for illustration purposes. The final modular expansion joint details will be determined by the joint manufacturer.

NOTE: See Sheet No. B30 for modular expansion joint details.

NOTE: See Sheet No. B27 thru B28 for Slab Reinforcing.

*NOTE: Minimum and maximum dimensions are shown. Adjust depth dimensions for thickened slab and blockout as required by the joint manufacturers design.

**NOTE: Adjust width of thickened slab as necessary to provide 4" minimum cover outside support box.

SHEET NO. B29

SLAB DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED			C.E.B.	06-02-22
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ROUTE P-82A

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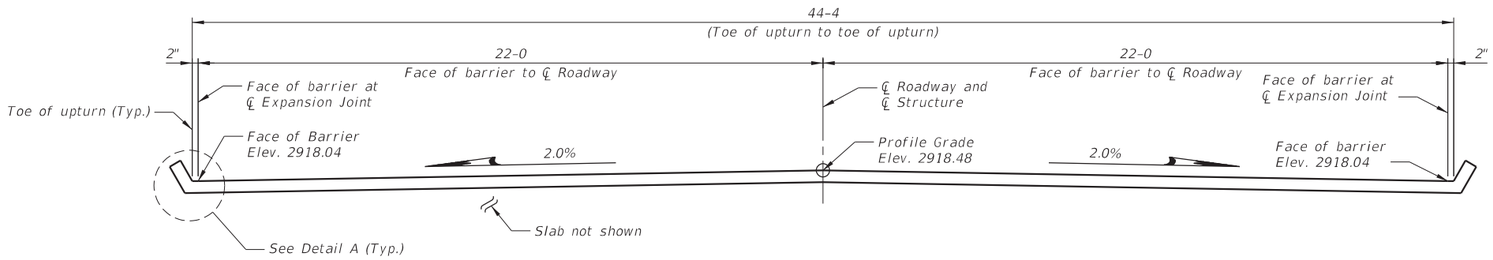
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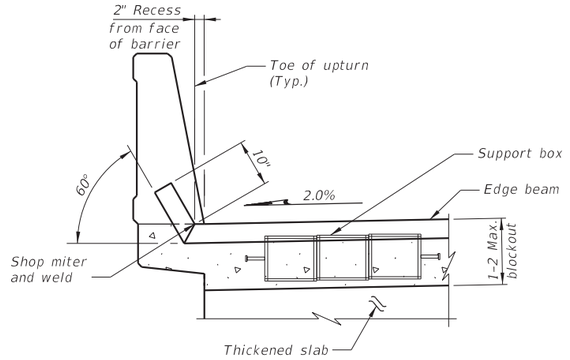
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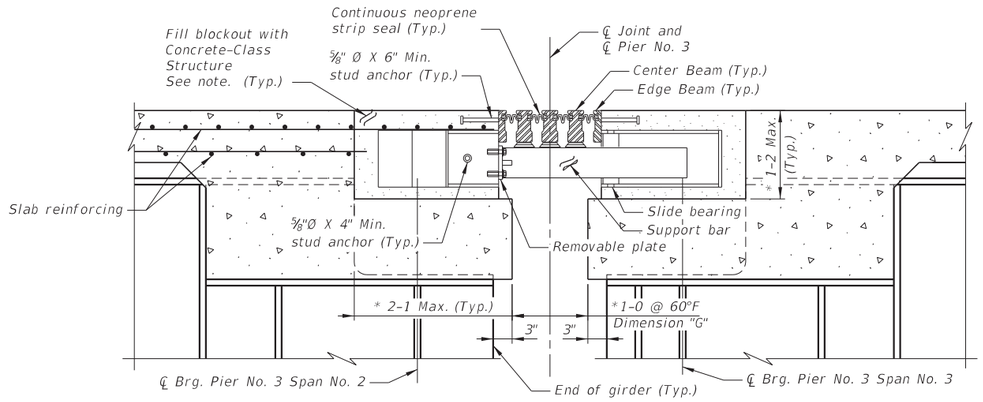
MODULAR EXPANSION JOINT ELEVATION

Scale ~ ⅜" = 1'-0"



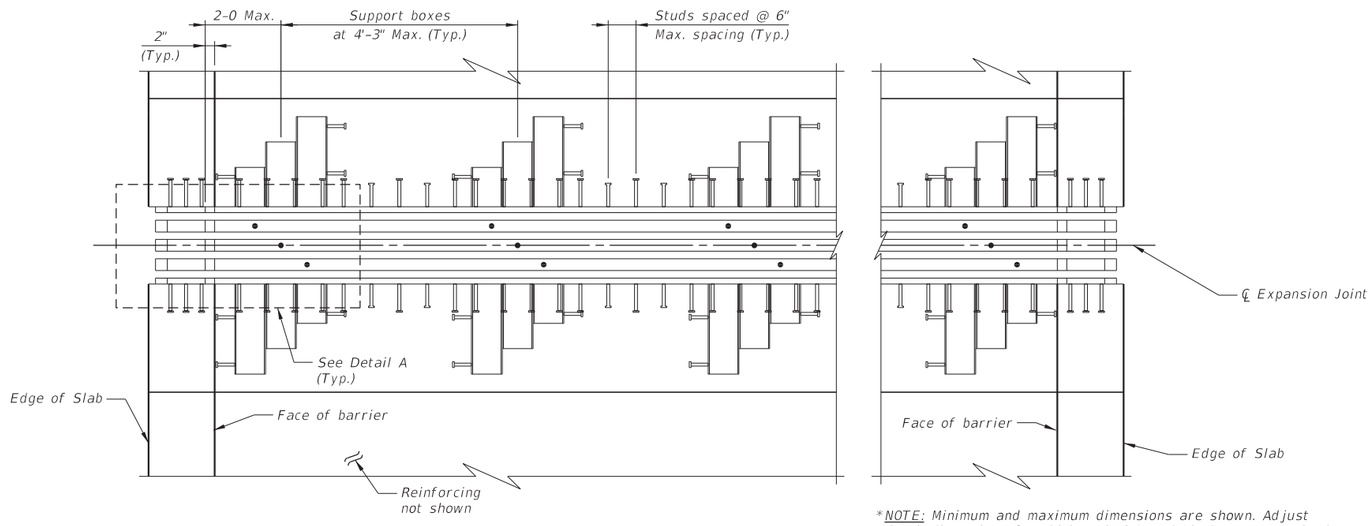
DETAIL A

Scale ~ ¾" = 1'-0"



PIER NO. 3 SPAN NO. 2 SECTION THROUGH MODULAR JOINT

Scale ~ 1" = 1'-0"



MODULAR EXPANSION JOINT PLAN

Scale ~ ¾" = 1'-0"

*NOTE: Minimum and maximum dimensions are shown. Adjust depth dimensions for thickened slab and blockout as required by the joint manufacturer's design. Clearly show preferred dimensions on joint shop drawings.

*TEMPERATURE ADJUSTMENT TABLE

Dimension (Inch)	Temperature (°F)																	Adjustment for 5°F Temperature Change (Inch)
	-35°	-30°	-20°	-10°	0°	10°	20°	30°	35°	40°	50°	60°	70°	80°	90°	100°	105°	
*G	17.23	16.96	16.41	15.85	15.30	14.75	14.20	13.65	13.38	13.10	12.55	12.00	11.45	10.90	10.35	9.80	9.52	0.28

*NOTE: Set concrete to concrete distance "G" equal to 1'-0" at 60°F. Verify and adjust "G" based on the temperature adjustment table. Middle movement temperature is assumed at 35°F.

NOTE: This drawing is a schematic of the modular joint device required at Pier No. 3. Manufacturer is responsible for the design of a modular joint device in accordance with AASHTO LRFD Chapter 14, which is capable of accommodating a minimum of 10" temperature movement. This movement is based on a temperature range of -35°F to 105°F along the length of fixity for the bridge. Provide a joint device capable of maintaining equal distance between all transverse beams. Acceptable alternates for the expansion device are D.S. Brown Steel Flex expansion joint system, Watson Bowman Acme (WABO) modular expansion joint system, Mageba Tensa modular expansion joint system, or an approved equal.

NOTE: Design live load is HL-93 with impact. See special provisions for additional design and submittal requirements. Submit shop drawings that include expansion devices, method of support during installation, and installation procedures.

NOTE: Manufacturer is responsible for developing a temperature adjustment table for the applicable temperature range of -35°F to 105°F. Set the expansion joint to accommodate the expected movements and adjust joint opening for the structure temperature. The structure temperature is taken as the actual air temperature averaged over the 24-hour period immediately preceding setting. The table should include expected movements, with no factors applied. Clearly show joint opening dimensions with corresponding temperatures on shop drawings and installation instructions.

NOTE: Use steel conforming to AASHTO M 270 Grade 36 or Grade 50. Galvanize assembly after fabrication in accordance with ASTM A 123 or AASHTO M 111. Galvanize all bolts, nuts, washers and incidentals in accordance with AASHTO M 232. Use headed anchor studs meeting the requirements of AASHTO M 169 Grades 1015 through 1020.

NOTE: See Sheet No. B27 thru B29 for reinforcing placed in and projected into the blockouts. Shift and bend reinforcing to clear joint anchors and support boxes as much as practical to minimize cutting. Cut bars interfering with expansion joint 2" from conflicting element. Coat cut reinforcing with an approved protection coating. Maintain 2½" minimum clear cover from reinforcing to top of deck.

NOTE: Provide continuous rails and seals across the width of the joint, including turn ups. Do not field splice rails or seals unless approved by Project Manager.

NOTE: Install expansion joint after the entire deck slab has been cast. Place prior to casting barriers.

NOTE: Use Concrete - Class Structure or approved equal for secondary pours. Place high strength grout below support box if recommended by joint manufacturer. Ensure that concrete completely supports the support boxes and is well consolidated. Quantities of concrete and reinforcing steel in the secondary pours are included in the deck slab quantities.

NOTE: Payment for Expansion Joint - Modular per foot includes all resources necessary to complete the work.

NOTE: Install expansion joint device such that it conforms to the roadway grades and slope at the joint location and provides a smooth riding surface. Install rails ½-inch below finished grade.

SHEET NO. B30

MODULAR EXPANSION JOINT DETAILS

SCALE: As noted

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

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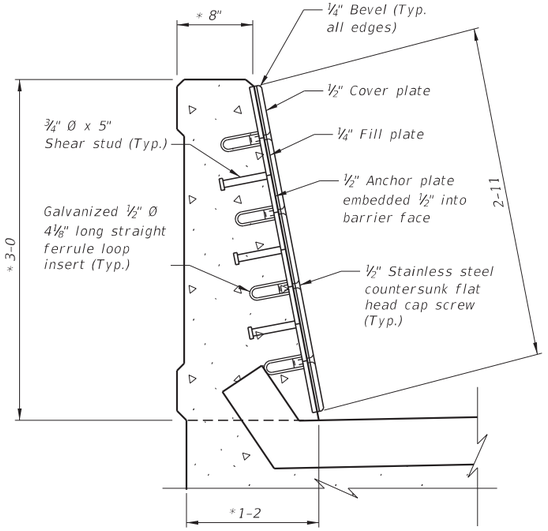
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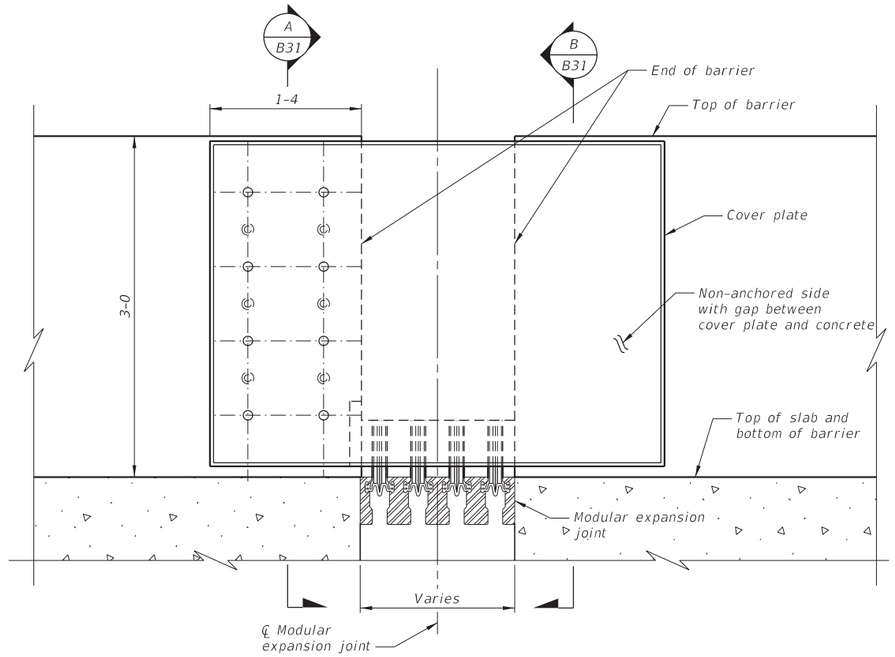
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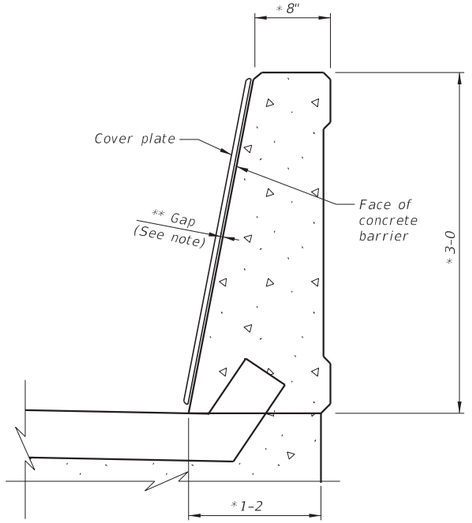


A B31 SECTION A

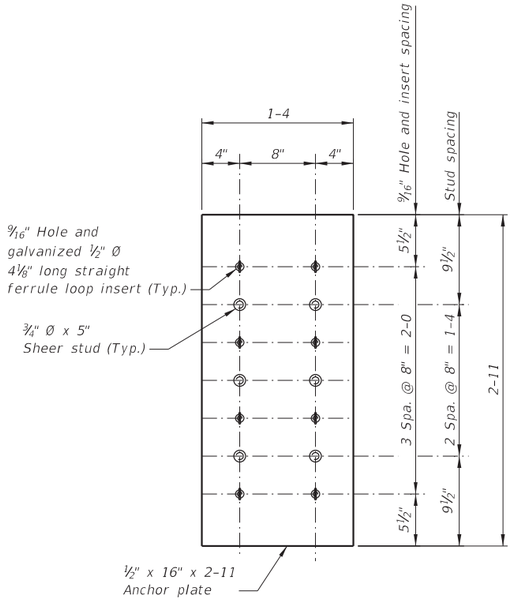


BARRIER COVER PLATE ELEVATION

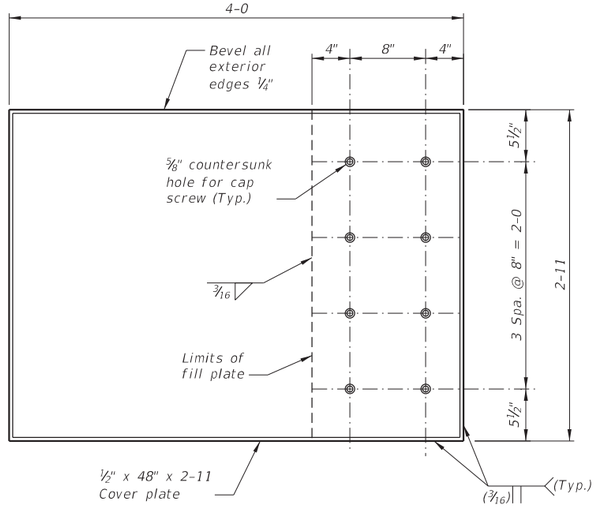
(Inside face of Pier No. 3 left shown, Pier No. 3 right similar)



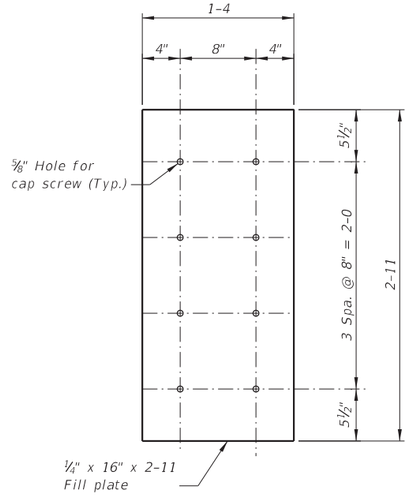
B B31 SECTION B



ANCHOR PLATE



COVER PLATE



FILL PLATE

NOTE: Form barrier within 4'-0" of modular expansion joint at barrier cover plate. (slip forming is not allowed within 4'-0" of joint).

*NOTE: Typical barrier dimensions, see Drawing No. SBR-SS36 for details.

**NOTE: Embed anchor plate ½" and ensure outside face of anchor plate is flush with typical barrier face. Ensure ⅛" to 3/16" gap between cover plate and concrete surface on non-anchored end thru entire temperature range movement.

NOTE: See Sheet No. B30 for modular expansion joint details.

NOTE: Barrier cover plate anchorage system consists of ⅝" Ø countersink holes in the cover plate, 9/16" Ø holes in the cover filler plate, and 9/16" Ø hole with galvanized ½" Ø 4⅛" long straight ferrule loop insert tack welded to embedded anchor plate for ½" Ø stainless steel flat countersunk head cap screw.

NOTE: Take all necessary precautions to ensure that the anchor plate is held firmly in proper place to ensure accurate position and to prevent movement during concrete placement.

NOTE: Use steel conforming to AASHTO M270 Grade 36 or 50 for all plates. Galvanize all steel in accordance with AASHTO M111 after fabrication.

NOTE: Provide shop drawings showing all finishes, dimensions, and details. Include installation procedures.

NOTE: Include all costs for materials, fabrication, and installation in the unit price bid for Structural Steel-Girder. Estimated weight is included in the estimated Structural Steel-Girder quantity shown on Sheet No. B2.

SHEET NO. B31

BARRIER COVER PLATE DETAILS

SCALE: 1½" = 1'-0"

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED	CHECKED	C.E.B. 06-01-22
REVISED	DRAWN	D.A.D. 02-11-22
REVISED	DESIGNED	D.J.L. 02-11-22

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

ROUTE P-82A

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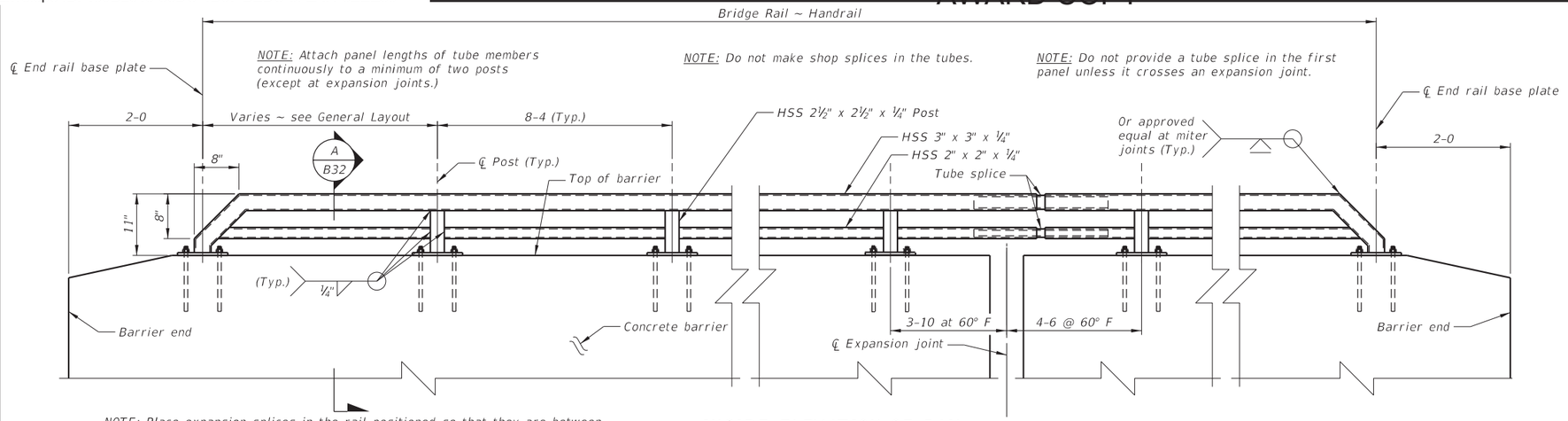
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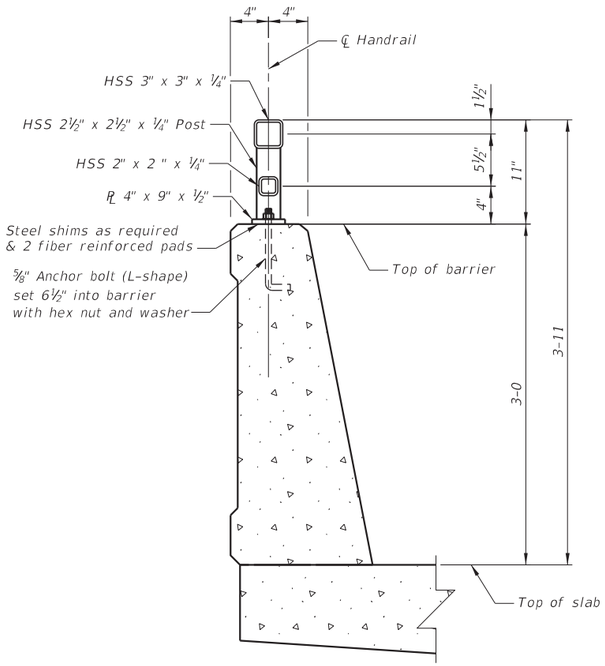
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Morrison Maierle

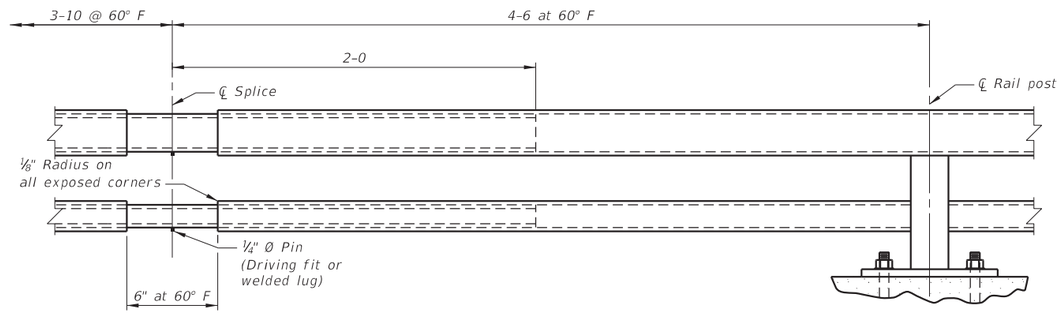


NOTE: Place expansion splices in the rail positioned so that they are between the same pair of rail posts as the expansion joint.

INSIDE ELEVATION OF RAIL

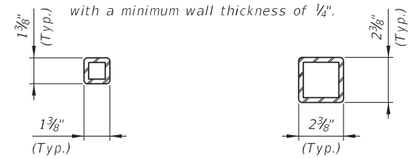


SECTION A



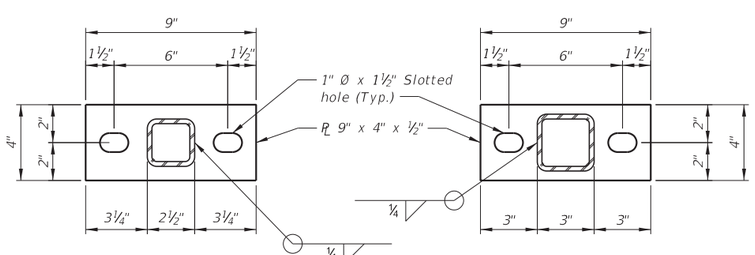
TUBE SPLICE DETAIL

NOTE: Fabricate sleeves using channels, angles, plates, or bent plates meeting the dimensions shown. Weld and grind smooth as required. Fabricate sleeves using no more than four welds. Fabricate sleeves with a minimum wall thickness of ¼".



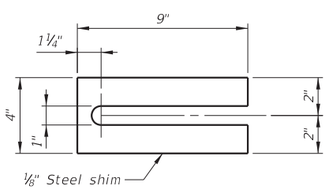
LOWER TUBE UPPER TUBE

SPLICE FABRICATION OPTIONS

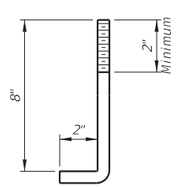


INTERMEDIATE END

RAIL BASE PLATES



RAIL SHIM DETAIL



ANCHOR BOLT DETAIL

NOTES

GALVANIZING: Galvanize all bolts, nuts, washers and pipe sleeves in accordance with ASTM F 2329.

PAYMENT: Handrail is paid for by the linear foot, which is full compensation for all resources necessary to complete the item. The General Layout shows the number of linear feet of Handrail for payment. Use posts and plates conforming to AASHTO M 270 Grade 36 and tubing conforming to ASTM A500 Grade B. Use anchor bolts conforming to AASHTO M 314 Grade 36, nuts conforming to ASTM A 563 Grade A and washers conforming to ASTM F 844.

ERECTION: Set the rail parallel to the top of barrier. Adjust the rail to the proper rail height using rail post shims.

PAINTING: Paint all posts, structural tubing and plates (except as noted) in accordance with the Standard Specifications. Galvanizing the posts, structural tubing and plates in accordance with AASHTO M 111 is allowed.

FABRICATION: Consider this rail system an ancillary item for the purposes of fabrication. Meet the requirements of subsection 1.3.7 of AASHTO/AWS D1.5.

SHIMS: Place shims as necessary to adjust the rail to grade. Place the shims between fiber reinforced pads with the slots toward oncoming traffic.

FIBER REINFORCED PADS: Use fiber reinforced pads meeting the requirements of subsection 711.16 of the Standard Specifications. Size and position the pads so that not less than ½" of the pad protrudes on all sides of the base plate. Punch slotted holes in the pads to match the base plate.

FINISHING: Finish the top of the barrier under each rail post to a smooth and uniform surface to assure a proper alignment of the post and a tight fit between the fiber reinforced pad and concrete. Bush hammering is acceptable only to remove high spots.

CONCRETE BARRIER: See Dwg. No. SBR-SS36 and SBR-SS36R for additional barrier details.

RAIL WEIGHT: For informational purposes only, the rail weight is approximately 15.4 lb/ft.

SHEET NO. B32

HANDRAIL DETAILS

SCALE: No Scale

BRIDGE OVER FLATHEAD RIVER

AT STA. 306+95.00

FEDERAL AID PROJECT STPB-STPP-SSS 82-1(6)5

COUNTY FLATHEAD

REVISED					C.E.B.	07-04-22
REVISED					D.A.D.	06-06-22
REVISED					R.A.W.	06-05-22
CHECKED						
DRAWN						
DESIGNED						

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MONTANA DEPARTMENT OF TRANSPORTATION MDT BRIDGE BUREAU

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ROUTE P-82A

REF POINT 05+0.830

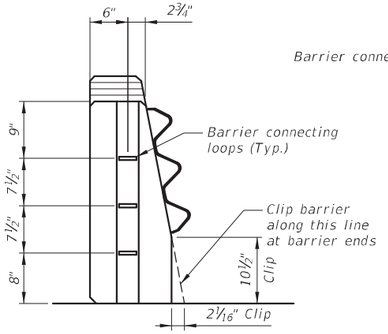
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UPN NUMBER 6850000

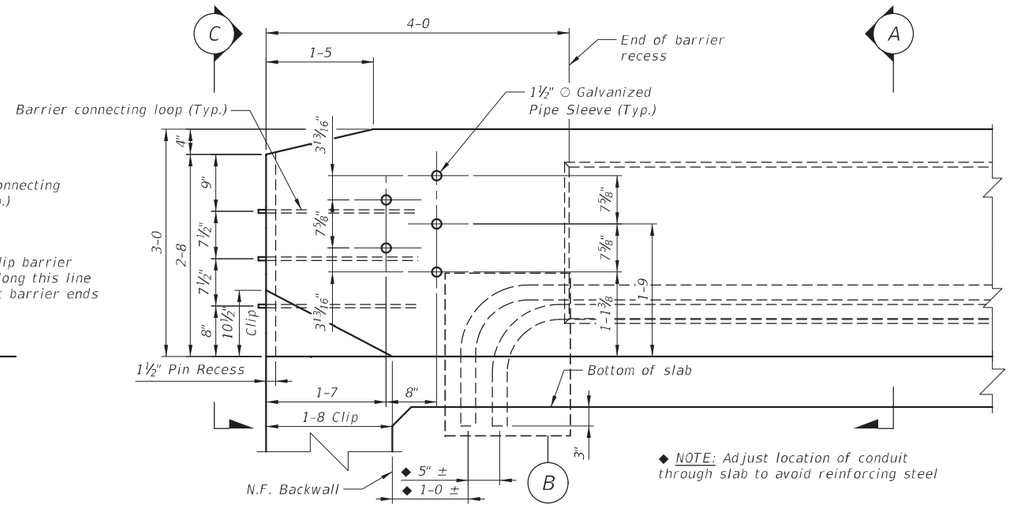
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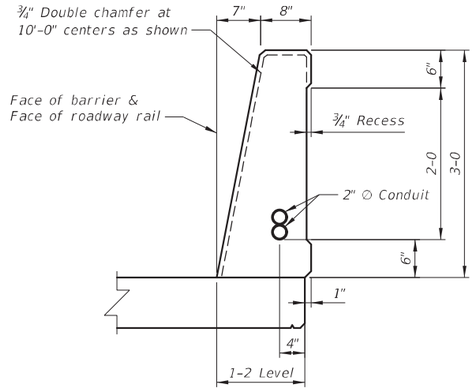
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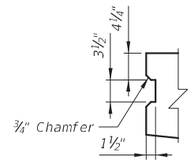
VIEW C



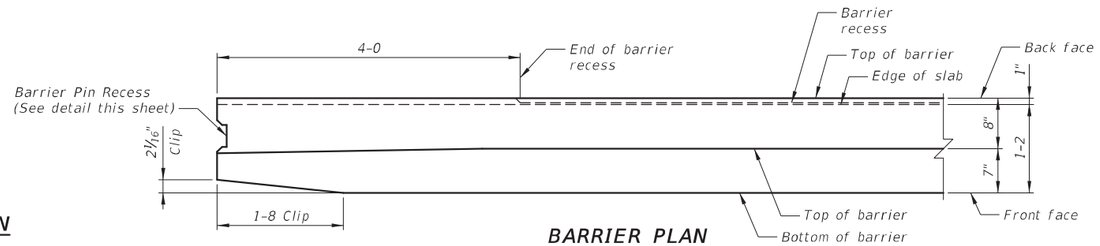
BARRIER INSIDE ELEVATION



SECTION A



BARRIER PIN RECESS PLAN



BARRIER PLAN

NOTES

PLACEMENT: Do not disturb the deck cure to construct the concrete barrier.

CONCRETE STRENGTH: Do not place construction vehicles or equipment on the deck until the concrete has reached 90% of its specified 28-Day compressive strength or without approval from the Project Manager.

Do not open bridge to traffic for at least 14 days after placement of concrete barrier or until concrete in barrier has reached 90% of its specified 28-Day compressive strength.

CONTROL JOINT: Do not place ¾" double chamfer in the barrier recess or the bottom outside edge of the barrier.

REFLECTOR: Place a white reflector on the top of barrier rail at 30-foot spacing between the barrier ends. See Dtl. Dwg. No. 605-00 for reflector detail.

TOLERANCES: Construct the concrete bridge rail to the same tolerances specified for concrete barrier rail, see Section 564 of the Standard Specifications.

REINFORCING STEEL: See Std. Dwg. No. SBR-SS36R for reinforcing steel locations.

GALVANIZING: Galvanize pipe sleeves in accordance with AASHTO M 111.

RADIUS: A ¾" radius may be substituted for the ¾" chamfers and fillets shown.

PAYMENT: Include all costs associated with the barrier as shown on this sheet in the unit price bid for 36 IN SS Concrete Barrier Rail-Br. See Std. Dwg. No. SBR-SS36R for reinforcing steel payment.

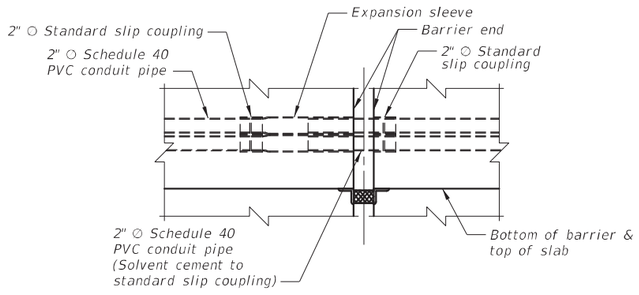
EXCEPTIONS: Use details shown on this drawing only as they apply to the project. Refer to other drawings for variations in these details.

CONDUIT: Omit conduit in any barrier not located at the edge of slab.

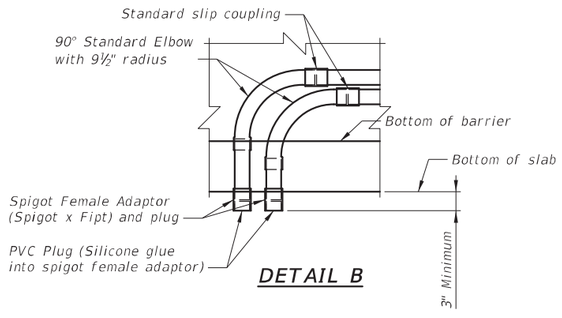
RAIL WEIGHT: For informational purposes only and based on Section A dimensions.
Rail weight = 411 lb/ft
Rail Volume = 2.74 ft3/ft

CRASH TEST: This rail has been evaluated and approved to be of equal strength to railings with like geometry, which have been crash tested to meet MASH TL-4 criteria.

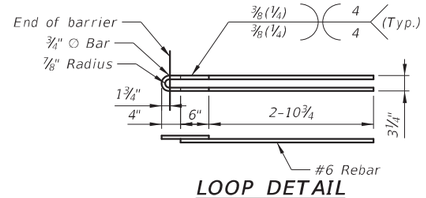
RAIL DESIGN CAPACITY		
	Interior Region	End Region
Rw	100 kips	67 kips
Lc	16'-9"	5'-9"
Mc	106 kip*in/ft	209 kip*in/ft



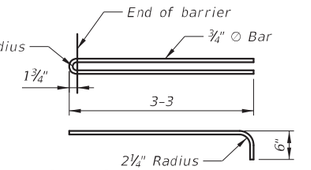
CONDUIT EXPANSION JOINT DETAIL



DETAIL B



LOOP DETAIL



OPTIONAL LOOP DETAIL

NOTE: Use reinforcing steel conforming to ASTM A 706, Grade 60 for rebar being welded to loops.

NOTE: Loop ends and the optional loop detail consist of smooth round bars conforming to AASHTO M 270, Grade 36.

NOTE: Cold bend the loops by using a jig that will produce an accurate radius without marring the bar. Do not heat the bar to facilitate bending.

NOTE: Weld rebar to loops using ⅛" ∅ E8018 rod. Do not tack weld the pieces together prior to welding. Use a certified welder in accordance with the current edition of AWS D1.4. Do not place the welded assembly in the form until it has been inspected.

NOTE: No additional welding is permitted on the smooth round bars or reinforcing steel.

STANDARD BRIDGE RAIL
TYPE SINGLE SLOPE 36"

No Scale

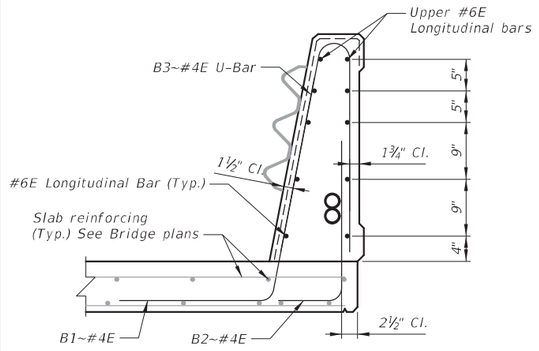
MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

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APPROVED	9-27-18	J.S.O.
CHECKED	6-28-18	T.W.S.
DRAWN	5-8-18	T.J.B.
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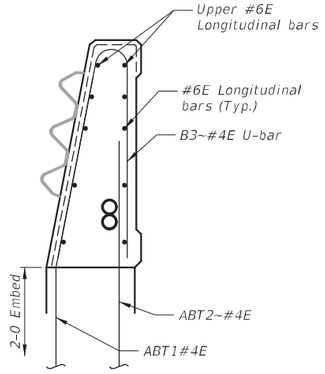
DRAWING NO.
SBR-SS36

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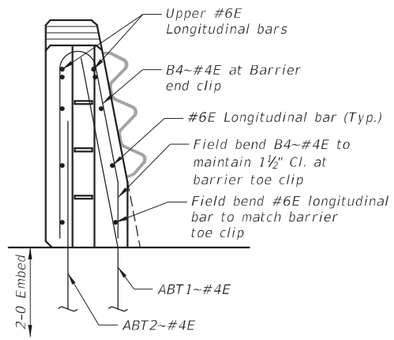
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SECTION A



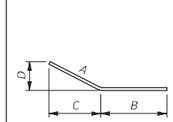
SECTION B



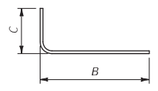
VIEW C

BILL OF REINFORCING STEEL

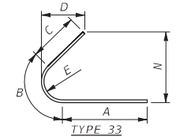
(ALL DIMENSIONS ARE OUT TO OUT)



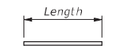
TYPE 28



TYPE 37



TYPE 33



TYPE STR

NOTE: See Bridge Plans for number of bars required and longitudinal bars.

Mark	Size	Type	Length	A	B	C	D	E	G	N
B1	#4E	28	5-0	3-0	2-0	6¾"	2-11¼			
B2	#4E	37	2-11¼		10"	2-1¼				
B3	#4E	33	5-9¼	2-6½	7¼"	2-7½	2-9	2"		11"
B4	#4E	33	5-5¾	2-4¼	8¼"	2-5¼	2-7	2¼"		11¼"
ABT1	#4E	28	4-6½	2-6½	2-0	2-6	5¾"			
ABT2	#4E	STR	3-8							

NOTES

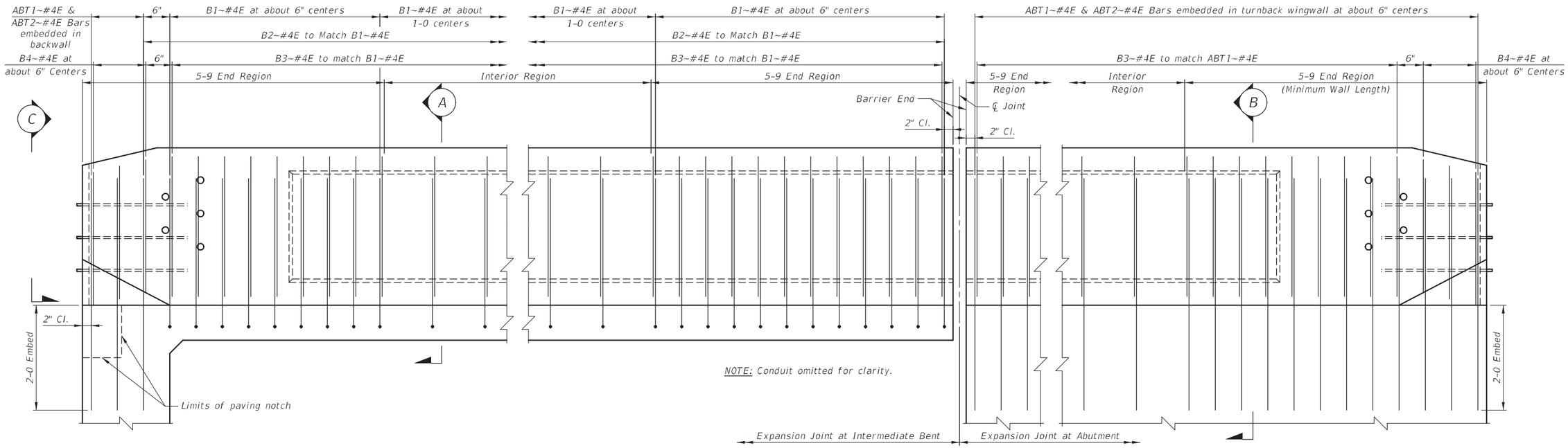
REINFORCING STEEL: All barrier reinforcing steel is epoxy coated.

DETAILS: See Std. Dwg. No SBR-SS36 for barrier details not shown on this drawing.

PAYMENT: Include all costs associated with furnishing and placing reinforcing steel in the barrier in the unit price bid for Reinforcing Steel - Epoxy Coated.

EXCEPTIONS: Use details shown on this drawing only as they apply to the project. Anchorage details may vary. Refer to other drawings for variations in these details.

UPPER LONGITUDINAL BARS: Adjust the lap length by approximately 10½" at the tapered ends of the barrier.



SEMI-INTEGRAL ABUTMENT

ABUTMENT OR INTERMEDIATE BENT
WITH EXPANSION JOINT

TURNBACK WINGWALL

BARRIER INSIDE ELEVATION

STANDARD BRIDGE RAIL
TYPE SINGLE SLOPE 36"
REINFORCING

No Scale

MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

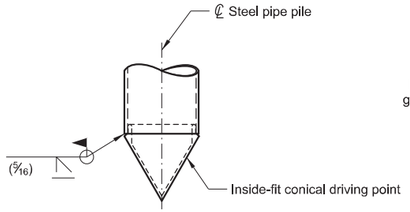
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					J.S.O.	T.W.S.	T.J.B.
9/28/2018							

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SBR-SS36R

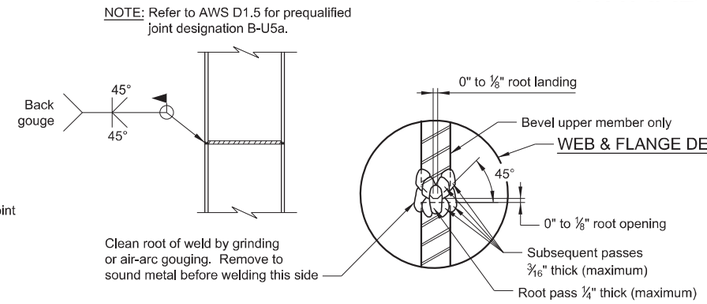
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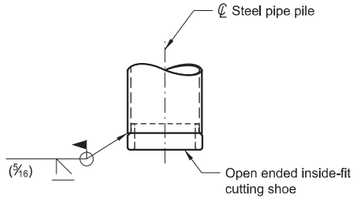
CONICAL DRIVING POINT WELD DETAIL

Slip driving point inside pipe.



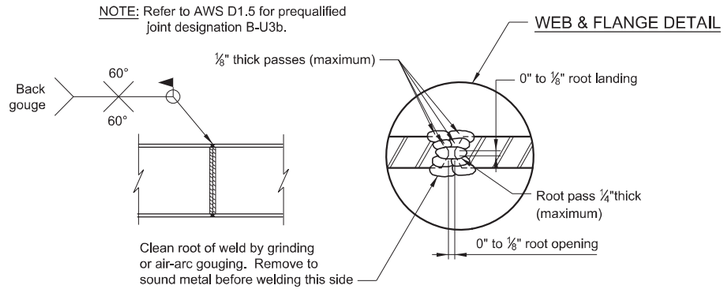
PILE EXTENSION AFTER DRIVING

(Pile Vertical)



CUTTING SHOE WELD DETAIL

Slip shoe inside pipe.



PILE EXTENSION BEFORE DRIVING

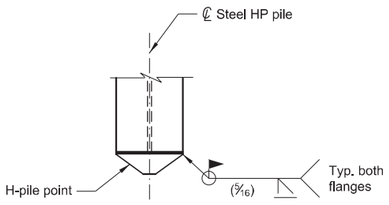
WELDED SPLICES FOR STEEL HP PILES

NOTES

PILE SPLICES: Use only E7018 series electrodes. Prepare the weld surfaces to a smooth, uniform finish. Remove all fins, tears, loose scale, slag, rust, grease, moisture and other material that would prevent proper welding.

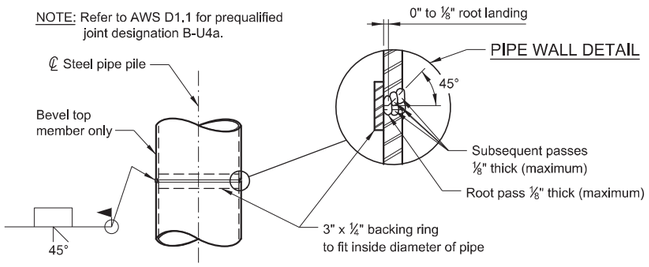
PILE TIPS: Use only E7018 series electrodes to attach pile tips.

PILE TYPE: See Footing Plan sheets for correct pile type, pile tip and pile tip elevations.



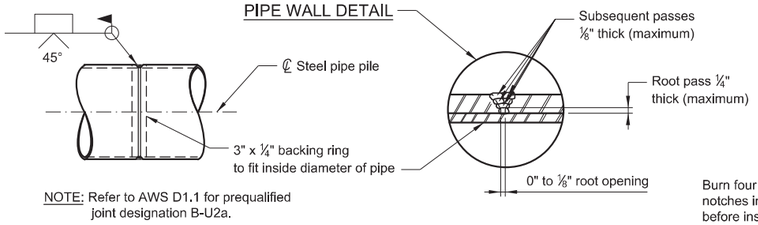
H-PILE POINT WELD DETAIL

Do not weld web or inside of flanges.



PILE EXTENSION AFTER DRIVING

(Pile Vertical)



PILE EXTENSION BEFORE DRIVING

WELDED SPLICES FOR STEEL PIPE PILES

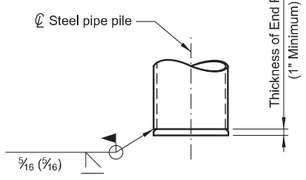
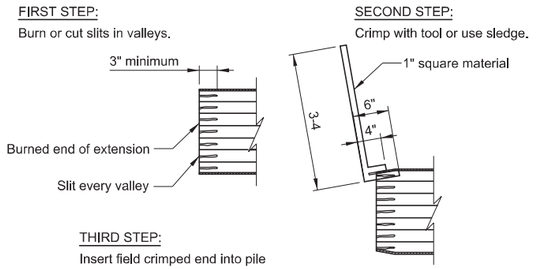
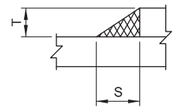


PLATE END WELD DETAIL

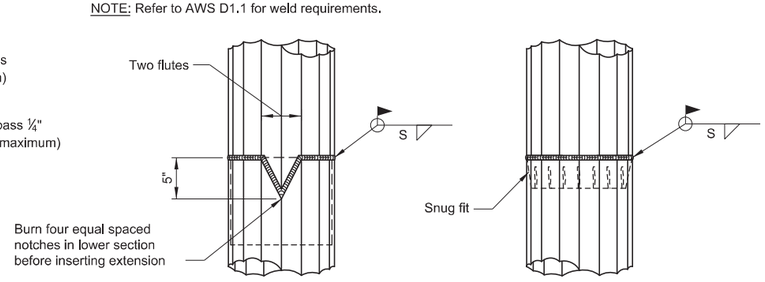
Align plate with outside of pipe.



Gage of Pile T	Weld Size S
9 gage (0.1495")	1/4"
7 gage (0.1793")	5/16"
5 gage (0.2092")	5/16"
3 gage (0.2391")	3/8"



FIELD CRIMPING DETAIL FOR CUT-OFF EXTENSIONS



FACTORY CRIMPED EXTENSION

FIELD CRIMPED EXTENSION

WELDED SPLICES FOR STEEL FLUTED PILES

STANDARD PILE SPLICE DETAILS AND PILE TIPS

No Scale

MDT MONTANA DEPARTMENT OF TRANSPORTATION — BRIDGE BUREAU

REVISED			
REVISED			
REVISED			
REVISED			
APPROVED	1-30-15	D.F.J.	
CHECKED	1-30-15	D.F.J.	
DRAWN	1-23-15	T.J.B.	$FILEABBREV$
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