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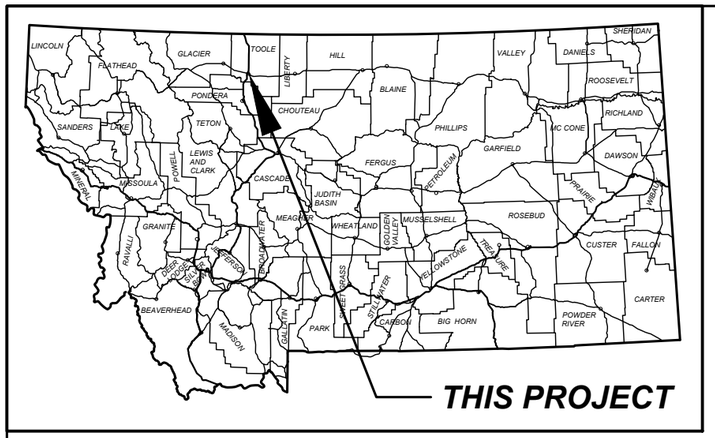


MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT IM 15-8(72)364

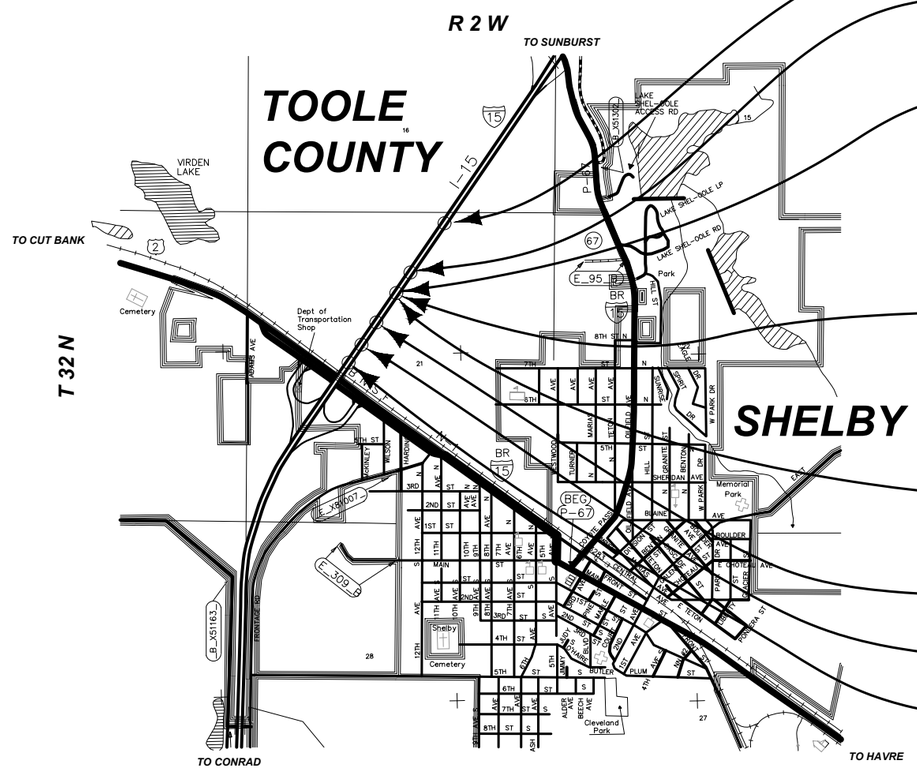
STOCKPASS REPLACEMENT

I-15 CULVERT - SHELBY

TOOLE COUNTY

LENGTH 0.1 MILES

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R/W	##########
I.C.	##########
P.E.	IM 15-8(71)364



SURFACING SOURCES - CONTRACTOR FURNISHED

STA. 33+85.00
RP 364.2
EX. CROSSOVER

STA. 25+33.24
END CONNECTION TO PTW

STA. 165+74.32 ON
I-IG-ING 15-8(3)351

STA. 24+83.30 END
IM 15-8(72)364=

STA. 24+44 REMOVE
14'10"x9'1" SSPPAC STOCKPASS
NBI ID 100015363+08001
MDT SID 01291, RP 363.8
24+38 NEW DBL 10'x10' RCB
STOCKPASS/DR.

RP 363.8 TO RP 363.9

STA. 23+93.18 BEG
IM 15-8(72)364=

STA. 164+14.24 ON
I-IG-ING 15-8(3)351

STA 23+43.24
BEGIN CONNECTION TO PTW

STA 12+54.00
NEW CROSSOVER

STA. 11+86.49
GUARDRAIL CONNECTION

MONTANA
DEPARTMENT OF TRANSPORTATION

APPROVED BY:

HIGHWAYS ENGINEER

MONTANA
DAMIAN KRINGS
12113PE
LICENSED PROFESSIONAL ENGINEER

DATE

SHEET NO. 1

TITLE SHEET

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 101111000

DESIGNED BY	06/2023
D. BRAATEN	
REVIEWED BY	03/2024
J.COMBS	
CHECKED BY	03/2024
J. CERECK	

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MONTANA Department of Transportation

ROAD PLANS

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NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 3/8" AGG.	= 6.2% OF PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD

SOILS INFORMATION

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

BORING NUMBER

(GEOTECHNICAL BORING)

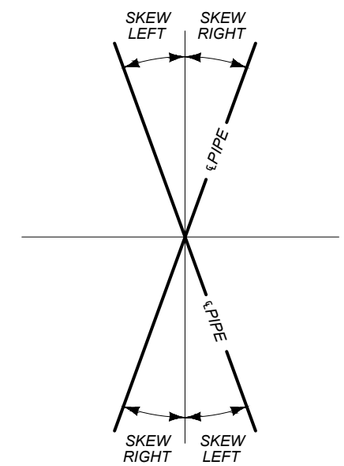
WETLANDS

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.

WL TM — DELINEATED WETLAND AREAS

WL TM — PERMANENT WETLAND IMPACTED AREAS

SKEW DIAGRAM



WETLAND DELINEATION TABLE

WETLAND DESIGNATION	STATION		WETLAND AREA (acres)		REMARKS
	FROM	TO	DELINEATED AREA	PERMANENT IMPACTED AREA #	
2065-R	20+65.79	24+30.51	0.578	0.074	RIGHT #
2109-L	21+09.77	25+63.27	0.429	0.084	LEFT #
TOTAL			1.01	0.16	

AREA OF EXISTING WETLAND EXTENDS BEYOND PLAN LIMITS

SHEET NO. 2

TABLE OF CONTENTS AND NOTES

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 06/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

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MONTANA Department of Transportation

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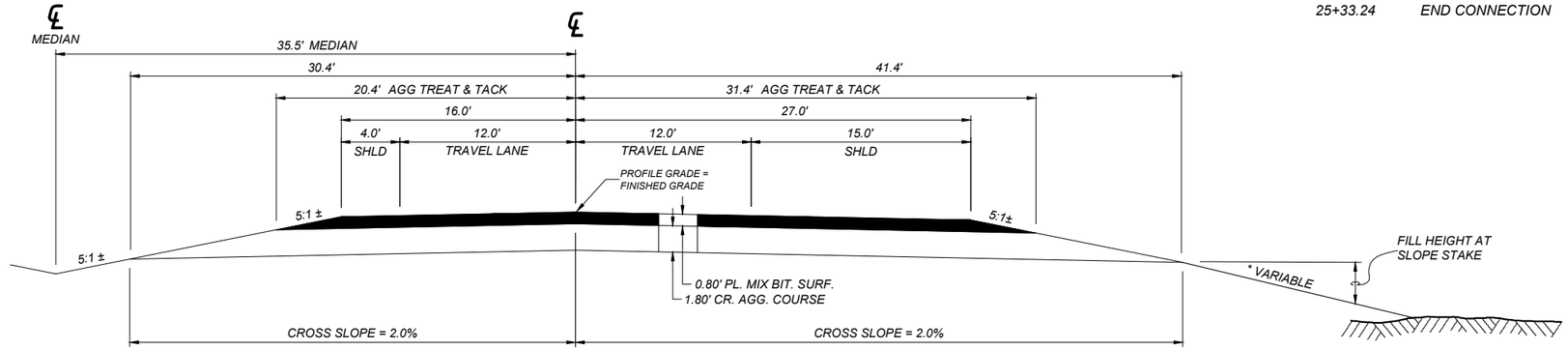
TYPICAL SECTION NO. 1

NORTHBOUND			
23+43.24			BEGIN CONNECTION
23+43.24	TO	23+93.18	
23+93.18			BEGIN PROJECT
23+93.18	TO	24+83.30	
		24+83.30	END PROJECT
24+83.30	TO	25+33.24	
		25+33.24	END CONNECTION



QUANTITIES						
				BITUMINOUS MATERIAL		
UNIT	PLANT MIX	CR. AGG. COURSE	UNIT	ASPHALT CEMENT	AGG. TREATMENT	EMULSIFIED ASPHALT TACK*
AREA square feet	37.92	111.24	square yards PER STATION		576	2,302
cubic yards PER STATION	140.4	412.0	tons PER STATION	16.78		
tons PER STATION	270.6		gals. PER STATION			115
square yards PER STATION						

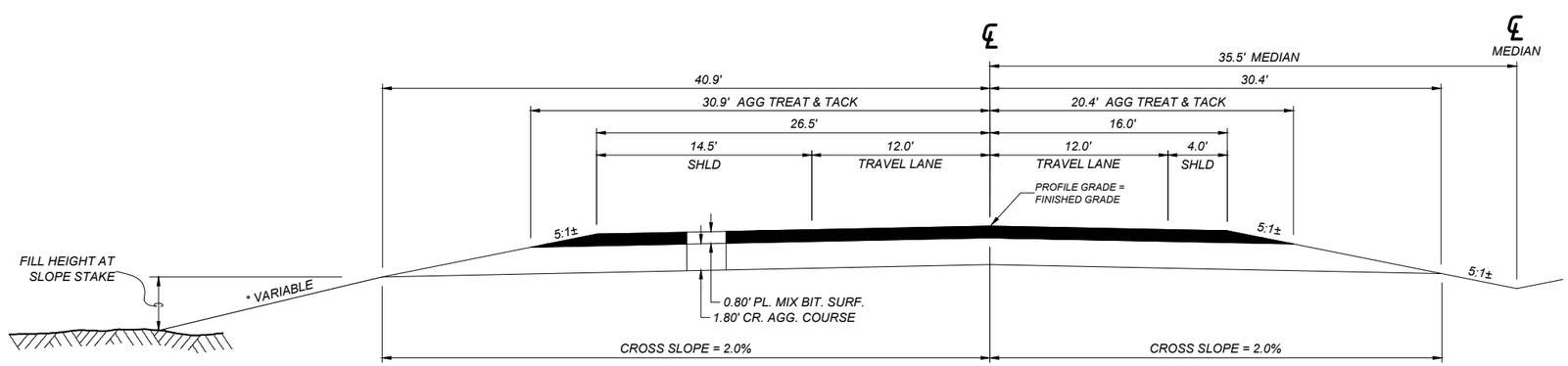
* BASED ON 4 APPLICATIONS

*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

SOUTHBOUND			
23+43.24			BEGIN CONNECTION
23+43.24	TO	23+93.18	
23+93.18			BEGIN PROJECT
23+93.18	TO	24+83.30	
		24+83.30	END PROJECT
24+83.30	TO	25+33.24	
		25+33.24	END CONNECTION



QUANTITIES						
				BITUMINOUS MATERIAL		
UNIT	PLANT MIX	CR. AGG. COURSE	UNIT	ASPHALT CEMENT	AGG. TREATMENT	EMULSIFIED ASPHALT TACK*
AREA square feet	37.52	110.34	square yards PER STATION		570	2,280
cubic yards PER STATION	139.0	408.7	tons PER STATION	16.61		
tons PER STATION	267.9		gals. PER STATION			114
square yards PER STATION						

* BASED ON 4 APPLICATIONS

SHEET NO.
3

TYPICAL SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 06/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024
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ROAD PLANS
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SUMMARY

SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE tons COMMERCIAL MIX PG 70-28	AGGREGATE cu. yards CRUSHED AGG. COURSE	AGGREGATE cu. yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
NORTHBOUND												
23+93.18	24+83.30	90.12	90.12				244	371		104	519	TYP. SECT. NO. 1
						ADDITIONAL SURFACING	270	427		114	576	
SUBTOTAL		90.12	90.12	~	~		514	798	91	218	1,095	
SOUTHBOUND												
23+93.18	24+83.30	90.12	90.12				241	368		103	514	TYP. SECT. NO. 2
						ADDITIONAL SURFACING	268	423		114	570	
SUBTOTAL		90.12	90.12	~	~		509	791	90	217	1,084	
TOTAL		**180.24**	**180.24**	~	~		**1,023**	**1,589**	**181**	**435**	**2,179**	

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE tons COMMERCIAL MIX PG 70-28	AGGREGATE cu. yards CRUSHED AGG. COURSE	AGGREGATE TRAFFIC GRAVEL	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	BITUMINOUS MATERIAL sq. yards AGG. TREAT.	REMARKS
NORTHBOUND												
23+43.24	23+93.18					CONN. TO PTW	135	206		57	288	TYP. SECT. NO. 1
24+38.00						STOCKPASS EGRESS		3				#
24+83.30	25+33.24					CONN. TO PTW	135	206		57	288	TYP. SECT. NO. 1
						GUARDRAIL WIDENING		12				
SUBTOTAL		~	~	~	~		270	427	~	114	576	
SOUTHBOUND												
23+43.24	23+93.18					CONN. TO PTW	134	204		57	285	TYP. SECT. NO. 2
24+38.00						STOCKPASS EGRESS		3				#
24+83.30	25+33.24					CONN. TO PTW	134	204		57	285	TYP. SECT. NO. 2
						GUARDRAIL WIDENING		12				
SUBTOTAL		~	~	~	~		268	423	~	114	570	

MEASURED ON CAD

TRAFFIC CONTROL

RP FROM	RP TO	each CROSS-OVER	miles TWO-WAY TRAFFIC	REMARKS
RP 363.65	RP 364.20	2	2.0	TWO-WAY CROSS OVER, NB LANE
RP 363.65	RP 364.20	2	2.0	TWO-WAY CROSS OVER, SB LANE
TOTAL		**4**	**4.0**	

SHEET NO. 4

SUMMARY

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 06/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation
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STOCKPASS

STATION	linear feet	cu. yards					sq. yards	linear feet			
	DBL 10' x 10' RCB	FOUND-ATION MATERIAL	GRANULAR BEDDING MATERIAL	SPECIAL BACKFILL	CONCRETE - CLASS GENERAL	INFILL MATERIAL (CAC)	STABILIZ. GEOTEXT.	HEIGHT OF COVER	END SECTIONS LT. & RT.	SKEW ANGLE	REMARKS
24+38	202	389	196	3,202	18.7	150.0	1,257	1.8	2:1 SLOPE	1° LT.	CONC. EDGE PROT. AND CUTOFF WALL LT & RT RCB SILL. SEE DETAIL.
TOTAL	202	389	196	3,202	18.7	150.0	1,257	~	~	~	

CULVERTS

STATION	BASIC BID ITEMS			CULVERT IN PL. in. X ft.	REMARKS
	cu. yards	linear feet			
	FILL & ABANDON PIPE	REMOVE & SALVAGE CULVERT	REMOVE PIPE		
21+87	105			48 x 225.9 RCP	DRAIN
24+44			112.1	14 ft. 10 in. x 9 ft. 1 in. SSPPA	STOCKPASS REMOVE
24+44		196.2		60 X 196.2 CMP	STOCKPASS REMOVE AND SALVAGE
25+47			40.3	12 X 40.3 CMP	LEFT EMBANKMENT PROTECTOR REMOVE
25+47			39.7	12 X 39.7 CMP	RIGHT EMBANKMENT PROTECTOR REMOVE
TOTAL	105	196.2	192.1	~	

TEMPORARY BARRIER RAIL

STATION		linear feet		each		REMARKS
FROM	TO	TEMPORARY BARRIER RAIL	RESET TEMPORARY BARRIER RAIL	TEMPORARY IMPACT ATTENUATOR	RESET TEMPORARY IMPACT ATTENUATOR	
NORTHBOUND						
23+68.00	25+08.00	140	140	2	2	
SOUTHBOUND						
23+68.00	25+08.00	140	140	2	2	
TOTAL		280	280	4	4	

MEDIAN INLETS

STATION	each	REMARKS
	MEDIAN INLET	
	TYPE 1	
24+32.95	1	SEE DETAIL
TOTAL	1	

GUARDRAIL

STATION		linear feet							REMARKS
		REMOVE GUARDRAIL		MGS GUARDRAIL		MASH W-BEAM TERMINAL SECTION		# REMOVE CABLE GUARDRAIL	
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT		
NORTHBOUND									
11+86.49	26+62.79		1,476.3						
11+86.49	26+11.49				1,425.00		1		HEIGHT TRANSITION REQUIRED
SOUTHBOUND									
11+88.51	26+54.08	1,465.6							
11+88.51	26+13.51			1,425.00		1			HEIGHT TRANSITION REQUIRED
37+56.50	39+89.50							233	CROSSOVER
SUBTOTAL		1,465.6	1,476.3	1,425.00	1,425.00	1	1	233	
TOTAL		2,941.9		2,850.00		2		233	

FOR INFORMATION ONLY. INCLUDED IN COST OF CROSSOVER.

WIDE LOAD MARSHALLING

STATION		lump sum	REMARKS
FROM	TO	WIDE LOAD MARSHALLING	
11+86.49	43+61.38	1	
TOTAL		1	

MEDIAN CROSSOVER *

RP	each			REMARKS
	CROSSOVER - CONST., MAINTAIN, & REMOVE	CROSSOVER - MAINTAIN & CLOSE	CROSSOVER RECLAMATION	
RP 363.65	1.0		1.0	
RP 364.20		1.0		
TOTAL	1.0	1.0	1.0	

* SEE DETAIL

SPECIAL BORROW

STATION		cu. yards	sq. yards	REMARKS
FROM	TO	SPECIAL BORROW NEAT LINE	SEPARATION GEOTEXTILE	
23+43.24	23+93.18	378	479	NORTHBOUND
23+43.24	23+93.18	379	476	SOUTHBOUND
24+83.30	25+33.24	398	479	NORTHBOUND
24+83.30	25+33.24	384	476	SOUTHBOUND
TOTAL		1,539	1,910	

SHEET NO. 5

SUMMARY

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 06/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation
ROAD PLANS
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PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICA-TION #	FINAL APPLICA-TION	TOTAL
STRIPING - WHITE PAINT	gallon	16		16
STRIPING - YELLOW PAINT	gallon	13		13
STRIPING - WHITE EPOXY	gallon		22	22
STRIPING - YELLOW EPOXY	gallon		17	17

BASED ON 1 APPLICATIONS.

REVEGETATION

STATION FROM	STATION TO	lump sum REVEGE-TATION	REMARKS
23+43.24	25+33.24	1	LT. & RT., MEDIAN, & CONNECTIONS
TOTAL		1	

FENCING

STATION FROM	STATION TO	linear feet FENCE TYPE F2W-32 IN WW	each FARM FENCE PANEL SINGLE FW	each DEADMAN	REMARKS
NORTHBOUND					
23+75.75	25+19.15	167	5	1	RT.
SOUTHBOUND					
23+86.39	24+95.23	119	5	1	LT.
TOTAL		286	10	2	

RUMBLE STRIPS

STATION FROM	STATION TO	miles RUMBLE STRIPS CONTIN-UOUS	miles RUMBLE STRIPS INTER-MITTENT	gals EMULSIFIED ASPHALT FOG SEAL #	REMARKS
NORTHBOUND					
23+43.24	25+33.24	0.04	0.04	4	
SOUTHBOUND					
23+43.24	25+33.24	0.04	0.04	4	
SUBTOTAL		0.08	0.08	8	
TOTAL		0.16		~	

FOR INFORMATION ONLY, INCLUDE IN THE COST OF RUMBLE STRIPS

SHEET NO.
6

SUMMARY

PROJECT NAME I-15 CULVERT - SHELBY
COUNTY TOOLE COUNTY
PROJECT ID IM 15-8(72)364
UPN 10111000

DESIGNED BY D. BRAATEN 06/2023
REVIEWED BY J. COMBS 03/2024
CHECKED BY J. CERECK 03/2024

MONTANA Department of Transportation
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HYDRAULIC DATA SUMMARY *

STATION	STREAM NAME (IF NAMED)	DRAINAGE AREA (mi^2)	SIZE/TYPE STRUCTURE ① ② ⑤	DESIGN FLOOD MAGNITUDE (cfs)	DESIGN FLOOD FREQUENCY (%)	DESIGN FLOOD H.W. ELEV. (ft)	BASE FLOOD (1%) MAGNITUDE (cfs)	BASE FLOOD (1%) H.W. ELEV. (ft)	OVERTOPPING FLOOD ③ ④ MAGNITUDE (cfs)	OVERTOPPING FLOOD APPROX. FREQUENCY (%)	OVERTOPPING FLOOD H.W. ELEV. (ft)	REMARKS (FLOOD OF RECORD, Qp(max), etc.) ⑥
24+38		0.82	DOUBLE 10'X10' RCB	172	1	3278.40	172	3278.40	95	6	3278.20	H.W. ELEV. CONTROLLED BY SHED AT STA. 22+23.8, 1367.99' RT

NOTES:
* H.W. ELEVATIONS SHOWN ARE BASED UPON PEAK FLOW ANALYSIS UNLESS NOTED IN REMARKS COLUMN.
ADDITIONAL GUIDANCE ON THE HYDRAULIC DATA SUMMARY SHEET CAN BE FOUND IN SECTION 11.8.2 OF THE HYDRAULICS MANUAL.

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 TOP LENGTH AND NUMBER OF SPANS OR BASE BID CULVERT SIZE AND SHAPE.

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 THROUGH THE Qp(max) EVENT. Qp(max) IS THE 200 YEAR EVENT FOR CULVERTS AND THE 500 YEAR EVENT FOR BRIDGES.

⑤ HEAD WATER ELEVATIONS MAY VARY SLIGHTLY DEPENDING UPON THE PIPE OPTION SELECTED.

⑥ NOTE ANY CULVERTS THAT WERE SIZED USING THE HEADWATER EXCEPTION PROCEDURE PER SECTION 11.3.1.3.2 OF THE HYDRAULICS MANUAL. (FORMERLY CALLED PM10.)

EXCEEDANCE PROBABILITY

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

SHEET NO.
7

HYDRAULIC DATA SUMMARY

PROJECT NAME: I-15 CULVERTS - SHELBY
COUNTY: TOOLE
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: L. DAVIES 07/27/23
REVIEWED BY: C. KNUTH 07/27/23
CHECKED BY: J. JOHNSON 07/27/23

MONTANA Department of Transportation
HYDRAULICS

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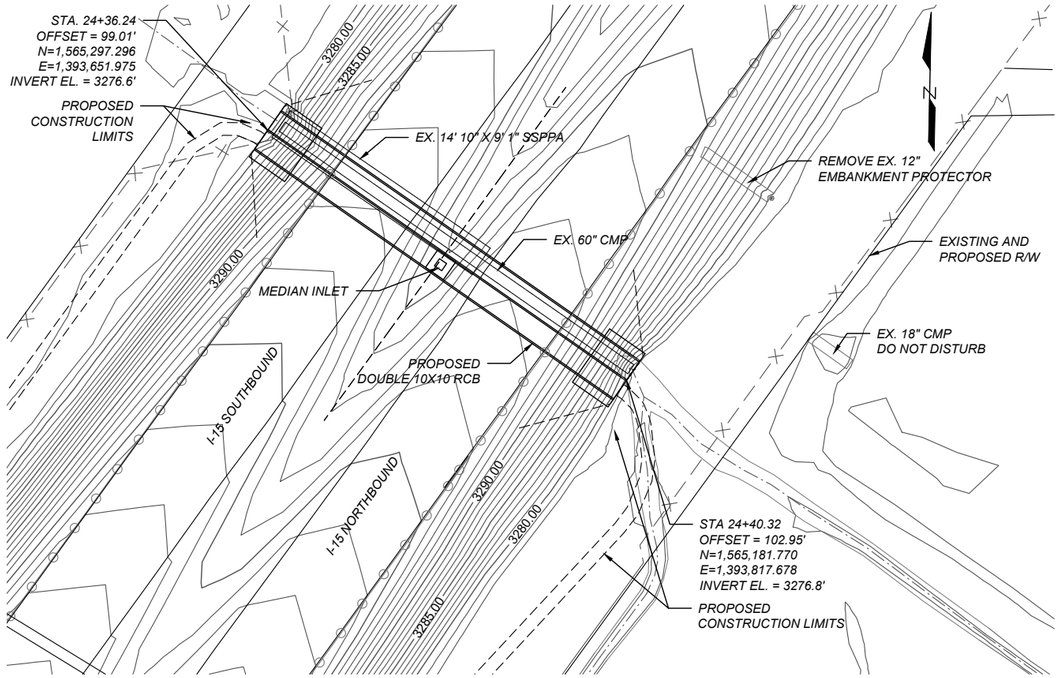
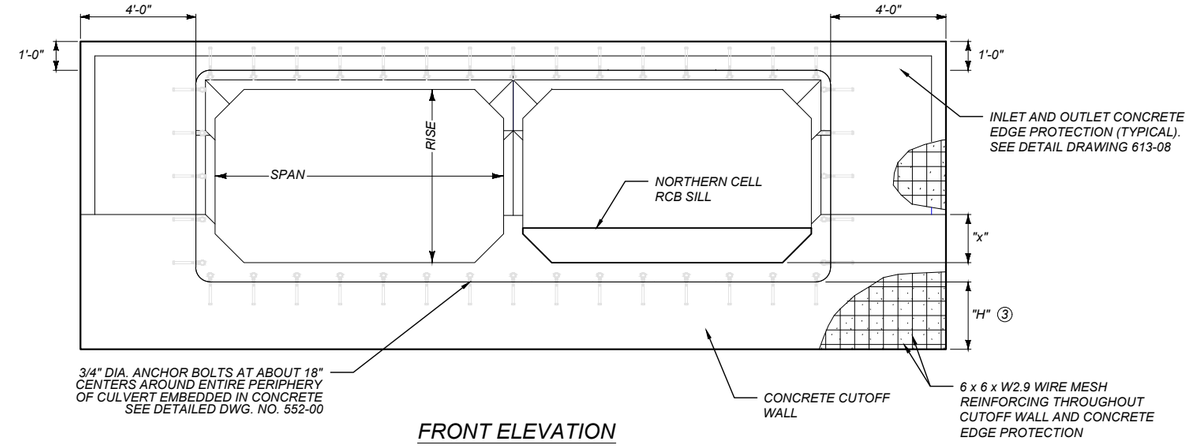
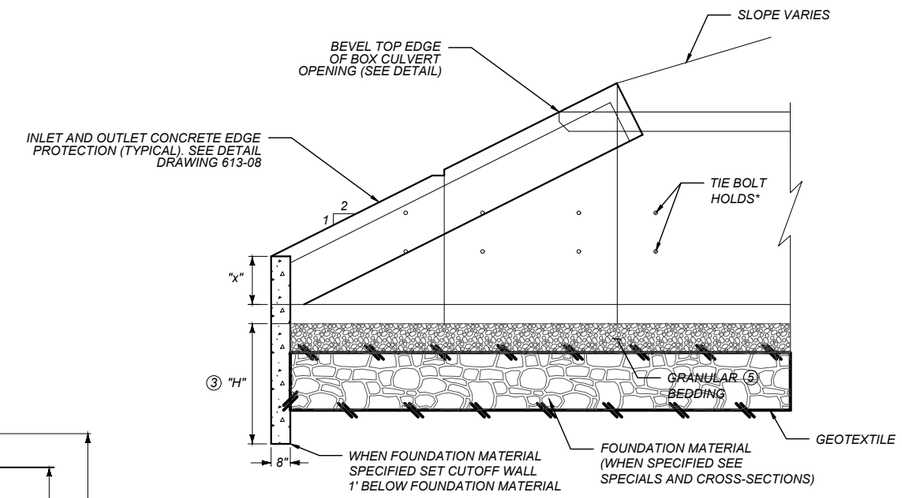


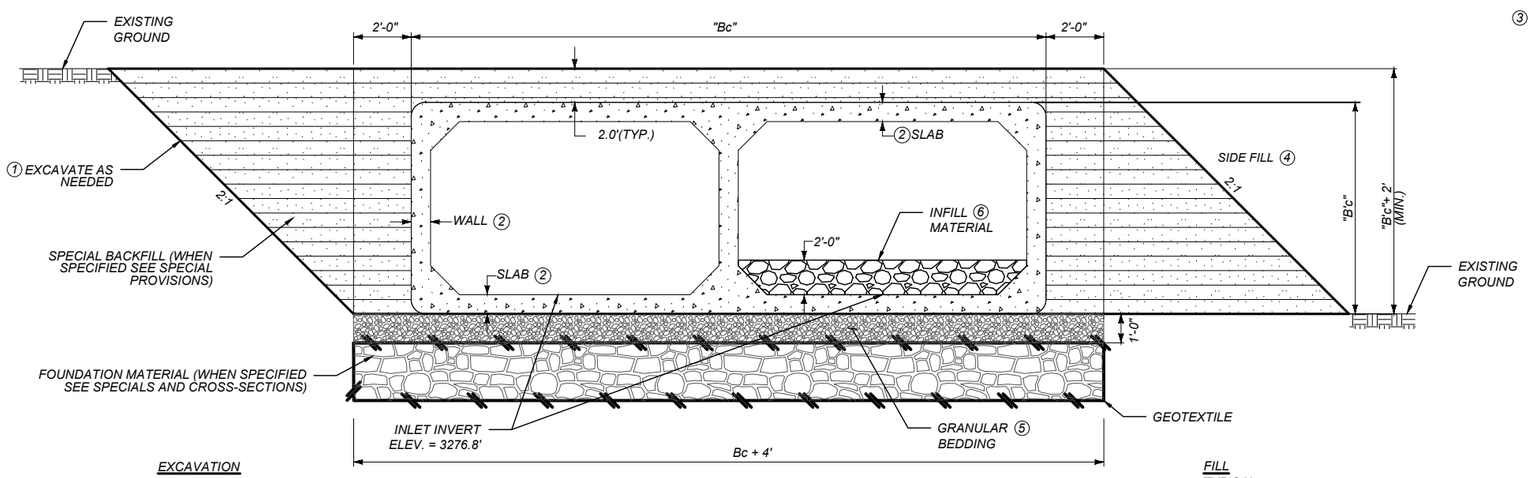


FRONT ELEVATION

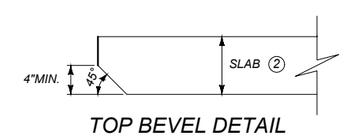


*TIE BOLTS, LOCATE PER MANUFACTURER'S RECOMMENDATION

SIDE ELEVATION



BEDDING DETAIL



TOP BEVEL DETAIL

DIMENSIONS										
STATION	SPAN (ft.)	RISE (ft.)	LENGTH (ft.)	WALL (in.)	SLAB (in.)	"Bc" (ft.)	"x" (ft.)	"B'c" (ft.)	"H" (ft.)	COVER (ft.)
24+38	10	10	202	8	8	22	1.667	11.3	4.0	1.8

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

NOTES:

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

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

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

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

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

⑥ INFILL NORTHERN CELL OF THE RCB WITH CRUSHED AGGREGATE COURSE.

SHEET NO.
8

STA. 24+38
DRAINAGE & STOCKPASS
DOUBLE RCB SLOPED END
DETAIL
NO SCALE

PROJECT NAME: I-15 CULVERTS - SHELBY
COUNTY: TOOLE
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY	REVIEWED BY	CHECKED BY
L. DAVIES 07/27/23	C. KNUTH 07/27/23	J. JOHNSON 07/27/23

10111000HYDET001.DWG

MONTANA Department of Transportation
HYDRAULICS
7/13/2023 1:49 PM

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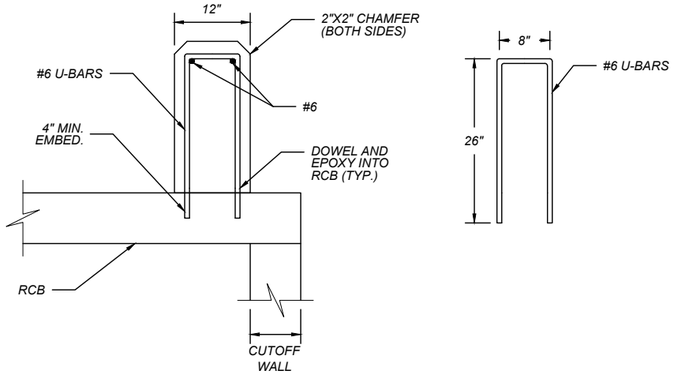
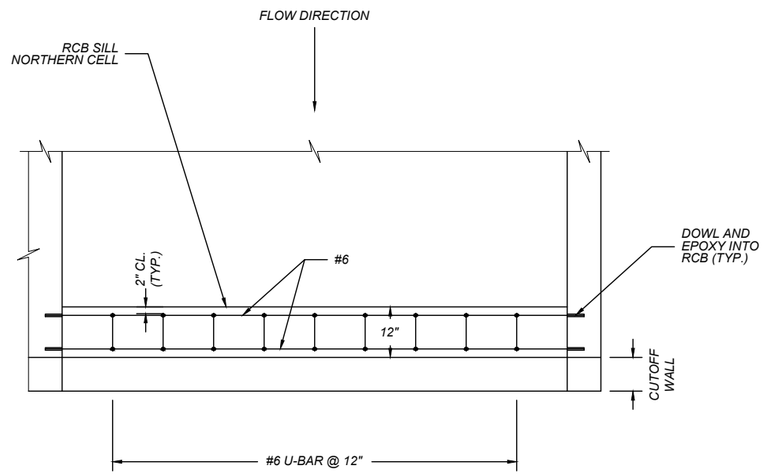
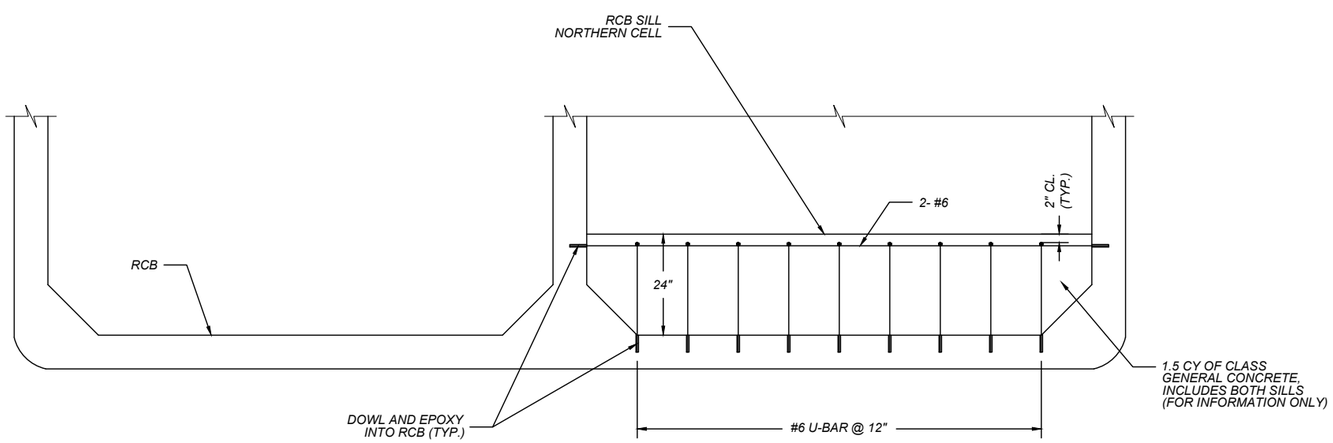


PRECAST BOX CULVERT TYPICAL SILL DETAIL

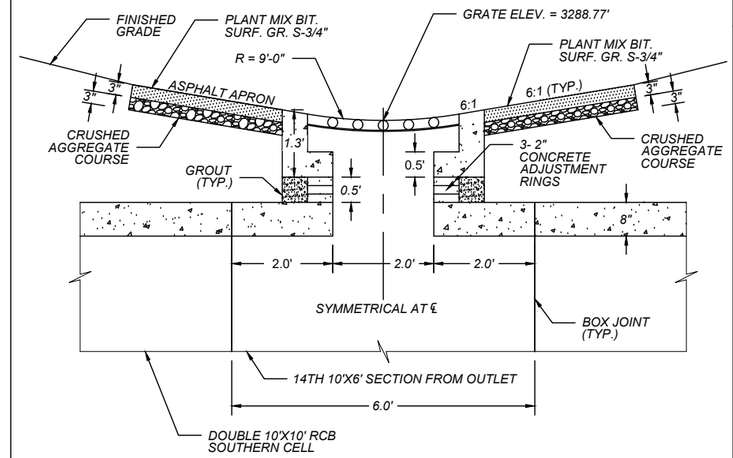


PLAN TYPICAL SILL

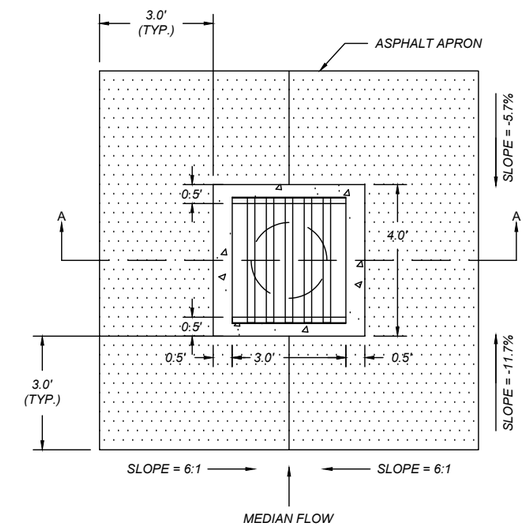


PROFILE TYPICAL SILL

NOTES:
1. INCLUDE REINFORCING MATERIAL AND CONCRETE SILL IN THE UNIT PRICE BID PRICE PER CUBIC YARD OF CLASS GENERAL CONCRETE.
2. FOR ALL DOWEL AND EPOXY INSTALLATIONS INTO THE RCB, MINIMUM EMBEDMENT DEPTH IS 4".
3. EPOXY RESIN BONDING ADHESIVE: MEET THE REQUIREMENTS OF AASHTO M 235 TYPE 4.



MEDIAN INLET SECTION A-A



TYPE 1 MEDIAN INLET PLAN VIEW

QUANTITIES			
	cubic yards		
STATION	COMMERCIAL MIX PG 70-28	CRUSHED AGG. COURSE	REMARKS
24+32.95	0.8	0.8	FOR INFORMATION ONLY

NOTES:
1. SEE DETAIL DWG NO. 604-00 FOR ADDITIONAL INFORMATION ON CONCRETE REINFORCEMENT AND GRATE DESIGN.
2. PAINT ALL EXPOSED METAL PARTS WITH ONE COAT OF ZINC RICH PAINT AND TWO COATS OF ALUMINUM PAINT PER SECTION 710.
3. INCLUDE THE COST OF THE OPENING IN THE RCB, IN THE COST OF THE DOUBLE 10' X 10' RCB.
4. INCLUDE THE COST OF THE GROUT, ADJUSTMENT RINGS, ASPHALT, CRUSHED AGG. COURSE, AND ANY OTHER INCIDENTALS NECESSARY TO COMPLETE THE WORK IN THE COST OF THE MEDIAN INLET.

SHEET NO.
9

RCB SILL & MEDIAN INLET DETAIL

PROJECT NAME: I-15 CULVERTS - SHELBY
COUNTY: TOOLE
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: L. DAVIES 07/27/23
REVIEWED BY: C. KNUTH 07/27/23
CHECKED BY: J. JOHNSON 07/27/23
10111000HYDET001.DWG

MONTANA Department of Transportation
HYDRAULICS
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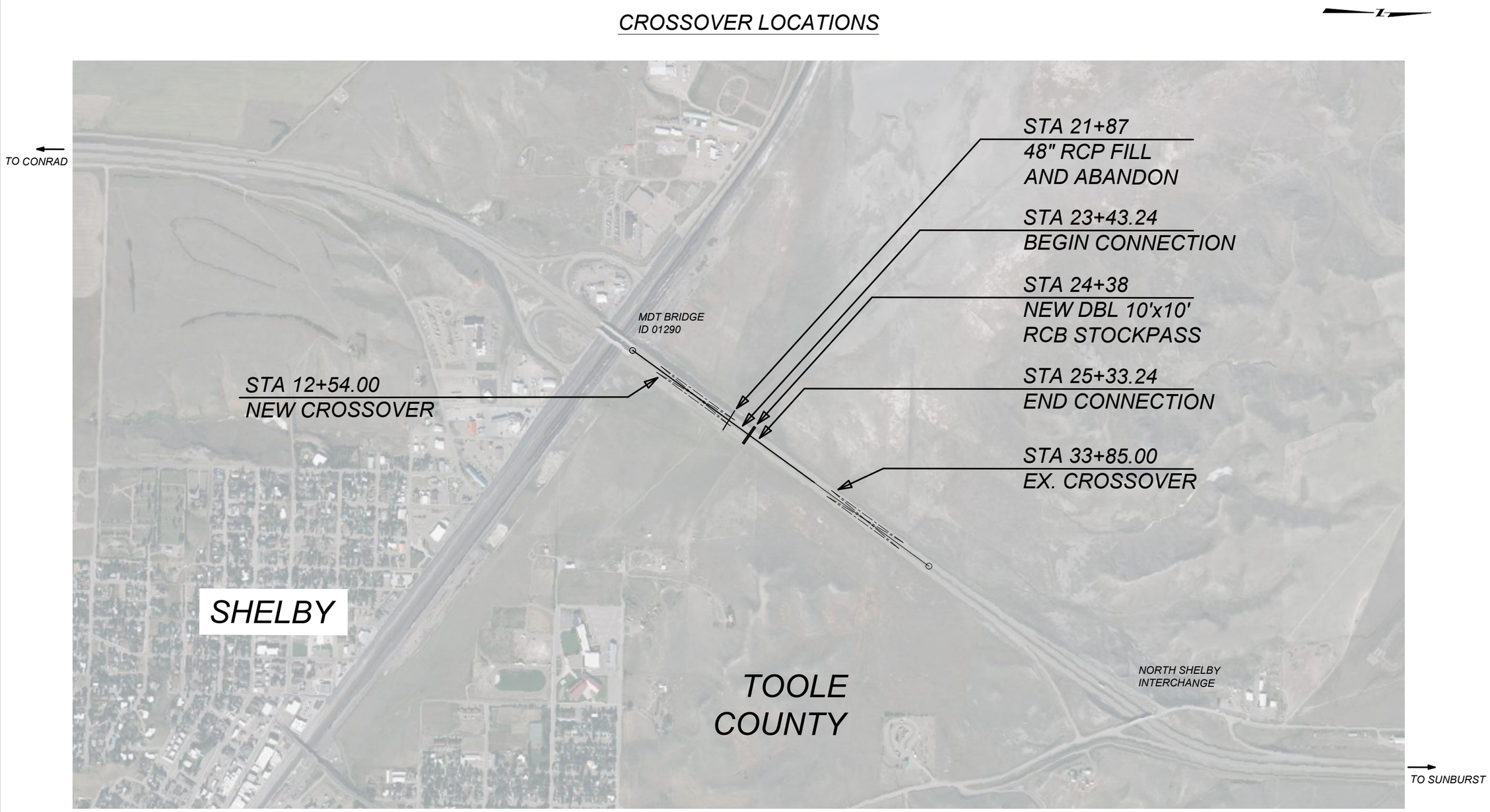
DETAIL

CROSSOVER LOCATIONS



SHEET NO.
10

CROSSOVER DETAILS
(NO SCALE)

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 07/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation
ROAD PLANS

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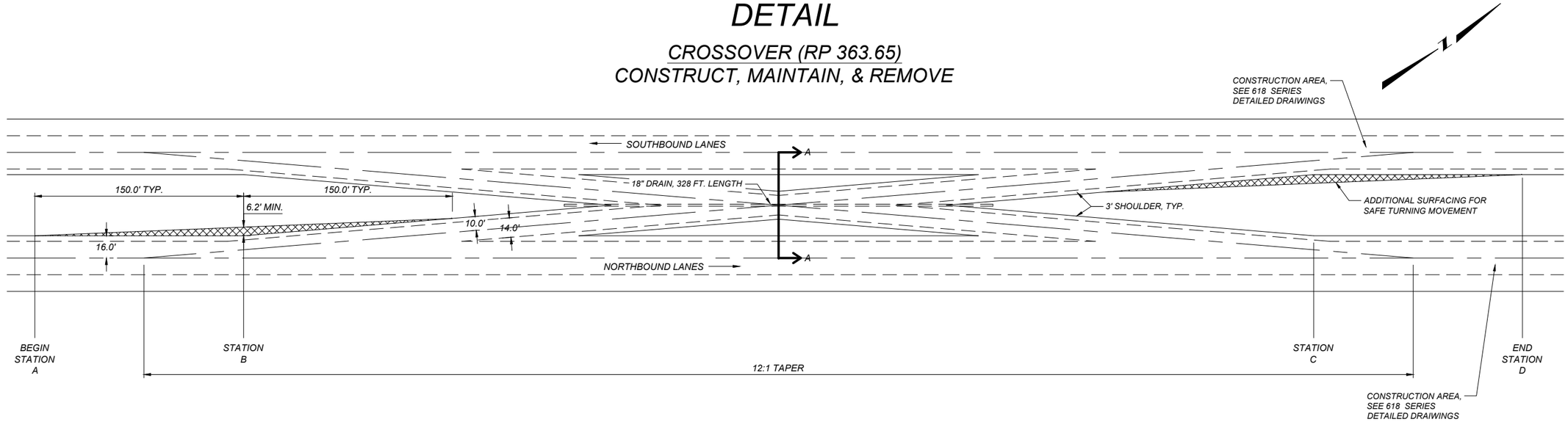
DETAIL

CROSSOVER (RP 363.65)
CONSTRUCT, MAINTAIN, & REMOVE



QUANTITIES FOR RP 363.65 CROSSOVER
(FOR INFORMATIONAL PURPOSES ONLY)

PLANT MIX BIT. SURF. (COMMERCIAL MIX PG 70-28)	= 609 TONS
CRUSHED AGG COURSE	= 1,120 CU YDS
EMULSIFIED ASPHALT TACK	= 262 GAL.
EMBANKMENT +	= 410 CU YDS
18" CSP (0.064" WALL THICKNESS)	= 328 LIN. FT.
COVER	= 1.5 FT. MIN.
10:1 SAFETY SLOPED END	= 2 EACH

NOTES:

STATIONING IS APPROXIMATE - ADJUST TO BEST FIT THE TERRAIN WHILE MEETING THE TAPERS AND DIMENSIONS DESCRIBED IN THE MDT MEDIAN CROSSOVERS (INTERSTATE) PROCEDURES & GUIDELINES.

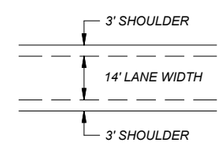
ANY TOPSOIL AND SEEDING ASSOCIATED WITH THE DIVIDED CROSSOVERS IS INCLUDED IN THE COST OF THE CROSSOVER RECLAMATION.

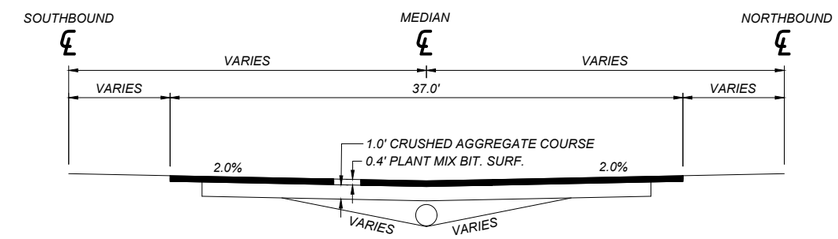
DESIGN SPEED = 45 MPH

CROSSOVER STATIONING

CROSSOVER RP	A	B	C	D
RP 363.65	12+54	14+04	21+73	23+23

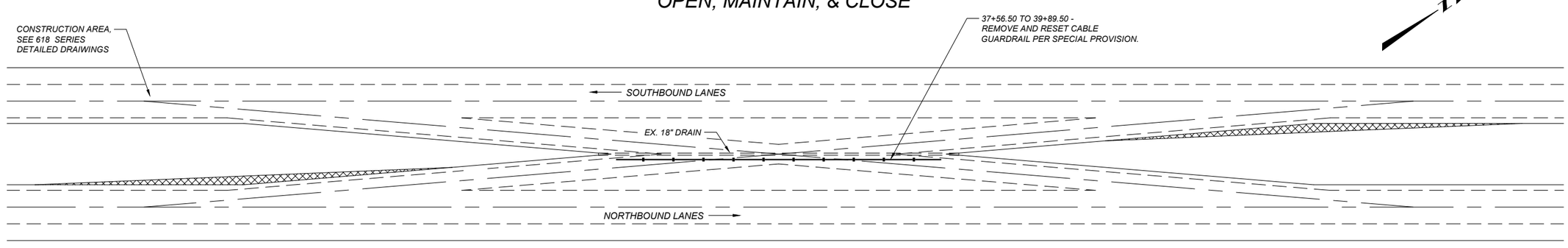
TYPICAL CROSSOVER SECTION





SECTION A-A

CROSSOVER (RP 364.20)
OPEN, MAINTAIN, & CLOSE



SHEET NO.
11

CROSSOVER DETAILS
(NO SCALE)

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY	D. BRAATEN	07/2023
REVIEWED BY	J. COMBS	03/2024
CHECKED BY	J. CERECK	03/2024

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MONTANA Department of Transportation

ROAD PLANS

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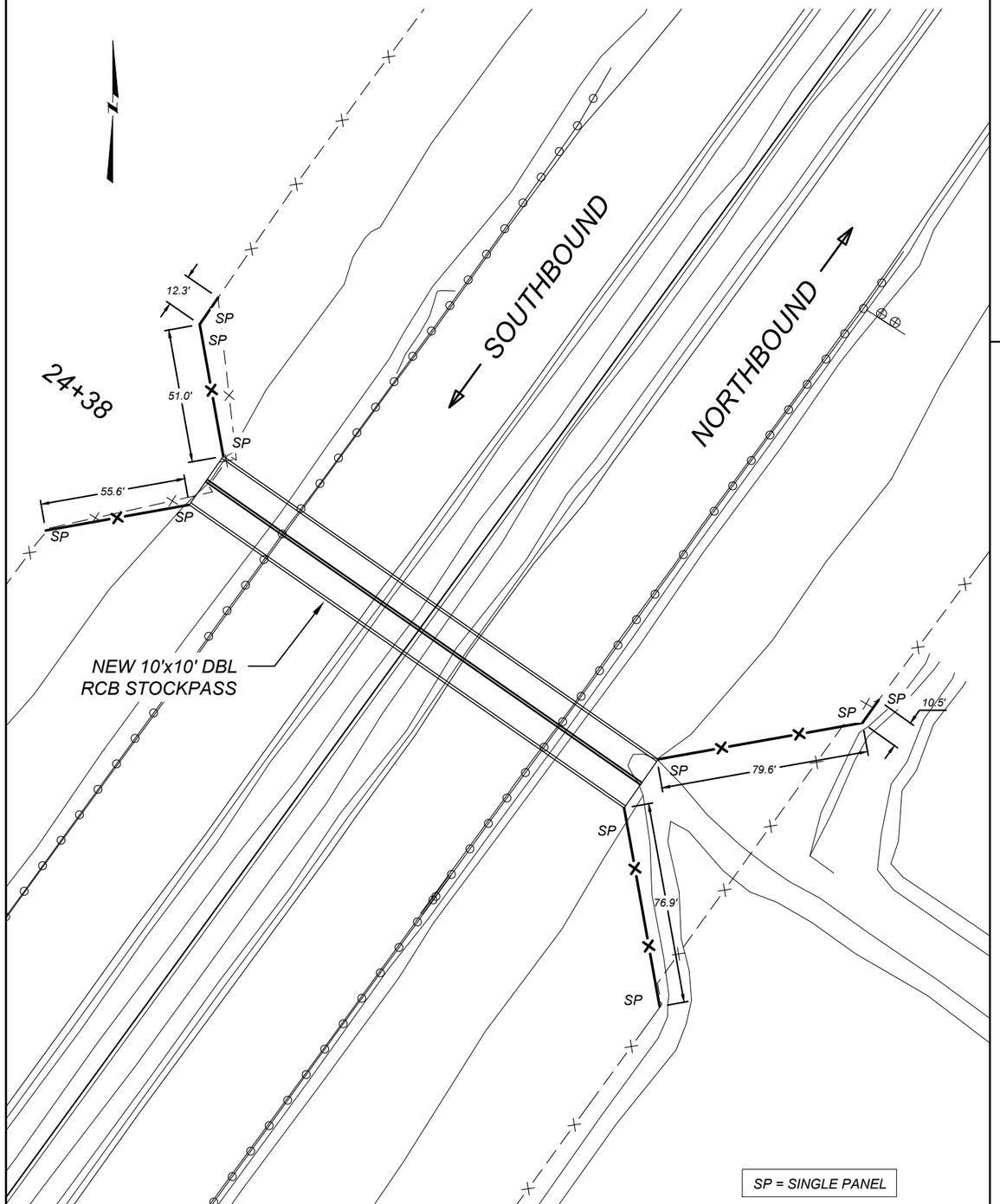
ADVERTISED COPY

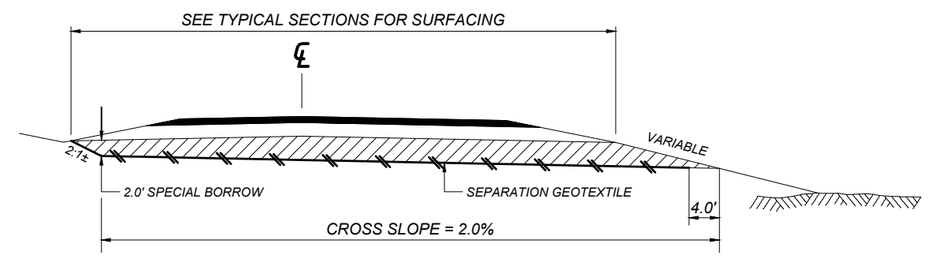
DETAIL

FENCING DETAIL



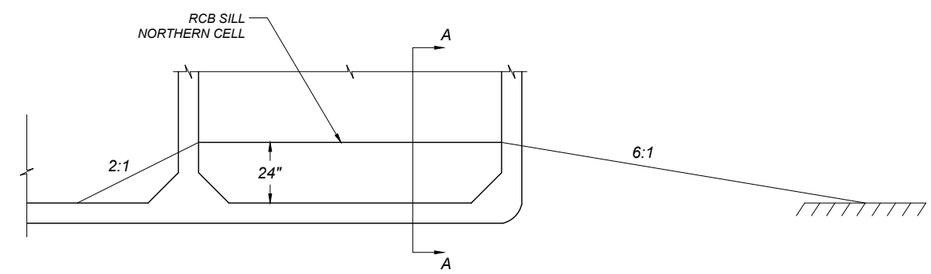
SPECIAL BORROW DETAIL

NORTHBOUND
(REVERSE FOR SOUTHBOUND)

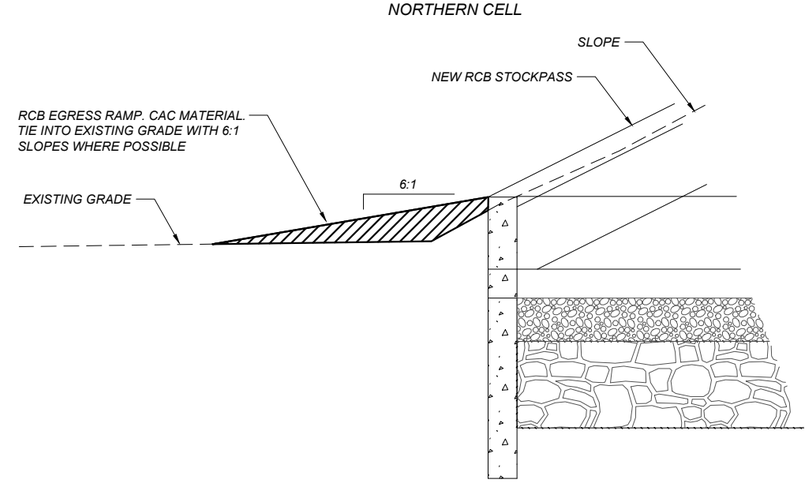


RCB EGRESS RAMP DETAIL

ENTRANCE/EXIT VIEW



SECTION A-A
NORTHERN CELL



SHEET NO.
12

FENCING, SPECIAL BORROW, AND RCB EGRESS RAMP DETAILS (NO SCALE)

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 101111000

DESIGNED BY	D. BRAATEN	07/2023
REVIEWED BY	J. COMBS	03/2024
CHECKED BY	J. CERECK	03/2024

MONTANA Department of Transportation
ROAD PLANS
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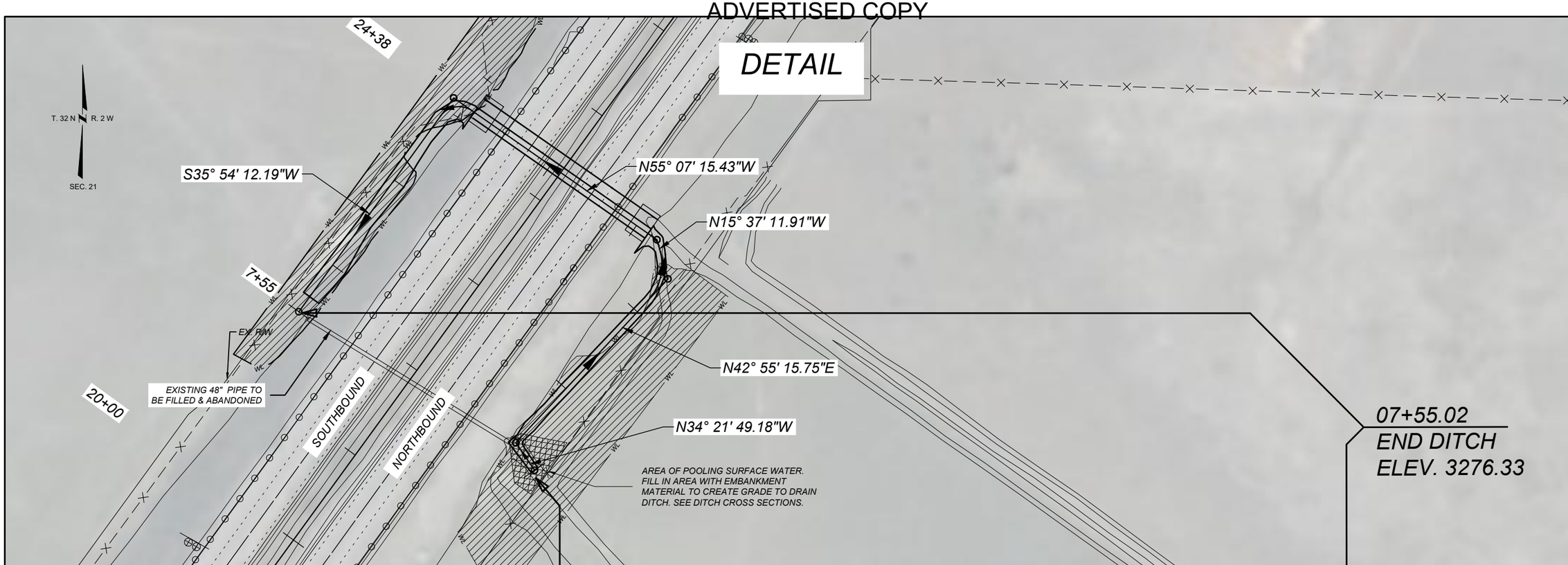
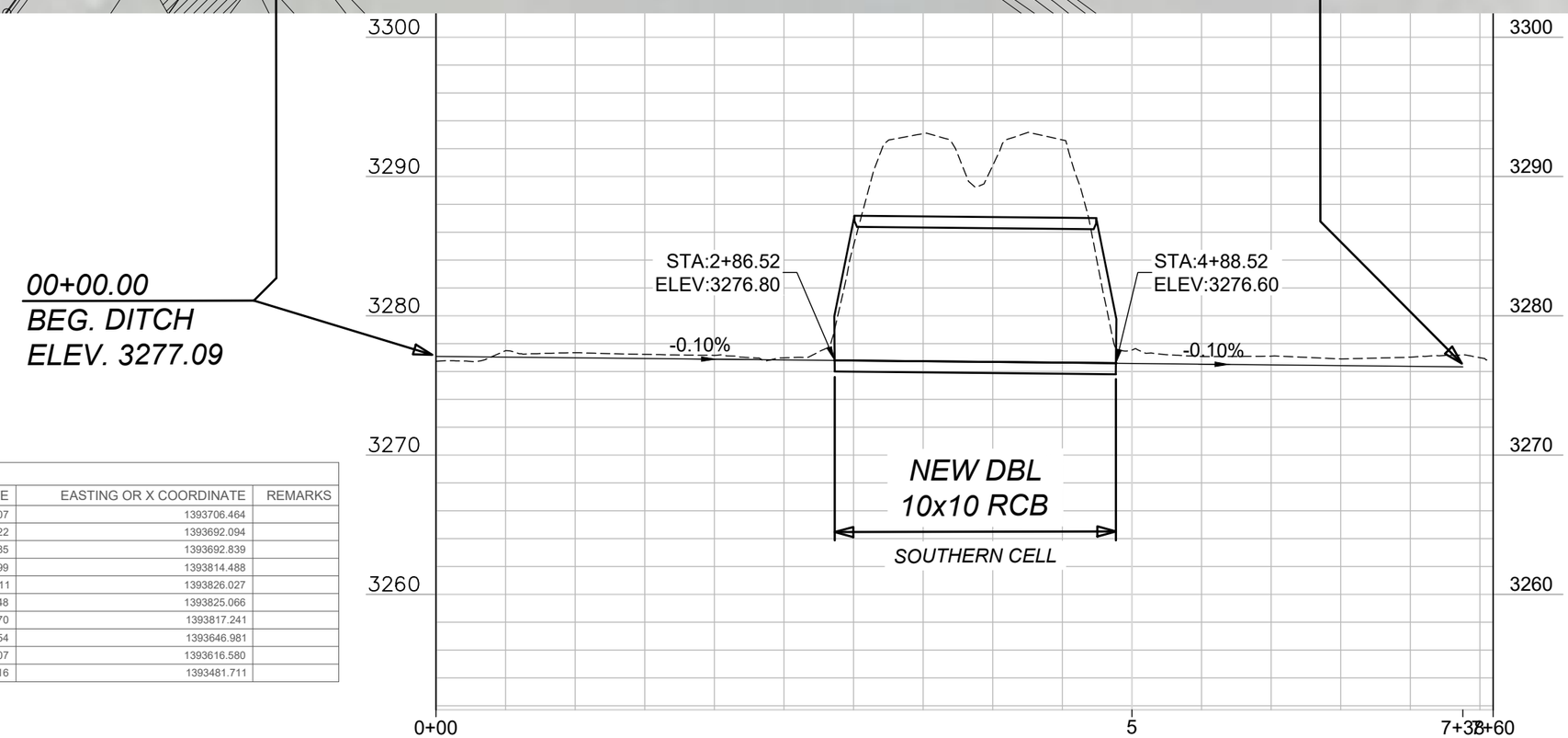
ADVERTISED COPY





CL I-15 Ditch				
STATION	DESCRIPTION	NORTHING OR Y COORDINATE	EASTING OR X COORDINATE	REMARKS
0+00.00	BOA	1564951.807	1393706.464	
0+25.46	PC	1564972.822	1393692.094	
0+36.25	PT	1564982.785	1393692.839	
2+14.88	PC	1565113.599	1393814.488	
2+65.97	PT	1565161.111	1393826.027	
2+69.54	PC	1565164.548	1393825.066	
2+83.33	PT	1565175.570	1393817.241	
4+90.87	PC	1565294.254	1393646.981	
5+25.04	PT	1565289.107	1393616.580	
7+55.02	EOA	1565102.816	1393481.711	

SHEET NO.
13

DITCH
PLAN AND PROFILE
DETAIL

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 11/17/2023
REVIEWED BY: J. CERECK ####
CHECKED BY: J. CERECK 03/2024
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MONTANA
Department of Transportation

ROAD PLANS

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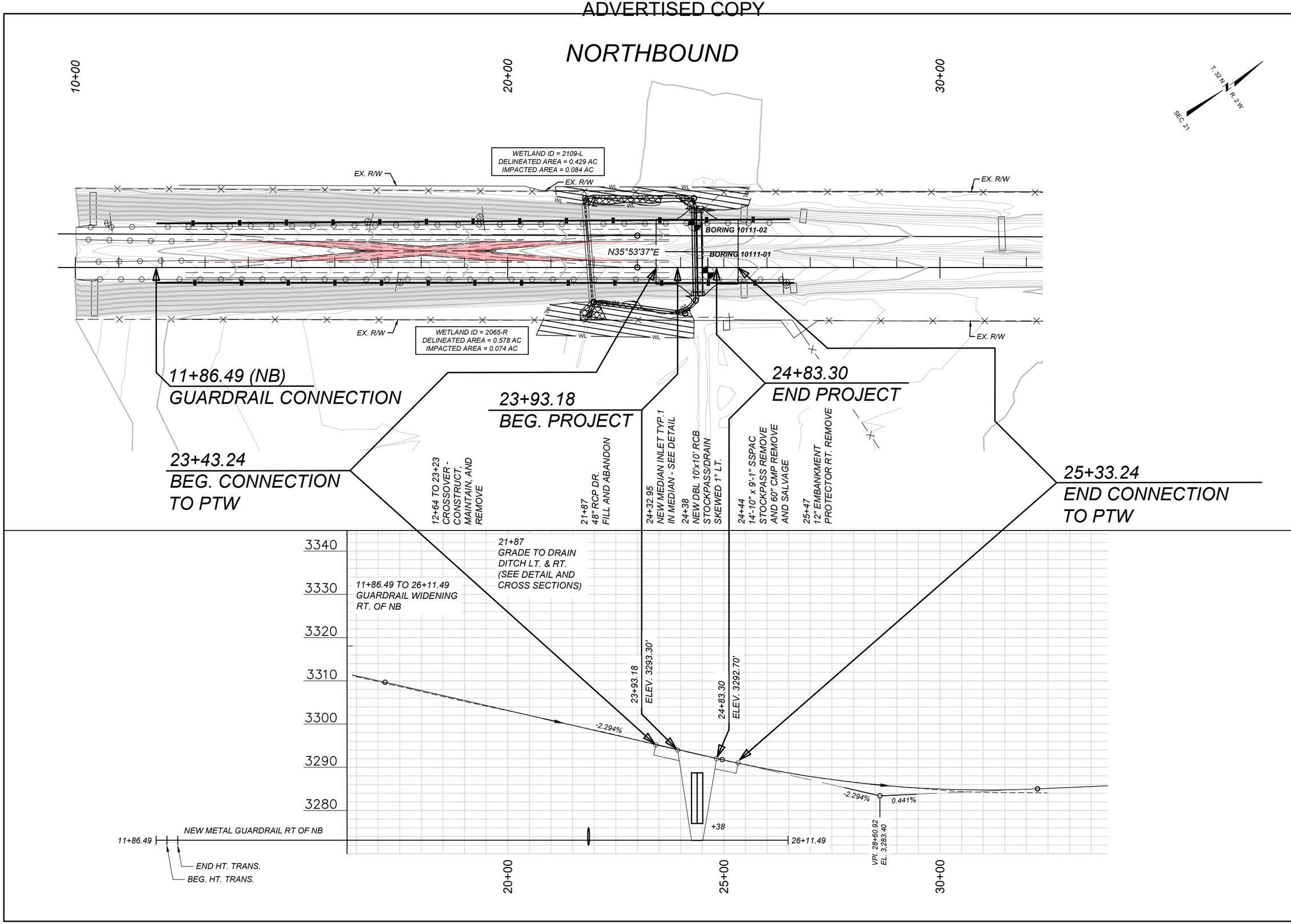

SHEET NO.
14

NORTHBOUND
PLAN AND PROFILE

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 08/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

10111000RDPLP001.DWG

MONTANA
Department of Transportation

ROAD PLANS

6/12/2024 8:34 AM

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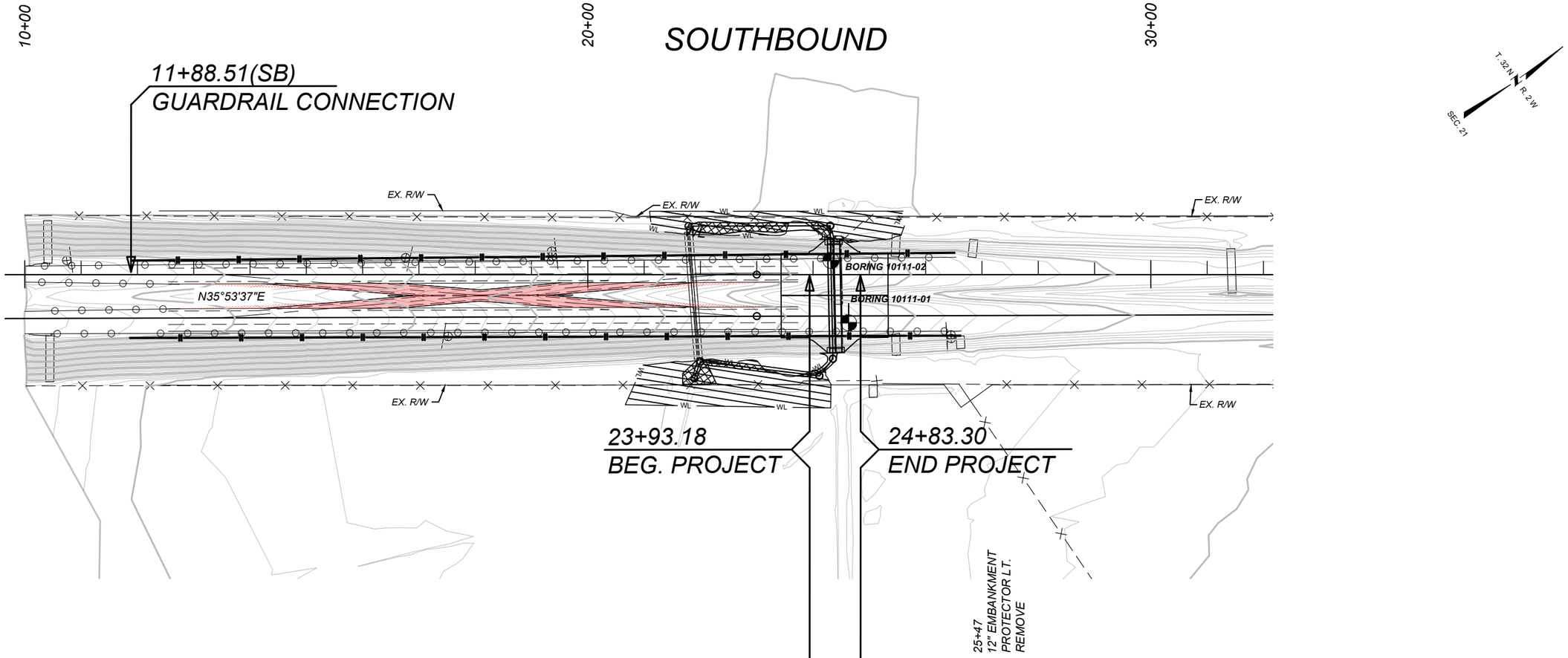

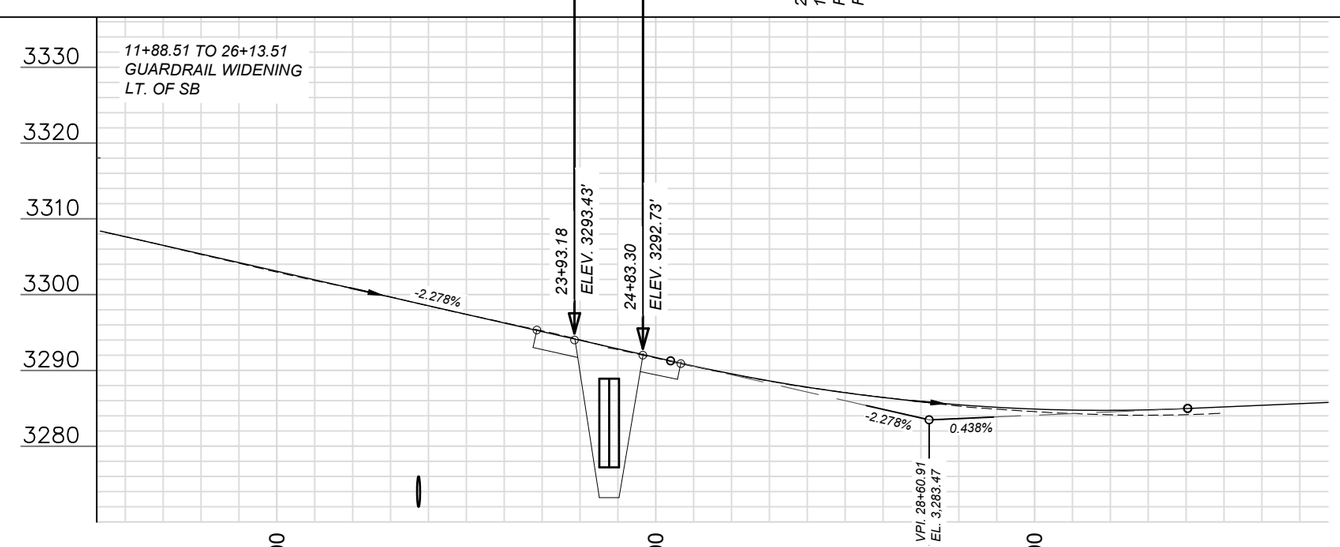

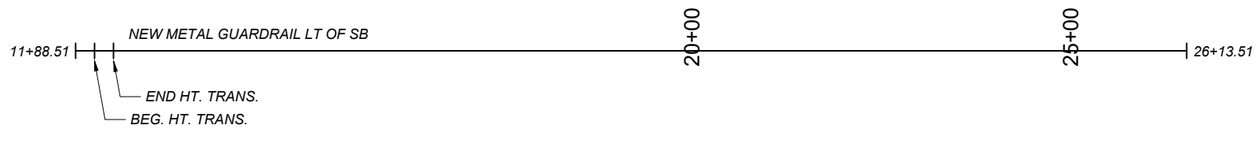

SHEET NO.
15

SOUTHBOUND
PLAN AND PROFILE

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 08/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

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MONTANA
Department of Transportation

ROAD PLANS

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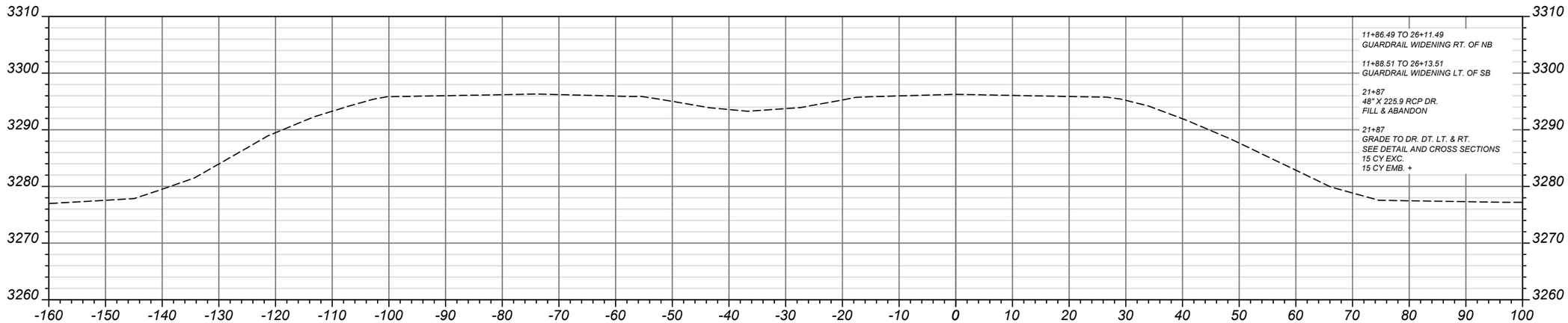

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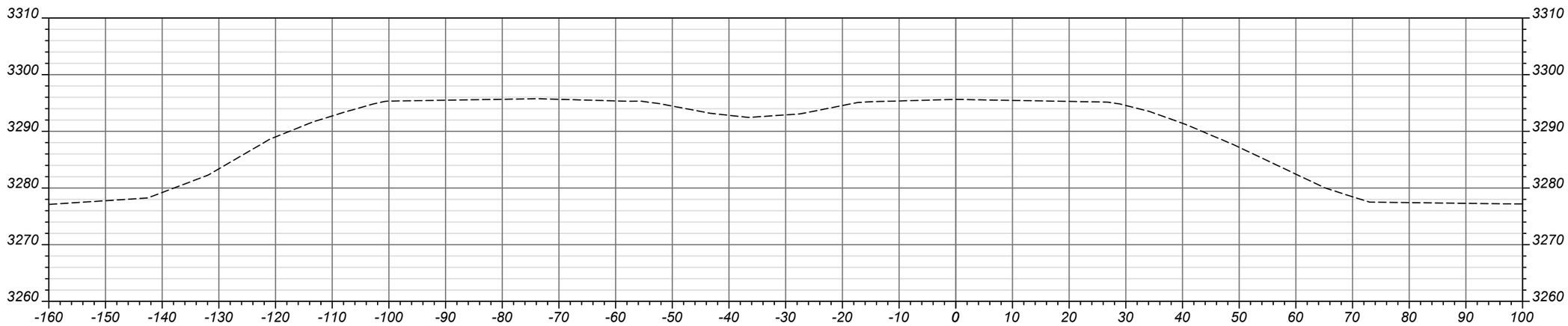

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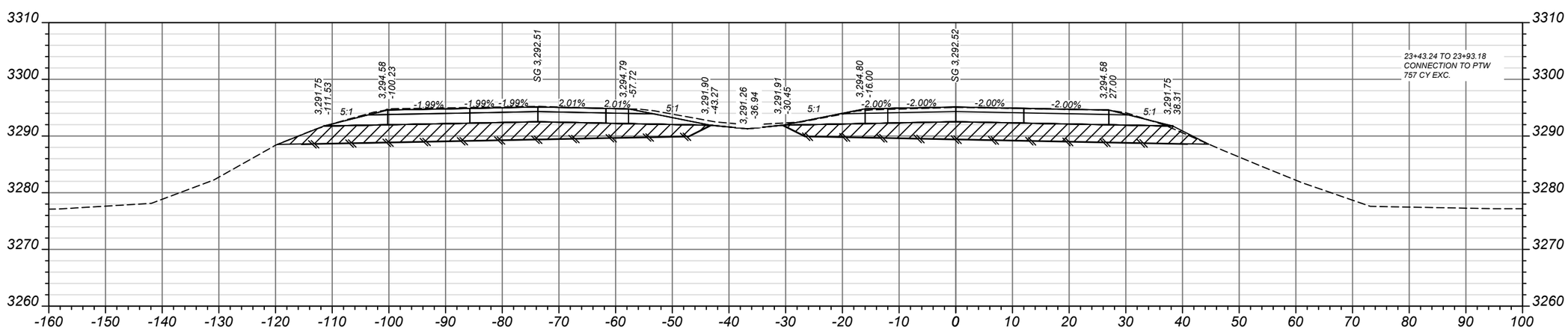

STA 23+50.00

SHEET NO.
1

CROSS SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY	08/2023
D. BRAATEN	
REVIEWED BY	03/2024
J. COMBS	
CHECKED BY	03/2024
J. CERECK	

10111000RDXSF001.DWG

MONTANA
Department of Transportation

CROSS SECTIONS

6/12/2024 8:19 AM

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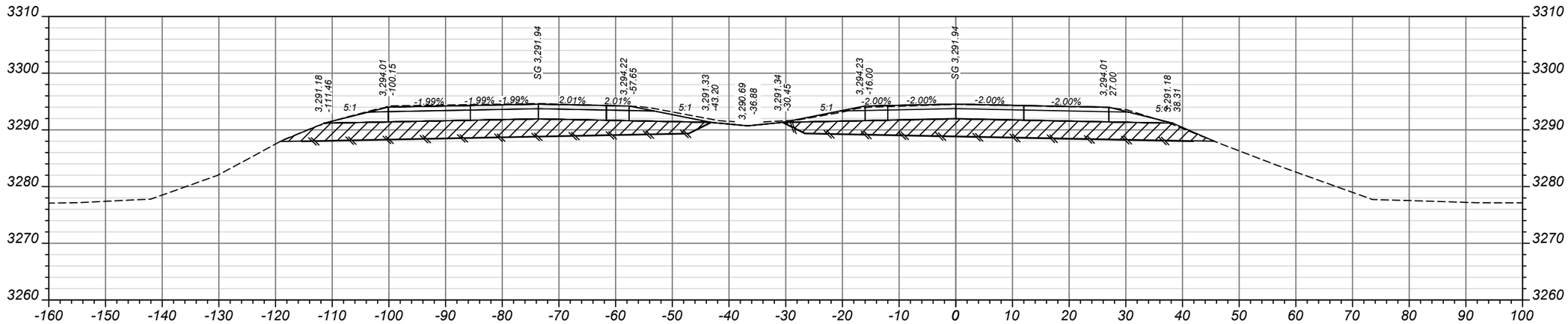

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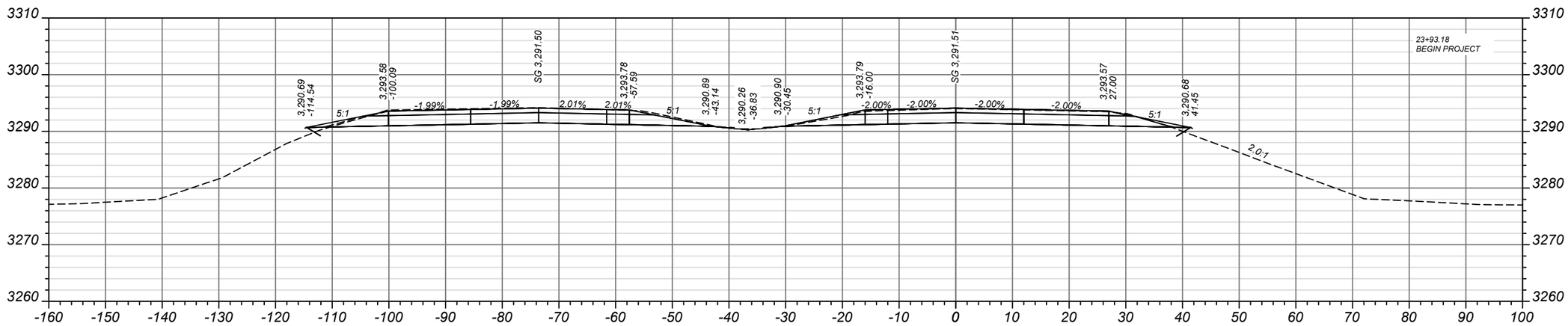

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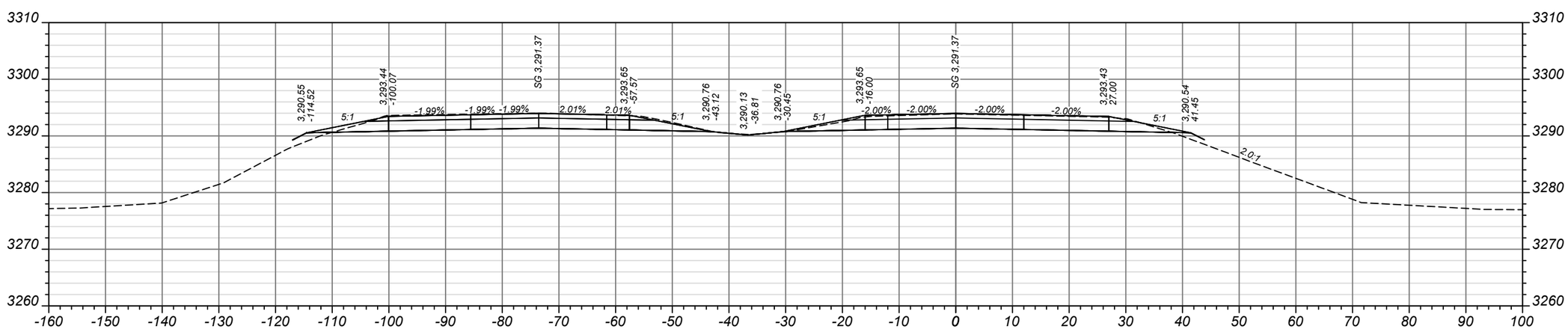

STA 24+00.00

SHEET NO.
2

CROSS SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY	08/2023
D. BRAATEN	
REVIEWED BY	03/2024
J. COMBS	
CHECKED BY	03/2024
J. CERECK	

10111000RDXSF001.DWG

MONTANA Department of Transportation

CROSS SECTIONS

6/12/2024 8:19 AM

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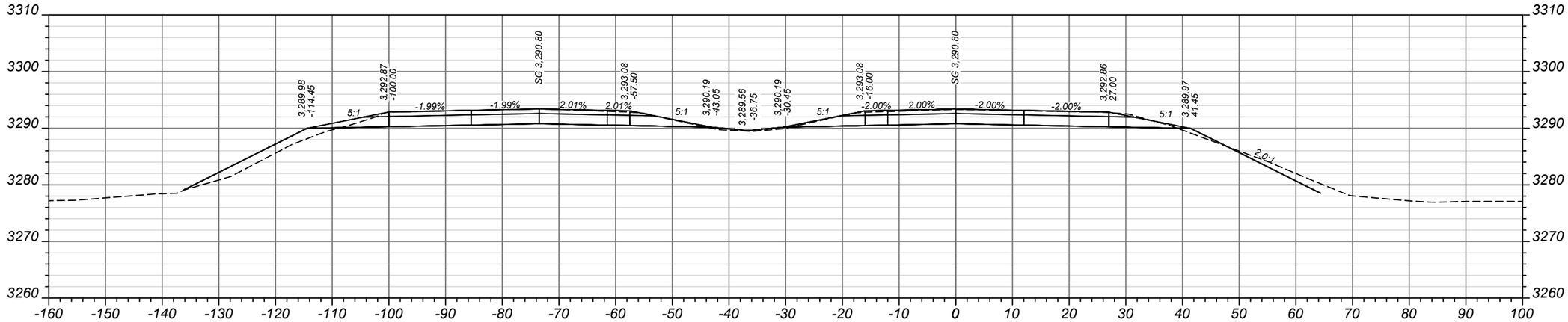

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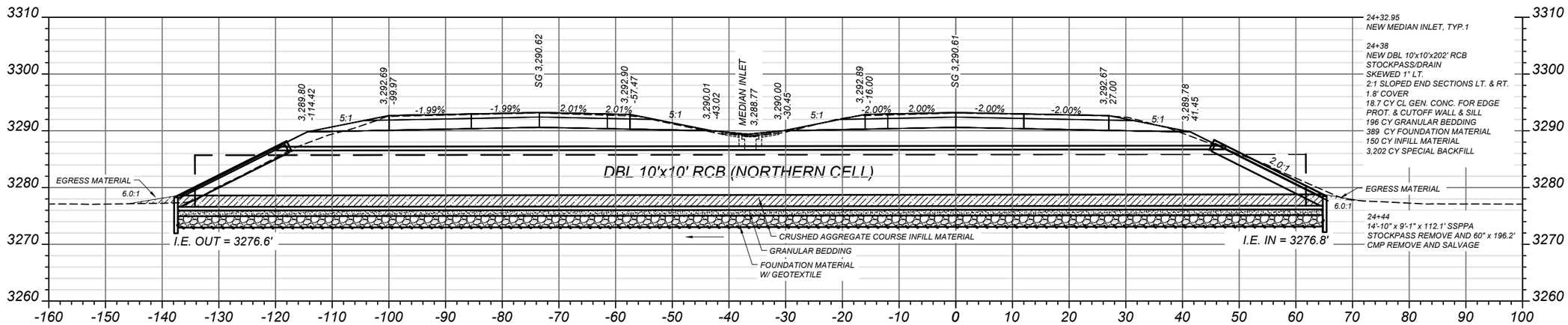

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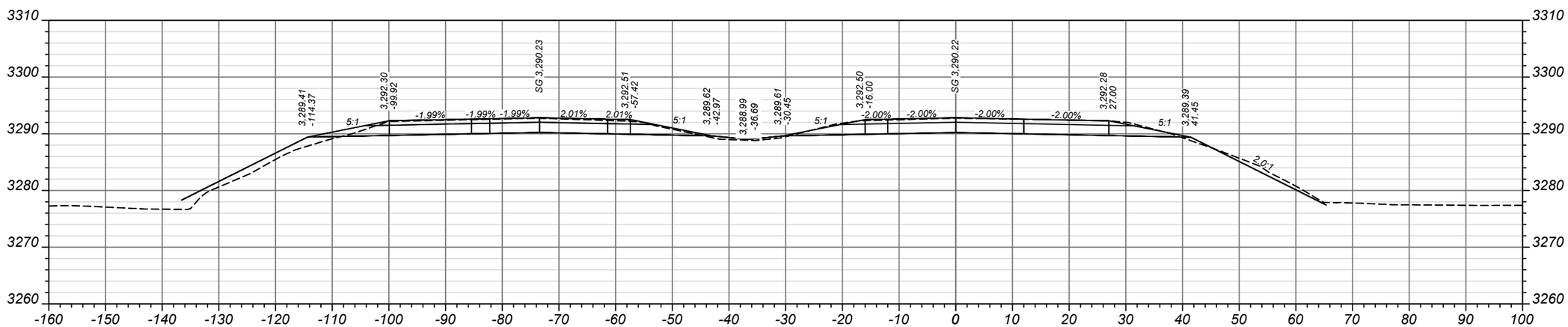

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SHEET NO.
3

CROSS SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY	08/2023
D. BRAATEN	
REVIEWED BY	03/2024
J. COMBS	
CHECKED BY	03/2024
J. CERECK	

10111000RDXSF001.DWG

MONTANA Department of Transportation

CROSS SECTIONS

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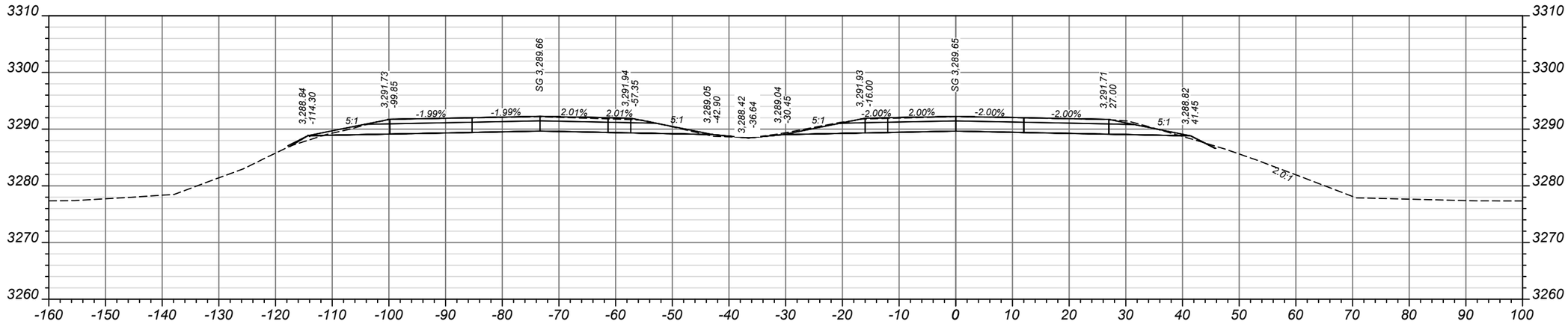

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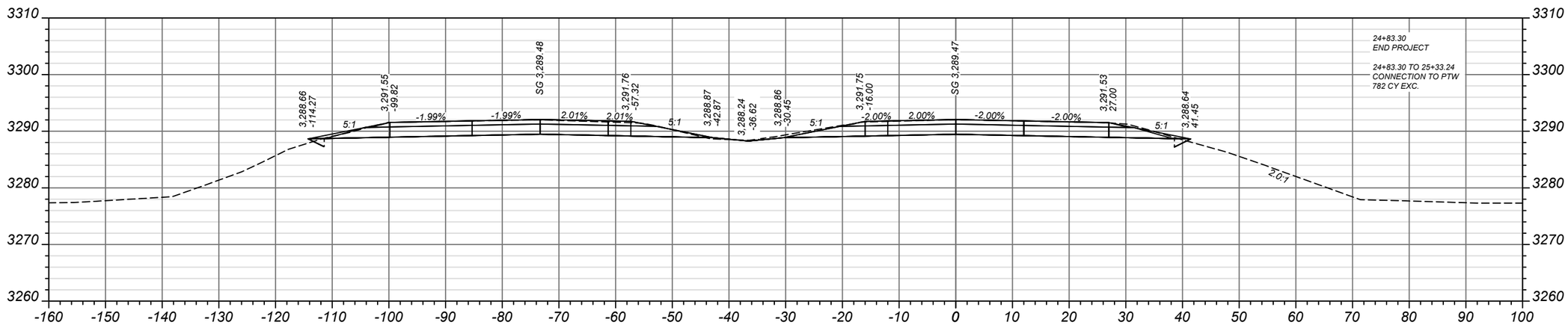

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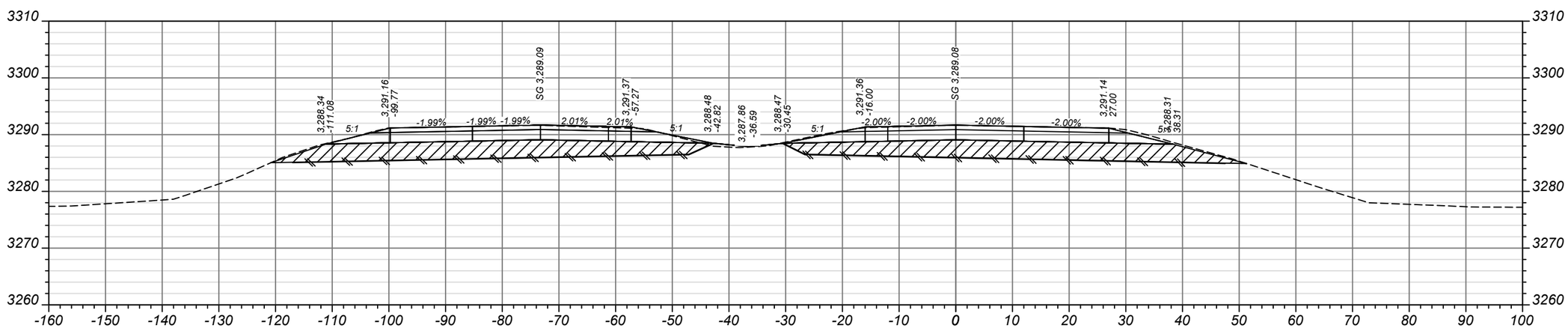

STA 25+00.00

SHEET NO.
4

CROSS SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 08/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

10111000RDXSF001.DWG

MONTANA Department of Transportation

CROSS SECTIONS

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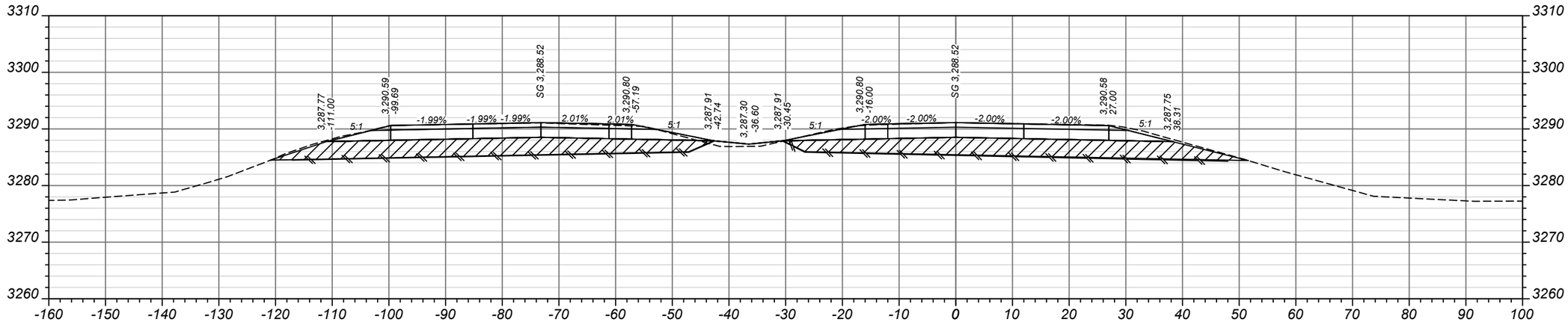

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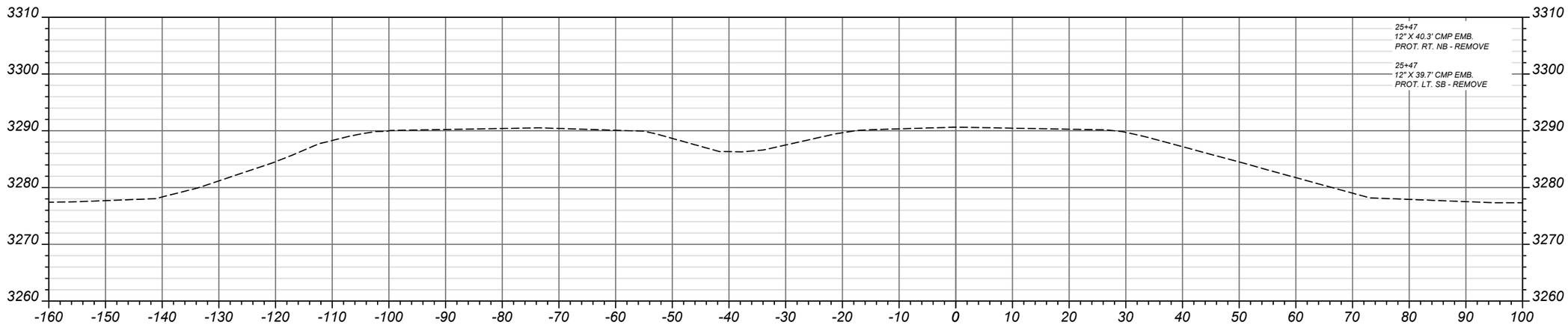

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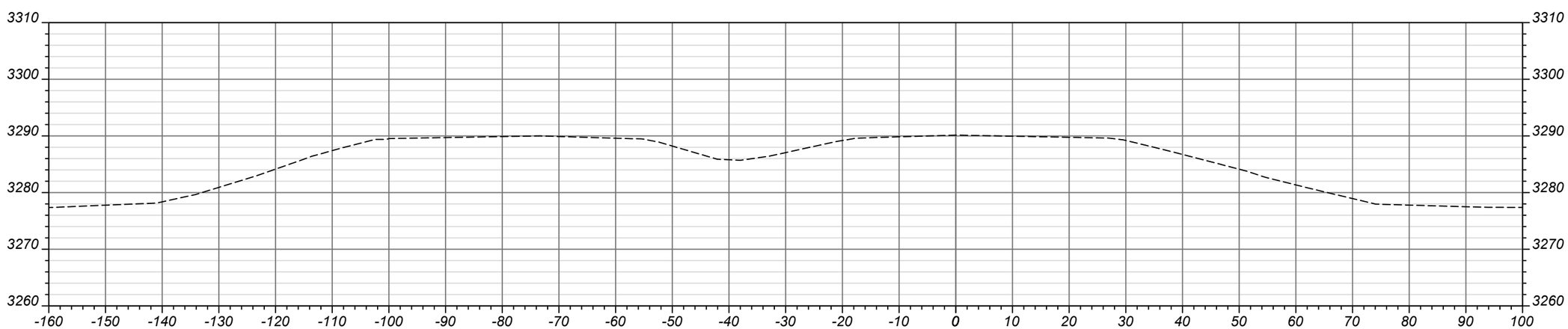


STA 25+75.00

SHEET NO.
5

CROSS SECTIONS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 08/2023
REVIEWED BY: J. COMBS 03/2024
CHECKED BY: J. CERECK 03/2024

10111000RDXSF001.DWG

MONTANA Department of Transportation

CROSS SECTIONS

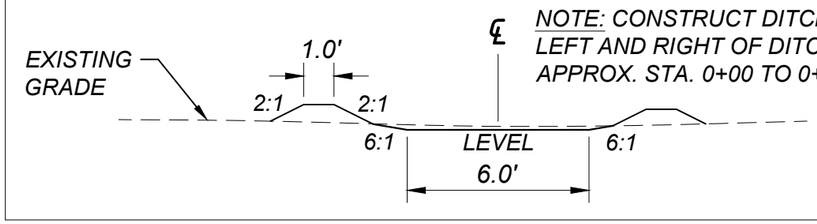
6/12/2024 8:19 AM

ADVERTISED COPY

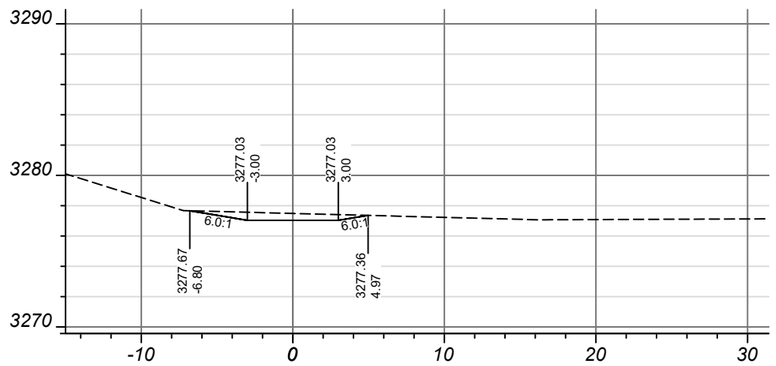
DETAIL

GRADE TO DRAIN DITCH CROSS SECTIONS

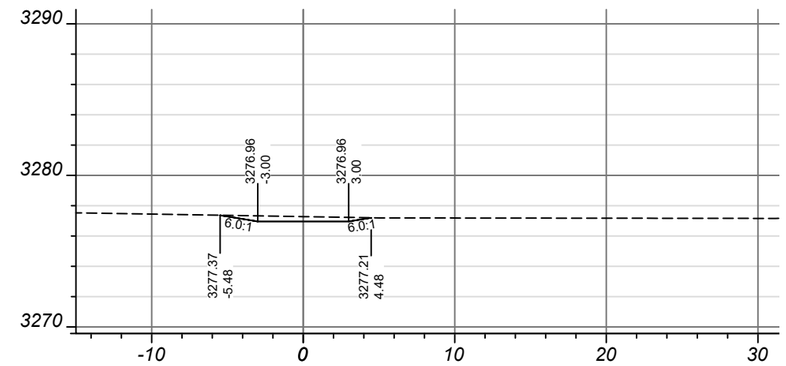
DITCH CROSS SECTION DETAIL



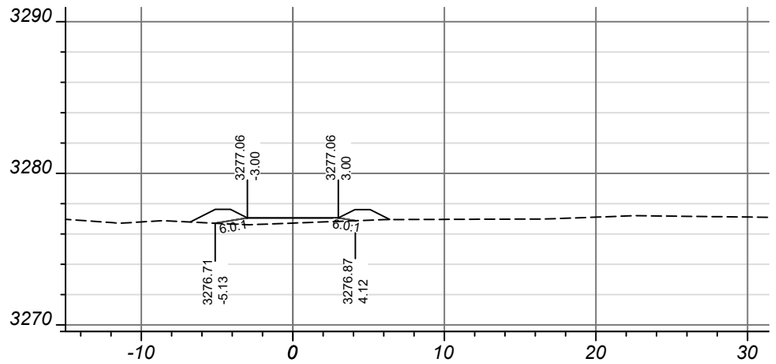
NOTE: CONSTRUCT DITCH BERM LEFT AND RIGHT OF DITCH FROM APPROX. STA. 0+00 TO 0+30.



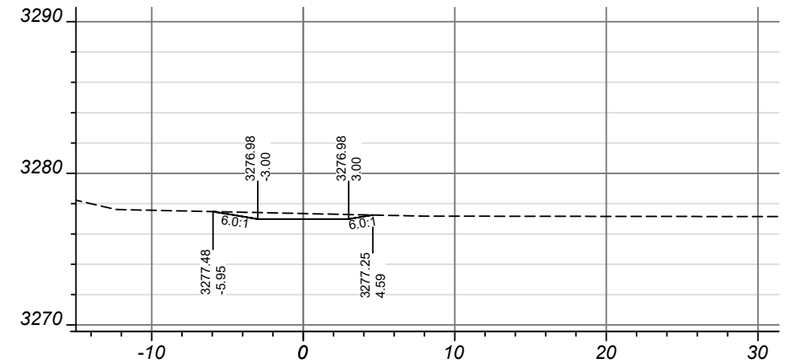
STA 0+50.00



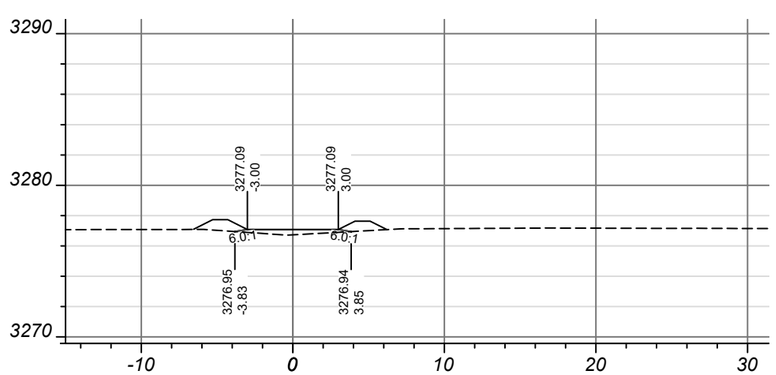
STA 1+25.00



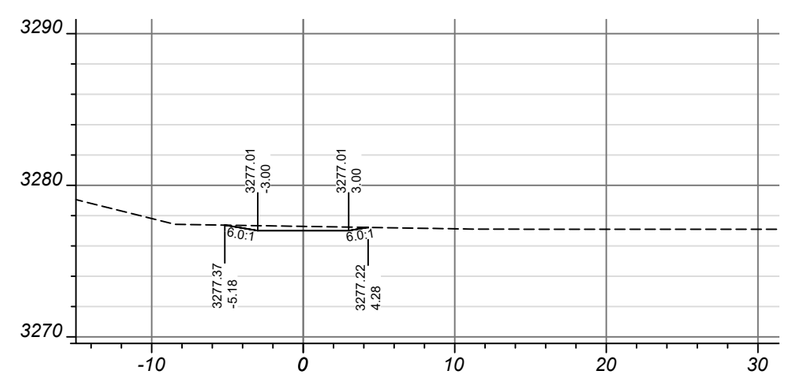
STA 0+25.00



STA 1+00.00



STA 0+00.00 DITCH BEGIN



STA 0+75.00

SHEET NO. 6

DITCH CROSS SECTION DETAILS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 11/21/2023
REVIEWED BY: J.CERECK ####
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation

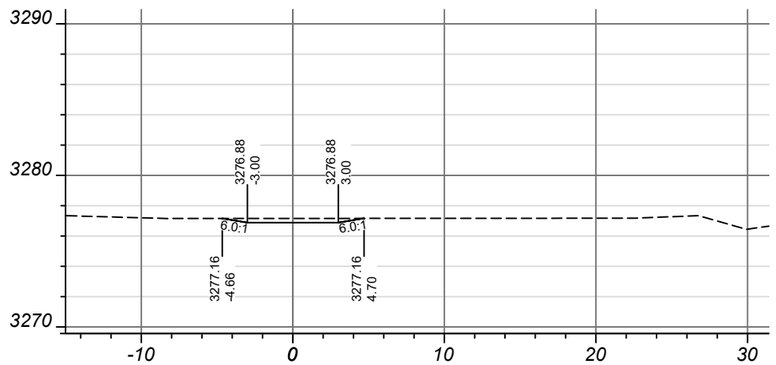
CROSS SECTIONS

6/12/2024 8:29 AM 10111000RDDET003.DWG

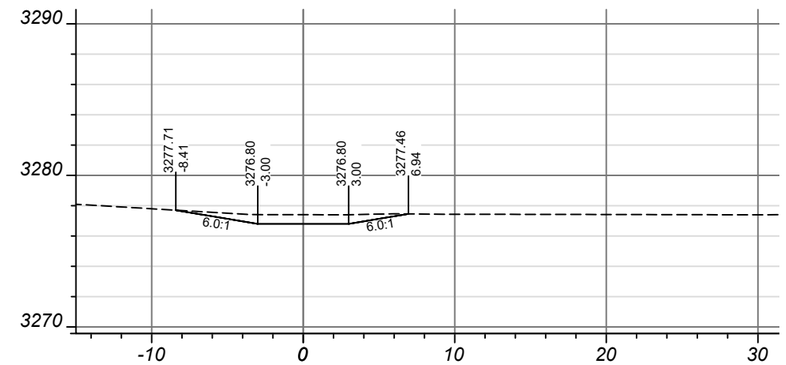
ADVERTISED COPY

DETAIL

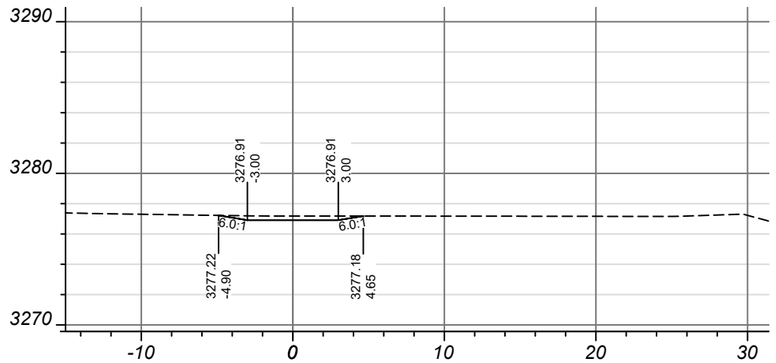
GRADE TO DRAIN DITCH CROSS SECTIONS



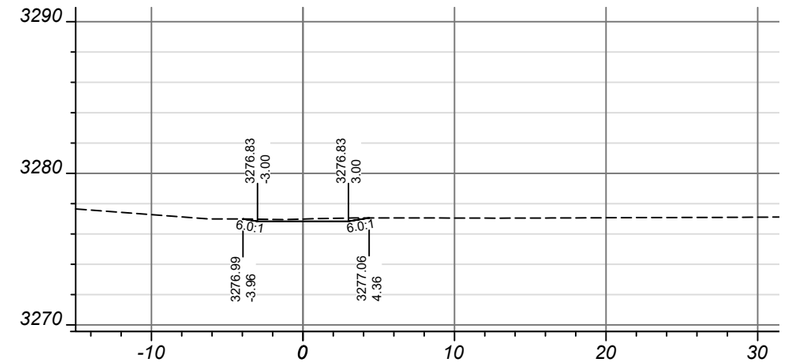
STA 2+00.00



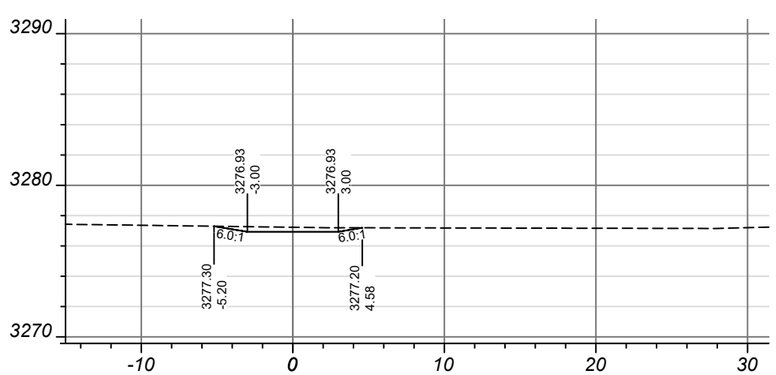
STA 2+75.00



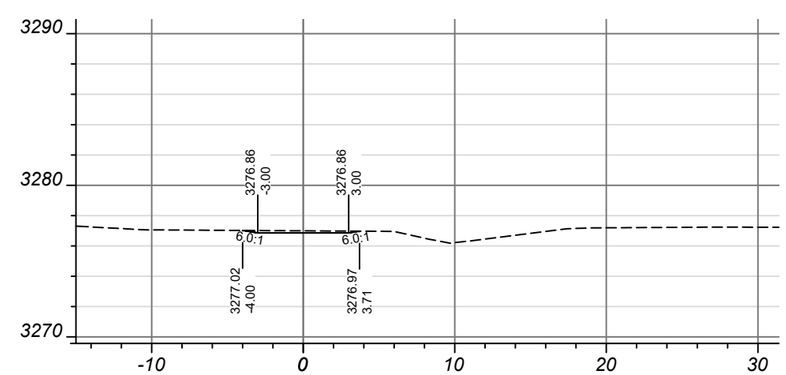
STA 1+75.00



STA 2+50.00



STA 1+50.00



STA 2+25.00

SHEET NO.
7

DITCH CROSS SECTION DETAILS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 101111000

DESIGNED BY: D. BRAATEN 11/21/2023
REVIEWED BY: J.CERECK ####
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation

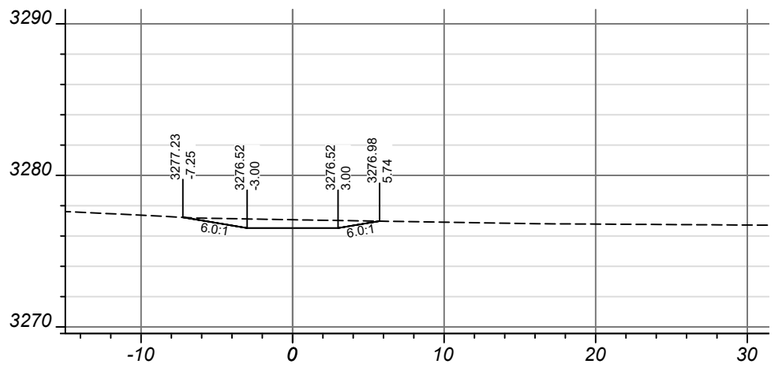
CROSS SECTIONS

6/12/2024 8:29 AM 10111000RDDET003.DWG

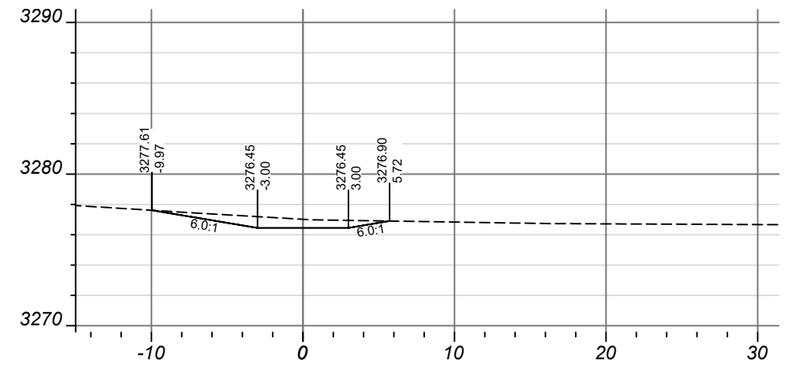
ADVERTISED COPY

DETAIL

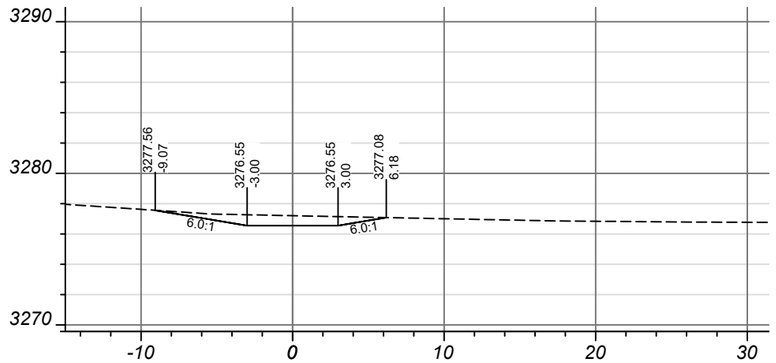
GRADE TO DRAIN DITCH CROSS SECTIONS



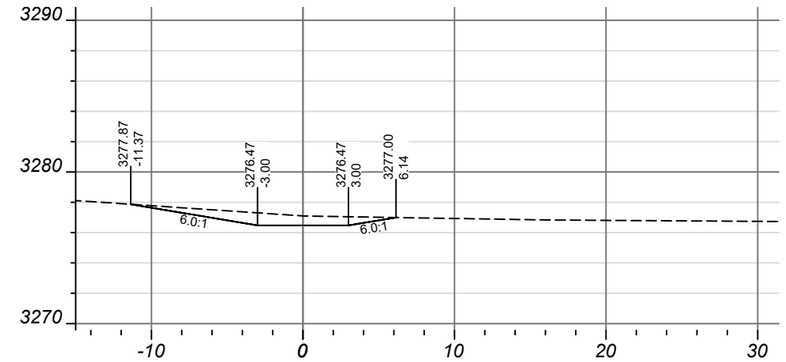
STA 5+50.00



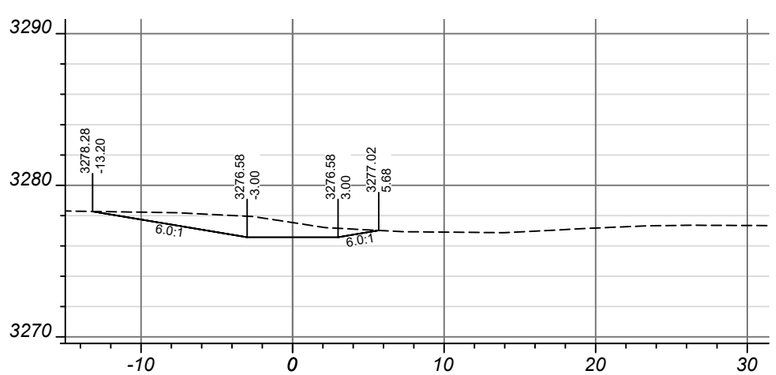
STA 6+25.00



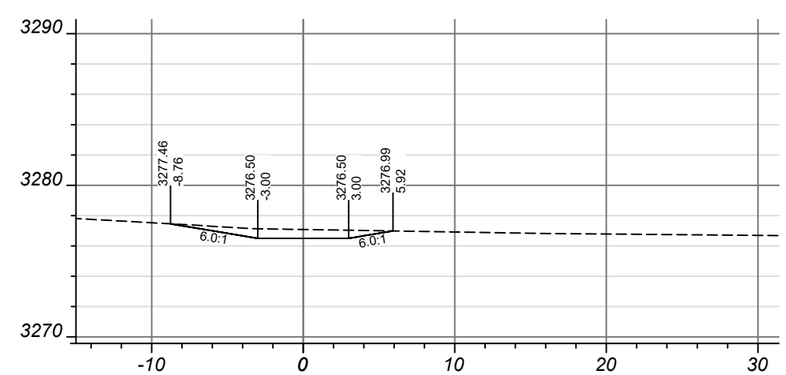
STA 5+25.00



STA 6+00.00



STA 5+00.00



STA 5+75.00

SHEET NO.
8

DITCH CROSS SECTION DETAILS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 101111000

DESIGNED BY: D. BRAATEN 11/17/2023
REVIEWED BY: J.CERECK ####
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation

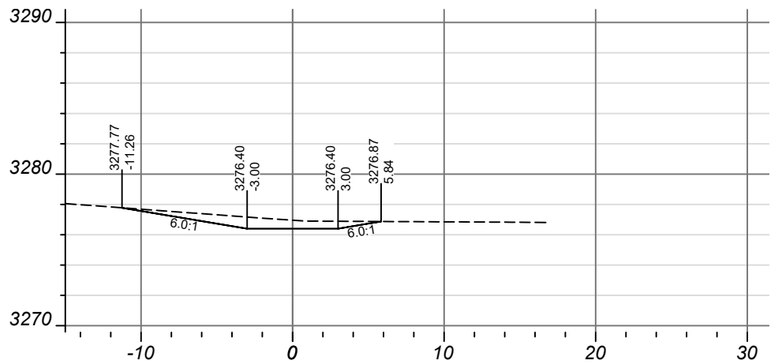
CROSS SECTIONS

6/12/2024 8:29 AM 101111000RDDET003.DWG

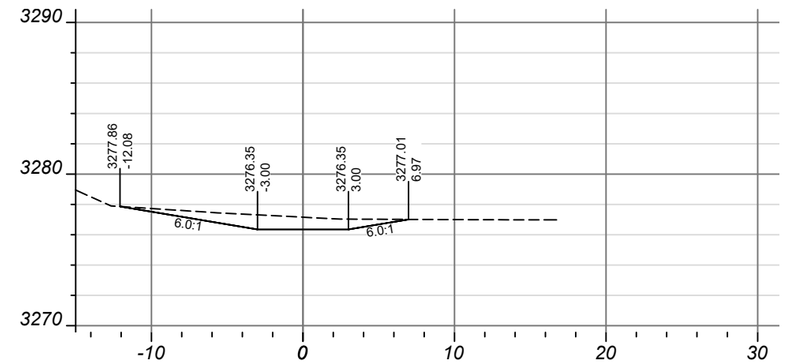
ADVERTISED COPY

DETAIL

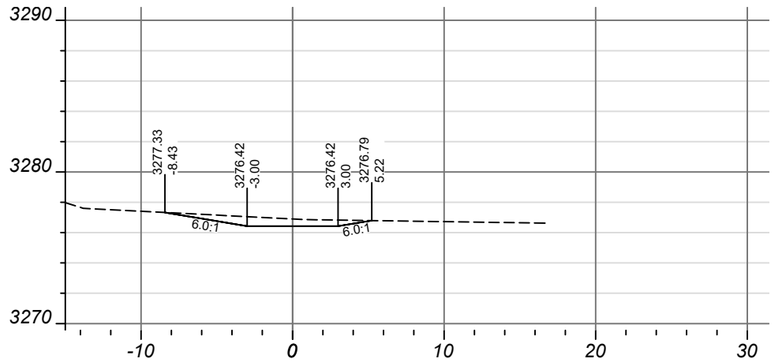
GRADE TO DRAIN DITCH CROSS SECTIONS



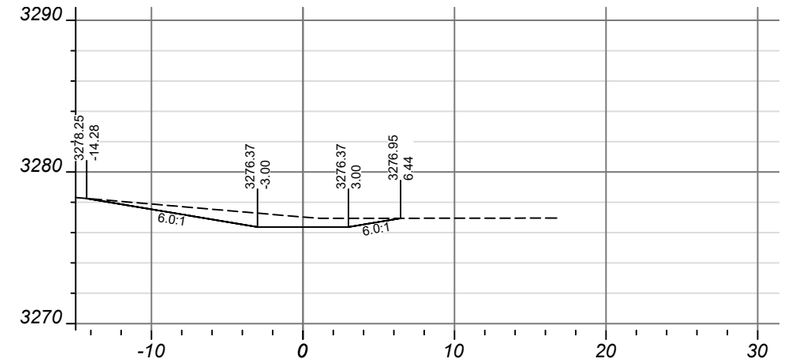
STA 6+75.00



STA 7+25.00 (DITCH END @ 7+55.02)



STA 6+50.00



STA 7+00.00

SHEET NO.
9

DITCH CROSS SECTION DETAILS

PROJECT NAME: I-15 CULVERT - SHELBY
COUNTY: TOOLE COUNTY
PROJECT ID: IM 15-8(72)364
UPN: 10111000

DESIGNED BY: D. BRAATEN 11/21/2023
REVIEWED BY: J.CERECK ####
CHECKED BY: J. CERECK 03/2024

MONTANA Department of Transportation

CROSS SECTIONS

6/12/2024 8:29 AM 10111000RDDET003.DWG