MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY

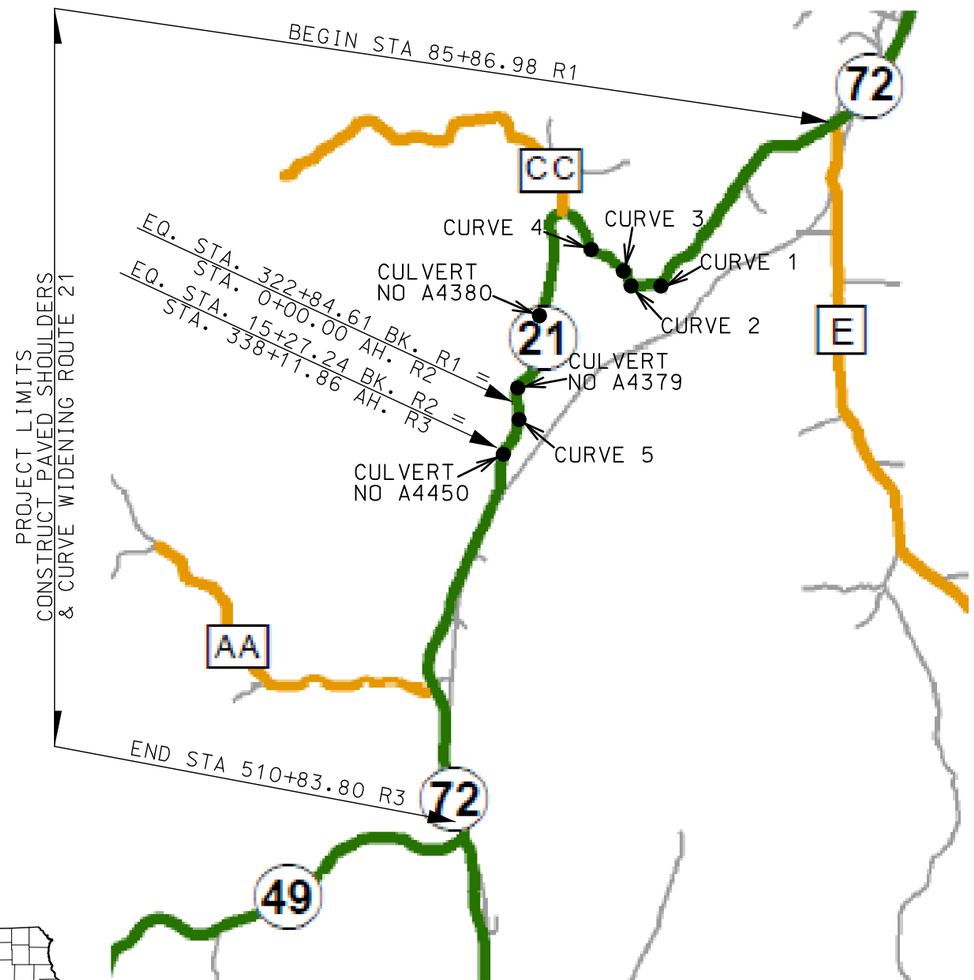
IRON COUNTY

DESIGN DESIGNATION

A.A.D.T. - 2023 = 2295
A.A.D.T. - 2043 = 3061
D.H.V. = 12.37%
T = 7.4%
V = 55 M.P.H.

FUNCTIONAL CLASSIFICATION - MINOR COLLECTOR

NORMAL RIGHT-OF-WAY REQUIRED FOR THIS PROJECT



THE EXISTENCE AND APPROXIMATE LOCATION OF UTILITY FACILITIES KNOWN TO EXIST, AS SHOWN ON THE PLANS, ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE. RELIANCE UPON THIS INFORMATION IS DONE AT THE RISK AND PERIL OF THE USER, AND THE COMMISSION SHALL NOT BE LIABLE FOR ANY DAMAGES THAT MAY ARISE FROM ANY ERROR IN THE INFORMATION. IT IS, THEREFORE, THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE, LOCATION AND STATUS OF ANY FACILITY. SUCH VERIFICATION INCLUDES DIRECT CONTACT WITH THE LISTED UTILITIES.

CONVENTIONAL SYMBOLS

(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	—FO—	—FO—
OVERHEAD TELEPHONE	—O—	—●—
UNDERGROUND TELEPHONE	—T—	—T—
OVERHEAD POWER	—□—	—■—
UNDERGROUND POWER	—P—	—P—
GAS	—G—	—G—
WATER	—W—	—W—
MANHOLE	SAN	
FIRE HYDRANT	HYD	
WATER VALVE	WV	
WATER METER	WM	
DROP INLET	DI	
DITCH BLOCK		
GROUND MOUNTED SIGN	SIGN	
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL	PED	
FENCE		
CHAIN LINK	—V—	
WOVEN WIRE	—X—	
GATE POST		
BENCHMARK	BM	

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 85+86.98 R1
END OF PROJECT	STA. 510+83.80 R3
APPARENT LENGTH	42496.82 FEET
EQUATIONS AND EXCEPTIONS:	
EQ. STA. 322+84.61 BK. R1 = STA. 0+00.00 AH. R2	- 32284.61 FEET
EQ. STA. 15+27.24 BK. R2 = STA. 338+11.86 AH. R3	+ 322+84.62 FEET
TOTAL CORRECTIONS	+0.01 FEET
NET LENGTH OF PROJECT	42496.83 FEET
STATE LENGTH	8.049 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	20 ACRES

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:06:25 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED: 8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	1

COUNTY: IRON
JOB NO.: J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

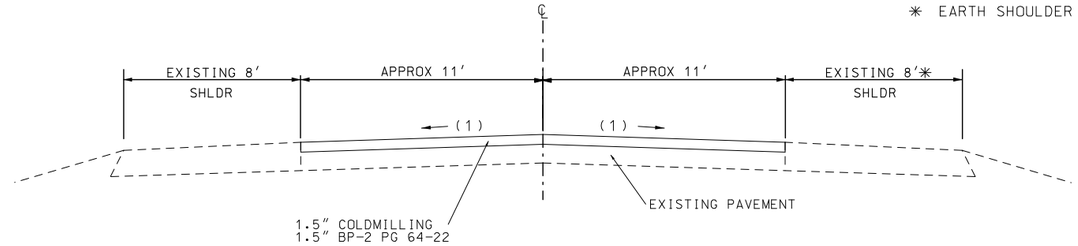
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

(1) MATCH EXISTING TRAVELWAY CROSS SLOPE
(2) MATCH EXISTING SLOPE OR 2:1, WHICHEVER IS FLATTER
(3) THE BACKSLOPE SHALL BE EXCAVATED ONLY TO THE EXTENT NECESSARY TO CONFORM WITH THE LINES AND GRADES OF THE TYPICAL SECTION. THE BACKSLOPE SHALL NOT BE EXCAVATED FOR THE SOLE PURPOSE OF GENERATING EMBANKMENT MATERIAL.

✳ EARTH SHOULDER - STA 86+86.98 TO STA 87+21.98 R1

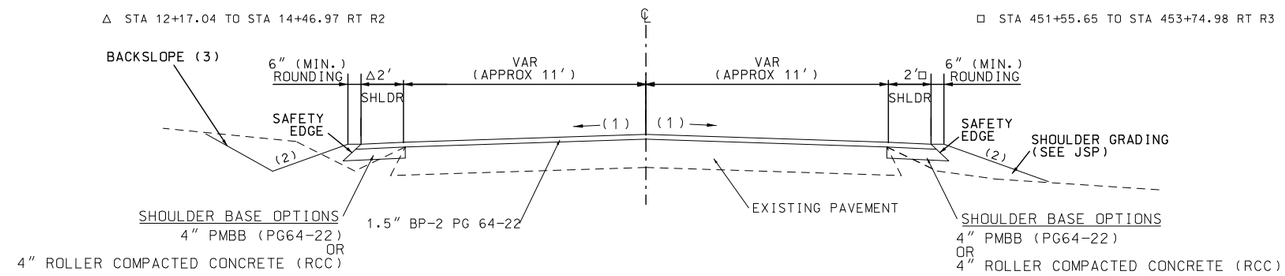


TYPICAL SECTION RTE 21

STA 85+86.98 TO STA 87+21.98 R1

△ STA 12+17.04 TO STA 14+46.97 RT R2

□ STA 451+55.65 TO STA 453+74.98 RT R3



TYPICAL SECTION RTE 21

STA 87+21.98 TO STA 179+89.30 R1
STA 186+68.74 TO STA 190+04.38 R1
STA 205+22.29 TO STA 216+55.40 R1
STA 224+59.30 TO STA 284+00.74 R1
STA 297+69.25 TO STA 313+46.24 R1
STA 14+46.97 TO STA 15+27.24 R2
STA 338+11.86 TO STA 342+33.65 R3
STA 358+05.03 TO STA 408+48.24 R3
STA 409+58.59 TO STA 448+41.76 R3
STA 453+74.98 TO STA 458+92.01 R3
STA 461+02.73 TO STA 482+32.89 R3
STA 483+91.54 TO STA 510+83.80 R3

NOTES:

STD 203.20 AND 203.22 WERE USED TO DETERMINE THE CURVE WIDENING DIMENSIONS AND TAPER LENGTHS

DO NOT PLACE 2′ SHOULDER WIDENING WHERE ASPHALT OR CONCRETE ALREADY EXISTS. SHOULDER WIDENING IS 2′ OUTSIDE OF EXISTING PAVEMENT (EOP) EXCEPT AT CURVE WIDENING LOCATIONS.

DITCH BOTTOM WIDTHS SHALL MATCH EXISTING, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

SLOPES MAY BE STEEPENED WITH APPROVAL OF THE ENGINEER.

SLOPE MAY BE STEEPENED UP TO 1:1 AT CULVERT ENDS TO PROVIDE SPACE FOR DITCH GRADING AS DIRECTED BY ENGINEER.

EXISTING TYPICALS ARE FOR INFORMATION ONLY. PAVEMENT LAYERS MAY VARY FROM TYPICALS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:07:31 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	2
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

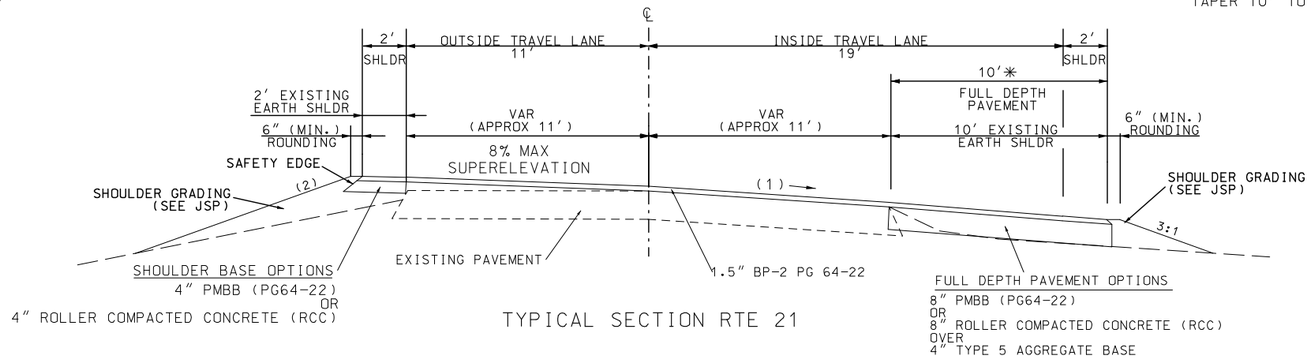
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TYPICAL SHEET
SHEET 1 OF 7

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) MATCH EXISTING TRAVELWAY CROSS SLOPE
(2) MATCH EXISTING SLOPE OR 2:1, WHICHEVER IS FLATTER

✳ TAPER 2′ TO 10′ - STA 179+89.30 TO STA 181+55.30 R1
TAPER 10′ TO 2′ - STA 185+02.74 TO STA 186+68.74 R1

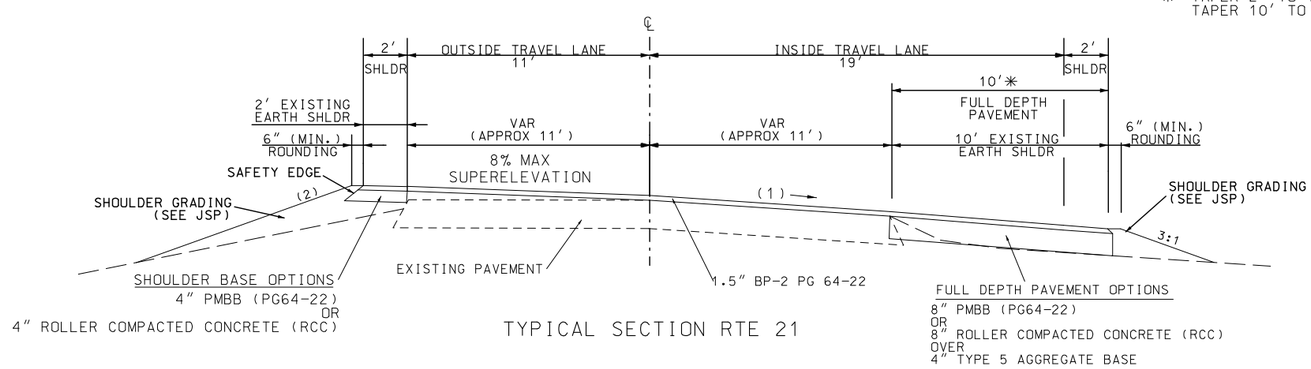


TYPICAL SECTION RTE 21

CURVE 1

STA 181+55.30 TO STA 185+02.74 R1

✳ TAPER 2′ TO 10′ - STA 190+04.38 TO STA 191+70.38 R1
TAPER 10′ TO 2′ - STA 198+61.79 TO STA 200+27.79 R1



TYPICAL SECTION RTE 21

CURVE 2

STA 191+70.38 TO STA 198+61.79 R1

NOTES:

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DITCH BOTTOM WIDTHS SHALL MATCH EXISTING, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

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SLOPE MAY BE STEEPENED UP TO 1:1 AT CULVERT ENDS TO PROVIDE SPACE FOR DITCH GRADING AS DIRECTED BY ENGINEER.

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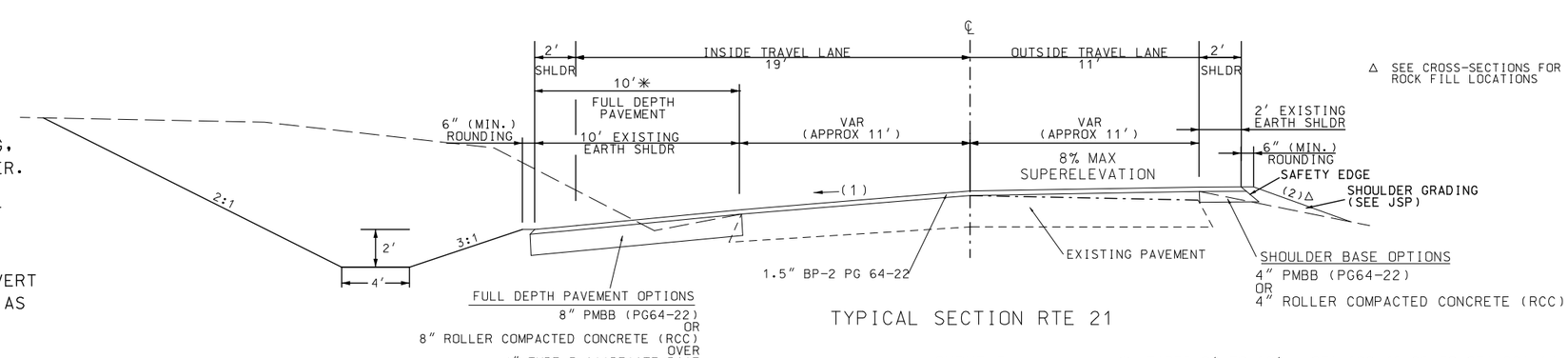
DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



△ SEE CROSS-SECTIONS FOR ROCK FILL LOCATIONS

TYPICAL SECTION RTE 21

CURVE 3

✳ TAPER 2′ TO 10′ - STA 199+48.98 TO STA 201+14.98 R1
TAPER 10′ TO 2′ - STA 203+56.29 TO STA 205+22.29 R1

STA 201+14.98 TO STA 203+56.29 R1

STATE OF MISSOURI
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CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

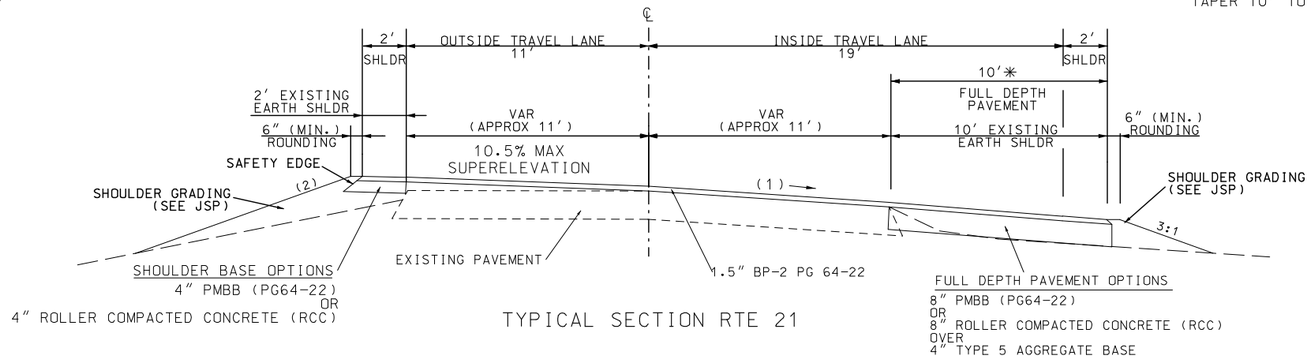
TYPICAL SHEET
SHEET 2 OF 7

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) MATCH EXISTING TRAVELWAY CROSS SLOPE

(2) MATCH EXISTING SLOPE OR 2:1, WHICHEVER IS FLATTER

✳ TAPER 2′ TO 10′ - STA 216+55.40 TO STA 218+21.40 R1
TAPER 10′ TO 2′ - STA 220+69.28 TO STA 222+28.42 R1



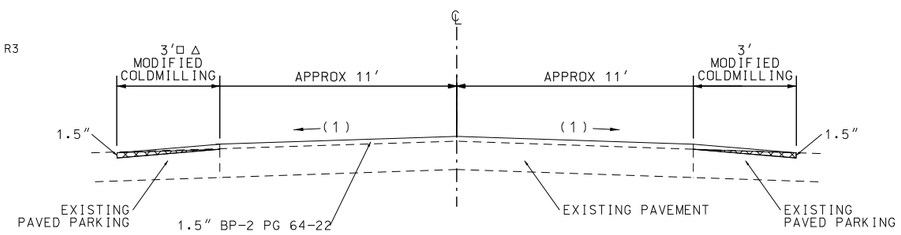
TYPICAL SECTION RTE 21

CURVE 4

STA 218+21.40 TO STA 220+69.28 R1

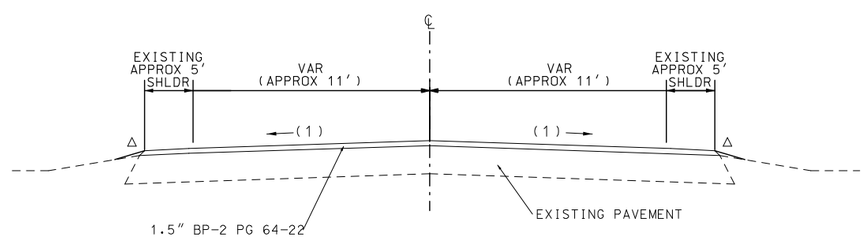
□ STA 449+01.16 TO STA 453+74.98 LT R3

△ PAVE TO EDGE OF EXISTING PAVEMENT STA 0+60.00 TO STA 2+67.93 LT R2 REFERENCE CURVE 5 XS SHEETS



TYPICAL SECTION RTE 21
EXISTING PAVED SHOULDER LT/RT

STA 222+28.42 TO STA 224+59.30 R1



△ - SAFETY EDGE (SEE STANDARD PLANS)

TYPICAL SECTION RTE 21
CULVERT A4380 & EXISTING SHOULDERS

STA 284+00.74 TO STA 297+69.25 R1

NOTES:

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DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:11:01 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	2
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

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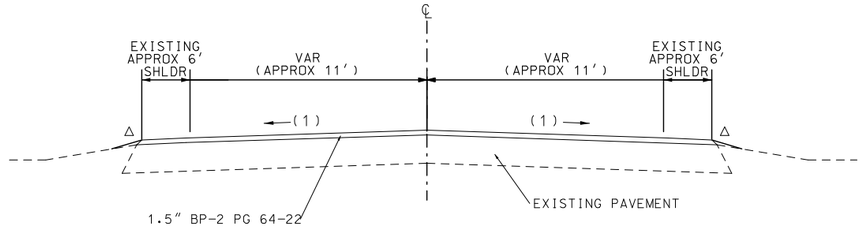
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TYPICAL SHEET
SHEET 3 OF 7

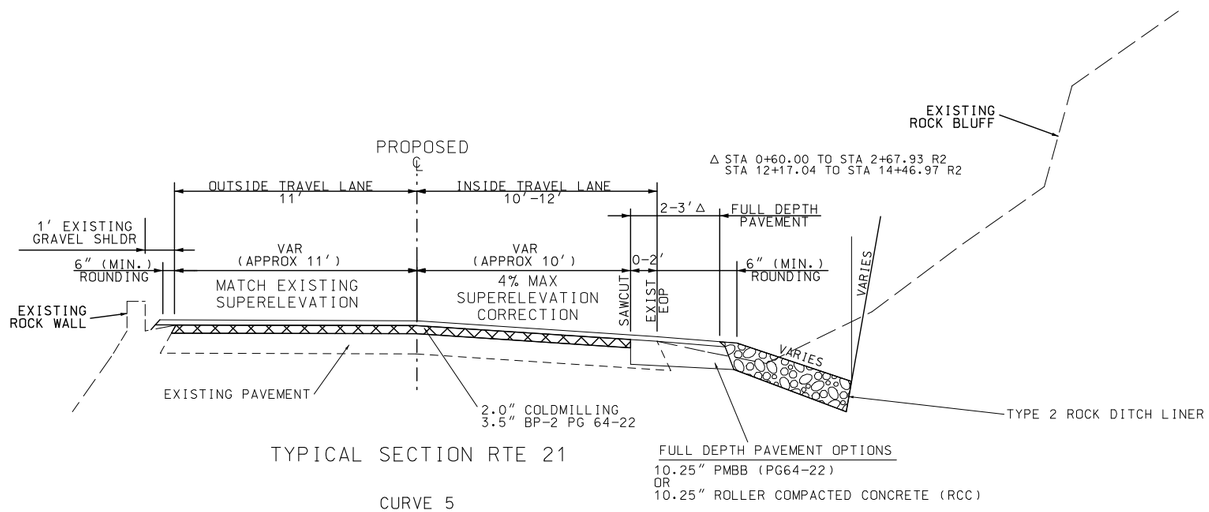
(1) MATCH EXISTING TRAVELWAY CROSS SLOPE



TYPICAL SECTION RTE 21
CULVERT A4379 & EXISTING SHOULDERS

STA 313+46.24 TO STA 322+84.61 R1
STA 0+00.00 TO STA 0+60.00 R2

Δ - SAFETY EDGE (SEE STANDARD PLANS)



TYPICAL SECTION RTE 21

CURVE 5

STA 2+67.93 TO STA 12+17.04 R2

NOTES:

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SLOPES MAY BE STEEPENED WITH APPROVAL OF THE ENGINEER.

SLOPE MAY BE STEEPENED UP TO 1:1 AT CULVERT ENDS TO PROVIDE SPACE FOR DITCH GRADING AS DIRECTED BY ENGINEER.

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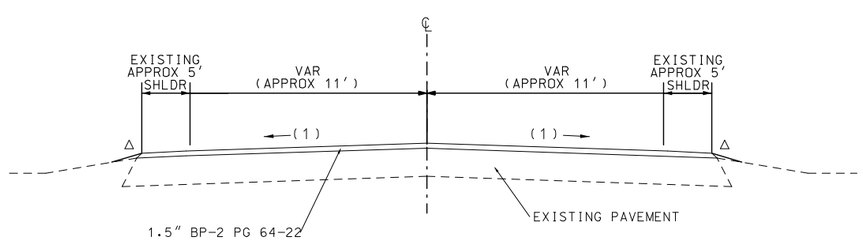
DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



TYPICAL SECTION RTE 21
CULVERT A4450 & EXISTING SHOULDERS

STA 342+33.65 TO STA 358+05.03 R3

Δ - SAFETY EDGE (SEE STANDARD PLANS)

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08-11/2024 3:11:58 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

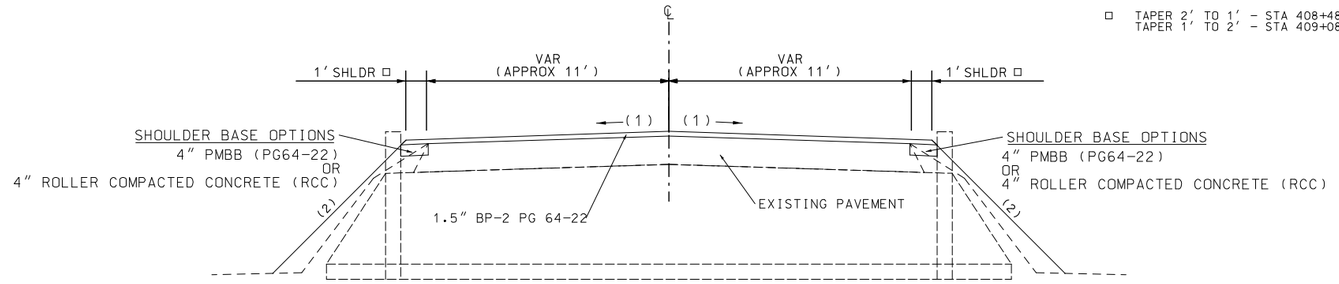
TYPICAL SHEET
SHEET 4 OF 7

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

(1) MATCH EXISTING TRAVELWAY CROSS SLOPE

(2) ROCK LINE SLOPE 1.5:1 AND 1:1 AT CULVERTS

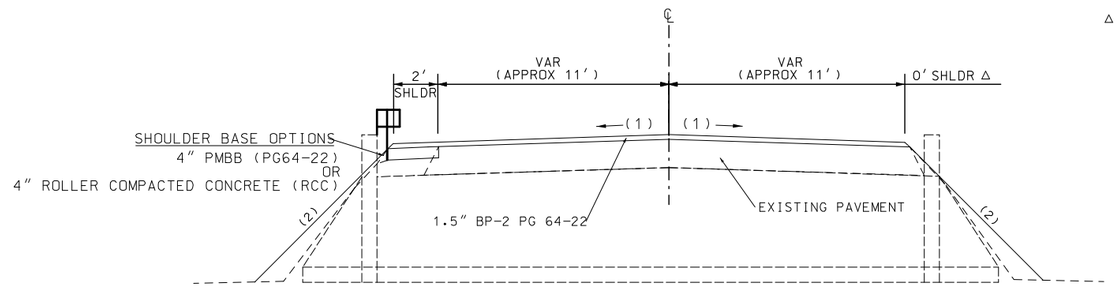
□ TAPER 2′ TO 1′ – STA 408+48.24 TO STA 408+98.24 R3
TAPER 1′ TO 2′ – STA 409+08.59 TO STA 409+58.59 R3



TYPICAL SECTION RTE 21
CULVERT 24

STA 408+98.24 TO STA 409+08.59 R3

△ TAPER 2′ TO 0′ – STA 458+92.01 TO STA 459+92.01 R3
TAPER 0′ TO 2′ – STA 460+02.73 TO STA 461+02.73 R3



TYPICAL SECTION RTE 21
CULVERT 29

STA 459+92.01 TO STA 460+02.73 R3

NOTES:

STD 203.20 AND 203.22 WERE USED TO DETERMINE THE CURVE WIDENING DIMENSIONS AND TAPER LENGTHS

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DITCH BOTTOM WIDTHS SHALL MATCH EXISTING, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

SLOPES MAY BE STEEPENED WITH APPROVAL OF THE ENGINEER.

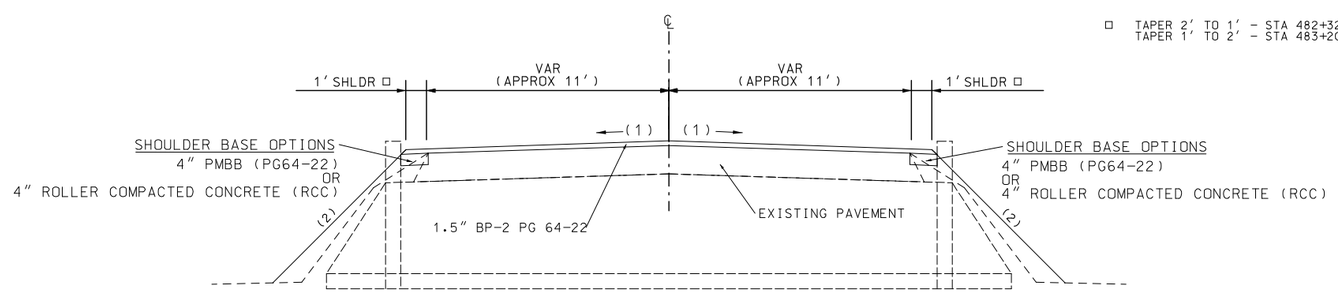
SLOPE MAY BE STEEPENED UP TO 1:1 AT CULVERT ENDS TO PROVIDE SPACE FOR DITCH GRADING AS DIRECTED BY ENGINEER.

EXISTING TYPICALS ARE FOR INFORMATION ONLY. PAVEMENT LAYERS MAY VARY FROM TYPICALS.

SEE CULVERT SECTIONS FOR MORE DETAILS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

□ TAPER 2′ TO 1′ – STA 482+32.89 TO STA 483+03.50 R3
TAPER 1′ TO 2′ – STA 483+20.22 TO STA 483+91.54 R3



TYPICAL SECTION RTE 21
CULVERT 33

STA 483+03.50 TO STA 483+20.22 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:12:34 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

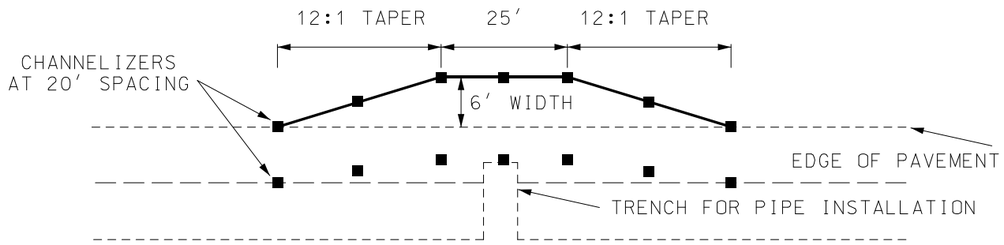
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TYPICAL SHEET
SHEET 5 OF 7



TEMPORARY WIDENING FOR PIPE REPLACEMENT AND NEW INSTALLATION FOR USE WITH TWO-WAY ONE-LANE FLAGGING OPERATION

SURFACE WITH 6" GRAVEL A OR CRUSHED STONE B

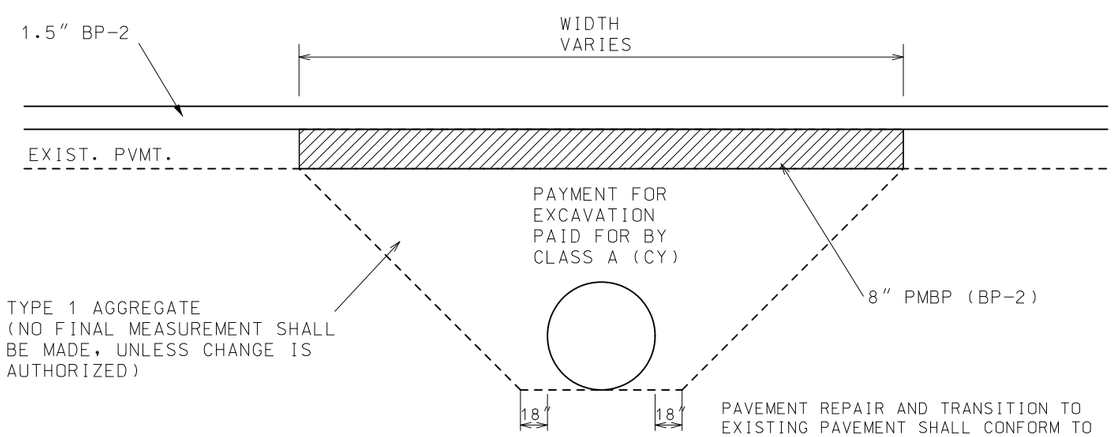
GRADING REQUIRED TO CONSTRUCT AND REMOVE
TEMPORARY WIDENING TO BE PAID
AS SHOULDER GRADING

MAINTAIN A MINIMUM TRAVELWAY WIDTH OF 12'

STA 99+85.29 R1	STA 300+45.63 R1	STA 369+10.30 R3
STA 133+50.19 R1	STA 308+37.18 R1	STA 397+28.85 R3
STA 146+67.14 R1	STA 1+83.63 R2	STA 418+40.49 R3
STA 237+56.52 R1	STA 4+56.05 R2	STA 431+93.21 R3
STA 251+96.89 R1	STA 7+60.84 R2	STA 464+04.47 R3
STA 266+12.47 R1	STA 9+20.00 R2	STA 496+25.76 R3
STA 275+24.36 R1	STA 10+95.44 R2	STA 507+86.81 R3
	STA 12+66.39 R2	

- SURFACE WITH 6" GRAVEL A OR CRUSHED STONE B AT NO DIRECT PAY
- GRADING REQUIRED TO CONSTRUCT TEMPORARY WIDENING TO BE PAID AS LINEAR GRADING CLASS 2
- NO DIRECT PAY FOR MAINTAINING AND REMOVAL OF TEMPORARY WIDENING

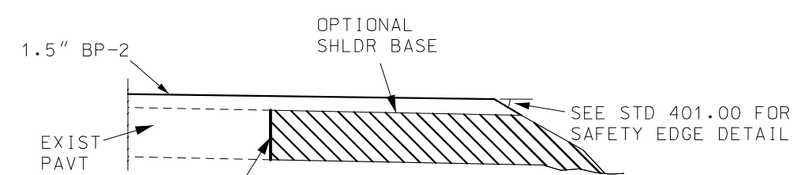
PIPE INSTALLATION FOR REPLACEMENT OF CROSSROAD CULVERTS



-BACKFILL WITH DIRT BEYOND THE LIMITS OF THE PAVED SHOULDER, BACKFILL WITH ROCK AT REQUIRED LOCATIONS

PAVEMENT REPAIR AND TRANSITION TO EXISTING PAVEMENT SHALL CONFORM TO SMOOTHNESS REQUIREMENTS OF SECTION 610.4.3 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION

NEW PAVED - SHOULDER DETAIL



VERTICAL FACE SHALL BE TACKED AT NO DIRECT PAY.

VERTICAL FACE TO BE LOCATED AT THE EDGE OF THE FULL DEPTH PAVEMENT.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:13:17 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

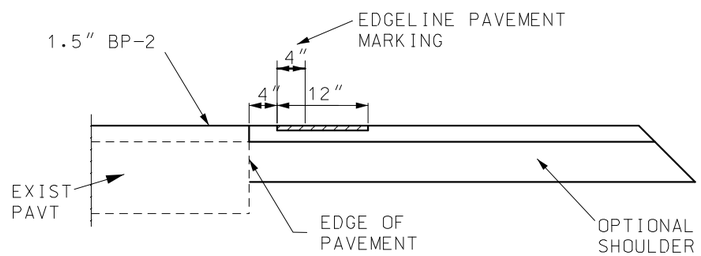
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

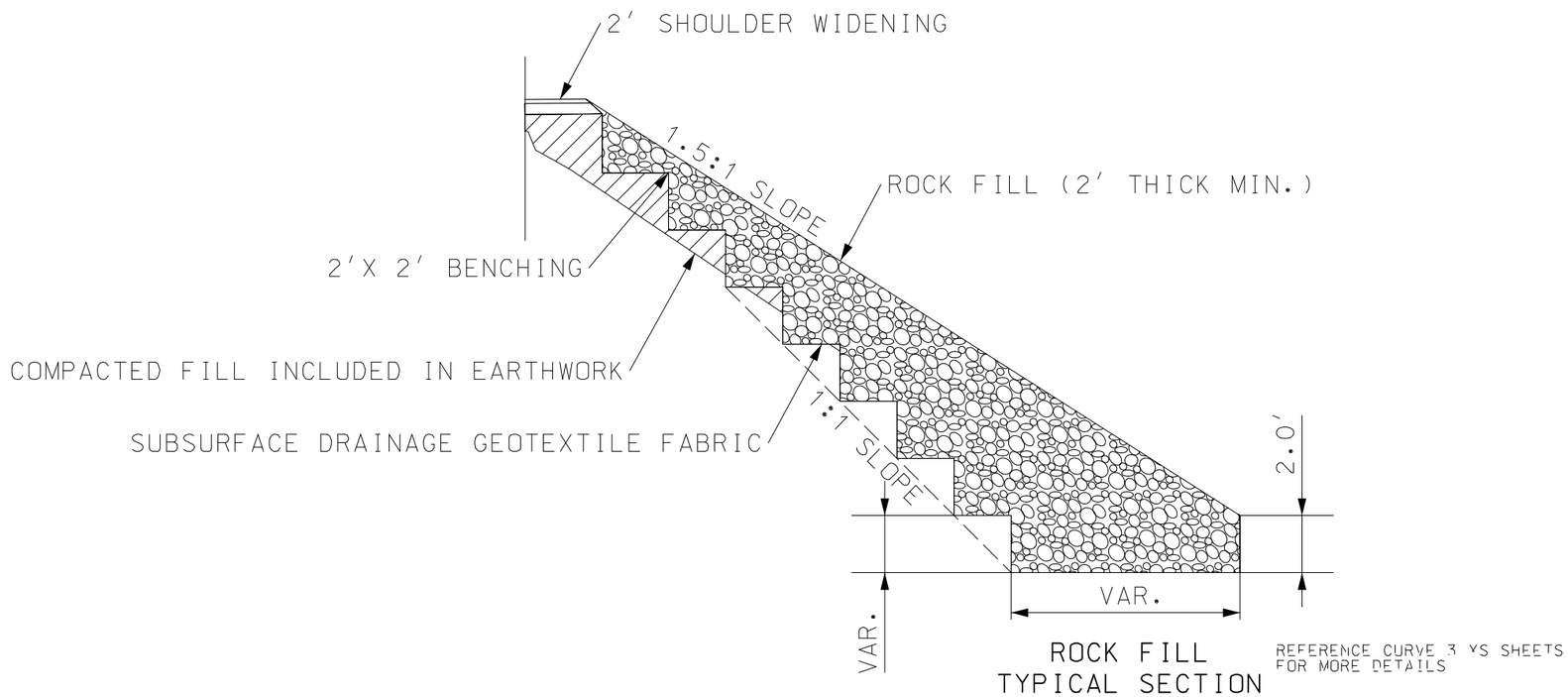
TYPICAL SHEET
SHEET 6 OF 7

SHOULDER RUMBLE STRIP LOCATION



STA 87+21.98 TO STA 322+84.61 R1 LT/RT
STA 0+00.00 TO STA 0+60.47 R2 LT/RT
STA 12+16.48 TO STA 15+27.24 R2 LT/RT
STA 338+11.86 TO STA 510+83.80 R3 LT/RT

OMIT SHOULDER RUMBLE STRIP ALONG CURVE 5 ROYAL GORGE, STA 0+60.47 TO 12+16.48 R2.
SEE STD. 626.00 FOR CENTERLINE RUMBLE STRIP DETAIL



ROCK FILL
TYPICAL SECTION

REFERENCE CURVE 3 YS SHEETS FOR MORE DETAILS

STA.203+50 (RIGHT) TO STA.206+00 (RIGHT)

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/12/2024 9:26:48 AM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/12/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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TYPICAL SHEET
SHEET 7 OF 7

PAVEMENT AND TACK

STA	R#	STA	R#	LOCATION	LENGTH FT	WIDTH FT	AREA SF	THICK IN	BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-2) (2.040 TON/CY) TON	TACK (0.08 GAL/SY) GAL	REMARKS
85+86.98	R1	86+86.98	R1	ROUTE 21	100.0	22	-	1.5	20.8	20	BEGIN PROJECT TO END OF EXISTING SHOULDER RT
86+86.98	R1	87+21.98	R1	ROUTE 21	35.0	24	-	1.5	7.9	8	2' SHOULDER RT
87+21.98	R1	179+89.30	R1	ROUTE 21	9267.3	26	-	1.5	2275.6	2162	2' SHOULDERS LT/RT
179+89.30	R1	181+55.30	R1	ROUTE 21	166.0	VARIES	-	1.5	47.0	45	CURVE 1 - TAPER 2' TO 10' RT / 2' SHOULDER LT
181+55.30	R1	185+02.74	R1	ROUTE 21	347.4	34	-	1.5	111.6	106	CURVE 1 - 10' WIDENING RT / 2' SHOULDER LT
185+02.74	R1	186+68.74	R1	ROUTE 21	166.0	VARIES	-	1.5	47.0	45	CURVE 1 - TAPER 10' TO 2' RT / 2' SHOULDER LT
186+68.74	R1	190+04.38	R1	ROUTE 21	335.6	26	-	1.5	82.4	78	2' SHOULDERS LT/RT
190+04.38	R1	191+70.38	R1	ROUTE 21	166.0	VARIES	-	1.5	47.0	45	CURVE 2 - TAPER 2' TO 10' RT / 2' SHOULDER LT
191+70.38	R1	198+61.79	R1	ROUTE 21	691.4	34	-	1.5	222.0	210	CURVE 2 - 10' WIDENING RT / 2' SHOULDER LT
198+61.79	R1	199+48.98	R1	ROUTE 21	87.2	32	-	1.5	26.4	25	CURVE 2 - WIDENING TAPER RT / 2' SHOULDER LT
199+48.98	R1	200+27.97	R1	ROUTE 21	79.0	29	-	1.5	21.6	21	CURVE 2 & 3 WIDENING TAPER LT/RT
200+27.97	R1	201+14.98	R1	ROUTE 21	87.0	32	-	1.5	26.3	25	CURVE 3 - 2' SHOULDER RT / WIDENING TAPER LT
201+14.98	R1	203+56.29	R1	ROUTE 21	241.3	34	-	1.5	77.5	73	CURVE 3 - 2' SHOULDER RT / 10' WIDENING LT
203+56.29	R1	205+22.29	R1	ROUTE 21	166.0	VARIES	-	1.5	47.0	45	CURVE 3 - 2' SHOULDER RT / TAPER 10' TO 2' LT
205+22.29	R1	216+55.40	R1	ROUTE 21	1133.1	26	-	1.5	278.2	264	2' SHOULDERS LT/RT
216+55.40	R1	218+21.40	R1	ROUTE 21	166.0	VARIES	-	1.5	47.0	45	CURVE 4 - TAPER 2' TO 10' RT / 2' SHOULDER LT
218+21.40	R1	220+69.28	R1	ROUTE 21	247.9	34	-	1.5	79.6	75	CURVE 4 - 10' WIDENING RT / 2' SHOULDER LT
220+69.28	R1	222+28.42	R1	ROUTE 21	159.1	VARIES	-	1.5	45.1	43	CURVE 4 - TAPER 10' TO 2' RT / 2' SHOULDER LT
222+28.42	R1	224+59.30	R1	ROUTE 21	230.9	22	-	1.5	48.0	46	MAINLINE AT EXISTING PAVED SHOULDER LOCATION AT TIP TOP PARK
224+59.30	R1	284+00.74	R1	ROUTE 21	5941.4	26	-	1.5	1459.0	1386	2' SHOULDERS LT/RT
284+00.74	R1	297+69.25	R1	ROUTE 21	1368.5	32	-	1.5	413.6	392	CULVERT A4380 & EXISTING SHOULDERS
297+69.25	R1	313+46.24	R1	ROUTE 21	1577.0	26	-	1.5	387.2	368	2' SHOULDERS LT/RT
313+46.24	R1	322+84.61	R1	ROUTE 21	938.4	34	-	1.5	301.3	286	CULVERT A4379 & EXISTING SHOULDERS (STATION EQUATION)
0+00.00	R2	0+60.00	R2	ROUTE 21	60.0	34	-	1.5	19.3	18	CULVERT A4379 & EXISTING SHOULDERS (STATION EQUATION)
0+60.00	R2	2+67.93	R2	ROUTE 21	207.9	VARIES	-	3.5	105.4	94	✳ - CURVE 5 - TAPER 2' TO 3' RT / 0' SHOULDER LT
2+67.93	R2	12+17.04	R2	ROUTE 21	949.1	VARIES	-	3.5	502.0	430	✳ - CURVE 5 - 3' WIDENING RT / 0' SHOULDER LT
12+17.04	R2	14+46.97	R2	ROUTE 21	229.9	VARIES	-	3.5	116.5	104	✳ - CURVE 5 - TAPER 3' TO 2' RT / 2' SHOULDER LT
14+46.97	R2	15+27.24	R2	ROUTE 21	80.3	26	-	1.5	19.7	19	2' SHOULDERS LT/RT (STATION EQUATION)
338+11.86	R3	342+33.65	R3	ROUTE 21	421.8	26	-	1.5	103.6	98	2' SHOULDERS LT/RT (STATION EQUATION)
342+33.65	R3	358+05.03	R3	ROUTE 21	1571.4	32	-	1.5	474.9	450	CULVERT A4450 & EXISTING SHOULDERS
358+05.03	R3	408+48.24	R3	ROUTE 21	5043.2	26	-	1.5	1238.4	1177	2' SHOULDER LT/RT
408+48.24	R3	408+98.24	R3	ROUTE 21	50.0	VARIES	-	1.5	11.8	11	CULVERT 24 - TAPER 2' TO 1' LT / RT SHOULDERS
408+98.24	R3	409+08.59	R3	ROUTE 21	10.3	24	-	1.5	2.3	2	CULVERT 24 - 1' SHOULDER LT/RT
409+08.59	R3	409+58.59	R3	ROUTE 21	50.0	VARIES	-	1.5	11.8	11	CULVERT 24 - TAPER 1' TO 2' LT/RT SHOULDERS
409+58.59	R3	448+41.76	R3	ROUTE 21	3883.2	26	-	1.5	953.5	906	2' SHOULDERS LT/RT
448+41.76	R3	449+01.16	R3	ROUTE 21	59.4	22	-	1.5	12.3	12	CR117 LT / EXISTING TURN LANE RT
449+01.16	R3	451+55.65	R3	ROUTE 21	254.5	22	-	1.5	52.9	50	EXISTING PAVED SHOULDER LT / RTE AA RT
451+55.65	R3	453+74.98	R3	ROUTE 21	219.3	24	-	1.5	49.7	47	EXISTING PAVED SHOULDER LT / 2' SHOULDER RT
453+74.98	R3	458+92.01	R3	ROUTE 21	517.0	26	-	1.5	127.0	121	2' SHOULDERS LT/RT
458+92.01	R3	459+92.01	R3	ROUTE 21	100.0	VARIES	-	1.5	23.6	22	CULVERT 29 - TAPER 2' TO 0' RT SHOULDER
459+92.01	R3	460+02.73	R3	ROUTE 21	10.7	24	-	1.5	2.4	2	CULVERT 29 - 0' SHOULDER RT
460+02.73	R3	461+02.73	R3	ROUTE 21	100.0	VARIES	-	1.5	23.6	22	CULVERT 29 - TAPER 0' TO 2' RT SHOULDER
461+02.73	R3	482+32.89	R3	ROUTE 21	2130.2	26	-	1.5	523.1	497	2' SHOULDERS LT/RT
482+32.89	R3	483+03.50	R3	ROUTE 21	70.6	25	-	1.5	16.7	16	CULVERT 33 - TAPER 2' TO 1' LT/RT SHOULDERS
483+03.50	R3	483+20.22	R3	ROUTE 21	16.7	24	-	1.5	3.8	4	CULVERT 33 - 1' SHOULDER LT/RT
483+20.22	R3	483+91.54	R3	ROUTE 21	71.3	25	-	1.5	16.8	16	CULVERT 33 - TAPER 1' TO 2' LT/RT SHOULDERS
483+91.54	R3	510+83.80	R3	ROUTE 21	2692.3	26	-	1.5	661.1	628	2' SHOULDERS LT/RT TO END OF PROJECT
240+00.84	R1	-	-	ROUTE CC	VARIES	VARIES	2050	1.5	19.4	18	
450+63.06	R3	-	-	ROUTE AA	VARIES	VARIES	4290	1.5	40.5	38	
180+00.00	R1	185+50.00	R1	CURVE 1	550	VARIES	VARIES	VARIES	80.4	62	ASPHALT WEDGING FOR 8% SUPER CORRECTION
191+50.00	R1	199+00.00	R1	CURVE 2	750	VARIES	VARIES	VARIES	76.0	75	ASPHALT WEDGING FOR 8% SUPER CORRECTION
201+00.00	R1	204+00.00	R1	CURVE 3	300	VARIES	VARIES	VARIES	54.7	31	ASPHALT WEDGING FOR 8% SUPER CORRECTION
220+00.00	R1	221+00.00	R1	CURVE 4	100	VARIES	VARIES	VARIES	6.3	10	ASPHALT WEDGING FOR 8% SUPER CORRECTION
4+20.00	R2	8+40.00	R2	CURVE 5	420	VARIES	VARIES	VARIES	24.8	47	ASPHALT WEDGING FOR 4% SUPER CORRECTION
183+05.54	R1	449+57.50	R3	AGG COUNTY ROADS/CITY STREETS (2)	12	55	-	3.0	24.9	12	CARTER LANE / COUNTY ROAD 117 - PAVE TO ROW LINE
126+66.77	R1	-	-	PAVED COUNTY ROAD (1)	12	45	-	1.5	5.1	5	COUNTY ROAD 116 - PAVE TO ROW LINE
93+28.86	R1	494+09.24	R3	AGG PRIVATE ENTRANCES (67)	2	46	-	3.0	116.4	55	
89+28.58	R1	410+93.91	R3	PAVED PRIVATE ENTRANCES (9)	2	40	-	1.5	6.8	6	
222+28.42	R1	224+59.30	R1	PAVED SHOULDER LOCATION	231	3	-	1.5	6.5	6	LOCATED AT TIP TOP PARK LT
222+28.42	R1	224+59.30	R1	PAVED SHOULDER LOCATION	231	3	-	1.5	6.5	6	LOCATED AT TIP TOP PARK RT
0+60.00	R2	2+67.93	R2	PAVED SHOULDER LOCATION	208	VARIES	1919	1.75	21.1	17	BEFORE EXISTING ROCK WALL
449+01.16	R3	453+74.98	R3	PAVED SHOULDER LOCATION	474	3	-	1.5	13.4	13	NEAR ROUTE AA/CR 117
181+25.85	R1	-	-	PARCEL 1 ENTRANCE	2	VARIES	65	4.0	1.6	1	SEE CROSS-SECTIONS SHEET 52 OF 52 FOR DETAILS
185+77.60	R1	-	-	PARCEL 2 ENTRANCE	2	VARIES	65	5.0	2.0	1	SEE CROSS-SECTIONS SHEET 52 OF 52 FOR DETAILS
189+08.81	R1	-	-	CARTER ENTRANCE	11	VARIES	249	5.5	8.6	2	SEE CROSS-SECTIONS SHEET 52 OF 52 FOR DETAILS
189+76.45	R1	-	-	PARCEL 3 ENTRANCE	15	VARIES	329	5.6	11.6	3	SEE CROSS-SECTIONS SHEET 52 OF 52 FOR DETAILS
								SUB-TOTAL	11717.9	10978	
				SAFETY EDGE					223.8		
				RUTTING & IRREGULARITIES					603.6		75 TONS/MI
								TOTAL	12545.3	10978	

✳ - TACK QTY: USE 0.12 GAL/SY ON MILLED SURFACE, USE 0.05 GAL/SY BETWEEN LIFTS OF NEW PAVEMENT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:18:46 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	3

COUNTY: IRON

JOB NO. J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 1 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

OPTIONAL SHOULDERS

STA	R#	STA	R#	LOCATION	LENGTH FT	WIDTH FT	4" OPTIONAL SHOULDER BASE PG 64-22 (PMBB) (SEE JSP) TON	SHOULDER GRADING STA	FULL DEPTH PAVEMENT REPAIR SAW CUT LF	REMARKS
86+86.98	R1	87+21.98	R1	RT	35.0	2.0	1.8	1	-	BEGIN OPTIONAL SHOULDER AT EXISTING SHOULDER RT
87+21.98	R1	179+89.30	R1	LT/RT	9267.3	2.0	933.6	93	-	2' OPTIONAL SHOULDER LT/RT
179+89.30	R1	181+55.30	R1	LT	166.0	2.0	8.4	2	-	2' OPTIONAL SHOULDER LT
179+89.30	R1	181+55.30	R1	RT	166.0	0.0	0.0	-	-	CURVE 1 - WIDENING TAPER RT
181+55.30	R1	185+02.74	R1	LT	347.4	2.0	17.5	3	-	2' OPTIONAL SHOULDER LT
181+55.30	R1	185+02.74	R1	RT	347.4	0.0	0.0	-	-	CURVE 1 - 10' WIDENING RT
185+02.74	R1	186+68.74	R1	LT	166.0	2.0	8.4	2	-	2' OPTIONAL SHOULDER LT
185+02.74	R1	186+68.74	R1	RT	166.0	0.0	0.0	-	-	CURVE 1 - WIDENING TAPER RT
186+68.74	R1	190+04.38	R1	LT/RT	335.6	2.0	33.8	3	-	2' OPTIONAL SHOULDER LT/RT
190+04.38	R1	191+70.38	R1	LT	166.0	2.0	8.4	2	-	2' OPTIONAL SHOULDER LT
190+04.38	R1	191+70.38	R1	RT	166.0	0.0	0.0	-	-	CURVE 2 - WIDENING TAPER RT
191+70.38	R1	198+61.79	R1	LT	691.4	2.0	34.8	7	-	2' OPTIONAL SHOULDER LT
191+70.38	R1	198+61.79	R1	RT	691.4	0.0	0.0	-	-	CURVE 2 - 10' WIDENING RT
198+61.79	R1	201+14.98	R1	LT	253.2	0.0	0.0	3	-	CURVE 2 & 3 WIDENING TAPER LT/RT
198+61.79	R1	201+14.98	R1	RT	253.2	0.0	0.0	-	-	CURVE 2 & 3 WIDENING TAPERS LT/RT
201+14.98	R1	203+56.29	R1	LT	241.3	0.0	0.0	-	-	CURVE 3 - 10' WIDENING LT
201+14.98	R1	203+56.29	R1	RT	241.3	2.0	12.2	2	-	2' OPTIONAL SHOULDER RT
203+56.29	R1	205+22.29	R1	LT	166.0	0.0	0.0	-	-	CURVE 3 - WIDENING TAPER LT
203+56.29	R1	205+22.29	R1	RT	166.0	2.0	8.4	2	-	2' OPTIONAL SHOULDER RT
205+22.29	R1	216+55.40	R1	LT/RT	1133.1	2.0	114.2	11	-	2' OPTIONAL SHOULDER LT/RT
216+55.40	R1	218+21.40	R1	LT	166.0	2.0	8.4	2	-	2' OPTIONAL SHOULDER LT
216+55.40	R1	218+21.40	R1	RT	166.0	0.0	0.0	-	-	CURVE 4 - WIDENING TAPER RT
218+21.40	R1	220+69.28	R1	LT	247.9	2.0	12.5	2	-	2' OPTIONAL SHOULDER LT
218+21.40	R1	220+69.28	R1	RT	247.9	0.0	0.0	-	-	CURVE 4 - 10' WIDENING RT
220+69.28	R1	222+28.42	R1	LT	159.1	2.0	8.0	2	153	2' OPTIONAL SHOULDER LT / CUT INTO EXISTING SHOULDER AT STA 222+28.42
220+69.28	R1	222+28.42	R1	RT	159.1	0.0	0.0	-	149	CURVE 4 - WIDENING TAPER RT / CUT INTO EXISTING SHOULDER AT STA 222+28.42
222+28.42	R1	224+59.30	R1	LT/RT	230.9	0.0	0.0	-	-	EXISTING PARKING AREA
224+59.30	R1	284+00.74	R1	LT/RT	5941.4	2.0	598.5	59	-	2' OPTIONAL SHOULDER LT/RT
284+00.74	R1	297+69.25	R1	LT/RT	1368.5	0.0	0.0	-	-	CULVERT A4380 & EXISTING SHOULDERS
297+69.25	R1	313+46.24	R1	LT/RT	1577.0	2.0	158.9	16	194	2' OPTIONAL SHOULDER LT/RT / CUT INTO EXISTING SHOULDERS AT STA 297+69.25 & STA 313+46.24
313+46.24	R1	322+84.61	R1	LT/RT	938.4	0.0	0.0	-	-	CULVERT A4379 & EXISTING SHOULDERS
00+00.00	R2	00+60.00	R2	LT/RT	60.0	0.0	0.0	-	-	CULVERT A4379 & EXISTING SHOULDERS
00+60.00	R2	02+67.93	R2	LT	207.9	0.0	0.0	2	-	0' OPTIONAL SHOULDER LT / PAVED SHOULDER LOCATION
00+60.00	R2	02+67.93	R2	RT	207.9	0.0	0.0	-	208	CURVE 5 - WIDENING RT
02+67.93	R2	12+17.04	R2	LT	949.1	0.0	0.0	9	-	0' OPTIONAL SHOULDER LT / EXISTING ROCK WALL
02+67.93	R2	12+17.04	R2	RT	949.1	0.0	0.0	-	949	CURVE 5 - WIDENING RT
12+17.04	R2	14+46.97	R2	RT	229.9	0.0	0.0	-	230	CURVE 5 - WIDENING RT
12+17.04	R2	14+46.97	R2	LT	229.9	2.0	11.6	2	-	2' OPTIONAL SHOULDER LT
14+46.97	R2	15+27.24	R2	LT/RT	80.3	4.0	8.1	1	-	2' OPTIONAL SHOULDER LT/RT
338+11.86	R3	342+33.65	R3	LT/RT	421.8	4.0	42.5	4	123	2' OPTIONAL SHOULDER LT/RT / CUT INTO EXISTING SHOULDERS AT STA 342+33.65
342+33.65	R3	358+05.03	R3	LT/RT	1571.4	0.0	0.0	-	-	CULVERT A4450 & EXISTING SHOULDERS
358+05.03	R3	408+48.24	R3	LT/RT	5043.2	2.0	508.1	50	104	2' OPTIONAL SHOULDER LT/RT / CUT INTO EXISTING SHOULDERS AT STA 358+05.03
408+48.24	R3	408+98.24	R3	LT/RT	50.0	VAR	3.8	1	-	SHOULDER TAPER 2' TO 1' LT/RT
408+98.24	R3	409+08.59	R3	LT/RT	10.3	1.0	0.5	1	-	1' OPTIONAL SHOULDER LT/RT - CULVERT 24
409+08.59	R3	409+58.59	R3	LT/RT	50.0	VAR	3.8	1	-	SHOULDER TAPER 1' TO 2' LT/RT
409+58.59	R3	448+41.76	R3	LT/RT	3883.2	4.0	391.2	39	-	2' OPTIONAL SHOULDER LT/RT
448+41.76	R3	449+01.16	R3	LT/RT	59.4	0.0	0.0	-	-	CR 117 LT / EXISTING TURN LANE RT
449+01.16	R3	451+55.65	R3	LT/RT	254.5	0.0	0.0	-	-	EXISTING PAVED SHOULDER LT / RTE AA RT
451+55.65	R3	453+74.98	R3	RT	219.3	2.0	11.0	2	-	EXISTING PAVED SHOULDER LT / 2' OPTIONAL SHOULDER RT
453+74.98	R3	458+92.01	R3	LT/RT	517.0	4.0	52.1	5	-	2' OPTIONAL SHOULDER LT/RT
458+92.01	R3	461+02.73	R3	LT	210.7	2.0	10.6	2	-	2' OPTIONAL SHOULDER LT - CULVERT 29
458+92.01	R3	459+92.01	R3	RT	100.0	VAR	2.5	-	-	SHOULDER TAPER 2' TO 0' RT
459+92.01	R3	460+02.73	R3	RT	10.7	0.0	0.0	-	-	0' OPTIONAL SHOULDER RT - CULVERT 29
460+02.73	R3	461+02.73	R3	RT	100.0	VAR	2.5	-	-	SHOULDER TAPER 0' TO 2' RT
461+02.73	R3	482+32.89	R3	LT/RT	2130.2	2.0	214.6	21	-	2' OPTIONAL SHOULDER LT/RT
482+32.89	R3	482+70.22	R3	LT	37.3	2.0	1.9	1	-	2' OPTIONAL SHOULDER LT
482+70.22	R3	483+20.22	R3	LT	50.0	VAR	1.9	1	-	SHOULDER TAPER 2' TO 1' LT
483+20.22	R3	483+41.54	R3	LT	21.3	1.0	0.5	1	-	1' OPTIONAL SHOULDER LT - CULVERT 33
483+41.54	R3	483+91.54	R3	LT	50.0	VAR	1.9	1	-	SHOULDER TAPER 1' TO 2' LT
482+32.89	R3	482+82.89	R3	RT	50.0	VAR	1.9	-	-	SHOULDER TAPER 2' TO 1' RT
482+82.89	R3	483+03.50	R3	RT	20.6	1.0	0.5	-	-	1' OPTIONAL SHOULDER RT - CULVERT 33
483+03.50	R3	483+53.50	R3	RT	50.0	VAR	1.9	-	-	SHOULDER TAPER 1' TO 2' RT
483+53.50	R3	483+91.54	R3	RT	38.0	2.0	1.9	-	-	2' OPTIONAL SHOULDER RT
483+91.54	R3	510+83.80	R3	LT/RT	2692.3	2.0	271.2	27	-	2' OPTIONAL SHOULDER LT/RT
						TOTAL	3514.3	383	2110	

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/12/2024 9:27:39 AM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/12/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	3

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 2 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

OPTIONAL PAVEMENT

STA	R#	STA	R#	LOCATION	LENGTH FT	WIDTH FT	8" OPTIONAL FULL DEPTH PAVEMENT SY	10.25" OPTIONAL FULL DEPTH PAVEMENT SY	TYPE 5 AGGREGATE FOR BASE (4" THICK) SY	REMARKS
179+89.30	R1	181+55.30	R1	RT	166.0	VARIES	110.7		111	CURVE 1 - BEGIN WIDENING RT
181+55.30	R1	185+02.74	R1	RT	347.4	10.0	386.0		386	CURVE 1 - CONSTANT WIDENING RT
185+02.74	R1	186+68.74	R1	RT	166.0	VARIES	110.7		111	CURVE 1 - END WIDENING RT
190+04.38	R1	191+70.38	R1	RT	166.0	VARIES	110.7		111	CURVE 2 - BEGIN WIDENING RT
191+70.38	R1	198+61.79	R1	RT	691.4	10.0	768.2		768	CURVE 2 - CONSTANT WIDENING RT
198+61.79	R1	200+27.79	R1	RT	166.0	VARIES	110.7		111	CURVE 2 - END WIDENING RT
199+48.98	R1	201+14.98	R1	LT	166.0	VARIES	110.7		111	CURVE 3 - BEGIN WIDENING LT
201+14.98	R1	203+56.29	R1	LT	241.3	10.0	268.1		268	CURVE 3 - CONSTANT WIDENING LT
203+56.29	R1	205+22.29	R1	LT	166.0	VARIES	110.7		111	CURVE 3 - END WIDENING LT
216+55.40	R1	218+21.40	R1	RT	166.0	VARIES	110.7		111	CURVE 4 - BEGIN WIDENING RT
218+21.40	R1	220+69.28	R1	RT	247.9	10.0	275.4		275	CURVE 4 - CONSTANT WIDENING RT
220+69.28	R1	222+28.42	R1	RT	159.1	VARIES	53.0		53	CURVE 4 - END WIDENING RT
0+60.00	R2	2+67.93	R2	RT	207.9	VARIES		57.8		CURVE 5 - BEGIN WIDENING RT
2+67.93	R2	12+17.04	R2	RT	949.1	3.0		316.4		CURVE 5 - WIDENING RT
12+17.04	R2	14+46.97	R2	RT	229.9	VARIES		63.9		CURVE 5 - END WIDENING RT
						TOTAL	2525.6	438.1	2527	

SEEDING

STA	R#	STA	R#	LOCATION	SEEDING COOL SEASON GRASSES (AC)	TEMPORARY SEEDING (AC)	MULCHING (AC)	REMARKS
86+86.98	R1	179+89.30	R1	RT	2.14	2.14	2.14	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING
179+89.30	R1	186+68.74	R1	RT	0.31	0.31	0.31	ASSUMPTION OF 20' DISTURBED GROUND FOR SHOULDER GRADING
186+68.74	R1	190+04.38	R1	RT	0.08	0.08	0.08	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING
190+04.38	R1	200+27.79	R1	RT	0.47	0.47	0.47	ASSUMPTION OF 20' DISTURBED GROUND FOR SHOULDER GRADING
200+27.79	R1	216+55.40	R1	RT	0.37	0.37	0.37	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING
216+55.40	R1	222+28.42	R1	RT	0.26	0.26	0.26	ASSUMPTION OF 20' DISTURBED GROUND FOR SHOULDER GRADING
87+21.98	R1	199+48.98	R1	LT	2.58	2.58	2.58	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING
199+48.98	R1	205+22.29	R1	LT	0.59	0.59	0.59	ASSUMPTION OF 45' DISTURBED GROUND FOR SHOULDER GRADING
205+22.29	R1	222+28.42	R1	LT	0.39	0.39	0.39	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING
222+28.42	R1	224+59.30	R1	LT/RT	0.00	0.00	0.00	EXISTING PARKING AREA LT/RT
224+59.30	R1	284+00.74	R1	LT/RT	2.73	2.73	2.73	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING LT/RT
284+00.74	R1	297+69.25	R1	LT/RT	0.00	0.00	0.00	CULVERT A4380 AND EXISTING SHOULDERS LT/RT
297+69.25	R1	313+46.24	R1	LT/RT	0.72	0.72	0.72	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING LT/RT
313+46.24	R1	322+84.61	R1	LT/RT	0.00	0.00	0.00	CULVERT A4379 AND EXISTING SHOULDERS LT/RT
00+00.00	R2	00+60.00	R2	LT/RT	0.00	0.00	0.00	CULVERT A4379 AND EXISTING SHOULDERS LT/RT
00+60.00	R2	05+00.00	R2	RT	0.05	0.05	0.05	ASSUMPTION OF 5' DISTURBED GROUND FOR SHOULDER GRADING
05+00.00	R2	12+17.04	R2	RT	0.00	0.00	0.00	ASSUMPTION OF EXISTING ROCK THROUGH SECTION RT
12+17.04	R2	15+27.24	R2	LT/RT	0.07	0.07	0.07	ASSUMPTION OF 5' DISTURBED GROUND FOR SHOULDER GRADING LT/RT
338+11.86	R3	342+33.65	R3	LT/RT	0.19	0.19	0.19	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING LT/RT
342+33.65	R3	358+05.03	R3	LT/RT	0.00	0.00	0.00	CULVERT A4450 AND EXISTING SHOULDERS LT/RT
358+05.03	R3	510+83.80	R3	LT/RT	7.02	7.02	7.02	ASSUMPTION OF 10' DISTURBED GROUND FOR SHOULDER GRADING LT/RT
				TOTAL	17.97	17.97	17.97	
				USE	18.0	18.0	18.0	

BITUMINOUS SHOULDER RUMBLE STRIP

STA	R#	STA	R#	LENGTH FT	LOC	ENTRANCE EXCEPTIONS LT/RT FT	BITUMINOUS CENTERLINE RUMBLE STRIP STA	BITUMINOUS SHOULDER RUMBLE STRIP STA	REMARKS
85+86.98	R1	510+83.80	R3	42497	CL	0	425.0	-	
85+86.98	R1	510+83.80	R3	42497	LT/RT	22423	-	625.7	EXEMPT ROYAL GORGE
						TOTAL	425.0	625.7	

MAILBOX POSTS

STA	STA	WOOD POST 4" X 4" LF	REMARKS
85+86.98	510+83.80	203	APPROX. 30 POSTS
		203	

LOCATIONS DETERMINED BY THE ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/12/2024 9:28:18 AM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/12/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	3

COUNTY
IRON

JOB NO.
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DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 3 OF 9

REV.

REMOVAL OF IMPROVEMENTS

STA	R#	LOCATION	DESCRIPTION
90+64.89	R1	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
93+45.34	R1	RTE 21 LT	✳ - EXISTING 3' X 2' BOX ENTRANCE PIPE
99+65.44	R1	RTE 21 LT	✳ - EXISTING 15" ENTRANCE PIPE
99+85.29	R1	RTE 21	✳ - EXISTING 18" CMP - 39'
120+43.46	R1	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
120+43.46	R1	RTE 21 LT&RT	REMOVE EXISTING HEADWALL LT AND RT
130+81.80	R1	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
133+50.19	R1	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
133+50.19	R1	RTE 21	✳ - EXISTING 18" CMP - 34' - REMOVE HEADWALL LT AND RT
136+77.58	R1	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
146+67.14	R1	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
146+67.14	R1	RTE 21	✳ - EXISTING CMP - 33' - REMOVE HEADWALL LT AND RT
157+02.54	R1	RTE 21 RT	✳ - EXISTING 18" ENTRANCE PIPE
160+81.94	R1	RTE 21 LT	✳ - EXISTING 15" ENTRANCE PIPE
164+01.47	R1	RTE 21 LT	✳ - EXISTING 15" ENTRANCE PIPE
177+82.65	R1	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
181+25.85	R1	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
183+05.54	R1	RTE 21 LT	✳ - EXISTING 18" ENTRANCE PIPE
188+32.17	R1	RTE 21 RT	EXISTING 137' OF PAVEMENT, APPROX 6' WIDE
207+52.23	R1	RTE 21 LT	✳ - EXISTING 18" ENTRANCE PIPE
237+56.52	R1	RTE 21	✳ - EXISTING 18" CMP - 44'
251+96.89	R1	RTE 21 RT	TYPE 3 OBJECT MARKER
251+96.89	R1	RTE 21	✳ - EXISTING 18" CMP - 41'
266+12.47	R1	RTE 21	✳ - EXISTING 18" CMP - 40'
275+24.36	R1	RTE 21	✳ - EXISTING 18" CMP - 51'
291+95.14	R1	RTE 21 LT&RT	EXISTING GUARDRAIL AT CULVERT A4380
300+45.63	R1	RTE 21	✳ - EXISTING 15" CMP - 36'
308+37.18	R1	RTE 21	✳ - EXISTING 15" CMP - 32' - REMOVE HEADWALL LT
318+63.91	R1	RTE 21 LT&RT	EXISTING GUARDRAIL AT CULVERT A4379
0+60.00	R2	RTE 21 RT	REMOVAL OF PAVEMENT BEYOND 10' RT OF CL - TO STA 14+40
01+00.00	R2	RTE 21 RT	REMOVE EXISTING CURVE SIGN WITH SPEED PLACARD
4+91.71	R2	RTE 21	✳ - EXISTING 18" CMP - 36'
12+73.00	R2	RTE 21 RT	REMOVE EXISTING CURVE SIGN
14+00.00	R2	RTE 21 LT	REMOVE EXISTING CURVE SIGN WITH SPEED PLACARD
338+95.66	R3	RTE 21 LT	TYPE 3 OBJECT MARKER
341+45.08	R3	RTE 21 LT&RT	✳ - EXISTING 18" CMP - 2' LT AND RT
344+24.00	R3	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
350+30.32	R3	RTE 21 LT&RT	EXISTING GUARDRAIL AT CULVERT A4450
369+10.30	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
369+10.30	R3	RTE 21	✳ - EXISTING 15" CMP - 30'
371+98.16	R3	RTE 21 RT	✳ - EXISTING 18" CMP - 2' RT
385+17.35	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
385+17.35	R3	RTE 21 LT&RT	5' X 2' BOX CULVERT - REMOVE HEADWALL AND WINGWALLS LT/RT
392+27.56	R3	RTE 21 LT	✳ - EXISTING 24" ENTRANCE PIPE
397+28.85	R3	RTE 21	✳ - EXISTING 18" CMP - 31' - REMOVE HEADWALL LT AND RT
408+72.58	R3	RTE 21 RT	✳ - EXISTING 12" ENTRANCE PIPE
409+03.67	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
418+40.49	R3	RTE 21	✳ - EXISTING 18" CMP - 34'
431+93.21	R3	RTE 21	✳ - EXISTING 15" CMP - 35' - REMOVE HEADWALL RT
437+30.43	R3	RTE 21 RT	✳ - EXISTING 15" ENTRANCE PIPE
448+34.34	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
448+34.34	R3	RTE 21 RT	5' X 3' BOX CULVERT - REMOVE HEADWALL RT
459+96.93	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
460+02.65	R3	RTE 21 LT	REMOVE EXISITNG GUARD CABLE
464+04.47	R3	RTE 21 RT	TYPE 3 OBJECT MARKER
464+04.47	R3	RTE 21	✳ - EXISTING 15" CMP - 37' - REMOVE HEADWALL LT AND RT
467+93.41	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
467+93.41	R3	RTE 21	✳ - EXISTING 30" CMP - 2' RT
472+96.25	R3	RTE 21	✳ - EXISTING 24" CMP - 2' RT
483+12.63	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
483+12.63	R3	RTE 21 RT	EXISTING OLD GUARD CABLE
496+25.76	R3	RTE 21	✳ - EXISTING 18" CMP - 41'
501+71.14	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
501+71.14	R3	RTE 21 LT&RT	4'X3' BOX CULVERT - REMOVE HEADWALL AND WINGWALLS LT/RT
507+86.81	R3	RTE 21	✳ - EXISTING 15" CMP - 40'
510+62.25	R3	RTE 21 LT&RT	TYPE 3 OBJECT MARKERS
			LUMP SUM 1

✳ - PIPE REMOVAL INCLUDES EXCAVATION FOR NEW PIPE INSTALLATION

ENTRANCE PIPES

STA	R#	LOC	GROUP C PIPE 15" LF	GROUP C PIPE 18" LF	GROUP C PIPE 24" LF	8" BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-2) (2.027 TON/CY) TONS	CORRUGATED METALLIC-COATED STEEL PIPE-ARCH B-12 LF	REMARKS
90+64.89	R1	RT	65	-	-	8.0	-	✳ - REPLACE PIPE - PAVED DRIVEWAY
93+45.34	R1	LT	-	-	-	-	35	✳ - REPLACE PIPE - AGG (6' ARCH PIPE)
99+65.44	R1	LT	36	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
130+81.80	R1	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
136+77.58	R1	RT	46	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
157+02.54	R1	RT	-	50	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
160+81.94	R1	LT	41	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
164+01.47	R1	LT	47	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
177+82.65	R1	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
181+25.85	R1	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
183+05.54	R1	LT	-	56	-	-	-	✳ - REPLACE PIPE - AGG (CARTER LANE)
185+77.60	R1	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
207+52.23	R1	LT	-	35	-	3.0	-	✳ - REPLACE PIPE - PAVED DRIVEWAY
344+24.00	R3	RT	37	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
392+27.56	R3	LT	-	-	35	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
408+72.58	R3	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
437+30.43	R3	RT	35	-	-	-	-	✳ - REPLACE PIPE - AGG DRIVEWAY
		TOTAL	482	141	35	11.0	35	

REPLACE ENTRANCE PIPES (LENGTH AND SIZE) AS DIRECTED BY THE ENGINEER
SEE STD 725.00 FOR CORRUGATED METAL PIPE INSTALLATION
✳ - EXCAVATION PAID AS REMOVAL OF IMPROVEMENTS
SEE SHOULDER GRADING JSP FOR PIPE EXCAVATION DETAILS

CLEARING AND GRUBBING

STA.	STA.	R#	LOC	AREA (ACRES)	REMARKS
179+75.00	187+03.47	R1	ROUTE 21 - RT	0.4	CURVE 1 - R/W LIMITS
189+57.68	199+97.97	R1	ROUTE 21 - RT	0.6	CURVE 2 - R/W LIMITS & PERM. EASEMENT
199+17.09	206+28.75	R1	ROUTE 21 - LT	0.7	CURVE 3 - R/W LIMITS & PERM. EASEMENT
215+00.00	222+50.00	R1	ROUTE 21 - RT	0.4	CURVE 4 - R/W LIMITS & PERM. EASEMENT
0+60.00	12+15.00	R2	ROUTE 21 - RT	0.4	CURVE 5 - AS NEEDED TO PERFORM EXCAVATION
12+15.00	14+50.00	R2	ROUTE 21 - RT	0.1	CURVE 5 - R/W LIMITS
			TOTAL	2.6	
			USE	3	

EARTHWORK

STA.	STA.	R#	LOC	COMPACTING EMBANKMENT (CY)	CLASS A EXCAVATION (CY)	UNCLASSIFIED EXCAVATION (CY)	CLASS C EXCAVATION (CY)	REMARKS
179+89.30	186+68.74	R1	ROUTE 21	174	502	-	-	CURVE 1 - APPROX. 298 CY EXCESS MATERIAL
190+04.38	199+50.00	R1	ROUTE 21	77	666	-	-	CURVE 2 - APPROX. 575 CY EXCESS MATERIAL
199+50.00	206+00.00	R1	ROUTE 21	120	-	3628	-	CURVE 3 - APPROX. 3487 CY EXCESS MATERIAL
216+55.40	222+28.42	R1	ROUTE 21	209	159	-	-	CURVE 4 - OBTAIN 59 CY FROM CURVE 3
0+60.00	2+20.00	R2	ROUTE 21	8	-	257	-	CURVE 5 - CLOSURE
2+20.00	3+60.00	R2	ROUTE 21	3	-	-	102	CURVE 5 - CLOSURE
3+60.00	4+60.00	R2	ROUTE 21	3	-	161	-	CURVE 5 - CLOSURE
4+60.00	12+40.00	R2	ROUTE 21	4	-	-	478	CURVE 5 - CLOSURE
12+40.00	14+40.00	R2	ROUTE 21	32	-	269	-	CURVE 5 - CLOSURE
			TOTAL	630	1327	4315	580	

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
08/11/2024 3:41:56 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024
ROUTE 21 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 4 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

COLDMILLING

STA	R#	STA	R#	LOC	LENGTH FT	WIDTH FT	THICK IN	COLDMILLING 3" OR LESS SY	MODIFIED COLDMILLING DEPTH TRANSITIONS SY	REMARKS
85+86.98	R1	87+21.98	R1	MAINLINE	135	22	1.5	330	-	BEGIN PROJECT WEST OF ROUTE E AT PAV'T CHANGE
87+21.98	R1	87+96.98	R1	MAINLINE	75	22	1.5	-	183	WEST OF MILL/FILL
00+60.00	R2	14+46.97	R2	MAINLINE	1387	24	2.0	3699	-	2" MILL/3.5" FILL AT ROYAL GORGE
510+08.80	R3	510+83.80	R3	MAINLINE	75	22	1.5	-	183	END PROJECT NORTH OF RTE 49 AT PAV'T CHANGE
240+00.84	R1	-		RTE CC	25	22	1.5	-	61	
450+63.06	R3	-		RTE AA	25	26	1.5	-	72	
126+66.77	R1	-		CR 116	13	45	1.5	-	65	COUNTY ROAD / MILL TO ROW LINE
89+28.58	R1	410+93.91	R3	VAR	2	40	1.5	-	80	9 PAVED PRIVATE ENTRANCES
222+28.42	R1	224+59.30	R1	LT	231	3	1.5	-	77	EXISITNG PAVED SHOULDER
222+28.42	R1	224+59.30	R1	RT	231	3	1.5	-	77	EXISITNG PAVED SHOULDER
449+01.16	R3	453+74.98	R3	LT	474	3	1.5	-	158	EXISITNG PAVED SHOULDER
							TOTAL	4029	956	

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING AND STAKING
1 LUMP SUM

ADDITIONAL MOBILIZATION FOR SEEDING
4 OCCURANCES
LOCATIONS TO BE DETERMINED BY THE ENGINEER

GUARDRAIL

STA	R#	STA	R#	LOCATION	MGS GUARDRAIL LF	MGS GUARDRAIL 8 FT POSTS LF	MGS LONG SPAN GUARDRAIL SECTION EA	MGS BRIDGE APPROACH TRANSITION (THRIE-BEAM BRIDGE) EACH	TYPE A CRASHWORTHY END TERMINAL (MASH) EACH	MODIFIED SHAPING SLOPES CLASS III LF	3" MINUS AGGREGATE TONS	REMARKS
290+05.50	R1	291+80.50	R1	LT	87.5	-	-	1	1	80	115.0	NE CORNER OF CULVERT A4380
289+87.02	R1	291+62.02	R1	RT	87.5	-	-	1	1	80	115.0	NW CORNER OF CULVERT A4380
292+28.26	R1	294+03.26	R1	LT	87.5	-	-	1	1	80	115.0	SE CORNER OF CULVERT A4380
292+10.02	R1	293+85.02	R1	RT	87.5	-	-	1	1	80	115.0	SW CORNER OF CULVERT A4380
316+73.37	R1	318+48.37	R1	LT	87.5	-	-	1	1	80	115.0	NE CORNER OF CULVERT A4379
316+51.22	R1	318+26.22	R1	RT	87.5	-	-	1	1	80	115.0	NW CORNER OF CULVERT A4379
319+01.59	R1	320+76.59	R1	LT	87.5	-	-	1	1	80	115.0	SE CORNER OF CULVERT A4379
318+76.56	R1	320+51.56	R1	RT	87.5	-	-	1	1	80	115.0	SW CORNER OF CULVERT A4379
348+48.87	R3	350+11.37	R3	LT	75.0	-	-	1	1	80	115.0	NE CORNER OF CULVERT A4450
348+40.76	R3	350+03.26	R3	RT	75.0	-	-	1	1	80	115.0	NW CORNER OF CULVERT A4450
350+57.37	R3	352+19.87	R3	LT	75.0	-	-	1	1	80	115.0	SE CORNER OF CULVERT A4450
350+48.62	R3	352+11.12	R3	RT	75.0	-	-	1	1	80	115.0	SW CORNER OF CULVERT A4450
350+48.62	R3	#VALUE!	R3	RT	-	87.5	1	-	2	160	230.0	AT CULVERT NO. 29 - IN PLACE OF EXISTING GUARD CABLE
				TOTAL	1000	87.5	1	12	14	1120	1610	
				USE		88					NO DIRECT PAY	

ANY GRADING REQUIRED FOR END TERMINALS TO BE PAID AS SHOULDER GRADING

TYPE III OBJECT MARKERS AT CULVERTS

LOC	LOG MI	R#	SIGN NUMBER	2" PSST LF	DRIVEN POST ANCHOR FOR 2" PSST - 12 GA. EA	TYPE III OBJECT MARKER PAID FOR AS SH-FLAT SHEETING SF	REMARKS
RTE 21 - LT AND RT	120+43.46	R1	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	133+50.19	R1	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	146+67.14	R1	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	251+96.89	R1	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	338+95.66	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	369+10.30	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	385+17.35	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	409+03.67	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	448+34.34	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	459+96.93	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	464+04.47	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	467+93.41	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	483+12.63	R3	OM3-R	48	4	12	12 FT OF POST PER SIGN, 4 SIGNS
RTE 21 - LT AND RT	501+71.14	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
RTE 21 - LT AND RT	510+62.25	R3	OM3-R	24	2	6	12 FT OF POST PER SIGN, 2 SIGNS
			TOTAL	384	32	96	

ESTIMATED EARTHWORK FOR SHOULDER GRADING✳

STA	R#	STA	R#	LOCATION	CUT CY	FILL CY
86+86.98	R1	510+83.80	R3	RTE 21	4000 TO 7500	2500 TO 6000
					NO DIRCT PAY	NO DIRCT PAY

✳ - NO DIRECT PAY FOR EARTHWORK QUANTITIES
ESTIMATED QUANTITY IS FOR INFORMATIONAL PURPOSES ONLY

GRAVEL A OR CRUSHED STONE B

STA	R#	STA	R#	(TON)	REMARKS
93+28.86	R1	494+09.24	R3	67	67 ENTRANCES (1 TON/ENTRANCE)
181+25.85	R1	-	-	9	PARCEL 1 NEW ENTRANCE
185+77.60	R1	-	-	5	PARCEL 2 NEW ENTRANCE
189+08.81	R1	-	-	1	CARTER NEW ENTRANCE
189+76.45	R1	-	-	3	PARCEL 3 NEW ENTRANCE
TOTAL:				85	

ENTRANCES AT STA 181+25.85 AND 185+77.60 RT SHALL HAVE AGGREGATE TO THE ROW LINE
SEE CROSS-SECTIONS SHEET 52 OF 52 FOR NEW ENTRANCE DETAILS
USE GRAVEL AT AGGREGATE ENTRANCES AS DIRECTED BY ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/12/2024 9:41:14 AM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/12/2024
ROUTE 21 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 5 OF 9

CROSS PIPE CULVERTS - PART 1

CULVERT NUMBER	STA	R#	EXISTING SIZE	APPROX. DEPTH OF EXIST PIPE FROM CENTERLINE FT	15″ F.E.S EA	18″ GROUP B PIPE LF	18″ F.E.S EA	24″ GROUP B PIPE LF	24″ F.E.S EA	30″ GROUP B PIPE LF	8″ BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-2) (2.040 TON/CY) TONS	TYPE 1 AGGR. FOR CROSS-ROAD PIPES CY	CLASS A EXC. CY	LINEAR GRADING CLASS 2 STA	REMARKS
1	89+77.18	R1	18″	1.6	-	-	-	-	-		-	-	4	-	UIP PIPE / GRADE DITCH TO DRAIN
2	99+85.29	R1	18″	2.7	-	36.7	2	-	-		13.4	35	-	1.0	✳ - REPLACE PIPE
3	108+22.61	R1	18″	2.6	-	-	-	-	-		-	-	-	-	UIP PIPE
4	112+70.85	R1	18″	4.3	-	-	-	-	-		-	-	-	-	UIP PIPE
5	120+43.46	R1	18″	3.3	-	3.4	1	-	-		-	-	-	-	EXTEND PIPE 3.4′ LT
6	133+50.19	R1	18″	2.1	-	35.9	2	-	-		11.1	25	-	1.0	✳ - REPLACE PIPE
7	146+67.14	R1	-	-	-	34.1	2	-	-		10.9	22	-	1.0	✳ - REPLACE PIPE
8	237+56.52	R1	18″	4.7	-	38.4	-	-	-		15.0	77	-	1.0	✳ - REPLACE PIPE
9	251+96.89	R1	18″	1.8	-	42.2	2	-	-		13.9	34	-	1.0	✳ - REPLACE PIPE
10	266+12.47	R1	18″	2.0	-	36.4	1	-	-		11.1	24	-	1.0	✳ - REPLACE PIPE
11	275+24.36	R1	18″	2.5	-	45.0	1	-	-		12.8	38	-	1.0	✳ - REPLACE PIPE
12	278+83.14	R1	18″	3.7	-	-	-	-	-		-	-	-	-	UIP PIPE
13	300+45.63	R1	15″	1.6	-	35.0	2	-	-		10.8	23	-	1.0	✳ - REPLACE PIPE
14	308+37.18	R1	15″	1.9	-	36.5	1	-	-		10.9	25	-	1.0	✳ - REPLACE PIPE
16	338+95.66	R3	15″	2.5	1	-	-	-	-		-	-	3	-	UIP PIPE / GRADE DITCH TO DRAIN
17	341+45.08	R3	18″	1.9	-	2.5	2	-	-		-	-	-	-	✳ - REMOVE PIPE 2.0′ LT & RT / REPLACE PIPE 0.8′ LT & 1.7′ RT
18	365+36.16	R3	15″	1.8	-	-	-	-	-		-	-	-	-	UIP PIPE
19	369+10.30	R3	15″	1.0	-	32.3	2	-	-		10.4	19	-	1.0	✳ - REPLACE PIPE
20	371+98.16	R3	18″	1.7	-	-	1	-	-		-	-	-	-	✳ - REMOVE PIPE 2.0′ RT
22	397+28.85	R3	18″	1.6	-	33.5	2	-	-		9.6	17	-	1.0	✳ - REPLACE PIPE
23	403+56.20	R3	24″	3.5	-	-	-	-	-	-	-	-	-	-	UIP PIPE
25	418+40.49	R3	18″	1.6	-	33.8	2	-	-		9.7	18	-	1.0	✳ - REPLACE PIPE
26	426+03.41	R3	30″	1.6	-	-	-	-	-	-	-	-	3	-	UIP PIPE / GRADE DITCH TO DRAIN
27	431+93.21	R3	15″	3.0	-	35.8	2	-	-		12.1	33	-	1.0	✳ - REPLACE PIPE
30	464+04.47	R3	15″	3.1	-	33.9	2	-	-		12.1	37	-	1.0	✳ - REPLACE PIPE
31	467+93.41	R3	30″	4.2	-	-	-	-	-	2.2	-	-	-	-	✳ - REMOVE PIPE 2.0′ RT / REPLACE PIPE 2.2′ RT
32	472+96.25	R3	24″	3.4	-	-	-	1.0	1	-	-	-	-	-	✳ - REMOVE PIPE 2.0′ RT / REPLACE PIPE 1.0′ RT
34	496+25.76	R3	18″	1.6	-	35.3	2	-	-		9.6	19	-	1.0	✳ - REPLACE PIPE
36	507+86.81	R3	15″	1.7	-	33.3	2	-	-		9.7	16	-	1.0	✳ - REPLACE PIPE
37	510+62.25	R3	18″	2.2	-	-	-	-	-		-	-	-	-	UIP PIPE
				TOTAL	1	584.0	31	1.0	1	3	183.1	462	10	16.0	
				USE		584		1							

✳ - EXCAVATION PAID AS REMOVAL OF IMPROVEMENTS

CROSS PIPE CULVERTS - PART 2

CULVERT NUMBER	STA	R#	RETAINING COLLAR (B-1 CONCRETE WITH AIR) EA	HEADWALL COLLAR (B-1 CONCRETE WITH AIR) EA	CUSTOM PRECAST INLET (B-1 CONCRETE WITH AIR) EA	PIPE COLLAR TYPE A EA	30″ CLASS IV RCCP LF	21″ CLASS IV RCCP LF	18″ CLASS IV RCCP LF	30″ RCCP F.E.S. EA	21″ RCCP F.E.S. EA	REINFORCING STEEL (CULVERTS) LB	8″ BITUMINOUS PAVEMENT MIXTURE PG 64-22 (BP-2) (2.040 TON/CY) TONS	REMARKS
15A	01+83.63	R2	-	-	-	-	72	-	-	2	-	-	30.1	
15B	04+56.05	R2	1	-	-	1	36	-	-	1	-	371	19.7	SEE PART 3 REMARKS
-	04+91.71	R2	-	-	-	-	-	-	-	-	-	-	10.6	ASPHALT FOR REMOVAL OF EXISTING PIPE
15C	07+60.84	R2	1	1	1	1	-	32	-	-	-	590	14.4	SEE PART 3 REMARKS
15D	09+20.00	R2	1	1	1	1	-	-	32	-	-	585	14.4	SEE PART 3 REMARKS
15E	10+95.44	R2	1	1	1	1	-	-	32	-	-	585	14.4	SEE PART 3 REMARKS
15F	12+66.39	R2	-	1	1	-	-	36	-	-	1	243	16.6	SEE PART 3 REMARKS
		TOTAL	4	4	4	4	108	68	64	3	1	2374	120.3	
		USE										2370		

SEE SPECIAL SHEETS 11 AND 12 OF 13 FOR DETAILS.
SEE SHEET 72 OF 72 FOR BILL OF REINFORCING STEEL.

CROSS PIPE CULVERTS - PART 3

CULVERT NUMBER	STA	R#	TYPE 1 AGGR. FOR CROSS-ROAD PIPES CY	CLASS 3 EXC. CY	CLASS 3 EXC. IN ROCK CY	REMARKS
15A	01+83.63	R2	118	143	-	
15B	04+56.05	R2	47	64	-	COLLAR DETAILS ON SPECIAL SHEET 12. REINFORCING QTYS SHEET 72. FOR PAYMENT DETAILS SEE JSPs.
-	04+91.71	R2	31	-	-	✳ EXCAVATION FOR EXISTING PIPE REMOVAL IS PAID AS REMOVAL OF IMPROVEMENTS.
15C	07+60.84	R2	27	-	37	PRECAST DETAILS ON SPECIAL SHEET 11. COLLAR DETAILS ON SPECIAL SHEET 12. REINFORCING QTYS SHEET 72. FOR PAYMENT DETAILS SEE JSPs.
15D	09+20.00	R2	24	-	34	PRECAST DETAILS ON SPECIAL SHEET 11. COLLAR DETAILS ON SPECIAL SHEET 12. REINFORCING QTYS SHEET 72. FOR PAYMENT DETAILS SEE JSPs.
15E	10+95.44	R2	27	-	37	PRECAST DETAILS ON SPECIAL SHEET 11. COLLAR DETAILS ON SPECIAL SHEET 12. REINFORCING QTYS SHEET 72. FOR PAYMENT DETAILS SEE JSPs.
15F	12+66.39	R2	38	49	-	PRECAST DETAILS ON SPECIAL SHEET 11. COLLAR DETAILS ON SPECIAL SHEET 12. REINFORCING QTYS SHEET 72. FOR PAYMENT DETAILS SEE JSPs.
		TOTAL	312	256	108	

FOR TYPICAL SECTION OF EXCAVATION SEE CULVERT SHEETS.
FOR PAYMENT DETAILS OF TYPE 1 AGGR. SEE JSPs.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:55:18 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024
ROUTE 21 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 6 OF 9

PERMANENT EROSION CONTROL

CULVERT NUMBER	STA	R#	FINAL PIPE SIZE	FURNISHING AND PLACING ROCK DITCH LINER (SLOPE PROTECTION) TON	FURNISHING AND PLACING ROCK DITCH LINER (PIPE OUTLETS) TON	PERM EROSION CONTROL GEOTEXTILE (SLOPE PROTECTION) SY	PERM EROSION CONTROL GEOTEXTILE (PIPE OUTLETS) SY	FURNISHING TYPE 2 ROCK DITCH LINER CY	PLACING TYPE 2 ROCK DITCH LINER CY	REMARKS
1	89+77.18	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
2	99+85.29	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
3	108+22.61	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
4	112+70.85	R1	18″	5	–	8	–	–	–	ROCKLINE SLOPE 1.8:1 RT / DO NOT ROCK LINE OUTLET
5	120+43.46	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
6	133+50.19	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
7	146+67.14	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
8	237+56.52	R1	18″	14	–	28	–	–	–	ROCK LINE SLOPE 1.5:1 LT AND RT / DO NOT ROCK LINE OUTLET
9	251+96.89	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
10	266+12.47	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
11	275+24.36	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
12	278+83.14	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
13	300+45.63	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
14	308+37.18	R1	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
15A	01+83.63	R2	30″	–	25	–	28	–	–	ROCK LINE SLOPE 3:3:1 RT – INCLUDED IN CURVE 5 BELOW
15B	04+56.05	R2	30″	–	–	–	–	–	–	ROCK LINE SLOPE 2.4:1 RT – INCLUDED IN CURVE 5 BELOW
15C	07+60.84	R2	21″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
15D	09+20.00	R2	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
15E	10+95.44	R2	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
15F	12+66.39	R2	21″	–		–		–	–	ROCK LINE SLOPE 2.4:1 RT – INCLUDED IN CURVE 5 BELOW
16	338+95.66	R3	15″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
17	341+45.08	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
18	365+36.16	R3	15″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
19	369+10.30	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
20	371+98.16	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
21	385+17.35	R3	5′ X 2′	–	5	–	10	–	–	ROCK LINE OUTLET ONLY
22	397+28.85	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
23	403+56.20	R3	24″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
24	409+03.67	R3	10′ X 8′	90	9	154	16	–	–	ROCK LINE SLOPE 1.0:1 LT AND RT
25	418+40.49	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
26	426+03.41	R3	30″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES OR OUTLET
27	431+93.21	R3	18″	5	–	10	–	–	–	ROCK LINE SLOPE 1.5:1 RT / DO NOT ROCK LINE OUTLET
28	448+34.34	R3	5′ X 3′	22	9	35	15	–	–	ROCK LINE SLOPE 1.0:1 RT
29	459+96.93	R3	10′ X 8′	56	9	97	17	–	–	ROCK LINE SLOPE 1.0:1 LT AND RT
30	464+04.47	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
31	467+93.41	R3	30″	7	–	12	–	–	–	ROCK LINE SLOPE 1.5:1 RT / DO NOT ROCK LINE OUTLET
32	472+96.25	R3	24″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
33	483+12.63	R3	20′ X 8′	112	18	193	33	–	–	ROCK LINE SLOPE 1.5:1 LT AND 1.0:1 RT
34	496+25.76	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
35	501+71.14	R3	4′ X 3′	–	5	–	8	–	–	ROCK LINE OUTLET ONLY
36	507+86.81	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
37	510+62.25	R3	18″	–	–	–	–	–	–	DO NOT ROCK LINE SLOPES
CURVE 5	VARIES	R2	–	–	–	–	–	601	601	PERMANENT EROSION CONTROL ALONG ROCK BLUFF – ROYAL GORGE
–	VARIES		–	1067	–	1778	–	–	–	LOCATIONS OF PERMANENT EROSION CONTROL ITEMS TO BE DETERMINED BY THE ENGINEER
			TOTAL	1378	80	2315	127	601	601	
			USE	1458		2442				

ROCK DITCH LINER WAS ESTIMATED AT 1.8 TONS PER CY.

STONE WALL RESTORATION

LOCATION	STA	STA	R#	DECONSTRUCT & RECONSTRUCT STONE WALL & STONE FACING LF	REMOVE DEBRIS FROM ARCHWAYS LS	REMARKS
PIPE 15B	4+44.00	4+69.00	R2	25.0	–	USE EXISTING STONES TO REBUILD WALL – RESTORE TO AS BUILT CONDITIONS, SEE CULVERT SECTION SHEET
PIPE 15C	7+48.00	7+73.00	R2	25.0	–	USE EXISTING STONES TO REBUILD WALL – RESTORE TO AS BUILT CONDITIONS, SEE CULVERT SECTION SHEET
PIPE 15D	9+08.00	9+33.00	R2	25.0	–	USE EXISTING STONES TO REBUILD WALL – RESTORE TO AS BUILT CONDITIONS, SEE CULVERT SECTION SHEET
PIPE 15E	10+83.00	11+08.00	R2	25.0	–	USE EXISTING STONES TO REBUILD WALL – RESTORE TO AS BUILT CONDITIONS, SEE CULVERT SECTION SHEET
ARCHWAYS	2+67.00	12+17.00	R2	–	1.0	RESTORE AS BUILT ARCHWAY DRAINAGE
			TOTAL	100.0	1.0	

SEE JSPs FOR DESCRIPTION AND PAYMENT DETAILS

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:56:05 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	3

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 7 OF 9

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

TEMPORARY PAVEMENT MARKING

STA	R#	STA	R#	LENGTH	REMOVABLE MARKING TAPE 4" SOLID YELLOW	REMOVABLE MARKING TAPE 4" SOLID WHITE	PAVEMENT MARKING REMOVAL	REMARKS
				FT	LF	LF	LF	
286+02.02	R1	297+88.26	R1	1190	2432	120	1168	CULVERT A4380 INCLUDES EACH SIDE
312+66.22	R1	1+76.98	R2	1200	2448	130	1172	CULVERT A4379 INCLUDES EACH SIDE
344+88.62	R3	356+17.37	R3	1130	2424	120	1166	CULVERT A4450 INCLUDES EACH SIDE
				TOTAL	7304	370	3506	

PERMANENT PAVEMENT MARKING

STA	R#	STA	R#	LENGTH	WATERBORNE PAVEMENT MARKING TYPE P BEADS 4" SOLID YELLOW	WATERBORNE PAVEMENT MARKING TYPE P BEADS 4" INT. YELLOW	WATERBORNE PAVEMENT MARKING TYPE P BEADS 4" SOLID WHITE	REMARKS
				FT	LF	LF	LF	
85+86.98	R1	510+83.80	R3	42496.82	73133	2073	85114	
				TOTAL	73133	2073	85114	
				USE	75206			

SEE PAVEMENT MARKING JSP
PAVEMENT MARKING LOCATIONS AND QUANTITIES ARE APPROXIMATE.

BOX CULVERT EXTENSIONS

CULVERT NUMBER	STA	R#	EXISTING SIZE	CLASS B1 CONCRETE (CULVERTS)	REINFORCING STEEL (CULVERTS)	CLASS 3 EXC.	CLASS A EXC.	REMARKS
				CY	LB	CY	CY	
21	385+17.35	R3	5' X 2'	8.4	1380	1	–	EXTEND BOX 2.4' LT AND 2.8' RT
24	409+03.67	R3	10' X 8'	–	–	–	7	GRADE DITCH TO DRAIN
28	448+34.34	R3	5' X 3'	6.0	860	1	3	EXTEND BOX 4.7' RT
29	459+96.93	R3	10' X 8'	–	–	–	10	GRADE DITCH TO DRAIN
33	483+12.63	R3	20' X 8'	–	–	–	24	GRADE DITCH TO DRAIN
35	501+71.14	R3	4' X 3'	8.8	1430	1	–	EXTEND BOX 3.4' LT AND 3.1' RT
			TOTAL	23.2	3670	3	44	

CONCRETE HEADWALL EXTENSION

CULVERT NO.	STA	R#	LOC	LENGTH	WIDTH	EXTEND HEIGHT	CLASS B1 CONCRETE	REMARKS
				FT	FT	FT	CY	
28	448+34.34	R3	LT	6.7	0.7	1.0	0.2	EXTEND VERTICALLY
29	459+96.93	R3	LT	12.2	0.8	0.5	0.2	EXTEND VERTICALLY
						TOTAL	0.4	

#5 BAR AND RESIN ANCHORS ARE INCIDENTAL TO HEADWALL EXTENSIONS.
SEE SPECIAL SHEET 8 OF 13 FOR DETAILS.

THE HEADWALL HEIGHT ADJUSTMENT SHALL BE CHECKED BEFORE POURING.

DELINEATORS

STA	STA	LENGTH	TRAFFIC BARRIER DELINEATORS WHITE / WHITE	REMARKS
		FT	EA	
2+70.00	12+15.00	945.00	80	INSTALL AT 25' SPACING ALONG EXISTING ROCK WALL
		TOTAL	80	

SEE PLAN SHEET 6 OF 15 FOR DETAILS.

ROCK FILL

STA	R#	STA	R#	LOCATION	FURNISHING ROCK FILL	PLACING ROCK FILL	REMARKS
					CY	CY	
203+50.00	R1	206+00.00	R1	RTE 21	116	116	CURVE 3 WIDENING SECTION
				TOTAL	116.0	116.0	

TEMPORARY EROSION CONTROL

STA	R#	STA	R#	SILT FENCE	ROCK DITCH CHECK	SEDIMENT TRAP EXCAVATION	SEDIMENT TRAP ROCK	SEDIMENT REMOVAL
				LF	LF	CY	CY	CY
85+86.98	R1	510+83.80	R3	4653	4305	83	233	405

LOCATIONS OF EROSION CONTROL ITEMS TO BE DETERMINED BY THE ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:56:52 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024
ROUTE 21 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SUMMARY SHEET
SHEET 8 OF 9

EFFECTIVE: 04-01-2024

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
W01-1L	48X48	16.00						TURN (SYMBOL LEFT)
W01-1R	48X48	16.00						TURN (SYMBOL RIGHT)
W01-2L	48X48	16.00						CURVE (SYMBOL LEFT)
W01-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
W01-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
W01-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
W01-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT)
W01-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)
W01-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)
W01-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)
W01-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)
W01-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)
W01-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
W01-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
W01-8	18X24	3.00						CHEVRON (SYMBOL)
W01-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1	48X48	16.00						STOP AHEAD (SYMBOL)
W03-2	48X48	16.00						YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00	8	128				BE PREPARED TO STOP
W03-5	48X48	16.00						SPEED LIMIT AHEAD
W04-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
W04-1aL	48X48	16.00						MERGE (LEFT)
W04-1aR	48X48	16.00						MERGE (RIGHT)
W05-1	48X48	16.00	4	64				ROAD/BRIDGE/RAMP NARROWS
W05-3	48X48	16.00						ONE LANE BRIDGE
W05-5	48X48	16.00	1	16				NARROW LANES
W06-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
W08-1	48X48	16.00						BUMP
W08-2	48X48	16.00						DIP
W08-3	48X48	16.00						PAVEMENT ENDS
W08-4	48X48	16.00						SOFT SHOULDER
W08-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00						TRUCK CROSSING
W08-6c	48X48	16.00						TRUCK ENTRANCE
W08-7	36X36	9.00						LOOSE GRAVEL
W08-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
W08-9	48X48	16.00						LOW SHOULDER
W08-11	48X48	16.00	18	288				UNEVEN LANES
W08-12	48X48	16.00	10	160				NO CENTER LINE
W08-15	48X48	16.00						GROOVED PAVEMENT
W08-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
W08-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
W08-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
W08-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
W012-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
W012-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
W012-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
W012-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
W012-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
W013-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
W016-2	30X24	5.00						XXX FEET (PLAQUE)
W016-3	30X24	5.00						X MILE (PLAQUE)
W020-1	48X48	16.00	20	320				ROAD/BRIDGE/RAMP WORK AHEAD
W020-2	48X48	16.00	4	64				DETOUR AHEAD
W020-3	48X48	16.00	2	32				ROAD CLOSED AHEAD
W020-4	48X48	16.00	6	96				ONE LANE ROAD AHEAD
W020-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
W020-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
W020-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
W020-7a	48X48	16.00	12	192				FLAGGER (SYMBOL)
W021-2	36X36	9.00						FRESH OIL
W021-5	48X48	16.00	2	32				SHOULDER WORK / SHOULDER WORK AHEAD
W022-1	48X48	16.00						BLASTING ZONE AHEAD
W022-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50						END BLASTING ZONE
G022-1	21X15	2.19	4	8.76				WET PAINT (ARROW PIVOTS)

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
G020-1	60X24	10.00	2	20				ROAD WORK NEXT 8 MILES
G020-2	48X24	8.00	2	16				END ROAD WORK
G020-4	36X18	4.50	1	4.5				PILOT CAR FOLLOW ME
G020-4a	42X30	8.75	5	43.75				PILOT CAR IN USE WAIT & FOLLOW
G020-4a	18X12	1.50	3	4.5				PILOT CAR IN USE WAIT & FOLLOW
G020-5aP	36X24	6.00						WORK ZONE (PLAQUE)
M04-8a	24X18	3.00	4	12				END DETOUR
M04-9L	48X36	12.00						DETOUR (LEFT)
M04-9R	48X36	12.00						DETOUR (RIGHT)
M04-9P	48X12	4.00						STREET NAME (PLAQUE)
M04-10L	48X18	6.00						DETOUR ARROW (LEFT)
M04-10R	48X18	6.00						DETOUR ARROW (RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00						SPEED LIMIT XX
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00						DO NOT PASS
R4-2	36X48	12.00						PASS WITH CARE
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	2	20				ROAD CLOSED
R11-3a	60X30	12.50	4	50				ROAD CLOSED 1, 2 MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00						POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00	2	24				WORK ZONE NO PHONE ZONE
W021-5a	48X48	16.00	3	48.00				RIGHT SHOULDER CLOSED
W021-5b	48X48	16.00	6	96.00				RIGHT/LEFT SHOULDER CLOSED AHEAD
W020-3a	48X48	16.00	2	32.00				ROAD CLOSED 500 FT
M1-5	24X24	4.00	42	168.00				MO 21 SHIELD
	36X78	19.50	42	819.00				DETOUR BLANK
M6-1	21X15	2.19	9	19.71				DIRECTIONAL ARROW LT/RT
M6-3	21X15	2.19	33	72.27				DIRECTIONAL ARROW STRAIGHT

	TOTAL
616-10.05 CONSTRUCTION SIGNS	2851

	TOTAL
616-10.10 RELOCATED SIGNS	0

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012	3	IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020	3	REPLACEMENT SAND BARREL
6122030	3	IMPACT ATTENUATOR (RELOCATION)
6123001		TRUCK MOUNTED ATTENUATOR (TMA)
6161008	4	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	250	CHANNELIZER (TRIM LINE)
6161030	10	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040		FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	7	CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D	295	TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A	295	RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 3:57:55 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	3

COUNTY IRON

JOB NO. J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

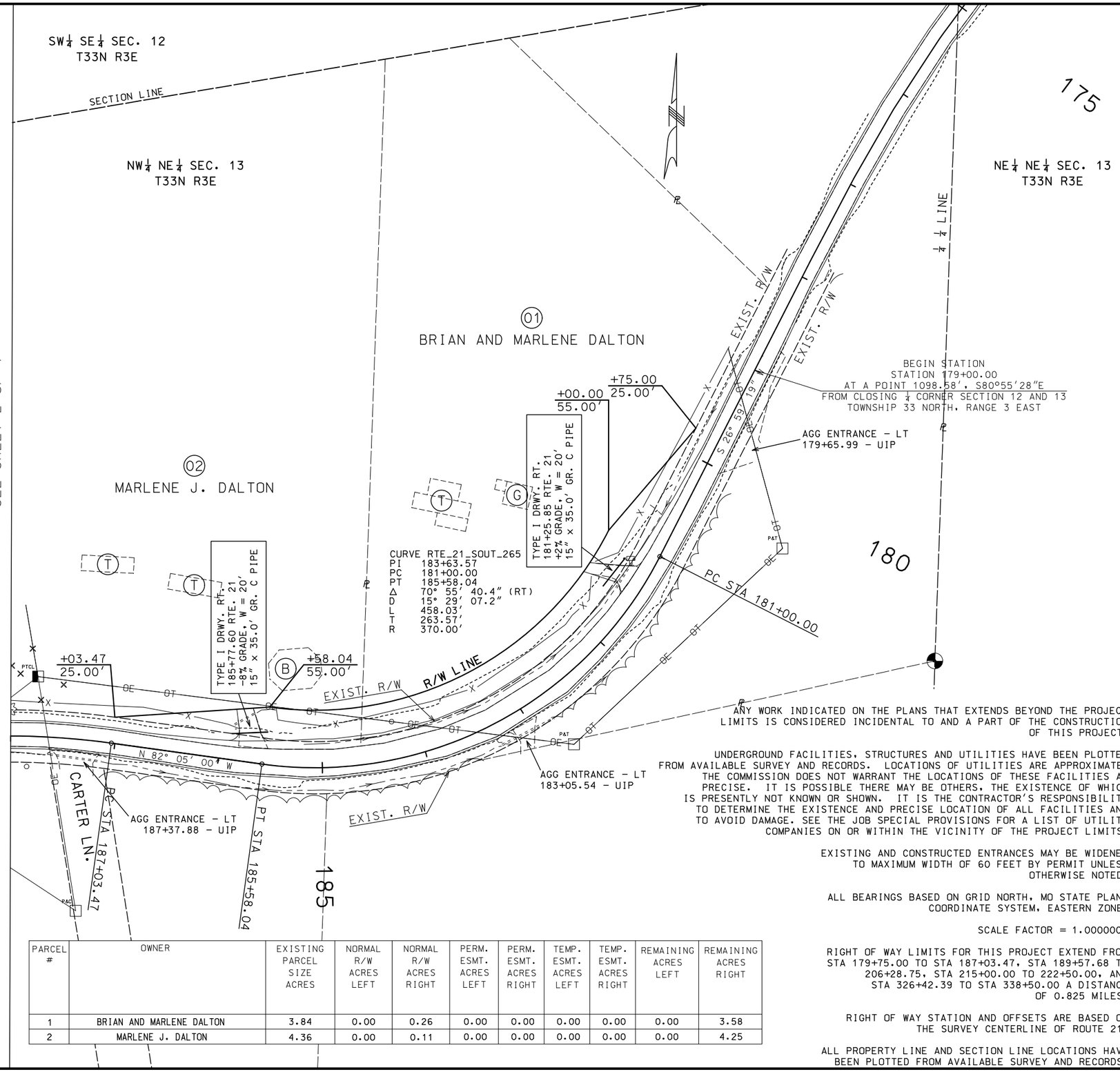
SUMMARY SHEET
SHEET 9 OF 9

CERTIFIED LAND CORNER

STATION 180+00.00 CENTERLINE ROUTE 21 IS 1072.04', S14°10'03"E FROM ¼ CORNER SECTION 12 AND 13 TOWNSHIP 33 NORTH, RANGE 3 EAST.

CORNER MARKED BY A NAIL IN MOUND OF STONE
PREVIOUS TIE #822 Δ 0.05

MATCHLINE STATION 188+00 ROUTE 21
SEE SHEET 2 OF 4



PARCEL #	OWNER	EXISTING PARCEL SIZE ACRES	NORMAL R/W ACRES LEFT	NORMAL R/W ACRES RIGHT	PERM. ESMT. ACRES LEFT	PERM. ESMT. ACRES RIGHT	TEMP. ESMT. ACRES LEFT	TEMP. ESMT. ACRES RIGHT	REMAINING ACRES LEFT	REMAINING ACRES RIGHT
1	BRIAN AND MARLENE DALTON	3.84	0.00	0.26	0.00	0.00	0.00	0.00	0.00	3.58
2	MARLENE J. DALTON	4.36	0.00	0.11	0.00	0.00	0.00	0.00	0.00	4.25

NOTE:
SEE XS SHEET 52 OF 52 FOR
TYPE 1 DRWY ENTRANCE CROSS-SECTIONS

SCALE
0 50 100 150

ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEY AND RECORDS. LOCATIONS OF UTILITIES ARE APPROXIMATE. THE COMMISSION DOES NOT WARRANT THE LOCATIONS OF THESE FACILITIES AS PRECISE. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXISTENCE AND PRECISE LOCATION OF ALL FACILITIES AND TO AVOID DAMAGE. SEE THE JOB SPECIAL PROVISIONS FOR A LIST OF UTILITY COMPANIES ON OR WITHIN THE VICINITY OF THE PROJECT LIMITS.

EXISTING AND CONSTRUCTED ENTRANCES MAY BE WIDENED TO MAXIMUM WIDTH OF 60 FEET BY PERMIT UNLESS OTHERWISE NOTED.

ALL BEARINGS BASED ON GRID NORTH, MO STATE PLANE COORDINATE SYSTEM, EASTERN ZONE.

SCALE FACTOR = 1.0000000

RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STA 179+75.00 TO STA 187+03.47, STA 189+57.68 TO 206+28.75, STA 215+00.00 TO 222+50.00, AND STA 326+42.39 TO STA 338+50.00 A DISTANCE OF 0.825 MILES.

RIGHT OF WAY STATION AND OFFSETS ARE BASED ON THE SURVEY CENTERLINE OF ROUTE 21.

ALL PROPERTY LINE AND SECTION LINE LOCATIONS HAVE BEEN PLOTTED FROM AVAILABLE SURVEY AND RECORDS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:06:58 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

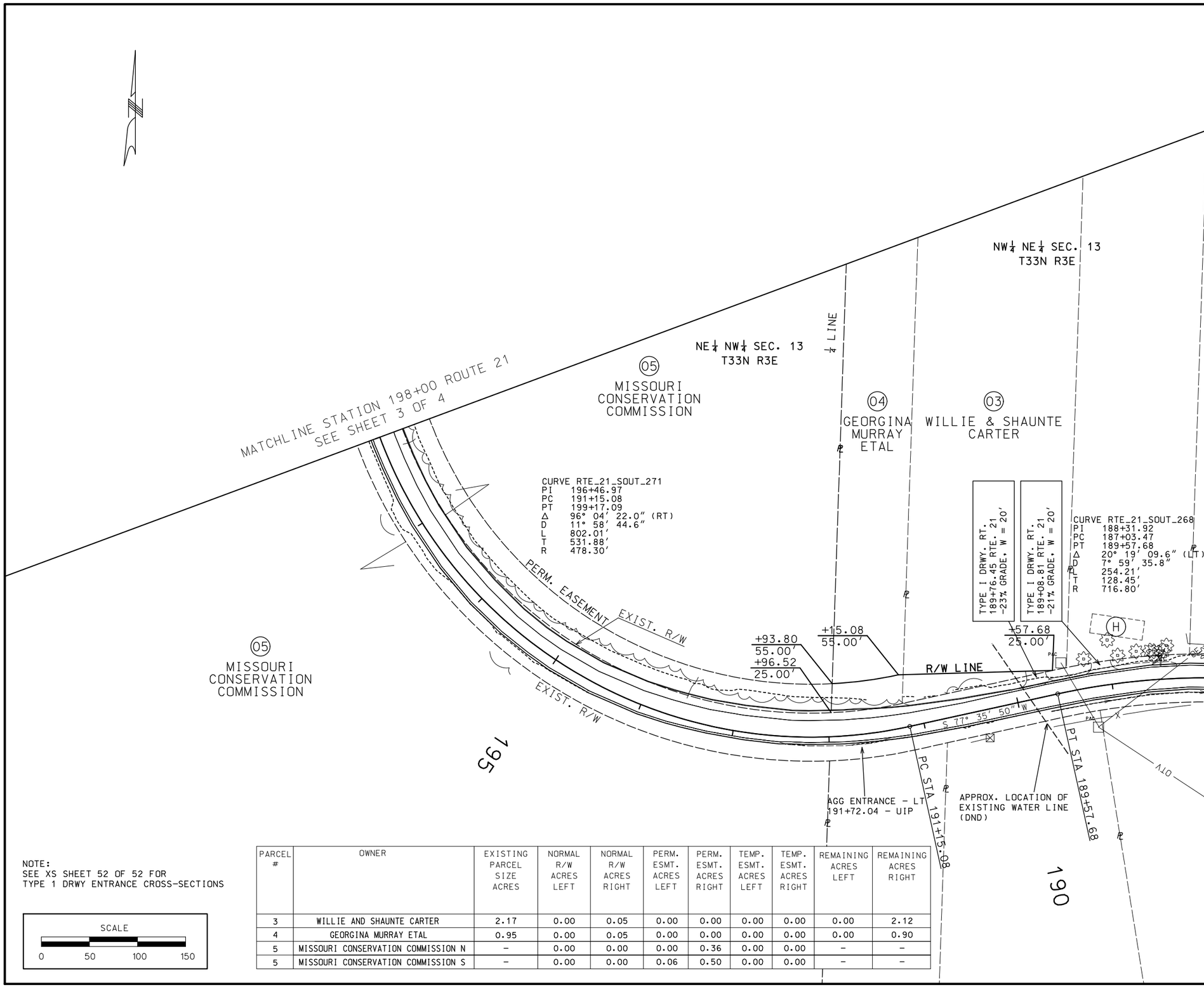
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 4
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 1 OF 15
CURVE 1



NOTE:
SEE XS SHEET 52 OF 52 FOR
TYPE 1 DRWY ENTRANCE CROSS-SECTIONS

SCALE
0 50 100 150

PARCEL #	OWNER	EXISTING PARCEL SIZE ACRES	NORMAL R/W ACRES LEFT	NORMAL R/W ACRES RIGHT	PERM. ESMT. ACRES LEFT	PERM. ESMT. ACRES RIGHT	TEMP. ESMT. ACRES LEFT	TEMP. ESMT. ACRES RIGHT	REMAINING ACRES LEFT	REMAINING ACRES RIGHT
3	WILLIE AND SHAUNTE CARTER	2.17	0.00	0.05	0.00	0.00	0.00	0.00	0.00	2.12
4	GEORGINA MURRAY ETAL	0.95	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.90
5	MISSOURI CONSERVATION COMMISSION N	–	0.00	0.00	0.00	0.36	0.00	0.00	–	–
5	MISSOURI CONSERVATION COMMISSION S	–	0.00	0.00	0.06	0.50	0.00	0.00	–	–

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:07:37 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 5
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

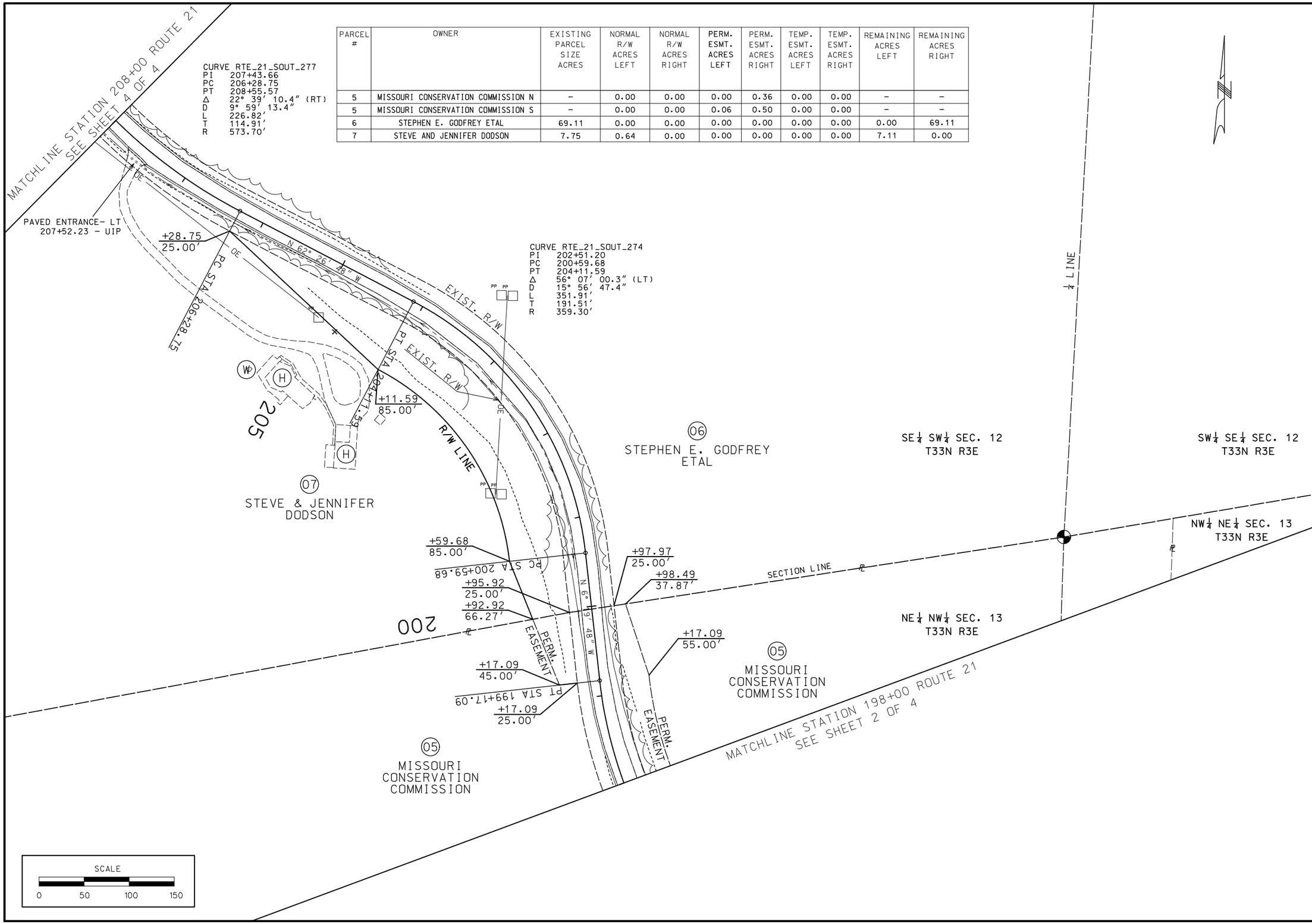
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 2 OF 15
CURVE 2

PARCEL #	OWNER	EXISTING PARCEL SIZE ACRES	NORMAL R/W ACRES LEFT	NORMAL R/W ACRES RIGHT	PERM. ESMT. ACRES LEFT	PERM. ESMT. ACRES RIGHT	TEMP. ESMT. ACRES LEFT	TEMP. ESMT. ACRES RIGHT	REMAINING ACRES LEFT	REMAINING ACRES RIGHT
5	MISSOURI CONSERVATION COMMISSION N	–	0.00	0.00	0.00	0.36	0.00	0.00	–	–
5	MISSOURI CONSERVATION COMMISSION S	–	0.00	0.00	0.06	0.50	0.00	0.00	–	–
6	STEPHEN E. GODFREY ETAL	69.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.11
7	STEVE AND JENNIFER DODSON	7.75	0.64	0.00	0.00	0.00	0.00	0.00	7.11	0.00



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:08:19 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	6

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

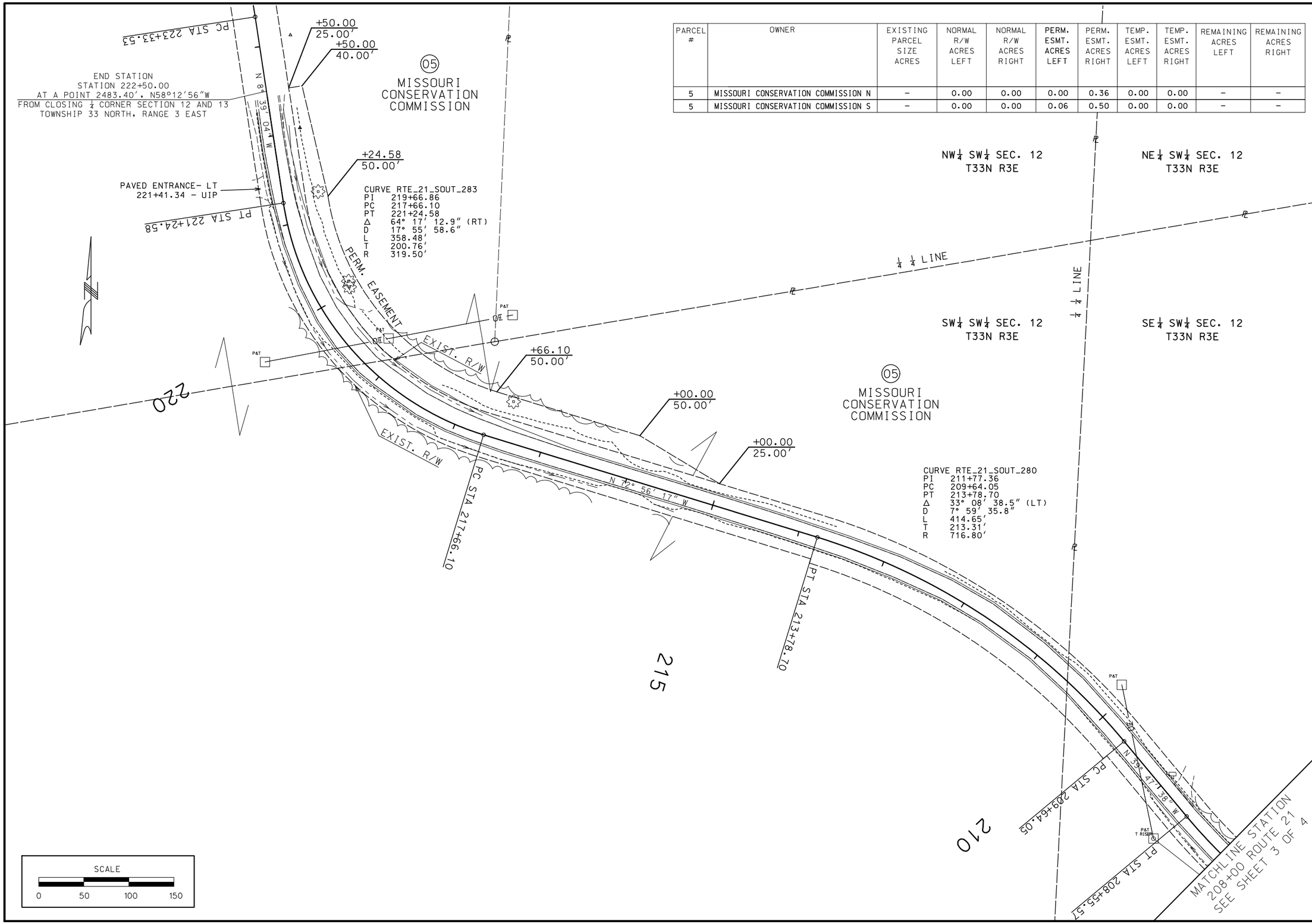
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
3 OF 15
CURVE 3

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

PARCEL #	OWNER	EXISTING PARCEL SIZE ACRES	NORMAL R/W ACRES LEFT	NORMAL R/W ACRES RIGHT	PERM. ESMT. ACRES LEFT	PERM. ESMT. ACRES RIGHT	TEMP. ESMT. ACRES LEFT	TEMP. ESMT. ACRES RIGHT	REMAINING ACRES LEFT	REMAINING ACRES RIGHT
5	MISSOURI CONSERVATION COMMISSION N	–	0.00	0.00	0.00	0.36	0.00	0.00	–	–
5	MISSOURI CONSERVATION COMMISSION S	–	0.00	0.00	0.06	0.50	0.00	0.00	–	–



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:08:45 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	7

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

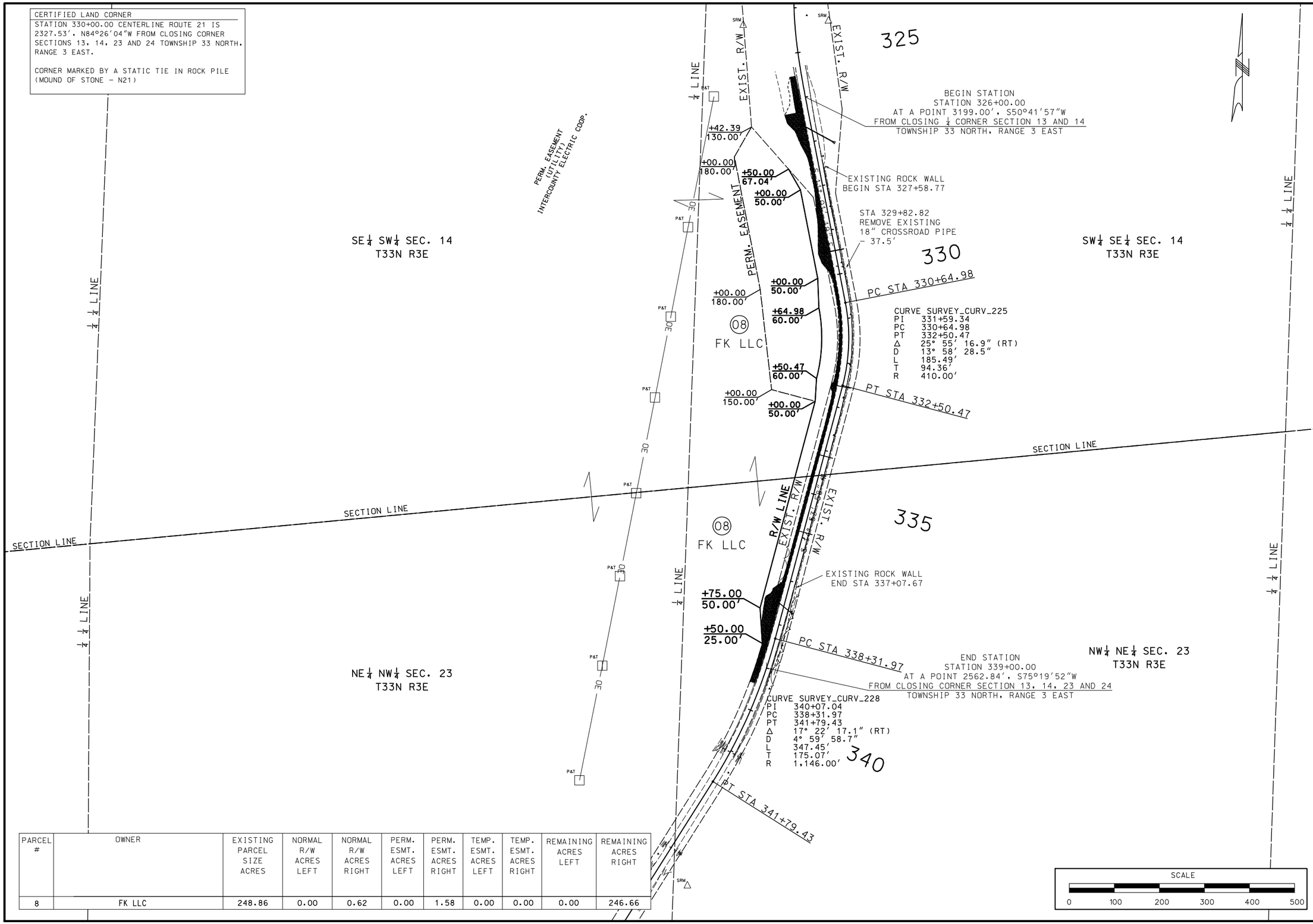
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 4 OF 15
CURVE 4

CERTIFIED LAND CORNER

STATION 330+00.00 CENTERLINE ROUTE 21 IS 2327.53', N84°26'04"W FROM CLOSING CORNER SECTIONS 13, 14, 23 AND 24 TOWNSHIP 33 NORTH, RANGE 3 EAST.

CORNER MARKED BY A STATIC TIE IN ROCK PILE (MOUND OF STONE - N21)



PARCEL #	OWNER	EXISTING PARCEL SIZE ACRES	NORMAL R/W ACRES LEFT	NORMAL R/W ACRES RIGHT	PERM. ESMT. ACRES LEFT	PERM. ESMT. ACRES RIGHT	TEMP. ESMT. ACRES LEFT	TEMP. ESMT. ACRES RIGHT	REMAINING ACRES LEFT	REMAINING ACRES RIGHT
8	FK LLC	248.86	0.00	0.62	0.00	1.58	0.00	0.00	0.00	246.66

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
08/11/2024 4:00:15 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

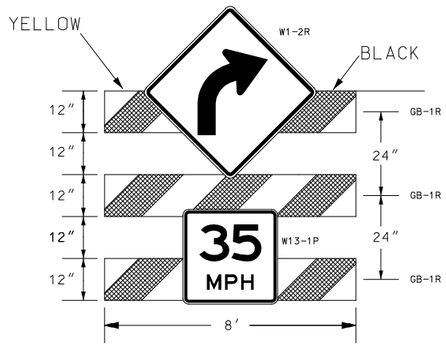
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 8
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

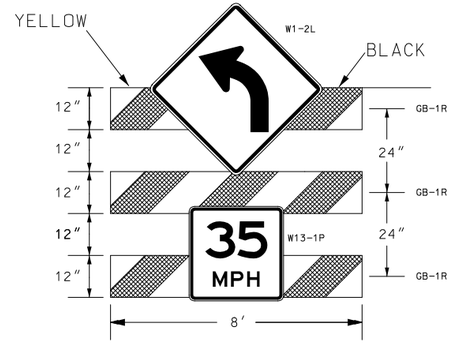
PLAN SHEET
SHEET 5 OF 15
CURVE 5

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



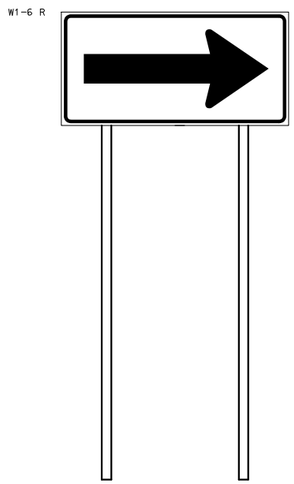
SHOULDER BARRICADE ASSEMBLY

1



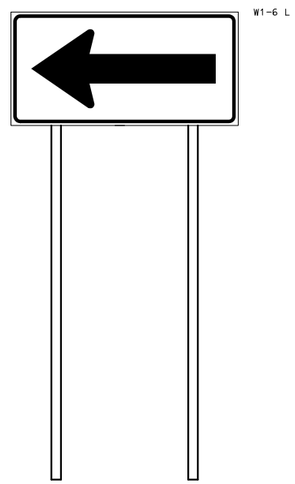
SHOULDER BARRICADE ASSEMBLY

5



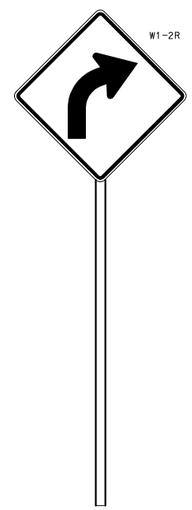
ONE-DIRECTION
LARGE ARROW SIGN

2



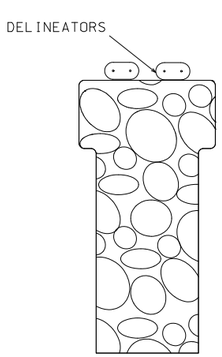
ONE-DIRECTION
LARGE ARROW SIGN

3



CURVE SIGN

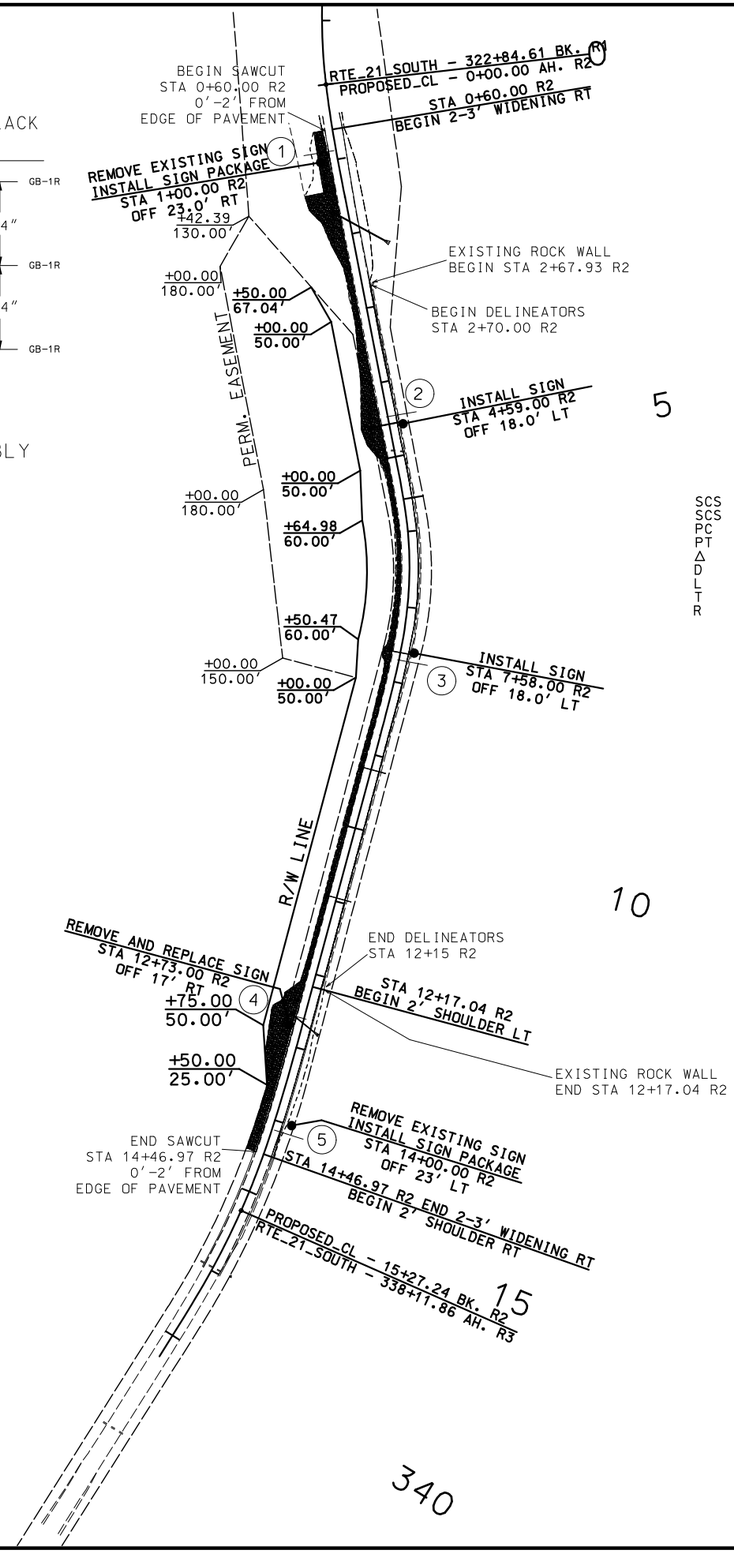
4



NOTES:

INSTALL AT 25 FT SPACING, TWO DOUBLE-SIDED WHITE TRAFFIC BARRIER DELINEATORS ALONG EXISTING ROCK WALL AT FROM STA 2+67 TO STA 12+17.

SEE STANDARD PLAN 903.03BR FOR INSTALLATION AND MATERIAL DETAILS.



SCS	PI STA 6+72.02
SCS	TOTAL Δ 25°57'37.7"
PC	5+90.93
PT	6+82.64
Δ	10°30'05.3" (RT)
D	11°27'04.0"
L	91.71' (ARC)
T	45.98'
R	500.35'

SCALE
0 100 200 300 400 500

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:00:51 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

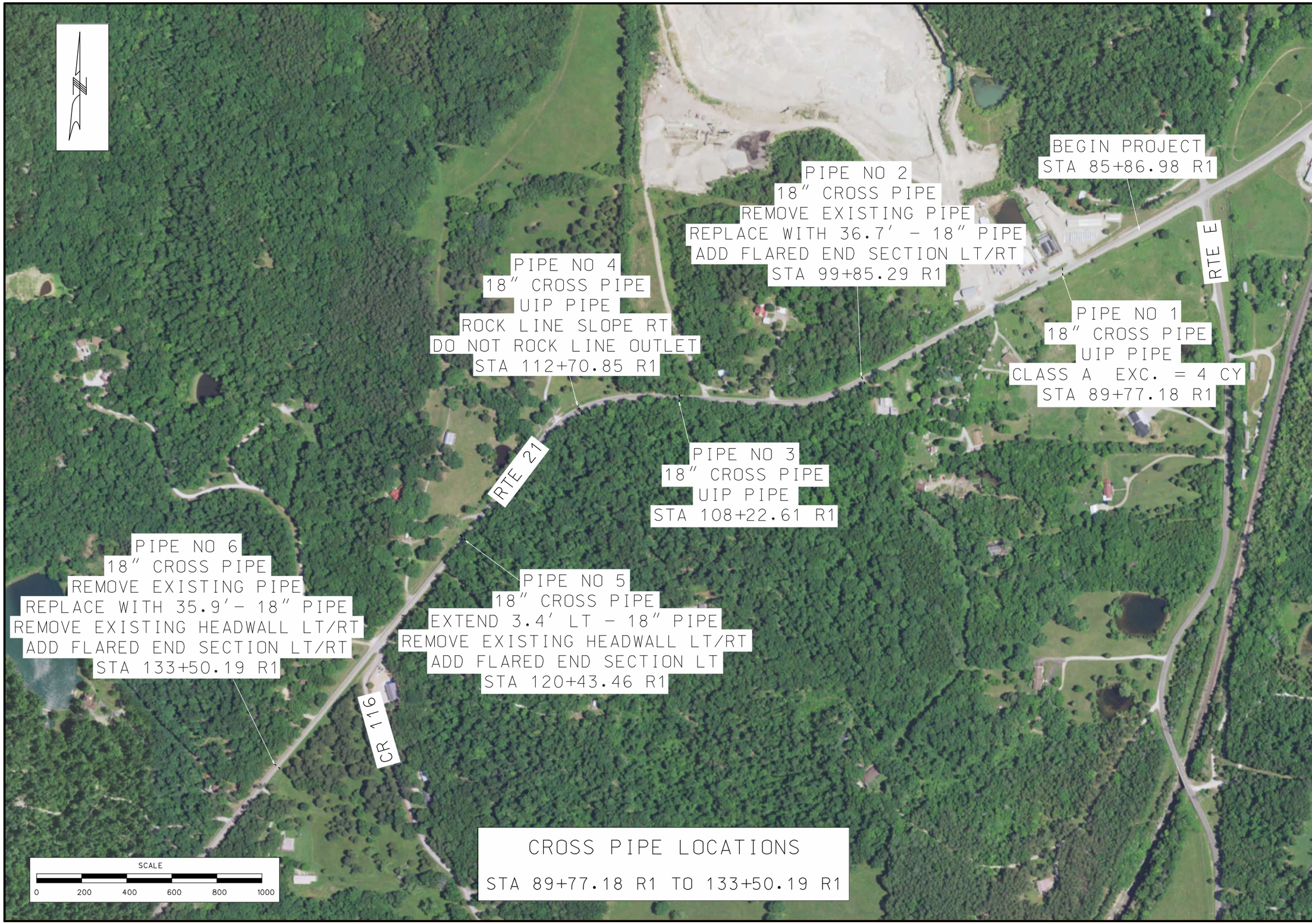
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 9
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 6 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



CROSS PIPE LOCATIONS

STA 89+77.18 R1 TO 133+50.19 R1

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:10:25 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 10
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 7 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CROSS PIPE LOCATIONS

STA 146+67.14 R1

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:10:57 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 11
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

PLAN SHEET
SHEET 8 OF 15

CROSS PIPE LOCATIONS

STA 237+56.52 R1 TO 275+24.36 R1

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:12:36 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	12
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 9 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CROSS PIPE LOCATIONS

STA 278+83.14 R1 TO 308+37.18 R1

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry

08/13/2024 4:13:12 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 13
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 10 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CROSS PIPE LOCATIONS

STA 1+83.63 R2 TO 341+45.08 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:13:47 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	14
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 11 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CROSS PIPE LOCATIONS

STA 365+36.16 R3 TO 403+56.20 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:14:28 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	15
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

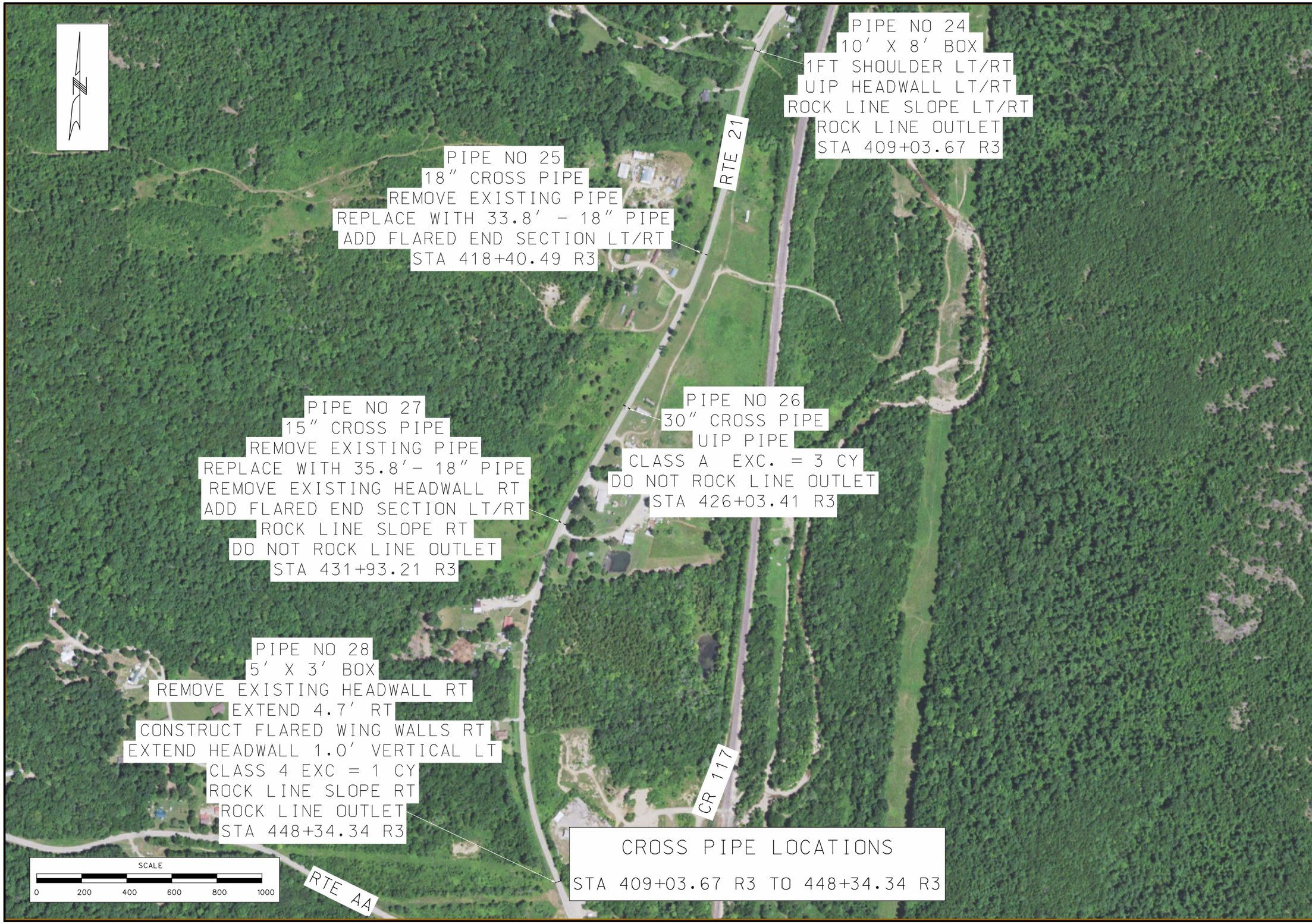
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 12 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



CROSS PIPE LOCATIONS

STA 409+03.67 R3 TO 448+34.34 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:19:52 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	16
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

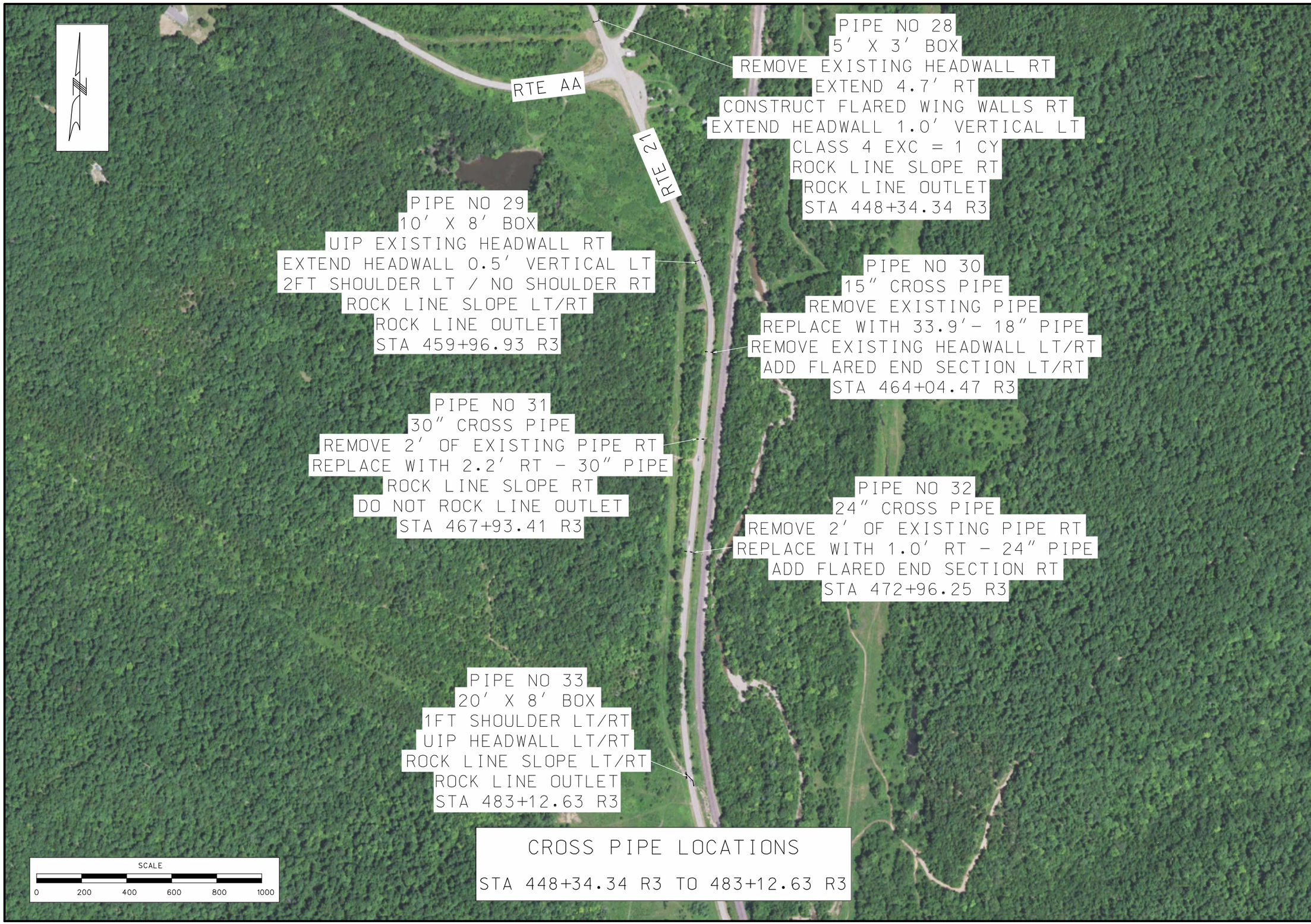
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 13 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



CROSS PIPE LOCATIONS

STA 448+34.34 R3 TO 483+12.63 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:20:24 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 17
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

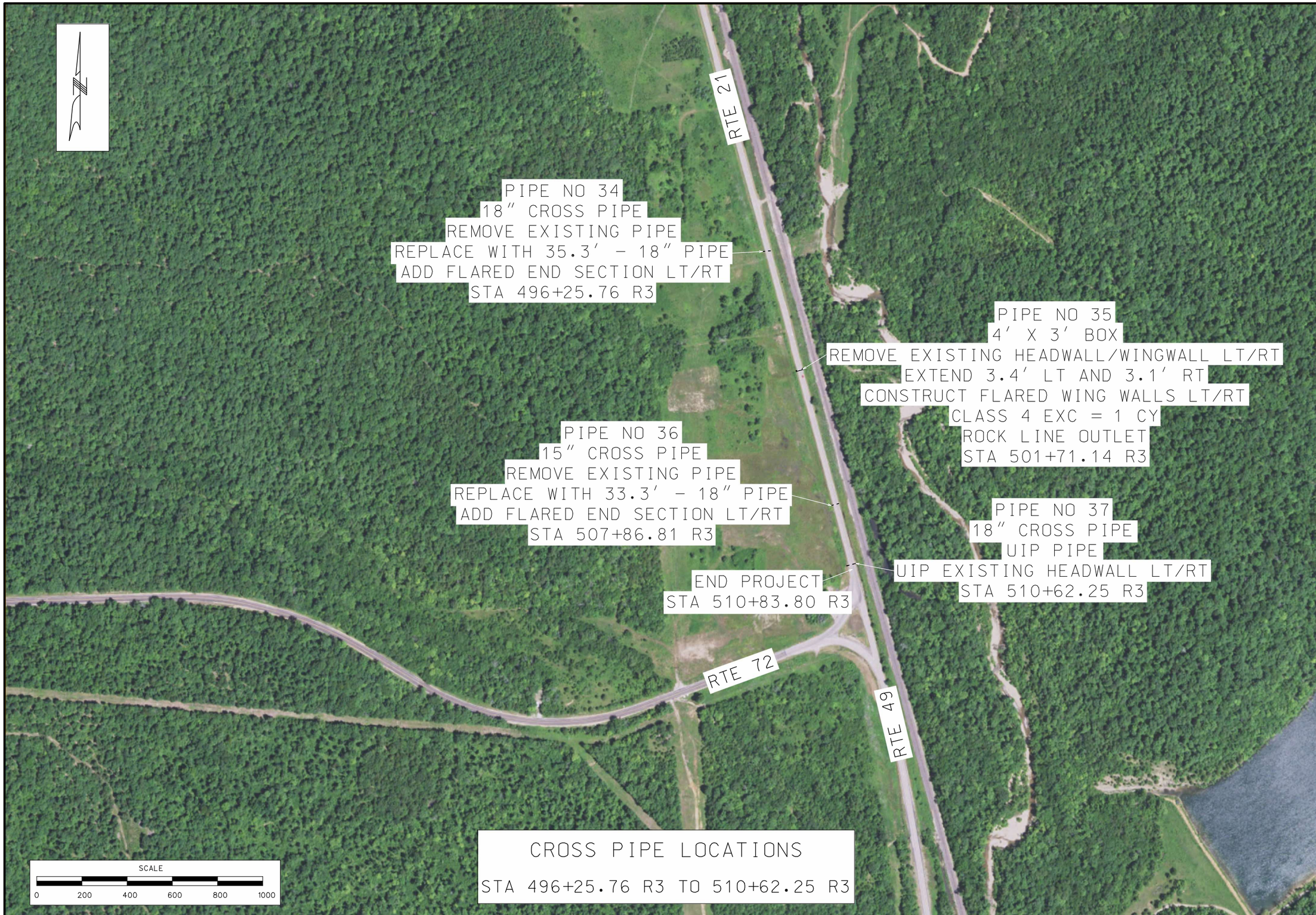
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 14 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



CROSS PIPE LOCATIONS

STA 496+25.76 R3 TO 510+62.25 R3

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:21:06 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	18
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

PLAN SHEET
SHEET 15 OF 15

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

COORDINATE POINT LISTING
1983 MISSOURI STATE PLANE COORDINATES

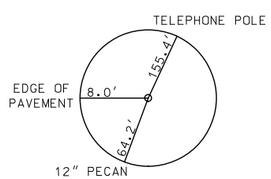
VERTICAL DATUM - NAV88

HORIZONTAL DATUM - NAV83

EAST ZONE
PROJECTION FACTOR = 1.000000000
GRID FACTOR = 1.000000000

SHEET NO.	STATION BACK	R#	STATION AHEAD	R#	LOCATION	OFFSET (FEET)	NORTHING (FEET)	EASTING (FEET)	DESCRIPTION	DESIGN PT. ID
RTE21_CURVE_WIDENING - ALIGNMENT IN CURVE SECTION 1 THRU 5										
-	85+86.98	1			CL	0.00	633,245.33	779,993.59	BEGIN CHAIN - RTE_21_SOUTH	POINT 25230
4	177+82.65	1			CL	0.00	627,560.24	773,315.85	BEGIN CHAIN - EXCL_21_3	POINT 23
4	181+00.00	1			CL	0.00	627,277.45	773,171.84	P.C STA - CURVE RTE_21_SOUT_265	
4	183+63.57	1			LT	84.28	627,042.59	773,052.23	P.I. STA - CURVE RTE_21_SOUT_265	
4	185+58.04	1			CL	0.00	627,078.89	772,791.17	P.T. STA - CURVE RTE_21_SOUT_265	
5	191+15.08	1			CL	0.00	627,055.21	772,240.70	P.C STA - CURVE RTE_21_SOUT_271	
5	196+46.97	1			LT	237.01	626,940.97	771,721.23	P.I. STA - CURVE RTE_21_SOUT_271	
5	199+17.09	1			CL	0.00	627,469.61	771,662.59	P.T. STA - CURVE RTE_21_SOUT_271	
6	200+59.68	1			CL	0.00	627,611.34	771,646.87	P.C STA - CURVE RTE_21_SOUT_274	
6	202+51.20	1			RT	47.85	627,801.68	771,625.75	P.I. STA - CURVE RTE_21_SOUT_274	
6	204+11.59	1			CL	0.00	627,890.27	771,455.96	P.T. STA - CURVE RTE_21_SOUT_274	
7	217+66.10	1			CL	0.00	628,555.67	770,307.79	P.C STA - CURVE RTE_21_SOUT_283	
7	219+66.86	1			LT	57.84	628,614.57	770,115.87	P.I. STA - CURVE RTE_21_SOUT_283	
7	221+24.58	1			CL	0.00	628,813.05	770,085.67	P.T. STA - CURVE RTE_21_SOUT_283	
-	232+68.35	1			CL	0.00	629,854.74	769,655.23	END CHAIN - EXCL_21_3	POINT 24
9	322+84.61	1	0+00.00	2	CL	0.00	622,617.76	767,037.45	BEGIN CHAIN - BASELINE PROP7	COGO POINT_1
9	15+27.24	2	338+11.86	3	CL	0.00	621,131.40	766,925.42	END CHAIN - BASELINE PROP7	COGO POINT_2
-	510+83.80	3			CL	0.00	604,932.25	764,431.60	END CHAIN - RTE_21_SOUTH	POINT 25838

CP-101

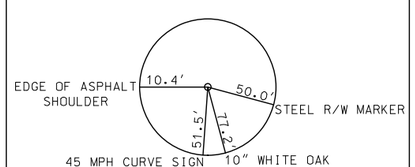


SET 5/8" X 24" REBAR WITH
PLASTIC CONTROL POINT CAP IN
EAST R/W RTE 21 & 72 0.3 DEEP

STATE PLANE COORDINATES
EAST ZONE

X 763,905.0320
Y 613,590.2740
Z 938.5200

CP-102

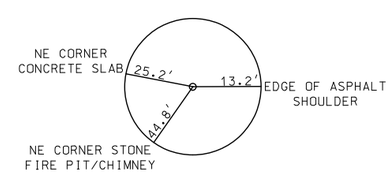


SET 5/8" X 24" REBAR WITH
PLASTIC CONTROL POINT CAP IN
EAST R/W RTE 21 & 72 0.2 DEEP

STATE PLANE COORDINATES
EAST ZONE

X 767,058.1200
Y 622,691.5450
Z 1035.8700

CP-103

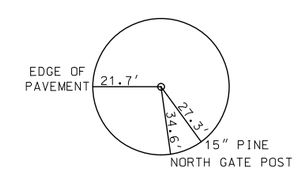


SET 5/8" X 24" REBAR WITH
PLASTIC CONTROL POINT CAP IN
WEST R/W RTE 21 & 72 AT
TIP TOP ROADSIDE PARK 0.3 DEEP

STATE PLANE COORDINATES
EAST ZONE

X 770,013.0170
Y 629,128.8100
Z 1316.6500

CP-104



SET 5/8" X 24" REBAR WITH
PLASTIC CONTROL POINT CAP IN
EAST R/W RTE 21 & 72 0.2 DEEP
AT RESIDENCE #16062

STATE PLANE COORDINATES
EAST ZONE

X 776,687.0000
Y 631,451.6050
Z 1151.8000

NOTE : THE RECIPROCAL OF THE AVERAGE GRID FACTOR IS USED AS A MULTIPLIER FROM STATE PLANE DISTANCE TO GROUND DISTANCE. STATION AND OFFSETS ABOVE ARE SHOWN AS GROUND DISTANCE.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:21:36 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 19
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

COORDINATE POINTS
SHEET 1 OF 2

BM1 -
ELEV. 1303.62

BM2 - ½" REBAR MURPHY CAP LS 1155
(BENT) NE CORNER CJ SUTTON
PLAT PART TRACT 7 MURDOCK
CRUMB CO SUBDIVISION
ELEV. 1243.21

BM3 - ½" REBAR MURPHY LS 1155 PART
TRACT 7
MURDOCK CRUMB CO SUBDIVISION
ELEV. 1252.14

BM4 - ½" REBAR MURPHY LS 1155
NW CORNER TRACT 7
MURDOCK CURMB CO SUBDIVISION
ELEV. 1259.81

BM5 - NAIL IN MOS
¼ CORNER SEC 12 & 13
T33N R3E PREVIOUS TIE
#822 Δ 0.05
ELEV. 1185.65

BM6 - ½" REBAR NO CAP
ELEV. 1247.65

BM7 - ½" REBAR LS 1155
SE CORNER SUTTON PLAT
ELEV. 1204.06

BM8 - 1½" PIPE ON EAST SIDE
LANDFILL ROAD
ELEV. 1201.98

BM9 - AXLE POSSIBLE NW TRACT 5
ELEV. 1233.19

BM10 - ANCIENT FENCE CORNER FNC
TO WEST S80°W
ELEV. 1226.06

BM11 - EMBEDDED MOS SE CORNER TRACT
ELEV. 1184.74

N21_STATIC - ROCK PILE CORNER SECTIONS
13-14-23-24 T33N R3E
ELEV. 1063.33

L21_STATIC - ½" REBAR IN MOS 1/4 CORNER
SEC 13-14 T33N R3E
ELEV. 1140.72

O18 - NW 1/16 CORNER SEC 23T33N R3E
½" REBAR LS 1802 CAP IN MOS
16" WHITE OAK S67°W - 10.6'
15" WHITE OAK N72°W - 45.0'
ELEV. 1021.79

STATE OF MISSOURI
CHRIS E. BERRY
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MO-PE-2001018707

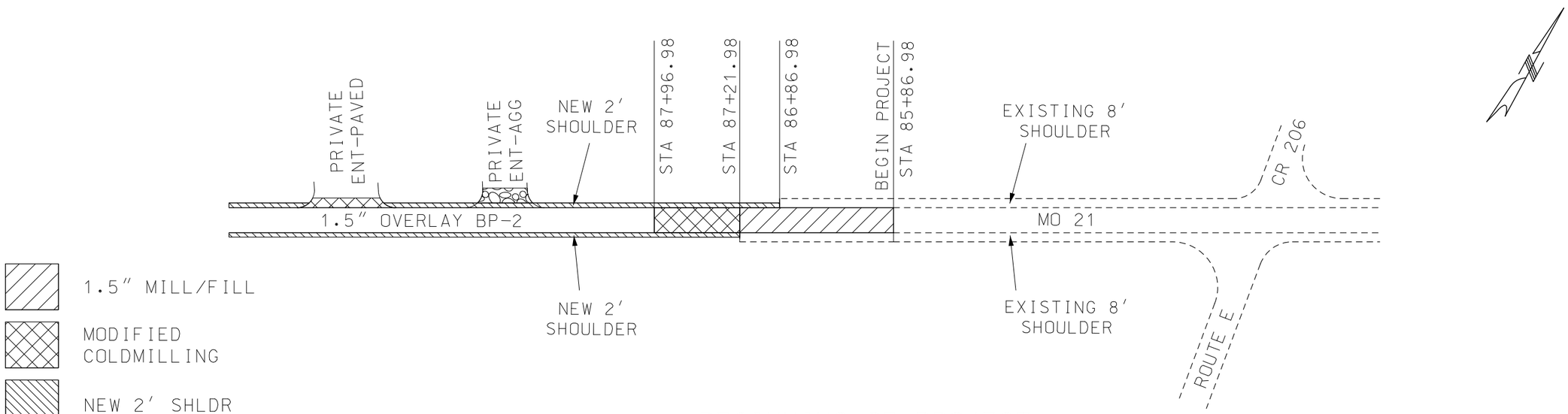
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 20
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

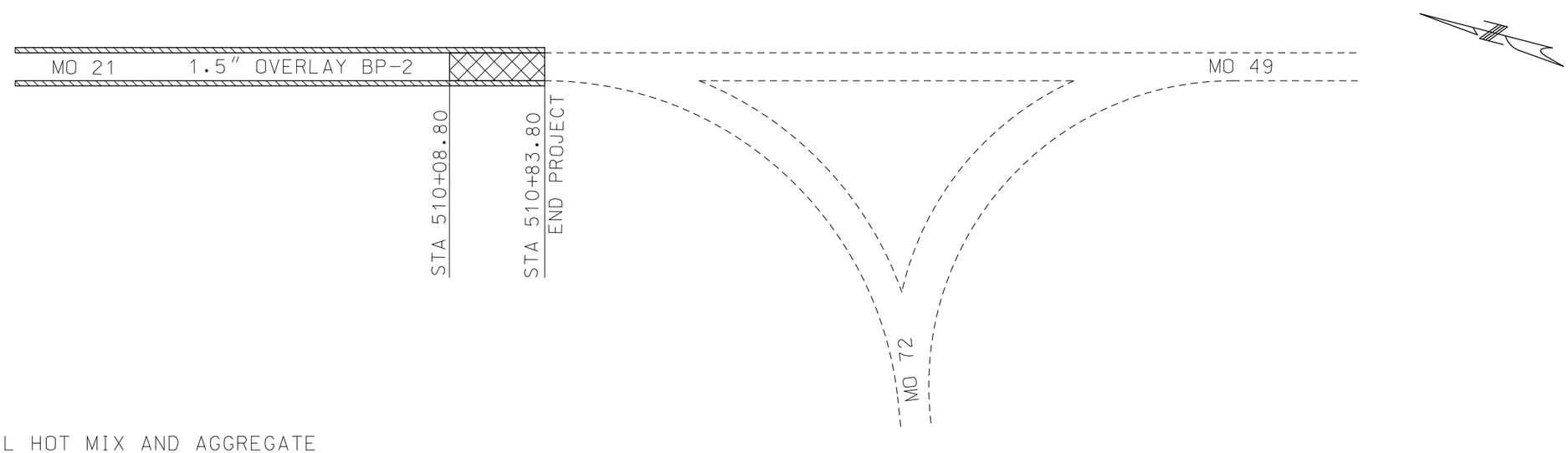
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

COORDINATE POINTS
SHEET 2 OF 2



BEGINNING OF PROJECT

STA 85+86.98 R1



END OF PROJECT

STA 510+83.80 R3

NOTES

THE WIDTH OF ALL HOT MIX AND AGGREGATE APRONS MAY BE ADJUSTED BY THE ENGINEER AS NECESSARY TO OBTAIN SUITABLE TRANSITIONS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
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CHRIS E. BERRY - CIVIL
MO-PE-2001018707

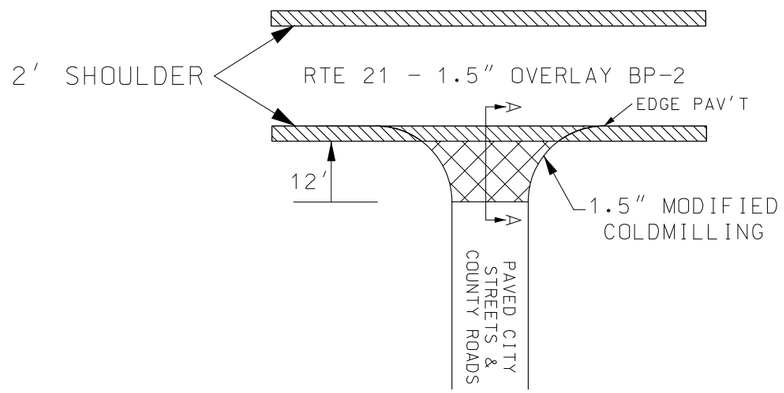
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 21
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

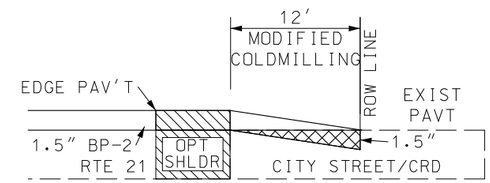
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 1 OF 13

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



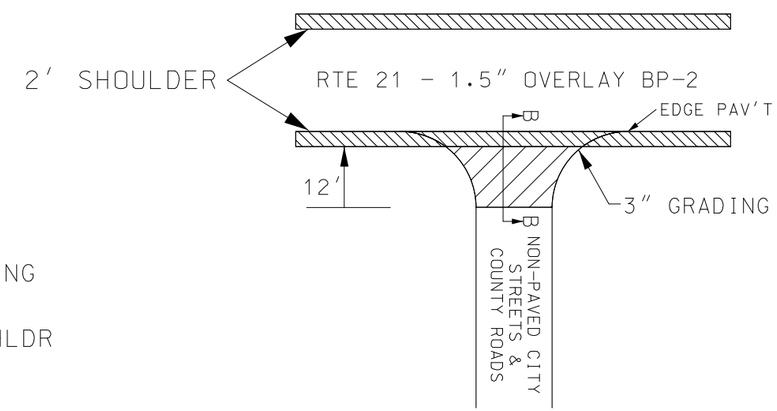
PLAN VIEW FOR PAVED
CITY STREET AND COUNTY ROADS



TYPICAL
SECTION A-A

PAVED COUNTY ROADS
AND CITY STREETS

STA 126+66.77 R1 (CR 116) LT

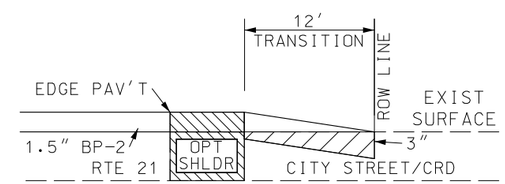


GRADING

MODIFIED
COLDMILLING

NEW 2′ SHLDR

PLAN VIEW FOR NON-PAVED
CITY STREETS AND COUNTY ROADS



TYPICAL
SECTION B-B

NOTES

ALL GRADING NECESSARY FOR THE PROPER CONSTRUCTION OF HOT MIX AND AGGREGATE APRONS SHALL BE CONSIDERED INCIDENTAL WORK AND AT NO DIRECT PAY.

THE WIDTH OF ALL HOT MIX AND AGGREGATE APRONS MAY BE ADJUSTED BY THE ENGINEER AS NECESSARY TO OBTAIN SUITABLE TRANSITIONS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

NON-PAVED COUNTY ROAD
AND CITY STREETS

STA 183+05.54 R1 (CARTER LANE) LT
STA 449+57.50 R3 (CR 117) LT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
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CHRIS E. BERRY - CIVIL
MO-PE-2001018707

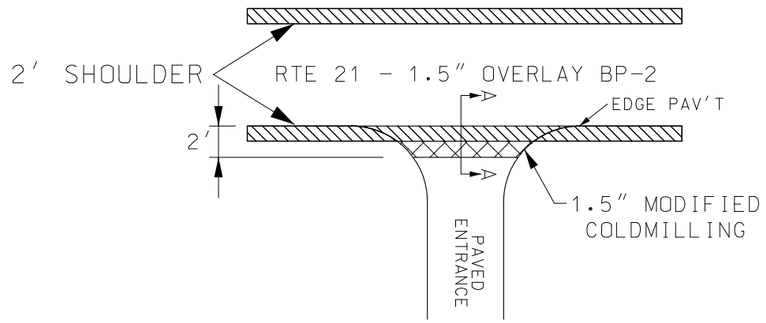
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 22
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

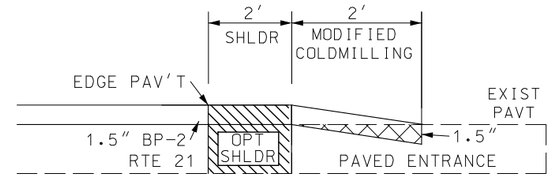
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 2 OF 13



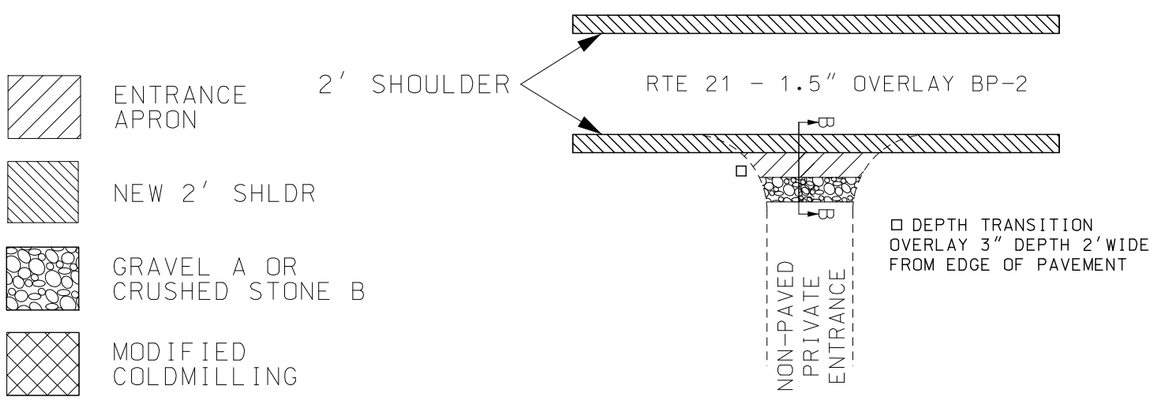
PLAN VIEW FOR PAVED
PRIVATE AND COMMERCIAL ENTRANCES



TYPICAL
SECTION A-A

PAVED PRIVATE ENTRANCES

STA 89+28.58 R1 (PRIVATE) RT
STA 90+64.89 R1 (PRIVATE) RT
STA 107+10.83 R1 (PRIVATE) RT
STA 119+36.77 R1 (PRIVATE) RT
STA 207+52.23 R1 (PRIVATE) LT
STA 208+93.42 R1 (PRIVATE) RT
STA 221+41.34 R1 (PRIVATE) LT
STA 225+10.88 R1 (PRIVATE) LT
STA 410+93.91 R3 (PRIVATE) RT



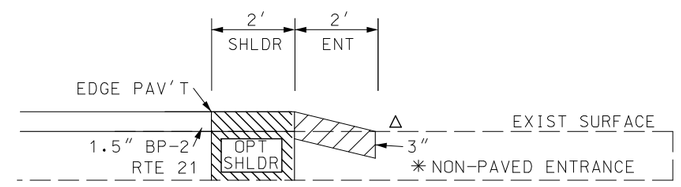
NOTES

THE WIDTH OF ALL HOT MIX AND AGGREGATE APRONS MAY BE ADJUSTED BY THE ENGINEER AS NECESSARY TO OBTAIN SUITABLE TRANSITIONS.

REMOVE EXISTING 2′ PAVED APRON AND REPLACE WITH PAVED OPTIONAL SHOULDER AND 2′ PAVEMENT WITH GRAVEL A OR CRUSHED STONE B AS DIRECTED BY ENGINEER

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

Δ ENTRANCES AT STA. 181+25.85 AND 185+77.60 RT SHALL HAVE AGGREGATE TO THE ROW LINE. REFERENCE SHEET 4 FOR DETAILS.
-ENTRANCE AT STA. 189+08.81 AND 189+76.45 RT SHALL BE PAVED TO THE ROW LINE. REFERENCE SHEET 5 FOR DETAILS.
-SEE XS SHEET 52 OF 52 FOR CROSS-SECTIONS



TYPICAL
SECTION B-B

✳ GRAVEL A OR CRUSHED STONE B AT AGGREGATE ENTRANCES (AS APPROVED BY ENGINEER)

NON-PAVED PRIVATE ENTRANCES

STA 93+28.86 TO 315+24.59 R1
21 PRIVATE ENTRANCES RT
24 PRIVATE ENTRANCES LT

STA 354+16.11 TO 494+09.24 R3
15 PRIVATE ENTRANCES RT
10 PRIVATE ENTRANCES LT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001016707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:23:29 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001016707

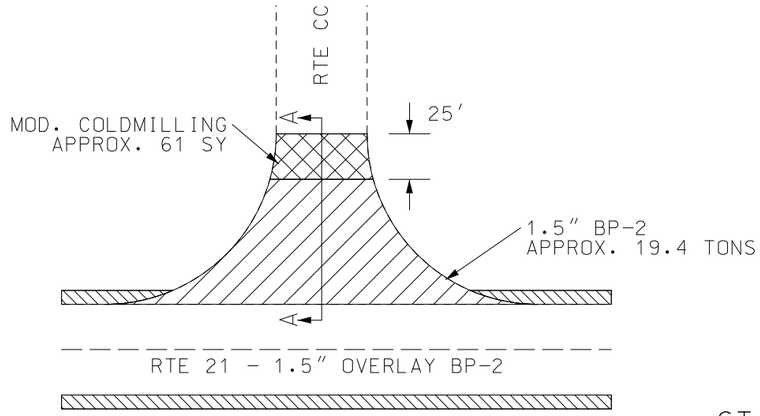
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 23
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

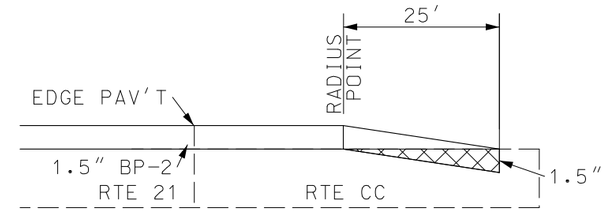
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 3 OF 13



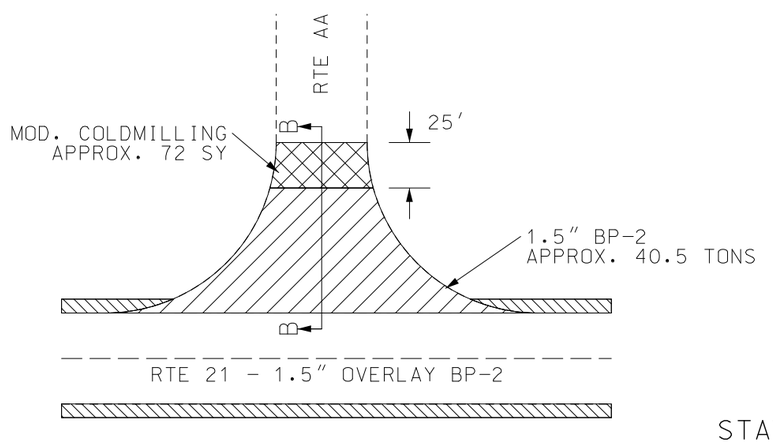
PLAN VIEW



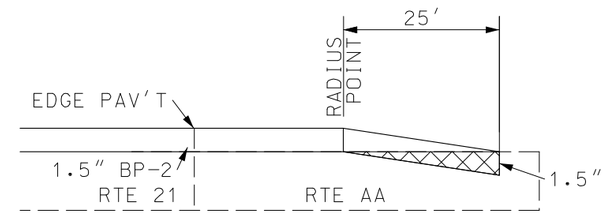
TYPICAL
SECTION A-A

STATE ROUTE

ROUTE CC - STA 240+00.84 R1



PLAN VIEW



TYPICAL
SECTION B-B

STATE ROUTE

ROUTE AA - STA 450+63.06 R3

OVERLAY

NEW 2' SHLDR

MODIFIED COLDMILLING

NOTES

THE WIDTH OF ALL HOT MIX AND AGGREGATE APRONS MAY BE ADJUSTED BY THE ENGINEER AS NECESSARY TO OBTAIN SUITABLE TRANSITIONS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:23:58 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

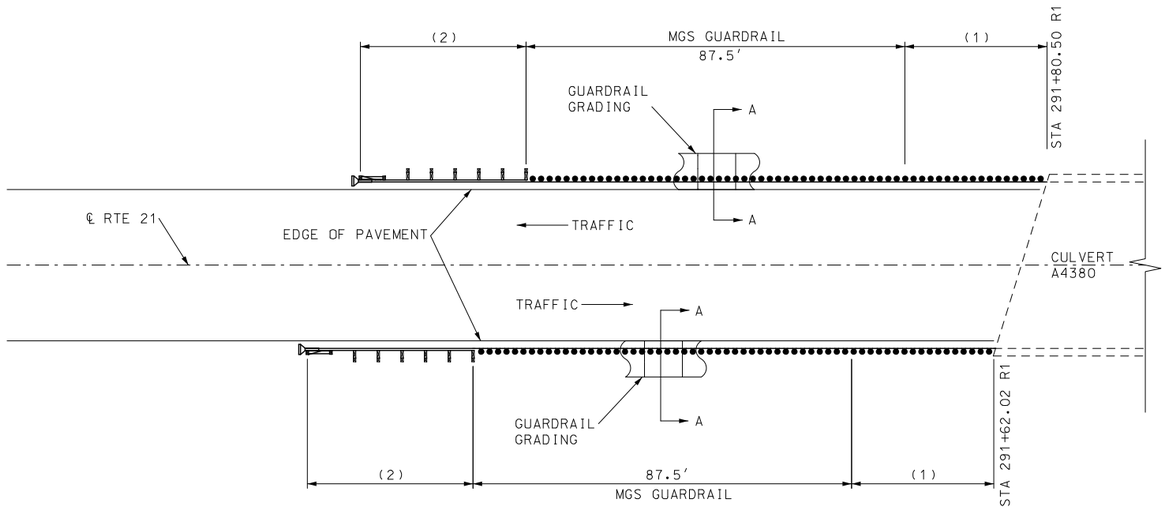
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 24
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

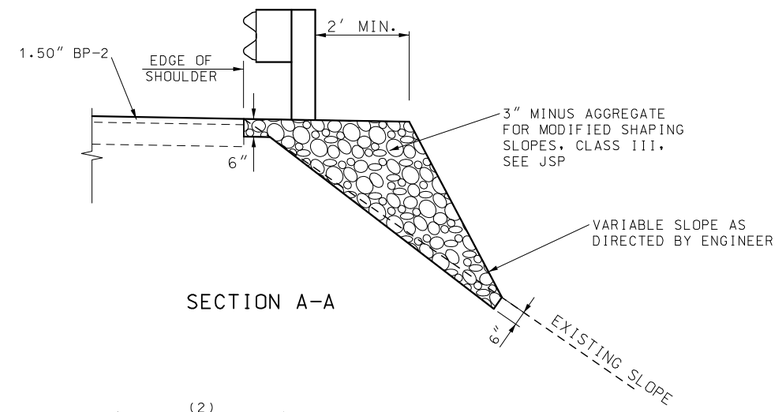
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

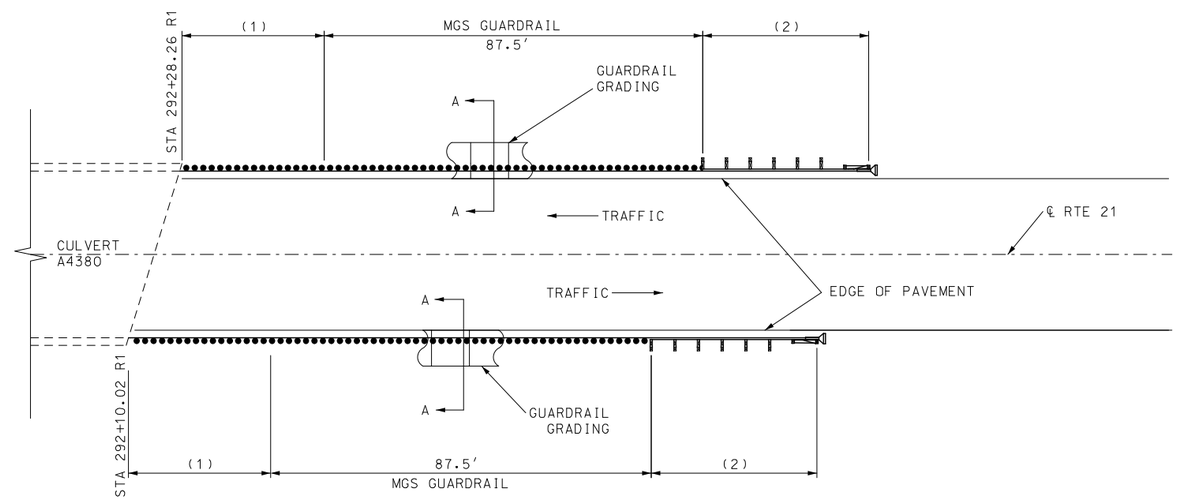
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 4 OF 13





SECTION A-A



NOTES

SEE STD 606.81 FOR GRADING LIMITS
OF MODIFIED SHAPING SLOPES CLASS III.

(1) MGS BRIDGE APPROACH TRANSITION (THRIE-BEAM BRIDGE)
(2) TYPE A CRASHWORTHY END TERMINAL (MASH)

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

TYPICAL GUARDRAIL AND GRADING LIMITS AT TRIPLE BOX CULVERT A4380 STA 291+62.02 TO STA 292+28.26 R1

STATE OF MISSOURI
CHRIS E. BERRY
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DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	25
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

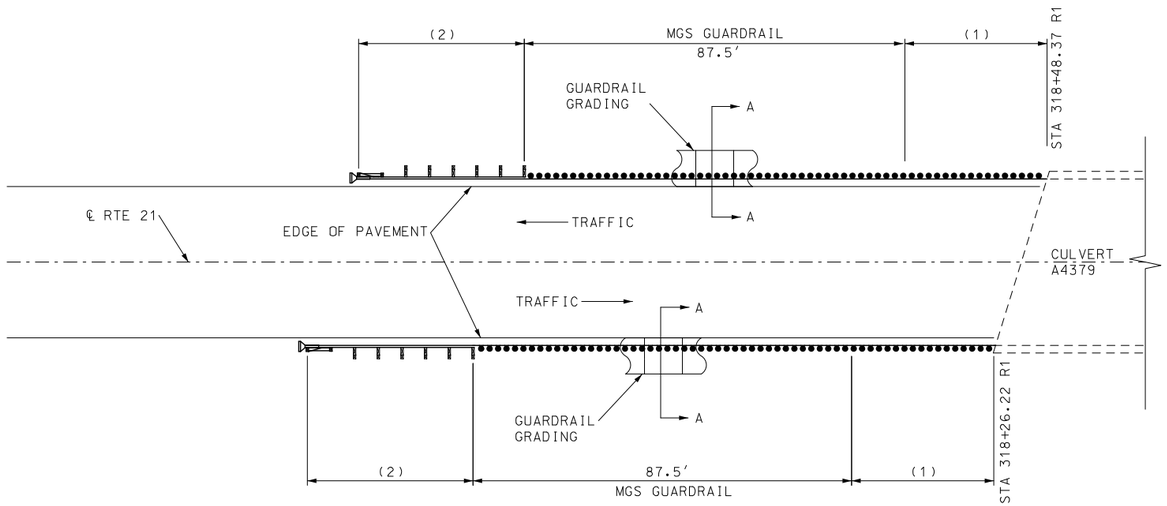
DATE	DESCRIPTION

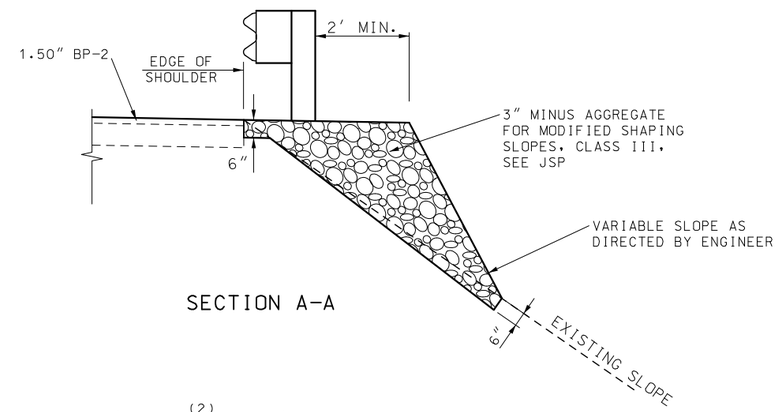
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 5 OF 13

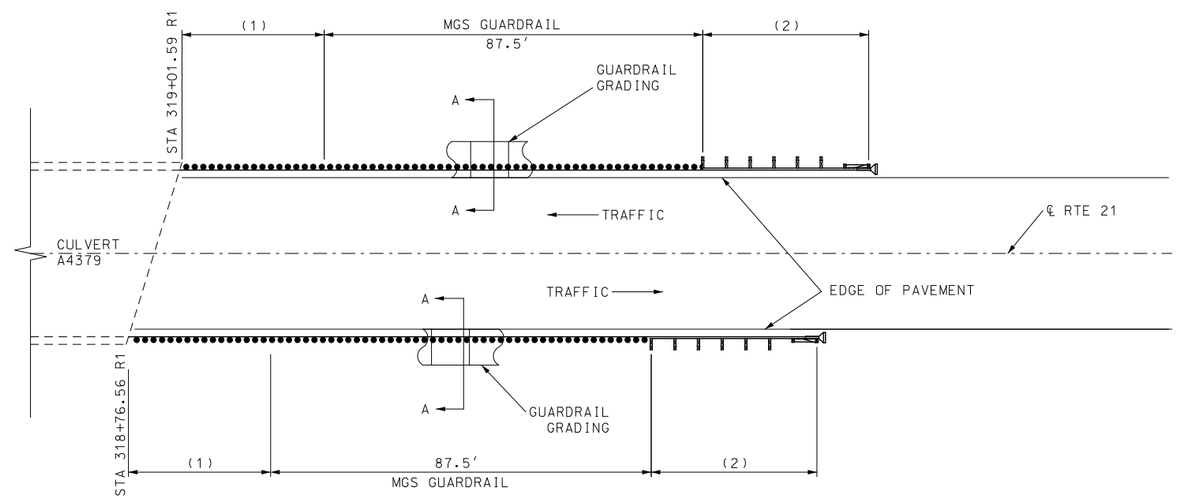
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.





SECTION A-A



NOTES

SEE STD 606.81 FOR GRADING LIMITS
OF MODIFIED SHAPING SLOPES CLASS III.

(1) MGS BRIDGE APPROACH TRANSITION (THRIE-BEAM BRIDGE)
(2) TYPE A CRASHWORTHY END TERMINAL (MASH)

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

TYPICAL GUARDRAIL AND GRADING LIMITS AT TRIPLE BOX CULVERT A4379 STA 318+26.22 TO STA 319+01.59 R1

STATE OF MISSOURI
CHRIS E. BERRY
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DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	26
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

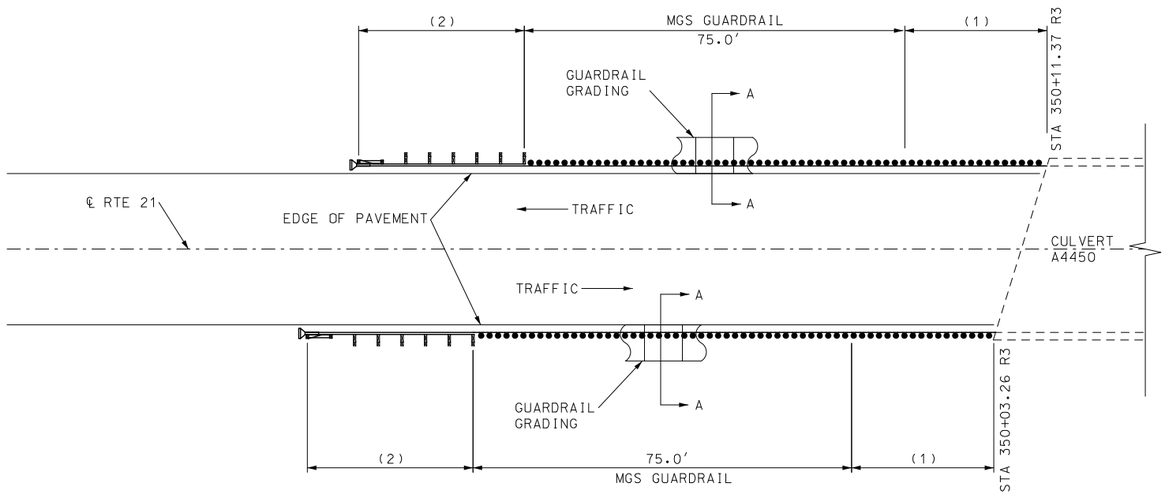
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

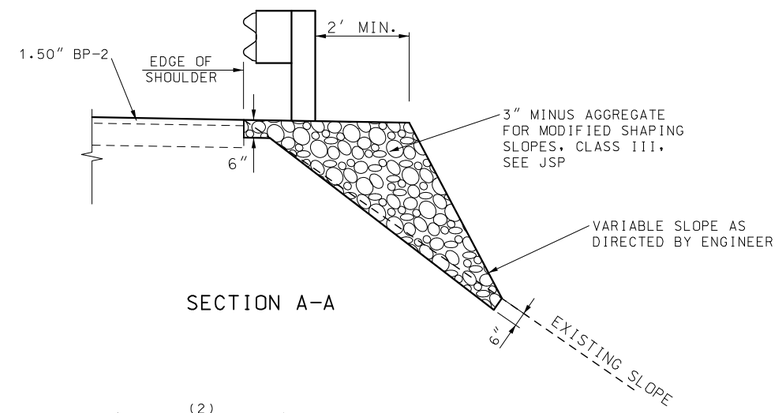
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 6 OF 13

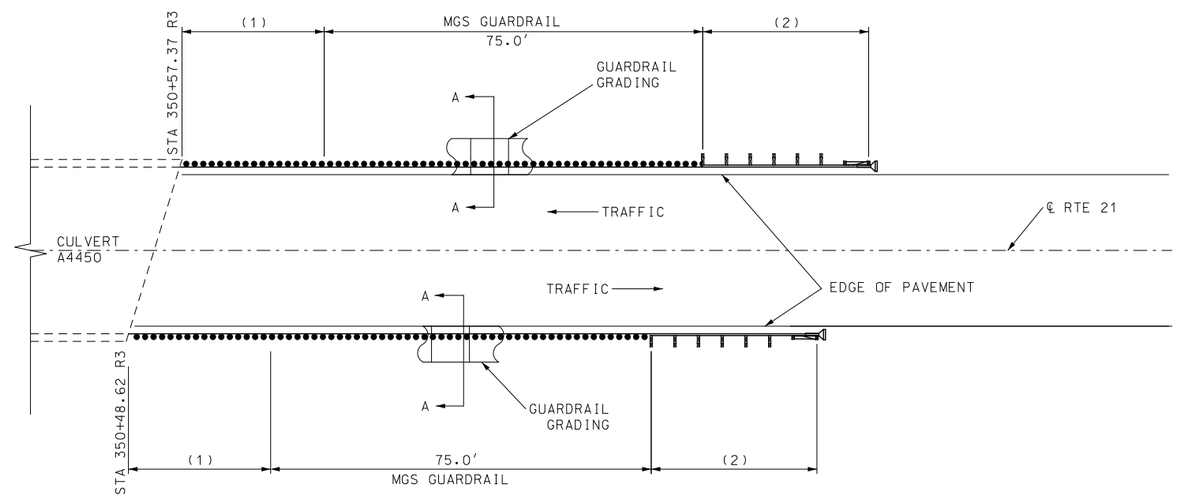
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.





SECTION A-A



NOTES

SEE STD 606.81 FOR GRADING LIMITS
OF MODIFIED SHAPING SLOPES CLASS III.

(1) MGS BRIDGE APPROACH TRANSITION (THRIE-BEAM BRIDGE)
(2) TYPE A CRASHWORTHY END TERMINAL (MASH)

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

TYPICAL GUARDRAIL AND GRADING LIMITS AT TRIPLE BOX CULVERT A4450 STA 350+03.26 TO STA 350+57.37 R3

STATE OF MISSOURI
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NUMBER
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08/11/2024 4:25:47 PM
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DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 27
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 7 OF 13

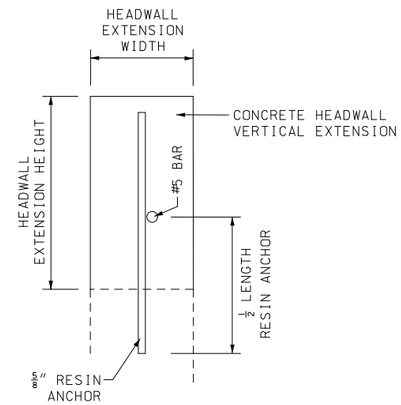
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

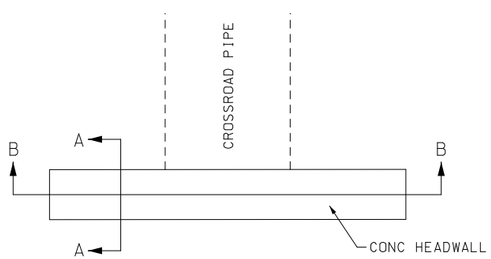
CONCRETE HEADWALL EXTENSION

EXTEND HEADWALLS VERTICALLY

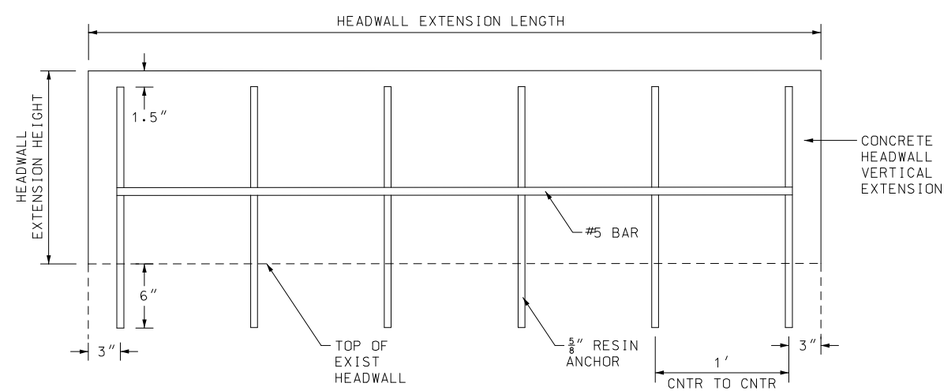
CULVERT 28 - STA 448+34.34 R3 - 5′ X 3′ BOX - 1.0 FEET LEFT
CULVERT 29 - STA 459+96.93 R3 - 10′ X 8′ BOX - 0.5 FEET LEFT



SECTION A-A



PLAN VIEW



SECTION B-B

NOTE:
CONCRETE HEADWALLS TO BE EXTENDED WITH CLASS B-1 CONCRETE.
#5 BAR AND RESIN ANCHORS ARE INCIDENTAL TO HEADWALL EXTENSIONS.

MATCH EXISTING HEADWALL DIMENSIONS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:26:17 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 28
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

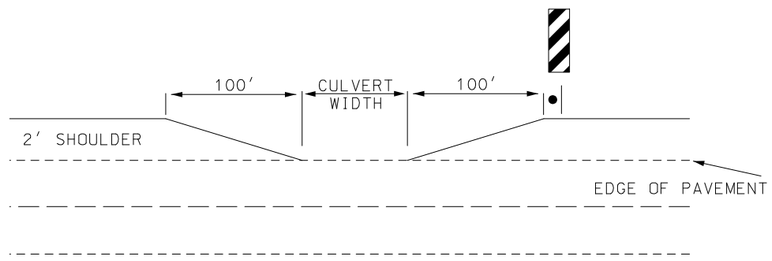
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 8 OF 13

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

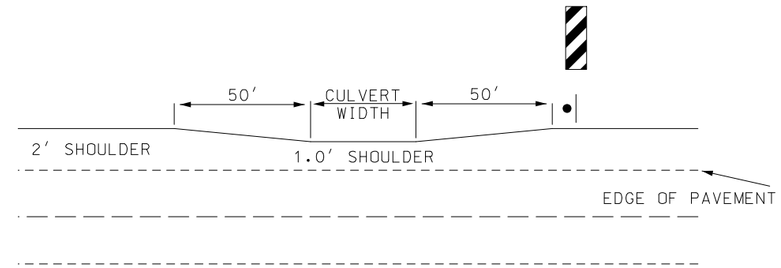
TYPE 3 OBJECT MARKER DETAIL AT SHOULDER WIDTH TRANSITIONS



SHOULDER TAPER

CULVERT NUMBER 29 STA 459+96.93 R3 RT

- OMIT RUMBLESTRIPS AT LOCATIONS WHERE SHOULDER IS TAPERED TO 0'.



SHOULDER TAPER

CULVERT NUMBER 24 STA 409+03.67 R3 LT/RT
CULVERT NUMBER 33 STA 483+12.63 R3 LT/RT

- OMIT RUMBLESTRIPS AT LOCATIONS WHERE SHOULDER IS TAPERED TO 1'.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
08/11/2024 4:26:57 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 29
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

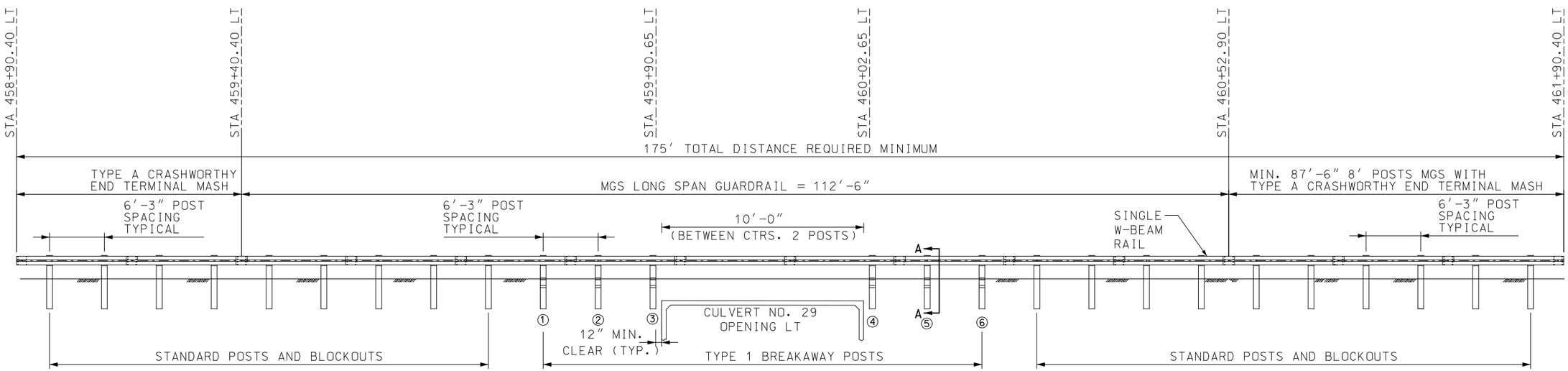
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 9 OF 13

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ELEVATION VIEW

NOTES:

REMOVE EXISTING GUARD CABLE.
REFERENCE REMOVAL OF IMPROVEMENTS.

STD 606.50 WAS USED TO DETERMINE GUARDRAIL LENGTHS

SLOPE MAY BE STEEPENED UP TO 1:1 AT CULVERT ENDS TO PROVIDE SPACE FOR DITCH GRADING AS DIRECTED BY ENGINEER.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:27:33 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 30
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

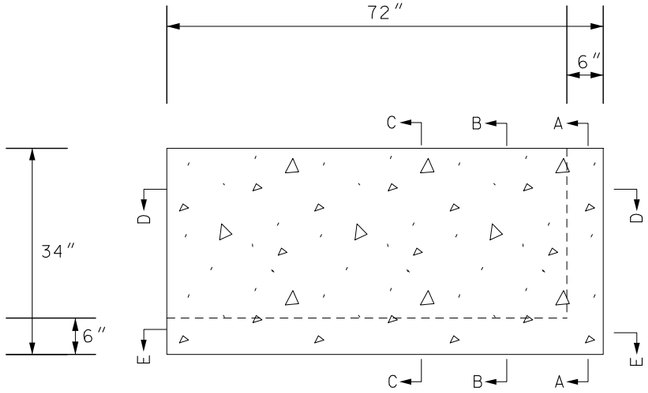
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

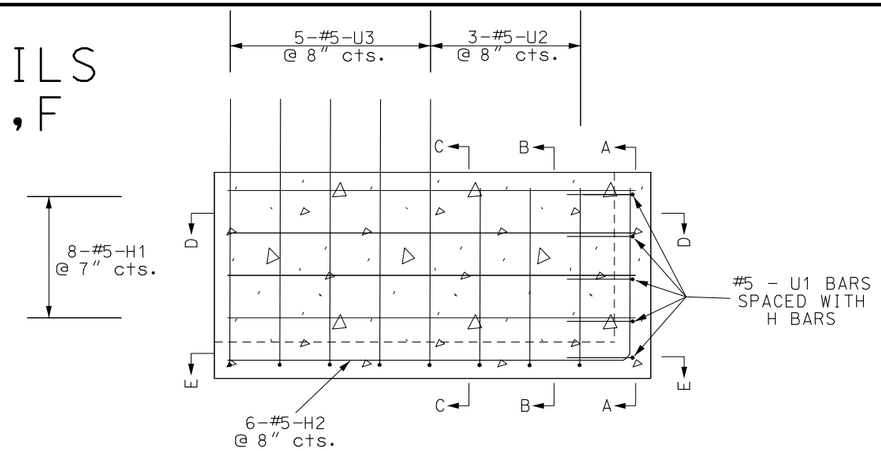
SPECIAL SHEET
SHEET 10 OF 13

REV.

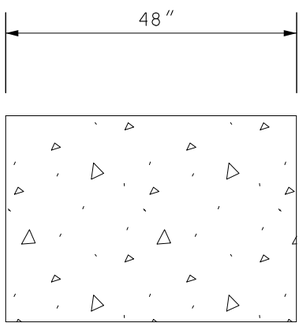
PRECAST INLET DETAILS FOR PIPE 15 C,D,E,F



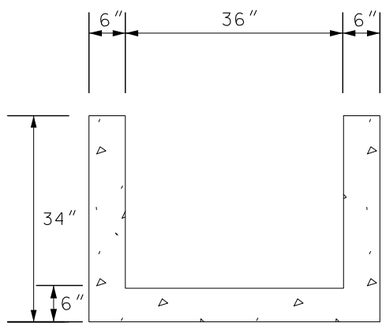
PROFILE VIEW



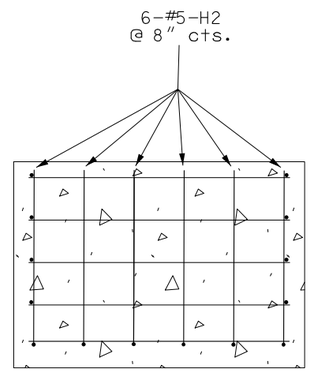
PROFILE VIEW



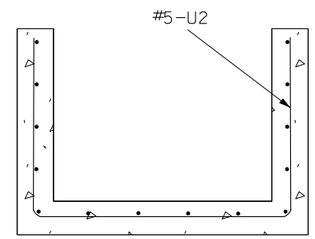
SECTION A-A



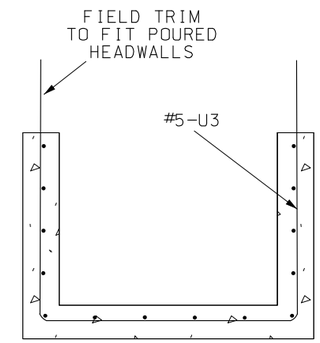
SECTION B-B &
SECTION C-C



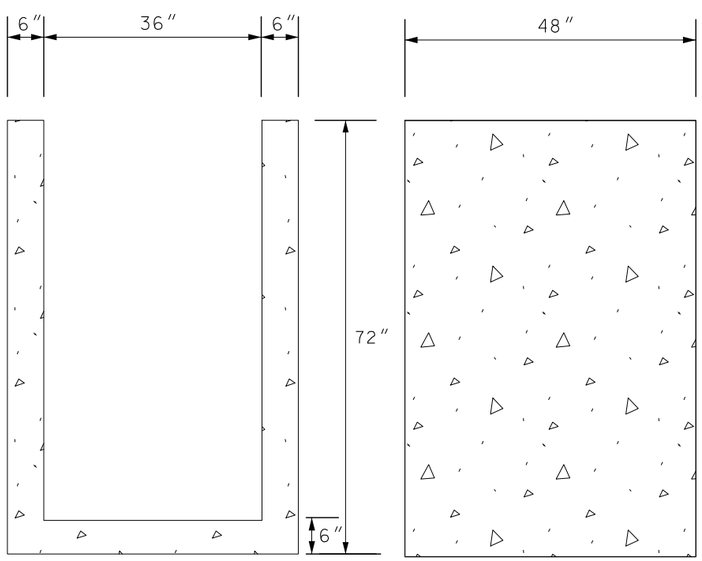
SECTION A-A



SECTION B-B

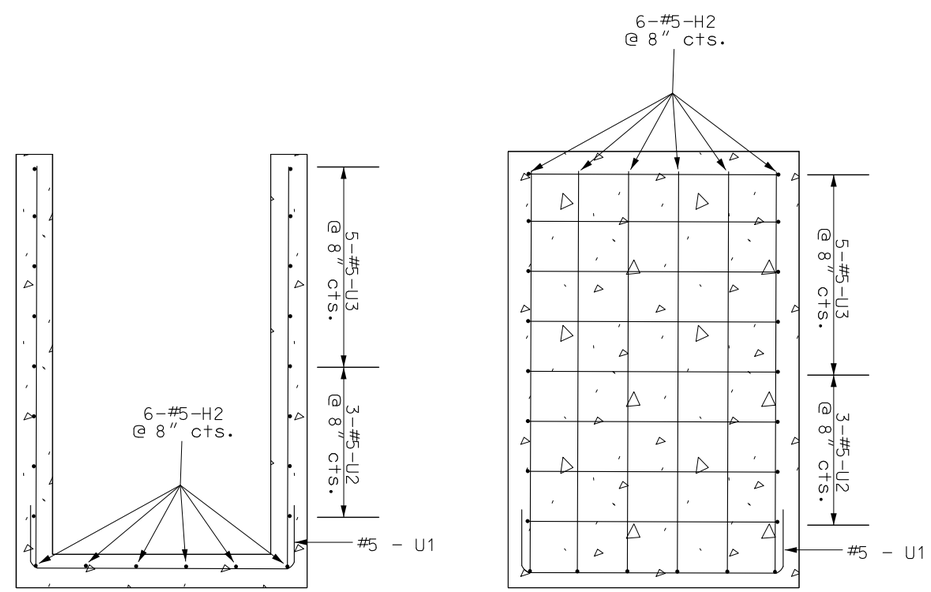


SECTION C-C



SECTION D-D

SECTION E-E



SECTION D-D

SECTION E-E

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:28:16 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	31
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

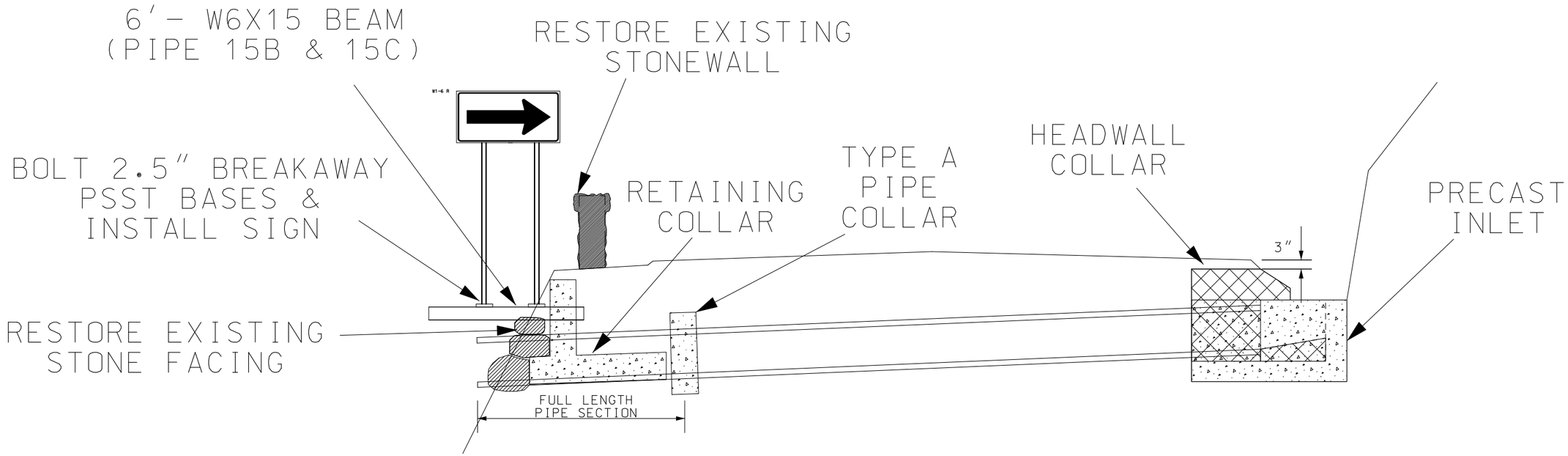
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 11 OF 13

REV.

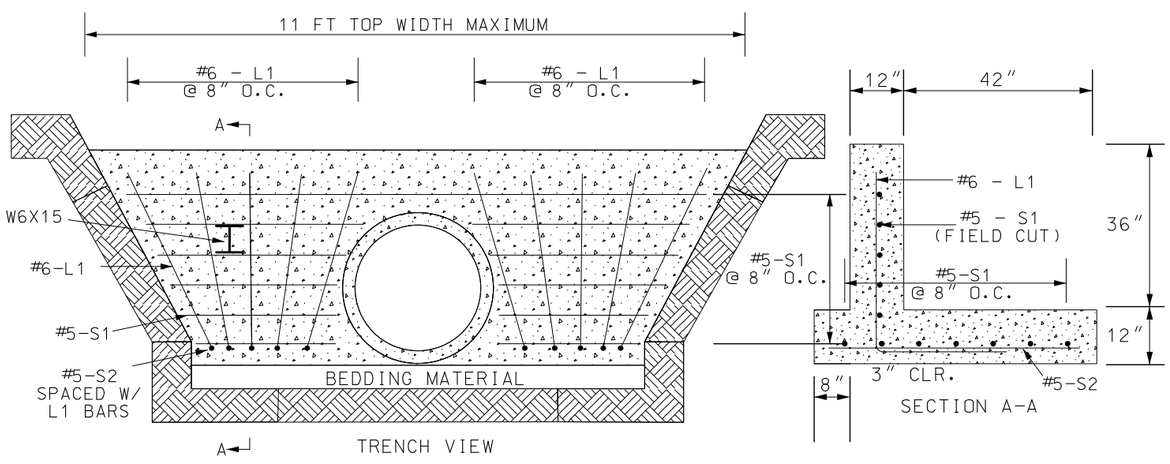
TYPICAL DETAILS OF RCP PIPES – 15 B,C,D,E,F



GROUND

RETAINING COLLAR

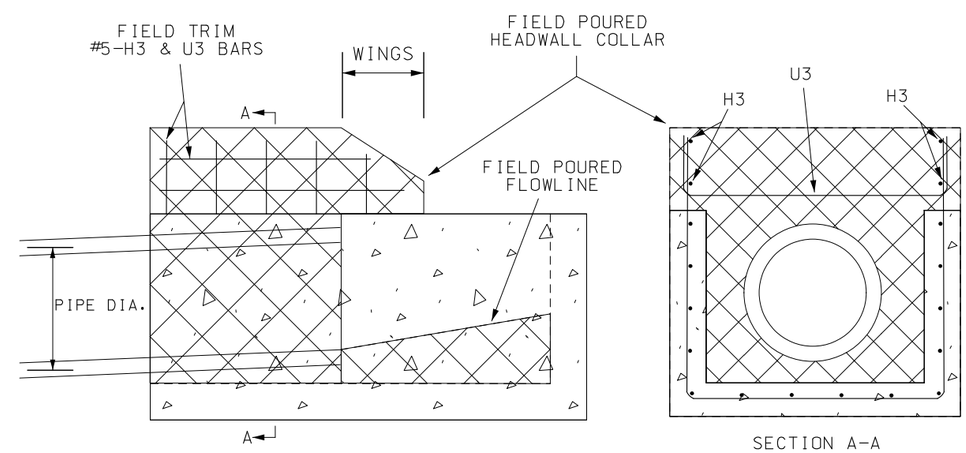
TYPICAL DETAILS OF RETAINING COLLAR FOR PIPES – 15 B,C,D,E



HEADWALL COLLAR

PRECAST INLET

TYPICAL DETAILS OF HEADWALL COLLAR FOR PIPES – 15 C,D,E,F



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:29:08 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 32
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

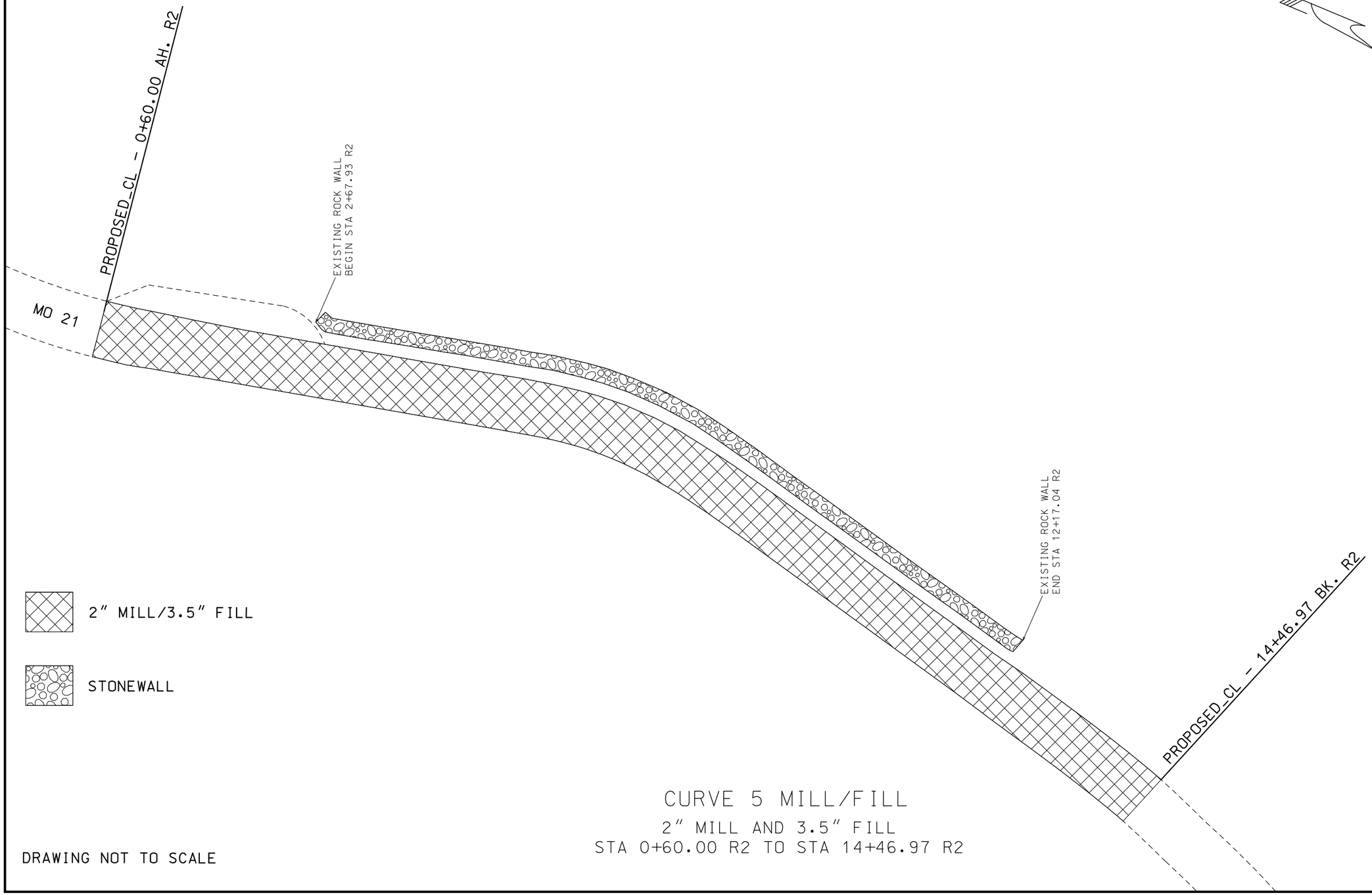
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 12 OF 13

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.



CURVE 5 MILL/FILL

2" MILL AND 3.5" FILL

STA 0+60.00 R2 TO STA 14+46.97 R2

DRAWING NOT TO SCALE

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry

08/11/2024 4:29:48 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 33
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

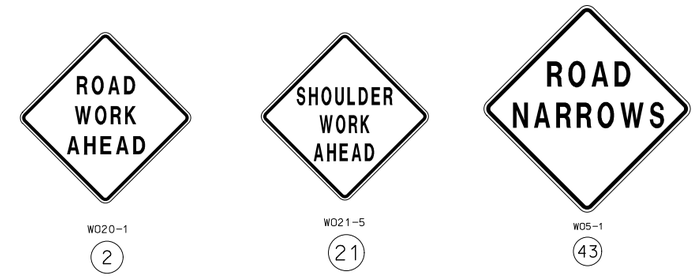
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

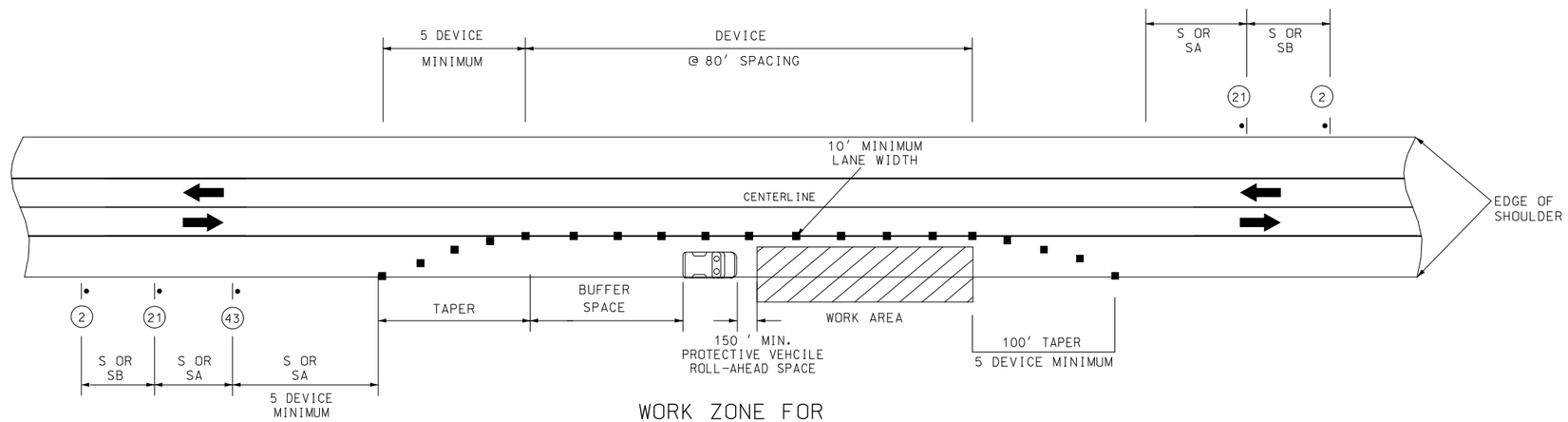
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 13 OF 13

SPEED	SIGN SPACING		TAPER LENGTH		OPTIONAL	CHANNELIZER SPACING	
NORMAL POSTED (mph)	NON-DIVIDED HIGHWAYS (S)	DIVIDED HIGHWAYS (S)	SHOULDER (1) (T1)	SHOULDER (2) (T2)	BUFFER LENGTH (B)	TAPER	BUFFER/ WORK AREA
0 – 35	200′	200′	70′	245′	280′	35′	40′
40 – 45	350′	500′	150′	540′	400′	40′	80′
50 – 55	500′	500′	185′	660′	560′	50′	80′
60 – 70	1000′	SA–1000′ SB–1500′ SC–2640′	235′	840′	840′	60′	120′





WORK ZONE FOR SHOULDER WORK WITH MINOR ENCROACHMENT ON DIVIDED AND UNDIVIDED HIGHWAYS

NOTES:

- REFER TO STANDARD PLAN SHEETS 616.20 FOR ADDITIONAL TEMPORARY TRAFFIC CONTROL.
- SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.
- NO PAYMENT WILL BE MADE FOR RELOCATION OF CONSTRUCTION SIGNS.
- THE PROTECTIVE VEHICLE MAY BE OMITTED IF A TAPER AND CHANNELIZING DEVICES ARE USED.
- VEHICLE-MOUNTED SIGNS SHALL BE MOUNTED IN A MANNER SUCH THAT THEY ARE NOT OBSCURED BY EQUIPMENT OR SUPPLIES.
- SIGN LEGENDS ON VEHICLE-MOUNTED SIGNS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.
- VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF VEHICLE'S ROTATING LIGHTS OR STROBE LIGHTS.

(1) SHOULDER TAPER LENGTH BASED ON 10′(STANDARD SHOULDER WIDTH) OFFSET.
(2) LANE TAPER LENGTH BASED ON 12′(STANDARD LANE WIDTH) OFFSET.

TRAFFIC CONTROL LEGEND

■ CHANNELIZER

SIGN

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:30:20 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	34

COUNTY IRON

JOB NO. J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

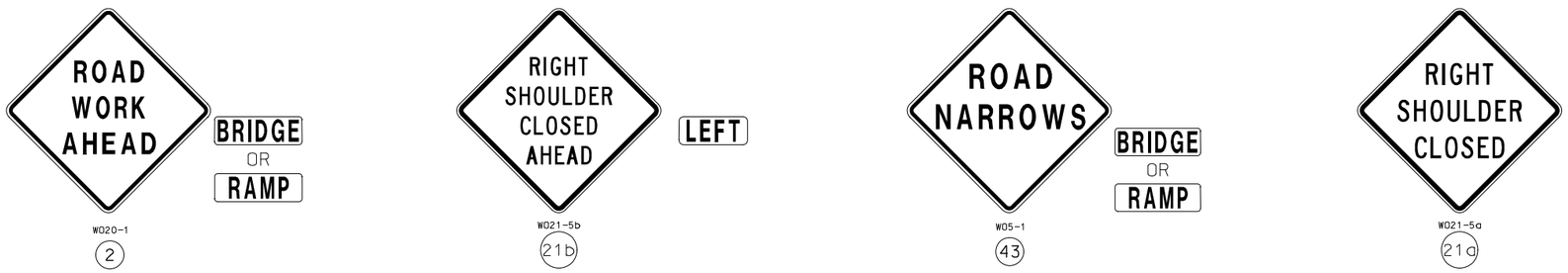
TRAFFIC CONTROL
SHEET 1 OF 4

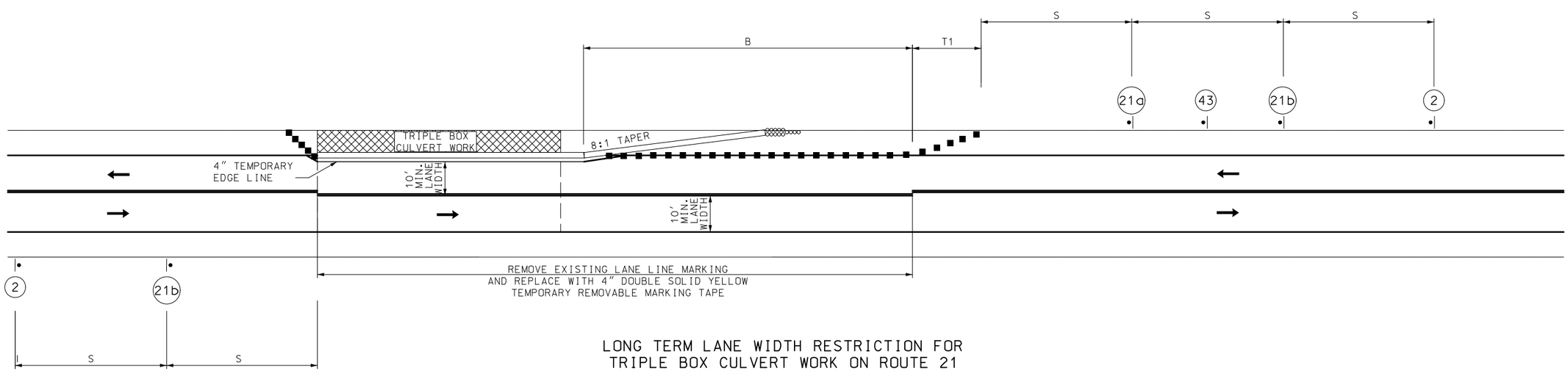
REV.

SPEED PERMANENT POSTED (MPH)	SIGN SPACING (FT) UNDIVIDED (S)	TAPER LENGTH (FT) SHLDR (T1)	TAPER LENGTH (FT) LANE (T2)	OPTIONAL BUFFER LENGTH (FT) (B)	CHANNELIZER SPACING (FT) TAPERS	CHANNELIZER SPACING (FT) BUFFER/ WORK AREAS
0-35	200	70	245	280	35	40
40-45	350	150	540	400	40	80
50-55	500	185	660	560	50	80
60-70	1000	235	840	840	60	120

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- TEMPORARY TRAFFIC BARRIER
- IMPACT ATTENUATOR





LONG TERM LANE WIDTH RESTRICTION FOR
TRIPLE BOX CULVERT WORK ON ROUTE 21

NOTE:

SIGN QUANTITIES INCLUDE ADEQUATE TRAFFIC CONTROL ITEMS FOR THREE SET-UPS FOR THE LONG TERM LANE CLOSURE FOR BRIDGE WORK TRAFFIC OPERATION. ANY ADDITIONAL SETUPS SHALL BE AT THE CONTRACTORS EXPENSE

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:30:49 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	35

COUNTY IRON

JOB NO. J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

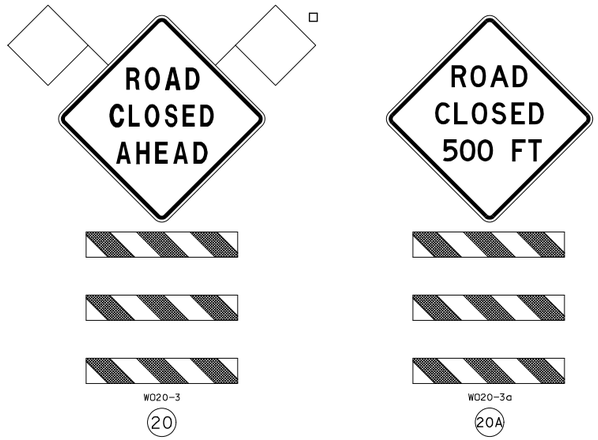
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TRAFFIC CONTROL
SHEET 2 OF 4

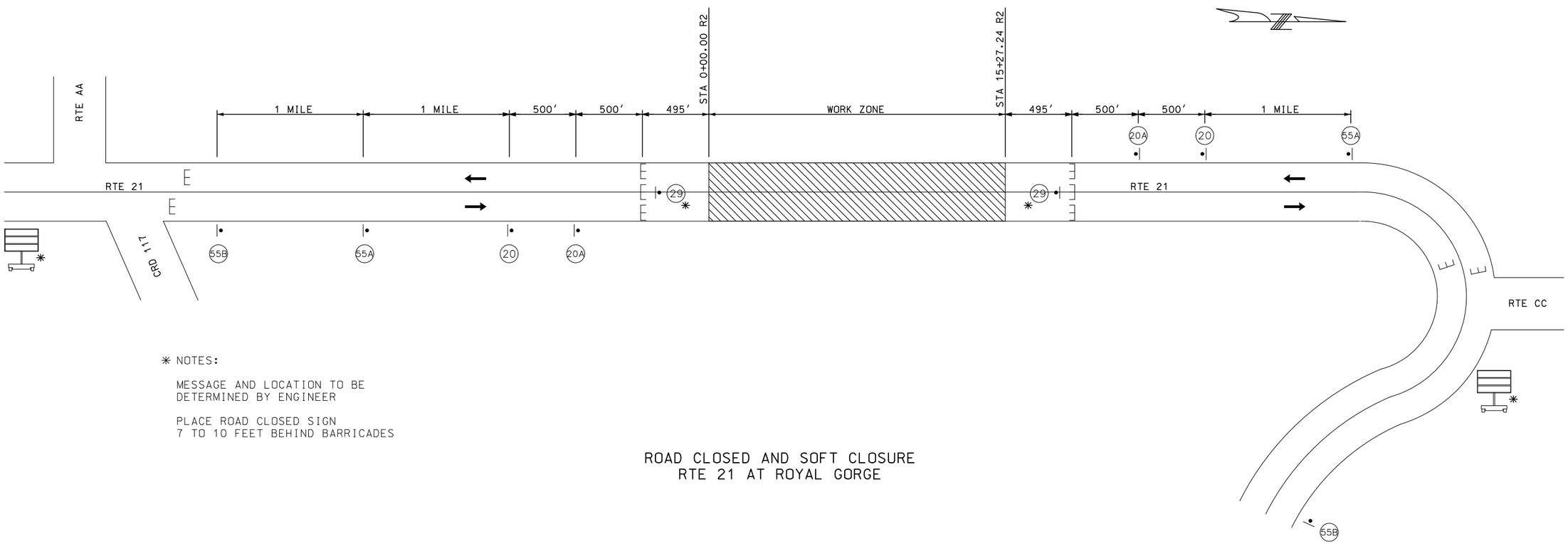
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- BARRICADE
- CHANGEABLE MESSAGE BOARD

☐ FLAG ASSEMBLIES ARE INCIDENTAL TO THE COST OF THE ROAD CLOSED AHEAD SIGNS.



✳ NOTES:

MESSAGE AND LOCATION TO BE DETERMINED BY ENGINEER

PLACE ROAD CLOSED SIGN 7 TO 10 FEET BEHIND BARRICADES

ROAD CLOSED AND SOFT CLOSURE
RTE 21 AT ROYAL GORGE

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:31:20 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 36
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

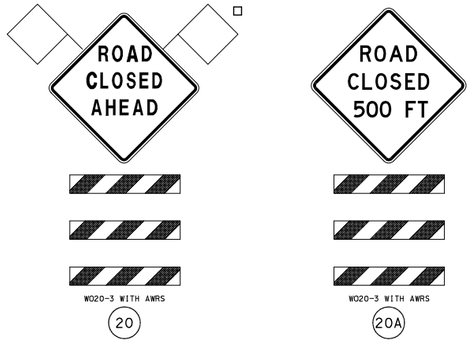
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

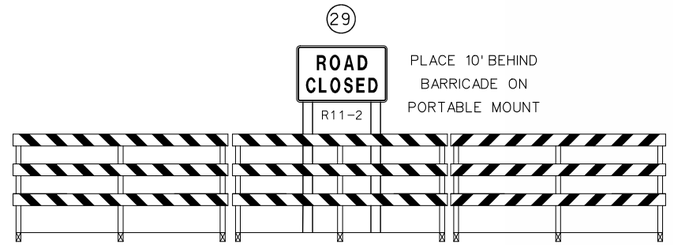
TRAFFIC CONTROL
SHEET 3 OF 4

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.



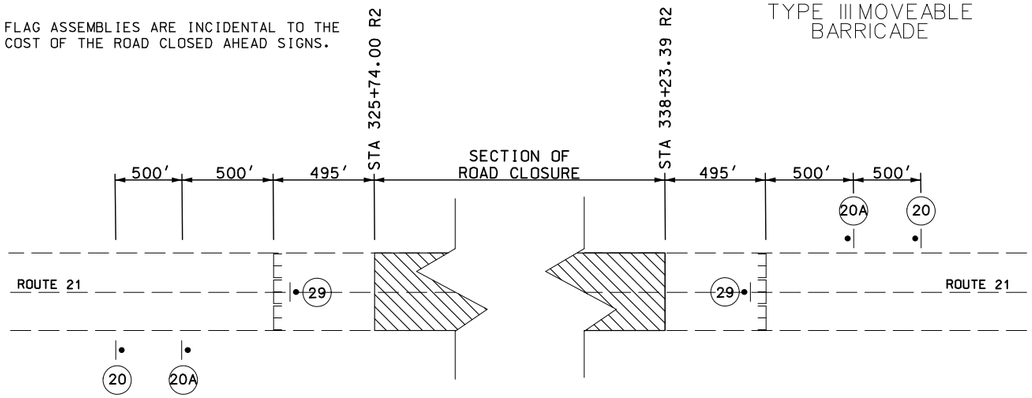
☐ FLAG ASSEMBLIES ARE INCIDENTAL TO THE COST OF THE ROAD CLOSED AHEAD SIGNS.



PLACE 10' BEHIND BARRICADE ON PORTABLE MOUNT

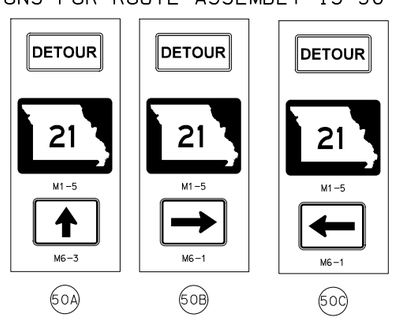
See Standard Plan 616.10 for Details.

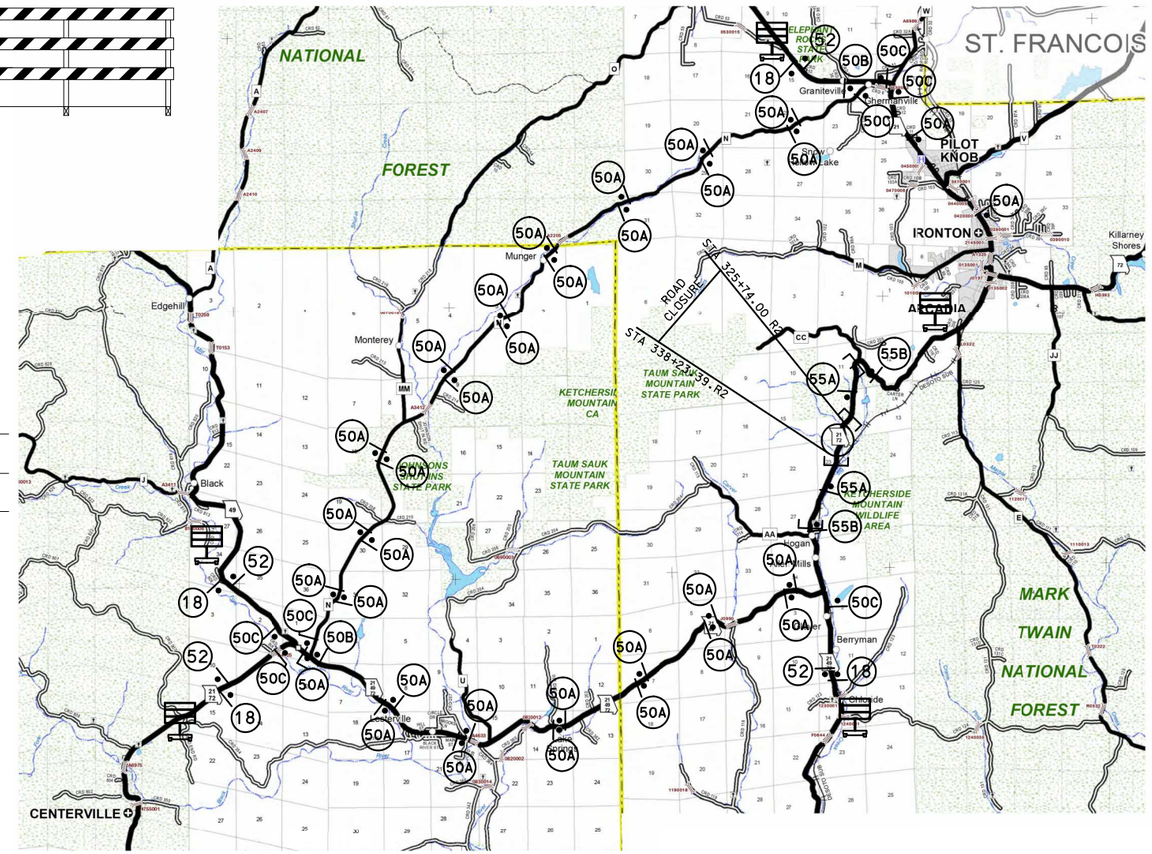
TYPE III MOVEABLE BARRICADE



ROAD CLOSURE ROUTE 21

DIMENSIONS FOR ROUTE ASSEMBLY IS 36" X 78"





TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- BARRICADE
- CHANGEABLE MESSAGE BOARD

NOTES:

SIGNS MAY BE PRODUCED BY EITHER PROCESSES: APPROPRIATE CARDINAL DIRECTIONS, ROUTE SHIELDS, AND DIRECTIONAL ARROWS MAY BE SHEETED ON THE SIGN BLANKS AS ONE HOMOGENOUS PRODUCT OR APPROPRIATE CARDINAL DIRECTIONS, ROUTE SHIELDS, AND DIRECTIONAL ARROWS PLATES MAY BE CONSTRUCTED AND MAY BE BOLTED ON THE DETOUR BLANK SIGNS.

SIGN SPACING IS 2 MILES. DISTANCE MAY BE ADJUSTED TO FIELD CONDITIONS.

USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER AND/OR REMOVE CONFLICTING SIGNS.

QUANTITY FOR #50 SIGNS ARE FOR A HOMOGENOUS PRODUCT PER SIGN. SUBSTITUTION OF SIGN BLANKS WITH BOLTED PLATES WILL BE ALLOWED FOR NO ADDITIONAL COMPENSATION.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

DRAWING NOT TO SCALE

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
08/11/2024 4:32:06 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 37
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

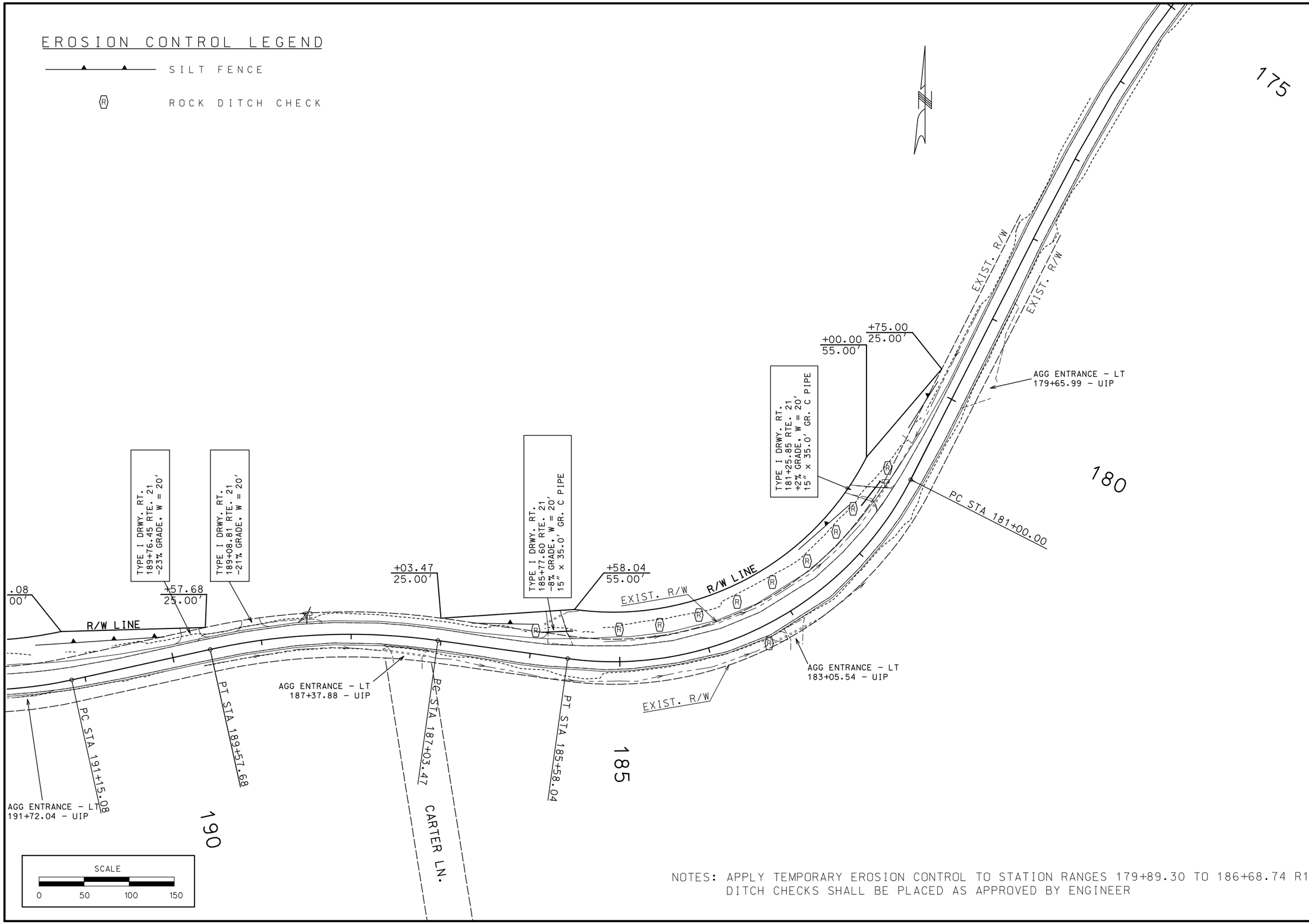
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

TRAFFIC CONTROL
SHEET 4 OF 4

EROSION CONTROL LEGEND

SILT FENCE

ROCK DITCH CHECK



NOTES: APPLY TEMPORARY EROSION CONTROL TO STATION RANGES 179+89.30 TO 186+68.74 R1
DITCH CHECKS SHALL BE PLACED AS APPROVED BY ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:32:38 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE	21
STATE	MO
DISTRICT	SE
SHEET NO.	38
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

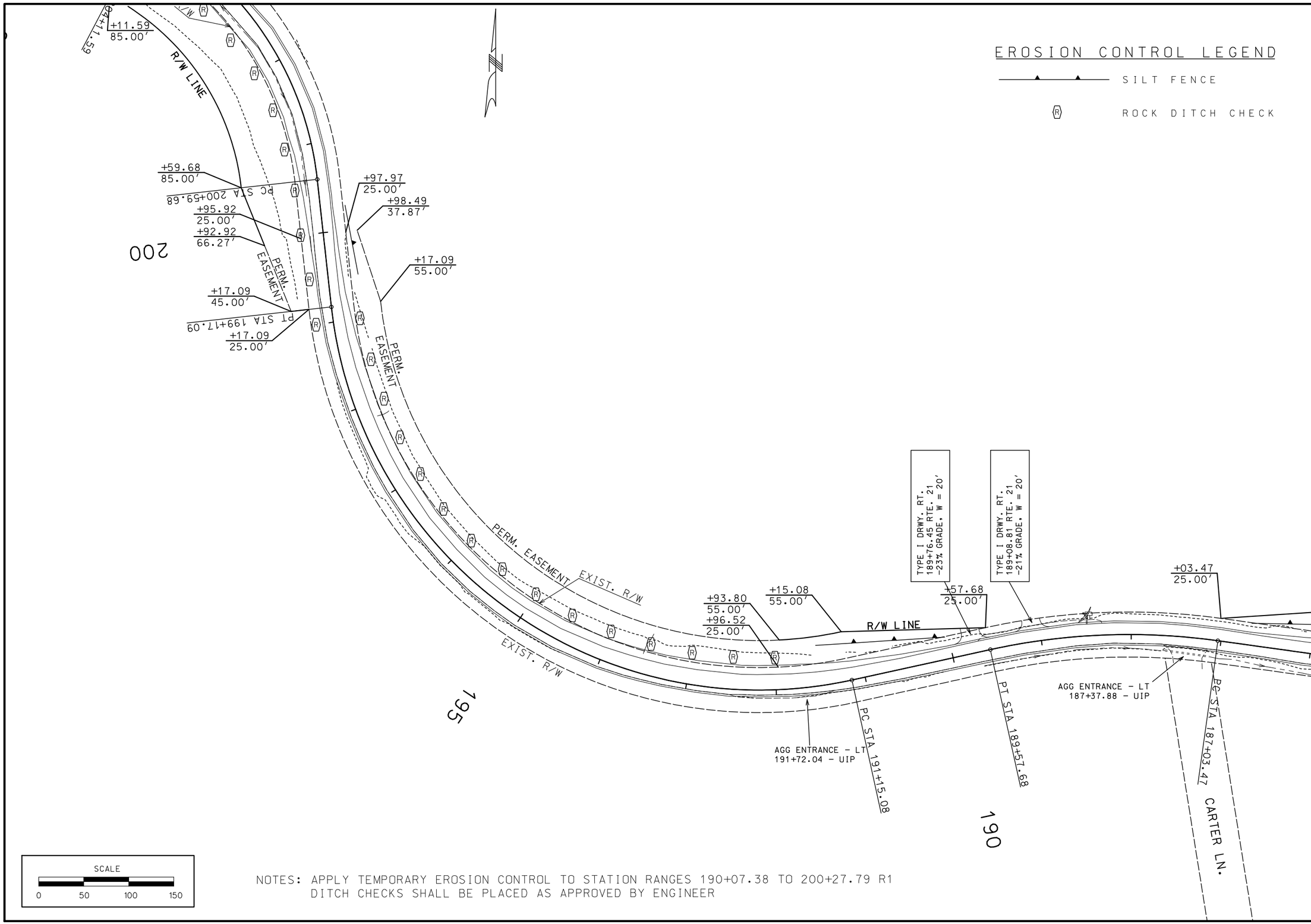
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CURVE 1
TEMPORARY EROSION CONTROL
SHEET 1 OF 8



NOTES: APPLY TEMPORARY EROSION CONTROL TO STATION RANGES 190+07.38 TO 200+27.79 R1
DITCH CHECKS SHALL BE PLACED AS APPROVED BY ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:33:19 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

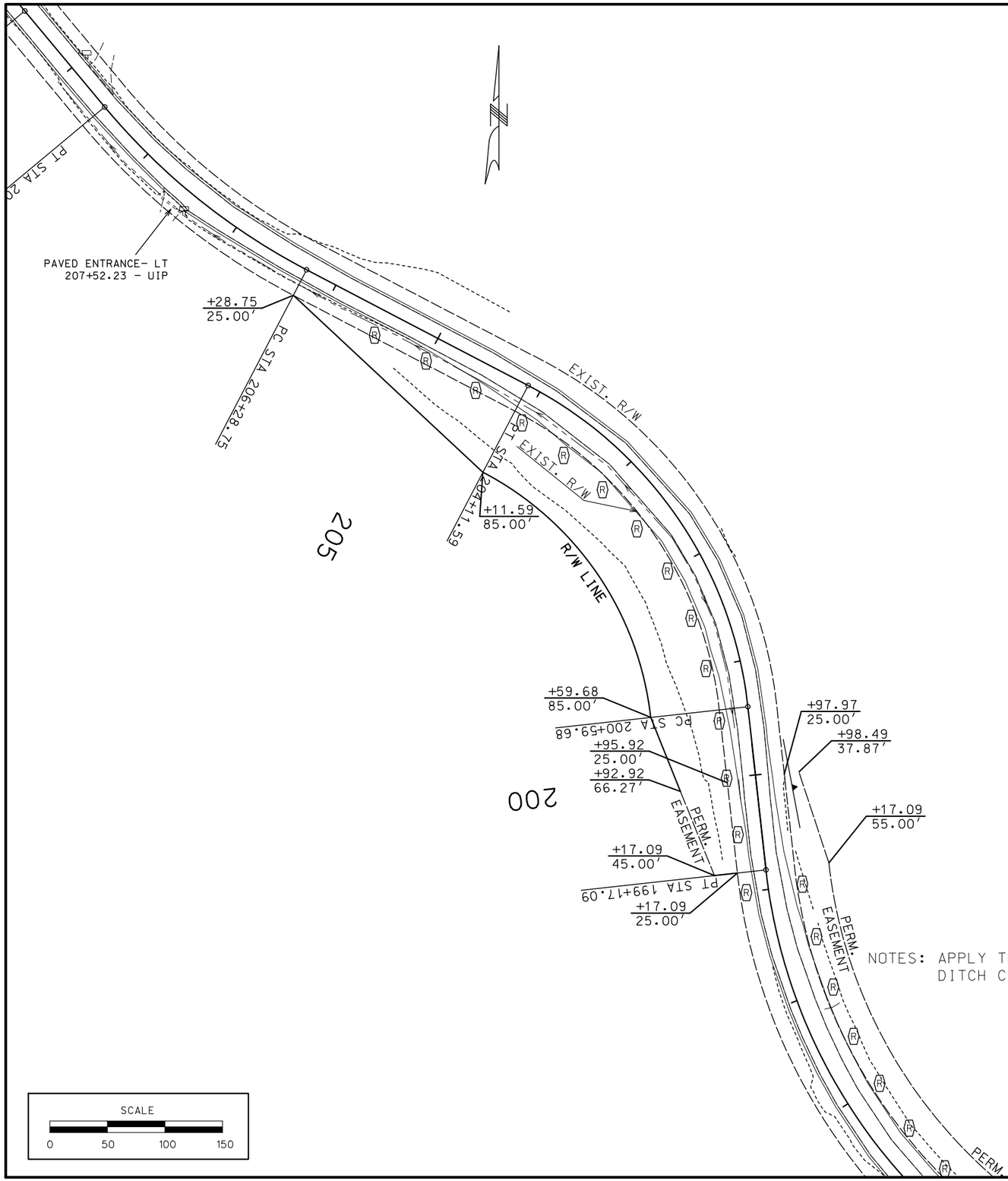
DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 39
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CURVE 2
TEMPORARY
EROSION CONTROL
SHEET 2 OF 8

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



EROSION CONTROL LEGEND

SILT FENCE

ROCK DITCH CHECK

NOTES: APPLY TEMPORARY EROSION CONTROL TO STATION RANGES 199+48.98 TO 205+22.29 R1
DITCH CHECKS SHALL BE PLACED AS APPROVED BY ENGINEER

SCALE
0 50 100 150

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:34:04 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 40
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

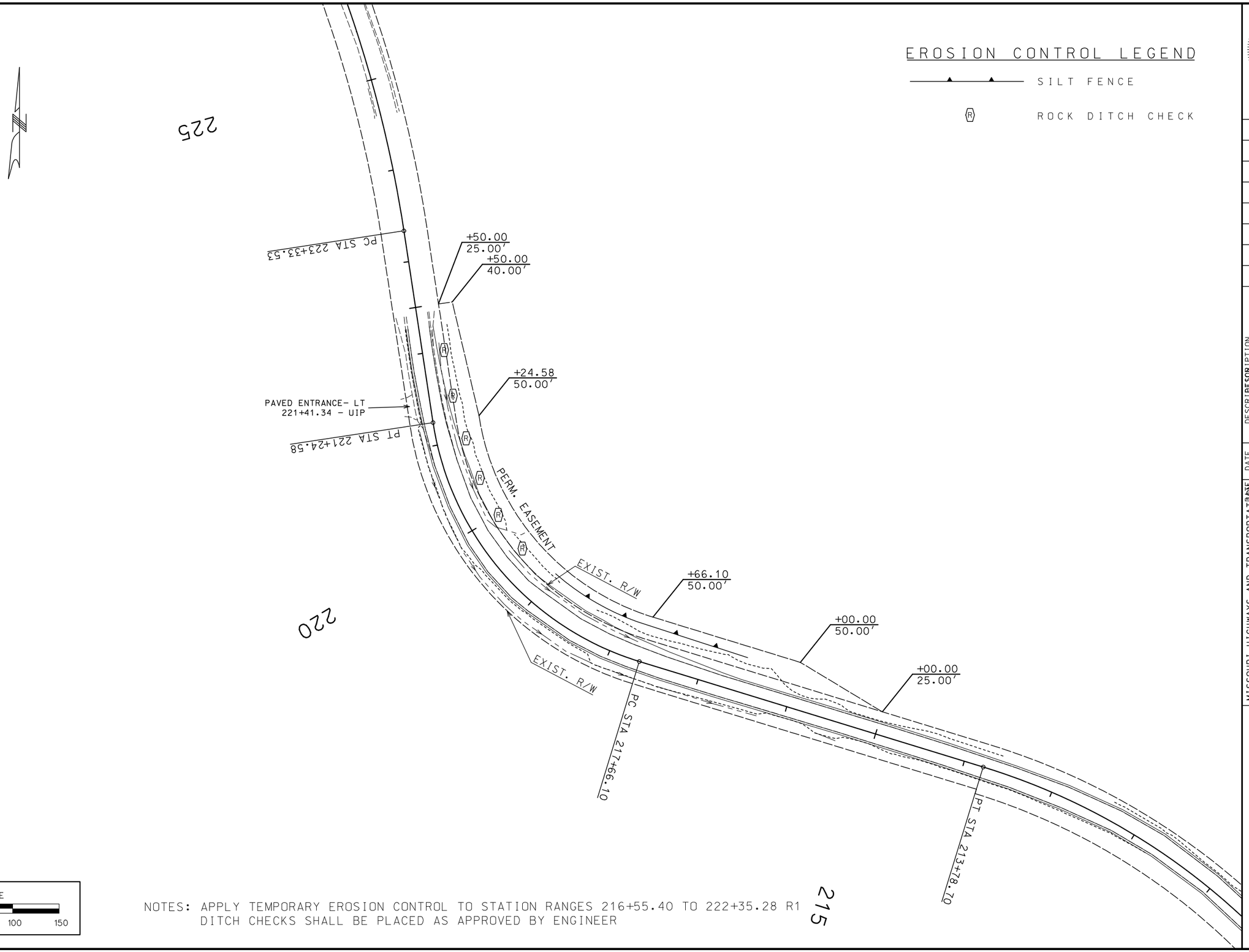
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CURVE 3
TEMPORARY
EROSION CONTROL
SHEET 3 OF 8

EROSION CONTROL LEGEND

SILT FENCE

(R) ROCK DITCH CHECK



SCALE

0 50 100 150

NOTES: APPLY TEMPORARY EROSION CONTROL TO STATION RANGES 216+55.40 TO 222+35.28 R1
DITCH CHECKS SHALL BE PLACED AS APPROVED BY ENGINEER

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:34:34 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 41
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

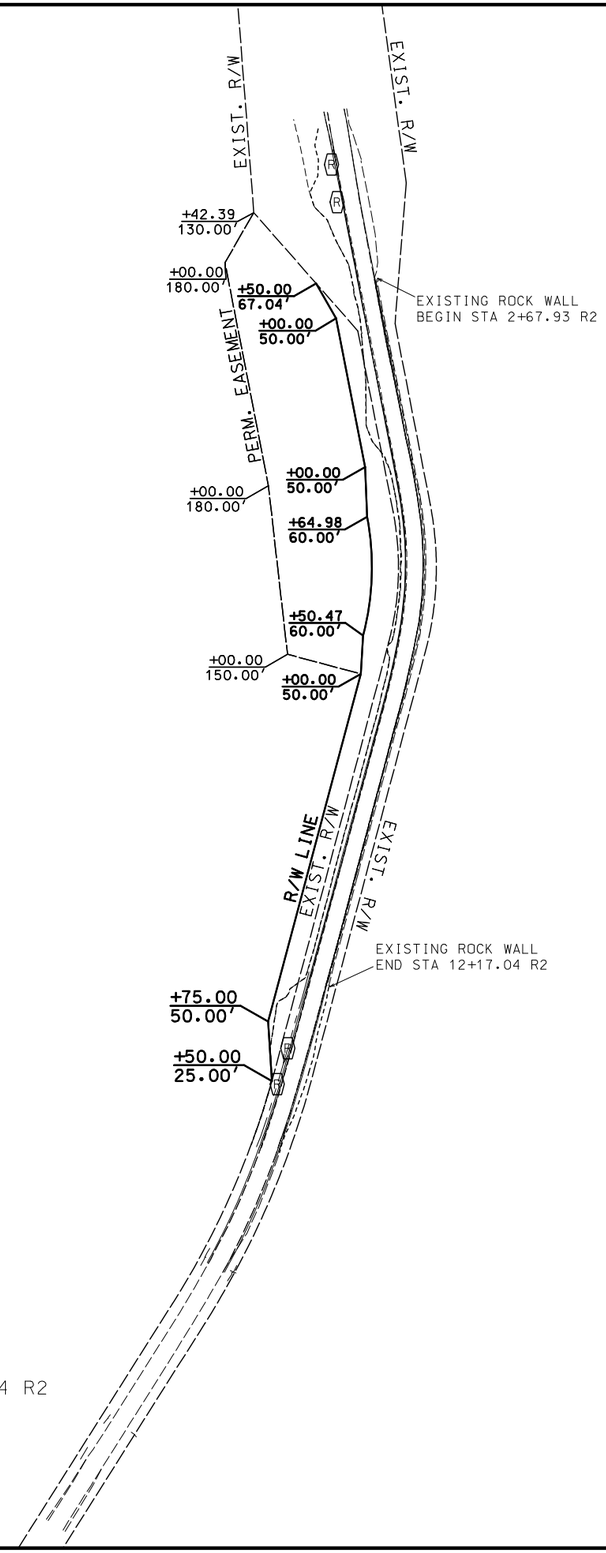
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CURVE 4
TEMPORARY
EROSION CONTROL
SHEET 4 OF 8



EROSION CONTROL LEGEND

(R) ROCK DITCH CHECK

NOTES: APPLY TEMPORARY EROSION CONTROL TO STATION RANGES 0+00.00 TO 15+27.24 R2
DITCH CHECKS SHALL BE PLACED AS APPROVED BY ENGINEER

SCALE

0 100 200 300 400 500

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER

Chris E. Berry
08/11/2024 4:35:06 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	8/9/2024
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 42
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

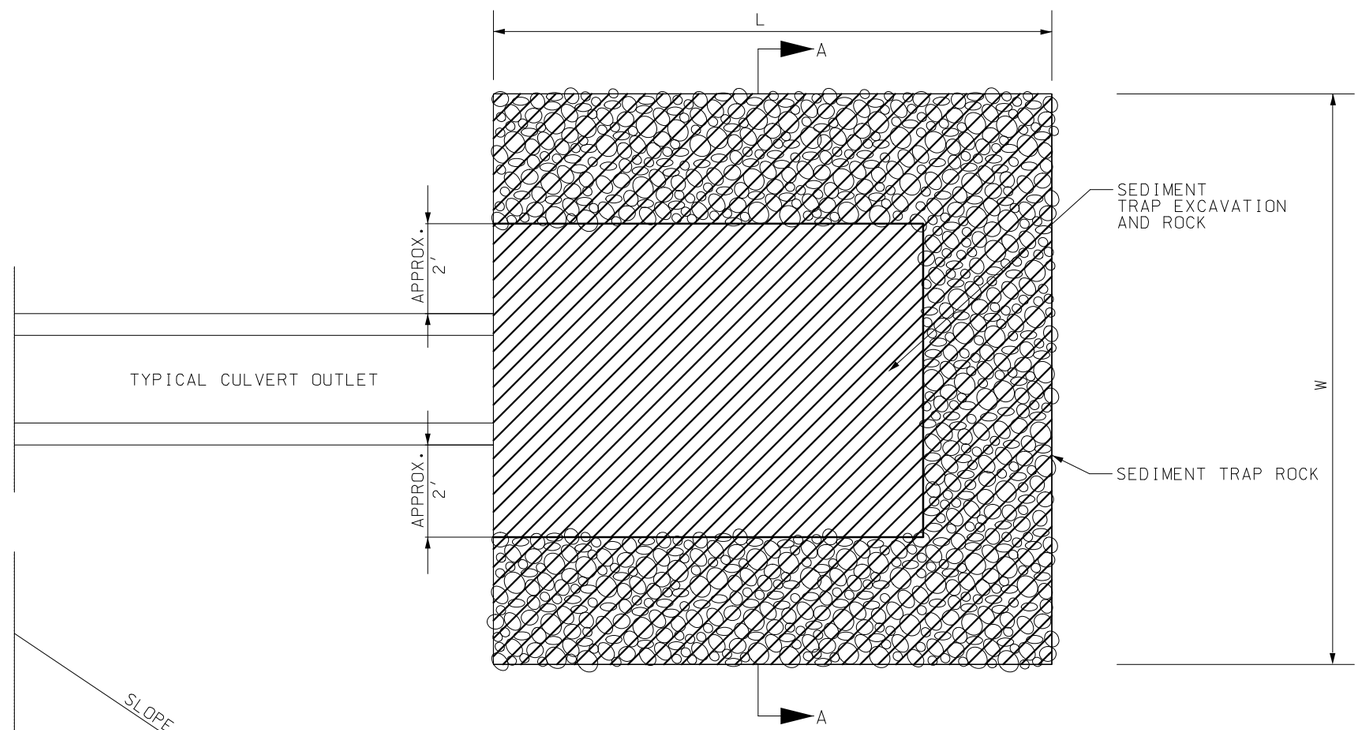
MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

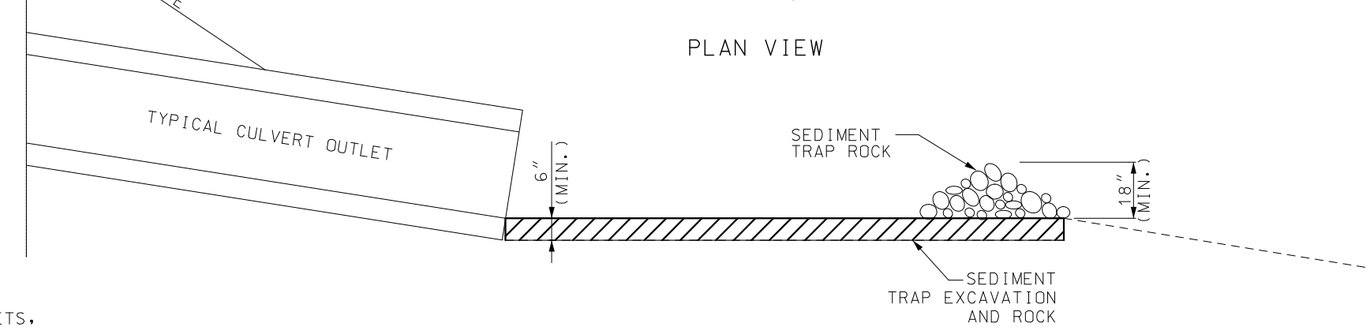
CURVE 5
TEMPORARY
EROSION CONTROL
SHEET 5 OF 8

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SEDIMENT TRAP



PLAN VIEW



PROFILE VIEW

NOTE:

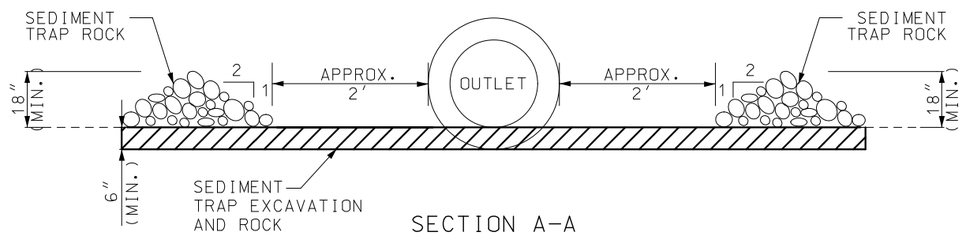
SEDIMENT TRAPS TO BE LOCATED AT PIPE OUTLETS, LOCATIONS WHERE WATER EXITS THE RIGHT OF WAY, AND IN DITCHES BEFORE ENTERING A STREAM AS DIRECTED BY THE ENGINEER

SEDIMENT TRAPS TO BE L=W AS LONG AS THE DIMENSIONS STAY WITHIN ROW

SEDIMENT TRAPS IN THE CLEAR ZONE SHALL BE REMOVED OR LEVELED (IF ALLOWABLE) AFTER THE VEGETATION HAS SUFFICIENTLY MATURED TO PROTECT THE DITCH OR SWALE.

SEE STD. 806.10 FOR ADDITIONAL DETAILS AND DETAILS FOR ROCK DITCH CHECKS AND SILT FENCE

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



SECTION A-A

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:35:44 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 43
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TEMPORARY
EROSION CONTROL
SHEET 6 OF 8

OUTFALL PROTECTION FOR BOX CULVERTS

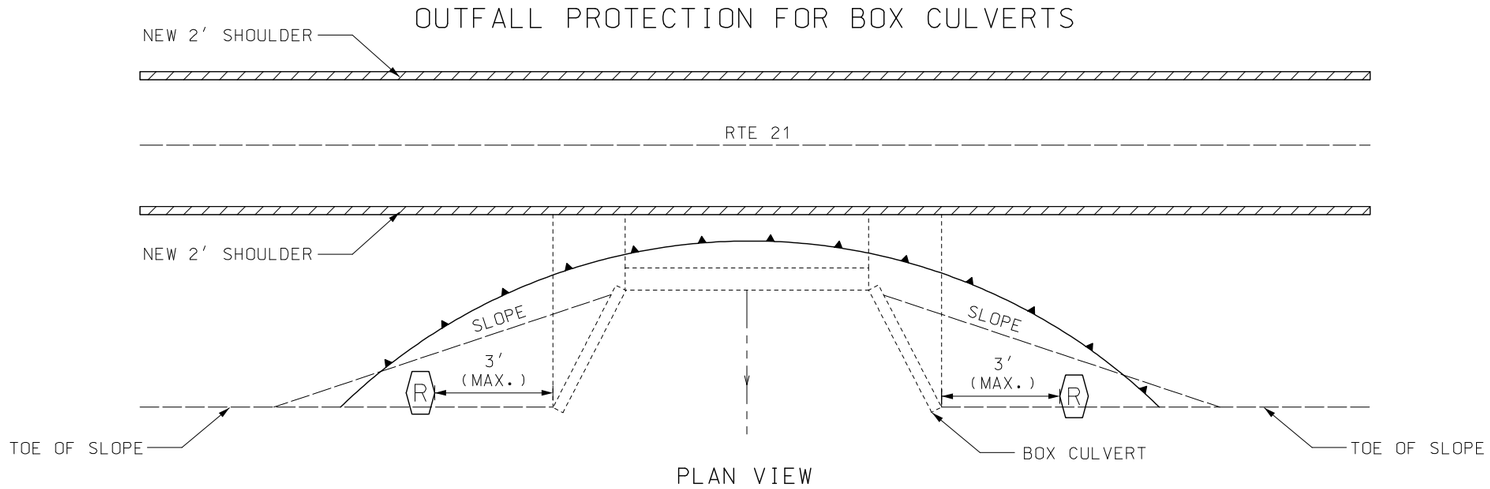
NOTE:

OUTFALL PROTECTION TO BE LOCATED AT CULVERT OUTLETS AND LOCATIONS WHERE WATER EXITS THE RIGHT OF WAY AS DIRECTED BY THE ENGINEER

(S) SEDIMENT TRAP

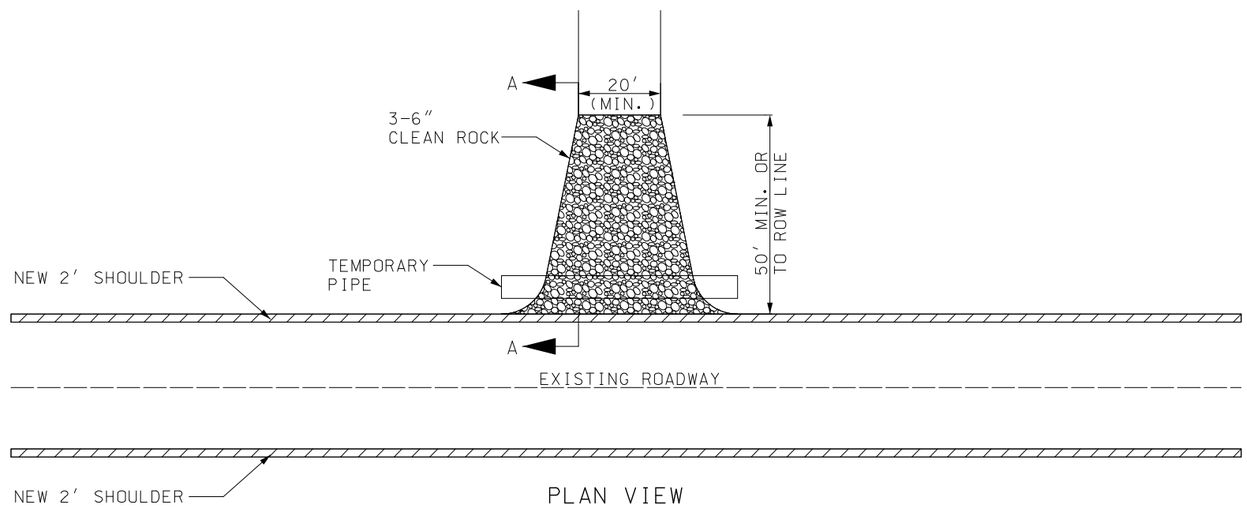
(R) ROCK DITCH CHECK

SILT FENCE



PLAN VIEW

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE



PLAN VIEW

NOTE:

CONSTRUCTION EXIT TO BE CONSTRUCTED IF FILL NEEDS TO BE OBTAINED FROM A STATE ROUTE AT NO DIRECT PAY

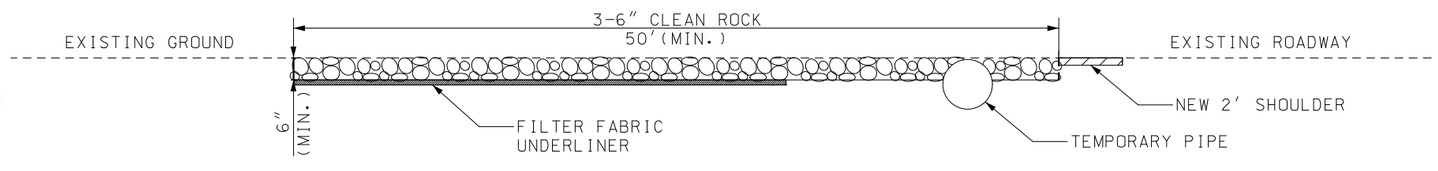
ROCK MUST BE MAINTAINED AND REPLACED IF IT BECOMES EXCESSIVELY MUDDY

CONSTRUCTION EXIT MAY HAVE A THICK MULCH TOP OVER THE CLEAN ROCK

TEMPORARY PIPE SIZE AND DISTANCE FROM EDGE OF SHOULDER ARE DEPENDANT ON LOCATION

CONSTRUCTION EXIT WILL BE PLACED AT A LOCATION WITH THE PROPER SIGHT DISTANCE AS DIRECTED BY THE ENGINEER

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



SECTION A-A

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E Berry
08/11/2024 4:36:18 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 44
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

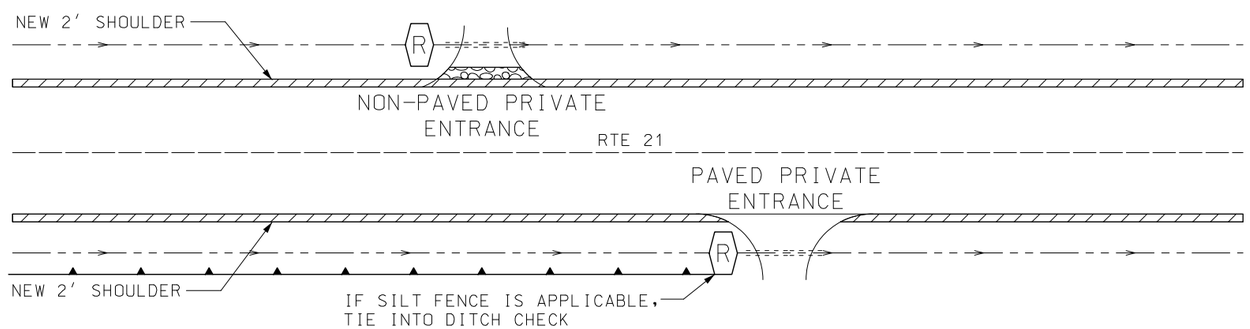
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TEMPORARY
EROSION CONTROL
SHEET 7 OF 8

EROSION CONTROL AT DRIVEWAYS



PLAN VIEW

NOTE:

ROCK DITCH CHECKS TO BE LOCATED AT EACH BRIDGE CORNER

TIE SILT FENCE INTO SEDIMENT TRAP WHEN DITCH IS NOT DEFINED

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E Berry
08/11/2024 4:36:46 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 45
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TEMPORARY EROSION CONTROL SHEET 8 OF 8

EFFECTIVE 07-01-2022

SIGNS						CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS ✳						PIPE POSTS ✳					BACKING BARS ✳✳				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE												BREAK-AWAY ASSEMBLY	REMARKS AND OTHER REQUIRED ITEMS
902 SIGNAL SIGNS TABULATED ON D-37A SHEET																							2 IN. POST						2.5 IN. POST							
																										ANCHORS						ANCHORS				
SIGN NO.	SIGN SIZE	STA	HORZ CLEAR IF NOT STD	LOCATION	SIGN DTL. SHT. NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X 3/8" BARS @ 2.55 LBS PER FT NO. EACH	LGTH IN.	TOTAL LF	TOTAL LBS	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	
						CY		LF	LF	LF		LBS	IN.	LF	LF		LBS	EACH	IN.	LF	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EA	
1	8'x5'	1+00 R2		RT	9																								14	14	28	2		2	2	
2	4'x2'	4+59 R2		LT	9		W6X15	6			15	90																	11	11	22				2	W6X15 - SEE SPECIAL SHEET 12
3	4'x2'	7+58 R2		LT	9		W6X15	6			15	90																	11	11	22				2	W6X15 - SEE SPECIAL SHEET 12
4	2.5'x2.5'	12+73 R2		RT	9																								14		14			1		
5	8'x5'	14+00 R2		LT	9																								12	12	24	2		2	2	
SUBTOTAL												180																			110	4		5	8	
TOTAL												180									✳✳										110	4		5	8	

✳ BREAKAWAY ASSEMBLY IS INCIDENTAL FOR STRUCTURAL STEEL AND PIPE POSTS.
✳✳ BACKING BARS ARE TOTALED WITH STRUCTURAL STEEL OR PIPE POSTS.

ROUND PIPE POST AND FOOTING DATA TABLE

NOM. SIZE	WEIGHT		STUB LENGTH	FOOTING		CONCRETE
(IN.)	LBS/FT	LBS/IN		DIA.	DEPTH	C.Y.
2½	5.79	0.48	4'- 3½"	12"	4'-6"	0.13
3	7.58	0.63	4'- 3½"	12"	4'-6"	0.13
4	10.79	0.90	5'- 3½"	18"	5'-6"	0.36

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

POST					FOOTING									
POST DES. NO.	NOM. SIZE	WEIGHT		STUB LENGTH	DIA.	LEVEL GROUND		6:1 GRADE		4:1 GRADE		3:1 OR 2:1 GRADE	
		LBS/FT	LBS/IN			DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.
1	W6	9.0	0.75	3'-0"	15"	3'-0"	0.14	3'-2"	0.15	3'-3"	0.16	3'-6"	0.17
2	W6	15.0	1.25	4'-0"	24"	4'-0"	0.47	4'-2"	0.50	4'-3"	0.51	4'-6"	0.54
3	W8	18.0	1.50	4'-6"	28"	4'-6"	0.71	4'-8"	0.73	4'-9"	0.74	5'-0"	0.78
4	W10	22.0	1.83	5'-0"	36"	5'-0"	1.31	5'-2"	1.36	5'-3"	1.39	5'-6"	1.45
5	W10	26.0	2.17	5'-0"	36"	5'-0"	1.31	5'-3"	1.37	5'-5"	1.43	5'-9"	1.52
6	W12	35.0	2.92	5'-6"	36"	5'-6"	1.44	5'-9"	1.52	5'-11"	1.56	6'-3"	1.65

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:37:15 PM
CHRIS E. BERRY-CIVIL
MO-PE-2001018707

DATE PREPARED: 8/9/2024
ROUTE: 21
STATE: MO
DISTRICT: SE
SHEET NO.: 46
COUNTY: IRON
JOB NO.: J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGNING SHEET
SHEET 1 OF 2

EFFECTIVE 10-01-2016

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STA	LOCATION	TYPE: W1-2R	W1-2L	GB-1L	W13-1	W1-6R	W1-6L
1	1+00 R2	RT	1		3	1		
2	4+59 R2	LT					1	
3	7+58 R2	LT						1
4	12+73 R2	RT	1					
5	14+00 R2	LT		1	3	1		

SIGN DESCRIPTION, SIZES & NUMBER OF EACH

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE	FLAT SHEET SH ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF ✳ ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF ✳ ITEM NO. 9035071A
W1-2R	9	2	2.5'X2.5'		12.50		
W1-2L	9	1	2.5'X2.5'		6.25		
GB-1L	9	6	8'X1'				48.00
W13-1	9	2	1.5'X1.5'		4.50		
W1-6R	9	1	4'X2'		8.00		
W1-6L	9	1	4'X2'		8.00		
			TOTAL		40		48

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:37:45 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED 8/9/2024
ROUTE 21 | STATE MO
DISTRICT SE | SHEET NO. 47
COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

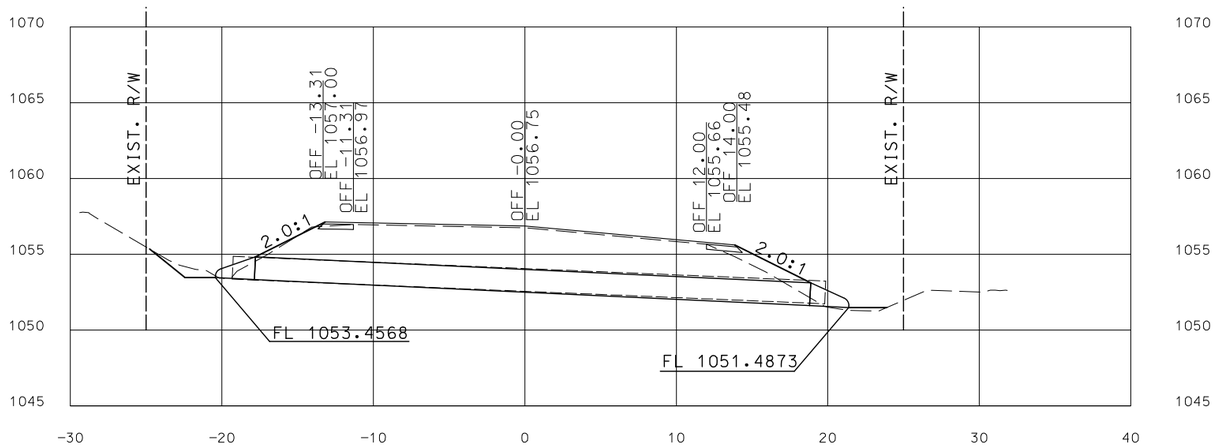
DESCRIPTION | DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

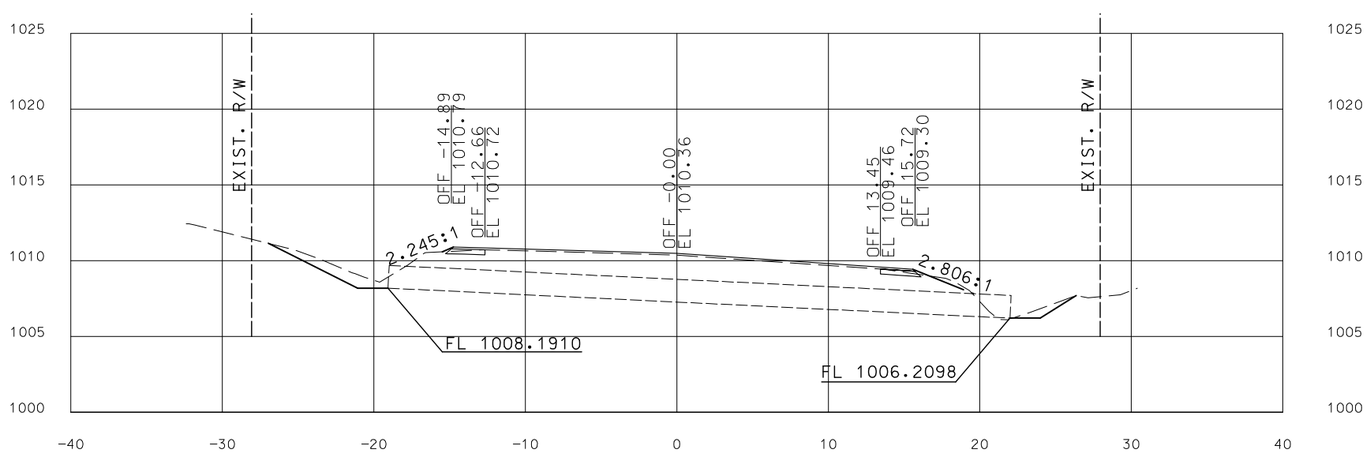
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SIGNING SHEET
SHEET 2 OF 2

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 2
ROUTE 21
STA. 99+85.29 R1
LOG MI. 88.241
EXISTING 18" CORRUGATED METAL PIPE
3 DEG SKEW LA
REMOVE EXISTING PIPE (39 FT.)
AND REPLACE WITH 36.7 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT AND RIGHT



PIPE 1
ROUTE 21
STA. 89+77.18 R1
LOG MI. 88.050
EXISTING 18" CORRUGATED METAL PIPE
27 DEG SKEW LA
UIP EXISTING PIPE
CLASS A EXC. = 4 CY
2.0:1 SLOPE LEFT
2.5:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:40:24 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 48
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

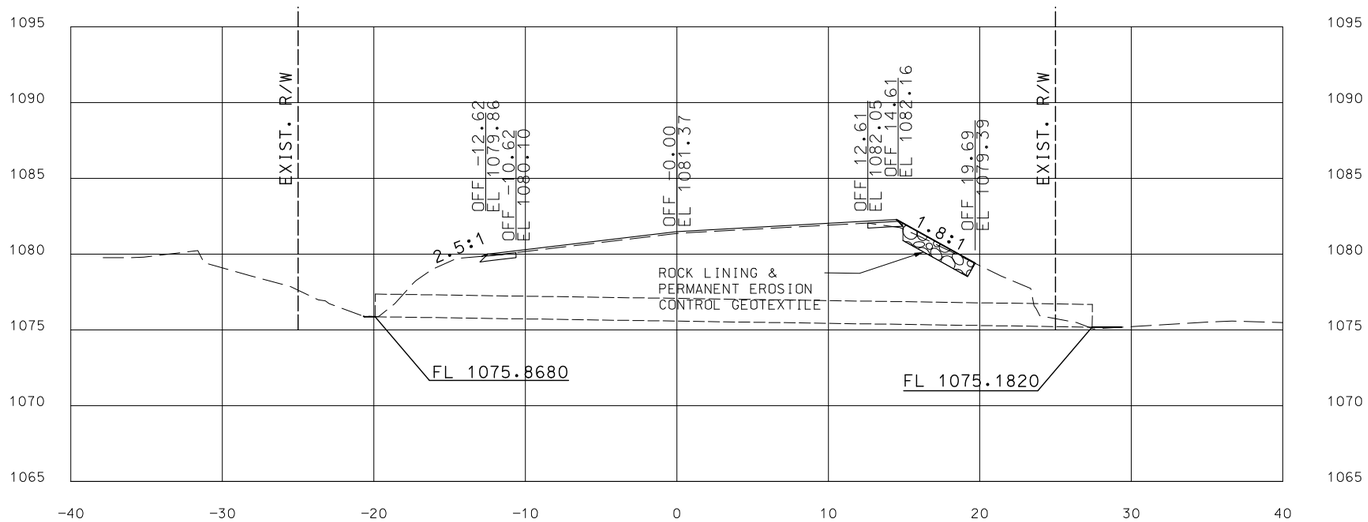
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

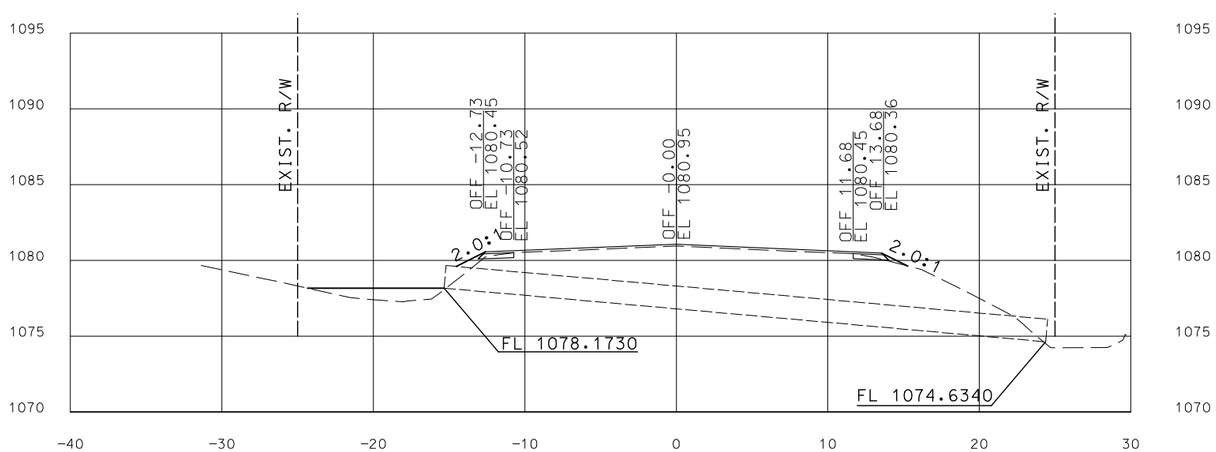
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 1 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 4
ROUTE 21
STA. 112+70.85 R1
LOG MI. 88.484
EXISTING 18" CORRUGATED METAL PIPE
1 DEG SKEW RA
UIP EXISTING PIPE
2.5:1 SLOPE LEFT
1.8:1 SLOPE RIGHT
ROCK LINE SLOPE RIGHT
DO NOT ROCK LINE OUTLET



PIPE 3
ROUTE 21
STA. 108+22.61 R1
LOG MI. 88.399
EXISTING 18" CORRUGATED METAL PIPE
0 DEG SKEW
UIP EXISTING PIPE
2.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:40:55 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 49
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

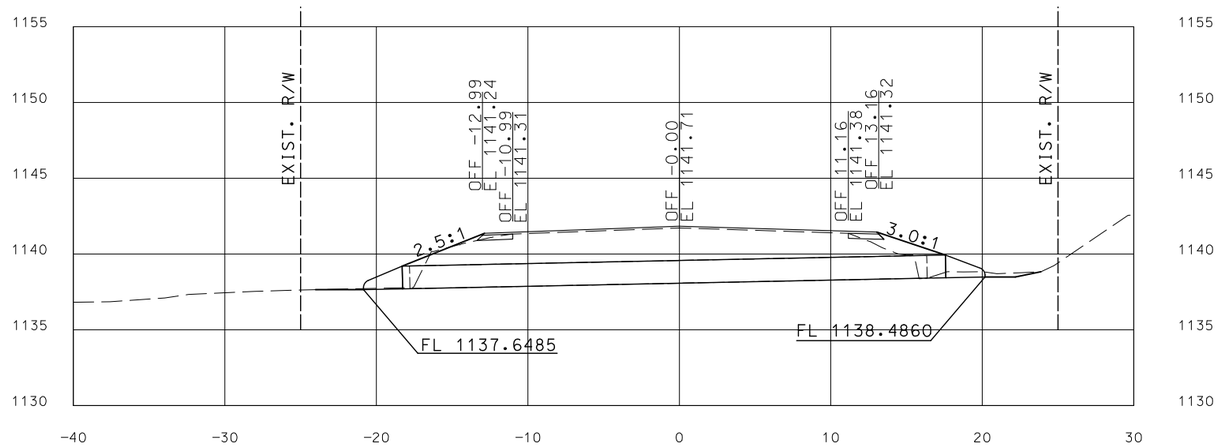
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

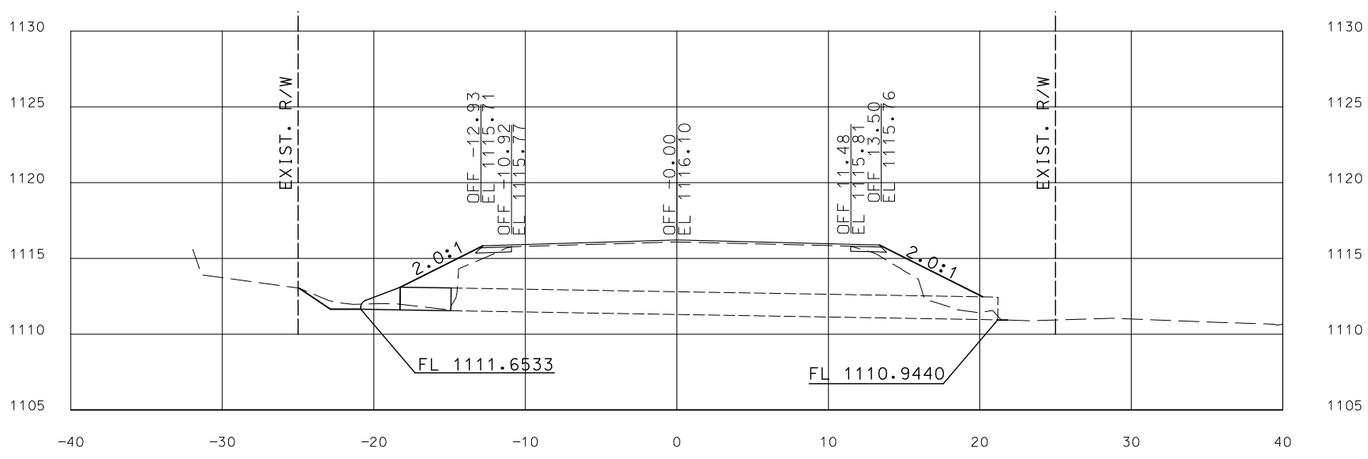
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 2 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 6
ROUTE 21
STA. 133+50.19 R1
LOG MI. 88.878
EXISTING 18" CORRUGATED METAL PIPE
1 DEG SKEW RA
REMOVE EXISTING PIPE (34 FT.)
AND REPLACE WITH 35.9 FT. - 18" GROUP B PIPE
REMOVE EXISTING HEADWALL LEFT AND RIGHT
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.5:1 SLOPE LEFT
3.0:1 SLOPE RIGHT



PIPE 5
ROUTE 21
STA. 120+43.46 R1
LOG MI. 88.631
EXISTING 18" CORRUGATED METAL PIPE
7 DEG SKEW LA
EXTEND 3.4 FT. LEFT WITH 18" GROUP B PIPE
REMOVE EXISTING HEADWALL LEFT AND RIGHT
1 - 18" FLARED END SECTION LEFT
2.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:41:37 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 50
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

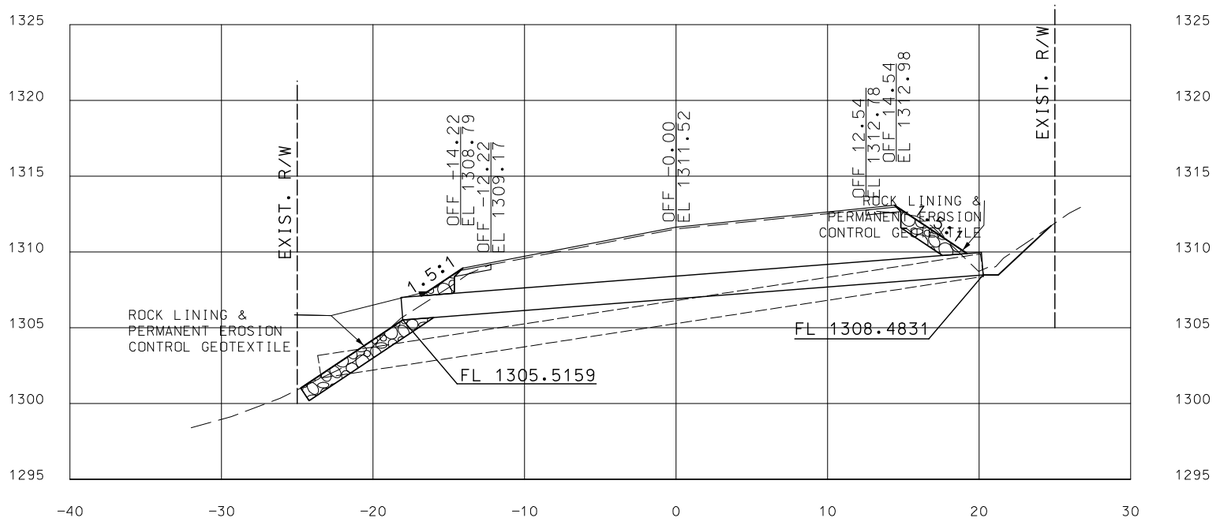
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

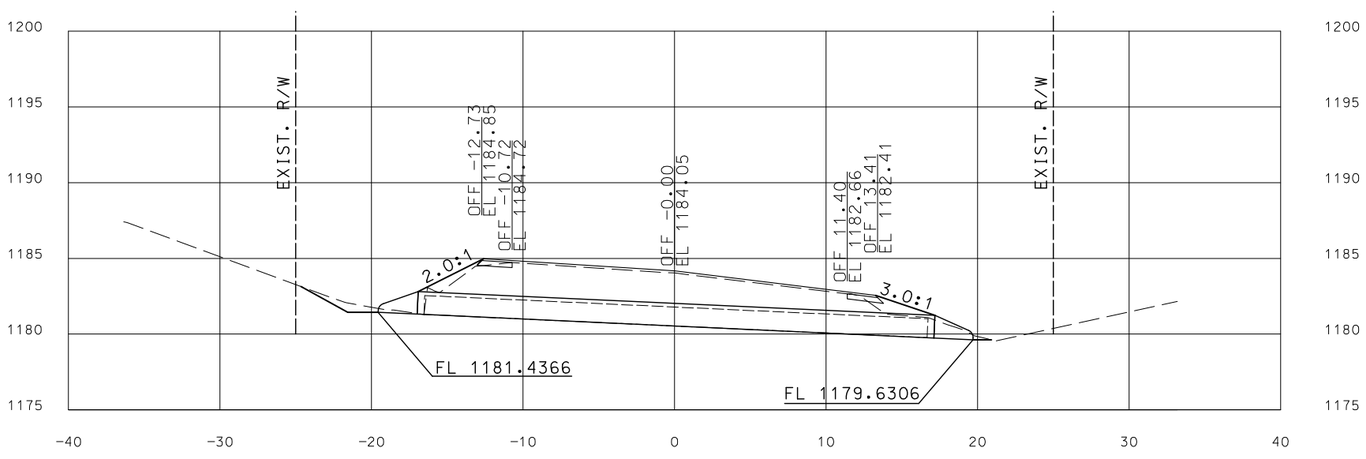
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 3 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 8
ROUTE 21
STA. 237+56.52 R1
LOG MI. 90.849
EXISTING 18" CORRUGATED METAL PIPE
6 DEG SKEW LA
REMOVE EXISTING PIPE (44 FT.)
AND REPLACE WITH 38.4 FT. - 18" GROUP B PIPE
1.5:1 SLOPE LEFT AND RIGHT
ROCK LINE SLOPE LEFT AND RIGHT
DO NOT ROCK LINE OUTLET



PIPE 7
ROUTE 21
STA. 146+67.14 R1
LOG MI. 89.128
EXISTING PIPE SIZE UNKNOWN
DEG SKEW UNKNOWN
REMOVE EXISTING PIPE (APPROX. 33 FT.)
AND REPLACE WITH 34.1 FT. - 18" GROUP B PIPE
REMOVE EXISTING HEADWALL LEFT AND RIGHT
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT
3.0:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:42:34 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 51
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

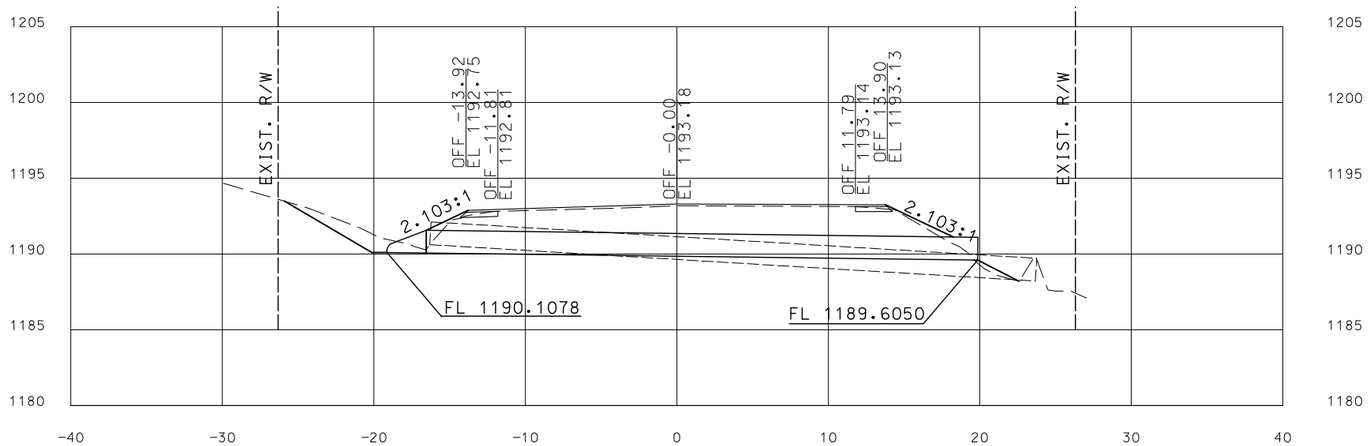
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

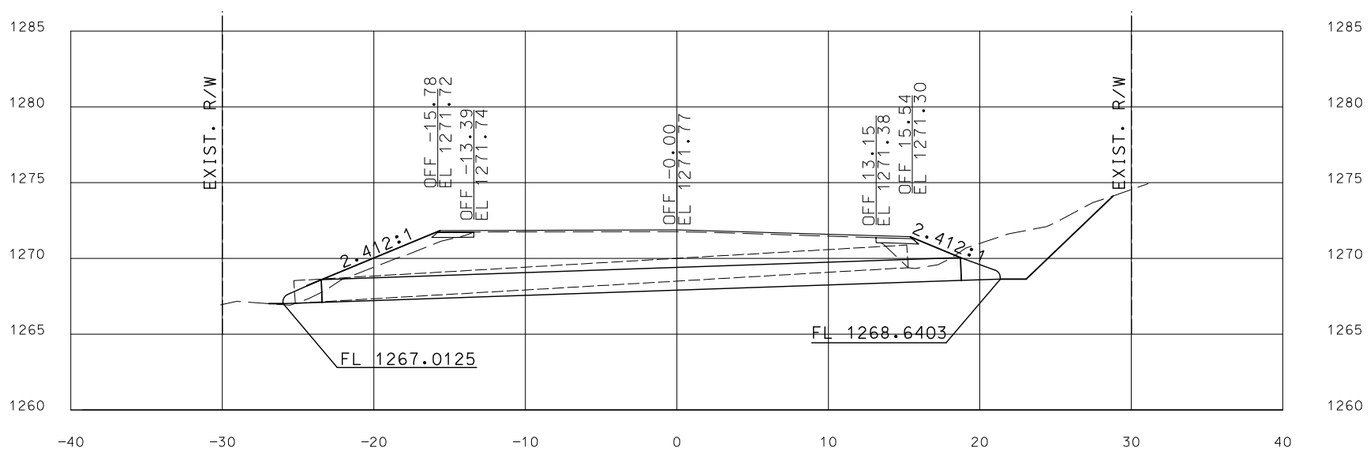
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 4 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 10
ROUTE 21
STA. 266+12.47 R1
LOG MI. 91.390
EXISTING 18" CORRUGATED METAL PIPE
18 DEG SKEW RA
REMOVE EXISTING PIPE (40 FT.)
AND REPLACE WITH 36.4 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
2.0:1 SLOPE LEFT AND RIGHT



PIPE 9
ROUTE 21
STA. 251+96.89 R1
LOG MI. 91.122
EXISTING 18" CORRUGATED METAL PIPE
34 DEG SKEW LA
REMOVE EXISTING PIPE (41 FT.)
AND REPLACE WITH 42.2 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:43:00 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 52
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

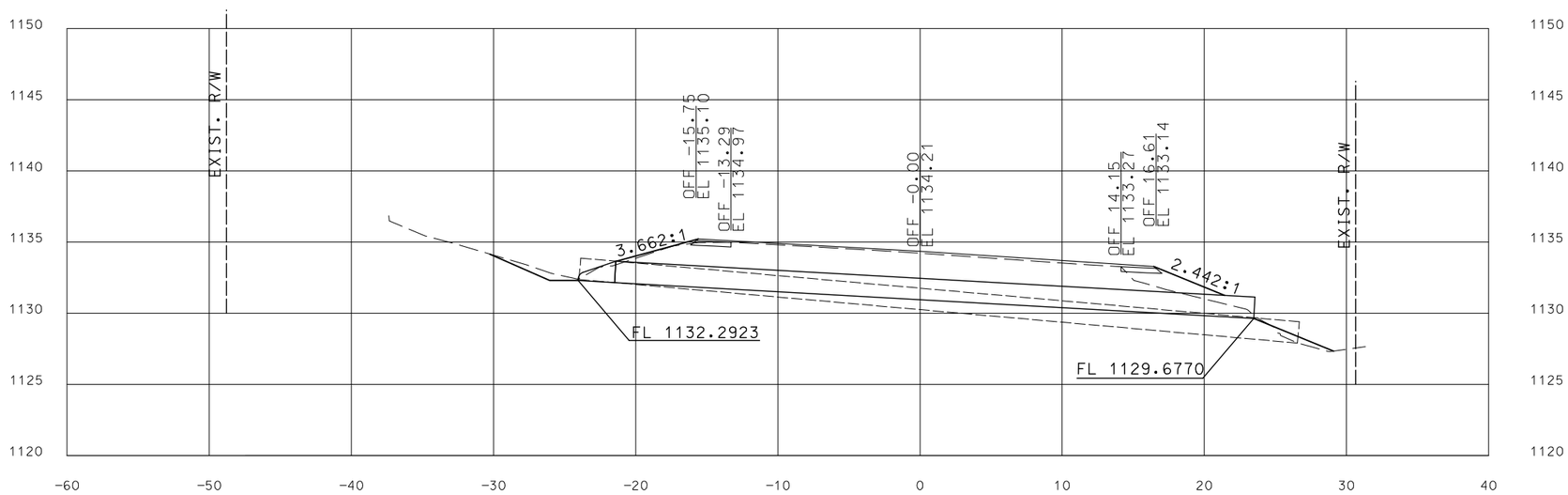
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 5 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 11
ROUTE 21
STA. 275+24.36 R1
LOG MI. 91.563
EXISTING 18" CORRUGATED METAL PIPE
35 DEG SKEW RA
REMOVE EXISTING PIPE (51 FT.)
AND REPLACE WITH 45.0 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
3.0:1 SLOPE LEFT
2.0:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:43:41 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 53
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

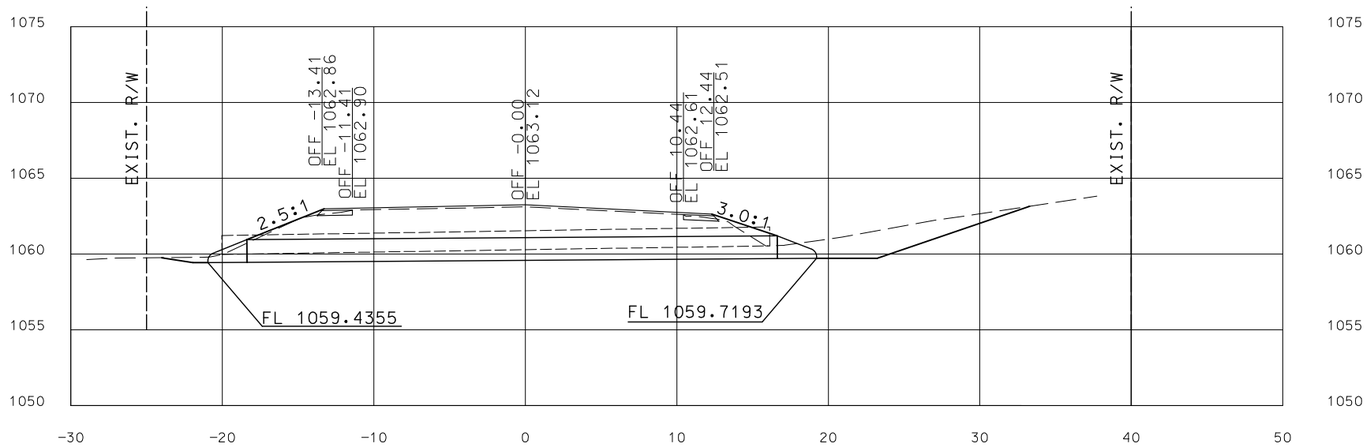
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

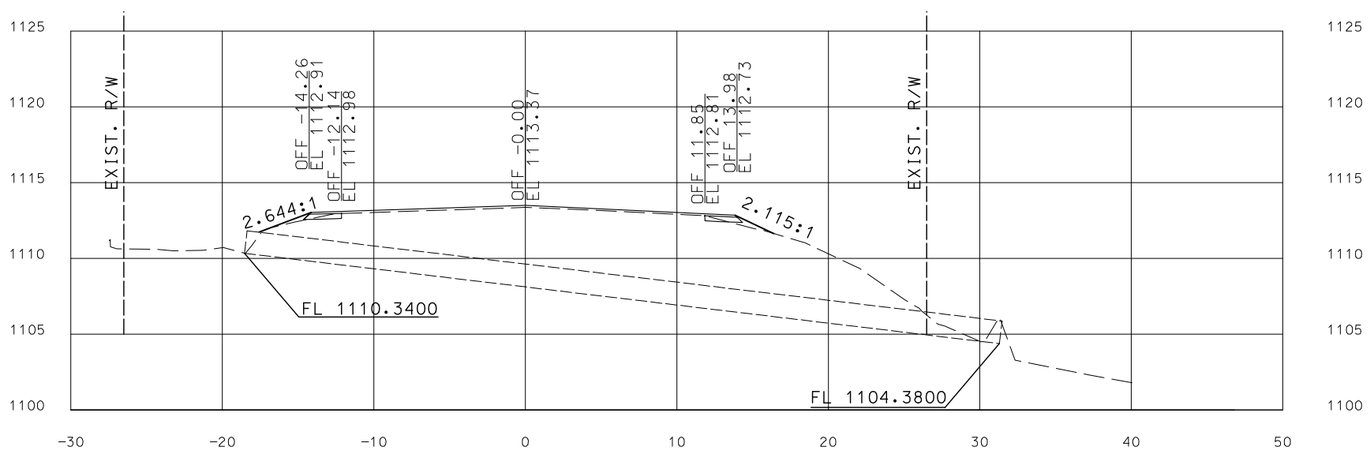
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CULVERT SECTION
SHEET 6 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 13
ROUTE 21
STA. 300+45.63 R1
LOG MI. 92.040
EXISTING 15" CORRUGATED METAL PIPE
2 DEG SKEW RA
REMOVE EXISTING PIPE (36 FT.)
AND REPLACE WITH 35.0 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.5:1 SLOPE LEFT
3.0:1 SLOPE RIGHT



PIPE 12
ROUTE 21
STA. 278+83.14 R1
LOG MI. 91.631
EXISTING 18" CORRUGATED METAL PIPE
19 DEG SKEW RA
UIP EXISTING PIPE
2.5:1 SLOPE LEFT
2.0:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:50:10 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 54
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

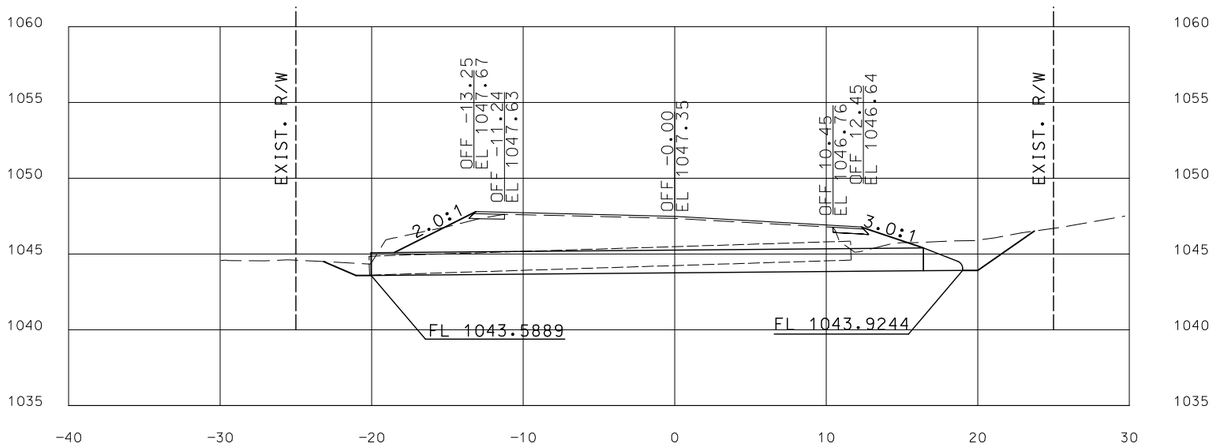
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 7 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 14
ROUTE 21
STA. 308+37.18 R1
LOG MI. 92.190
EXISTING 15" CORRUGATED METAL PIPE
4 DEG SKEW RA
REMOVE EXISTING PIPE (32 FT.)
AND REPLACE WITH 36.5 FT. - 18" GROUP B PIPE
REMOVE EXISTING HEADWALL LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT
3.0:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:50:38 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 55
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

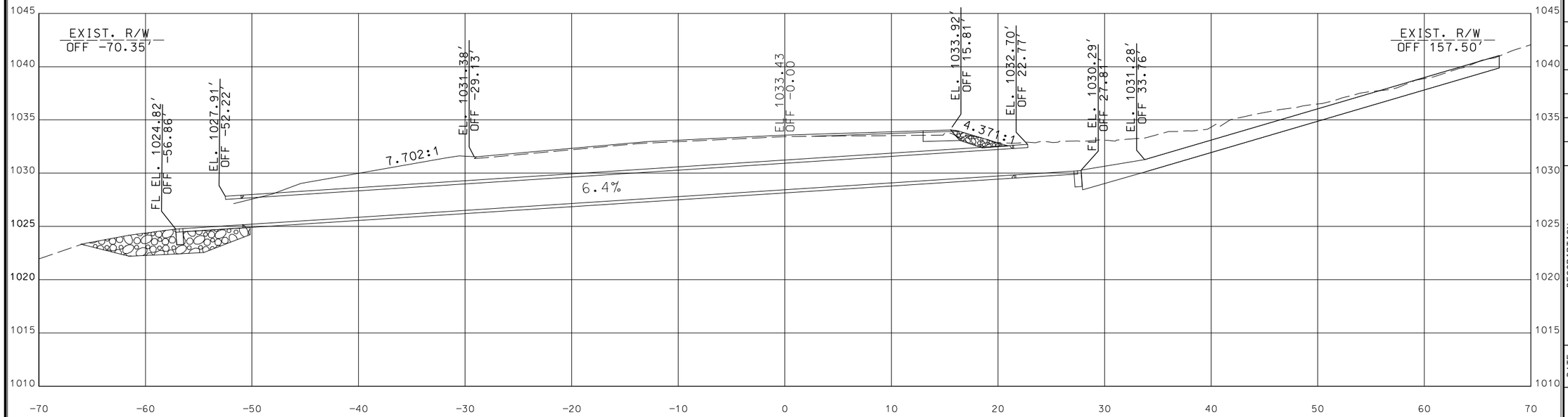
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

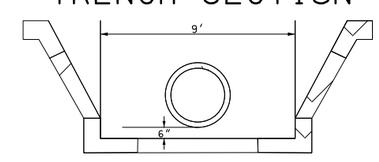
CULVERT SECTION
SHEET 8 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 15A
ROUTE 21
STA. 1+83.63 R2
LOG MI. 92.509
NEW PIPE
40 DEG SKEW LA
INSTALL 72.0 FT. - 30" CLASS IV REINFORCED CIRCULAR CONCRETE PIPE
1 - 30" CONCRETE FLARED END SECTION LEFT
1 - 30" CONCRETE FLARED END SECTION RIGHT
5.9:1 SLOPE LEFT
3.3:1 SLOPE RIGHT
CLASS 3 EXC. = 157 CY
USE MINIMUM BEDDING THICKNESS OF 6 INCHES

TRENCH SECTION



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:51:15 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 56
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

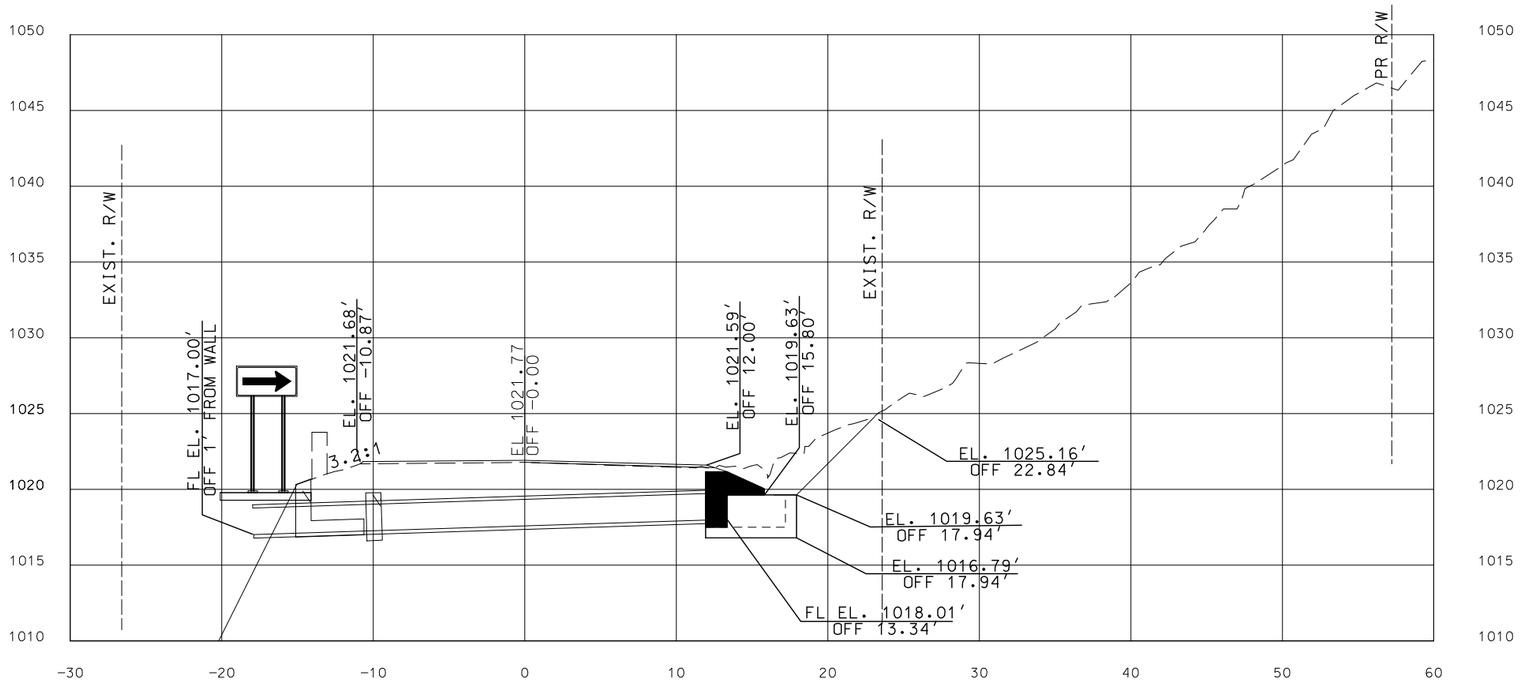
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

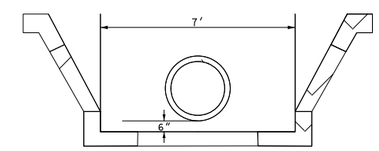
CULVERT SECTION
SHEET 9 OF 24

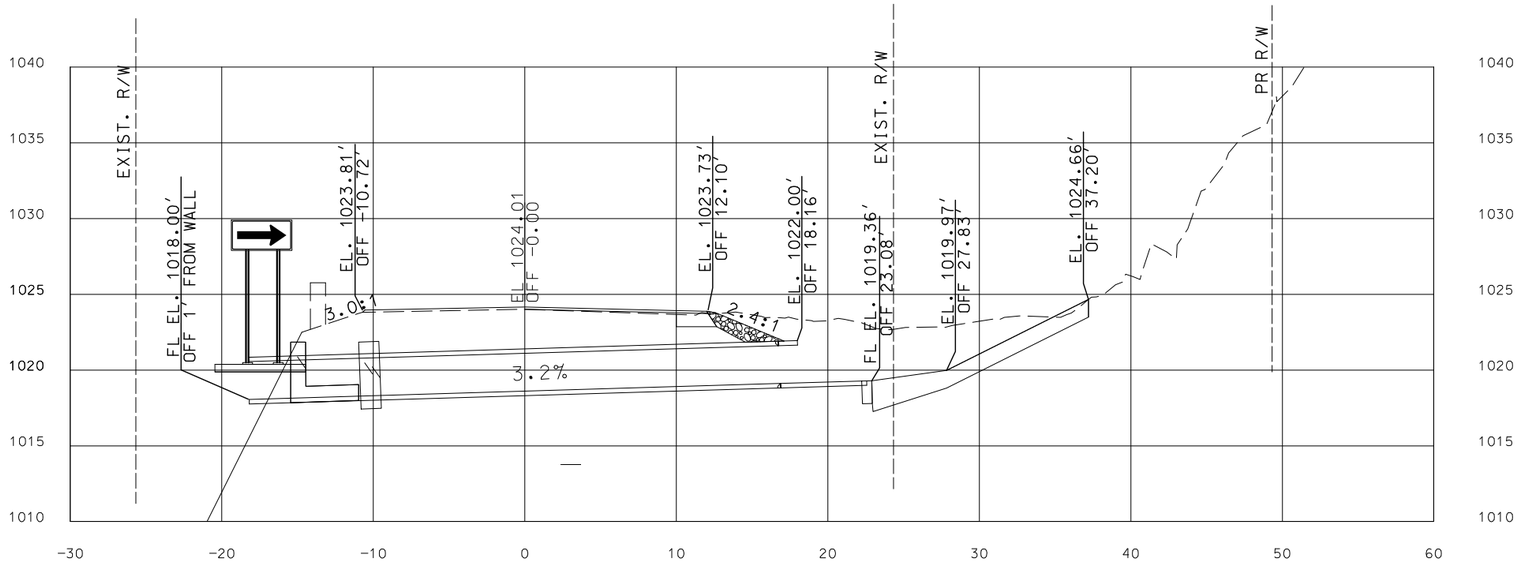
ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 15C
ROUTE 21
STA. 7+60.84 R2
LOG MI. 92.619
NEW PIPE
1 DEG SKEW RA
INSTALL 32.0 FT. - 21" CLASS IV RCP
1 - 21" CIP INLET RIGHT
2 - PIPE COLLARS TYPE A
3.2:1 SLOPE LEFT
2.3:1 SLOPE RIGHT
CLASS 3 EXC. = 42 CY
USE MIN. BEDDING THICKNESS 6 INCHES

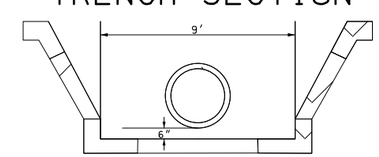
TRENCH SECTION





PIPE 15B
ROUTE 21
STA. 4+56.05 R2
LOG MI. 92.561
NEW PIPE
0 DEG SKEW
INSTALL 36.0 FT. - 30" CLASS IV RCP
1 - 30" CONCRETE FLARED END SECTION RT
2 - PIPE COLLARS TYPE A
3.0:1 SLOPE LEFT
2.4:1 SLOPE RIGHT
CLASS 3 EXC. = 79 CY
USE MIN. BEDDING THICKNESS 6 INCHES

TRENCH SECTION



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:51:45 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 57
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

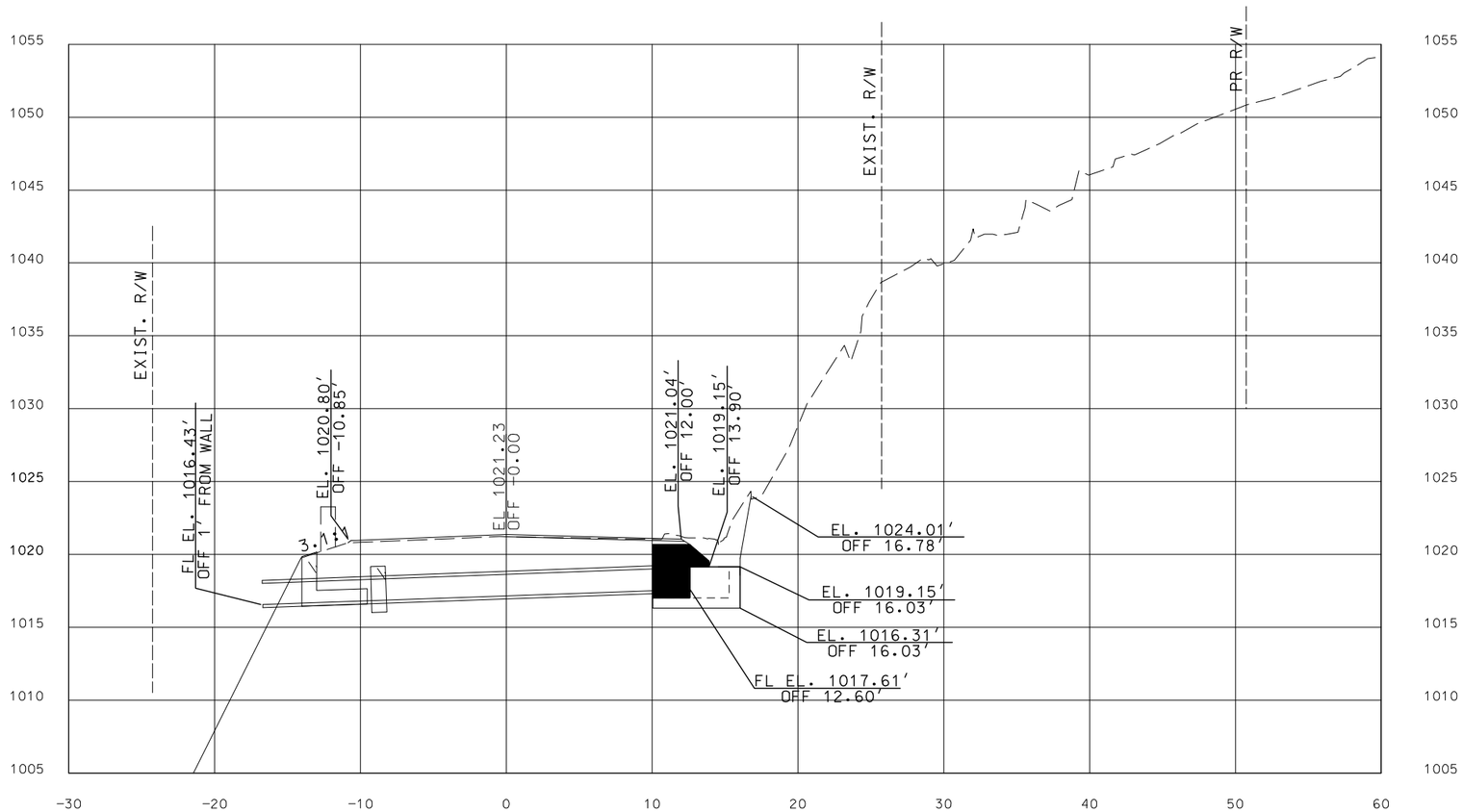
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

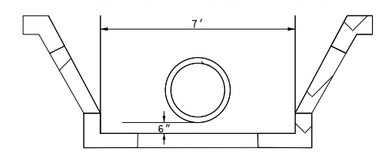
CULVERT SECTION
SHEET 10 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 15D
ROUTE 21
STA. 9+20.00 R2
LOG MI. 92.649
NEW PIPE
0 DEG SKEW
INSTALL 32.0 FT. - 18" CLASS IV RCP
1 - 18" CIP INLET RIGHT
2 - PIPE COLLARS TYPE A
3.1:1 SLOPE LEFT
1.6:1 SLOPE RIGHT
CLASS 3 EXC. = 36 CY
USE MIN. BEDDING THICKNESS 6 INCHES

TRENCH SECTION



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:52:26 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	58

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

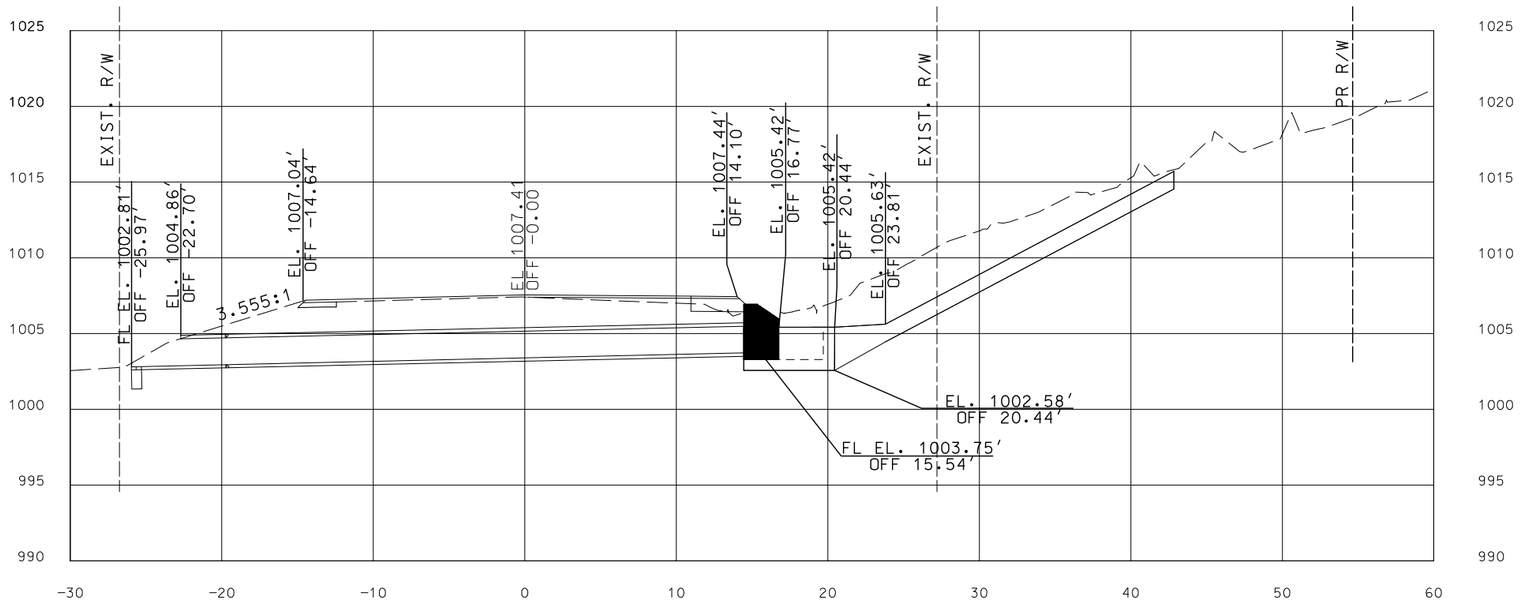
DESCRIPTION	DATE

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

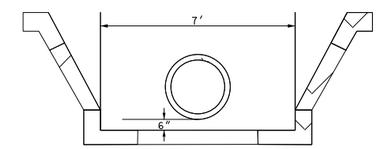
CULVERT SECTION
SHEET 11 OF 24

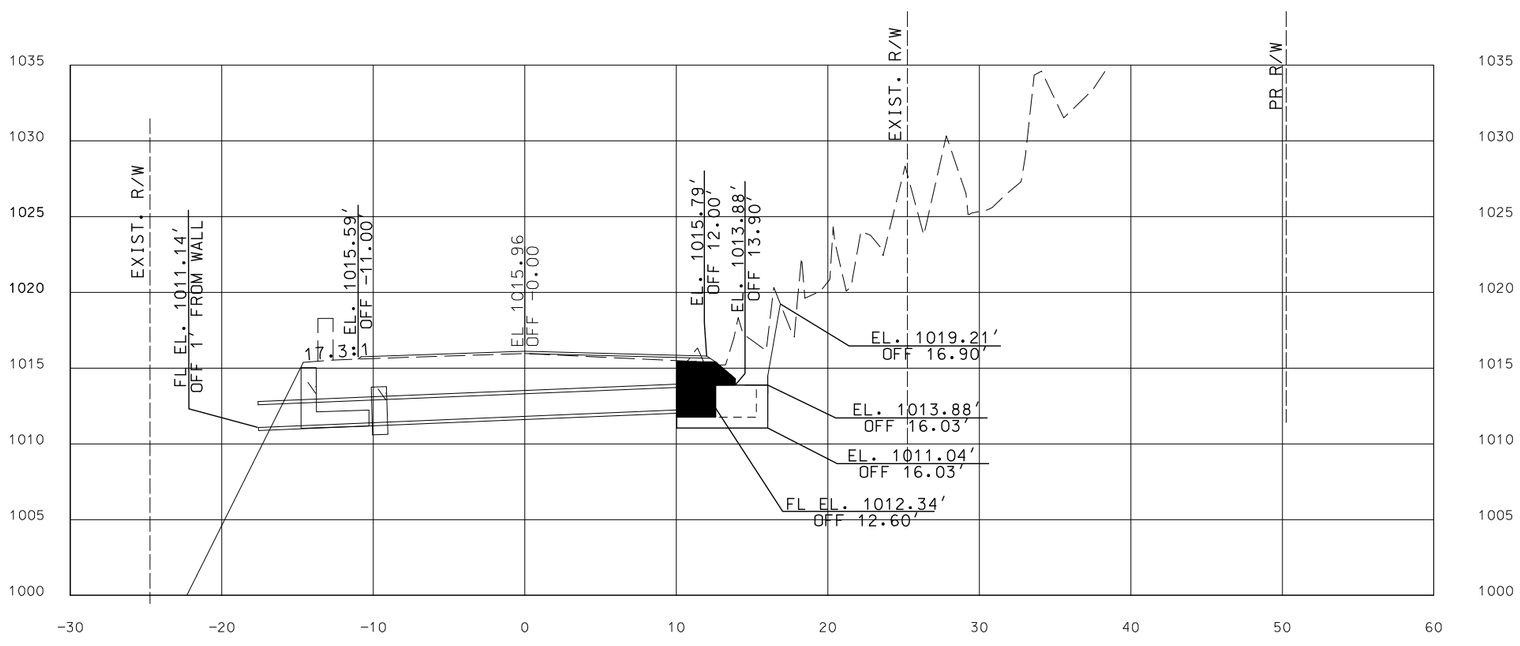
ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 15F
ROUTE 21
STA. 12+66.39 R2
LOG MI. 92.714
NEW PIPE
24 DEG SKEW LA
INSTALL 36.0 FT. - 21″ CLASS IV RCP
1 - 21″ CONCRETE FLARED END SECTION LT
1 - 21″ CIP INLET RIGHT
3.2:1 SLOPE LEFT
2.4:1 SLOPE RIGHT
CLASS 3 EXC. = 52 CY
USE MIN. BEDDING THICKNESS 6 INCHES

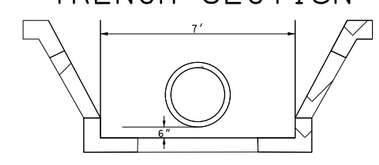
TRENCH SECTION





PIPE 15E
ROUTE 21
STA. 10+95.44 R2
LOG MI. 92.682
NEW PIPE
0 DEG SKEW
INSTALL 32.0 FT. - 18″ CLASS IV RCP
1 - 18″ CIP INLET RIGHT
2 - PIPE COLLAR TYPE A
17.3:1 SLOPE LEFT
1.6:1 SLOPE RIGHT
CLASS 3 EXC. = 40 CY
USE MIN. BEDDING THICKNESS 6 INCHES

TRENCH SECTION



STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:52:56 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 59
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

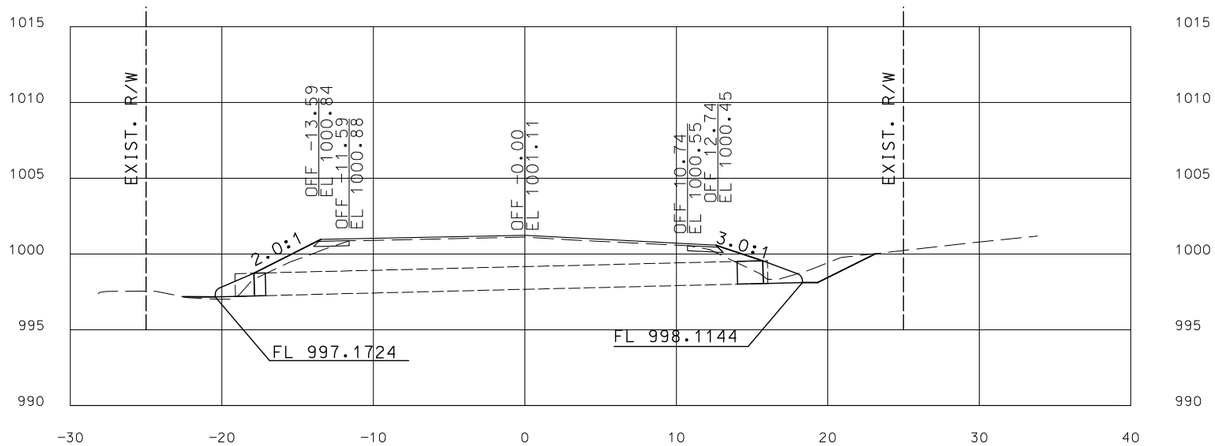
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

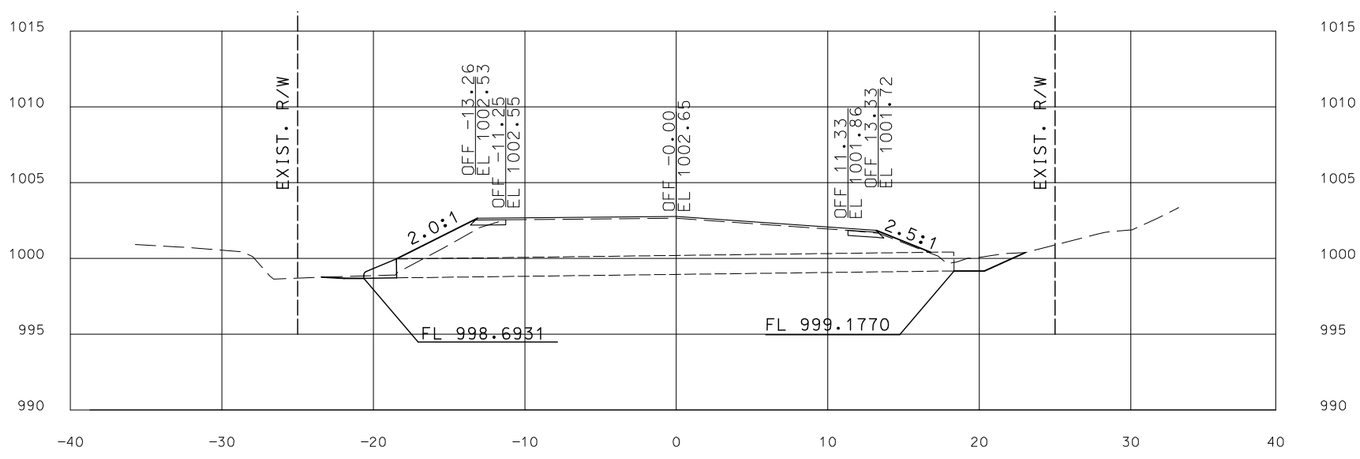
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 12 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 17
ROUTE 21
STA. 341+45.08 R3
LOG MI. 92.817
EXISTING 18" CORRUGATED METAL PIPE
0 DEG SKEW
REMOVE 2 FT. OF EXISING PIPE LT
AND REPLACE WITH 18" GROUP B PIPE 0.8 FT.
REMOVE 2 FT. OF EXISING PIPE RT
AND REPLACE WITH 18" GROUP B PIPE 1.7 FT.
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT
3.0:1 SLOPE RIGHT



PIPE 16
ROUTE 21
STA. 338+95.66 R3
LOG MI. 92.769
EXISTING 15" CORRUGATED METAL PIPE
0 DEG SKEW
UIP EXISTING PIPE
1 - 15" FLARED END SECTION LEFT
CLASS A EXC. = 3 CY
2.0:1 SLOPE LEFT
2.5:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:53:31 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 60
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

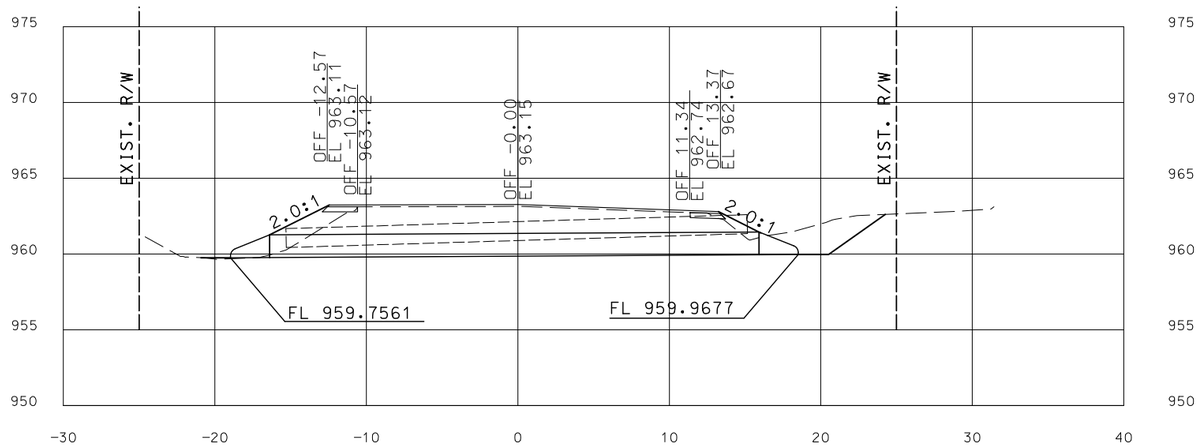
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

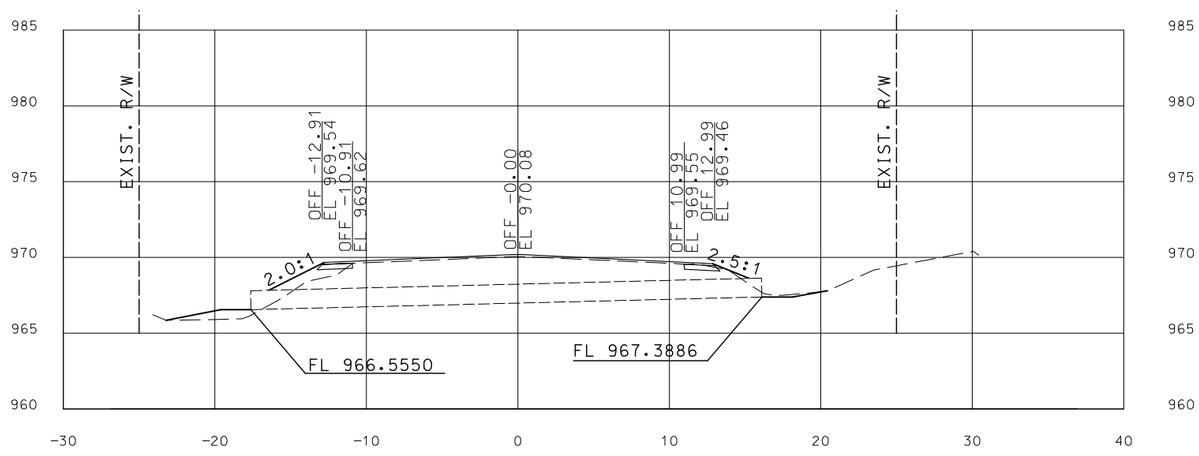
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 13 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 19
ROUTE 21
STA. 369+10.30 R3
LOG MI. 93.340
EXISTING 15" CORRUGATED METAL PIPE
0 DEG SKEW
REMOVE EXISTING PIPE (30 FT.)
AND REPLACE WITH 32.3 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT AND RIGHT



PIPE 18
ROUTE 21
STA. 365+36.16 R3
LOG MI. 93.269
EXISTING 15" CORRUGATED METAL PIPE
0 DEG SKEW
UIP EXISTING PIPE
2.0:1 SLOPE LEFT
2.5:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:54:42 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 61
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

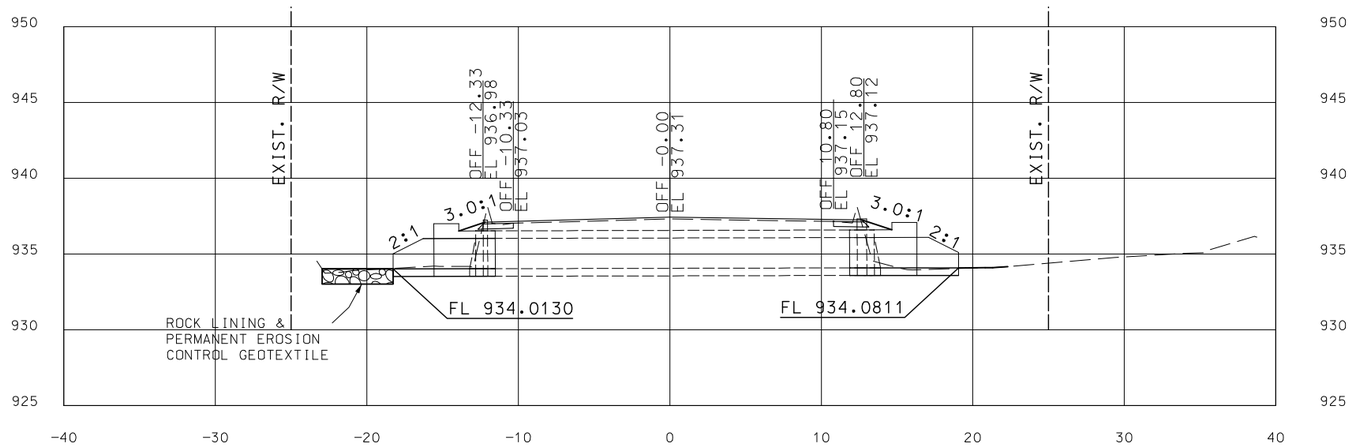
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

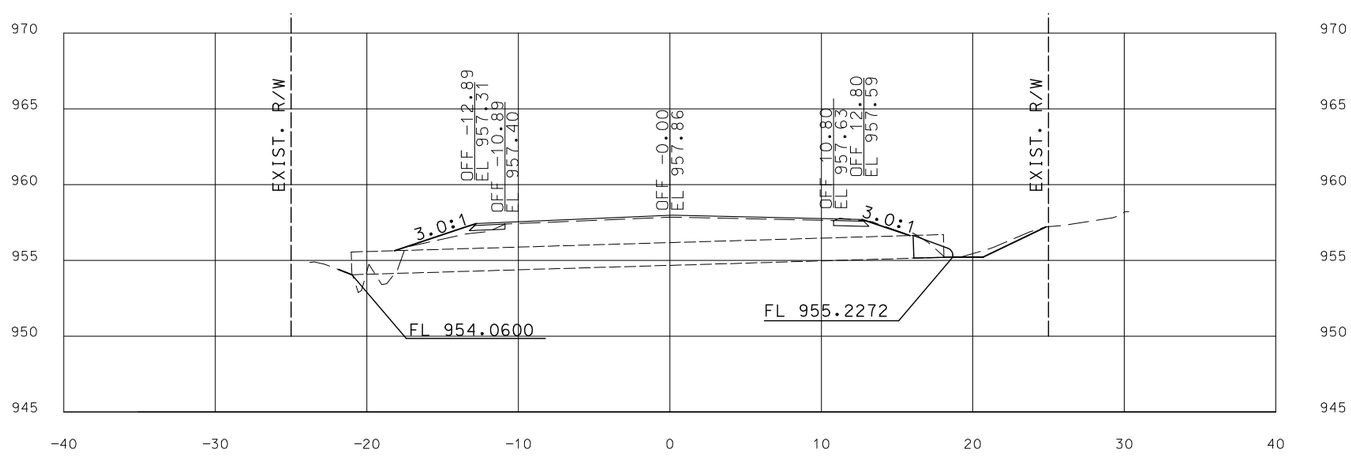
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 14 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 21
ROUTE 21
STA. 385+17.35 R3
LOG MI. 93.645
EXISTING 5'X2' BOX CULVERT
0 DEG SKEW
REMOVE EXISTING HEADWALL LEFT AND RIGHT
REMOVE EXISTING FLARED WINGWALL LEFT AND RIGHT
EXTEND LEFT 2.4 FEET
EXTEND RIGHT 2.8 FEET
CONSTRUCT NEW FLARED WING WALLS AT
2.0:1 SLOPE LEFT AND RIGHT
CLASS 3 EXC. = 1 CY
3.0:1 SLOPE LEFT AND RIGHT
ROCK LINE OUTLET



PIPE 20
ROUTE 21
STA. 371+98.16 R3
LOG MI. 93.395
EXISTING 18" CORRUGATED METAL PIPE
1 DEG SKEW LA
REMOVE 2 FT. OF EXISTING PIPE RIGHT
1 - 18" FLARED END SECTION RIGHT
3.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:55:17 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 62
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

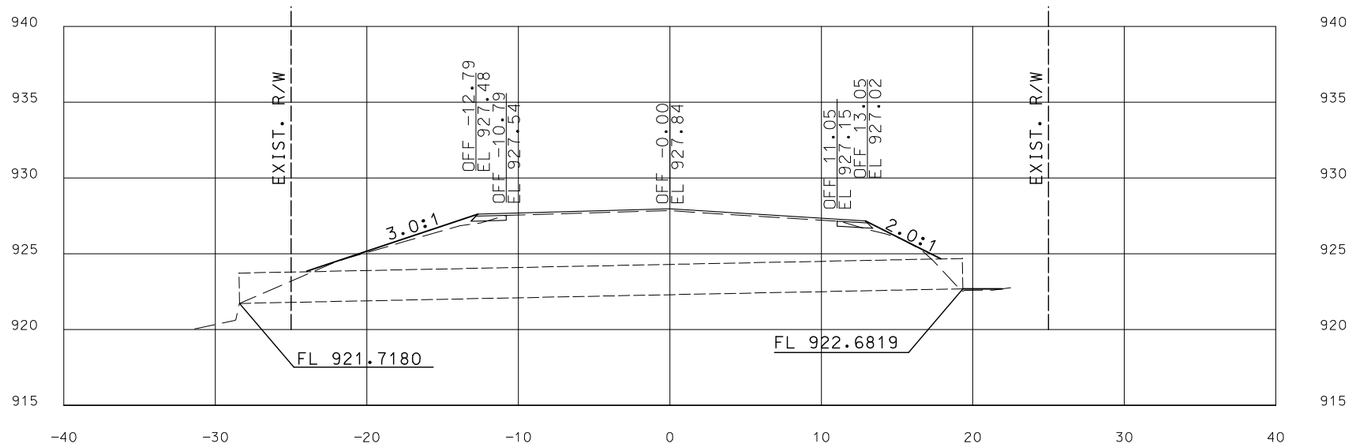
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

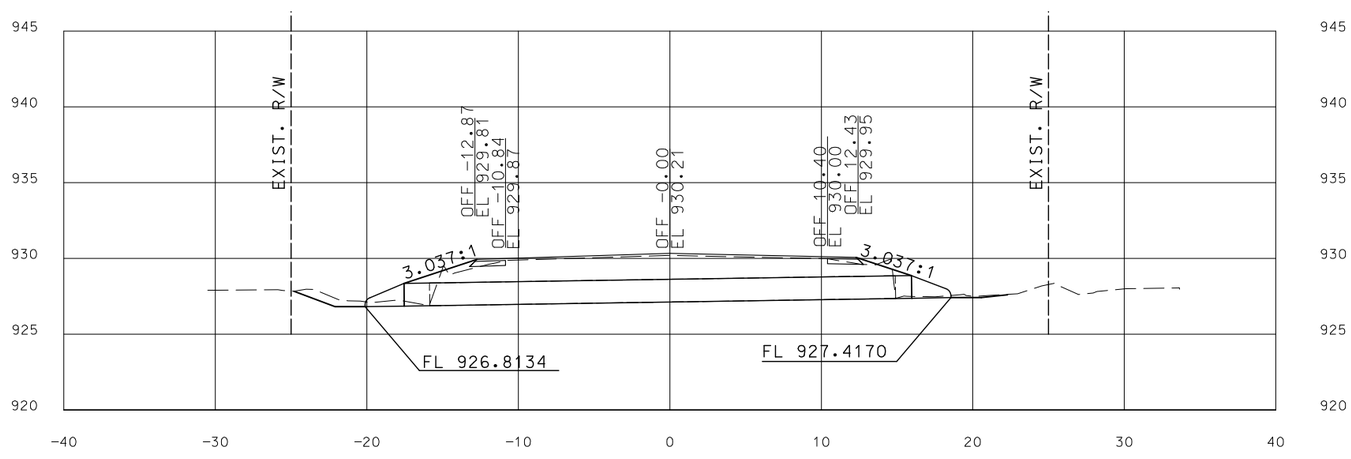
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 15 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 23
ROUTE 21
STA. 403+56.20 R3
LOG MI. 93.993
EXISTING 24" PLASTIC PIPE
1 DEG SKEW LA
UIP EXISTING PIPE
3.0:1 SLOPE LEFT
2.0:1 SLOPE RIGHT



PIPE 22
ROUTE 21
STA. 397+28.85 R3
LOG MI. 93.874
EXISTING 18" CORRUGATED METAL PIPE
9 DEG SKEW LA
REMOVE EXISTING PIPE (31 FT.)
AND REPLACE WITH 33.5 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
REMOVE EXISTING HEADWALL LEFT AND RIGHT
3.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:55:51 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 63
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

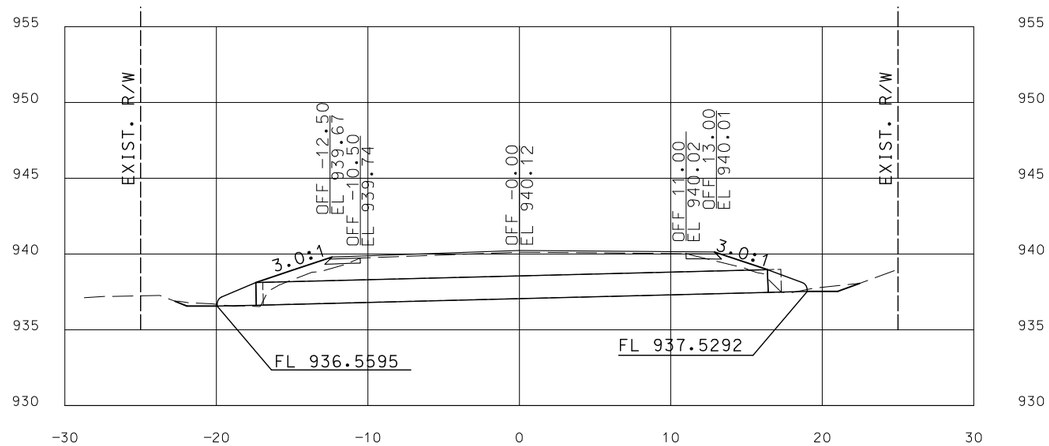
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

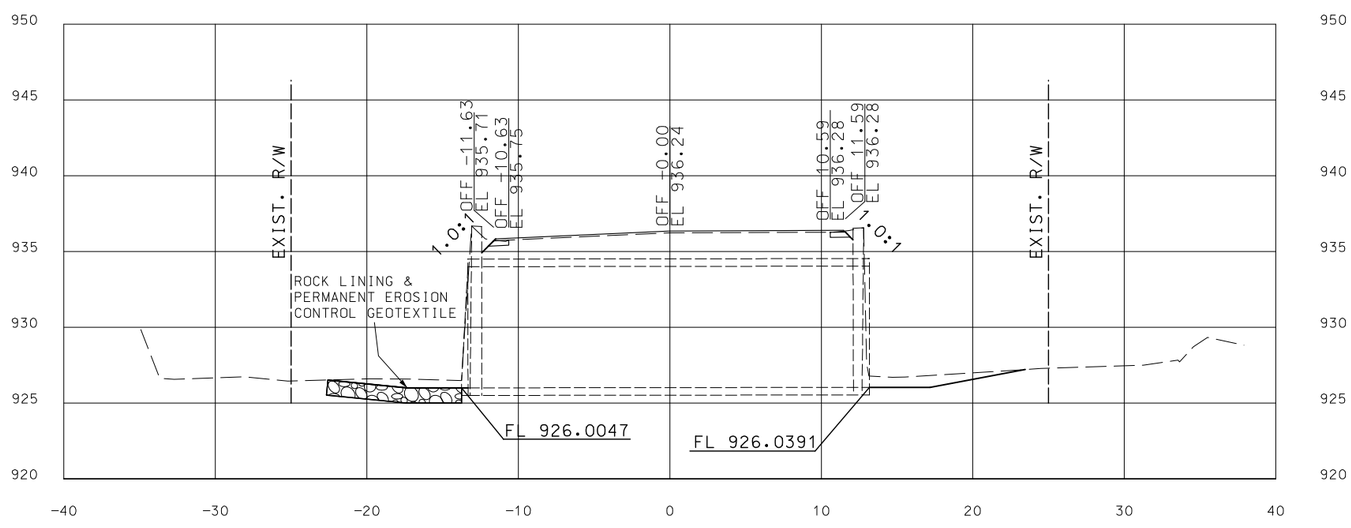
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 16 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 25
ROUTE 21
STA. 418+40.49 R3
LOG MI. 94.274
EXISTING 18" CORRUGATED METAL PIPE
1 DEG SKEW LA
REMOVE EXISTING PIPE (34 FT.)
AND REPLACE WITH 33.8 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
3.0:1 SLOPE LEFT AND RIGHT



PIPE 24
ROUTE 21
STA. 409+03.67 R3
LOG MI. 94.097
EXISTING 10'X8' BOX CULVERT
0 DEG SKEW
UIP EXISTING HEADWALL LEFT AND RIGHT
NEW 1FT SHOULDER LEFT AND RIGHT
1.0:1 SLOPE LEFT AND RIGHT
CLASS A EXC. = 7 CY
ROCK LINE SLOPE UPSTREAM AND DOWNSTREAM
OF BOX CULVERT LEFT AND RIGHT
ROCK LINE OUTLET

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:56:21 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 64
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

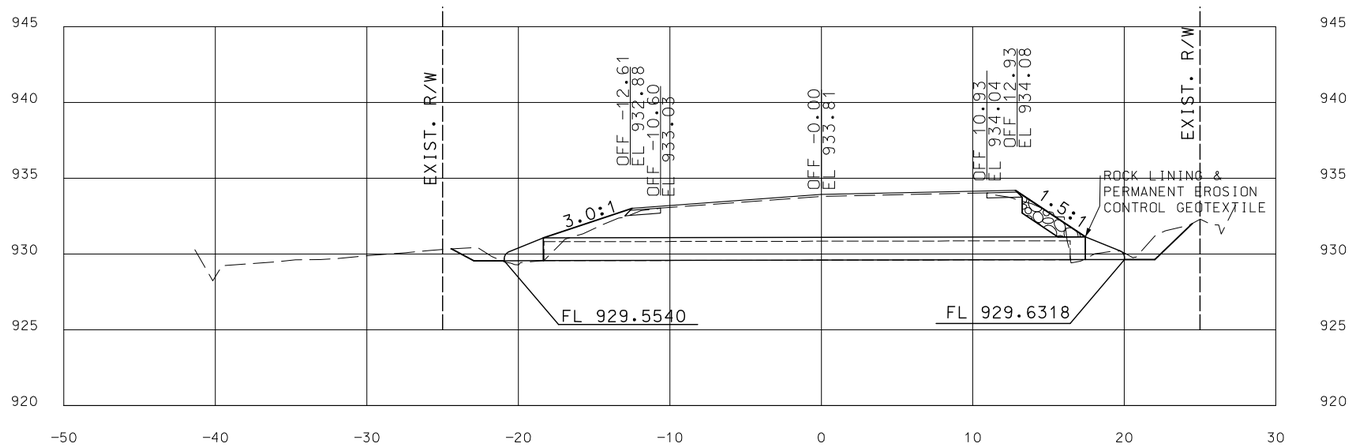
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

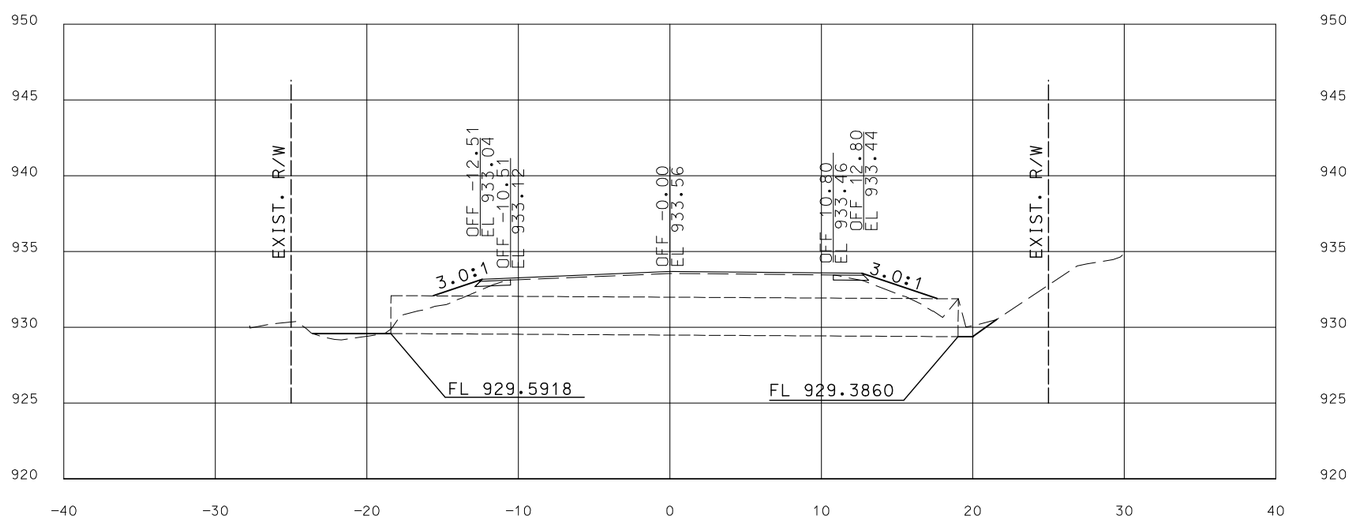
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 17 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 27
ROUTE 21
STA. 431+93.21 R3
LOG MI. 94.530
EXISTING 15" CORRUGATED METAL PIPE
3 DEG SKEW LA
REMOVE EXISTING PIPE (35 FT.)
AND REPLACE WITH 35.8 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
REMOVE EXISTING HEADWALL RIGHT
3.0:1 SLOPE LEFT
1.5:1 SLOPE RIGHT
ROCK LINE SLOPE RIGHT
DO NOT ROCK LINE OUTLET



PIPE 26
ROUTE 21
STA. 426+03.41 R3
LOG MI. 94.419
EXISTING 30" CORRUGATED METAL PIPE
1 DEG SKEW LA
UIP EXISTING PIPE
CLASS A EXC. = 3 CY
3.0:1 SLOPE LEFT AND RIGHT
DO NOT ROCK LINE OUTLET

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:57:05 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 65
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

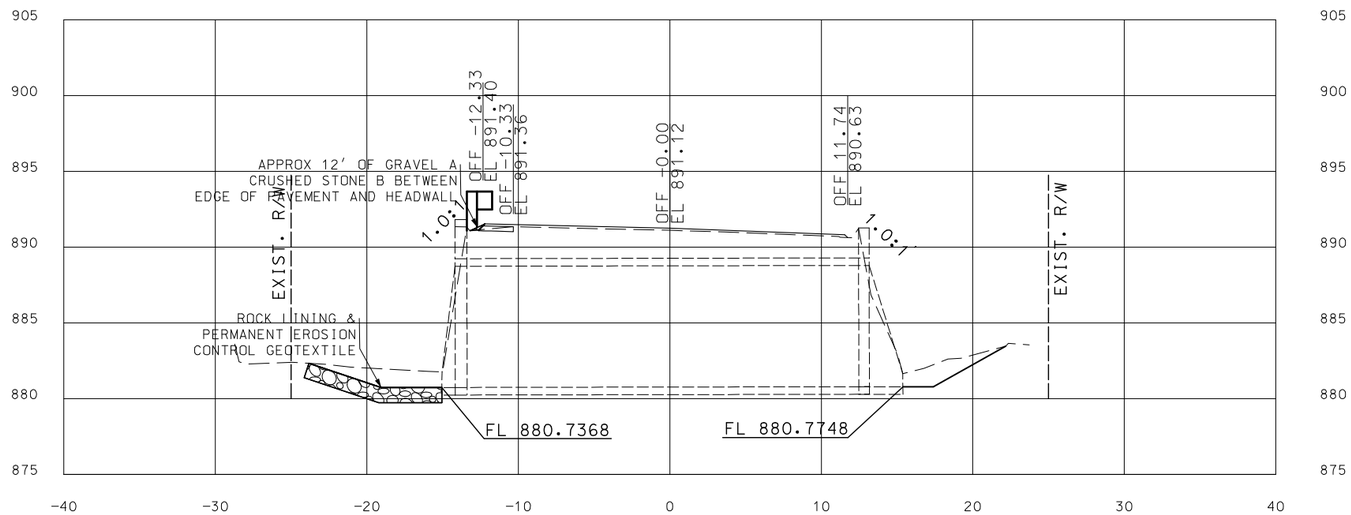
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

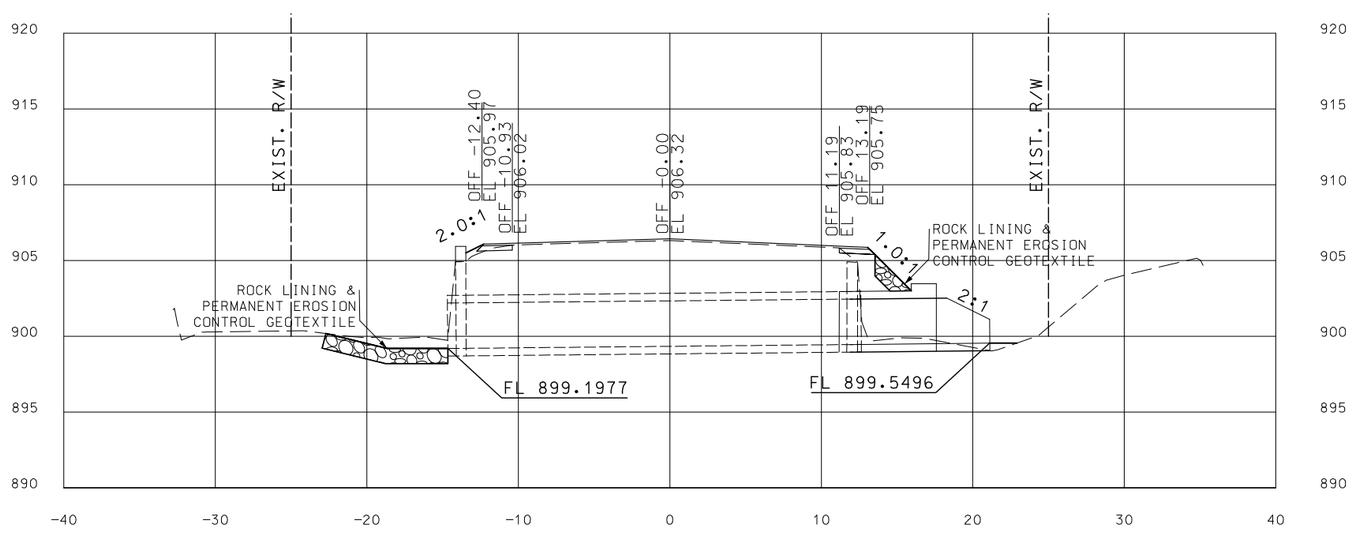
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 18 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 29
ROUTE 21
STA. 459+96.93 R3
LOG MI. 95.061
EXISTING 10'X8' BOX CULVERT
1 DEG SKEW LA
HEADWALL LEFT - EXTEND VERTICAL 0.5 FEET
UIP EXISTING HEADWALL RIGHT
NEW 2FT SHOULDER LEFT
NO SHOULDER RIGHT
1.0:1 SLOPE LEFT AND RIGHT
CLASS A EXC. = 10 CY
ROCK LINE SLOPE UPSTREAM AND DOWNSTREAM
OF BOX CULVERT LEFT AND RIGHT
ROCK LINE OUTLET



PIPE 28
ROUTE 21
STA. 448+34.34 R3
LOG MI. 94.841
EXISTING 5'X3' BOX CULVERT
6 DEG SKEW LA
HEADWALL LEFT - EXTEND VERTICAL 1.0 FEET
REMOVE EXISTING HEADWALL RIGHT
EXTEND RIGHT 4.7 FEET
CONSTRUCT NEW FLARED WING WALLS AT
2.0:1 SLOPE RIGHT
CLASS 3 EXC. = 1 CY
CLASS A EXC. = 3 CY
2.0:1 SLOPE LEFT
1.0:1 SLOPE RIGHT
ROCK LINE SLOPE RIGHT
ROCK LINE OUTLET

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:57:30 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	66
COUNTY	
IRON	
JOB NO.	
J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

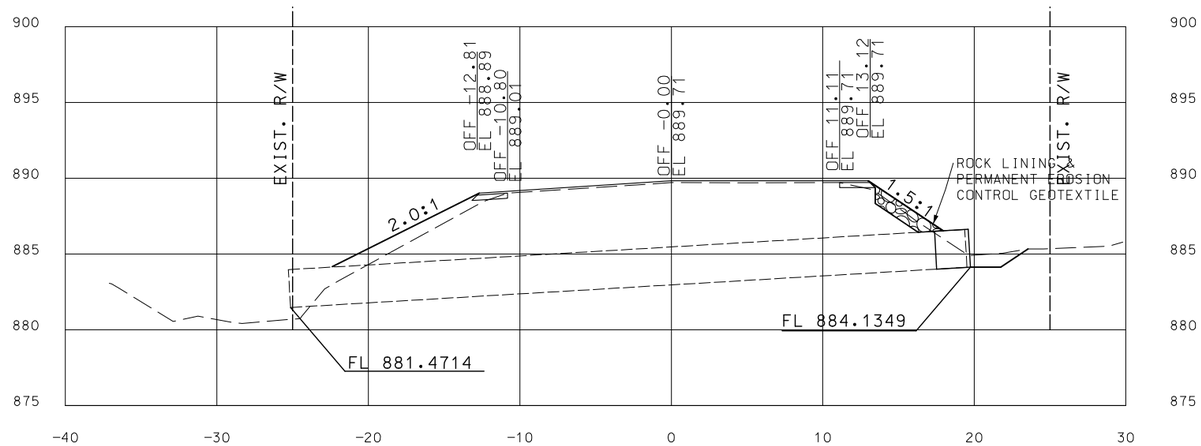
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

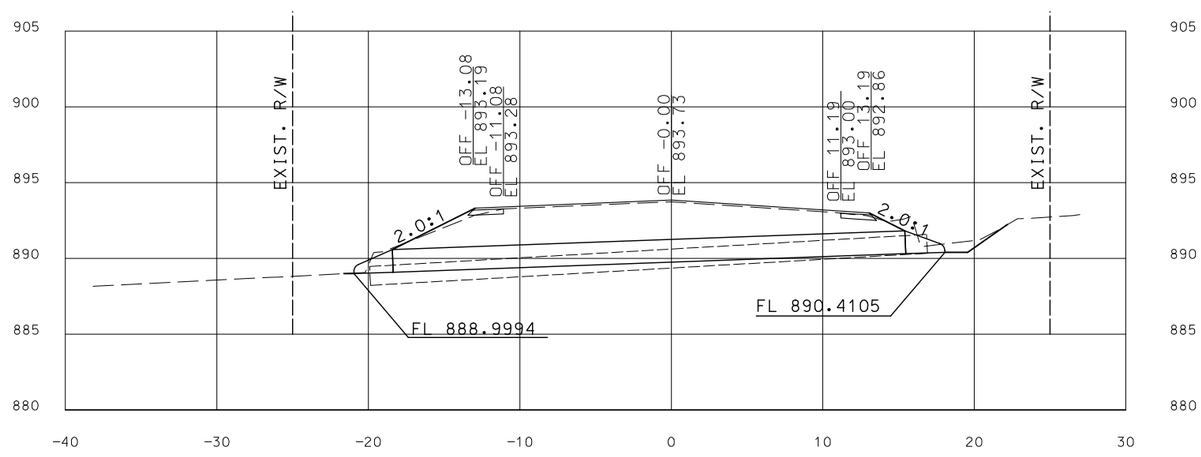
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 19 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 31
ROUTE 21
STA. 467+93.41 R3
LOG MI. 95.212
EXISTING 30" CORRUGATED METAL PIPE
4 DEG SKEW RA
REMOVE 2 FT. OF EXISING PIPE RT
AND REPLACE WITH 30" GROUP B PIPE 2.2 FT.
2.0:1 SLOPE LEFT
1.5:1 SLOPE RIGHT
ROCK LINE SLOPE RIGHT
DO NOT ROCK LINE OUTLET



PIPE 30
ROUTE 21
STA. 464+04.47 R3
LOG MI. 95.138
EXISTING 15" CORRUGATED METAL PIPE
2 DEG SKEW LA
REMOVE EXISTING PIPE (37 FT.)
AND REPLACE WITH 33.9 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
REMOVE EXISTING HEADWALL LEFT AND RIGHT
2.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:57:56 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 67
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

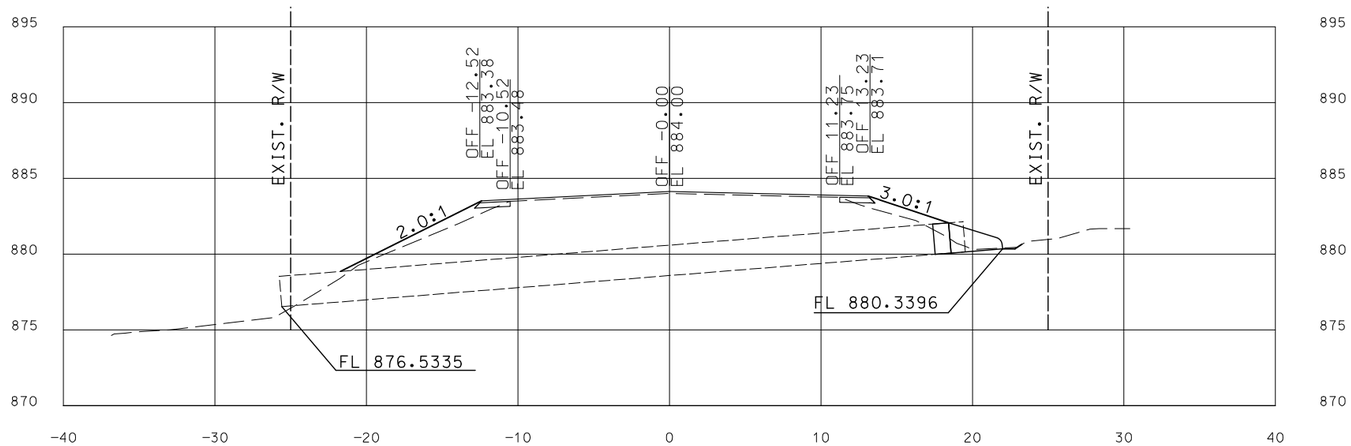
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 20 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 32
ROUTE 21
STA. 472+96.25 R3
LOG MI. 95.307
EXISTING 24" CORRUGATED METAL PIPE
0 DEG SKEW
REMOVE 2 FT. OF EXISTING PIPE RT
AND REPLACE WITH 24" GROUP B PIPE 1.0 FT.
1 - 24" FLARED END SECTION RIGHT
2.0:1 SLOPE LEFT
3.0:1 SLOPE RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:58:35 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 68
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

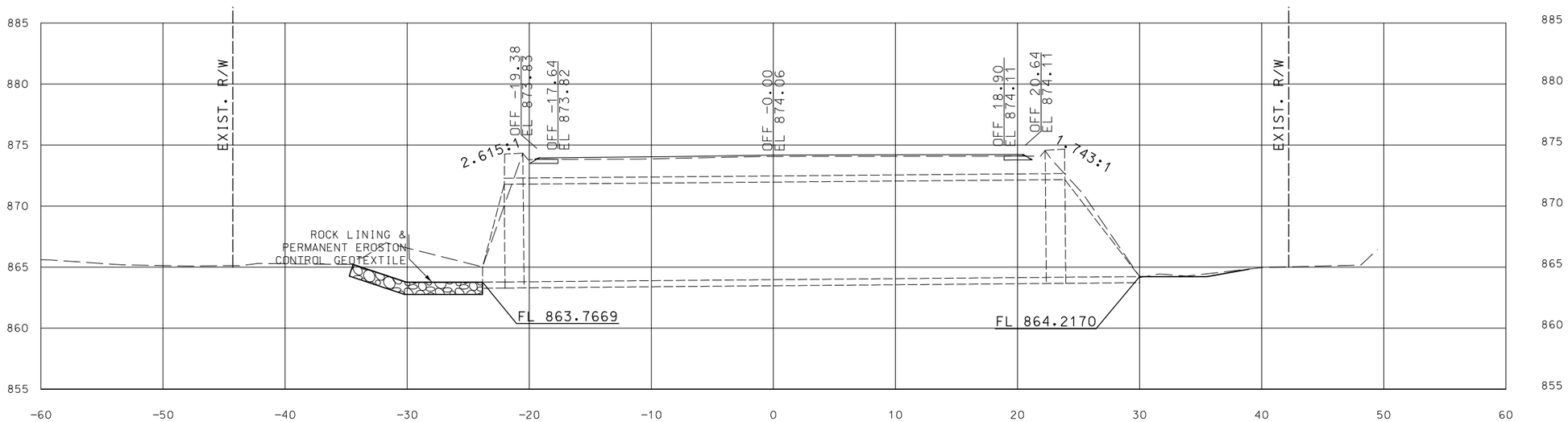
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CULVERT SECTION
SHEET 21 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 33
ROUTE 21
STA. 483+12.63 R3
LOG MI. 95.500
EXISTING 20'X8' BOX CULVERT
55 DEG SKEW LA
UIP EXISTING HEADWALL LEFT AND RIGHT
NEW 1 FT SHOULDER LEFT AND RIGHT
1.5:1 SLOPE LEFT
1:1 SLOPE RIGHT
CLASS A EXC. = 24 CY
ROCK LINE SLOPE UPSTREAM AND DOWNSTREAM
OF BOX CULVERT LEFT AND RIGHT
ROCK LINE OUTLET

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:59:16 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 69
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

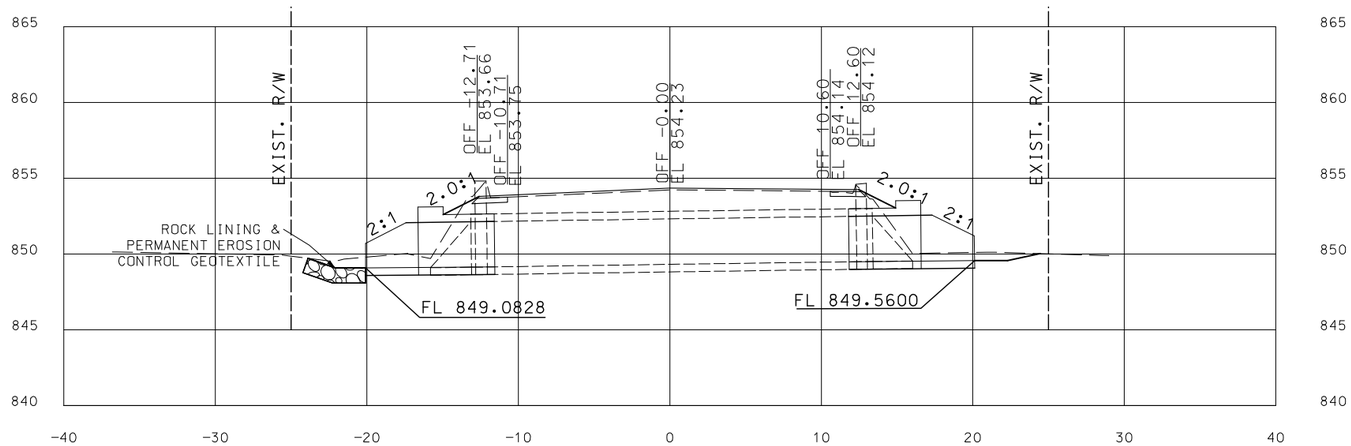
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

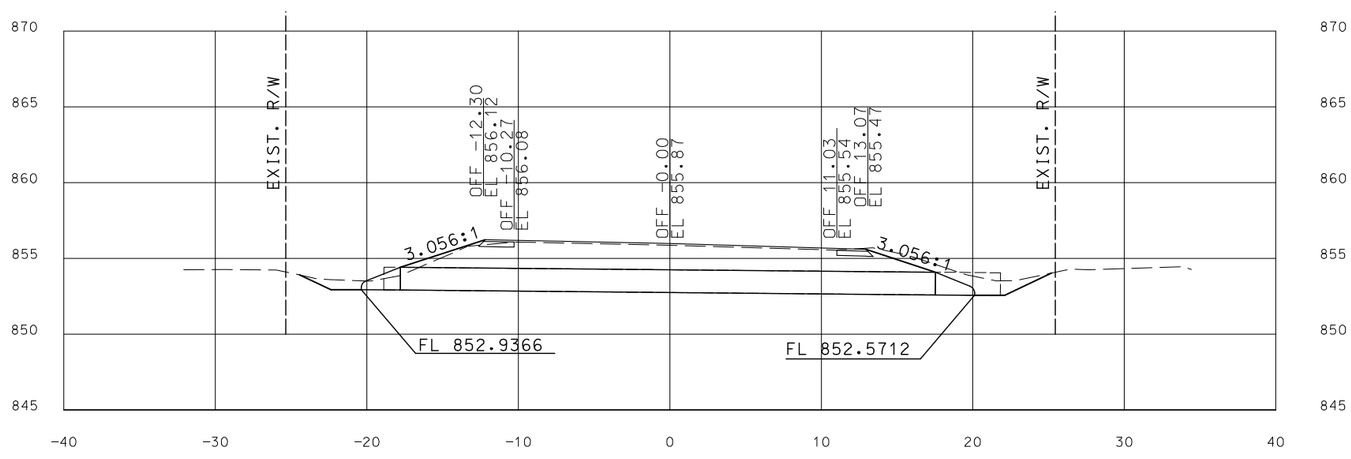
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

CULVERT SECTION
SHEET 22 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 35
ROUTE 21
STA. 501+71.14 R3
LOG MI. 95.852
EXISTING 4'X3' BOX CULVERT
1 DEG SKEW RA
REMOVE EXISTING HEADWALL LEFT AND RIGHT
REMOVE EXISTING FLARED WINGWALL LEFT AND RIGHT
EXTEND LEFT 3.4 FEET
EXTEND RIGHT 3.1 FEET
CONSTRUCT NEW FLARED WING WALLS AT
2.0:1 SLOPE LEFT AND RIGHT
CLASS 3 EXC. = 1 CY
2.0:1 SLOPE LEFT AND RIGHT
ROCK LINE OUTLET



PIPE 34
ROUTE 21
STA. 496+25.76 R3
LOG MI. 95.748
EXISTING 18" CORRUGATED METAL PIPE
11 DEG SKEW LA
REMOVE EXISTING PIPE (41 FT.)
AND REPLACE WITH 35.3 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
3.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 4:59:51 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 70
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

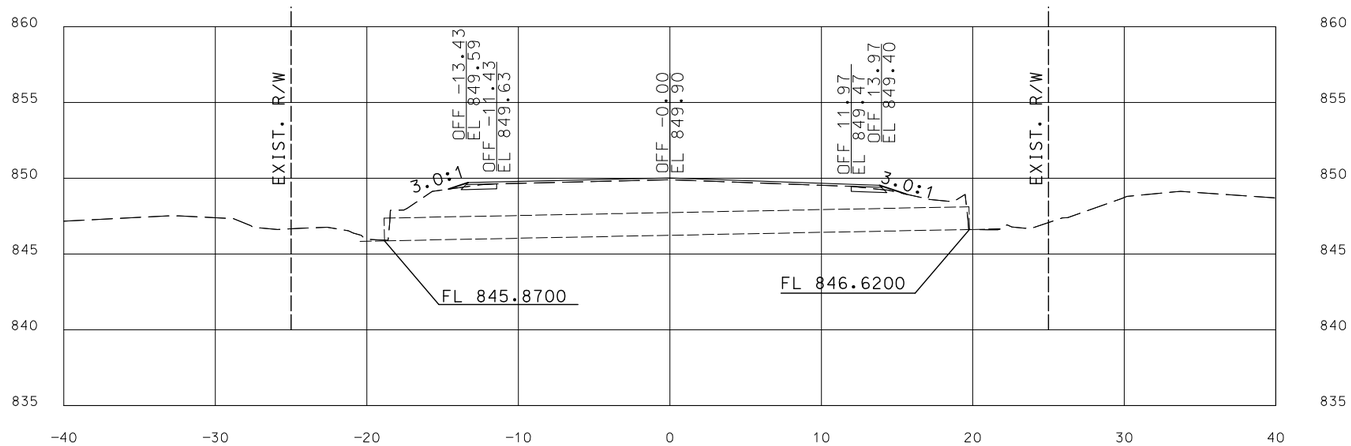
DATE	DESCRIPTION

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

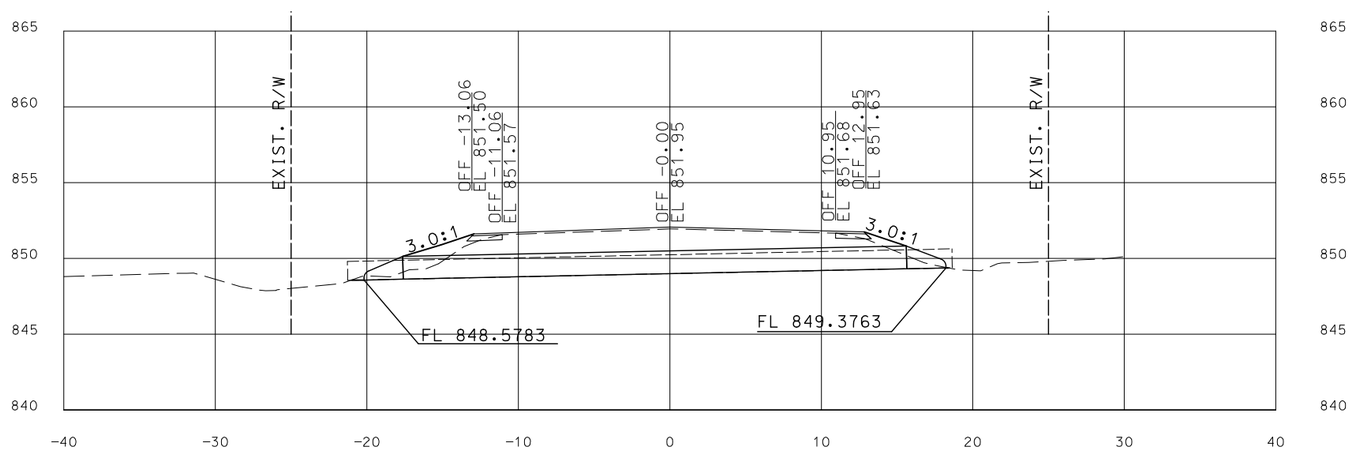
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CULVERT SECTION
SHEET 23 OF 24

ROADWAY SURFACE ELEVATIONS SHOWN ARE PRIOR TO OVERLAY.



PIPE 37
ROUTE 21
STA. 510+62.25 R3
LOG MI. 96.021
EXISTING 18" CORRUGATED METAL PIPE
1 DEG SKEW RA
UIP EXISITNG PIPE AND HEADWALL LT/RT
3.0:1 SLOPE LEFT AND RIGHT



PIPE 36
ROUTE 21
STA. 507+86.81 R3
LOG MI. 95.968
EXISTING 15" CORRUGATED METAL PIPE
0 DEG SKEW
REMOVE EXISTING PIPE (40 FT.)
AND REPLACE WITH 33.3 FT. - 18" GROUP B PIPE
1 - 18" FLARED END SECTION LEFT
1 - 18" FLARED END SECTION RIGHT
3.0:1 SLOPE LEFT AND RIGHT

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 5:00:22 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED	
8/9/2024	
ROUTE 21	STATE MO
DISTRICT SE	SHEET NO. 71
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

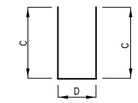
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

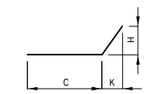
CULVERT SECTION
SHEET 24 OF 24

BILL OF REINFORCING STEEL FOR SPECIAL SHEET 12

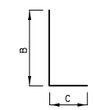
NO. REQ'D.	SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	B FT. IN.	C FT. IN.	DorF FT. IN.	E FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
5	5	U1	PRECAST INLET - PIPE 15C	10						1 0.00	3 7.00				5 7.00	5 5.00	28
3	5	U2	PRECAST INLET - PIPE 15C	10						2 6.00	3 6.00				8 6.00	8 4.00	26
5	5	U3	PRECAST INLET - PIPE 15C	10						4 0.00	3 6.00				11 6.00	11 4.00	59
8	5	H1	PRECAST INLET - PIPE 15C	20					5 9.00						5 9.00	5 9.00	48
6	5	H2	PRECAST INLET - PIPE 15C	19					2 6.00	5 8.00					8 2.00	8 1.00	51
4	5	H3	HEADWALL COLLAR - PIPE 15C	20					3 4.00						3 4.00	3 4.00	14
3	5	U1	HEADWALL COLLAR - PIPE 15C	10						1 0.00	3 7.00				5 7.00	5 5.00	17
5	5	U1	PRECAST INLET - PIPE 15D	10						1 0.00	3 7.00				5 7.00	5 5.00	28
3	5	U2	PRECAST INLET - PIPE 15D	10						2 6.00	3 6.00				8 6.00	8 4.00	26
5	5	U3	PRECAST INLET - PIPE 15D	10						4 0.00	3 6.00				11 6.00	11 4.00	59
8	5	H1	PRECAST INLET - PIPE 15D	20					5 9.00						5 9.00	5 9.00	48
6	5	H2	PRECAST INLET - PIPE 15D	19					2 6.00	5 8.00					8 2.00	8 1.00	51
4	5	H3	HEADWALL COLLAR - PIPE 15D	20					3 4.00						3 4.00	3 4.00	14
3	5	U1	HEADWALL COLLAR - PIPE 15D	10						1 0.00	3 7.00				5 7.00	5 5.00	17
5	5	U1	PRECAST INLET - PIPE 15E	10						1 0.00	3 7.00				5 7.00	5 5.00	28
3	5	U2	PRECAST INLET - PIPE 15E	10						2 6.00	3 6.00				8 6.00	8 4.00	26
5	5	U3	PRECAST INLET - PIPE 15E	10						4 0.00	3 6.00				11 6.00	11 4.00	59
8	5	H1	PRECAST INLET - PIPE 15E	20					5 9.00						5 9.00	5 9.00	48
6	5	H2	PRECAST INLET - PIPE 15E	19					2 6.00	5 8.00					8 2.00	8 1.00	51
4	5	H3	HEADWALL COLLAR - PIPE 15E	20					3 4.00						3 4.00	3 4.00	14
3	5	U1	HEADWALL COLLAR - PIPE 15E	10						1 0.00	3 7.00				5 7.00	5 5.00	17
5	5	U1	PRECAST INLET - PIPE 15F	10						1 0.00	3 7.00				5 7.00	5 5.00	28
3	5	U2	PRECAST INLET - PIPE 15F	10						2 6.00	3 6.00				8 6.00	8 4.00	26
5	5	U3	PRECAST INLET - PIPE 15F	10						4 0.00	3 6.00				11 6.00	11 4.00	59
8	5	H1	PRECAST INLET - PIPE 15F	20					5 9.00						5 9.00	5 9.00	48
6	5	H2	PRECAST INLET - PIPE 15F	19					2 6.00	5 8.00					8 2.00	8 1.00	51
4	5	H3	HEADWALL COLLAR - PIPE 15F	20					3 4.00						3 4.00	3 4.00	14
3	5	U1	HEADWALL COLLAR - PIPE 15F	10						1 0.00	3 7.00				5 7.00	5 5.00	17
12	5	C1B	TYPE A COLLAR - PIPE 15B	20					4 2.00						4 2.00	4 2.00	52
4	6	C2B	TYPE A COLLAR - PIPE 15B	10						2 10.00	4 0.00				9 8.00	9 5.00	57
8	4	C3B	TYPE A COLLAR - PIPE 15B	20					1 0.00						1 0.00	1 0.00	5
12	5	C1C	TYPE A COLLAR - PIPE 15C	20					3 3.00						3 3.00	3 3.00	41
4	6	C2C	TYPE A COLLAR - PIPE 15C	10						2 4.00	3 1.00				7 9.00	7 6.00	45
8	4	C3C	TYPE A COLLAR - PIPE 15C	20					0 9.00						0 9.00	0 9.00	4
12	5	C1D	TYPE A COLLAR - PIPE 15D	20					3 0.00						3 0.00	3 0.00	38
4	6	C2D	TYPE A COLLAR - PIPE 15D	10						2 3.00	2 10.00				7 4.00	7 1.00	43
8	4	C3D	TYPE A COLLAR - PIPE 15D	20					0 9.00						0 9.00	0 9.00	4
12	5	C1E	TYPE A COLLAR - PIPE 15E	20					3 0.00						3 0.00	3 0.00	38
4	6	C2E	TYPE A COLLAR - PIPE 15E	10						2 3.00	2 10.00				7 4.00	7 1.00	43
8	4	C3E	TYPE A COLLAR - PIPE 15E	20					0 9.00						0 9.00	0 9.00	4
10	6	L1	RETAINING COLLAR - PIPE 15B	19					3 9.00	2 6.00					6 3.00	6 1.00	91
11	5	S1	RETAINING COLLAR - PIPE 15B	20					10 0.00						10 0.00	10 0.00	115
10	5	S2	RETAINING COLLAR - PIPE 15B	20					4 10.00						4 10.00	4 10.00	50
10	6	L1	RETAINING COLLAR - PIPE 15C	19					3 9.00	2 6.00					6 3.00	6 1.00	91
11	5	S1	RETAINING COLLAR - PIPE 15C	20					10 0.00						10 0.00	10 0.00	115
10	5	S2	RETAINING COLLAR - PIPE 15C	20					4 10.00						4 10.00	4 10.00	50
10	6	L1	RETAINING COLLAR - PIPE 15D	19					3 9.00	2 6.00					6 3.00	6 1.00	91
11	5	S1	RETAINING COLLAR - PIPE 15D	20					10 0.00						10 0.00	10 0.00	115
10	5	S2	RETAINING COLLAR - PIPE 15D	20					4 10.00						4 10.00	4 10.00	50
10	6	L1	RETAINING COLLAR - PIPE 15E	19					3 9.00	2 6.00					6 3.00	6 1.00	91
11	5	S1	RETAINING COLLAR - PIPE 15E	20					10 0.00						10 0.00	10 0.00	115
10	5	S2	RETAINING COLLAR - PIPE 15E	20					4 10.00						4 10.00	4 10.00	50
																TOTAL	2370



SHAPE 10

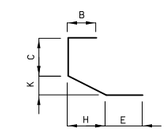


SHAPE 15



SHAPE 19

SHAPE 20

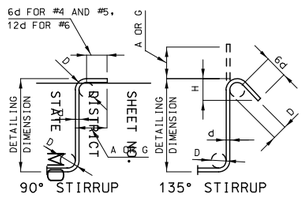


SHAPE 27

SPLICE LENGTH	
BAR SIZE	NON-EPOXY
#4	21 IN.
#5	26 IN.
#6	31 IN.
#7	39 IN.
#8	51 IN.
#9	65 IN.
#10	82 IN.
#11	101 IN.

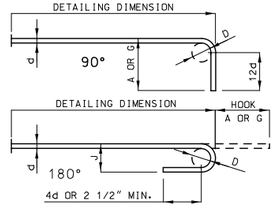
MAX BAR LENGTH	
BAR SIZE	NON-EPOXY
#4	60 FT.
#5	60 FT.
#6	60 FT.
#7	60 FT.
#8	60 FT.
#9	60 FT.
#10	60 FT.
#11	60 FT.

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY ESTIMATION PURPOSE ONLY AND SHALL BE VERIFIED OR MODIFIED BY THE CONTRACTOR.



STIRRUP HOOK DIMENSIONS				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	GRADE 60		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE. A BLANK IN THE SECOND LINE REPRESENTS THE SAME BAR DIMENSION AS THAT IN THE FIRST LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADD A SPLICE LENGTH TO A BAR LENGTH WHICH EXCEEDS ITS MAXIMUM ALLOWABLE LENGTH.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

DETAILED
CHECKED

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. OF

STATE OF MISSOURI
CHRIS E. BERRY
NUMBER
PE-2001018707
PROFESSIONAL ENGINEER
Chris E. Berry
08/11/2024 5:00:55 PM
CHRIS E. BERRY - CIVIL
MO-PE-2001018707

DATE PREPARED
8/9/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
SE	72

COUNTY
IRON

JOB NO.
J9P3548

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

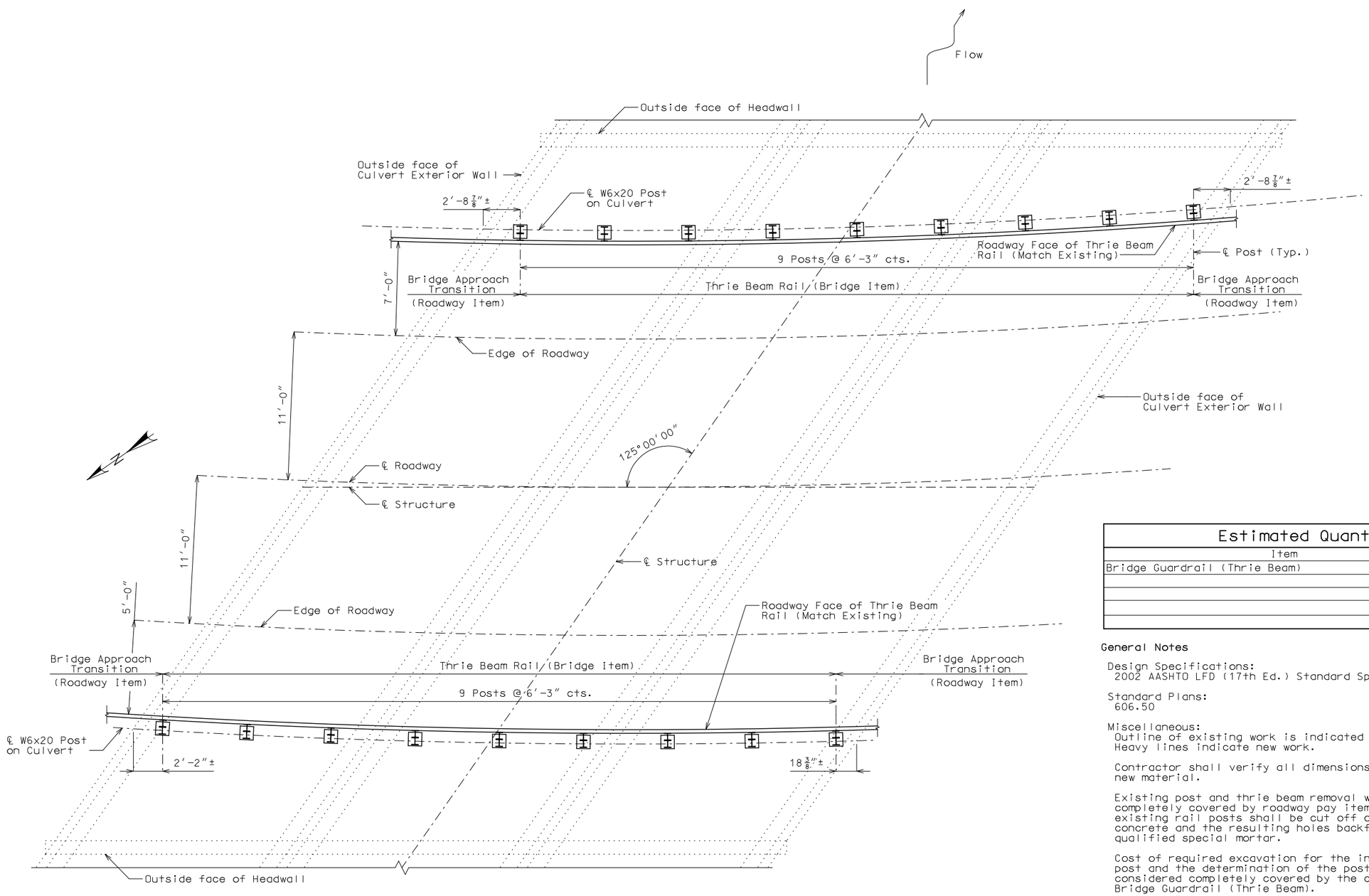
BILL OF
REINFORCING STEEL
SHEET 1 OF 1

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

SEC/SUR 14 TWP 33N RGE 3E

U.I.P. AND REHABILITATE EXISTING 3(14' X 8.5') CONCRETE BOX CULVERT (SKEW: 35° L.A.)



PART PLAN OF EXISTING BOX CULVERT
SHOWING POST LOCATIONS

Estimated Quantities

Item		Total
Bridge Guardrail (Thrie Beam)	linear foot	100

General Notes

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications

Standard Plans:
606.50

Miscellaneous:
Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Existing post and thrie beam removal will be considered completely covered by roadway pay item. Anchor bolts of existing rail posts shall be cut off one inch into the deck concrete and the resulting holes backfilled with an approved qualified special mortar.

Cost of required excavation for the installation of Thrie Beam post and the determination of the post height will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

REPAIRS TO BRIDGE: ROUTE 21
OVER CLAYBAUGH CREEK

ROUTE 21 FROM ROUTE CC TO ROUTE AA
ABOUT 1.5 MILES SOUTH OF ROUTE CC
BEG. STATION 319+48.18± (MATCH EXISTING)

Detailed Jan. 2022
Checked Nov. 2023

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

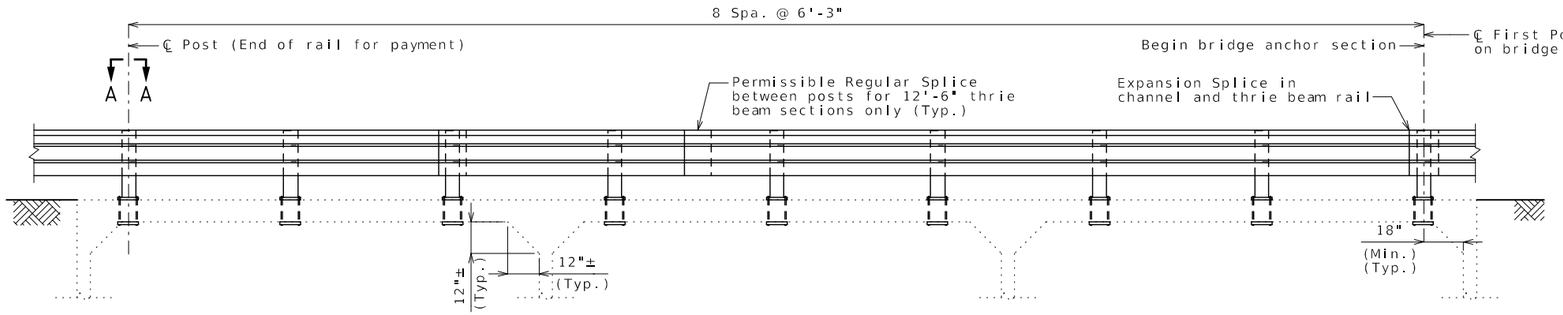
DATE PREPARED 7/31/2024

ROUTE	STATE
21	MO
DISTRICT	SHEET NO.
BR	1

COUNTY IRON
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A43791

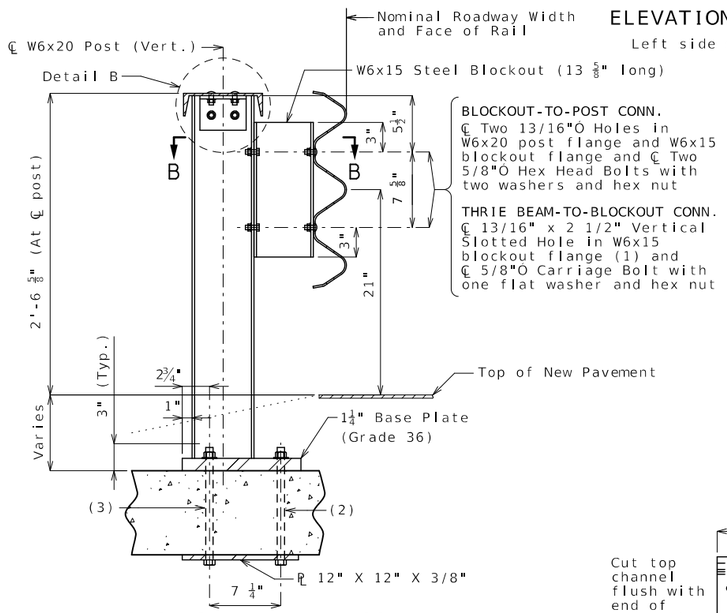
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



ELEVATION OF THRIE BEAM RAIL

Left side shown, right side similar.

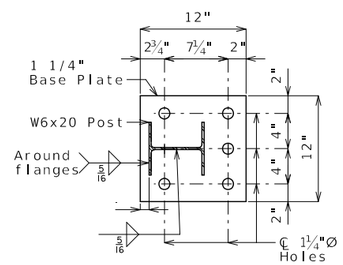


PART SECTION AT RAIL POST

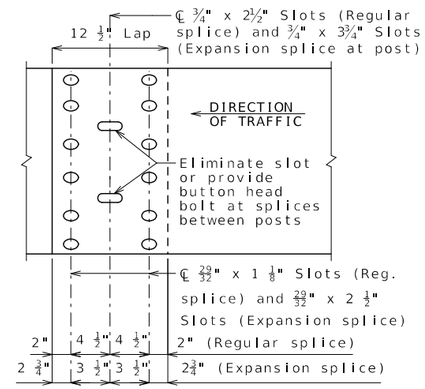
(1) Required on one side of web only, but may be provided on both sides of web at the contractor's option.

(2) Three 1"Ø ASTM F3125 Grade A325 Type 1 Bolts with hex nuts and hardened locking washers

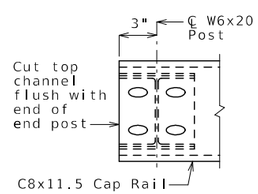
(3) Two 1"Ø ASTM F3125 Grade A325 Type 1 Bolts with hex nuts and hardened locking washers



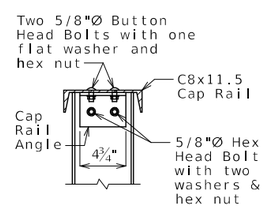
BASE PLATE



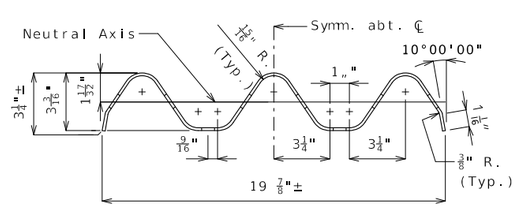
THRIE BEAM RAIL SPLICE



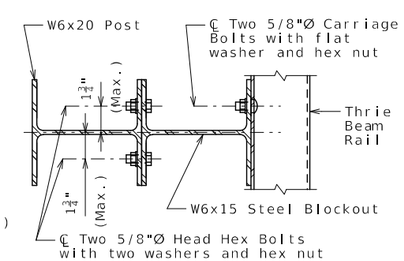
SECTION A-A



DETAIL B



SECTION THRU THRIE BEAM RAIL



SECTION B-B

Notes:

Guardrail delineators shall be attached to the top of the guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Panel lengths of channel members shall be attached continuously to a minimum of four posts and a maximum of six posts (except at end bents).

All bolts, nuts, washers, plates and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Holes for ASTM A307 bolts may be drilled into the culvert.

All steel connecting bolts and fasteners for posts and railing, and all anchor bolts, nuts, washers and plates shall be galvanized after fabrication. Protective coating and material requirement of steel railing shall be in accordance with Sec 1040.

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713 except that the rail posts shall be aligned by the use of 3 x 1 3/4-inch shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall placed between the blockout and the thrie beam rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

Rail posts shall be seated on 1/16-inch elastomeric pads having the same dimensions as the post base plate. Such pads may be any elastomeric material, plain or fibered, having a hardness (durometer) of 50 or above, as certified by the manufacturer. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

At the expansion slots in the thrie beam rails and channels, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

Minimum length of thrie beam sections is equal to one post space.

A 5/8-inch diameter button-head, oval shoulder bolt with a minimum 3/8-inch thick hex nut shall be used at all slots.

Thrie beam guardrail on the bridge shall be 12-guage steel.

Posts, cap rail angles, base plates, blockouts, channels and channel splice plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

Flat washers 3 x 1 3/4 x 3/16-inch minimum shall be used at all post bolts between the bolt head and beam. The washers shall be rectangular in shape with an 11/16 x 1-inch slot, or when necessary of such design as to fit the contour of the beam. Rectangular washers 3 x 1 3/4 x 5/8-inch shall be used between the blockout and the thrie beam rail.

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

Fabrication of structural steel shall be in accordance with Sec 1080.

Expansion splices in the thrie beam rail and the channel shall be provided on the Structure at the culvert ends.

Shim plates 6 x 6 x 1/16-inch may be used between the top of the post and the channel member as required for vertical alignment.

Shim plates shall be galvanized after fabrication.

See Missouri Standard Plan 606.70 for details not shown.

For details of expansion and splice plate connections, see Sheet No. 2.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

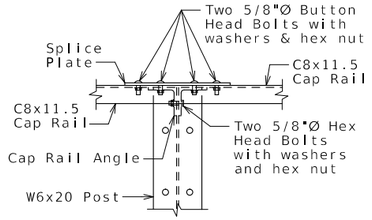
DATE PREPARED	
7/31/2024	
ROUTE 21	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY IRON	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A43791	

DATE	DESCRIPTION

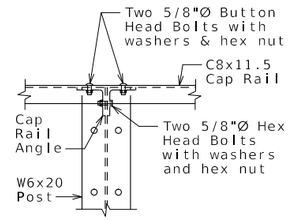
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed Jan. 2022
Checked Nov. 2023

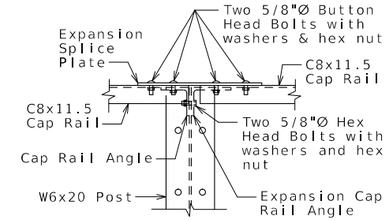
Note: This drawing is not to scale. Follow dimensions.



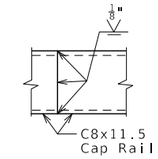
ELEVATION OF TYPICAL SPLICE



ELEVATION OF RAIL POST CONNECTION

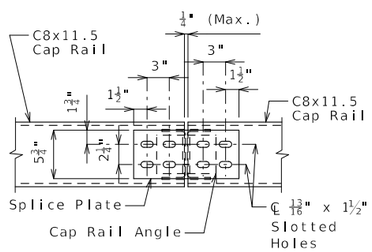


ELEVATION OF EXPANSION SPLICE



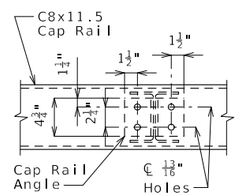
OPTIONAL SPLICE

One shop or field splice per panel may be provided at any location.

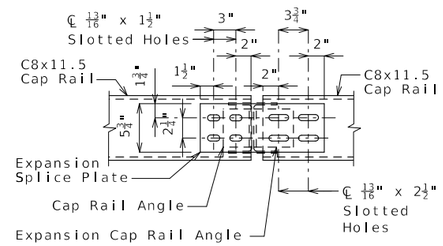


PLAN OF TYPICAL SPLICE

One shop or field splice per panel may be provided at any location.

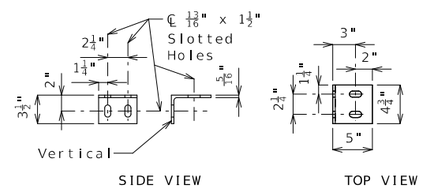


PLAN OF RAIL POST CONNECTION



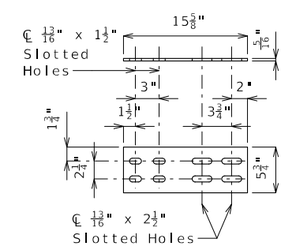
PLAN OF EXPANSION SPLICE

Expansion slots shall be on the same side of post as the expansion joint.



EXPANSION CAP RAIL ANGLE

L5x3½x5/16



EXPANSION SPLICE PLATE

Detailed Jan. 2022
Checked Nov. 2023

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	7/31/2024
ROUTE	21
STATE	MO
DISTRICT	BR
SHEET NO.	3
COUNTY	IRON
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A43791

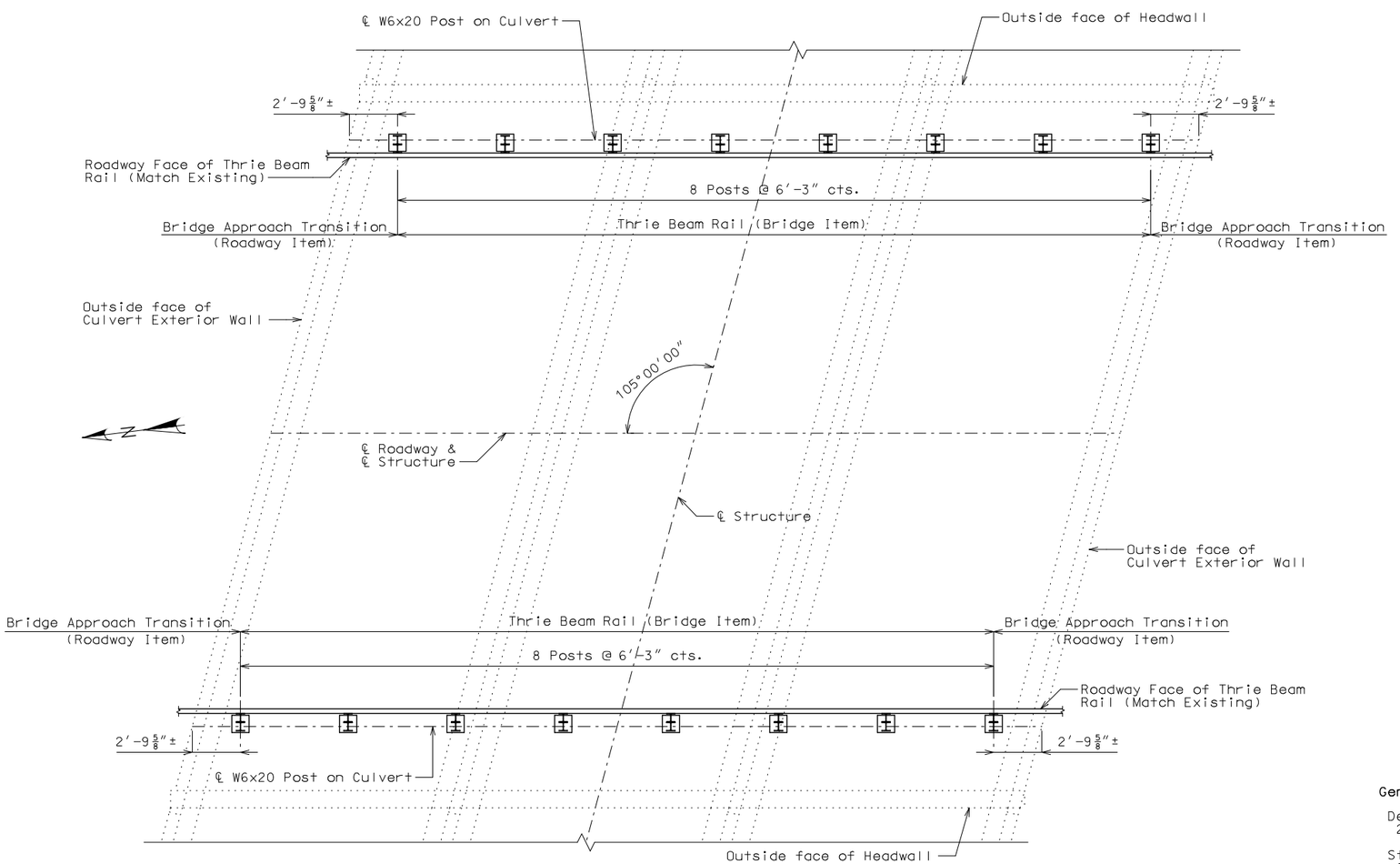
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SEC/SUR 23 TWP 33N RGE 3E

U.I.P. AND REHABILITATE EXISTING 3(15′ x 10′) CONCRETE BOX CULVERT (SKEW: 15° L.A.)



PART PLAN OF EXISTING BOX CULVERT
SHOWING POST LOCATIONS

Estimated Quantities

Item		Total
Bridge Guardrail (Thrie Beam)	linear foot	88

General Notes

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications

Standard Plans:
606.50

Miscellaneous:
Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Existing post and thrie beam removal will be considered completely covered by roadway pay item. Anchor bolts of existing rail posts shall be cut off one inch into the deck concrete and the resulting holes backfilled with an approved qualified special mortar.

Cost of required excavation for the installation of Thrie Beam post and the determination of the post height will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

REPAIRS TO BRIDGE: ROUTE 21
OVER PALMAR CREEK

ROUTE 21 FROM ROUTE CC TO ROUTE AA
ABOUT 1.0 MILE SOUTH OF ROUTE CC
BEG. STATION 352+07.37± (MATCH EXISTING)

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

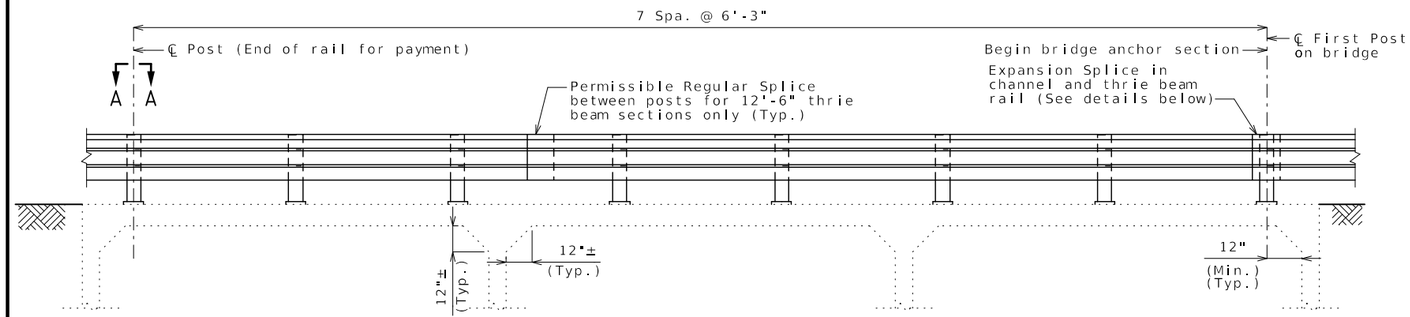
DATE PREPARED 7/31/2024
ROUTE 21 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY IRONS
JOB NO. J9P3548
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A43801

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

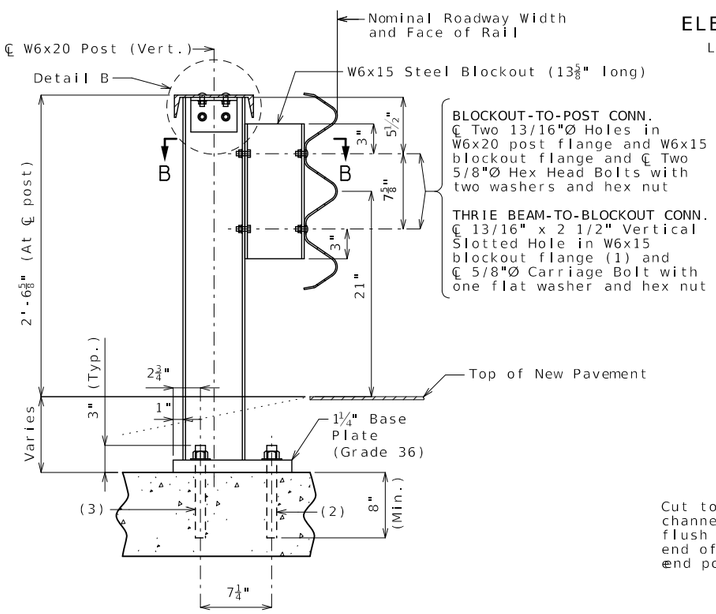
Detailed Jan. 2022
Checked Nov. 2023

Note: This drawing is not to scale. Follow dimensions.



ELEVATION OF THRIE BEAM RAIL

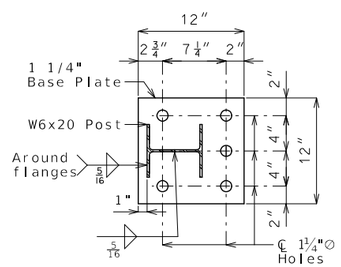
Left side shown, right side similar.



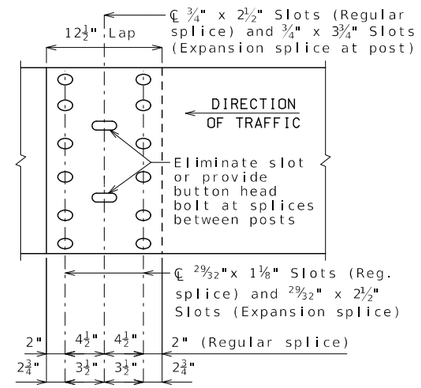
(1) Required on one side of web only, but may be provided on both sides of web at the contractor's option.

(2) ℄ Three Resin Anchor Systems each to include:
-1 1/8"Ø (Min.) Drilled Hole in slab or as recommended by manufacturer
-1 1/4"Ø Hole in base plate
-1"Ø ASTM A449 Type 1 Threaded rod snug tight and embedded 8 inches in slab
-Hex Nut and 2 1/2"Ø Hardened Locking Washer

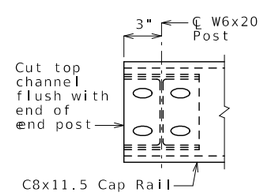
(3) ℄ Two Resin Anchor Systems each to include:
-1 1/8"Ø (Min.) Drilled Hole in slab or as recommended by manufacturer
-1 1/4"Ø Hole in base plate
-1"Ø ASTM A449 Type 1 Threaded rod snug tight and embedded 8 inches in slab
-Hex Nut and 2 1/2"Ø Hardened Locking Washer



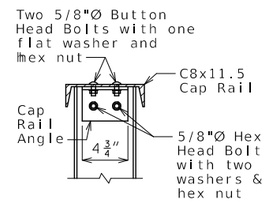
BASE PLATE



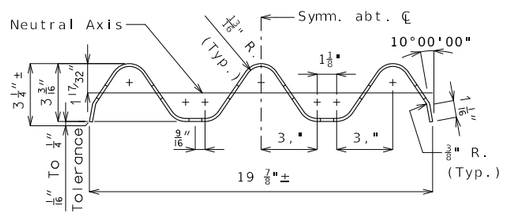
THRIE BEAM RAIL SPLICE



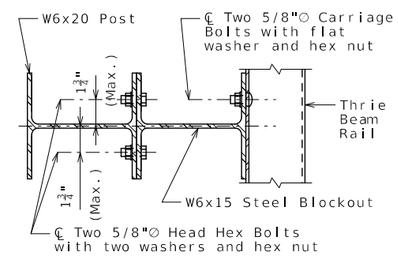
SECTION A-A



DETAIL B



SECTION THRU THRIE BEAM RAIL



SECTION B-B

Notes:

Guardrail delineators shall be attached to the top of the guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Panel lengths of channel members shall be attached continuously to a minimum of four posts and a maximum of six posts (except at end bents).

All bolts, nuts, washers, plates and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Holes for ASTM A307 bolts may be drilled into the culvert.

All steel connecting bolts and fasteners for posts and railing, and all anchor bolts, nuts, washers and plates shall be galvanized after fabrication. Protective coating and material requirement of steel railing shall be in accordance with Sec 1040.

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713 except that the rail posts shall be aligned by the use of 3 x 1 3/4-inch shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall placed between the blockout and the thrie beam rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

Rail posts shall be seated on 1/16-inch elastomeric pads having the same dimensions as the post base plate. Such pads may be any elastomeric material, plain or fibered, having a hardness (durometer) of 50 or above, as certified by the manufacturer. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

At the expansion slots in the thrie beam rails and channels, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

Minimum length of thrie beam sections is equal to one post space.

A 5/8-inch diameter button-head, oval shoulder bolt with a minimum 3/8-inch thick hex nut shall be used at all slots.

Thrie beam guardrail on the bridge shall be 12-guage steel.

Posts, cap rail angles, base plates, blockouts, channels and channel splice plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

Flat washers 3 x 1 3/4 x 3/16-inch minimum shall be used at all post bolts between the bolt head and beam. The washers shall be rectangular in shape with an 11/16 x 1-inch slot, or when necessary of such design as to fit the contour of the beam. Rectangular washers 3 x 1 3/4 x 5/8-inch shall be used between the blockout and the thrie beam rail.

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

Fabrication of structural steel shall be in accordance with Sec 1080.

Expansion splices in the thrie beam rail and the channel shall be provided on the structure at the culvert ends.

Shim plates 6 x 6 x 1/16-inch may be used between the top of the post and the channel member as required for vertical alignment.

Shim plates shall be galvanized after fabrication.

See Missouri Standard Plan 606.70 for details not shown.

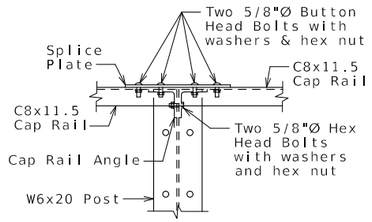
For details of expansion and splice plate connections, see Sheet No. 2.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

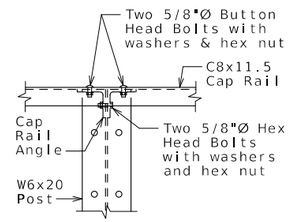
DATE PREPARED	
7/31/2024	
ROUTE 21	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY IRONS	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A43801	

DATE	DESCRIPTION

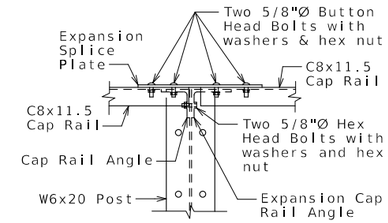
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



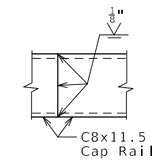
ELEVATION OF TYPICAL SPLICE



ELEVATION OF RAIL POST CONNECTION

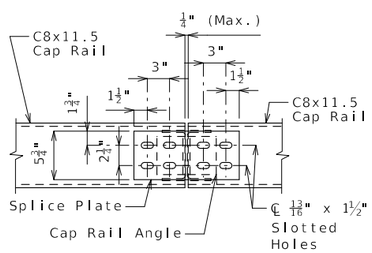


ELEVATION OF EXPANSION SPLICE



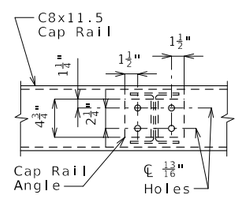
OPTIONAL SPLICE

One shop or field splice per panel may be provided at any location.

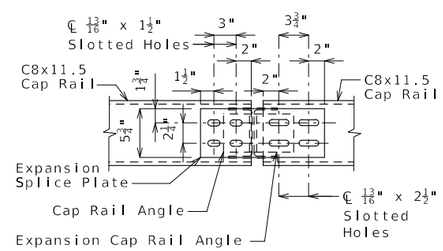


PLAN OF TYPICAL SPLICE

One shop or field splice per panel may be provided at any location.

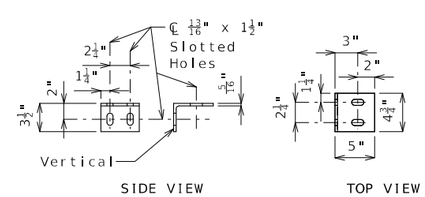


PLAN OF RAIL POST CONNECTION



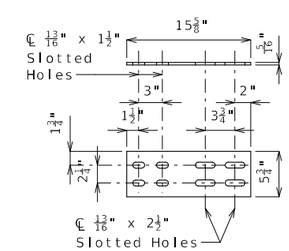
PLAN OF EXPANSION SPLICE

Expansion slots shall be on the same side of post as the expansion joint.



EXPANSION CAP RAIL ANGLE

L5x3 1/2x5/16



EXPANSION SPLICE PLATE

Detailed Jan. 2022
Checked Nov. 2023

Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

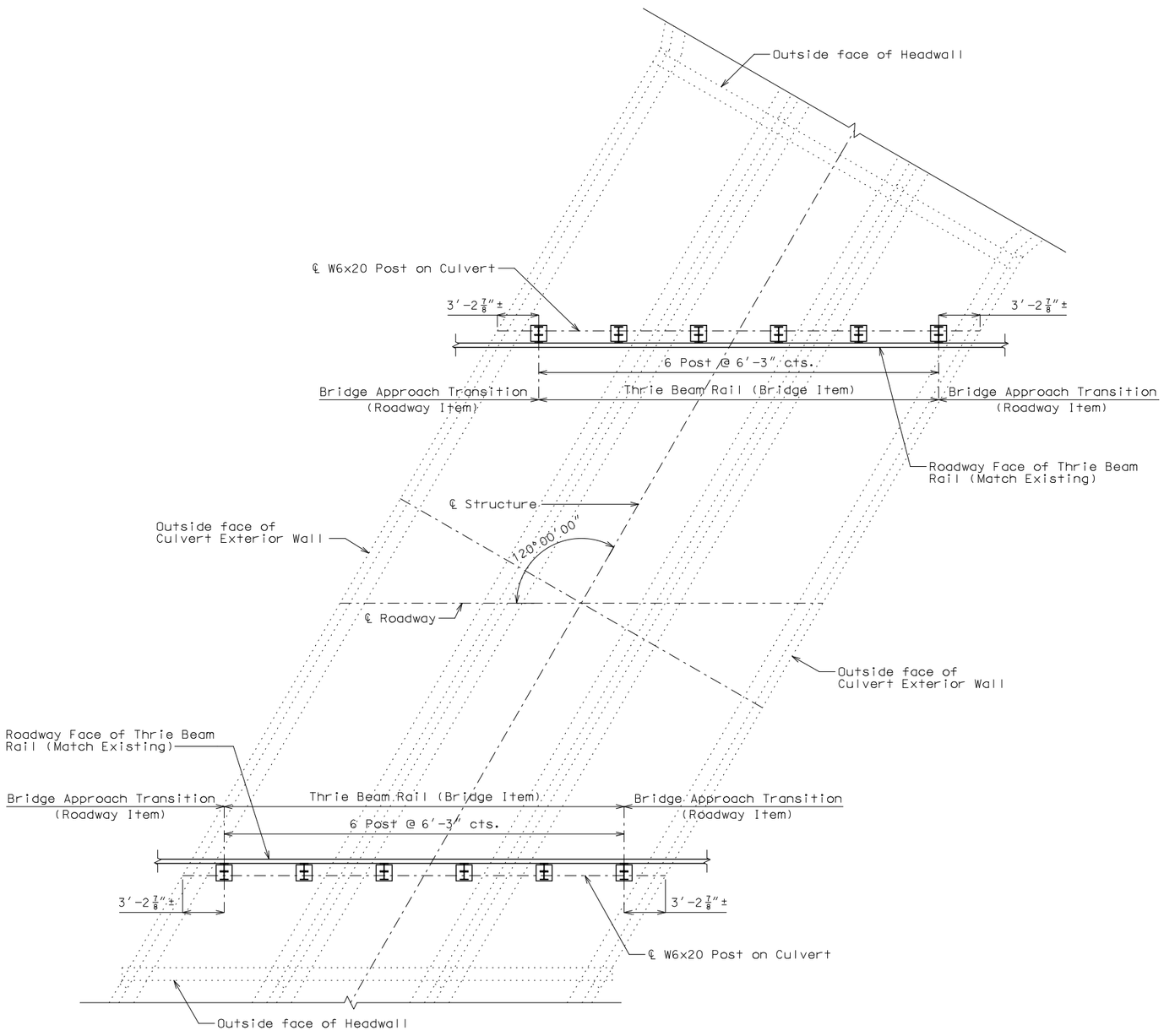
DATE PREPARED	
7/31/2024	
ROUTE 21	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY IRONS	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A43801	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SEC/SUR 14 TWP 33W RGE 3E

U.I.P. AND REHABILITATE EXISTING 3(10′ x 6′) CONCRETE BOX CULVERT (SKEW: 30° L.A.)



PART PLAN OF EXISTING BOX CULVERT
SHOWING POST LOCATIONS

Estimated Quantities		
Item		Total
Bridge Guardrail (Thrie Beam)	linear foot	63

General Notes

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications

Standard Plans:
606.50

Miscellaneous:
Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering new material.

Existing post and thrie beam removal will be considered completely covered by roadway pay item. Anchor bolts of existing rail posts shall be cut off one inch into the deck concrete and the resulting holes backfilled with an approved qualified special mortar.

Cost of required excavation for the installation of Thrie Beam post and the determination of the post height will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

REPAIRS TO BRIDGE: ROUTE 21 OVER MINOR CREEK

ROUTE 21 FROM ROUTE CC TO ROUTE AA
ABOUT 2.1 MILES SOUTH OF ROUTE CC
BEG. STATION 292+91.15± (MATCH EXISTING)

Detailed Jan. 2022
Checked Nov. 2023

Note: This drawing is not to scale. Follow dimensions.

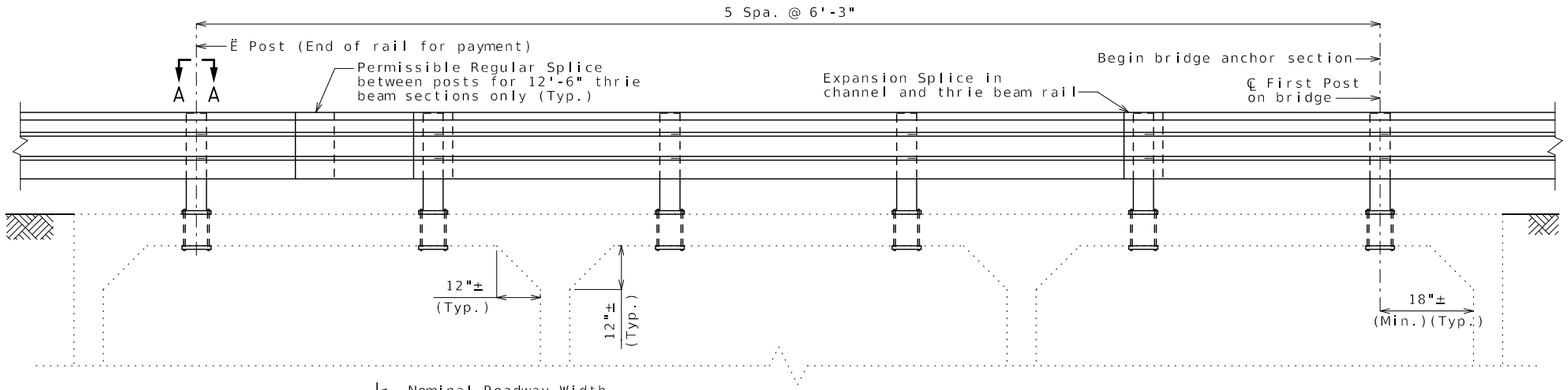
STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	7/31/2024
ROUTE	21
STATE	MO
DISTRICT	BR
SHEET NO.	1
COUNTY	IRONS
JOB NO.	J9P3548
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A44501

DESCRIPTION

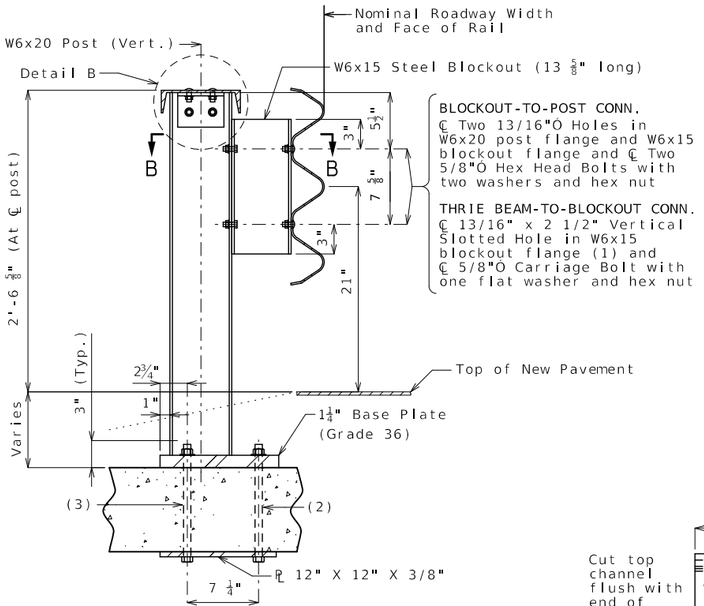
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



ELEVATION OF THRIE BEAM RAIL

Left side shown, right side similar.

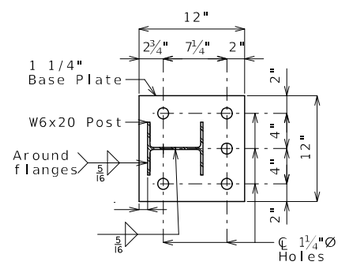


PART SECTION AT RAIL POST

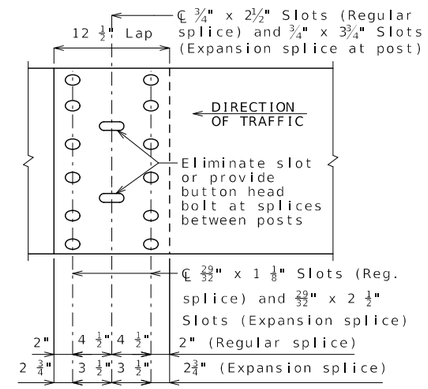
(1) Required on one side of web only, but may be provided on both sides of web at the contractor's option.

(2) Three 1"Ø ASTM F3125 Grade A325 Type 1 Bolts with hex nuts and hardened locking washers

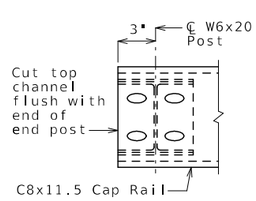
(3) Two 1"Ø ASTM F3125 Grade A325 Type 1 Bolts with hex nuts and hardened locking washers



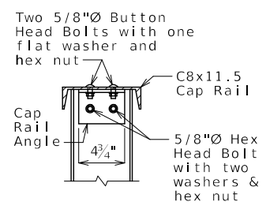
BASE PLATE



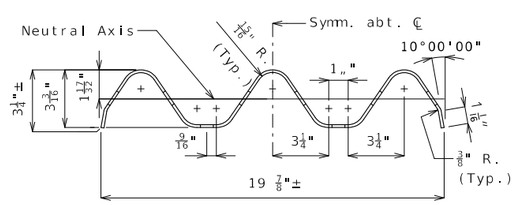
THRIE BEAM RAIL SPLICE



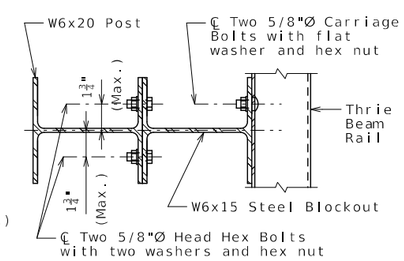
SECTION A-A



DETAIL B



SECTION THRU THRIE BEAM RAIL



SECTION B-B

Notes:

Guardrail delineators shall be attached to the top of the guardrail and shall similarly use the delineator details of Missouri Standard Plan 617.10, except that the delineator body shall be attached to the top of the cap rail using galvanized anchorage as shown on Missouri Standard Plan 606.00. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Guardrail delineators will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Panel lengths of channel members shall be attached continuously to a minimum of four posts and a maximum of six posts (except at end bents).

All bolts, nuts, washers, plates and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

Holes for ASTM A307 bolts may be drilled into the culvert

All steel connecting bolts and fasteners for posts and railing, and all anchor bolts, nuts, washers and plates shall be galvanized after fabrication. Protective coating and material requirement of steel railing shall be in accordance with Sec 1040.

Rail posts shall be set perpendicular to roadway profile grade, vertically in cross section and aligned in accordance with Sec 713 except that the rail posts shall be aligned by the use of 3 x 1 3/4-inch shims such that the post deviates not more than 1/2 inch from true horizontal alignment after final adjustment. The shims shall placed between the blockout and the thrie beam rail. The thickness of the shims shall be determined by the contractor and verified by the engineer before ordering material for this work.

Rail posts shall be seated on 1/16-inch elastomeric pads having the same dimensions as the post base plate. Such pads may be any elastomeric material, plain or fibered, having a hardness (durometer) of 50 or above, as certified by the manufacturer. Additional pads or half pads may be used in shimming for alignment. Post heights shown will increase by the thickness of the pad.

At the expansion slots in the thrie beam rails and channels, the bolts shall be tightened and backed off one-half turn and the threads shall be burred.

Minimum length of thrie beam sections is equal to one post space.

A 5/8-inch diameter button-head, oval shoulder bolt with a minimum 3/8-inch thick hex nut shall be used at all slots.

Thrie beam guardrail on the bridge shall be 12-guage steel.

Posts, cap rail angles, base plates, blockouts, channels and channel splice plates shall be fabricated from ASTM A709 Grade 36 steel and galvanized.

Flat washers 3 x 1 3/4 x 3/16-inch minimum shall be used at all post bolts between the bolt head and beam. The washers shall be rectangular in shape with an 11/16 x 1-inch slot, or when necessary of such design as to fit the contour of the beam. Rectangular washers 3 x 1 3/4 x 5/8-inch shall be used between the blockout and the thrie beam rail.

Special drilling of the thrie beam may be required at the splices. All drilling details shall be shown on the shop drawings.

Fabrication of structural steel shall be in accordance with Sec 1080.

Expansion splices in the thrie beam rail and the channel shall be provided on the structure at the culvert ends.

Shim plates 6 x 6 x 1/16-inch may be used between the top of the post and the channel member as required for vertical alignment.

Shim plates shall be galvanized after fabrication.

See Missouri Standard Plan 606.70 for details not shown.

For details of expansion and splice plate connections, see Sheet No. 2.

STATE OF MISSOURI
TED S. KOESTER
NUMBER PE-2013000591
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
7/31/2024	
ROUTE 21	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY IRONS	
JOB NO. J9P3548	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A44501	

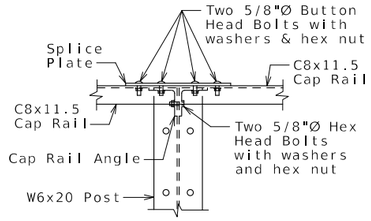
DESCRIPTION

DATE

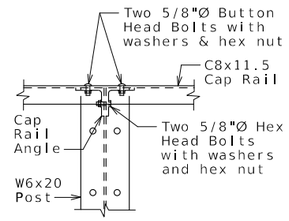
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Detailed Jan. 2022
Checked Nov. 2023

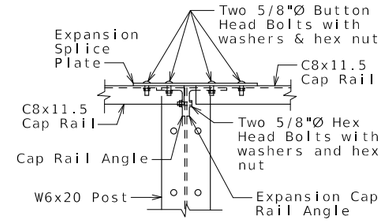
Note: This drawing is not to scale. Follow dimensions.



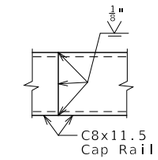
ELEVATION OF TYPICAL SPLICE



ELEVATION OF RAIL POST CONNECTION

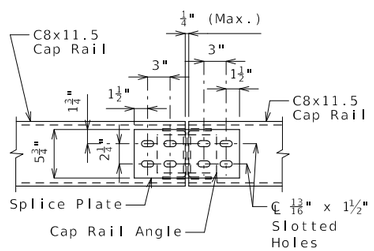


ELEVATION OF EXPANSION SPLICE



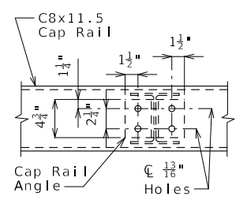
OPTIONAL SPLICE

One shop or field splice per panel may be provided at any location.

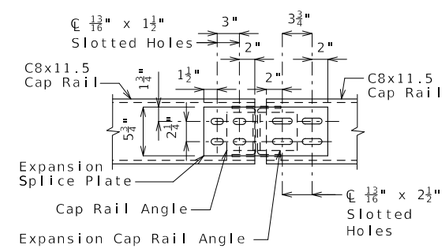


PLAN OF TYPICAL SPLICE

One shop or field splice per panel may be provided at any location.

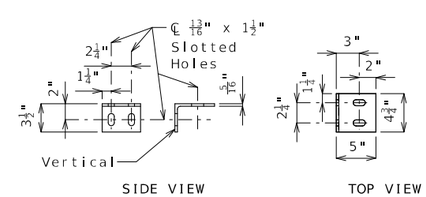


PLAN OF RAIL POST CONNECTION



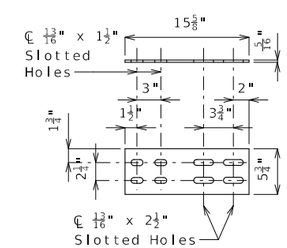
PLAN OF EXPANSION SPLICE

Expansion slots shall be on the same side of post as the expansion joint.



EXPANSION CAP RAIL ANGLE

L5x3 1/2x5/16



EXPANSION SPLICE PLATE

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STATE	MO
DISTRICT	BR
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