MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
FINAL PLANS FOR PROPOSED
STATE HIGHWAY
ROUTE MM
FRANKLIN COUNTY

DESIGN DESIGNATION

A.A.D.T. - 2021 = 2449
A.A.D.T. - 2041 = 2989
D.H.V. = 13%
T = 7%
V = 50 MPH
D = 51.5% NB

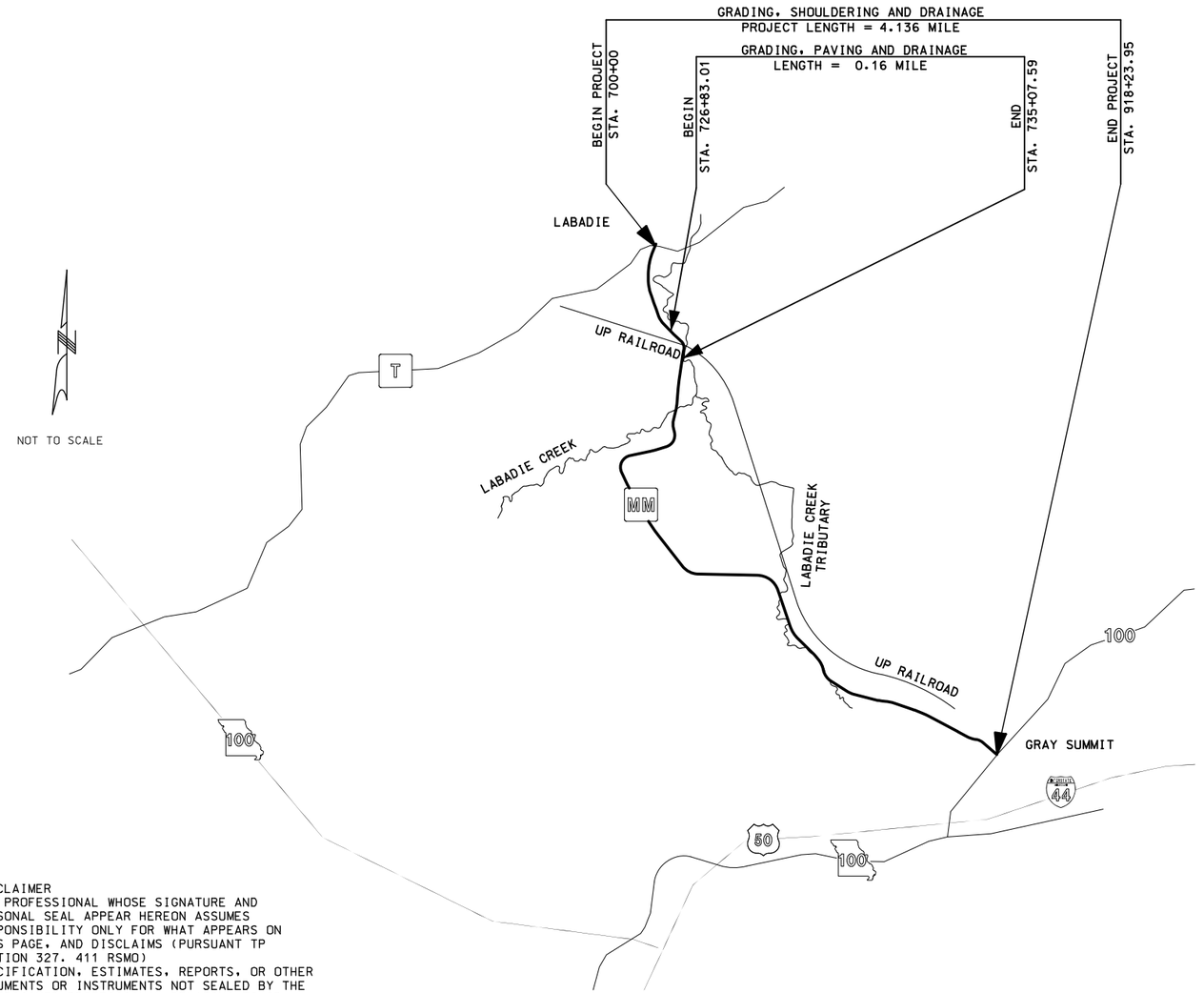
FUNCTIONAL CLASSIFICATION - MAJOR COLLECTOR

NORMAL RIGHT OF WAY

CONVENTIONAL SYMBOLS
(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	FO
OVERHEAD CABLE TV	-OTV-	OTV
UNDERGROUND CABLE TV	-UTV-	UTV
OVERHEAD TELEPHONE	-OT-	OT
UNDERGROUND TELEPHONE	-UT-	UT
OVERHEAD POWER	-OE-	OE
UNDERGROUND POWER	-UE-	UE
SANITARY SEWER	-S-	S
STORM SEWER	-SS-	SS
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	
USE IN PLACE	(UIP)	
REMOVE	(R)	
DO NOT DISTURB	(DND)	
ADJUST TO GRADE	(ATG)	
RELOCATE	(RELOC)	

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES



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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.

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (TS) (5 SHEETS)	2
QUANTITIES (QU) (6 SHEETS)	3
PLAN-PROFILE (PP)	4-19
GEOMETRY SHEETS (GM)	20-21
SPECIAL SHEET (SS)	22-23
TRAFFIC CONTROL SHEETS (TC)	24-28
EROSION CONTROL SHEETS (EC)	29-44
SIGNING & PAVEMENT MARKINGS (SN)	45-72
CULVERT SECTIONS (CS)	73-82
CULVERT DETAILS (CDTL)	83-86
CREEK MITIGATION DETAILS (CM)	87-88
RIGHT OF WAY (RW)	89-90
BRIDGE & STRUCTURE DRAWINGS (B)	
A9083	1-17
X0926	1-7
X0913	1-10
CROSS SECTIONS (XS)	1-13

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 700 + 00.00	
END OF PROJECT	STA. 918 + 23.95	
APPARENT LENGTH	21823.95	FEET
EQUATIONS AND EXCEPTIONS:		
EXCEPTION	-	
	-	
EQUATION	Sta 735+07.59 BK = Sta 734+95.95 AH	
TOTAL CORRECTIONS	11.64	FEET
NET LENGTH OF PROJECT	21835.59	FEET
STATE LENGTH	4.136	MILES
ESTIMATED DISTURBED AREA	12.47	ACRES

ERICA J. RIDGWAY
NUMBER PE-2018003138
STATE OF MISSOURI
PROFESSIONAL ENGINEER

DATE PREPARED: 2/5/2024
ROUTE: MM | STATE: MO
DISTRICT: SL | SHEET NO.: 1
COUNTY: FRANKLIN
JOB NO.: J6S3368
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)

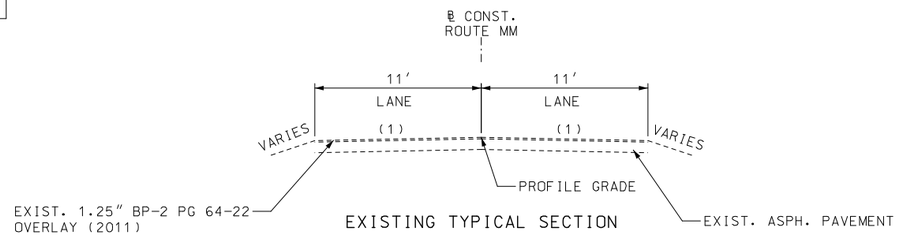
17 Cessens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300
TREK DESIGN GROUP, LLC

ROUTE MM
TITLE SHEET

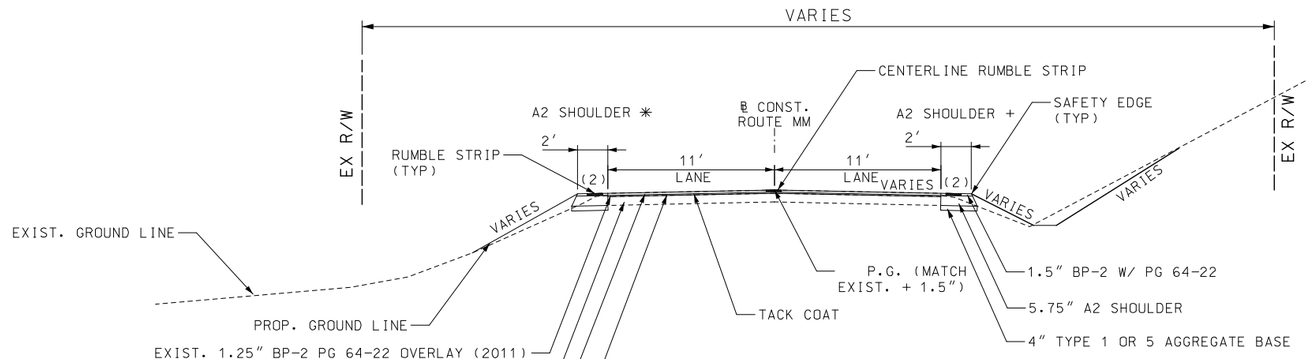
EQUIVALENT PAVEMENT DESIGNS				
LOCATION	BASE TYPE	HMA DESIGN	PCCP DESIGN	SHOULDERS
FULL DEPTH PAVEMENT	4" TYPE 1 OR 5 AGGREGATE BASE	9" HMA 1.5" BP-2 W/PG 64-22 OVER 7.5" BB W/PG 64-22	8" PCCP 10 FT. JOINTS AND 1.25" DOWELS	A2
PAVEMENT WIDENING	4" TYPE 1 OR 5 AGGREGATE BASE	9" HMA 1.5" BP-2 W/PG 64-22 OVER 7.5" BB W/PG 64-22	N/A	N/A

PAVEMENT TREATMENT
SURFACE TREATMENT 1.5" COLDMILL AND REPLACE WITH 1.5" BP-2 W/ PG 64-22 (MAINLINE ONLY) OVERLAY 1.5" BP-2 W/ PG 64-22 (MAINLINE AND SHOULDERS) SURFACE PREP: CLASS C FULL DEPTH AND PARTIAL DEPTH ASPHALT PAVEMENT REPAIRS SHOULD BE INCLUDED AS EVALUATED BY THE PROJECT OFFICE

APPLICATION RATES		
BP-2 W/PG 64-22	1.987	TON/CY
BB W/PG 64-22	2.005	TON/CY
TACK COAT		
NEW SURFACES	0.050	GAL/SY
COLDMILLED EXISTING SURFACES	0.10	GAL/SY



EXISTING TYPICAL SECTION
ROUTE MM
STA. 700+00 TO STA. 918+24



✳ - SHOULDER, RUMBLE STRIP & SHOULDER GRADING OMITTED

STA. 816+08 TO STA. 818+92

+ - PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SHOULDER

STA. 706+49 TO STA. 721+00
STA. 741+90 TO STA. 746+00

(2) TYPICAL SECTION
ROUTE MM
STA. 700+38 TO STA. 721+00
STA. 741+90 TO STA. 746+00
STA. 787+00 TO STA. 795+95
STA. 815+00 TO STA. 819+00

NOTE:

(1) CROSS SLOPE VARIES

(2) MATCH EXISTING PAVEMENT CROSS SLOPE ON SHOULDERS

TOP LIFT OF SHOULDER TO BE PAVED MONOLITHIC WITH MAINLINE PAVEMENT

TYPICAL SECTIONS
SHEET 1 OF 5

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	2

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

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

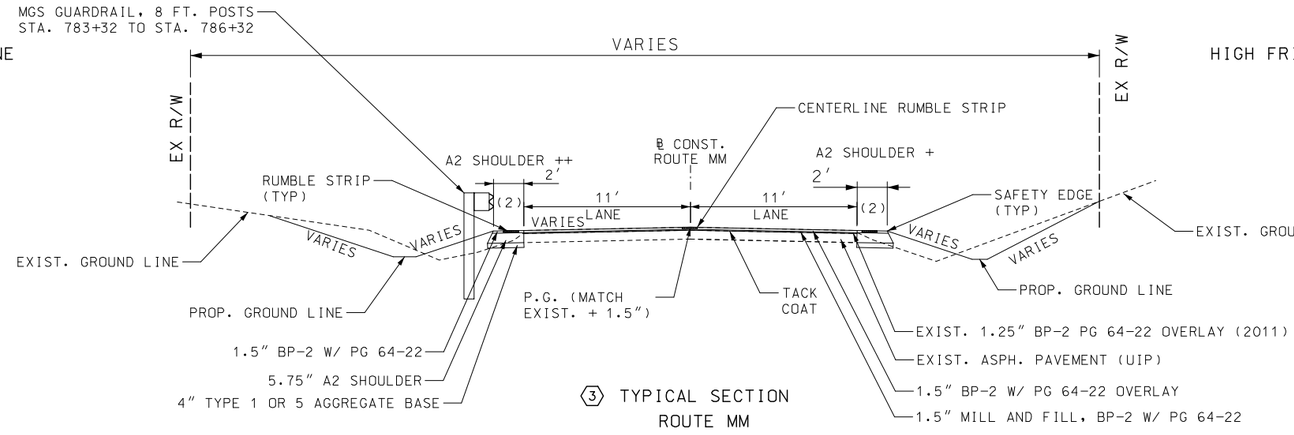
TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

TYPICAL SECTIONS
ROUTE MM
SHEET 1 OF 5

HIGH FRICTION SURFACE TREATMENT, LEFT LANE
STA. 776+00 TO STA. 779+01

CURVE WIDENING
STA. 776+00 TO STA. 778+56

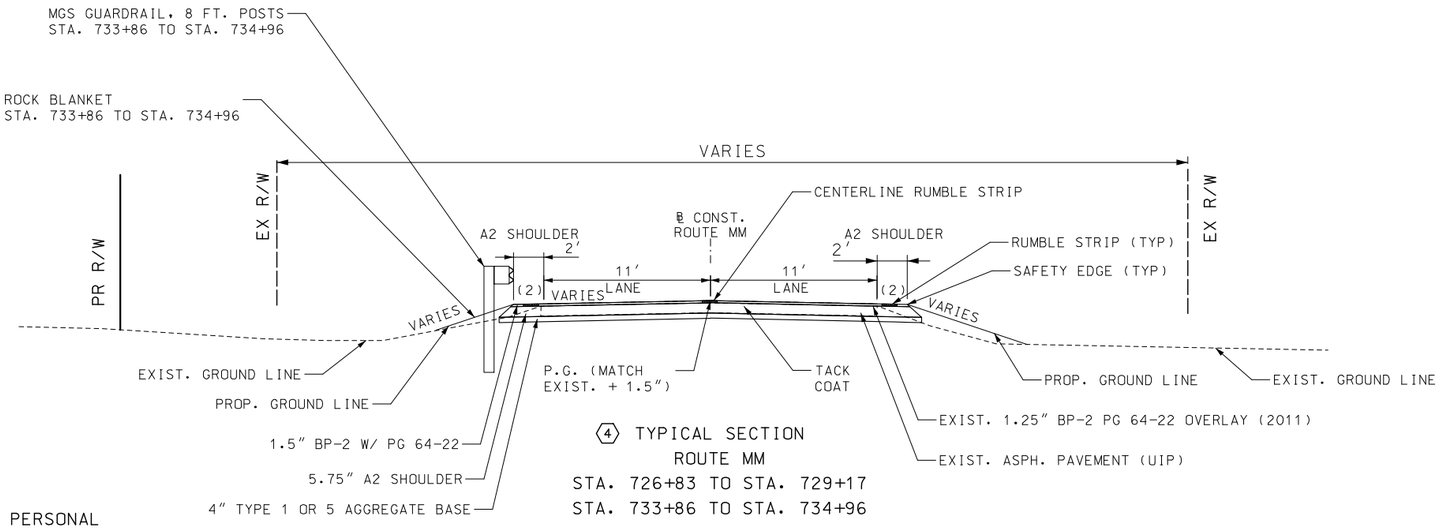
++ – ROCK FILL REQUIRED TO ESTABLISH SHOULDER
STA. 783+64 TO STA. 785+95



③ TYPICAL SECTION
ROUTE MM
STA. 721+00 TO STA. 726+83
STA. 766+42 TO STA. 768+50
STA. 776+00 TO STA. 787+00
STA. 819+00 TO STA. 832+00
STA. 842+00 TO STA. 855+76
STA. 900+00 TO STA. 911+00

HIGH FRICTION SURFACE TREATMENT, RIGHT LANE
STA. 776+00 TO STA. 777+28

+ – PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SHOULDER
STA. 721+00 TO STA. 723+40
STA. 783+64 TO STA. 785+95



④ TYPICAL SECTION
ROUTE MM
STA. 726+83 TO STA. 729+17
STA. 733+86 TO STA. 734+96

NOTE:

(1) CROSS SLOPE VARIES

(2) MATCH EXISTING PAVEMENT CROSS SLOPE ON SHOULDERS

TOP LIFT OF SHOULDER TO BE PAVED MONOLITHIC WITH MAINLINE PAVEMENT

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TYPICAL SECTIONS
SHEET 2 OF 5

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/19/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 2
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID. .
PROJECT NO. .
BRIDGE NO. .

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DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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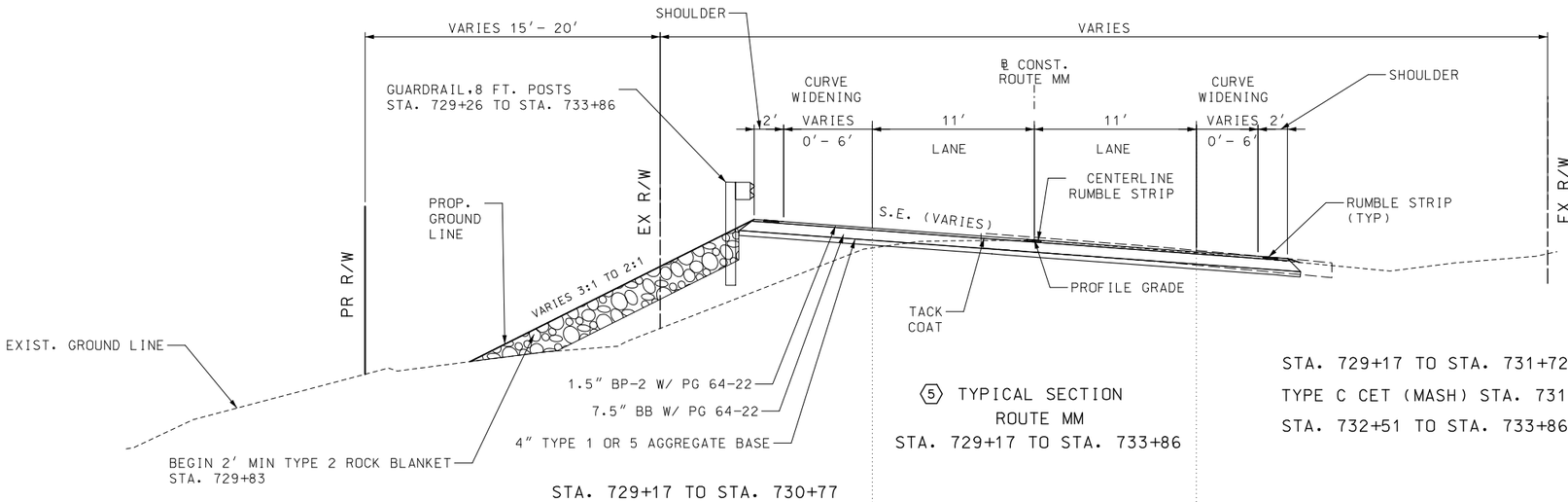
TYPICAL SECTIONS
ROUTE MM
SHEET 2 OF 5



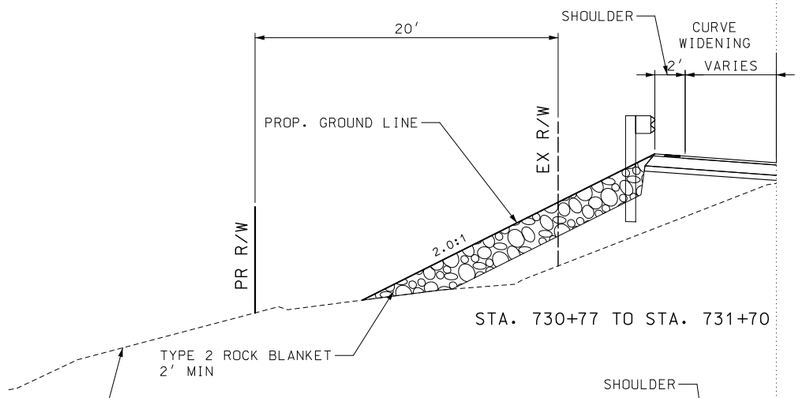
STA. 729+17 TO STA. 730+77

⑤ TYPICAL SECTION
ROUTE MM
STA. 729+17 TO STA. 733+86

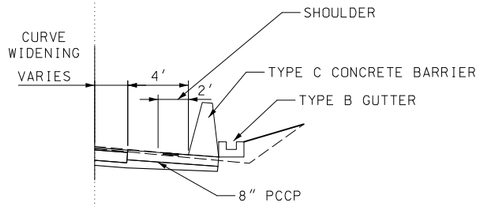
STA. 729+17 TO STA. 731+72

TYPE C CET (MASH) STA. 731+52 TO STA. 731+72

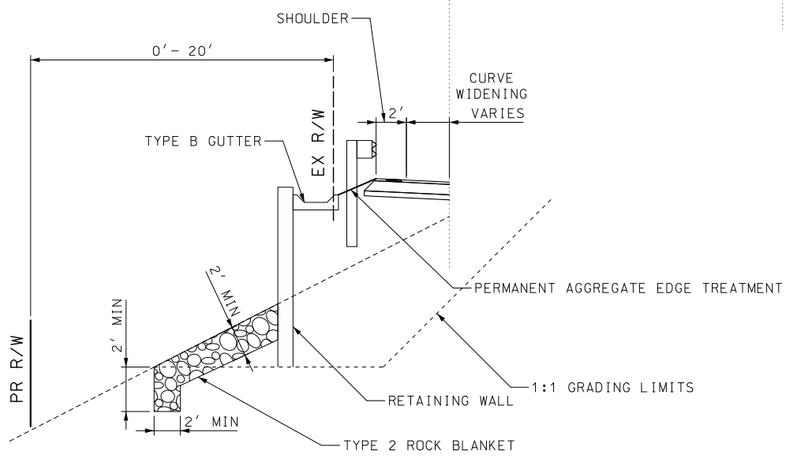
STA. 732+51 TO STA. 733+86



STA. 730+77 TO STA. 731+70



STA. 731+72 TO STA. 732+51



STA. 731+70 TO STA. 733+86

NOTE:

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TYPICAL SECTIONS
SHEET 3 OF 5

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	2

COUNTY FRANKLIN

JOB NO. J6S3368

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PROJECT NO. .

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DATE	DESCRIPTION
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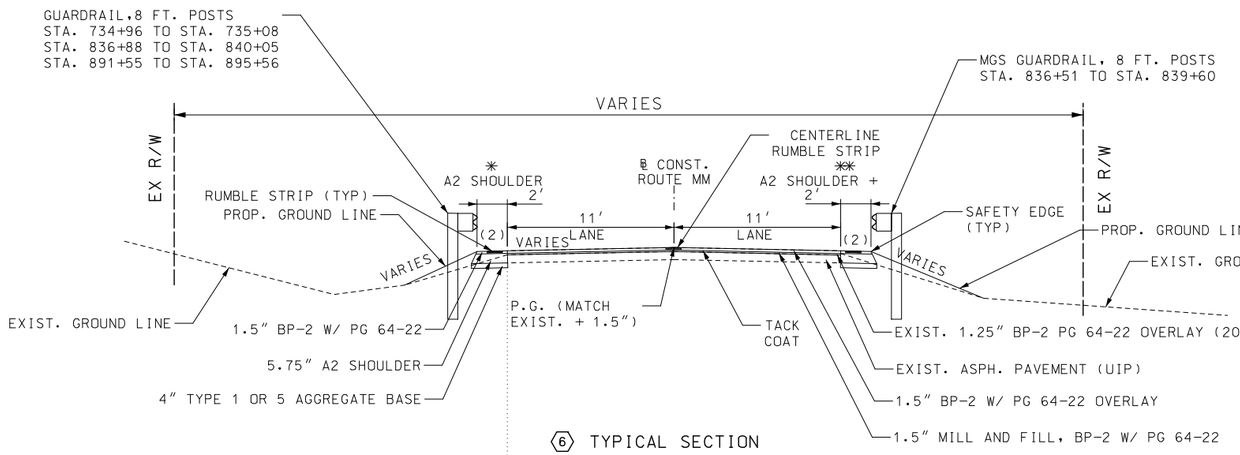
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com

Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

TYPICAL SECTIONS
ROUTE MM
SHEET 3 OF 5

✳ – 3 FT. SHOULDER WIDTH
STA. 838+04 TO STA. 838+46

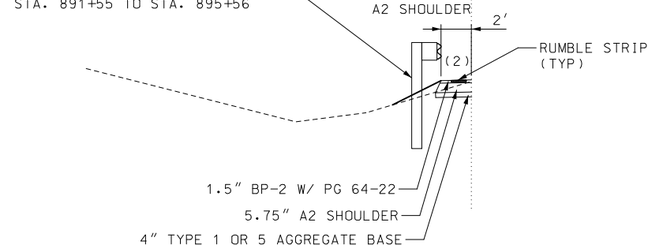


⑥ TYPICAL SECTION
ROUTE MM
STA. 734+96 TO STA. 741+90
STA. 746+00 TO STA. 751+00
STA. 832+00 TO STA. 842+00
STA. 880+00 TO STA. 900+00

+ – PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SHOULDER

STA. 738+80 TO STA. 741+90
STA. 746+00 TO STA. 748+00
STA. 883+25 TO STA. 888+00

✳✳ – 3 FT. SHOULDER WIDTH
STA. 838+17 TO STA. 838+47



STA. 734+96 TO STA. 736+68
STA. 880+00 TO STA. 900+00

NOTE:

(1) CROSS SLOPE VARIES

(2) MATCH EXISTING PAVEMENT CROSS SLOPE ON SHOULDERS

TOP LIFT OF SHOULDER TO BE PAVED MONOLITHIC WITH MAINLINE PAVEMENT

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TYPICAL SECTIONS
SHEET 4 OF 5

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	2

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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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)

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Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

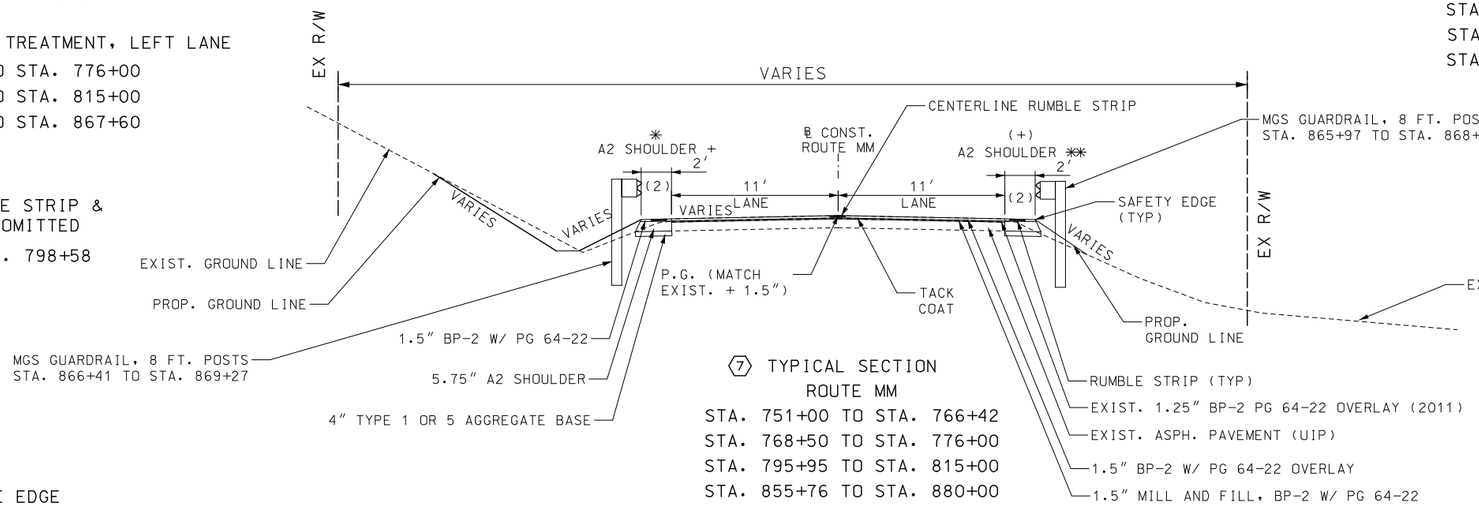
TYPICAL SECTIONS
ROUTE MM
SHEET 4 OF 5

CURVE WIDENING
STA 770+10 TO STA 776+00

HIGH FRICTION SURFACE TREATMENT, LEFT LANE
STA. 771+37 TO STA. 776+00
STA. 808+31 TO STA. 815+00
STA. 860+22 TO STA. 867+60

✳ – SHOULDER, RUMBLE STRIP & SHOULDER GRADING OMITTED
STA. 798+40 TO STA. 798+58

HIGH FRICTION SURFACE TREATMENT, RIGHT LANE
STA. 769+64 TO STA. 776+00
STA. 806+93 TO STA. 813+61
STA. 859+71 TO STA. 867+09

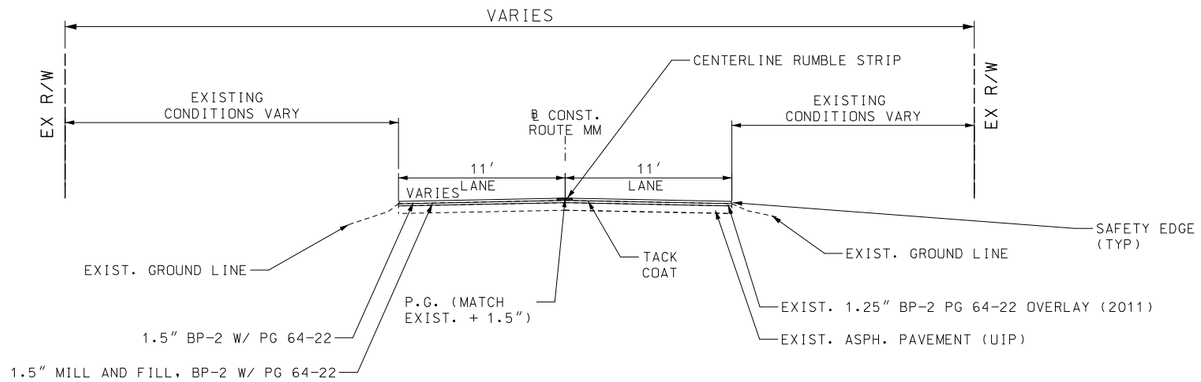


⑦ TYPICAL SECTION
ROUTE MM
STA. 751+00 TO STA. 766+42
STA. 768+50 TO STA. 776+00
STA. 795+95 TO STA. 815+00
STA. 855+76 TO STA. 880+00

✳✳ – SHOULDER, RUMBLE STRIP & SHOULDER GRADING OMITTED
STA. 770+88 TO STA. 773+85
STA. 798+66 TO STA. 798+83
STA. 861+40 TO STA. 863+12

(+) – PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SHOULDER
STA. 758+50 TO STA. 766+42
STA. 795+95 TO STA. 799+97
STA. 805+00 TO STA. 809+00

+ – PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SHOULDER
STA. 795+95 TO STA. 799+97



⑧ TYPICAL SECTION
ROUTE MM
STA. 911+00 TO STA. 916+73

NOTE:

(1) CROSS SLOPE VARIES

(2) MATCH EXISTING PAVEMENT CROSS SLOPE ON SHOULDERS

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TYPICAL SECTIONS
SHEET 5 OF 5

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 1/19/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 2
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID. .
PROJECT NO. .
BRIDGE NO. .

DESCRIPTION	DATE
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TYPICAL SECTIONS
ROUTE MM
SHEET 5 OF 5

REMOVAL OF IMPROVEMENTS (SIGNAGE)			
STA	LOCATION	DESCRIPTION	DIMENSIONS
-	RTE T	HIGHWAY T, ARROW	24x24, 18x20
700+40	RTE MM	STOP	36x36
701+44	RTE MM	TURN ARROW, SPEED LIMIT	36x36, 24X24
707+16	RTE MM	RTE MM	24x20
714+63	RTE MM	SPEED LIMIT 50	24x48
715+86	RTE MM	TURN ARROW, SPEED LIMIT	36x36, 24X24
718+50	RTE MM	TURN ARROW, SPEED LIMIT	36x36, 24X24
718+72	RTE MM	HIGHWAY MM	24x36
721+39	RTE MM	CHEVRON	18x24
721+76	RTE MM	CHEVRON	18x24
722+19	RTE MM	CHEVRON	18x24
722+54	RTE MM	CHEVRON	18x24
722+98	RTE MM	CHEVRON	18x24
725+62	RTE MM	TURN ARROW, SPEED LIMIT 20	36x36, 24X24
726+20	RTE MM	TURN ARROW, SPEED LIMIT 40	36x36, 24X24
728+62	RTE MM	SPEED LIMIT	42x30
730+44	RTE MM	CHEVRON	24x18
731+03	RTE MM	CHEVRON	24x18
731+22	RTE MM	CAUTION	12x36
731+46	RTE MM	CHEVRON	24x18
731+85	RTE MM	CHEVRON	24x18
732+03	RTE MM	CHEVRON	24x18
732+22	RTE MM	CHEVRON	24x18
732+40	RTE MM	CAUTION	12x36
732+49	RTE MM	CAUTION	12x36
732+52	RTE MM	LEFT ARROW	24x48
732+61	RTE MM	CHEVRON	24x18
734+00	RTE MM	CAUTION	18x24
734+88	RTE MM	CAUTION	12x36
735+21	RTE MM	CAUTION	12x36
735+69	RTE MM	CAUTION	12x36
736+24	RTE MM	CAUTION	12x36
737+05	RTE MM	TURN ARROW, SPEED LIMIT 20	36x36, 24X24
742+67	RTE MM	STREET	6x18
742+70	RTE MM	STOP	24x24
748+59	RTE MM	CAUTION	36x12
748+78	RTE MM	CAUTION	36x12
748+93	RTE MM	CAUTION	36x12
749+02	RTE MM	CAUTION	12x36
749+15	RTE MM	CAUTION	12x36
749+24	RTE MM	CAUTION	12x36
749+38	RTE MM	CAUTION	36x12
749+54	RTE MM	CAUTION	36x12
749+69	RTE MM	CAUTION	36x12
749+71	RTE MM	CAUTION	12x36
749+89	RTE MM	CAUTION	12x36
750+04	RTE MM	CAUTION	12x36
750+62	RTE MM	CURVE ARROW, SPEED	36x36, 24X24
751+54	RTE MM	BUS STOP AHEAD	36x36
753+21	RTE MM	CHEVRON	18x24
753+81	RTE MM	CHEVRON	18x24
754+57	RTE MM	CHEVRON	18x24
756+22	RTE MM	BUS STOP AHEAD	36x36
756+71	RTE MM	CHEVRON	18x24
757+57	RTE MM	CHEVRON	18x24
758+10	RTE MM	STOP FOR BUS	24x24
758+67	RTE MM	CHEVRON	18x24
759+24	RTE MM	HIGHWAY 100	24x30
759+24	RTE MM	EAST	12x21
759+26	RTE MM	HIGHWAY 100	28"x20"
759+26	RTE MM	RTE 100 & WEST	28x20
759+26	RTE MM	CHEVRON	21"x15"
759+27	RTE MM	CHEVRON	15x21
759+28	RTE MM	CHEVRON	24x30
759+28	RTE MM	HIGHWAY 100	28x20
759+28	RTE MM	HIGHWAY MM	30x24
759+49	RTE MM	CHEVRON	18x24
760+65	RTE MM	CHEVRON	18x24
761+50	RTE MM	CHEVRON	18x24
762+49	RTE MM	CHEVRON	18x24
765+14	RTE MM	CURVE LT CURVE RT	36, 24x20
769+34	RTE MM	CURVE LT. 25 MPH	36
772+10	RTE MM	CHEVRON	24x18
772+55	RTE MM	CHEVRON	24x18
773+25	RTE MM	CHEVRON	24x18
774+32	RTE MM	CHEVRON	18x24
775+47	RTE MM	CHEVRON	18x24
775+98	RTE MM	CHEVRON	18x24
776+49	RTE MM	CHEVRON	18x24
776+96	RTE MM	CHEVRON	18x24
780+18	RTE MM	TURN ARROW, SPEED LIMIT 25	36x36, 24X24
784+45	RTE MM	CAUTION	12x36
784+50	RTE MM	CAUTION	12x36
784+67	RTE MM	CAUTION	36x12
784+75	RTE MM	CAUTION	36X12
786+35	RTE MM	STOP	36
786+39	RTE MM	STREET	
787+21	RTE MM		

REMOVAL OF IMPROVEMENTS (SIGNAGE)			
STA	LOCATION	DESCRIPTION	DIMENSIONS
794+37	RTE MM	STREET SIGN	24x6
794+40	RTE MM	STOP	36
798+34	RTE MM	CAUTION	12x36
798+55	RTE MM	CAUTION	12x36
798+57	RTE MM	CAUTION	12x36
798+86	RTE MM	CAUTION	12x36
805+91	RTE MM	CURVE LT. 35 MPH	36, 24x20
808+31	RTE MM	CHEVRON	18x24
809+39	RTE MM	CHEVRON	18x24
810+38	RTE MM	CHEVRON	18x24
811+52	RTE MM	CHEVRON	18x24
812+53	RTE MM	CHEVRON	18x24
813+50	RTE MM	CHEVRON	18x24
814+09	RTE MM	STREET SIGN	24x6
814+11	RTE MM	STOP. NO PARKING.	36, 18x12
816+71	RTE MM	BUS STOP AHEAD	36x36
817+76	RTE MM	BUS STOP AHEAD	36x36
817+88	RTE MM	ARROW, SPEED LIMIT 35	36x36, 24X24
824+23	RTE MM	STREET	6x24
824+26	RTE MM	STOP	24x24
825+61	RTE MM	ARROW, SPEED LIMIT 35	36x36, 24X24
830+72	RTE MM	CHEVRON	24x18
831+70	RTE MM	CHEVRON	24x18
831+93	RTE MM	STOP	36
832+69	RTE MM	CHEVRON	24x18
833+92	RTE MM	CHEVRON	24x18
835+58	RTE MM	CHEVRON	24x18
836+51	RTE MM	CHEVRON	18x24
837+53	RTE MM	CAUTION	12x36
837+70	RTE MM	CAUTION	12x36
837+75	RTE MM	CAUTION	12x36
837+85	RTE MM	CAUTION	12x36
837+99	RTE MM	CAUTION	12x36
838+00	RTE MM	CAUTION	12x36
838+43	RTE MM	CAUTION	12x36
838+51	RTE MM	CAUTION	12x36
838+58	RTE MM	CAUTION	12x36
838+72	RTE MM	CAUTION	12x36
838+78	RTE MM	CAUTION	12x36
841+30	RTE MM	TURN ARROW, SPEED LIMIT 35 MPH	36x36, 24X24
846+13	RTE MM	CURVE LT. 45 MPH	36, 24x20
847+02	RTE MM	CURVE ARROW	24x18
847+87	RTE MM	CHEVRON	24x18
848+62	RTE MM	CHEVRON	24x18
849+24	RTE MM	CHEVRON	18x24
850+01	RTE MM	CHEVRON	18x24
850+75	RTE MM	CHEVRON	18x24
851+44	RTE MM	CHEVRON	18x24
852+13	RTE MM	CHEVRON	18x24
855+59	RTE MM	ARROW BEND, SPEED LIMIT 25	36x36, 24X24
855+74	RTE MM	CAUTION	12x36
855+75	RTE MM	CAUTION	12x36
855+98	RTE MM	CAUTION	12x36
855+99	RTE MM	CAUTION	12x36
857+26	RTE MM		36x36
857+31	RTE MM	STREET	8x48
859+91	RTE MM	STOP	36x36
860+25	RTE MM	STREET	6x24
860+93	RTE MM	CHEVRON	18x24
861+41	RTE MM	CHEVRON	18x24
861+88	RTE MM	CHEVRON	18x24
862+33	RTE MM	CHEVRON	18x24
862+86	RTE MM	CHEVRON	18x24
863+44	RTE MM	CHEVRON	18x24
864+97	RTE MM	CURVE ARROW	24x18
865+80	RTE MM	CURVE ARROW	24x18
866+38	RTE MM	CURVE ARROW	24x12
867+50	RTE MM	CAUTION	36x12
867+52	RTE MM	CAUTION	36x12
867+68	RTE MM	CAUTION	36x12
867+68	RTE MM	CAUTION	36x12
870+34	RTE MM	CURVE RT CURVE LT. 35 MPH	36, 24x20
872+63	RTE MM	STOP, NO PARKING	36x36, 18x12
872+65	RTE MM	STOP	24x24
872+81	RTE MM	STREET	6x40
873+16	RTE MM	CHEVRON	48x24
873+22	RTE MM	CHEVRON	48x24
878+74	RTE MM	TURN ARROW, 40 MPH	36x36, 24x24
879+50	RTE MM	CURVE LT THEN RT. 40 MPH	36, 24x20
879+83	RTE MM	CURVE RIGHT. 35 MPH	36, 24x20
883+94	RTE MM	CHEVRON	18x24
884+69	RTE MM	CHEVRON	18x24
885+53	RTE MM	CHEVRON	18x24
886+24	RTE MM	CHEVRON	18x24
888+33	RTE MM	CURVE 40 MPH	36, 24x20
895+55	RTE MM	STREET	6x30
895+62	RTE MM	STOP	36x36
899+32	RTE MM	ARROW	48x24

REMOVAL OF IMPROVEMENTS (SIGNAGE)			
STA	LOCATION	DESCRIPTION	DIMENSIONS
899+74	RTE MM	STOP,STREET	36x36, 6x24
905+35	RTE MM	ARROW, SPEED LIMIT	36x36, 24x24
908+35	RTE MM	NO MORE TRASH	48x24
909+78	RTE MM	SPEED LIMIT	42x30
910+04	RTE MM	SPEED LIMIT	42x30
911+84	RTE MM	CHEVRON	48x24
911+91	RTE MM	CHEVRON	48x24
912+10	RTE MM	RTE 100 JCT	28x20, 15x18
913+63	RTE MM	STOP AHEAD	36
914+20	RTE MM	STREET	6x30
914+21	RTE MM	STOP	36x36
915+23	RTE MM	ARROW, SPEED LIMIT 30MPH	36x36, 24x24
916+15	RTE MM	STREET SIGN	18x6
916+26	RTE MM	SPECIAL SIGN	24x72
916+34	RTE MM	NO PARKING	24x12
916+44	RTE MM	NO PARKING	18x15
916+60	RTE MM	RTE MM	20x28
917+77	RTE MM	STOP	36x36
	RTE 100	HIGHWAY 100	28x20
TOTAL = 1 LUMP SUM			

REMOVAL OF IMPROVEMENTS				
STA	LOCATION	DESCRIPTION	QUANTITY	REMARKS
702+23	RTE MM	18" CMP	37 LF	PIPE CULVERT REMOVAL
712+14	RTE MM	12" CMP	34 LF	PIPE CULVERT REMOVAL
712+79	RTE MM	30" CMP	36 LF	PIPE CULVERT REMOVAL
716+97	RTE MM	30" CMP	36 LF	PIPE CULVERT REMOVAL
723+13	RTE MM	18" CMP	34 LF	PIPE CULVERT REMOVAL
729+80	RTE MM	18" CMP	41 LF	PIPE CULVERT REMOVAL
741+89	RTE MM	24" CMP	33 LF	PIPE CULVERT REMOVAL
762+82	ENTRANCE	12" CMP	37 LF	PIPE CULVERT REMOVAL
771+12	ENTRANCE	12" STEEL	34 LF	PIPE CULVERT REMOVAL
771+78	RTE MM	15" CMP	43 LF	PIPE CULVERT REMOVAL
776+09	ENTRANCE	12" CMP	25 LF	PIPE CULVERT REMOVAL
780+38	ENTRANCE	24" PLASTIC	61 LF	PIPE CULVERT REMOVAL
806+66	ENTRANCE	12" CMP	32 LF	PIPE CULVERT REMOVAL
808+59	RTE MM	30" CMP	35 LF	PIPE CULVERT REMOVAL
822+62	ENTRANCE	18" PLASTIC	41 LF	PIPE CULVERT REMOVAL
825+43	ENTRANCE	12" CMP	34 LF	PIPE CULVERT REMOVAL
830+60	RTE MM	12" CMP	39 LF	PIPE CULVERT REMOVAL
847+18	RTE MM	18" CMP	35 LF	PIPE CULVERT REMOVAL
849+08	RTE MM	18" CMP	34 LF	PIPE CULVERT REMOVAL
860+83	RTE MM	12" CMP	35 LF	PIPE CULVERT REMOVAL
880+29	RTE MM	12" VCP	33 LF	PIPE CULVERT REMOVAL
910+48	RTE MM	24" CMP	37 LF	PIPE CULVERT REMOVAL
855+90	RTE MM	7' X 5' BOX CULVERT	26 LF	BOX CULVERT REMOVAL
867+61	RTE MM	4' X 4' BOX CULVERT	28 LF	BOX CULVERT REMOVAL
729+02	RTE MM	SPRINKLER	1 EA	HOSE BIB AND SPRINKLER HEAD
749+21	RTE MM	SPRINKLER	1 EA	SPRINKLER HEAD
729+92	RTE MM	SPRINKLER	1 EA	SPRINKLER HEAD
730+32	RTE MM	SPRINKLER	1 EA	SPRINKLER HEAD
891+91 895+60	RTE MM	GUARDRAIL	254 LF	GUARDRAIL REMOVAL
TOTAL = 1 LUMP SUM*				
* INLUDES ALL SAWCUTS, SIGNAGE, SIGN STRUCTURES, CULVERTS, INLETS, DRAINAGE STRUCTURES, WATER LINE AND APPURTENANCES AND OTHER NECESSARY REMOVALS FOR PROJECT CONSTRUCTION.				

DISCLAIMER

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SUMMARY OF QUANTITIES
SHEET 1 OF 6

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	3

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION
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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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com

Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 1 OF 6

MOBILIZATION
LUMP SUM 1

CONTRACTOR FURNISHED SURVEY AND STAKING
LUMP SUM 1

CLEARING AND GRUBBING
1 ACRE

RAILROAD PLAN SUBMITTAL
LUMP SUM 1

PAVEMENT

SHEET	STA TO STA		LOCATION		TYPE 5 AGREGATE BASE 4 IN.	BP-2 W/ PG64-22 (1.5+1.5) IN.	TACK COAT .05 (PROPOSED) .10 (EXISTING)	CONCRETE PAVEMENT (8 IN. NON-REINF)	OPTIONAL PAVEMENT	A2 SHOULDER	MODIFIED LINEAR GRADING, CLASS 2	COLDMILLING (LESS THAN 3")	CENTERLINE RUMBLE STRIP	SHOULDER RUMBLE STRIP
						1.967 TON/CY	GAL/SQ YD							
					SQ YD	TONS	GAL	SQ YD	SQ YD	SQ YD	STA.	SQ YD	STA	STA
4	700+38	709+00	RTE MM	LT/RT	383	380.6	335			383.1	17.2	2107	8.6	17.2
5	709+00	723+00	RTE MM	LT/RT	622	618.2	544			622.2	28.0	3422	14.0	28.0
6	723+00	726+83	RTE MM	LT/RT	170	169.1	149			170.2	7.7	936	3.8	7.7
6	726+83	735+08	RTE MM	LT/RT	2773			66.7	2706				8.3	16.5
6	735+08	738+00	RTE MM	LT/RT	130	128.9	114			129.8	5.8	714	2.9	5.8
7	738+00	751+50	RTE MM	LT/RT	600	596.1	525			600.0	27.0	3300	13.5	27.0
8	751+50	770+00	RTE MM	LT/RT	822	816.9	719			822.2	37.0	4522	18.5	37.0
9	770+00	787+50	RTE MM	LT/RT		708.3	642					4278	17.5	35.0
9	770+00	787+50	RTE MM	LT	389	32.2	19			388.9	17.5			
9	770+00	773+85	RTE MM	RT	86	7.1	4			85.6	3.9			
9	770+10	778+56	RTE MM	LT	687	56.9	34			687.2				
9	773+85	787+50	RTE MM	RT	303	25.1	15			303.3	13.7			
10	787+50	801+50	RTE MM	LT/RT	622	618.2	544			622.2	28.0	3422	14.0	28.0
11	801+50	816+50	RTE MM	LT/RT		607.1	550					3667	15.0	30.0
11	801+50	816+50	RTE MM	RT	333	27.6	17			333.3	15.0			
11	801+50	816+50	RTE MM	LT	333	27.6	17			333.3	15.0			
12	816+50	830+75	RTE MM	LT/RT		576.8	523					3483	14.3	28.5
12	816+50	830+75	RTE MM	RT	317	26.2	16			316.7	14.3			
12	816+50	830+75	RTE MM	LT	317	26.2	16			316.7	14.3			
13	830+75	845+00	RTE MM	LT/RT	633	629.2	554			633.3	28.5	3483	14.3	28.5
14	845+00	859+00	RTE MM	LT/RT	622	618.2	544			622.2	28.0	3422	14.0	28.0
15	859+00	873+50	RTE MM	LT/RT		586.9	532					3544	14.5	29.0
15	859+00	873+50	RTE MM	LT	322	26.7	16			322.2	14.5			
15	859+00	863+12	RTE MM	RT	92	7.6	5			91.6	4.1			
15	863+12	873+50	RTE MM	RT	231	19.1	12			230.7	10.4			
16	873+50	887+50	RTE MM	LT/RT	622	618.2	544			622.2	28.0	3422	14.0	28.0
17	887+50	901+50	RTE MM	LT/RT	622	618.2	544			622.2	28.0	3422	14.0	28.0
18	901+50	911+00	RTE MM	LT/RT	422	419.5	369			422.2	19.0	2322	9.5	19.0
18	911+00	915+00	RTE MM	LT/RT		161.9	147					978	4.0	
19	915+00	916+73	RTE MM	LT/RT		70.0	63					423	1.7	
SUBTOTALS					12453	9224.6	8113	66.7	2706	9681.5	404.9	50867	216	421.2
SUBTOTAL 1					762	45.1	17							
SUBTOTAL 2					262									
TOTALS					13477	10196.7*	8943*	66.7	2706	9681.5	404.9	50867	216	421

*** ASPHALT PAY ITEMS QUANTITIES INCREASED BY 10% TO ACCOUNT FOR IRREGULARITIES**
SUBTOTAL 1 - SEE "ENTRANCES" SCHEDULE
SUBTOTAL 2 - SEE "FULL DEPTH PAVEMENT REPLACEMENT" SCHEDULE

PERMANENT AGGREGATE EDGE TREATMENT

SHEET	STA TO STA		LOCATION		PERMANENT AGGREGATE EDGE TREATMENT	FOG SEAL
					TONS	0.2 GAL/SQ YD GAL
4,5	706+49	721+00	RTE MM	RT	301	64
5,6	721+00	723+40	RTE MM	RT	50	11
5,6	721+00	723+40	RTE MM	LT	50	11
6	731+90	733+86	RTE MM	LT	41	9
7	738+80	741+90	RTE MM	RT	64	14
7	741+90	746+00	RTE MM	RT	85	18
7	746+00	748+00	RTE MM	RT	41	9
8	758+50	766+42	RTE MM	RT	164	35
9	770+88	773+85	RTE MM	RT	62	13
9	783+64	785+95	RTE MM	RT	48	10
9	783+64	785+95	RTE MM	RT	48	10
10	795+95	799+97	RTE MM	LT	83	18
10	795+95	799+97	RTE MM	RT	83	18
11	805+00	809+00	RTE MM	RT	83	18
16,17	883+25	888+00	RTE MM	RT	99	21
TOTALS					1300	279

PAVEMENT REPAIR

LOCATION	DESCRIPTION	REMOVAL OF CLASS C PARTIAL DEPTH PAVEMENT REPAIR	FURNISHING AND PLACING BITUMINOUS MATERIAL FOR CLASS C PARTIAL DEPTH PAVEMENT REPAIR
		SQ YD	TONS
RTE MM	PARTIAL DEPTH	9500	1583.3
TOTALS		9500	1583.3

EARTHWORK

LOCATION	CLASS A EXCAVATION	COMPACTING EMBANKMENT
	CU YD	CU YD
RTE MM	1751	949
TOTAL	1751	949

PAVEMENT MARKINGS

SHEET	STA TO STA		LOCATION		length	WATERBORNE 4" WHITE SOLID	WATERBORNE 4" YELLOW SOLID	THERMOPLASTIC 24" WHITE SOLID	THERMOPLASTIC ARROW
					ft	LF	LF	LF	EACH
45	700+38	709+50	RTE MM	LT	912	912		12	
45	700+38	709+50	RTE MM	CL	912		1824		
45	700+38	709+50	RTE MM	RT	912	912			
46	709+50	723+50	RTE MM	LT	1400	1400			
46	709+50	723+50	RTE MM	CL	1400		2800		
46	709+50	723+50	RTE MM	RT	1400	1400			
47	723+50	739+00	RTE MM	LT	1550	1600			
47	723+50	739+00	RTE MM	CL	1550		3200		
47	723+50	739+00	RTE MM	RT	1550	1600			
48	739+00	753+00	RTE MM	LT	1400	1400			
48	739+00	753+00	RTE MM	CL	1400		2800		
48	739+00	753+00	RTE MM	RT	1400	1400			
49	753+00	771+00	RTE MM	LT	1800	1800			
49	753+00	771+00	RTE MM	CL	1800		3600		
49	753+00	771+00	RTE MM	RT	1800	1800			
50	771+00	787+50	RTE MM	LT	1650	1650			
50	771+00	787+50	RTE MM	CL	1650		3300		
50	771+00	787+50	RTE MM	RT	1650	1650			
51	787+50	801+50	RTE MM	LT	1400	1400			
51	787+50	801+50	RTE MM	CL	1400		2800		
51	787+50	801+50	RTE MM	RT	1400	1400			
52	801+50	816+75	RTE MM	LT	1525	1525			
52	801+50	816+75	RTE MM	CL	1525		3050		
52	801+50	816+75	RTE MM	RT	1525	1525			
53	816+75	830+50	RTE MM	LT	1375	1375			
53	816+75	830+50	RTE MM	CL	1375		2750		
53	816+75	830+50	RTE MM	RT	1375	1375			
54	830+50	845+00	RTE MM	LT	1450	1450			
54	830+50	845+00	RTE MM	CL	1450		2900		
54	830+50	845+00	RTE MM	RT	1450	1450			
55	845+00	859+50	RTE MM	LT	1450	1450			
55	845+00	859+50	RTE MM	CL	1450		2900		
55	845+00	859+50	RTE MM	RT	1450	1450			
56	859+50	874+25	RTE MM	LT	1475	1475			
56	859+50	874+25	RTE MM	CL	1475		2950		
56	859+50	874+25	RTE MM	RT	1475	1475			
57	874+25	888+50	RTE MM	LT	1425	1425			
57	874+25	888+50	RTE MM	CL	1425		2850		
57	874+25	888+50	RTE MM	RT	1425	1425			
57	874+50	875+50	RTE MM	CL					2
58	888+50	902+00	RTE MM	LT	1350	1350			
58	888+50	902+00	RTE MM	CL	1350		2700		
58	888+50	902+00	RTE MM	RT	1350	1350			
59	902+00	915+00	RTE MM	LT	1300	1300			
59	902+00	915+00	RTE MM	CL	1300		2600		
59	902+00	915+00	RTE MM	RT	1300	1300			
60	915+00	916+73	RTE MM	LT	173	173			
60	915+00	916+73	RTE MM	CL	173		346		
60	915+00	916+73	RTE MM	RT	173	173			
TOTALS						43370	43370	12	2

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SUMMARY OF QUANTITIES
SHEET 2 OF 6

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/23/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	3

COUNTY
FRANKLIN
JOB NO.
J6S3368
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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300
TREKK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 2 OF 6

ENTRANCES

SHEET	STATION	LOCATION		APPROX. LENGTH	TOTAL AREA	PROPOSED SURFACE TYPE	DRWY. TYPE	CLASS 1 LINEAR GRADING	4" TYPE 5 AGG. BASE	GRAVEL (A) OR CRUSHED STONE (B)	BP-2 W/ PG 64-22	BB W/ PG 64-22	TACK COAT	PAVED APPROACH, 8 IN	MODIFIED COLDMILLING
				FT	SQ FT			STA.	SQ YD	SQ YD	TON	TON	GAL	SQ YD	SQ YD
4	706+40	RTE MM	LT	13	48.0	GRAVEL	I	0.13		43	0.4				
6	727+18	RTE MM	RT	17	126.0	ASPH.	I				1.2		1		14.0
6	727+24	RTE MM	LT	24	240.00	GRAVEL	I			27	2.2				
6	734+62	RTE MM	RT	6	40.00	GRAVEL	I			4	0.4				
7	742+64	RTE MM	RT	25	118.00	GRAVEL	I	0.25		85	1.1				
7	743+81	RTE MM	RT	14	62.00	GRAVEL	I	0.14		52	0.6				
7	746+07	RTE MM	RT	20	46.00	GRAVEL	I			5	0.4				
7	748+33	RTE MM	RT	16	112.00	GRAVEL	I			12	1.0				
7	750+52	RTE MM	LT	11	52.00	GRAVEL	I			6	0.5				
8	757+09	RTE MM	LT	23	162.00	GRAVEL	I			18	1.5				
8	762+82	RTE MM	LT	11	60.00	GRAVEL	I	0.11		37	0.6				
8	763+47	RTE MM	LT	9	64.00	GRAVEL	I			7	0.6				
8	768+67	RTE MM	RT	10	206.02	CONCRETE	I	0.10	23					22.9	
9	771+12	RTE MM	LT	16	416.32	CONCRETE	I	0.16	46					99.3	
9	774+08	RTE MM	RT	10	80.00	GRAVEL	I			9	0.7				
9	776+09	RTE MM	LT	7	52.00	GRAVEL	I	0.07		17	0.5				
9	776+28	RTE MM	RT	5	86.00	GRAVEL	I			10	0.8				
9	780+38	RTE MM	RT	11	132.00	GRAVEL	I	0.11		88	1.2				
9	786+04	RTE MM	RT	23	180.00	ASPH.	I				1.7		1		20.0
10	794+14	RTE MM	RT	12	106.00	GRAVEL	I			12	1.0				
11	803+14	RTE MM	LT	7	42.00	GRAVEL	I			5	0.4				
11	806+64	RTE MM	LT	9	58.00	GRAVEL	I	0.09		32	0.5				
11	814+46	RTE MM	RT	10	48.00	GRAVEL	I			5	0.4				
11	814+34	RTE MM	LT	15	134.00	GRAVEL	I			15	1.2				
12	819+45	RTE MM	LT	12	415.15	CONCRETE	I	0.12	46					46.1	
12	821+09	RTE MM	LT	5	101.05	CONCRETE	I	0.05	11					11.2	
12	821+46	RTE MM	LT	8	66.00	GRAVEL	I			7	0.6				
12	822+62	RTE MM	LT	11	84.00	GRAVEL	I	0.11		56	0.8				
12	824+51	RTE MM	LT	8	88.00	ASPH.	I				0.8		1		9.8
12	825+43	RTE MM	LT	14	314.66	CONCRETE	I	0.14	35					78.7	
12	828+99	RTE MM	LT	9	301.40	CONCRETE	I	0.09	33					33.5	
12	829+98	RTE MM	LT	9	38.00	GRAVEL	I			4	0.3				
13	830+96	RTE MM	RT	10	122.00	ASPH.	I				1.1		1		13.6
13	832+16	RTE MM	LT	10	134.00	ASPH.	I				1.2		1		14.9
14	847+97	RTE MM	LT	18	156.00	GRAVEL	I			17	1.4				
14	857+06	RTE MM	RT	39	202.00	ASPH.	I				1.9		1		22.4
14	857+12	RTE MM	LT	11	78.00	ASPH.	I				0.7		1		8.7
14	858+53	RTE MM	LT	9	66.00	ASPH.	I				0.6		1		7.3
15	860+34	RTE MM	LT	15	142.00	ASPH.	I				1.3		1		15.8
15	870+92	RTE MM	RT	9	58.00	ASPH.	I				0.5		1		6.4
15	872+60	RTE MM	RT	30	2,266.91	CONCRETE	I	0.30	252					251.9	
15	873+06	RTE MM	LT	14	751.61	CONCRETE	I	0.14	84					83.5	
16	874+91	RTE MM	RT	12	482.00	GRAVEL	I			54	4.4				
16	877+66	RTE MM	LT	20	1,978.91	CONCRETE	I	0.20	220					219.9	
16	881+80	RTE MM	RT	11	112.00	ASPH.	I		12		1.0	5.2	1		12.4
16	882+61	RTE MM	LT	12	112.00	GRAVEL	I			12	1.0				
17	892+33	RTE MM	RT	9	84.00	GRAVEL	I			9	0.8				
17	895+41	RTE MM	RT	18	130.00	GRAVEL	I			14	1.2				
17	899+46	RTE MM	RT	17	238.00	ASPH.	I				2.2		1		26.4
18	910+37	RTE MM	LT	6	40.00	GRAVEL	I			4	0.4				
18	911+54	RTE MM	RT	13	44.00	GRAVEL	I			5	0.4				
18	912+48	RTE MM	LT	11	66.00	ASPH.	I				0.6		1		7.3
18	912+73	RTE MM	RT	6	74.00	ASPH.	I				0.7		1		8.2
18	914+42	RTE MM	LT	13	80.00	ASPH.	I				0.7		1		8.9
18	914+45	RTE MM	RT	3	40.00	GRAVEL	I			4	0.4				
19	915+58	RTE MM	LT	5	44.00	ASPH.	I				0.4		1		4.9
19	916+08	RTE MM	RT	3	52.00	ASPH.	I				0.5		1		5.8
19	916+29	RTE MM	LT	6	36.00	GRAVEL	I			4	0.3				
SUBTOTAL								2.3	762	679	45.1	5.2	17	847	206.9
SUBTOTAL 2												109.6			
TOTALS								2.3	762*	679	45.1*	114.8	17*	847	207

*** SEE PAVEMENT SCHEDULE FOR TOTAL**

SUBTOTAL 2 - SEE "FULL DEPTH PAVEMENT REPLACEMENT" SCHEDULE

FULL DEPTH PAVEMENT REPAIR

SHEET	CULVERT SECTION SHEET	STATION	LOCATION	LENGTH (ROAD)	LENGTH (SHOULDER)	TRENCH WIDTH	TYPE 5 AGREGATE BASE 4 IN.	BB W/ PG 64-22 7.5 IN.	HIGH PERFORMANCE GEOTEXTILE
								2.005 TON/CY	
							SQ YD	TONS	SQ YD
4	CS001	702+23	RTE MM	22.00	4.00	4.92	14	5.0	51
5	CS001	712+14	RTE MM	22.20	4.00	4.92	14	6.0	47
5	CS001	712+79	RTE MM	22.40	2.00	6.08	16	6.9	59
5	CS001	716+97	RTE MM	21.20	2.00	6.08	16	6.5	59
6	CS002	723+13	RTE MM	22.00	2.00	4.92	13	5.5	45
7	CS003	741+89	RTE MM	21.50	2.00	5.50	14	6.0	48
9	CS005	771+78	RTE MM	22.00	10.00	4.92	17	7.3	59
11	CS007	808+59	RTE MM	25.80	4.00	6.08	20	8.4	55
12	CS008	830+60	RTE MM	26.20	4.00	4.92	16	6.9	54
14	CS008	847+18	RTE MM	20.40	4.00	4.92	13	5.6	48
14	CS008	849+08	RTE MM	22.00	4.00	4.92	14	5.9	47
14	CS009	855+90	RTE MM	20.90	4.00	10.00	28	11.6	
15	CS009	860+83	RTE MM	23.70	4.00	4.92	15	6.3	48
15	CS009	867+60	RTE MM	22.00	4.00	7.00	20	8.4	
16	CS010	880+29	RTE MM	22.00	4.00	4.92	14	5.9	46
18	CS010	910+48	RTE MM	25.10	4.00	5.50	18	7.4	56
TOTALS							262*	109.6**	721.1

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**** SEE ENTRANCES SCHEDULE FOR TOTAL**

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SUMMARY OF QUANTITIES
SHEET 3 OF 6

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ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	3

COUNTY
FRANKLIN

JOB NO.
J6S3368

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TREKK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 3 OF 6

STORM SEWER

SHEET	CULVERT SECTION SHEET	STATION	LOCATION	GROUP B			GROUP C			FLARED END SECTIONS			CLASS 3 EXC.	ROCK LINING
				18 IN	24 IN	30 IN	15 IN	18 IN	24 IN	18 IN	24 IN	30 IN		
				LF	LF	LF	LF	LF	LF	EA	EA	EA	CU YD	CU YD
4	CS001	702+23	RTE MM	37						2			23	1
4		706+37	RTE MM				24						5	
5	CS001	712+14	RTE MM	34						2			31	
5	CS001	712+79	RTE MM			37						1	38	
5	CS001	716+97	RTE MM			36						1	46	3.5
5	CS002	720+89	RTE MM											3.5
6	CS002	723+13	RTE MM	35						2			26	1.5
6	CS002	730+06	RTE MM	67						2			24	2
7	CS003	741+89	RTE MM		33						1		23	3.5
7		742+49	RTE MM				40						15	
7		743+75	RTE MM				25						9	
8		762+82	RTE MM				37						13	
8	CS004	765+55	RTE MM							1			2	2
9		771+15	RTE MM				34						10	
9	CS005	771+78	RTE MM	43						2			28	2
9		776+00	RTE MM				25						13	
9		780+42	RTE MM						61				20	
10	CS006	796+75	RTE MM								2		1	3.5
11		806+66	RTE MM				32						12	
11	CS007	808+59	RTE MM			35						2	33	2.5
12	CS007	817+71	RTE MM										1	
12		822+70	RTE MM					41					16	
12		825+44	RTE MM				34						15	
12	CS008	830+60	RTE MM	40						2			23	1
14	CS008	847+18	RTE MM	35						2			25	2
14	CS008	849+08	RTE MM	33						2			22	2
15	CS009	860+83	RTE MM	33						2			19	1
16	CS010	880+29	RTE MM	33						2			18	0.5
18	CS010	910+48	RTE MM		37						2		36	3.5
SUBTOTALS				390	70	108	251	41	61	21	5	4	547	35
SUBTOTAL 3													44	
SUBTOTAL 4													151	
SUBTOTAL 5														106
TOTALS				390	70	108	251	41	61	21	5	4	742	141

SUBTOTAL 3 - SEE "TEMPORARY EROSION CONTROL" SCHEDULE
SUBTOTAL 4 - SEE "BOX CULVERTS" SCHEDULE
SUBTOTAL 5 - SEE "CULVERT - SLOPE PROTECTION" SCHEDULE

SEEDING

SHEET	STA TO STA		LOCATION		SLOPE AREA	SEEDING - COOL SEASON MIXTURES	TEMPORARY SEEDING	MULCH	ADDITIONAL MOBILIZATION FOR SEEDING
					SQ FT	ACRE	ACRE	ACRE	EA
4,5	700+00	721+00	RTE MM	LT/RT	42000	1.0	0.2	1.2	1
5,6	721+00	726+83	RTE MM	LT/RT	11660	0.3	0.1	0.4	
6	726+83	729+17	RTE MM	LT/RT	4680	0.1	0.0	0.1	
6	729+17	731+72	RTE MM	LT/RT	5100	0.1	0.0	0.1	
6	731+72	732+51	RTE MM	LT/RT	1580	0.0	0.0	0.0	
6	732+51	733+86	RTE MM	LT/RT	2700	0.1	0.0	0.1	
6	733+86	734+96	RTE MM	LT/RT	2200	0.1	0.0	0.1	
6,7	734+96	741+89	RTE MM	LT/RT	13860	0.3	0.1	0.4	
7	741+89	746+00	RTE MM	LT/RT	8220	0.2	0.0	0.2	
7	746+00	751+00	RTE MM	LT/RT	10000	0.2	0.1	0.3	
7,8	751+00	765+65	RTE MM	LT/RT	29300	0.7	0.2	0.9	
8	765+65	768+50	RTE MM	LT/RT	5700	0.1	0.0	0.1	
8,9	768+50	776+00	RTE MM	LT/RT	15000	0.3	0.1	0.4	
9	776+00	787+00	RTE MM	LT/RT	22000	0.5	0.1	0.6	
9,10	787+00	797+00	RTE MM	LT/RT	20000	0.5	0.1	0.6	
10,11	797+00	815+00	RTE MM	LT/RT	36000	0.8	0.2	1.0	
11,12	815+00	819+00	RTE MM	LT/RT	8000	0.2	0.0	0.2	
12,13	819+00	832+00	RTE MM	LT/RT	26000	0.6	0.1	0.7	
13	832+00	842+00	RTE MM	LT/RT	20000	0.5	0.1	0.6	
13,14	842+00	855+00	RTE MM	LT/RT	26000	0.6	0.1	0.7	
14,15,16	855+00	880+00	RTE MM	LT/RT	50000	1.1	0.3	1.4	
16,17	880+00	900+00	RTE MM	LT/RT	40000	0.9	0.2	1.1	
17,18	900+00	911+00	RTE MM	LT/RT	22000	0.5	0.1	0.6	
TOTALS						10.6	2.4	11.8	1

CULVERT - SLOPE PROTECTION

SHEET	STATION	LOCATION	HEAVY STONE REVETMENT	TYPE 2D EROSION CONTROL BLANKET	SILT FENCE	ROCK LINING	REMARKS
			SQ YD	SQ YD	LF	CU YD	
4	749+37	RTE MM	231	533			BOX CULVERT X0926
6	784+62	RTE MM			200	76	CULVERT EXTENSION, 6X7
10	838+23	RTE MM		100			BOX CULVERT X0913
11	855+90	RTE MM		.	200	19	CULVERT REPLACEMENT, 7X5
12	867+61	RTE MM			200	11	CULVERT REPLACEMENT, 5X4
TOTALS			231	633	600*	106**	

*** SEE TEMPORARY EROSION CONTROL SCHEDULE FOR TOTAL**
**** SEE STORM SEWER SCHEDULE FOR TOTAL**

CULVERT CLEANOUT

SHEET	STATION	LOCATION	MATERIAL	SIZE	LENGTH	CULVERT CLEANOUT	REMARKS
				IN	FT	EA	
5	720+89	RTE MM	CMP	24	62	1	EXISTING
6	733+59	RTE MM	CMP	48	64	1	EXISTING
8	760+29	RTE MM	CMP	18	60	1	EXISTING
8	765+55	RTE MM	CMP	18	42	1	EXISTING
10	791+32	RTE MM	CMP	12	46	1	EXISTING
10	796+75	RTE MM	CMP	24	40	1	EXISTING
11	804+49	RTE MM	CMP	18	40	1	EXISTING
12	817+71	RTE MM	CMP	24	40	1	EXISTING
TOTALS						8	

TEMPORARY EROSION CONTROL

SHEET	STA TO STA		LOCATION	SEDIMENT REMOVAL	SILT FENCE	SEDIMENT TRAP	CLASS 3 EXCAVATION	ROCK DITCH CHECK
				CU YD	LF	CU YD	EA	LF
29	700+00	709+00	ROUTE MM	27	1014	2	2	105
30	709+00	723+00	ROUTE MM	86	1106	8	8	525
31	723+00	738+00	ROUTE MM	59	1122	4	4	420
32	738+00	751+50	ROUTE MM	43	2070	2	2	180
33	751+50	770+00	ROUTE MM	129	1512	4	4	1410
34	770+00	787+50	ROUTE MM	130	948	2	2	1665
35	787+50	801+50	ROUTE MM	51	1740	4	4	210
36	801+50	816+50	ROUTE MM	99	1485	4	4	960
37	816+50	830+75	ROUTE MM	139	280	4	4	1740
38	830+75	845+00	ROUTE MM	28	1979			120
39	845+00	859+00	ROUTE MM	39	369	4	4	225
40	859+00	873+50	ROUTE MM	35	1336	2	2	180
41	873+50	887+50	ROUTE MM	30	1810	2	2	30
42	887+50	901+50	ROUTE MM	29	2350			75
43	901+50	915+00	ROUTE MM	45		2	2	525
SUBTOTAL				969	19121	44	44	8370
SUBTOTAL1					600			
TOTALS				969	19721	44	44*	8370

SUBTOTAL 1 - SEE "CULVERT -SLOPE PROTECTION" SCHEDULE
*** SEE STORM SEWER SCHEDULE FOR TOTAL**

GABION WALLS

SHEET	STA TO STA		LOCATION		GABIONS[1]	CONCRETE CUTOFF WALL	REMARKS
					CU YD	CU YD	
10	838+35	838+78	RTE MM	RT	75	18	BOX CULVERT X0913
TOTALS					75	18	

[1] **1.0 FEET OF CRUSHED LIMESTONE UNDER GABIONS INCLUDED IN PRICE OF GABIONS.**

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SUMMARY OF QUANTITIES
SHEET 4 OF 6

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

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TREK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 4 OF 6

GUARDRAIL

SHEET	STA TO STA		LOCATION		MGS GUARDRAIL, 8 FT. POSTS	MGS LONG SPAN GUARDRAIL SECTION	MGS BRIDGE APPROACH TRANSITION (THRIE-BEAM BRIDGE)	TYPE A CET (MASH)	TYPE C CET (MASH)	CLASS 3 SHAPING SLOPES
					LF	EA	EACH	EA	EA	100 FT
6	729+26	735+08	RTE MM	LT	675			2		2
6	731+52	731+72	RTE MM	RT					1	1
9	783+32	786+32	RTE MM	LT	88	1		2		2
13	836+51	839+60	RTE MM	RT	163		2	2		2
13	836+88	840+05	RTE MM	LT	175		2	2		2
15	865+97	868+77	RTE MM	RT	175			2		2
15	866+41	869+27	RTE MM	LT	175			2		2
17	891+55	895+56	RTE MM	LT	300			2		2
TOTALS					1750	1	4	14	1	12

ROCK BLANKET

SHEET	STA TO STA		LOCATION		FURNISHING TYPE 2	PLACING TYPE 2	REMARKS
					CU YD	CU YD	
6	729+83	734+96	RTE MM	LT	366	366	
6	785+00	785+96	RTE MM	RT	189	189	
7	749+37		RTE MM	LT/RT	480	480	BOX CULVERT X0926
13	838+28		RTE MM	LT/RT	375	375	BOX CULVERT X0913
TOTALS					1410	1410	

BARRIER

SHEET	STA TO STA		LOCATION		GUTTER TYPE B	TYPE C BARRIER
					LF	LF
6	731+72	732+51	RTE MM	RT	75	75

HIGH FRICTION SURFACE TREATMENT

SHEET	STA TO STA		AREA (SQ YD)
8,9	769+64	777+28	2394
11	806+93	813+62	1933
15	859+71	867+09	2132
TOTALS			6959

BOX CULVERTS

SHEET	STATION	LOCATION	CLASS 3 EXCAVATION	CLASS 4 EXCAVATION	PARTIAL REMOVAL OF CULVERT	CLASS B-1 CONCRETE (CULVERTS-BRIDGE)	REINFORCING STEEL (CULVERTS-BRIDGE)	CLASS A EXCAVATION	CULVERT CLEANOUT	GRANULAR BACKFILL	REMARKS
			CU YD	CU YD	LS	CU YD	LBS	CU YD	EA	CU YD	
9	784+62	RTE MM	114	302	1	52.2	12080			11.3	BOX CULVERT 7' X 8'
14	855+90	RTE MM	26	213		46.3	9520			12.4	BOX CULVERT 7' x 5'
15	867+61	RTE MM	11	141		31.3	5680			7.3	BOX CULVERT 4' x 4'
TOTALS			**151****	**656**	**1**	**129.8**	**27280**	**0**	**0**	**31**	
13	838+28	RTE MM						59	1		BOX CULVERT X0913
TOTALS								**59**	**1**		

**** SEE STORM SEWER SCHEDULE FOR TOTAL**

RETAINING WALL

SHEET	STATION		LOCATION	GUTTER TYPE B	SELECT GRANULAR BACKFILL	REMARKS
				LF	CU YD	
6	731+70	733+86	RTE MM	100	855	RETAINING WALL
TOTALS				100	855	

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SUMMARY OF QUANTITIES
SHEET 5 OF 6

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	3

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
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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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300
TREKK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 5 OF 6

EFFECTIVE: 04-01-2023

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT ARROW)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT ARROW)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT ARROW)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT ARROW)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT ARROW)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT ARROW)
WO1-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT ARROW)
WO1-4R	48X48	16.00	1	16			15	REVERSE CURVE (SYMBOL RIGHT ARROW)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00	2	32			12	SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00						MERGE (ARROW SYMBOL)
WO4-1aR	48X48	16.00						MERGE (ARROW SYMBOL)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING (WITH FLAGS)
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL/LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00	6	96			36	UNEVEN LANES
WO8-12	48X48	16.00	4	64			35	NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17	48X48	16.00	4	64			23	SHOULDER DROP-OFF (SYMBOL)
WO8-17P	30X24	5.00	4	20			23	SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
W012-2X	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00	6	96			2	ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00						DETOUR AHEAD
WO20-3	48X48	16.00	8	128				ROAD CLOSED AHEAD
WO20-4	48X48	16.00	6	96			7	ONE LANE ROAD AHEAD
WO20-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00	4	64			8	FLAGGER (SYMBOL, WITH FLAGS)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						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
GO20-1	60X24	10.00						ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00						END ROAD WORK
GO20-4	36X18	4.50						PILOT CAR FOLLOW ME
GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
GO20-5aP	36X24	6.00						WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00	1	3			52	END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT ARROW)
MO4-9R	48X36	12.00						DETOUR (RIGHT ARROW)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR (ARROW LEFT)
MO4-10R	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
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R4-7a	36X48	12.00						KEEP RIGHT (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	2	12			47	STOP HERE ON RED (45^ ARROW)
R11-2	48X30	10.00	2	20			29	ROAD CLOSED
R11-3a	60X30	12.50	3	38			55B	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	2	25			55A	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						WORK ZONE NO PHONE ZONE
M1-5a	24X24	4.00	28	112				
MO4-8	24X12	2.00	24	48				
M6-3	21X15	2.19	10	22			50A	
M6-1	21X15	2.19	8	18				
M5-1L	21X15	2.19	4	9			50D	
M5-1R	21X15	2.19	4	9			50B	

616-10.05 CONSTRUCTION SIGNS	TOTAL
	998

616-10.10 RELOCATED SIGNS	TOTAL
	✳

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010	1✳✳	IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		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	1✳✳	REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123000A		TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
6161008	2	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	50	CHANNELIZER (TRIM LINE)
6161030	12	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		CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A	2✳✳	WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A	216'✳✳	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
6169902	4✳✳	NTCIP COMPLIANT CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED/RETAINED
6173700B	408'✳✳	TEMPORARY TRAFFIC BARRIER ANCHORED CONTRACTOR FURNISHED/RETAINED

TRAFFIC CONTROL = 1 LUMP SUM

✳ NO DIRECT PAY WILL BE MADE FOR RELOCATING TRAFFIC CONTROL DEVICES.

✳✳ NOT INCLUDED IN TEMPORARY TRAFFIC CONTROL LUMP SUM BID. CMS LOCATIONS TO BE DETERMINED BY THE ENGINEER.

ALL WARNING SIGNS SHALL HAVE FLUORESCENT SHEETING.

SIGN QUANTITIES HAVE BEEN ESTIMATED. TEMPORARY TRAFFIC CONTROL SHOULD FOLLOW MUTCD STANDARDS.

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SUMMARY OF QUANTITIES
SHEET 6 OF 6

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	3

COUNTY
FRANKLIN

JOB NO.
J6S3368

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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com

Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

SUMMARY OF QUANTITIES
ROUTE MM
SHEET 6 OF 6

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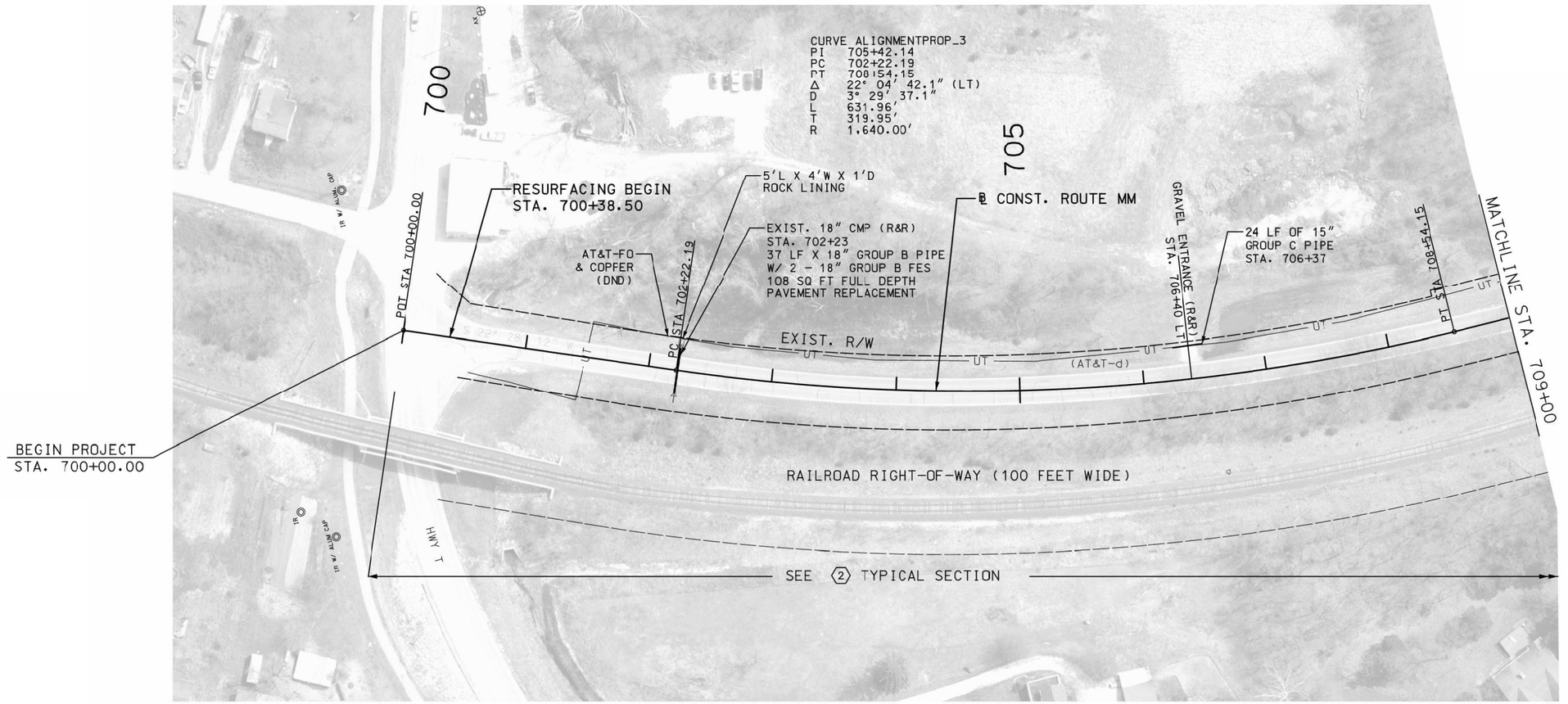

SCALE

0 50 100 150

NOTE:
1. DITCHES NEED TO BE REGRADED TO ACHIEVE POSITIVE DRAINAGE AT PIPE ENDS.
2. PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SLOPES THAT ARE GREATER THAN 2:1.
3. CONTRACTOR TO SHIFT PROPOSED PIPES TO AVOID BURIED UTILITIES.

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	4

COUNTY FRANK_IN

JOB NO. J6S3368

CONTRACT ID. .

PROJECT NO. .

BRIDGE NO. .

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DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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PLAN SHEET
ROUTE MM
SHEET 1 OF 16

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SCALE
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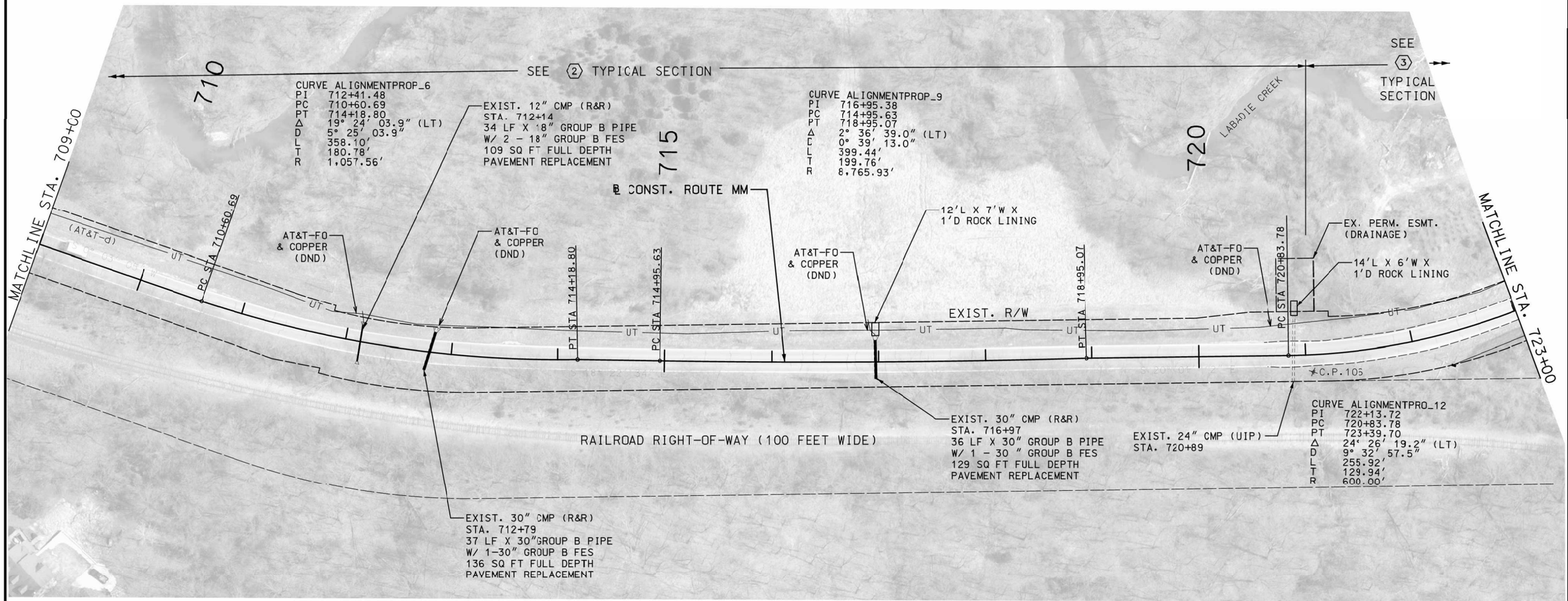

NOTE:
1. DITCHES NEED TO BE REGRADED TO ACHIEVE POSITIVE DRAINAGE AT PIPE ENDS.
2. PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SLOPES THAT ARE GREATER THAN 2:1.
3. CONTRACTOR TO SHIFT PROPOSED PIPES TO AVOID BURIED UTILITIES.

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 5
COUNTY FRANK_IN
JOB NO. J6S3368
CONTRACT ID. .
PROJECT NO. .
BRIDGE NO. .

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

DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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PLAN SHEET
ROUTE MM
SHEET 2 OF 16

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AERIAL NOT SHOWN FOR CLARITY

SCALE 0 50 100 150

① N/F FARINELLA, JOSEPH T. & ROSE F. TRUST

② N/F UNION PACIFIC CORP

℄ RELOCATED ROUTE MM

12'L X 4'W X 1'D ROCK LINING

TEMPORARY EASEMENT (CONST.)

TELEPHONE POLE (UIP)

BEGIN RETAINING WALL STA. 731+70

PAVEMENT EDGE TREATMENT

INSTALL TYPE B GUTTER, STA 731+70 TO 732+70

PERMANENT EASEMENT (CONST. & MAINT.) ON UNION PACIFIC CORP. PROPERTY

(AT&T, CENTURYLINK, CHARTER-d)

APPROX GRADING LIMITS (TYP)

SPRINKLER HEAD (R)

RELOC. INVENTORY WITHIN TEMP. EASEMENT AND NEW ROW

SPRINKLER HEADS (R)

TYPE A CET (MASH)

GUARDRAIL BEGIN STA. 729+26

NW QUARTER OF NW QUARTER SEC. 31

NW QUARTER NW QUARTER SECTION 31
NE QUARTER NE QUARTER SECTION 36

STA. 28+78.7 RANGE LINE

GRAVEL DRIVE(R)

HOSE BIB AND SPRINKLER HEAD (R)

INVENTORY AREA

GRADING LIMITS

STA 730+13.80 130' LT

STA 726+93.21 50' LT

STA 726+83.01

FARINELLA'S ENTRANCE (R&R) GRAVEL STA. 727+24.75 LT

NEW R/W

P.P. 101

EXIST. 48" CMP (UIP) STA. 733+69

END RETAINING WALL STA. 733+86

STA. 732+69.91

STA. 734+39.71

STA. 734+95.95

735

CABADIE CREEK

MGS GUARDRAIL, 8 FT. POSTS

℄ EXIST. R/W

TYPE A CET (MASH)

END GUARDRAIL STA. 736+68

(CENTURYLINK-d)

(CHARTER-c)

(AT&T-d)

C.P. 102

C.P. 103

TYPE C CET (MASH)

PAVEMENT REMOVAL

67 LF OF 18" GROUP B PIPE STA. 730+06 W/ 2 - 18" GROUP B FES

FACE OF BARRIER TO LINE UP WITH FACE OF BRIDGE

EXIST. 15" CMP (R)

75 LF CONCRETE BARRIER TYPE C W/ TYPE B GUTTER STA. 731+72 TO STA. 732+51

725

NE QUARTER OF NE SEC. 36

STA. 25+06.18 ℄ EXIST. R/W = STA. 725+00.00 ℄ RELOCATED ROUTE MM (0.19' LT)

EXIST. R/W

C.P 100

8'L X 4'W X 1'D ROCK LINING

STA 723+39.70

MATCHLINE STA. 723+00

APPROX GRADING LIMITS (TYP)

RAILROAD RIGHT-OF-WAY

UNION PACIFIC RAILROAD

FO (SPRINT)

LAKE DR

GRAVEL ENTRANCE (R&R) STA. 734+62 RT

EQUATION: STA 735+07.59 BK = STA 734+95.95 AHD

EX. PERM. ESMT. (DRAINAGE)

STA. 37+00 ℄ EXIST. R/W= STA. 736+90.04 ℄ RELOCATED ROUTE MM (3.17' LT)

MATCHLINE STA. 738+00

SEE ④ TYPICAL SECTION

SEE ⑤ TYPICAL SECTION

SEE ④ TYPICAL SECTION

SEE ⑥ TYPICAL SECTION

SEE ③ TYPICAL SECTION

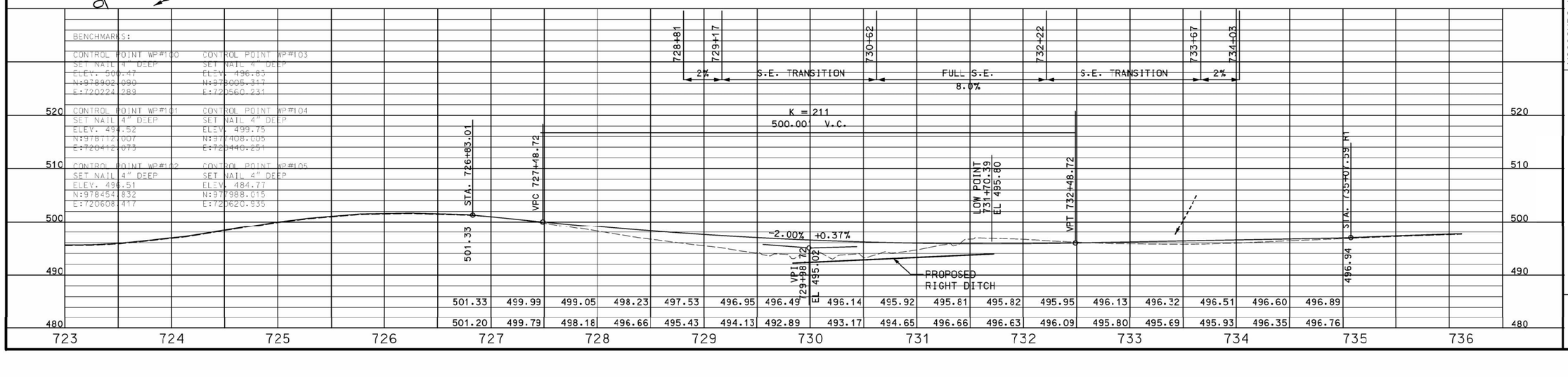
EXIST. 18" CMP BURIED (R&R)
STA. 723+13
35 LF X 18" GROUP B PIPE
W/ 2 - 18" GROUP B FES
108 SQ FT FULL DEPTH
PAVEMENT REPLACEMENT

PAVEMENT REMOVAL

NOTE:
1. DITCHES NEED TO BE REGRADED TO ACHIEVE POSITIVE DRAINAGE AT PIPE ENDS.
2. PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SLOPES THAT ARE GREATER THAN 2:1.
3. CONTRACTOR TO SHIFT PROPOSED PIPES TO AVOID BURIED UTILITIES.

BENCHMARKS:

CONTROL POINT WP#100	CONTROL POINT WP#103
SET NAIL 4" DEEP	SET NAIL 4" DEEP
ELEV. 500.47	ELEV. 496.83
N:978902.089	N:978005.317
E:720224.289	E:720560.231
CONTROL POINT WP#101	**CONTROL POINT WP#104**
SET NAIL 4" DEEP	SET NAIL 4" DEEP
ELEV. 494.52	ELEV. 499.75
N:978712.007	N:977408.005
E:720412.073	E:720440.251
CONTROL POINT WP#102	**CONTROL POINT WP#105**
SET NAIL 4" DEEP	SET NAIL 4" DEEP
ELEV. 496.51	ELEV. 484.77
N:978454.832	N:977988.015
E:720608.417	E:720620.935



STATE OF MISSOURI PROFESSIONAL ENGINEER
ERICA J. RIDGWAY NUMBER PE-2018003138

DATE PREPARED 1/18/2024

RCUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	6

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

PLAN SHEET
ROUTE MM
SHEET 3 OF 16

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AERIAL NOT SHOWN FOR CLARITY

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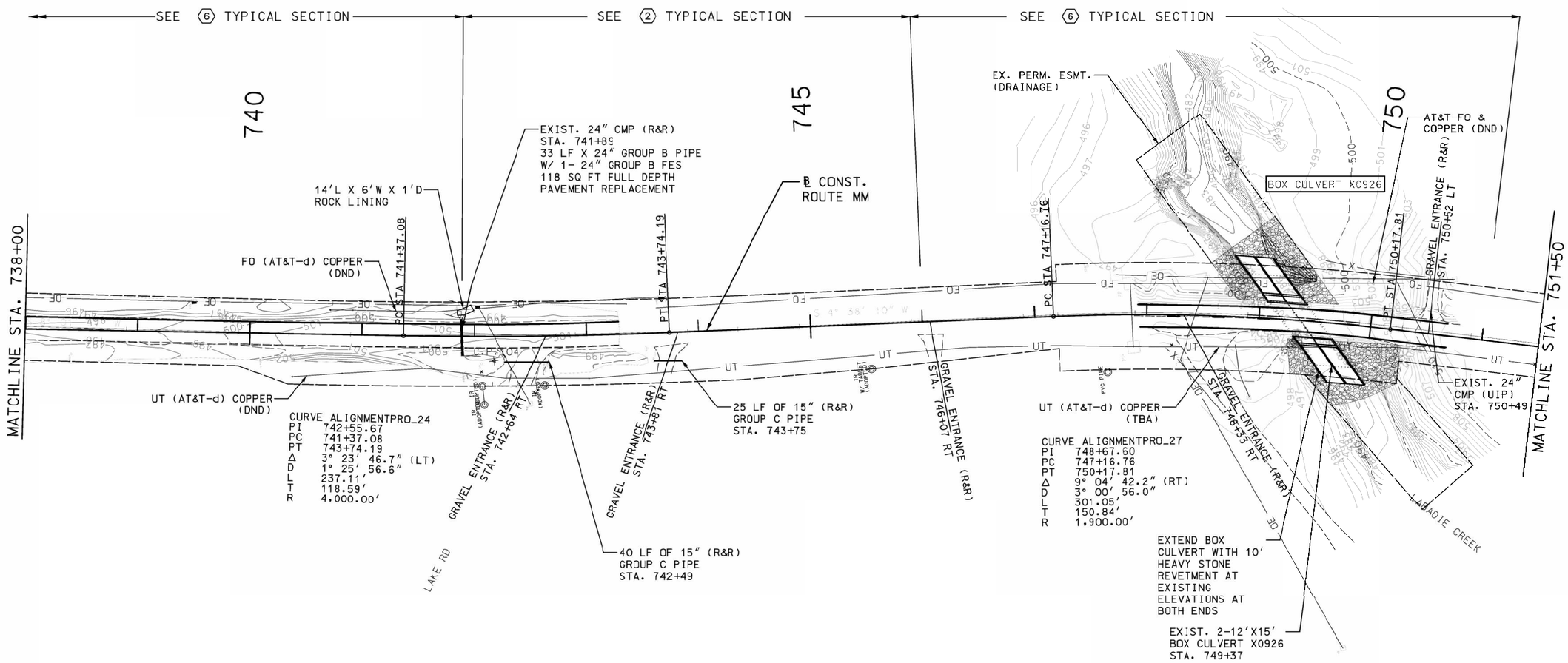

NOTE:
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2. PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SLOPES THAT ARE GREATER THAN 2:1.
3. CONTRACTOR TO SHIFT PROPOSED PIPES TO AVOID BURIED UTILITIES.

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 1/18/2024
ROUTE MM
STATE MO
DISTRICT SL
SHEET NO. 7
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

IF A SEAL IS PRESENT ON THIS SHEET IT WAS AFFIXED ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

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

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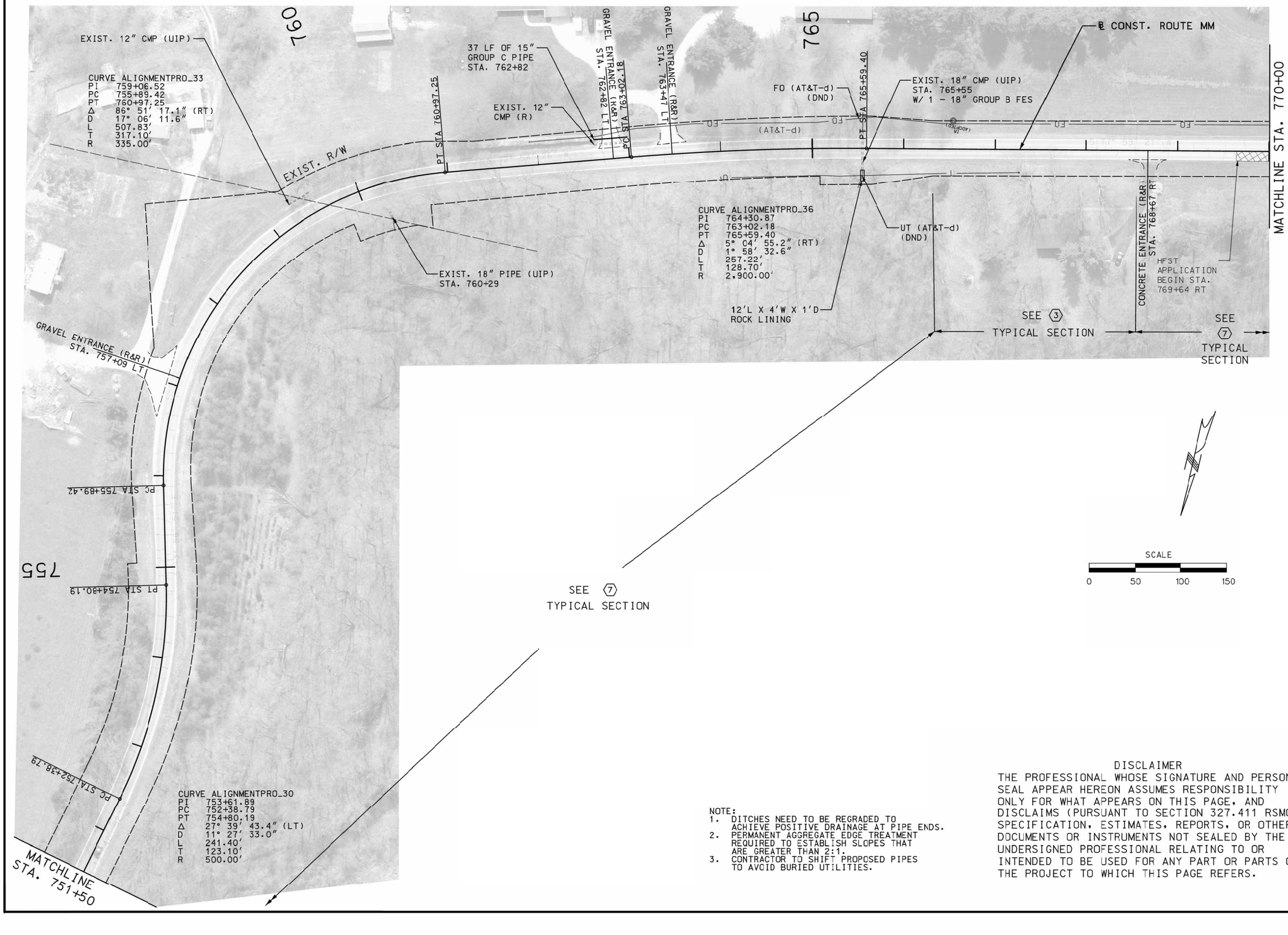
PLAN SHEET
ROUTE MM
SHEET 4 OF 16



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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 8
COUNTY FRANK_IN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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JEFFERSON CITY, MO 65102
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PLAN SHEET
ROUTE MM
SHEET 5 OF 16

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SCALE
0 50 100 150

MATCHLINE STA. 770+00

CURVE WIDENING
START STA. 770+10*

EXIST. 12" STEEL (R)

34 LF OF 15"
GROUP C PIPE
STA. 771+15

RELOCATED
AT&T COPPER

CONCRETE ENTRANCE (R&R)
STA. 771+12 LT

PC STA 771+37.65

HFST APPLICATION
BEGIN STA. 771+37 LT

EXIST. 15" CMP (R)
STA. 771+78
43 LF OF 18" GROUP B PIPE
W/ 2 - 18" GROUP B FES
108 SQ FT FULL DEPTH
PAVEMENT REPLACEMENT

12'L X 4'W X 1'D
ROCK LINING

AT&T-d
(DND)

GRAVEL ENTRANCE (R&R)
STA. 774+08 RT

GRAVEL ENTRANCE (R&R)
STA. 776+09 LT

25 LF OF 15"
GROUP C PIPE
STA. 776+00

EXIST. 12" CMP (R)

CURVE WIDENING
END STA. 778+56*

PT STA 777+28.24

GRAVEL ENTRANCE (R&R)
STA. 776+28 RT

HFST APPLICATION
END STA. 777+28 RT

MAX. CURVE WIDENING - 9'8"
STA. 772+02 TO STA. 776+64

CJRVE ALIGNMENTPRO_39
PI 775+49.12
PC 771+37.65
PT 777+28.24
Δ 102° 32' 27.0" (LT)
D 17° 21' 44.5"
L 590.59'
T 411.47'
R 330.00'

* CURVE WIDENING
STA 770+10 TO STA 772+02 - 0' TO 9.68'
STA 772+02 TO STA 776+64 - 9.68'
STA 776+84 TO STA 778+56 - 9.68' TO 0'

SEE ⟨7⟩ TYPICAL SECTION

SEE ⟨3⟩ TYPICAL SECTION

SEE ⟨2⟩ TYPICAL SECTION

775 780 785

PC STA 779+61.80

GRAVEL ENTRANCE (R&R)
STA. 780+38 RT

61 LF OF 24"
GROUP C PIPE
STA. 780+42

EXIST. 24" PLASTIC (R)

CURVE ALIGNMENTPRO_42
PI 782+14.61
PC 779+61.80
PT 784+66.76
Δ 7° 13' 58.6" (LT)
D 1° 25' 56.6"
L 504.96'
T 252.81'
R 4,000.00'

CURVE ALIGNMENTPRO_45
PI 787+04.85
PC 785+81.25
PT 788+28.36
Δ 3° 08' 47.4" (RT)
D 1° 16' 23.7"
L 247.13'
T 123.59'
R 4,500.00'

ROCK LINING
76 CY

MGS LONG SPAN GUARDRAIL SPAN (TYP)

MGS GUARDRAIL (TYP)

TYPE A CET (MASH) (TYP)

℄ CONST. ROUTE MM

EXIST. R/W

131.03'

STA 784+66.76

EX. PERM. ESMT. (DRAINAGE)

FO (AT&T-d) (DND)

STA 785+81.25

STA 786+04 RT

ASPHALT ENTRANCE (R&R)

UT (AT&T-d)
(DND)

COLEMAN RD

EXIST. 24"
CONC. BOX (UIP)
STA. 786+10

EX. PERM. ESMT.
(DRAINAGE)

UT (AT&T-d)
(DND)

STA 784+62.25
SKEW 10°00'00" L.A.
BLD. 8' X 7' X 32.59' RCB
PARALLEL WINGS ON US & DS SIDE
(SEE SPECIAL CULVERT DETAIL SHEETS)
SEE STD. PLAN 703.38 FOR EXISTING
HEADWALL AND WING REMOVAL
D.A.= 288 ACRES Q50 = 676 CFS

ROCK BLANKET
189 CY

AREA TO BE REGRADED AND ROCK ADDED TO COVER
EXPOSED UTILITIES AND PREVENT EROSION.

MATCHLINE STA. 787+50

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	9

COUNTY
FRANK_IN

JOB NO.
J6S3368

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)

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PLAN SHEET
ROUTE MM
SHEET 6 OF 16

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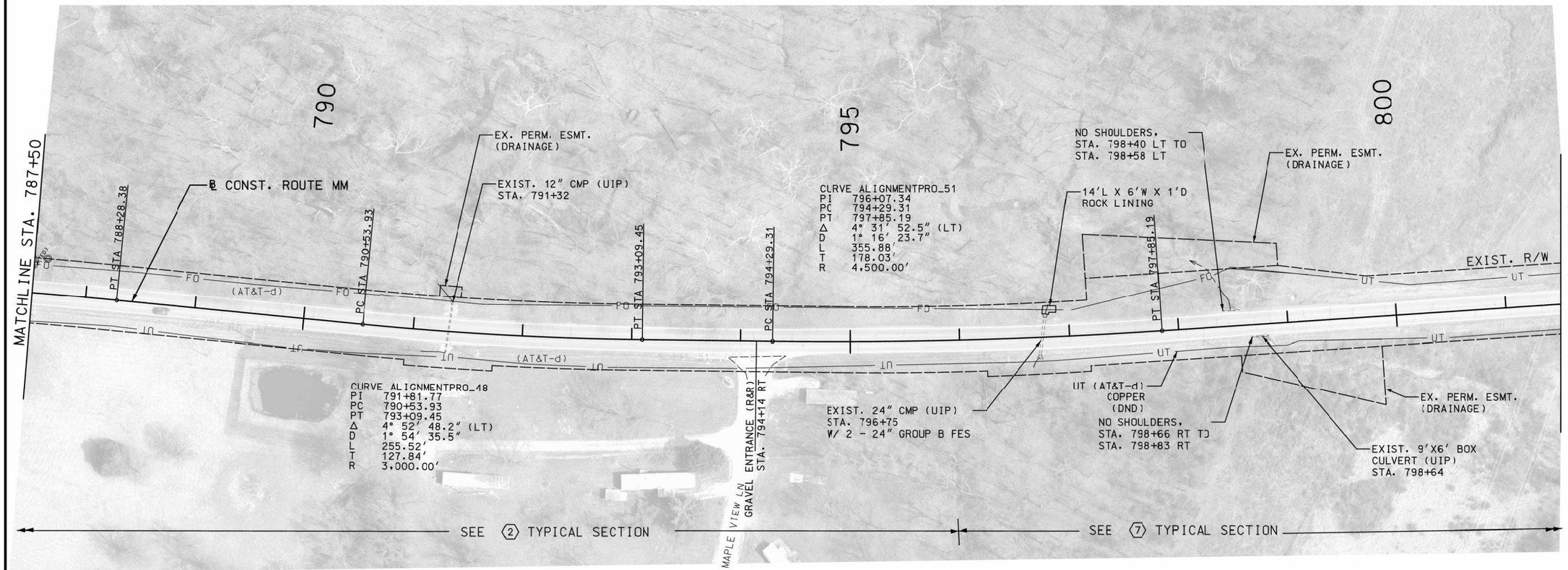

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NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	10

COUNTY
FRANK_IN
JOB NO.
J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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PLAN SHEET
ROUTE MM
SHEET 7 OF 16

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SCALE
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MATCHLINE STA. 801+50

SEE (1) TYPICAL SECTION

805

GRAVEL ENTRANCE (R&R) STA. 803+14 LT

EX. PERM. ESMT. (DRAINAGE)

EXIST. 12" CMP (R)

GRAVEL ENTRANCE (R&R) STA. 806+64 LT

32 LF OF 15' GROUP C PIPE STA. 806+66

EXIST. R/W

EXIST. 18" CMP (UIP) STA. 804+49

HFST APPLICATION BEGIN STA. 806+93 RT

8'L X 7'W X 1'D ROCK LINING

RELOCATED AT&T COPPER

EXIST. 30" CMP (R&R) STA. 808+59 35 LF X 30" GROUP B PIPE W/ 2 - 30" GROUP B FES 157 SQ FT FULL DEPTH PAVEMENT REPLACEMENT

810

HFST APPLICATION BEGIN STA. 808+31 LT

2 - 30" OR ALLOWED SUBSTITUTE GROUP B FLARED END SECTION

℄ CONST. ROUTE MM

PC STA 808+30.97

FO

UT

(AT&T-d)

CURVE ALIGNMENTPRO_54
PI 811+15.17
PC 808+30.97
PT 813+61.81
Δ 50° 41' 28.0" (LT)
D 9° 32' 57.5"
L 530.84'
T 284.20'
R 600.00'

HFST APPLICATION END STA. 815+00 LT

LATEAR WAY

815

SEE (2) TYPICAL SECTION

MATCHLINE STA. 816+50

GRAVEL ENTRANCE (R&R) STA. 814+34 LT

PT STA 813+61.81 LT

GRAVEL ENTRANCE (R&R) STA. 814+46 RT

HFST APPLICATION END STA. 813+61 RT

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	11

COUNTY FRANK_IN

JOB NO. J6S3368

CONTRACT ID. .

PROJECT NO. .

BRIDGE NO. .

DESCRIPTION	DATE

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
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PLAN SHEET
ROUTE MM
SHEET 8 OF 16

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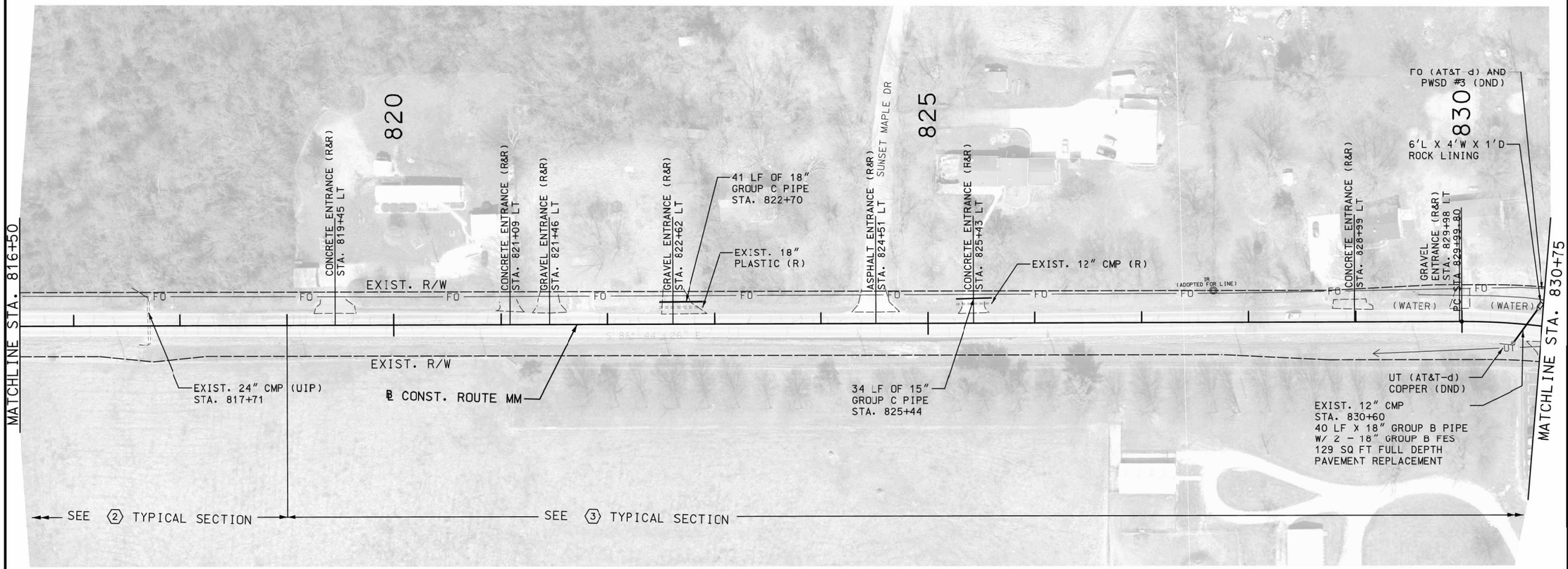

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ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	12

COUNTY FRANK_IN

JOB NO. J6S3368

CONTRACT ID. .

PROJECT NO. .

BRIDGE NO. .

DESCRIPTION	DATE
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PLAN SHEET
ROUTE MM
SHEET 9 OF 16

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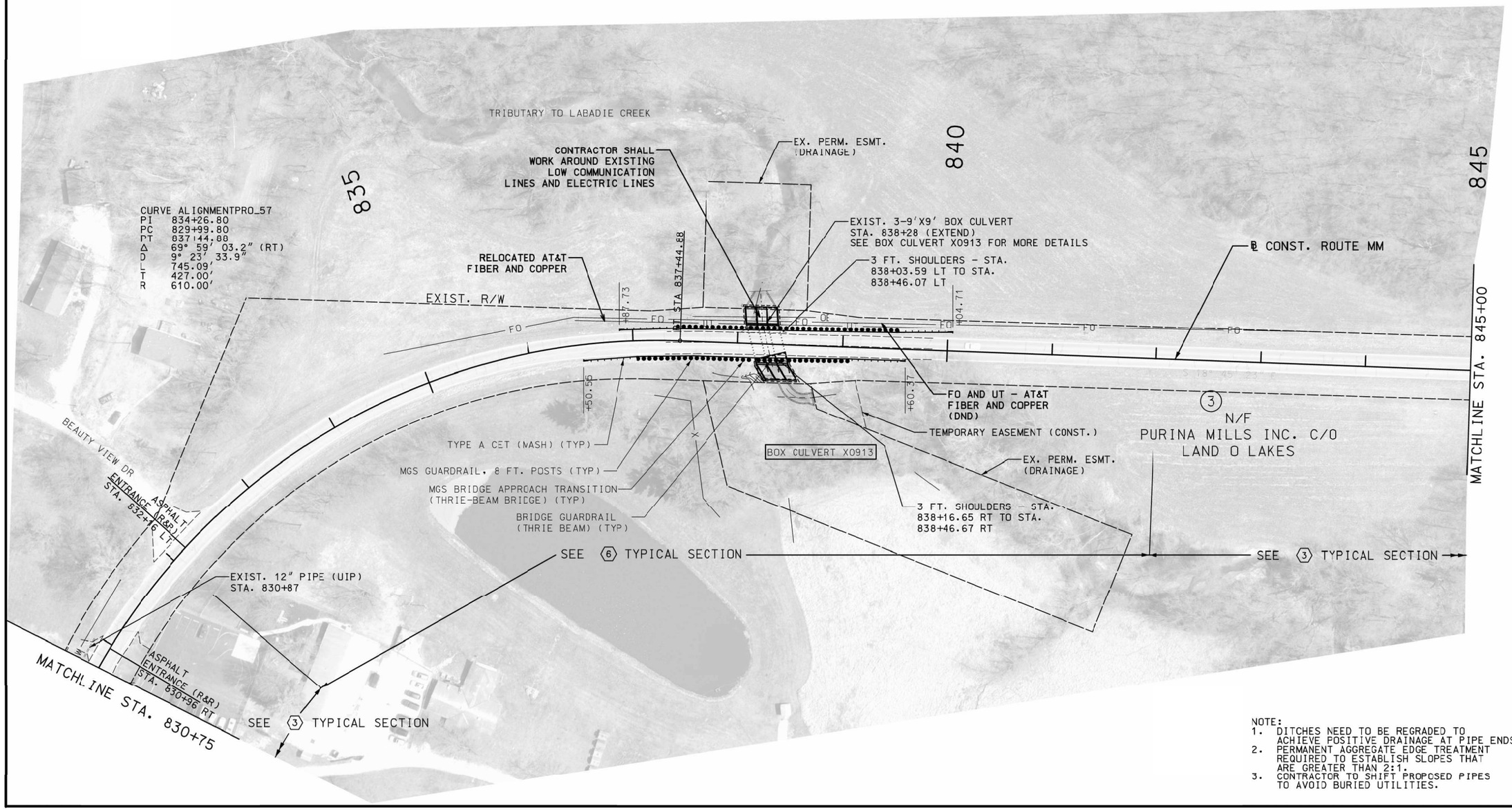

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 13
COUNTY FRANK_IN
JOB NO. J6S3368
CONTRACT ID. .
PROJECT NO. .
BRIDGE NO. .

DATE	DESCRIPTION
.	.

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JEFFERSON CITY, MO 65102
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PLAN SHEET
ROUTE MM
SHEET 10 OF 16

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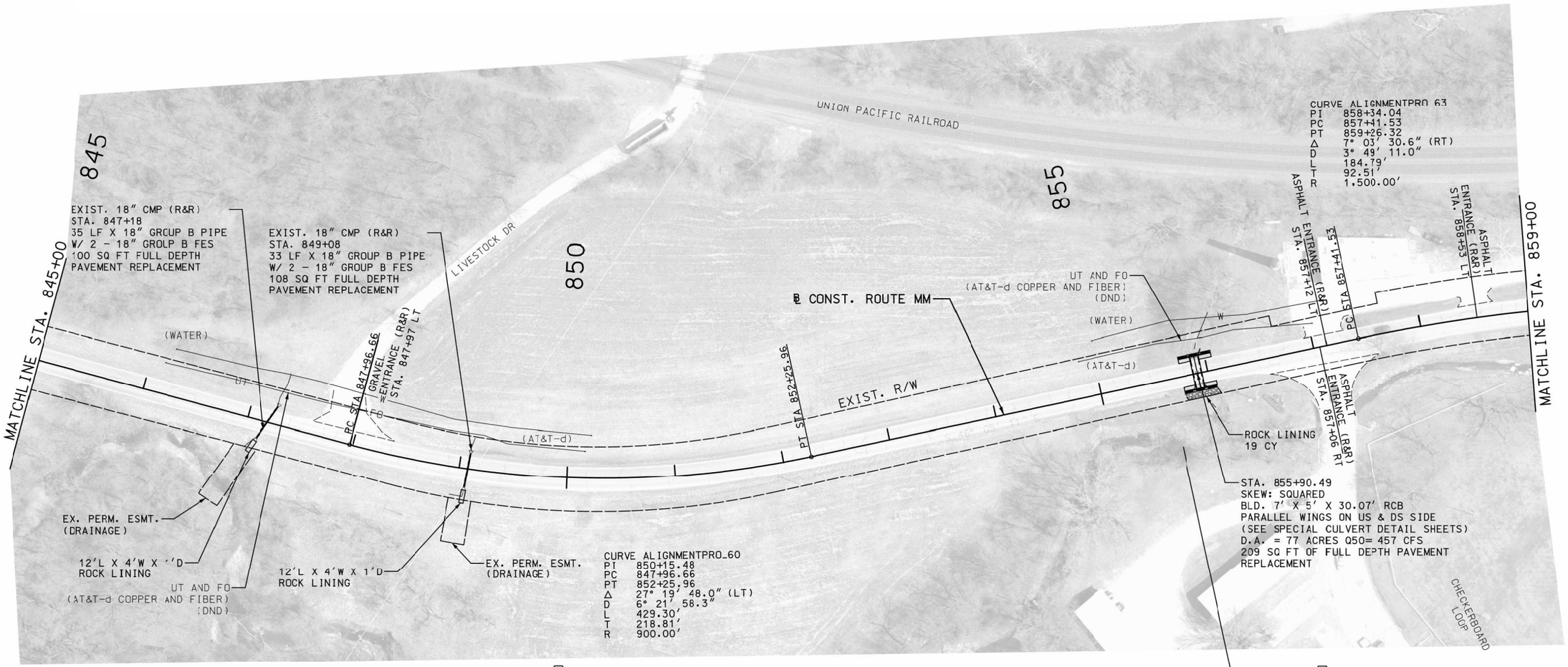

CURVE ALIGNMENTPRO_60
PI 850+15.48
PC 847+96.66
PT 852+25.96
Δ 27° 19' 48.0" (LT)
D 6° 21' 58.3"
L 429.30'
T 218.81'
R 900.00'

CURVE ALIGNMENTPRO 63
PI 858+34.04
PC 857+41.53
PT 859+26.32
Δ 7° 03' 30.6" (RT)
D 3° 49' 11.0"
L 184.79'
T 92.51'
R 1,500.00'

STA. 855+90.49
SKEW: SQUARED
BLD. 7' X 5' X 30.07' RCB
PARALLEL WINGS ON US & DS SIDE
(SEE SPECIAL CULVERT DETAIL SHEETS)
D.A. = 77 ACRES Q50= 457 CFS
209 SQ FT OF FULL DEPTH PAVEMENT
REPLACEMENT

SEE ③ TYPICAL SECTION
SEE ⑦ TYPICAL SECTION

NOTE:
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ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

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MM	MO
DISTRICT	SHEET NO.
SL	14

COUNTY
FRANK_IN

JOB NO.
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PLAN SHEET
ROUTE MM
SHEET 11 OF 16

DISCLAIMER
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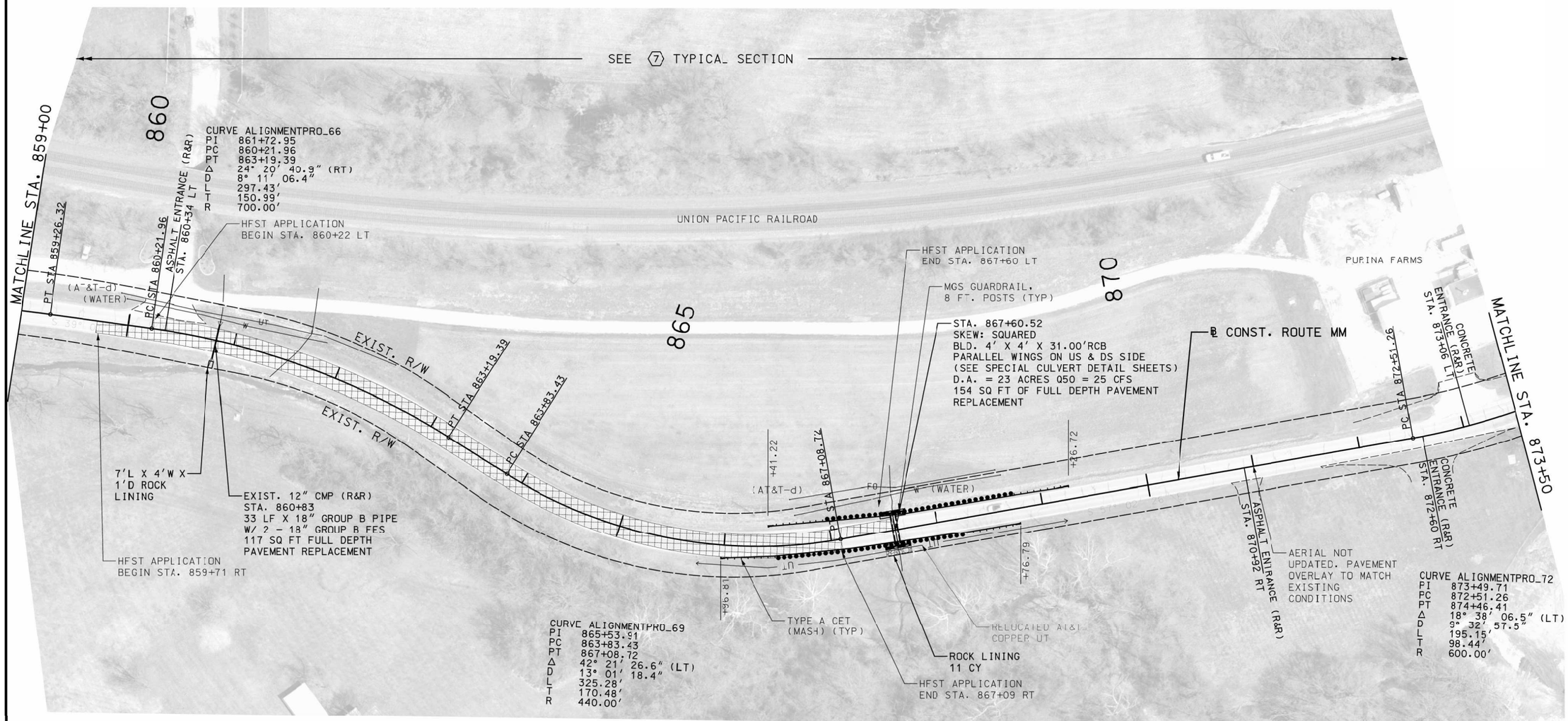

NOTE:
1. DITCHES NEED TO BE REGRADED TO ACHIEVE POSITIVE DRAINAGE AT PIPE ENDS.
2. PERMANENT AGGREGATE EDGE TREATMENT REQUIRED TO ESTABLISH SLOPES THAT ARE GREATER THAN 2:1.
3. CONTRACTOR TO SHIFT PROPOSED PIPES TO AVOID BURIED UTILITIES.

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 15
COUNTY FRANK_IN
JOB NO. J6S3368
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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002011000

PLAN SHEET
ROUTE MM
SHEET 12 OF 16

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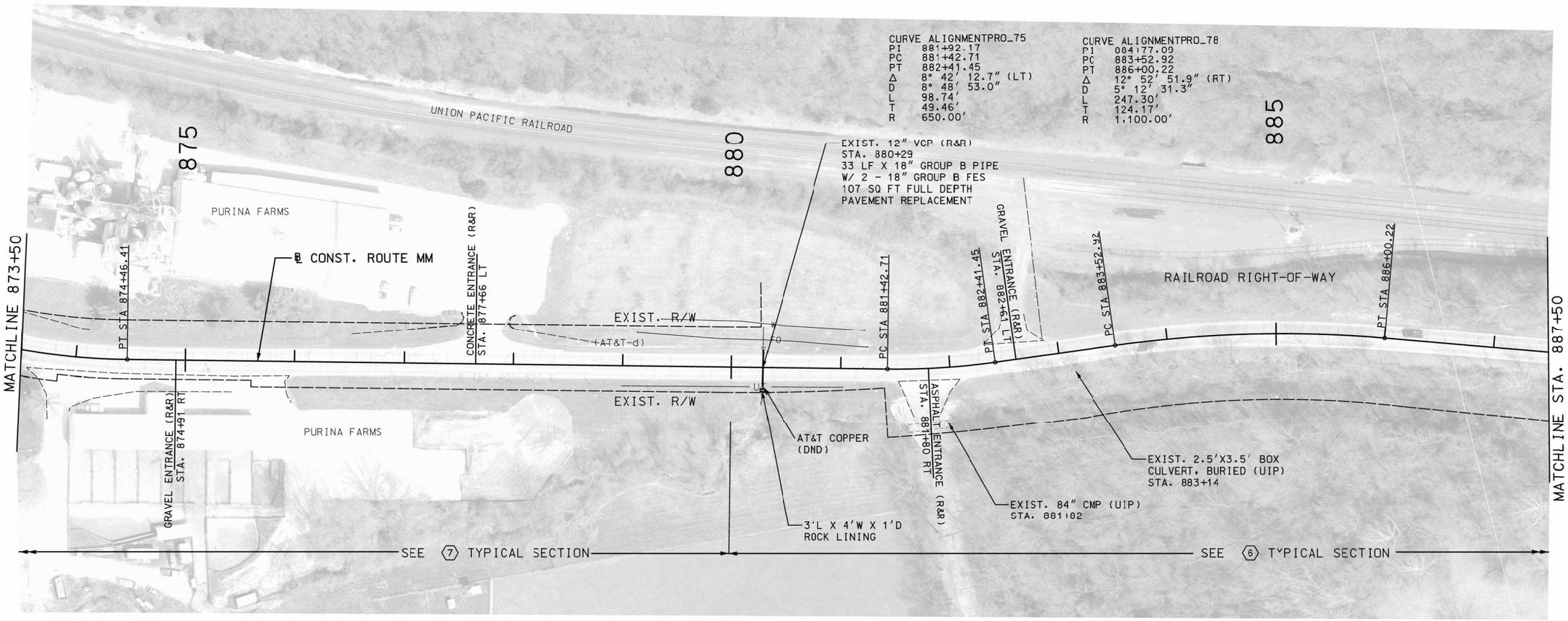

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STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	16

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
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PLAN SHEET
ROUTE MM
SHEET 13 OF 16

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SCALE
0 50 100 150

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PC 894+40.66
PT 896+57.96
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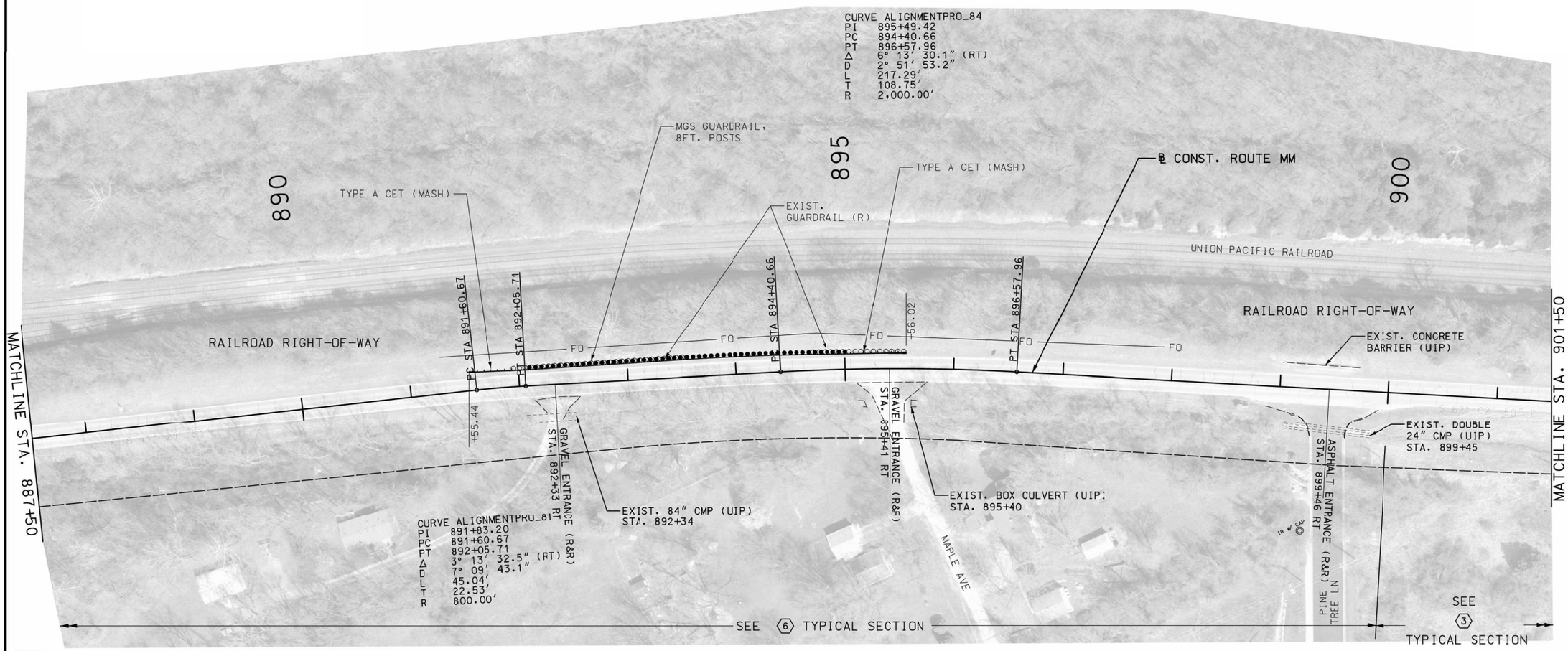
T 108.75′
R 2,000.00′



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PT 892+05.71
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L 45.04′
T 22.53′
R 800.00′

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PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED 1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	17

COUNTY FRANK_IN
JOB NO. J6S3368
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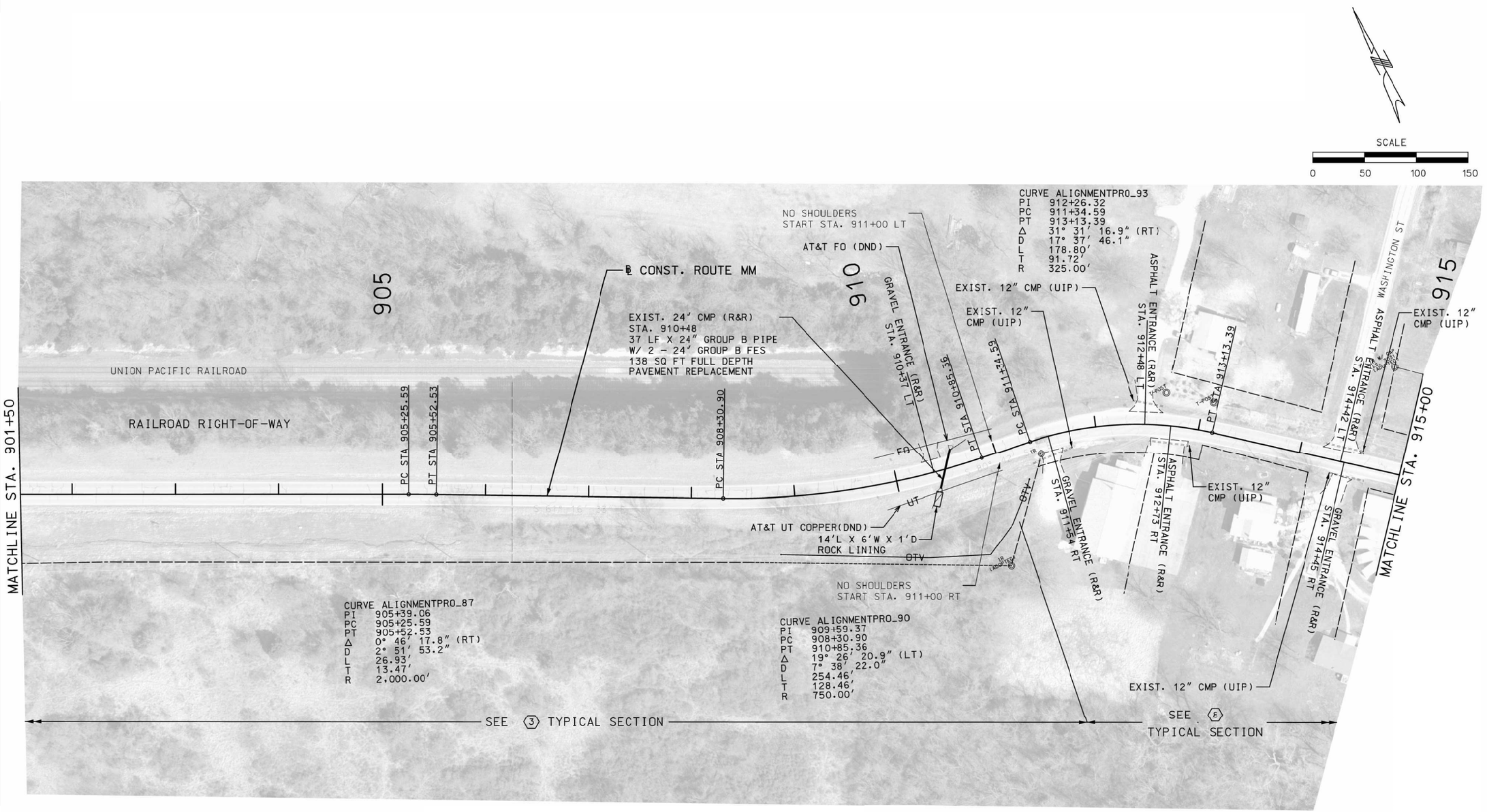
PLAN SHEET
ROUTE MM
SHEET 14 OF 16



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PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	18

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
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PLAN SHEET
ROUTE MM
SHEET 15 OF 16

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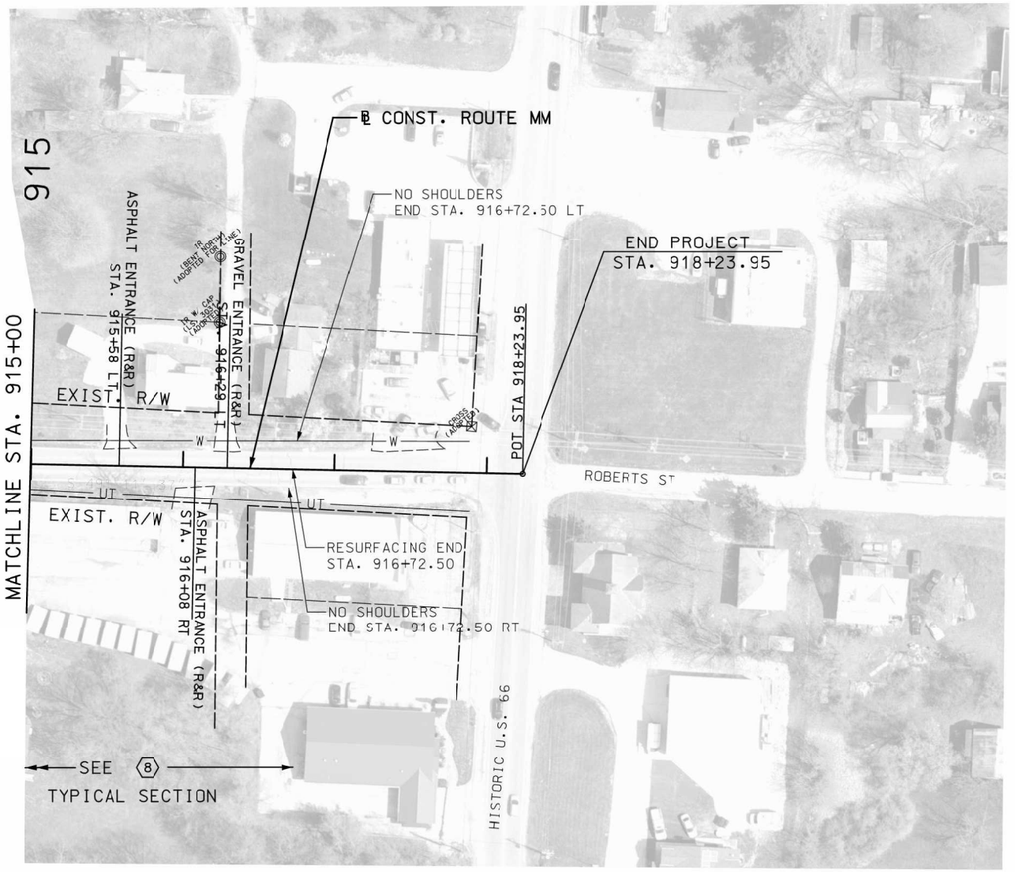

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0 50 100 150

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	19

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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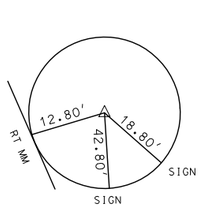
PLAN SHEET
ROUTE MM
SHEET 16 OF 16

COORDINATE POINT LISTING – MISSOURI COORDINATE SYSTEM OF 1983

SHEET NO	STATION	LOCATION	✳ OFFSET (FEET)	STATE PLANE NORTHING (FEET)	STATE PLANE EASTING (FEET)	ELEVATION	STATE PLANE ZONE	DESCRIPTION	GPK POINT ID	VERTICAL	GEOID MODEL
ROUTE MM											
2	721+06.10	RIGHT	16.06	979242.697	719899.105	500.479	EAST	CP 106			
3	725+76.73	LEFT	23.58	978902.090	720224.289	500.468	EAST	CP 100			
3	728+45.17	LEFT	17.40	978712.007	720412.073	494.524	EAST	CP 101			
3	731+69.58	LEFT	5.99	978454.832	720608.417	496.506	EAST	CP 102			
3	736+09.77	LEFT	14.52	978005.317	720560.231	496.828	EAST	CP 103			
3	736+18.42	LEFT	77.05	977988.015	720620.935	484.766	EAST	CP 105			
4	742+17.56	RIGHT	21.63	977408.005	720440.251	499.754	EAST	CP 104			
4	700+00.00	CL	0.00	981273.923	719827.712	–	EAST	BEGIN PROJECT	10000		
4	725+00.00	LEFT	0.19	978940.468	720153.853	–	EAST	STA. 25+06.18, 0.00′ ℄ EXIST. R/W	10001		
4	736+90.04	LEFT	3.17	977927.419	720537.776	–	EAST	STA. 37+00.00, 0.00′ ℄ EXIST. R/W	10002		
4	918+23.95	CL	0.00	967114.414	729289.654	–	EAST	END PROJECT	10003		

✳ GROUND DISTANCE

REFERENCE POINTS



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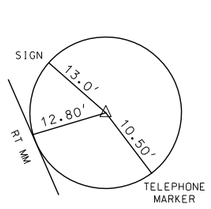
E:720224.289
BENCHMARK ELEV. 500.468



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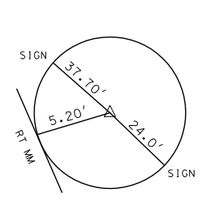
BENCHMARK ELEV. 494.524



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CONTROL POINT WP#102
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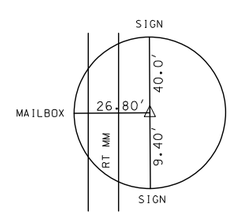
E:720608.417
BENCHMARK ELEV. 496.506



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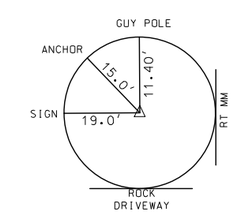
BENCHMARK ELEV. 496.828



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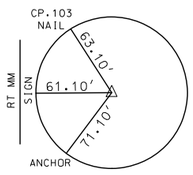
E:720440.251
BENCHMARK ELEV. 499.754



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CONTROL POINT WP#105
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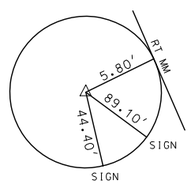
BENCHMARK ELEV. 484.766



REFERENCE TIE
CONTROL POINT WP#106
SET NAIL 4″ DEEP
N:979242.697
E:719899.105
BENCHMARK ELEV. 500.479

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 20
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
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GEOMETRY SHEETS
ROUTE MM

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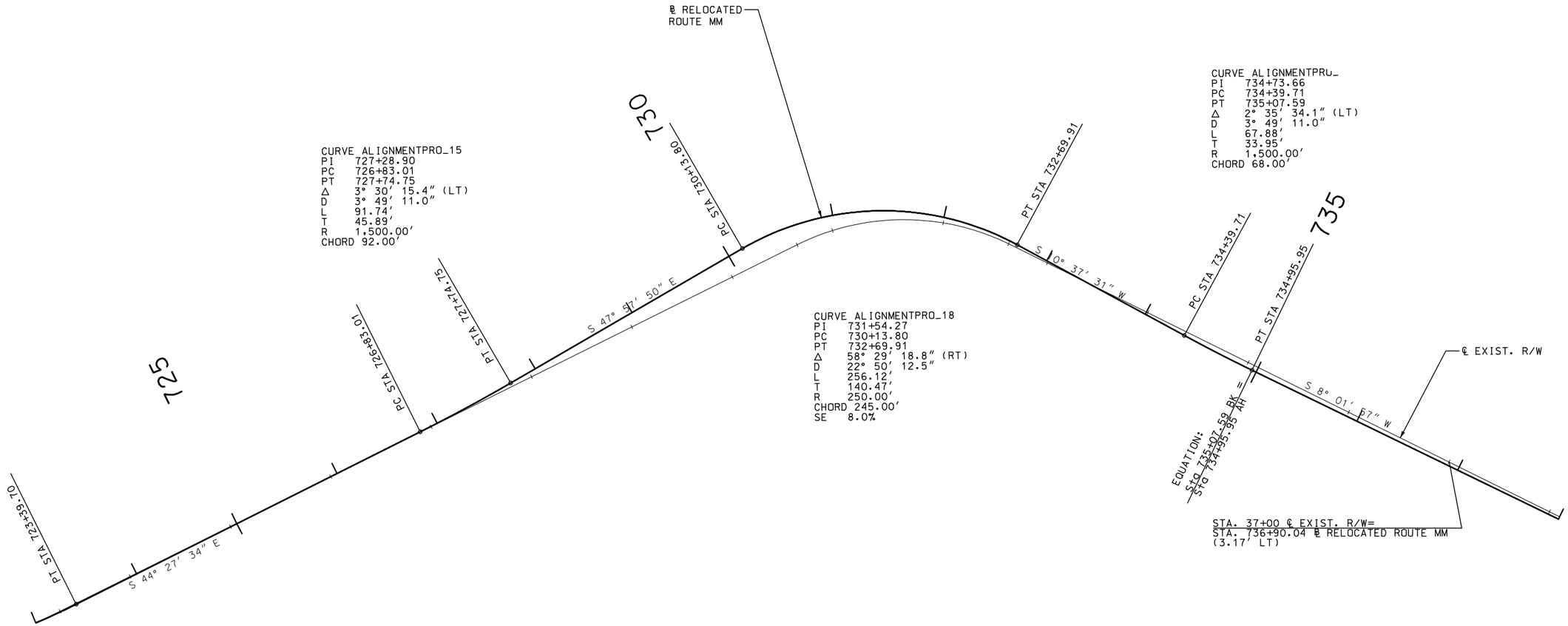

CURVE ALIGNMENTPRO_15
PI 727+28.90
PC 726+83.01
PT 727+74.75
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D 3° 49′ 11.0″
L 91.74′
T 45.89′
R 1,500.00′
CHORD 92.00′

CURVE ALIGNMENTPRO_18
PI 731+54.27
PC 730+13.80
PT 732+69.91
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D 22° 50′ 12.5″
L 256.12′
T 140.47′
R 250.00′
CHORD 245.00′
SE 8.0%

CURVE ALIGNMENTPRO_
PI 734+73.66
PC 734+39.71
PT 735+07.59
Δ 2° 35′ 34.1″ (LT)
D 3° 49′ 11.0″
L 67.88′
T 33.95′
R 1,500.00′
CHORD 68.00′

REALIGNMENT GEOMETRY

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138
Erica Ridgway

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	21

COUNTY
FRANKLIN
JOB NO.
J6S3368
CONTRACT ID.
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GEOMETRY SHEETS
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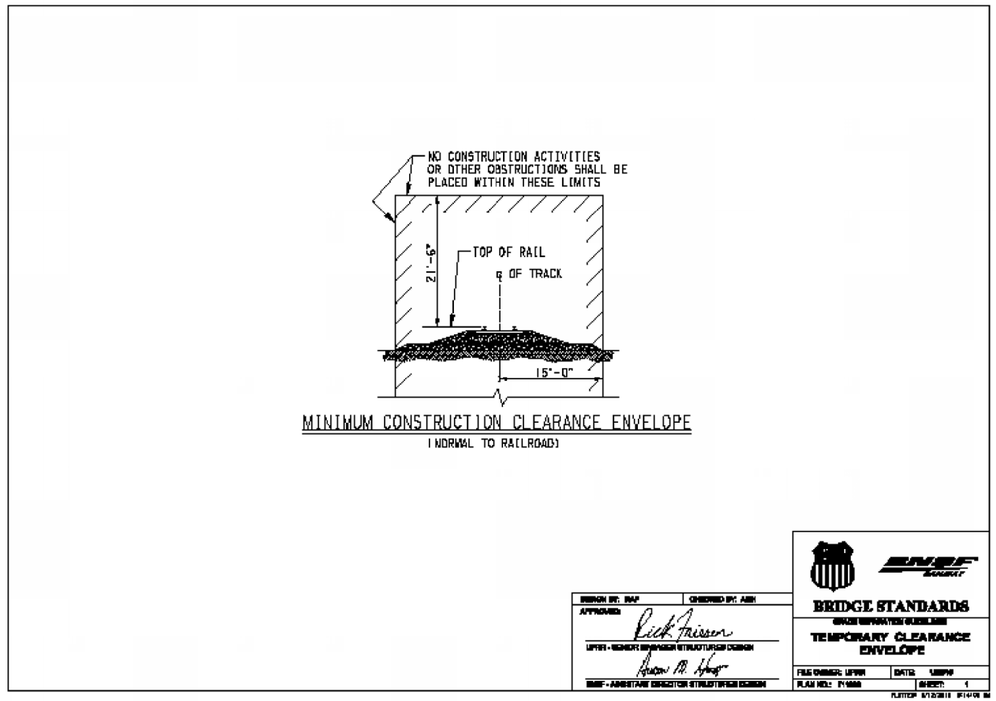


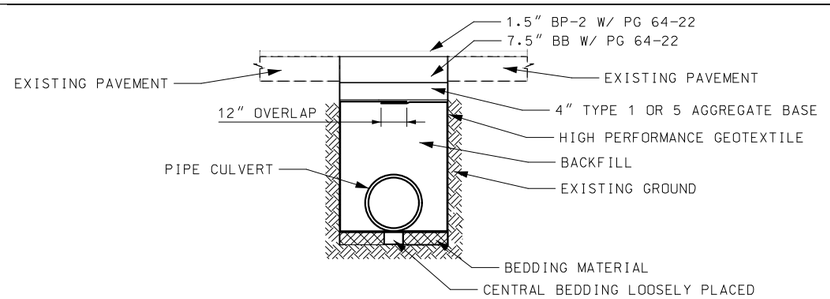
MINIMUM CONSTRUCTION CLEARANCE ENVELOPE
(NORMAL TO RAILROAD)

DESIGN BY: RAP | CHECKED BY: ABH
APPROVED
UPRR - SENIOR MANAGER STRUCTURES DESIGN
BNSF - ASSISTANT DIRECTOR STRUCTURES DESIGN

BRIDGE STANDARDS
TEMPORARY CLEARANCE ENVELOPE
FILE OWNER: UPRR | DATE:
PLAN NO.: | SHEET: 1

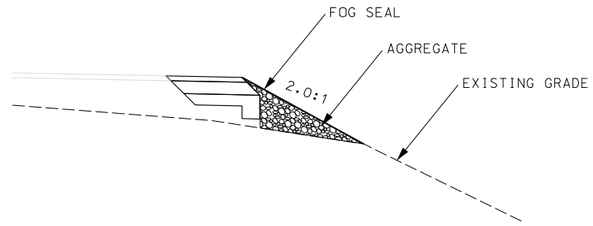
36

Railroad Notes
1. All permanent clearances shall be verified before project closing. Existing clearances shall not be decreased due to the proposed project.
2. Regardless of underlying land ownership, all shoring systems within Railroad right-of-way or that may impact the Railroad's operations and/or supports the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring.
3. The contractor submit and provide sufficient safety measures to protect unattended excavations to the Railroad for approval.
4. All demolitions/removals within the Railroad's right-of-way and/or that may impact the Railroad's tracks or operations shall be in compliance with the current Railroad's Demolition Guidelines.
5. Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment.
6. Call Before You Dig. Prior to excavation, disrupting, or working on the Railroad property the contractor shall locate and protect UPRR facilities by calling the UPRR "Call Before You Dig"(CBYD) phone number: 1-800-336-9193.
7. Construction activities, including falsework/formwork, are not allowed within the "Minimum Construction Clearance Envelope" as they would otherwise disrupt Railroad operations.

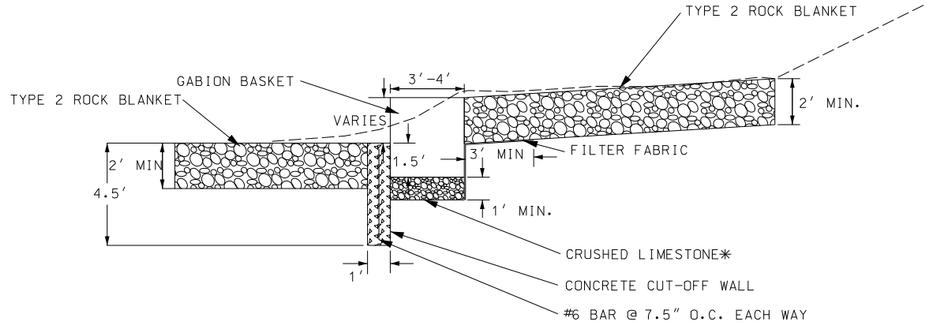


TRENCH INSTALLATION

PIPE CULVERT TYPICAL SECTION

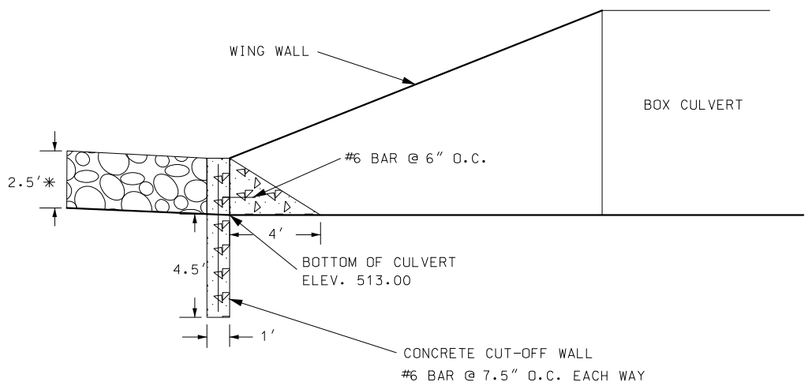


PERMANENT AGGREGATE EDGE TREATMENT DETAIL



GABION BASKET DETAIL

*CRUSHED LIMESTONE INCLUDED IN GABION COST



CONCRETE WEIR DETAIL

* 2.5' FOR NORTH CELL
2.0' FOR SOUTH CELL

ROCK LINING

CRUSHED LIMESTONE

ADJUST AS DIRECTED BY ENGINEER TO FIT FIELD CONDITIONS.

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DRAWING NOT TO SCALE

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	22

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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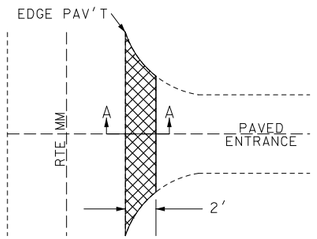
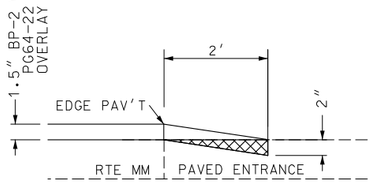
SPECIAL SHEET
ROUTE MM
SHEET 1 OF 2

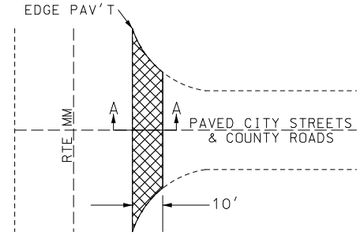
REV.



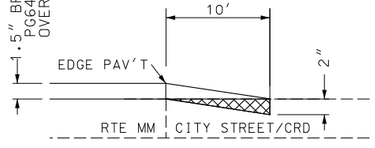
PLAN VIEW FOR PAVED
PRIVATE AND COMMERCIAL ENTRANCES



TYPICAL
SECTION A–A



PLAN VIEW FOR PAVED
CITY STREETS AND COUNTY ROADS



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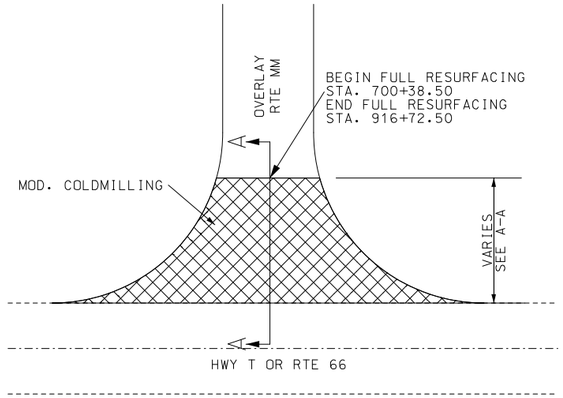
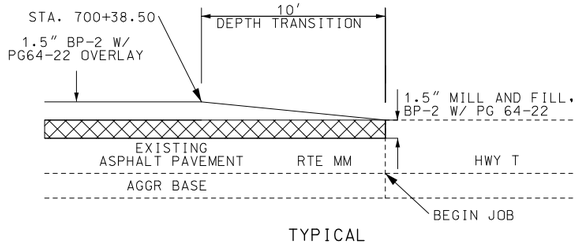
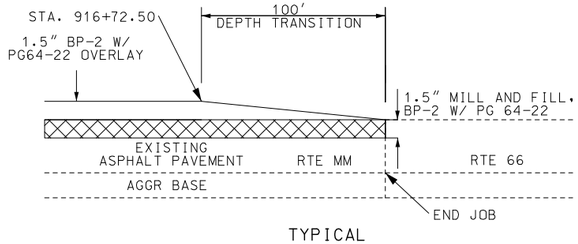
SECTION A–A



PLAN VIEW

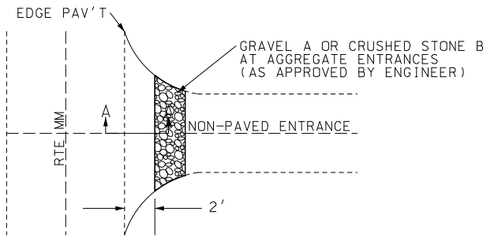


TYPICAL
SECTION A–A
HWY T

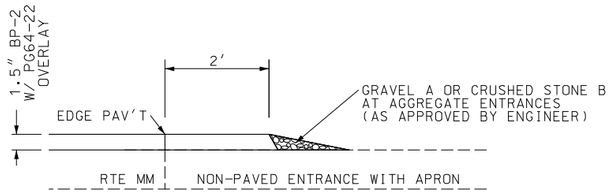


TYPICAL
SECTION A–A
RTE 66

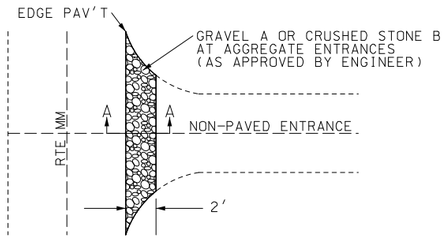
MODIFIED COLDMILLING
(DEPTH TRANSITIONS)
BEGINNING AND END OF PROJECT



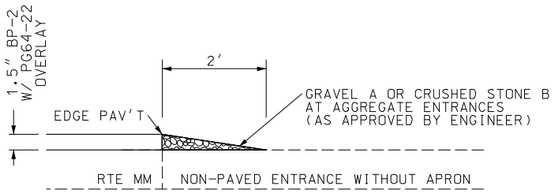
PLAN VIEW FOR NON-PAVED PRIVATE
AND COMMERCIAL ENTRANCES WITH EXISTING APRON



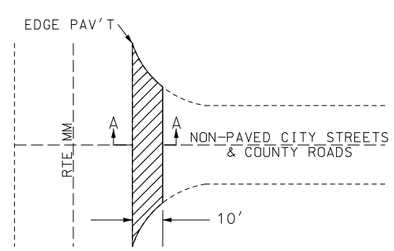
TYPICAL
SECTION A–A



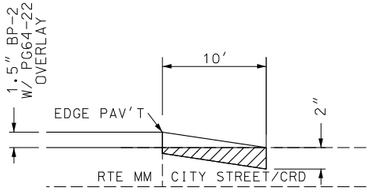
PLAN VIEW FOR NON-PAVED PRIVATE
AND COMMERCIAL ENTRANCES WITHOUT EXISTING APRON



TYPICAL
SECTION A–A



PLAN VIEW FOR NON-PAVED
CITY STREETS AND COUNTY ROADS



TYPICAL
SECTION A–A

COLDMILLING

GRADING

GRAVEL A OR
CRUSHED STONE 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.

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	23

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
. . . . .	. . . . .

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SHEET 2 OF 2

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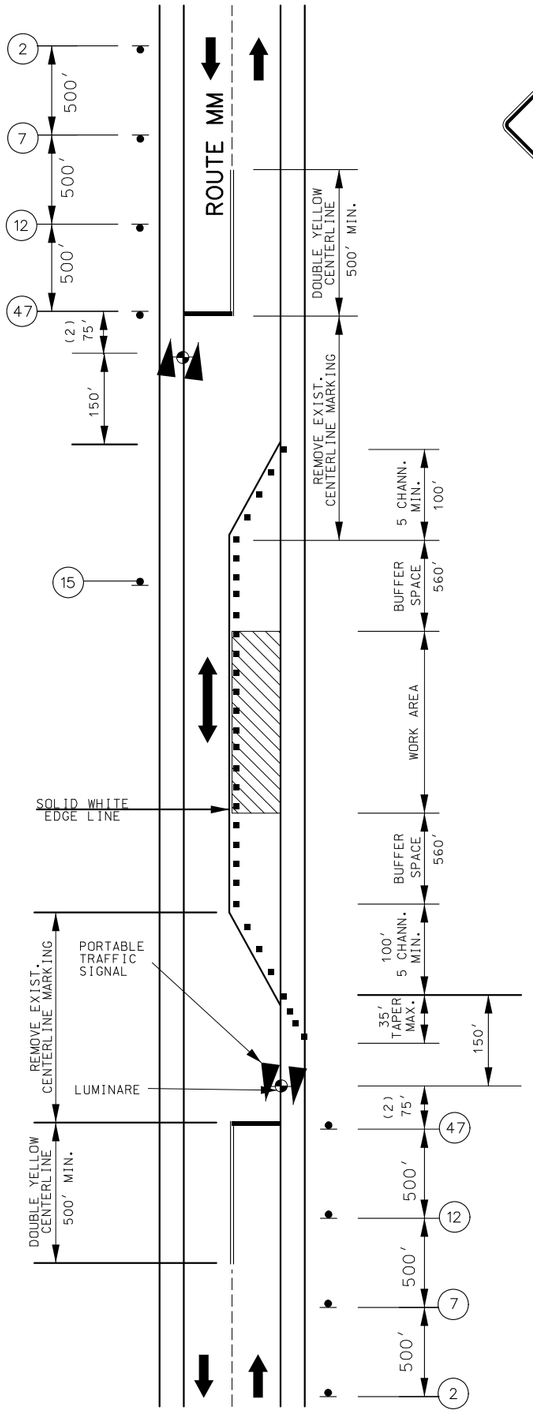
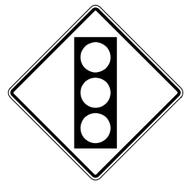


LANE CLOSURE ON TWO-LANE ROAD
USING TRAFFIC CONTROL SIGNALS

W020-1
(2)

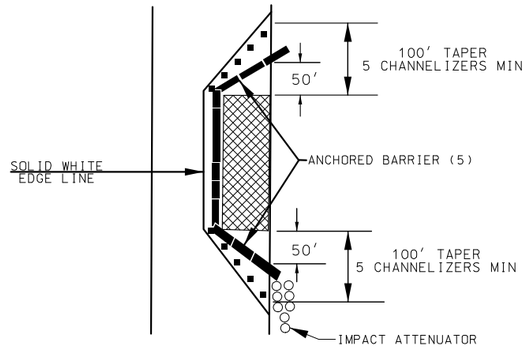
W020-4
(7)



W03-3
(12)

W01-4R
(15)

R10-6L
(47)



TEMPORARY TRAFFIC SIGNAL
DETAIL WITH BARRIER (1)

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER (TRIM-LINE)
- WORK AREA
- PORTABLE TRAFFIC SIGNAL & LUMINARE
- 24" WHITE STOP BAR
- ADVANCED WARNING RAIL SYSTEM

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NOTES:

FOR PORTABLE TRAFFIC SIGNAL, TEMPORARY TRAFFIC SIGNAL, AND TYPICAL ACTUATED PHASING, SEE EPG 616.8.12a PORTABLE TRAFFIC SIGNAL, TEMPORARY TRAFFIC BARRIER DETAILS AND SEE 616.8.12b ESTIMATED AVERAGE PEAK HOUR SIGNAL DELAY FOR SIGNAL CONTROL ONE-LANE TWO-WAY OPERATION.

(1) SIGNING AND PAVEMENT MARKING IDENTICAL ON BOTH APPROACHES.

(2) 75' RECOMMENDED SPACING. SPACING MAY BE BETWEEN 40' AND 150'

(3) NON-INTRUSIVE DETECTION IS PREFERRED. HOWEVER, IF OTHER VEHICLE INTERFERENCE IS PRESENT (I.E. PARKING LOTS OR SIDE ROAD ACTIVITY), THEN OTHER DETECTION METHODS MAY BE USED.

(4) IF SIDE ROADS OR DRIVEWAY OCCUR WITHIN THE LIMITS OF THE STOP BARS, ADDITIONAL INDICATIONS AND PHASING ARE REQUIRED. FURTHERMORE, RIGHT TURNS SHALL BE PROHIBITED FROM THESE ACCESS POINTS DURING THE RED INTERVAL.

(5) FLARE BARRIER TO EXTEND BEYOND CLEAR ZONE OR FLARE BARRIER TO EDGE LINE AND USE APPROVED END TREATMENT. UPON THE DISCRETION OF THE SUPERVISOR OR ENGINEER, THE END TREATMENT MAY BE LOCATED WITHIN THE ROADWAY IF THERE IS NOT ENOUGH WIDTH TO GET EQUIPMENT OR VEHICLES INTO THE WORK AREA. BARRIER FLARE RATE IS 8:1.

IF RUMBLE STRIPS ARE USED, REVIEW 616.6.87 RUMBLE STRIPS.

SEE EPG 616.12 WORK ZONE SPEED LIMITS FOR SPEED LIMIT GUIDELINES.

FOR FLAGS AND ADVANCED WARNING RAIL SYSTEM, REFER TO EPG 616.6.2.2 FLAGS AND ADVANCE WARNING RAIL SYSTEM.

TEMPORARY TRAFFIC CONTROL SIGNALS SHALL BE INSTALLED AND OPERATED IN ACCORDANCE WITH THE PROVISIONS OF MUTCD PART 4.TEMPORARY TRAFFIC CONTROL SIGNALS SHALL MEET THE PHYSICAL DISPLAY AND OPERATIONAL REQUIREMENTS OF CONVENTIONAL TRAFFIC CONTROL SIGNALS.

TEMPORARY TRAFFIC CONTROL SIGNAL TIMING SHALL BE ESTABLISHED BY AUTHORIZED OFFICIALS. DURATIONS OF RED CLEARANCE INTERVALS SHALL BE ADEQUATE TO CLEAR THE ONE LANE SECTION OF CONFLICTING VEHICLES.

WHEN THE TEMPORARY TRAFFIC CONTROL SIGNAL IS CHANGED TO THE FLASHING MODE, EITHER MANUALLY OR AUTOMATICALLY,RED SIGNAL INDICATIONS SHALL BE FLASHED TO BOTH APPROACHES.

STOP LINES SHALL BE INSTALLED WITH TEMPORARY TRAFFIC CONTROL SIGNALS FOR INTERMEDIATE AND LONG-TERM CLOSURES. EXISTING CONFLICTING PAVEMENT MARKINGS AND RAISED PAVEMENT MARKER REFLECTORS BETWEEN THE ACTIVITY AREA AND THE STOP LINE SHALL BE REMOVED. AFTER THE TEMPORARY TRAFFIC CONTROL SIGNAL IS REMOVED, THE STOP LINES AND OTHER TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED AND THE PERMANENT PAVEMENT MARKINGS RESTORED.

SAFEGUARDS SHALL BE INCORPORATED TO AVOID THE POSSIBILITY OF CONFLICTING SIGNAL INDICATIONS AT EACH END OF THE TTC ZONE.

CMS LOCATIONS TO BE DETERMINED BY ENGINEER.

SIGN AND DEVICE LOCATION WILL BE FIELD VERIFIED AND APPROVED BY THE ENGINEER.

SPEED	SIGN SPACING (ft.)		TAPER LENGTH (ft.)		OPTIONAL	CHANNELIZER SPACING (ft.)	
PERM. POSTED (MPH)	UN -DIVIDED (S)	DIVIDED (S)	SHOULDER (1) (T1)	LANE (2) (T2)	BUFFER LENGTH (ft) (B)	TAPERS	BUFFER/ WORK AREAS
0-35	200	-	-	-	280	-	40
40-45	350	-	-	-	400	-	80
50-55	500	-	-	-	560	-	80
60-70	1000	-	-	-	840	-	120

1 Shoulder taper length based on 10 ft. (standard shoulder width) offset.
2. Lane taper length based on 12 ft. (standard lane width) offset.

NOT TO SCALE

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	24

COUNTY
FRANKLIN
JOB NO.
J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE
.	.

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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TRAFFIC CONTROL SHEET
ROUTE MM
SHEET 1 OF 5

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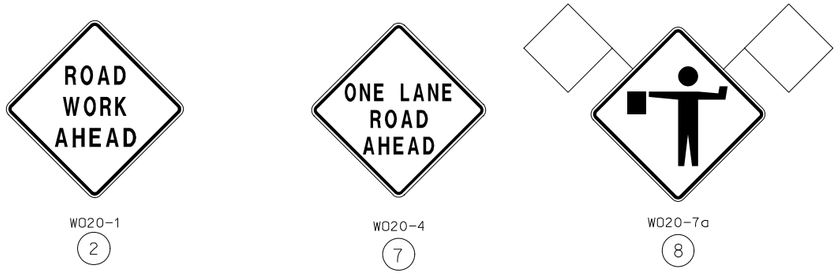

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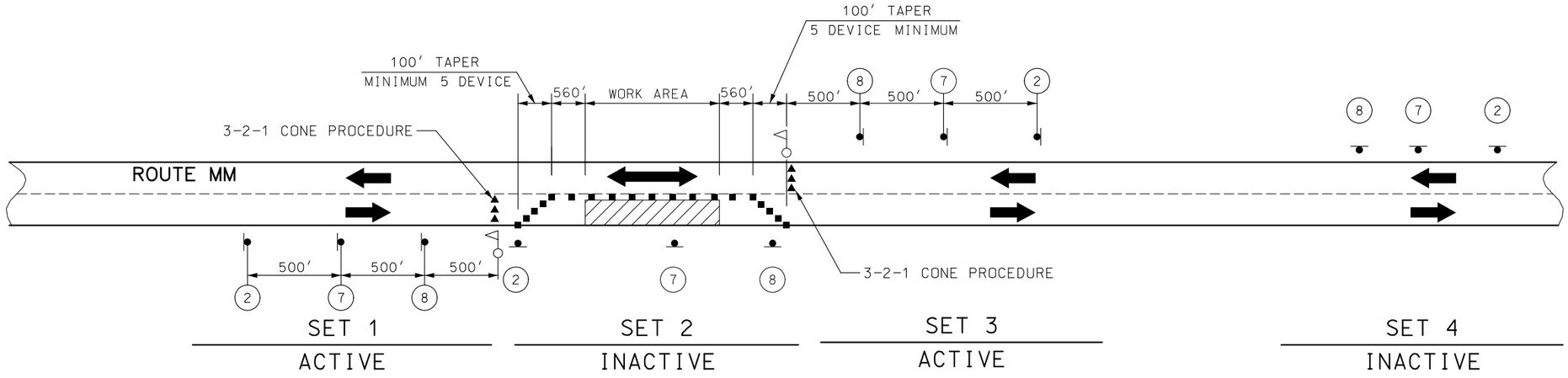

FLAGGER CONTROL RESURFACING OR MOVING OPERATION ONE LANE TWO-WAY OPERATION

NOTES:

SIGN SETS 1 AND 3 ARE ACTIVE (I.E., SIGNS FACE ONCOMING TRAFFIC).

SIGN SETS 2 AND 4 ARE INACTIVE (I.E., SIGNS DO NOT FACE EITHER DIRECTION OF TRAFFIC) WHEN THE RESURFACING OPERATION IS LOCATED BETWEEN SIGN SETS 1 AND 3.

WHEN SIGN SETS 2 AND 4 ARE ACTIVE, SIGN SETS 1 AND 3 BECOME INACTIVE AND ARE ADVANCED TO BECOME SETS 2 AND 4 WITH SIGN LEGENDS TURNED AWAY FROM BOTH DIRECTIONS OF TRAFFIC. WHEN THE RESURFACING OPERATION ADVANCES TO BETWEEN SIGN SET 2 AND 4. SIGN SETS 2 AND 4 BECOME ACTIVE (IE, NEW SIGN SETS 1 AND 3) AND SIGN SETS 1 AND 3 ADVANCED IN THE DIRECTION OF THE OPERATION (IE, NEW SIGN SETS 2 AND 4)

DAYLIGHT FLAGGING OPERATIONS ONLY.

(1) USE EPG 616.17M MOBILE OPERATION ON A TWO-LANE HIGHWAY FOR PLACEMENT/REMOVAL OF ADVANCE WARNING SIGNS.

(2) DO NOT EXCEED ONE MILE BETWEEN FLAGGER AND "FLAGGER" SYMBOL SIGN.

(3) CHANNELIZING DEVICES LOCATED DOWNSTREAM OF THE ONE-LANE, TWO-WAY TAPER ARE

FLAGGER STATION

(1) FLAGGERS WILL MAINTATIN A MINIMUM OF 100 FEET FROM ANY EQUIPMENT OR WORKERS.

(2) USE THE 3-2-1 CONE PROCEDURE.

(3) IDENTIFY AN ESCAPE ROUTE FOR ALL FLAGGERS.

NOTES:

(1) FLAGGER OPERATORS ARE REQUIRED TO HAVE CURRENT FLAGGER CERTIFICATION TRAINING.
A) EXTERNAL FLAGGER TRAINING WILL MEET STANDARD SPECIFICATIONS LOCATED IN SECTION 616.4.3.
B) INTERNAL FLAGGERES WILL BE TRAINED IN ACCORDANCE WITH EPG. 616.5.1.

SEE EPG 616.12 WORK ZONE SPEED LIMITS FOR SPEED LIMIT GUIDELINES

COST OF FLAG ASSEMBLY INCLUDED IN THE COST OF THE SIGN

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER (TRIM-LINE)
- WORK AREA
- FLAGGER

NOT TO SCALE

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 2/5/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	25

COUNTY: FRANKLIN
JOB NO.: J6S3368
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

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DESCRIPTION	DATE
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105 WEST CAPITOL
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TRAFFIC CONTROL SHEET
ROUTE MM
SHEET 2 OF 5

(1) ROAD CLOSED SIGN MAY BE PLACED 7-10 FEET BEHIND THE BARRICADES AND AT A SIGN HEIGHT APPROPRIATE TO THE ROADWAY. ONE BARRICADE IS REQUIRED TO COMPLETELY CLOSE 8 FEET OF PAVEMENT. PAVED SHOULDERS SHALL BE INCLUDED IN THE AREA CLOSED.

(2) IF USED,THE ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY OR ROAD CLOSED TO THRU TRAFFIC SIGN SHOULD BE LOCATED AT THE FIRST STATE ROUTE OR, UPON THE DISCRETION OF THE ENGINEER, ANY OTHER INTERSECTION IN ADVANCE OF THE CLOSURE. ADDITIONAL BARRICADES MAY BE USED AND OFFSET TO FACILITATE ACCESS FOR WORK VEHICLES, LOCAL TRAFFIC, ECT.

TRAFFIC CONTROL SHOULD BE REMOVED AS SOON AS PRACTICAL AFTER CONDITION FOR CLOSURE NO LONGER EXISTS.

FOR LONG-TERM OPERATIONS, REFER TO EPG 616.6.2.2 FLAGS AND ADVANCE WARNING RAIL SYSTEM (AWRS)

ADDITIONAL WARNING SIGNS SHOULD BE ERECTED AT EACH INTERSECTION WITHIN THE WORK ZONE.

SUPPLEMENTAL WARNING METHODS MAY BE USED TO CALL ATTENTION TO THE WORK ZONE.

SEE STANDARD PLAN 616.10 FOR TEMPORARY TRAFFIC CONTROL DEVICES FOR BARRICADES.

FOR LONG-TERM CLOSURE, DETOUR SIGNING SHOULD BE CONSIDERED.

FOR DETOUR SIGNING, REVIEW EPG 616.8.9 ROAD CLOSED BEYOND JUNCTION DETOUR.

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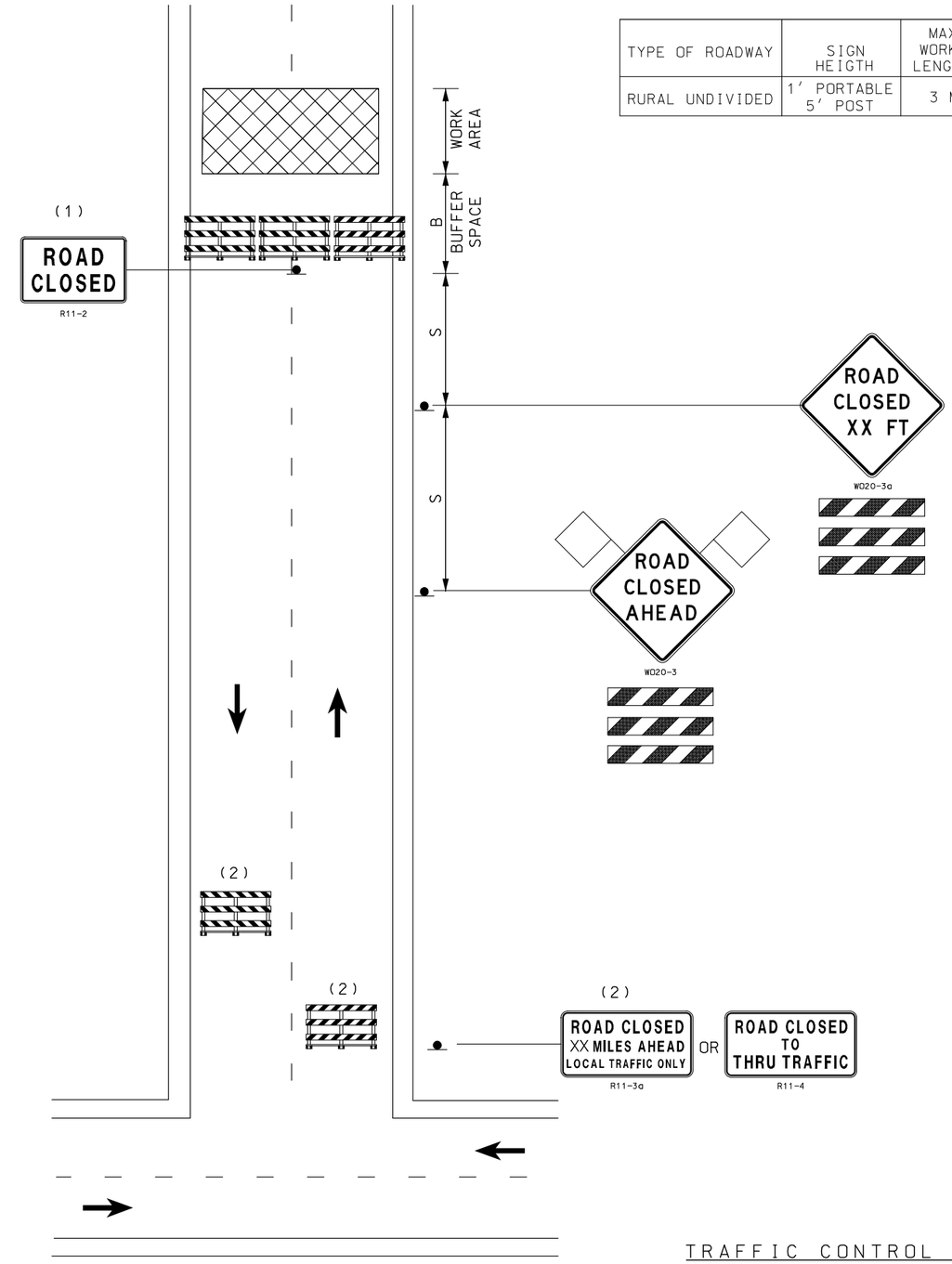
SPEED	SIGN SPACING (ft.)	OPTIONAL
PERM. POSTED (MPH)	UN -DIVIDED (S)	BUFFER LENGTH (ft) (B)
50-55	500	495

TYPE OF ROADWAY	SIGN HEIGTH	MAXIMUM WORK ZONE LENGTH (L)
RURAL UNDIVIDED	1' PORTABLE 5' POST	3 MILE



HIGHWAY CLOSURE

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE 3 BARRICADE
- WORK AREA

NOT TO SCALE

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED 1/18/2024
ROUTE MM
STATE MO
DISTRICT SL
SHEET NO. 26
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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DATE

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TRAFFIC CONTROL SHEET
ROUTE MM
SHEET 3 OF 5

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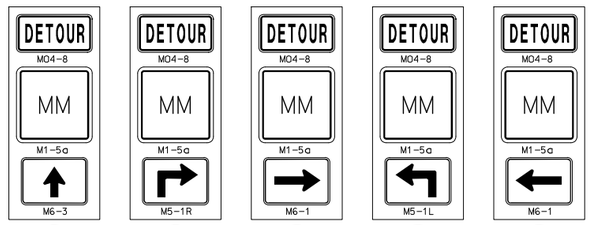

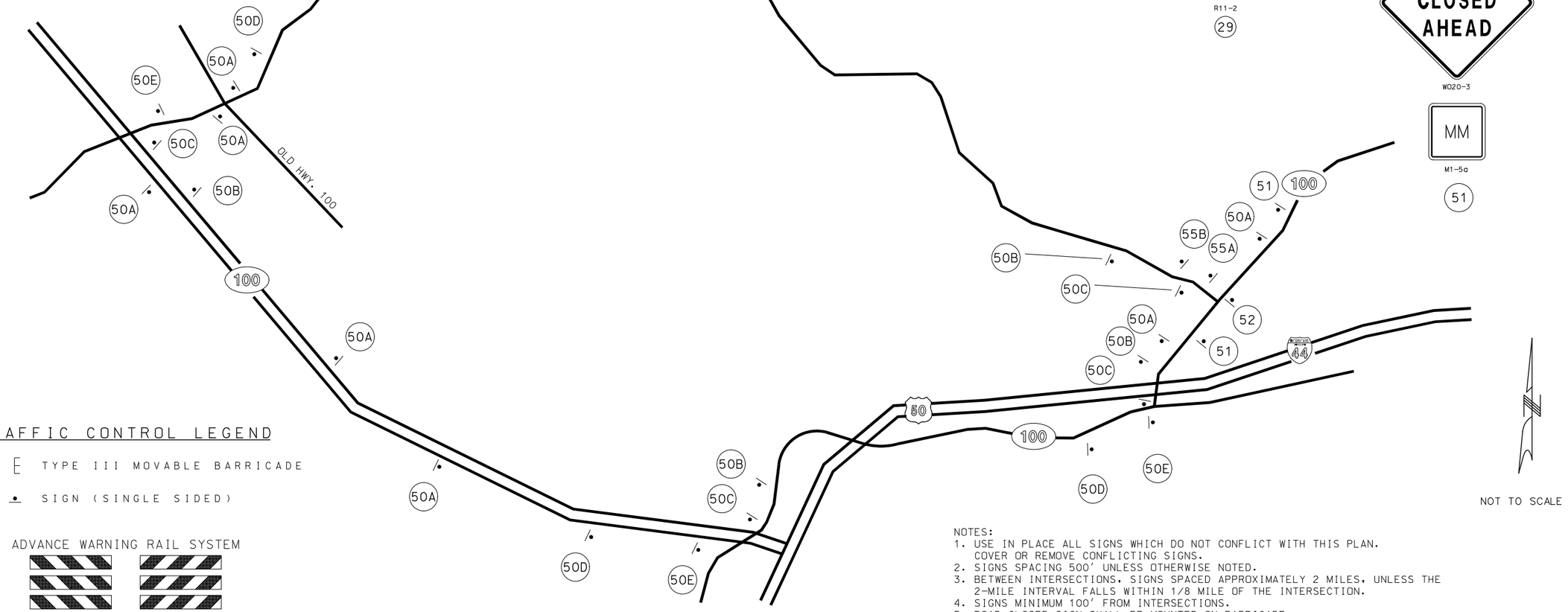

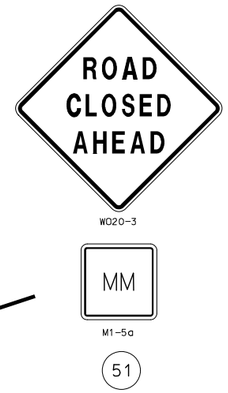

NOT TO SCALE

TRAFFIC CONTROL LEGEND

E TYPE III MOVABLE BARRICADE

SIGN (SINGLE SIDED)

ADVANCE WARNING RAIL SYSTEM

LEFT SIDE OF ROAD | RIGHT SIDE OF ROAD

NOTES:
1. USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER OR REMOVE CONFLICTING SIGNS.
2. SIGNS SPACING 500' UNLESS OTHERWISE NOTED.
3. BETWEEN INTERSECTIONS, SIGNS SPACED APPROXIMATELY 2 MILES, UNLESS THE 2-MILE INTERVAL FALLS WITHIN 1/8 MILE OF THE INTERSECTION.
4. SIGNS MINIMUM 100' FROM INTERSECTIONS.
5. ROAD CLOSED SIGN SHALL BE MOUNTED ON BARRICADE.
6. TRAFFIC CONTROL SHOULD BE REMOVED AS SOON AS PRACTICAL AFTER CONDITION FOR CLOSURE NO LONGER EXISTS.

ROUTE MM DETOUR PLAN

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	27

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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DESCRIPTION	DATE
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IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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TRAFFIC CONTROL SHEET
ROUTE MM
SHEET 4 OF 5

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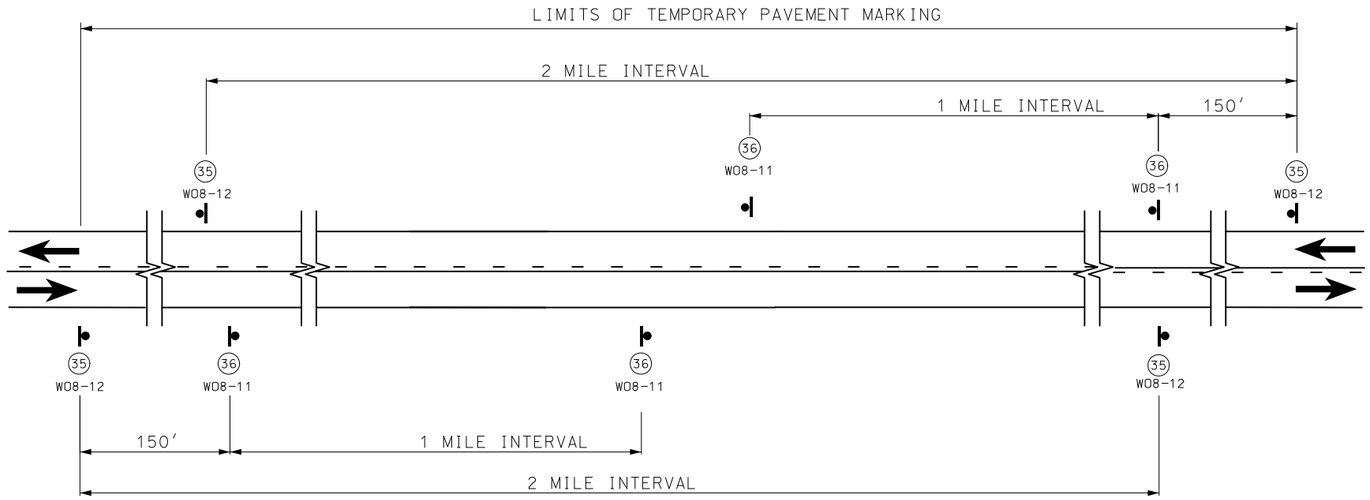
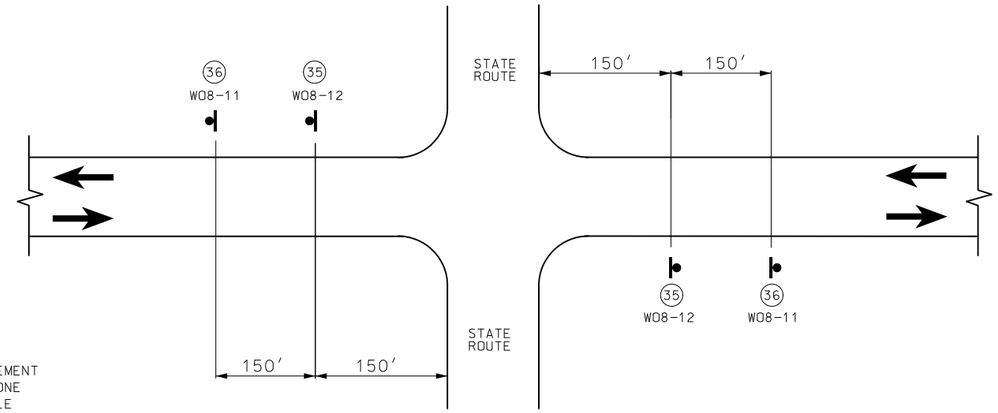


SIGN SPACING AND TEMPORARY STRIPING FOR MAINLINE

SIGN (23) TO BE PLACED PRIOR TO ANY PAVEMENT EDGE DIFFERENTIAL GREATER THAN 2" AT ONE MILE INTERVALS. SIGNS TO REMAIN VISIBLE UNTIL SHOULDER SHAPING IS COMPLETE.



SIGN SPACING AT STATE ROUTE INTERSECTIONS SHOWING TEMPORARY STRIPING FOR MAINLINE

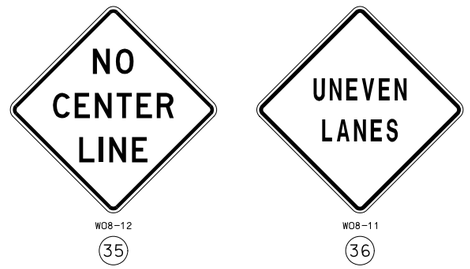
NOTES:

SIGN (35) AND TYPE 2 TRPM INSTALLED WHERE CENTERLINE STRIPING HAS BEEN COVERED OR REMOVED. SIGNS ARE TO REMAIN IN PLACE UNTIL THE PERMANENT CENTERLINE PAVEMENT MARKINGS ARE IN PLACE. SIGNS SHALL BE COVERED OR REMOVED WHEN PAVEMENT CENTERLINE MARKING HAS BEEN INSTALLED.

SIGN (35) IS PLACED AT APPROXIMATELY TWO-MILE INTERVALS AND AT STATE ROUTE JUNCTIONS. WHEN THE INSTALLATION AT A JUNCTION IS WITHIN ONE-EIGHTH MILE OF THE NORMAL MAINLINE SIGN (35), THE LATTER MAY BE ELIMINATED.

ALL SIGNS SHALL BE POST MOUNTED AND IN ACCORDANCE WITH STANDARD PLAN 616.10 AND 903.03.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



NOT TO SCALE

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SHEET 5 OF 5

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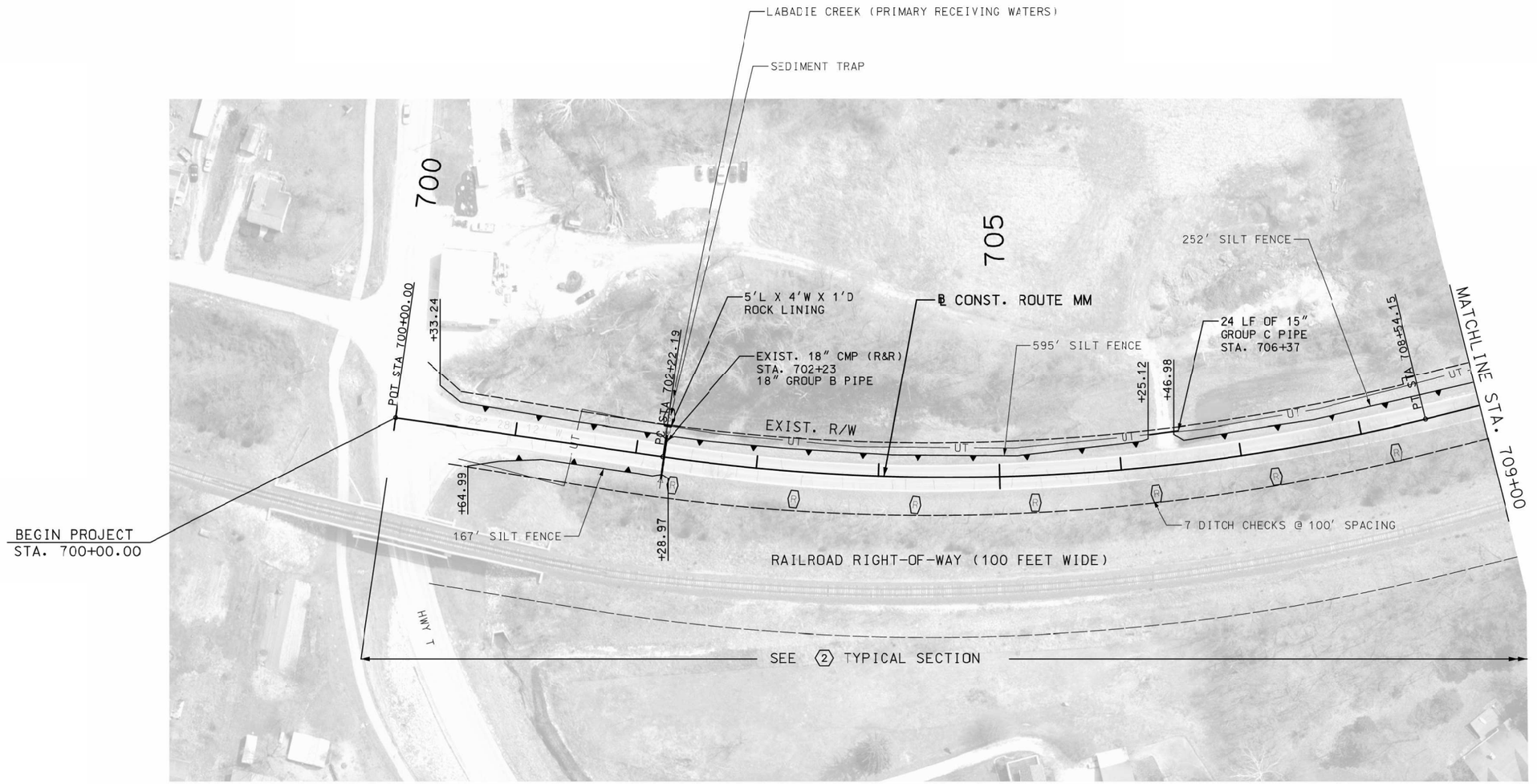

TEMPORARY EROSION CONTROL LEGEND

(R)	ROCK DITCH CHECK
(S)	SEDIMENT FINCE
	SILT FENCE

STATE OF MISSOURI
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ERICA J. RIDGWAY
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EROSION CONTROL
ROUTE MM
SHEET 1 OF 16

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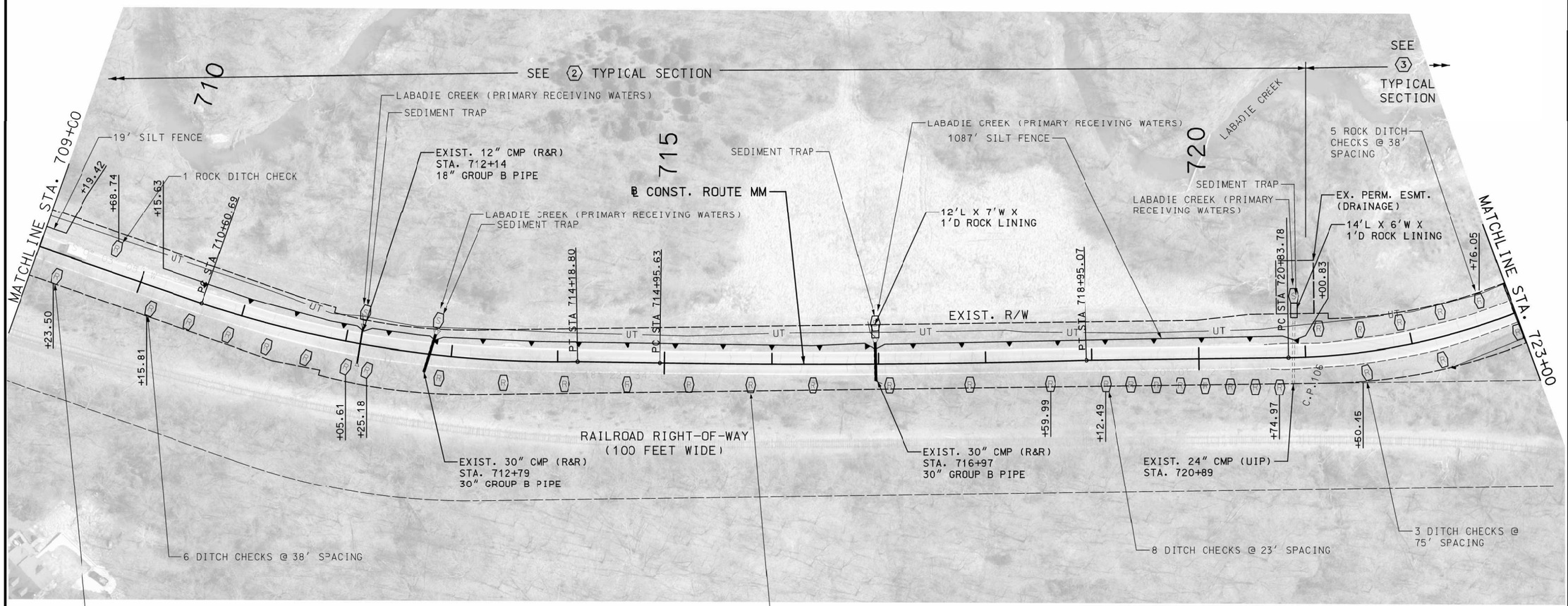

TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- SEDIMENT TRAP
- SILT FENCE

STATE OF MISSOURI
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ERICA J. RIDGWAY
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ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	30

COUNTY FRANK_IN

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EROSION CONTROL
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SHEET 2 OF 16

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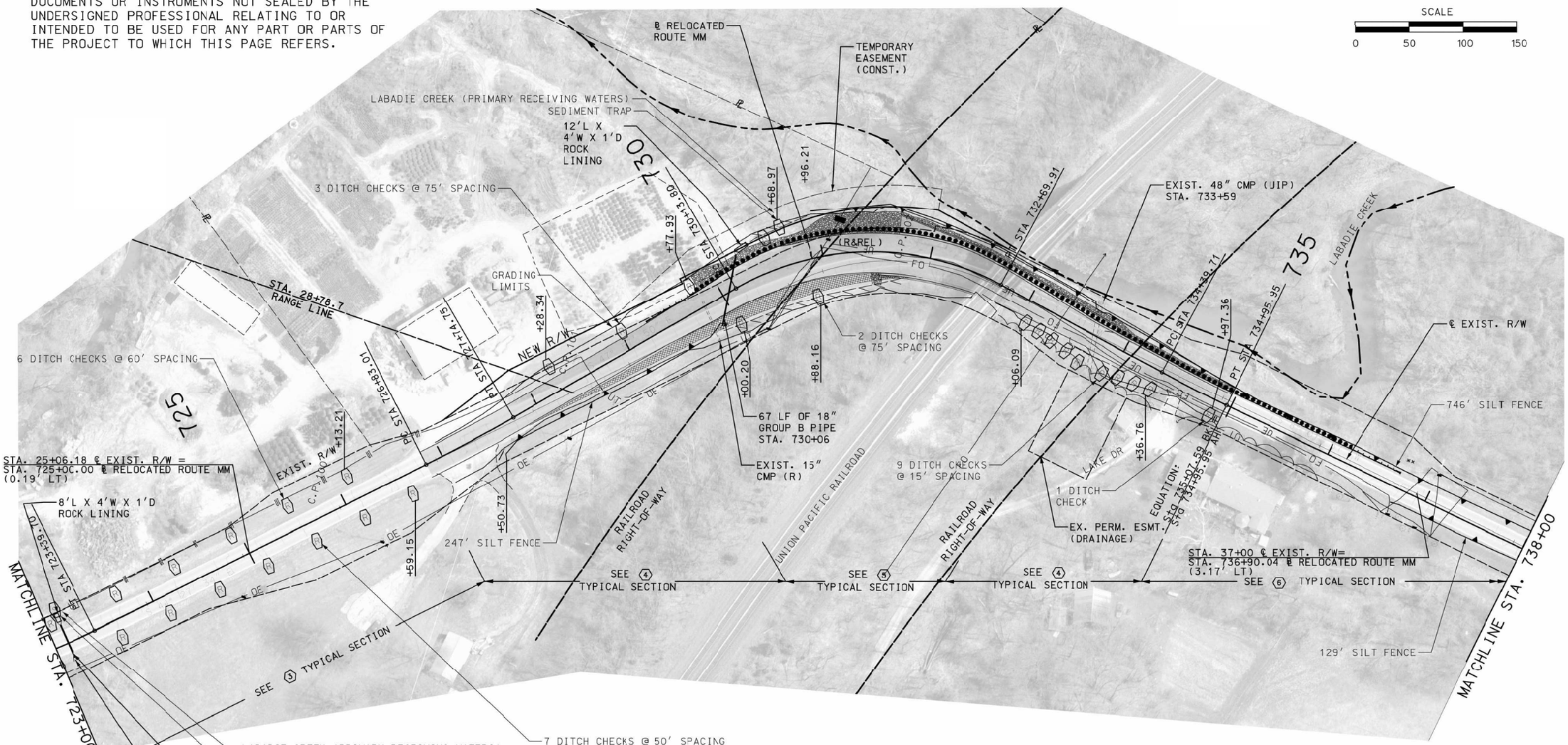

SCALE

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TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- SEDIMENT TRAP
- SILT FENCE

STATE OF MISSOURI
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ROUTE	STATE
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SHEET 3 OF 16

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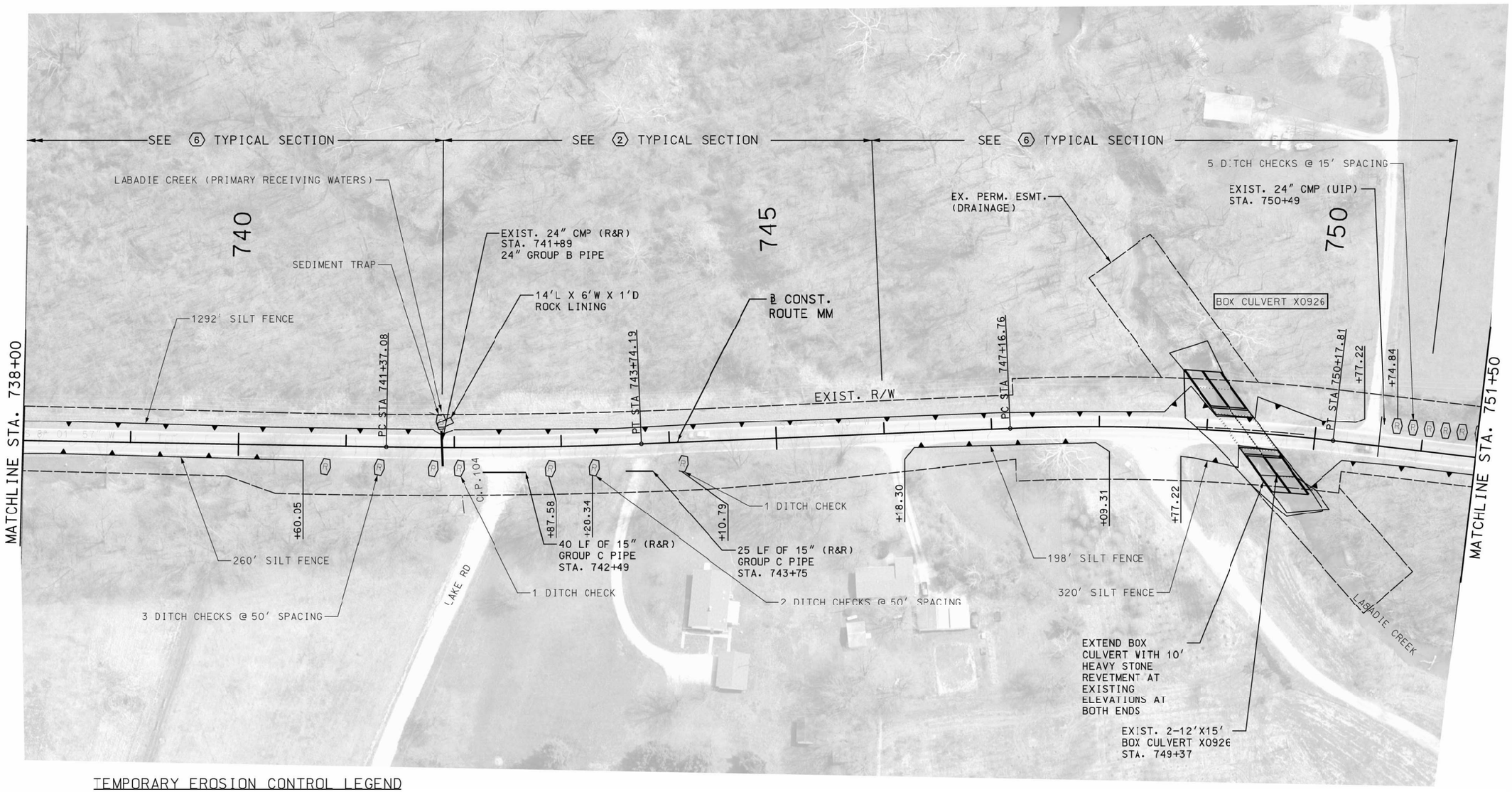

TEMPORARY EROSION CONTROL LEGEND

(R) ROCK DITCH CHECK

(S) SEDIMENT TRAP

SILT FENCE

STATE OF MISSOURI
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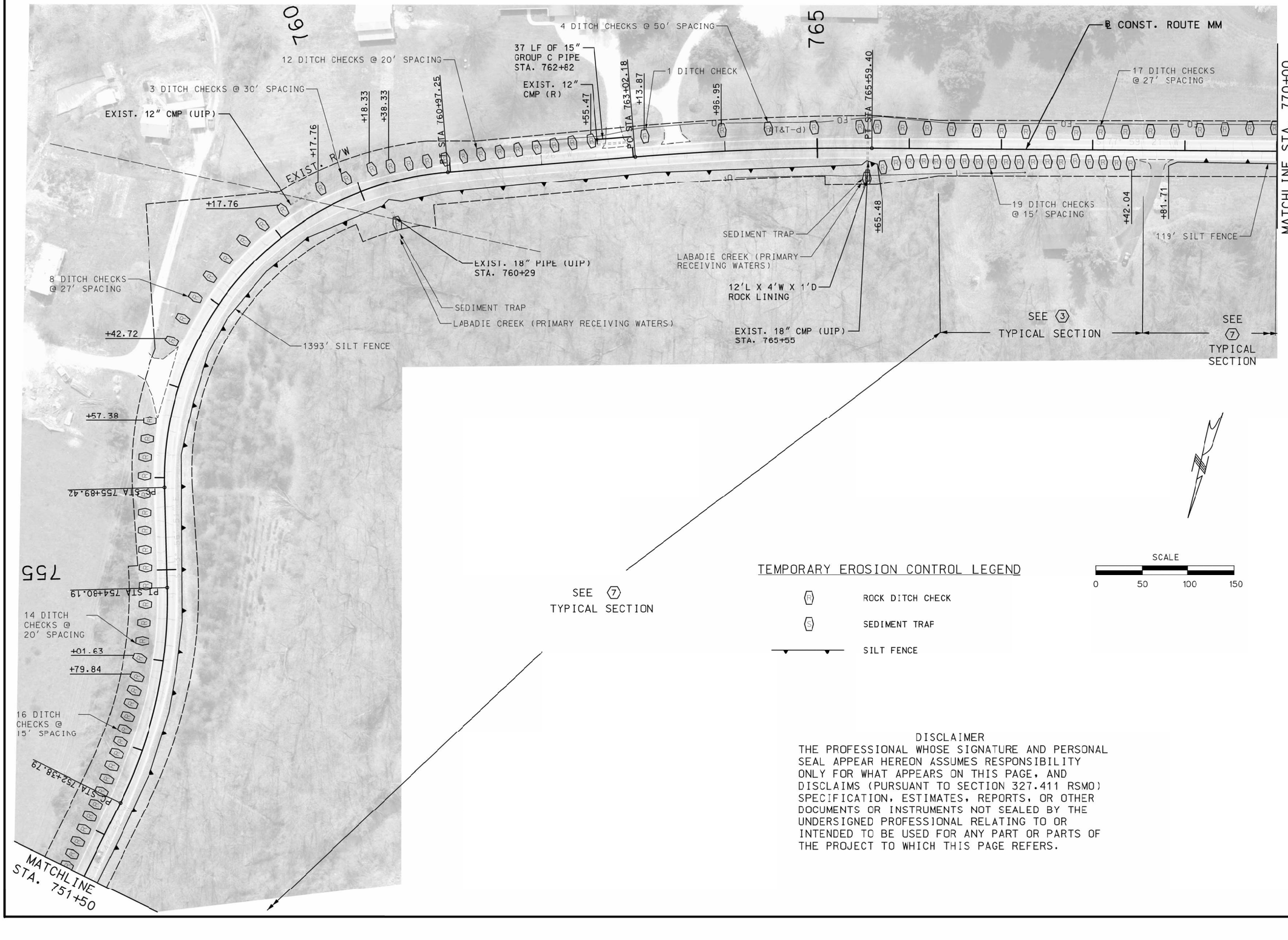
EROSION CONTROL
ROUTE MM
SHEET 4 OF 16



TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- SEDIMENT TRAF
- SILT FENCE

SCALE
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ERICA J. RIDGWAY
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PROFESSIONAL ENGINEER

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	33

COUNTY FRANK_IN
JOB NO. J6S3368
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BRIDGE NO. .

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EROSION CONTROL
ROUTE MM
SHEET 5 OF 16

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SCALE
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MATCHLINE STA. 770+00

3 DITCH CHECKS @ 27' SPACING

43 LF OF 18" GROUP B PIPE STA. 771+78

+77.59

EXIST. 12" STEEL (R)

34 LF OF 15" GROUP C PIPE STA. 771+15

SEDIMENT TRAP

PC STA 771+37.65

1 DITCH CHECK

EXIST. 15" CMP (R) STA. 771+78

SEE ⟨7⟩ TYPICAL SECTION

12'L X 4'W X 1'D ROCK LINING

412' SILT FENCE

LABADIE CREEK (PRIMARY RECEIVING WATERS)

775

SEE ⟨3⟩ TYPICAL SECTION

780

SEE ⟨8⟩ TYPICAL SECTION

785

SEE ⟨3⟩ TYPICAL SECTION

SEE ⟨2⟩ TYPICAL SECTION

25 LF OF 15" GROUP C PIPE STA. 776+00

EXIST. 12" CMP (R)

+95.92

5 DITCH CHECKS @ 75' SPACING

℄ CONST. ROUTE MM

EX. PERM. ESMT. (DRAINAGE)

LABADIE CREEK (PRIMARY RECEIVING WATERS)

51' SILT FENCE

5 DITCH CHECKS @ 17' SPACING

276' SILT FENCE

+86.09

+32.07

PC STA 777+28.24

47 DITCH CHECKS @ 15' SPACING

PC STA 779+61.80

+36.51

PC STA 784+66.76

PC STA 785+81.25

+09.47

+98.88

+26.61

EXIST. R/W

209' SILT FENCE

+17.65

+52.29

+04.33

+82.46

24 DITCH CHECKS @ 5' SPACING

+13.74

+37.02

1 DITCH CHECK

61 LF OF 24" GROUP C PIPE STA. 780+42

EXIST. 24" PLASTIC (R)

EXIST. 8'X7' BOX CULVERT (EXTEND) STA. 784+62

EX. PERM. ESMT. (DRAINAGE)

COLEMAN RD

EXIST. 24" CONC. BOX (UIP) STA. 786+10

25 DITCH CHECKS @ 15' SPACING

MATCHLINE STA. 787+50

TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
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EROSION CONTROL
ROUTE MM
SHEET 6 OF 16

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TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- SEDIMENT TRAP
- SILT FENCE

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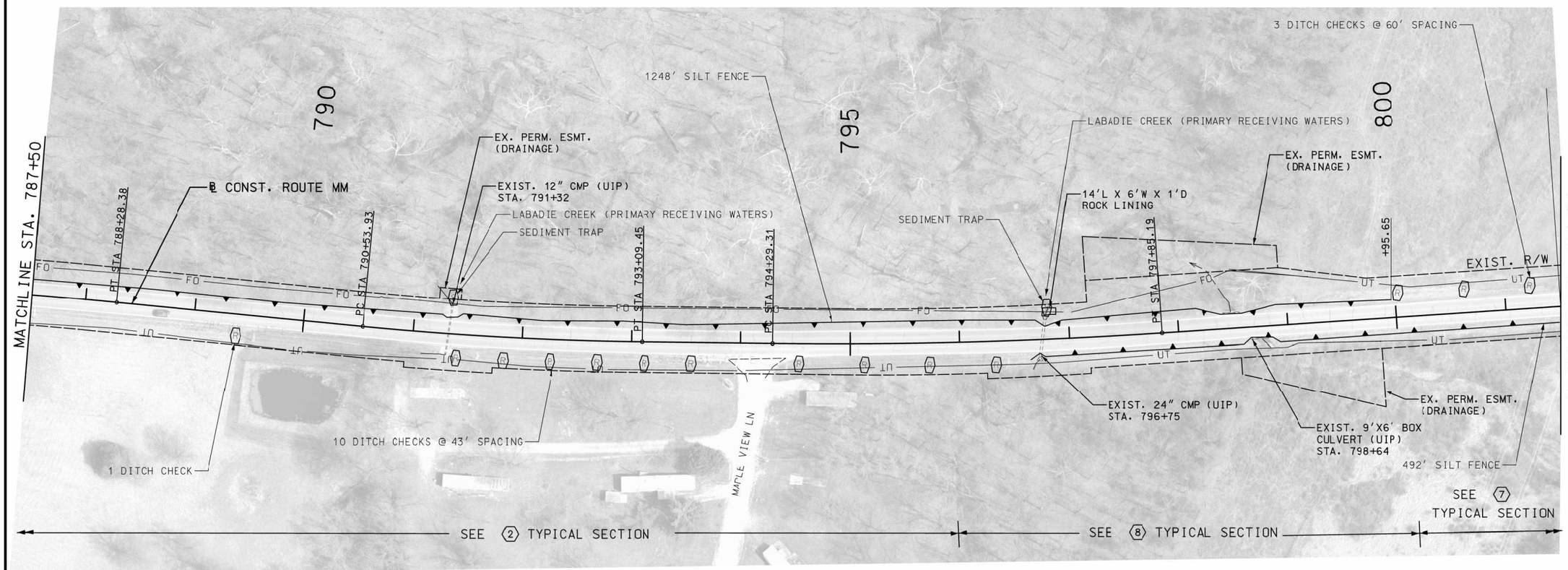

ERICA J. RIDGWAY
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PROFESSIONAL ENGINEER
STATE OF MISSOURI

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ROUTE	STATE
MM	MO
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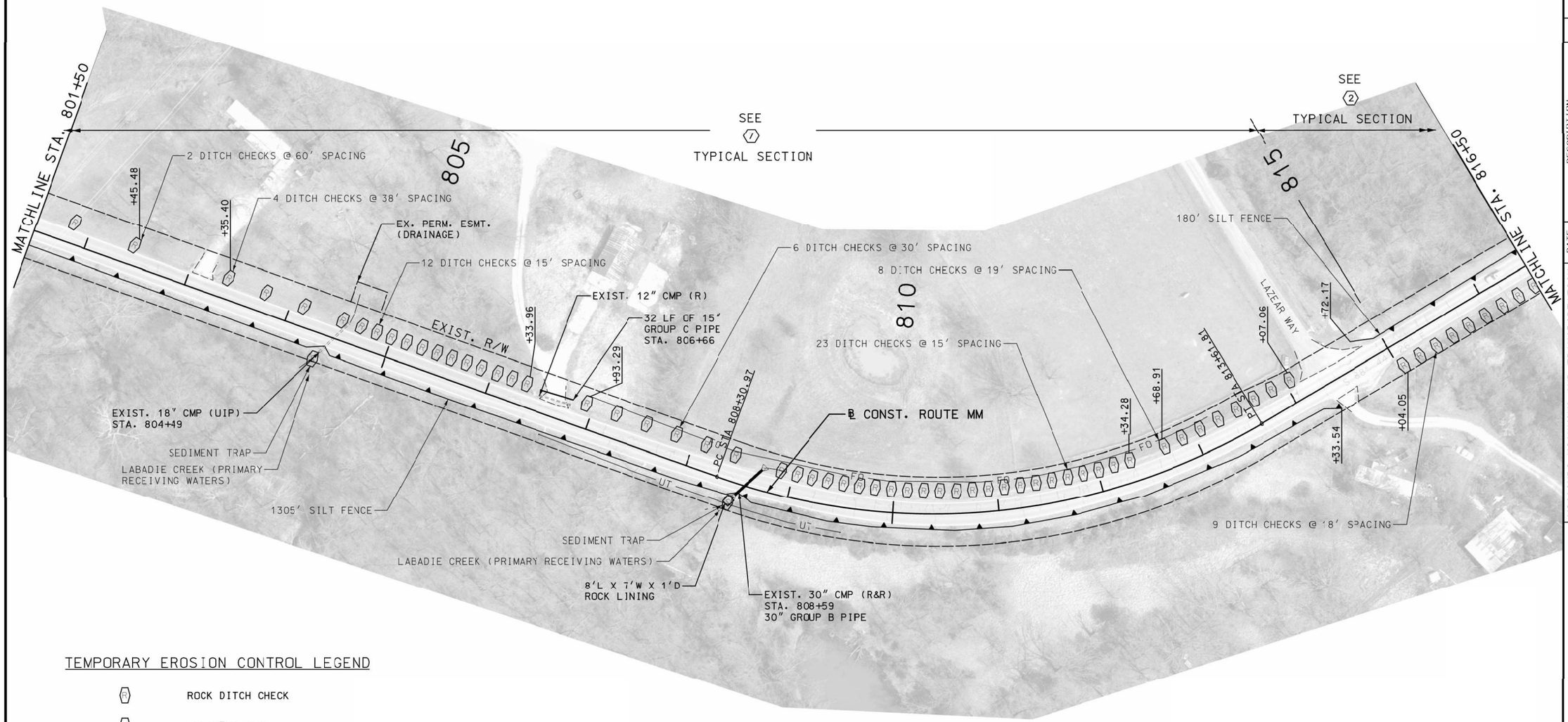

TEMPORARY EROSION CONTROL LEGEND

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STATE OF MISSOURI · PROFESSIONAL ENGINEER ·
ERICA J. RIDGWAY
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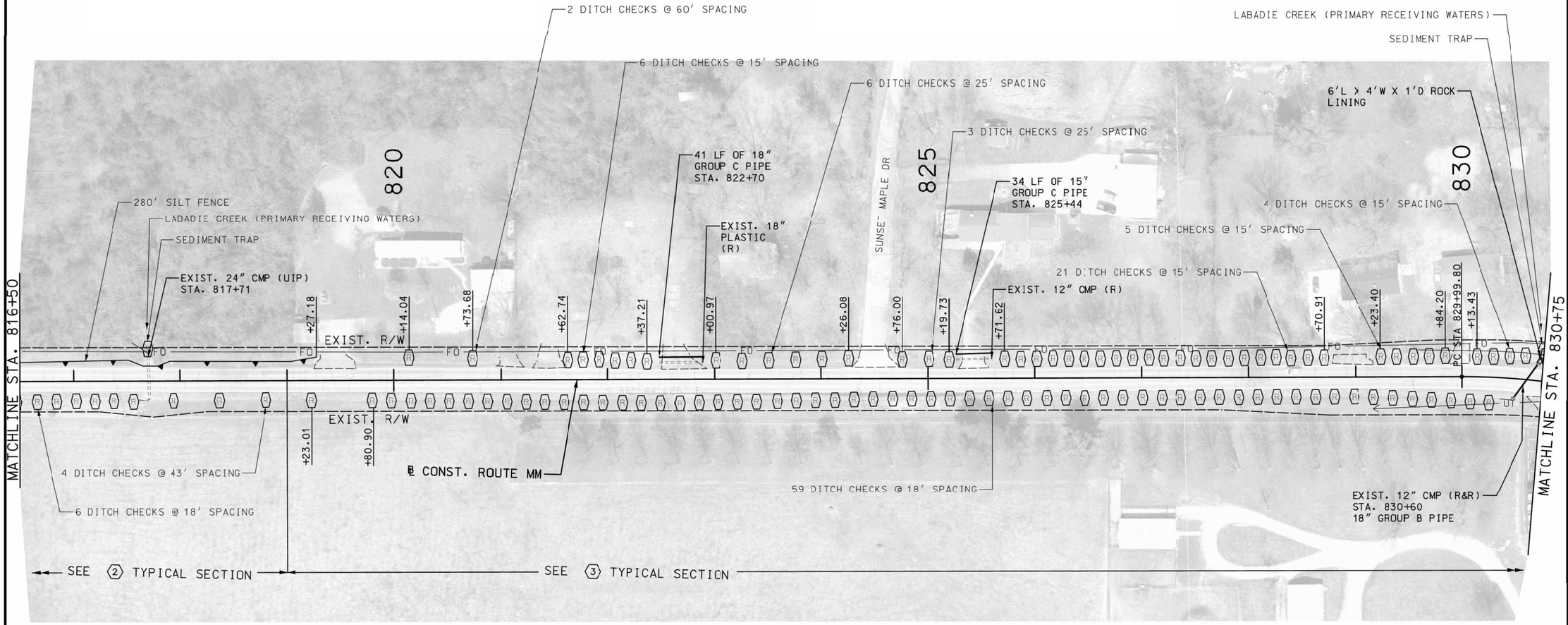

TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
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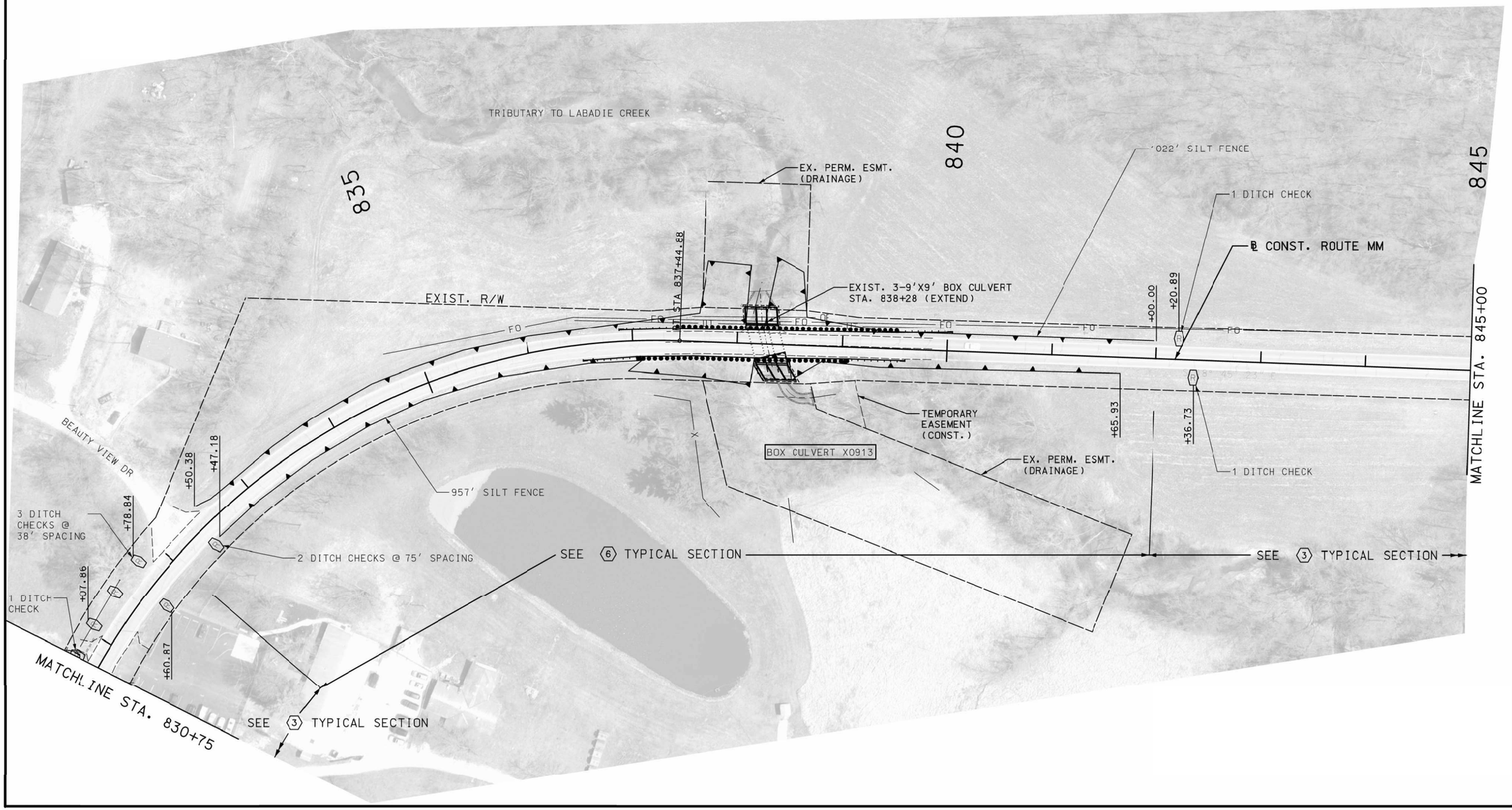

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ROUTE MM | STATE MO
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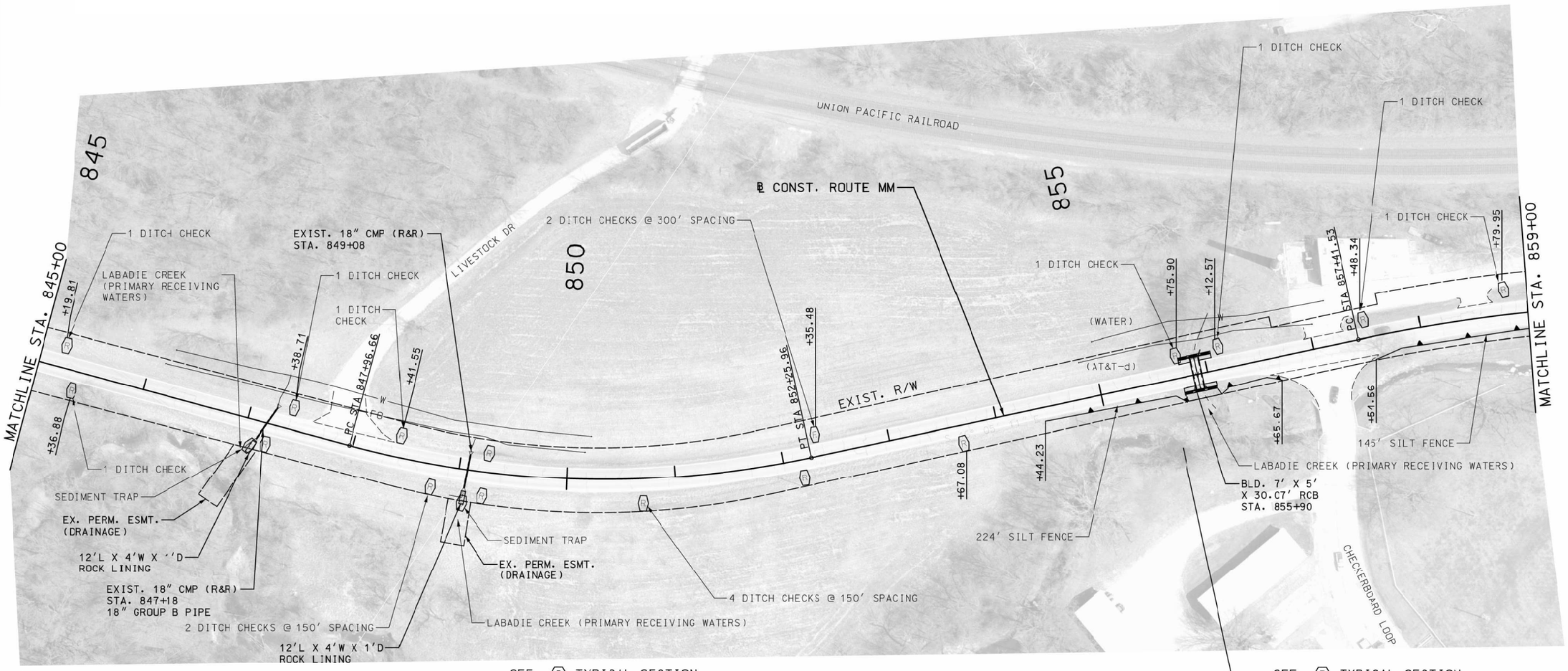
SCALE

0 50 100 150



SEE ③ TYPICAL SECTION — SEE ⑦ TYPICAL SECTION

ERICA J. RIDGWAY NUMBER PE-2018003138 — STATE OF MISSOURI — PROFESSIONAL ENGINEER

DATE PREPARED: 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	39

COUNTY: FRANK_IN

JOB NO.: J6S3368

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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

EROSION CONTROL
ROUTE MM
SHEET 11 OF 16

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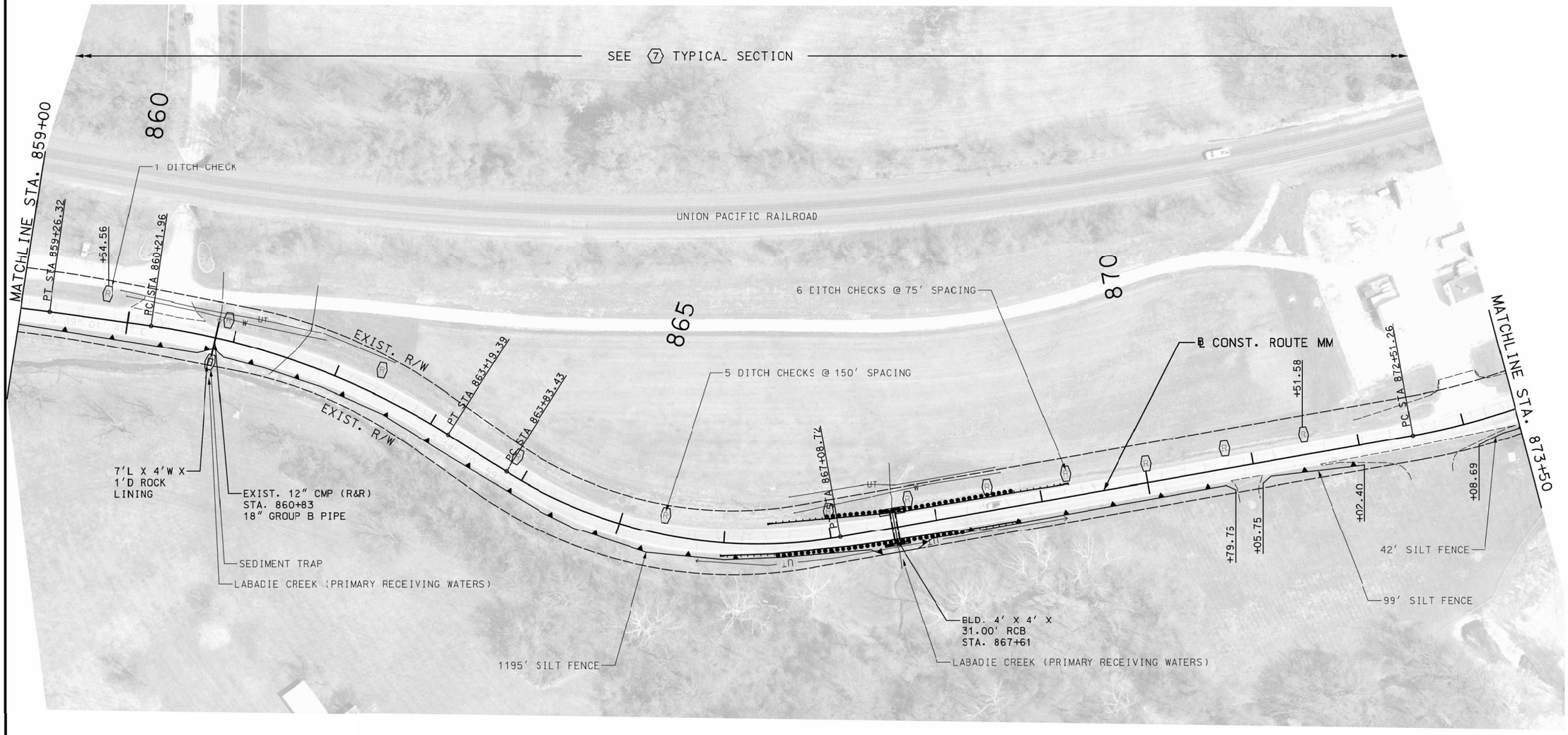
TEMPORARY EROSION CONTROL LEGEND

- (7) ROCK DITCH CHECK
- (5) SEDIMENT TRAP
- SILT FENCE

SCALE

0 50 100 150



STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	40

COUNTY FRANK_IN

JOB NO. J6S3368

CONTRACT ID. .

PROJECT NO. .

BRIDGE NO. .

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

DATE	DESCRIPTION
.	.

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

TREKK DESIGN GROUP, LLC
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EROSION CONTROL
ROUTE MM
SHEET 12 OF 16

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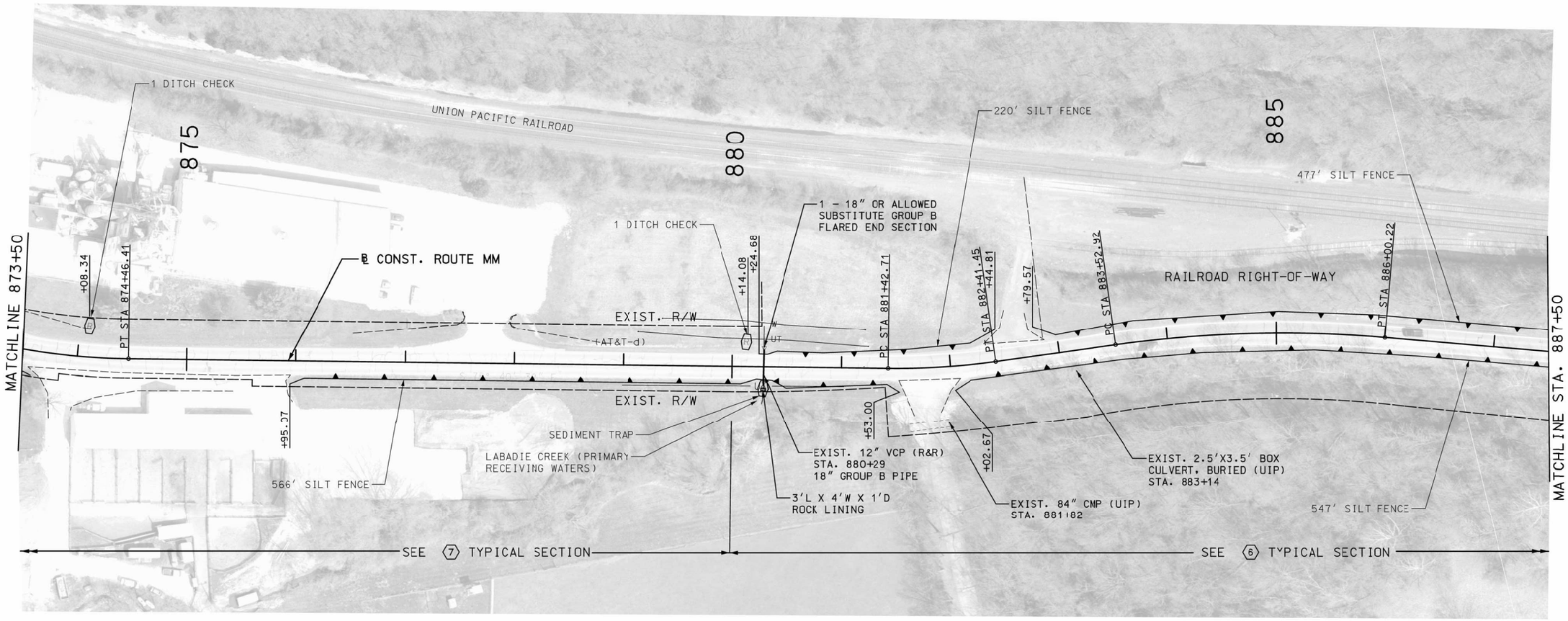
TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- SILT FENCE

SCALE

0 50 100 150



STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	41

COUNTY
FRANK_IN

JOB NO.
J6S3368

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)

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EROSION CONTROL
ROUTE MM
SHEET 13 OF 16

DISCLAIMER

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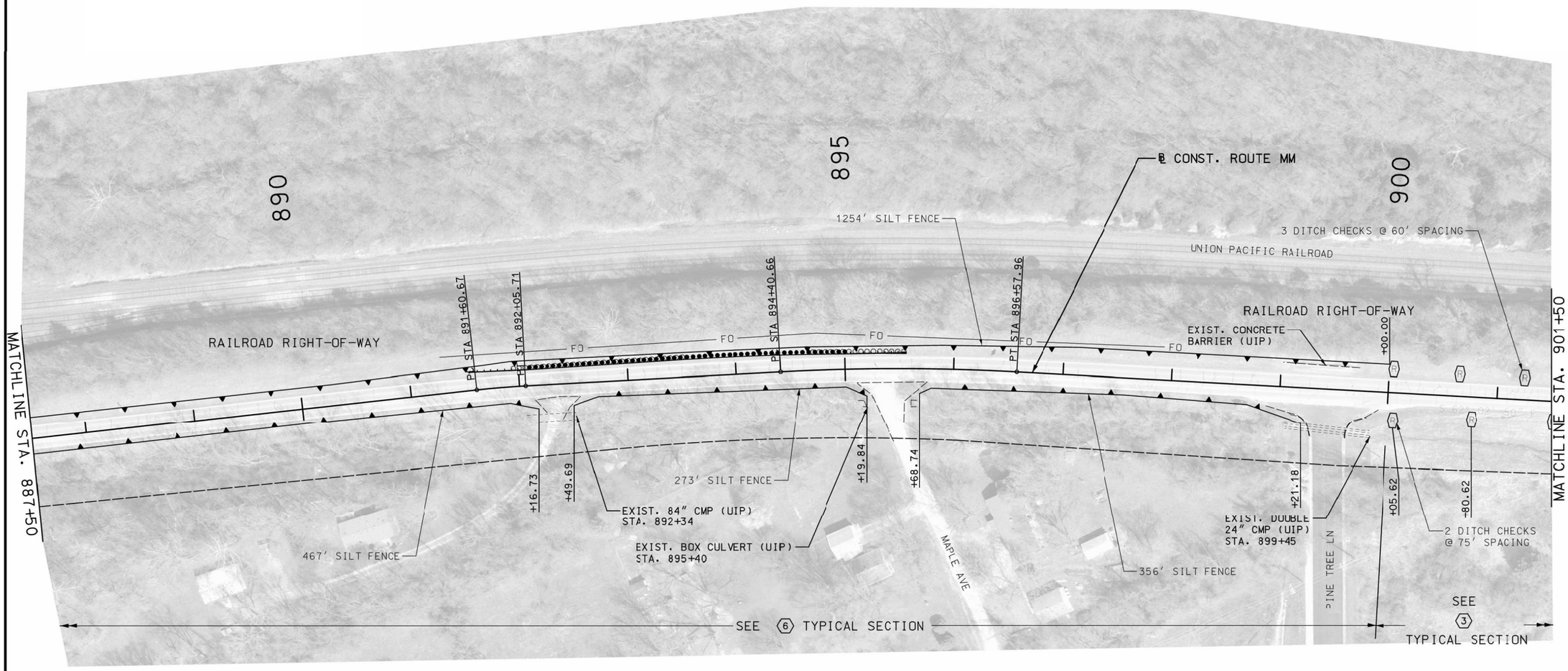
TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- SILT FENCE

SCALE

0 50 100 150



STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	42

COUNTY
FRANK_IN

JOB NO.
J6S3368

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
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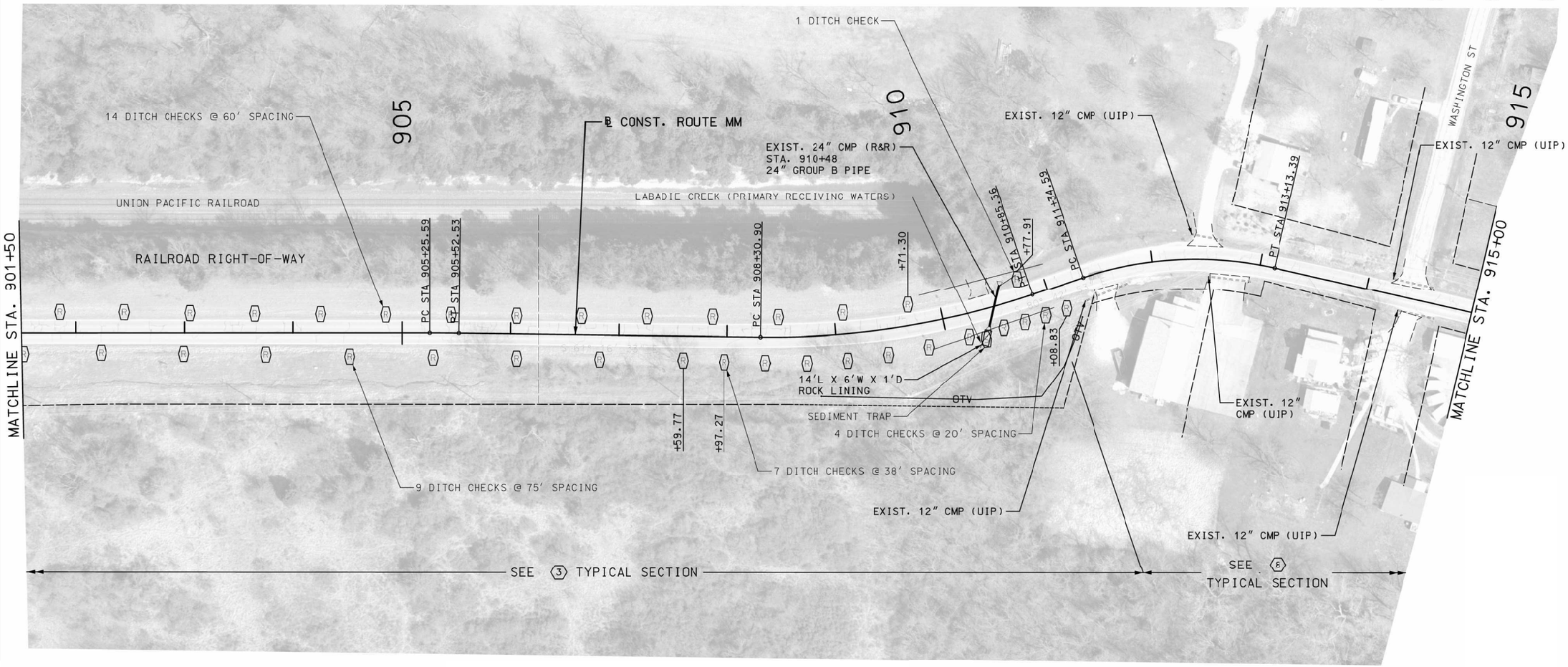
EROSION CONTROL
ROUTE MM
SHEET 14 OF 16



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TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- SEDIMENT TRAP
- SILT FENCE

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	43

COUNTY FRANK_IN
JOB NO. J6S3368
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

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JEFFERSON CITY, MO 65102
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EROSION CONTROL
ROUTE MM
SHEET 15 OF 16

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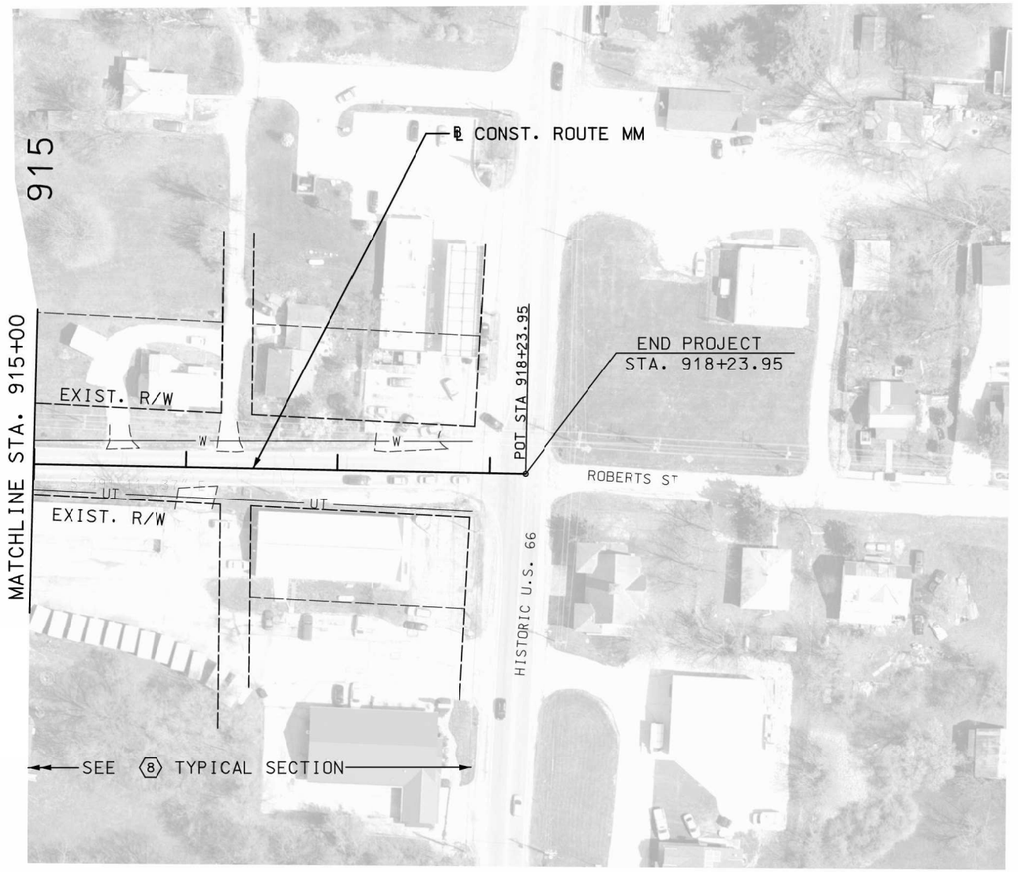
TEMPORARY EROSION CONTROL LEGEND

- (7) ROCK DITCH CHECK
- (5) SEDIMENT TRAP
- SILT FENCE

SCALE

0 50 100 150



ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED 1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	44

COUNTY FRANK_IN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

DESCRIPTION	DATE

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EROSION CONTROL
ROUTE MM
SHEET 16 OF 16

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SCALE
0 50 100 150

ROUTE T
700
705
MATCHLINE STA. 709+50

1
AT RTE T & RTE MM INTERSECTION
a) 24" x 24"
M1-5a
T
M1-5a
(R)
M6-4
(R)
b) 21" x 15"
M6-4
M6-4

2
STA. 700+54
a) 36"
R1-1
b) 36" x 18"
W4-4P
STOP
R1-1
STOP
R1-1
(R)
CROSS TRAFFIC DOES NOT STOP
W4-4P
24" SOLID WHITE
POT STA 700+00.00
+54.13
PC STA 702+22.19

3
W1-2L
(R)
45
M.P.H.
W13-1P
(R)
W1-2L
40
M.P.H.
W13-1P
STA. 701+56
a) 36" x 36"
W1-2L
b) 24" x 24"
W13-1P

6
STA. 708+54
a) 21" x 15"
M2-1
JCT
M2-1
b) 24" x 24"
M1-5a
T
M1-5a
PT STA 708+54.15

℄ CONST. ROUTE MM
4" DOUBLE SOLID YELLOW
4" SOLID WHITE

5
MM
M1-5a
STA. 704+58
30" x 24"
M1-5a
MM
M1-5a
(R)

ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED
1/18/2024
ROUTE MM
STATE MO
DISTRICT SL
SHEET NO. 45
COUNTY FRANK_IN
JOB NO. J6S3368
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)

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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 1 OF 28

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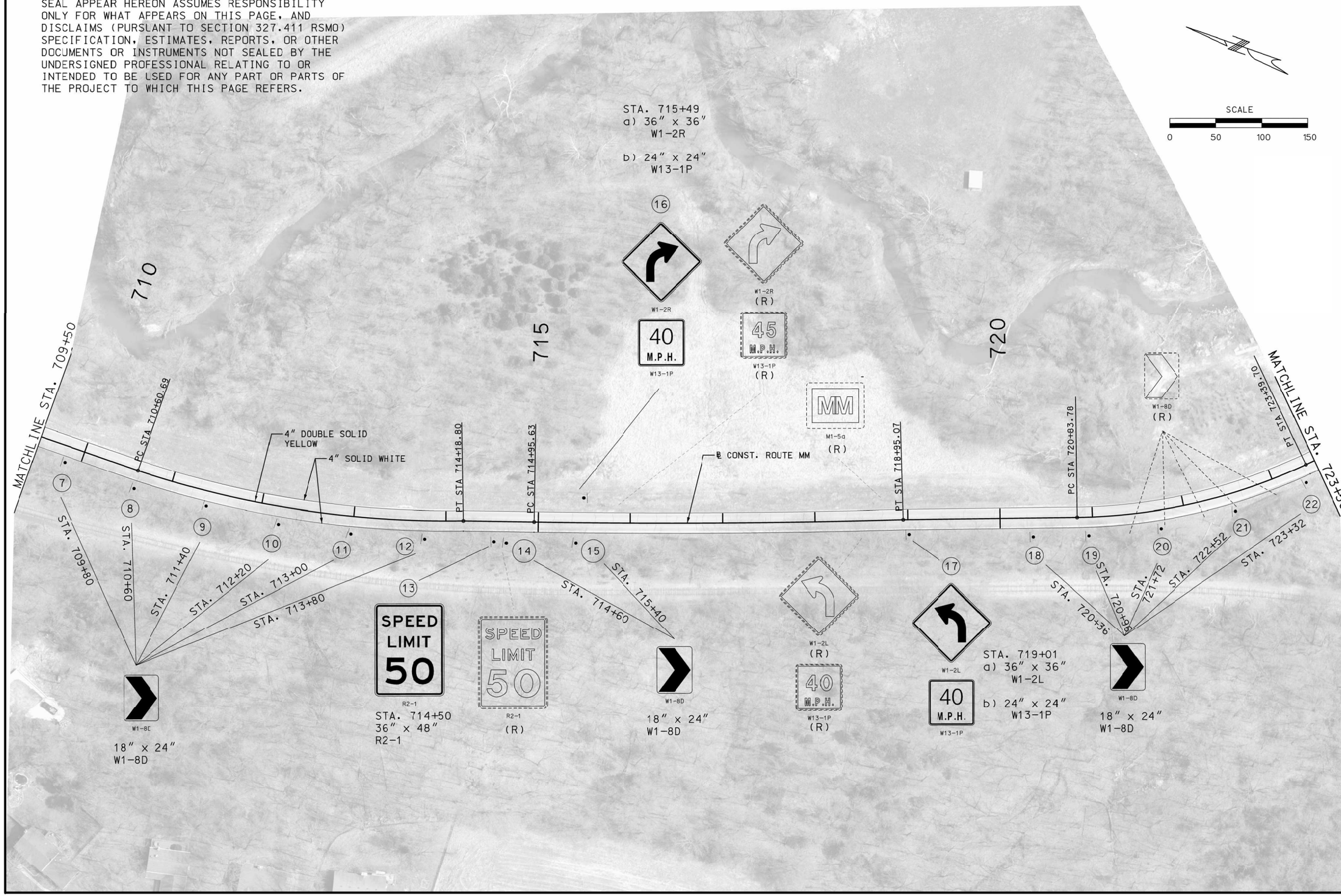

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	46

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 2 OF 28

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SCALE
0 50 100 150

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	47

COUNTY
FRANK_IN
JOB NO.
J6S3368
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)

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www.trekkdesigngroup.com
Missouri Cert. of Authority 2002011030

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 3 OF 28

(24) W1-2R — STA. 725+53 a) 36″ x 36″ W1-2R; b) 24″ x 24″ W13-1P
40 M.P.H. W13-1P
725
PC STA 725+83.01
PT STA 727+14.75
MATCHLINE STA. 723+50
(23) W1-8D — STA. 723+92 18″ x 24″ W1-8D
W1-2R (R)
40 M.P.H. W13-1P (R)
W1-1R (R)
20 M.P.H. W13-1P (R)
(25) W1-1R — STA. 728+14 a) 36″ x 36″ W1-1R; b) 24″ x 24″ W13-1P
20 M.P.H. W13-1P
(26) W1-8D — STA. 730+18 18″ x 24″ W1-8D
W1-6 48″ x 24″ W1-6
SPEED LIMIT 50 R2-1 (R)
W1-8D (R)
730
PC STA 730+13.80
STA. 731+28
STA. 731+49
(27) W1-8D — STA. 730+83 18″ x 24″ W1-8D
OM3-R (R)
STA. 731+07
STA. 732+17
OM3-F — 12″ x 36″ OM3-R
W1-6 (R)
PT STA 732+69.91
(28) (29) (30) (31) (32) (33) (34) (35)
OM3-L (R)
STA. 732+45
STA. 732+63
STA. 732+03
STA. 733+23
OM3-L — 12″ x 36″ OM3-L
W1-8D — 18″ x 24″ W1-8D
W1-30 (R)
EQUATION: Sta 733+07.59 BK = Sta 734+39.95 AH
PC STA 734+39.71
PT STA 734+85.95
STA. 734+39
STA. 735+21
STA. 735+63
735
STA. 736+24
(36) (38) (39) (40)
OM3-L OM3-R — a) 12″ x 36″ OM3-L; b) 12″ x 36″ OM3-R
OM3-R (R) OM3-L (R)
(37) W1-1L — STA. 734+76 a) 36″ x 36″ W1-1L; b) 24″ x 24″ W13-1P
20 M.P.H. W13-1P
4″ SOLID WHITE
4″ DOUBLE SOLID YELLOW
℄ CONST. RCUTE MM
(41) OM3-R — STA. 737+03 12″ x 36″ OM3-R
W1-1L (R)
20 M.P.H. W13-1P (R)
MATCHLINE STA. 739+00

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SCALE
0 50 100 150

740
745
750

MATCHLINE STA. 739+00
MATCHLINE STA. 753+00

4" DOUBLE SOLID YELLOW
4" SOLID WHITE
℄ CONST. ROUTE MM
PC STA 741+37.08
PT STA 743+74.19
PC STA 747+16.76
PT STA 750+17.81
PC STA 752+38.79
STA. 742+64
STA. 751+89

LAKE RD (RELOC)
LAKE RD
STOP
R1-1 (R)
42
LAKE RD STA. 742+62
a) (RELOCATED)
STOP
R1-1
b) 36"
R1-1

BOX CULVERT
X0926

OM3-L
12" x 36"
OM3-L
OM3-L (R)
OM3-R (R)
OM3-R
12" x 36"
OM3 R

STA. 748+57
STA. 748+76
STA. 748+93
STA. 749+41
STA. 749+55
STA. 749+72
44 45 46 50 51 52

56
W1-3L
30 M.P.H.
W13-1P
STA. 750+91
a) 36" x 36"
W1-3L
b) 24" x 24"
W13-1P

W1-8D
18" x 24"
W1-8D

47 48 49 53 54 55
STA. 748+99
STA. 749+11
STA. 749+27
STA. 749+74
STA. 749+92
STA. 750+07
OM3-R (R)
OM3-L (R)
OM3-R
12" x 36"
OM3-R
OM3-L
12" x 36"
OM3-L

W1-3L (R)
30 M.P.H.
W13-1P (R)
57
S3-1
STA. 751+54
36"
S3-1

58 59
STA. 751+89
STA. 752+55
SCHOOL BUS STOP AHEAD
S3-1 (R)

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024
ROUTE MM
STATE MO
DISTRICT SL
SHEET NO. 48
COUNTY FRANK_IN
JOB NO. J6S3368
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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 4 OF 28

760

765

770

MATCHLINE STA. 771+00

MATCHLINE STA. 753+00

W1-3D

18" x 24"
W1-8D

STA. 760+84

STA. 761+43

W1-3L

30
M.P.H.
W13-1P

STA. 762+53
a) 36" x 36"
W1-3L

b) 24" x 24"
W13-1P

W1-3L
(R)

30
M.P.H.
W13-1P
(R)

PT STA 760+97.25

PC STA 763+02.18

PT STA 765+59.40

SCALE
0 50 100 150

4" SOLID WHITE

℄ CONST. ROUTE MM

4" DOUBLE SOLID YELLOW

W1-6D
(R)

W1-8D
18" x 24"
W1-8D

STA. 758+45

STA. 757+86

STA. 757+26

STA. 756+66

STA. 759+64

STA. 759+05

STA. 760+24

W1-8D
18" x 24"
W1-8D

STOP FOR SCHOOL BUS R16-26 (UIP)

W1-1L
(R)

25
M.P.H.
W13-1P
(R)

STA. 769+31
a) 36" x 36"
W1-1L

b) 24" x 24"
W13-1P

25
M.P.H.
W13-1P

W1-8D
STA. 770+53
18" x 24"
W1-8D

SCHOOL
BUS STOP
AHEAD
S3-1
(R)

STA. 756+96
36"
S3-1

STA. 756+14

STA. 755+55

STA. 755+54

STA. 754+94

PC STA 755+89.42

W1-8D
18" x 24"
W1-8D

PT STA 754+80.19

W1-8D
18" x 24"
W1-8D

STA. 754+34

STA. 753+74

STA. 753+14

W1-8D
(R)

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	49

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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JEFFERSON CITY, MO 65102
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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 5 OF 28

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SCALE
0 50 100 150

MATCHLINE STA. 771+00

80 STA. 771+13
PC STA 771+37.65
81 STA. 771+72
82 STA. 772+32
18" x 24" W1-8D

83 STA. 772+85
48" x 24" W1-6

84 STA. 772+97
18" x 24" W1-8

775

85 STA. 773+52
18" x 24" W1-8D

86 STA. 774+12
87 STA. 774+72
88 STA. 775+33
18" x 24" W1-8D (R)

89 STA. 775+80
18" x 24" W1-8

90 STA. 775+92
48" x 24" W1-6

PT STA 777+28.24

91 STA. 776+62
92 STA. 777+12
93 STA. 777+73
18" x 24" W1-8D (R)

℄ CONST. ROUTE NM

PC STA 779+61.80

780

94 STA. 780+22
a) 36" x 36" W1-1R
b) 24" x 24" W13-1P
W1-1R (R)
25 M.P.H. W13-1P (R)

4" DOUBLE SOLID YELLOW
4" SOLID WHITE

785

PT STA 784+66.76
PC STA 785+81.25

OM3-L (R)
OM3-R (R)

223 STA. 784+53
12" x 36" OM3-R
OM3-R
OM3-R (R)
OM3-L (R)
OM3-L
STA. 784+70
12" x 36" OM3-L

224

95 COLEMAN RD STA. 786+26
a) (RELOCATED)
STOP b) 36" R1-1
R1-1

COLEMAN RD (RELOC)
STOP R1-1 (R)

MoDOT ADOPT-A-HIGHWAY Litter Cleanup
ADOPTER NAME
I9-1a (R)

COLEMAN RD

MATCHLINE STA. 787+50

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 50
COUNTY FRANK_IN
JOB NO. J6S3368
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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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 6 OF 28

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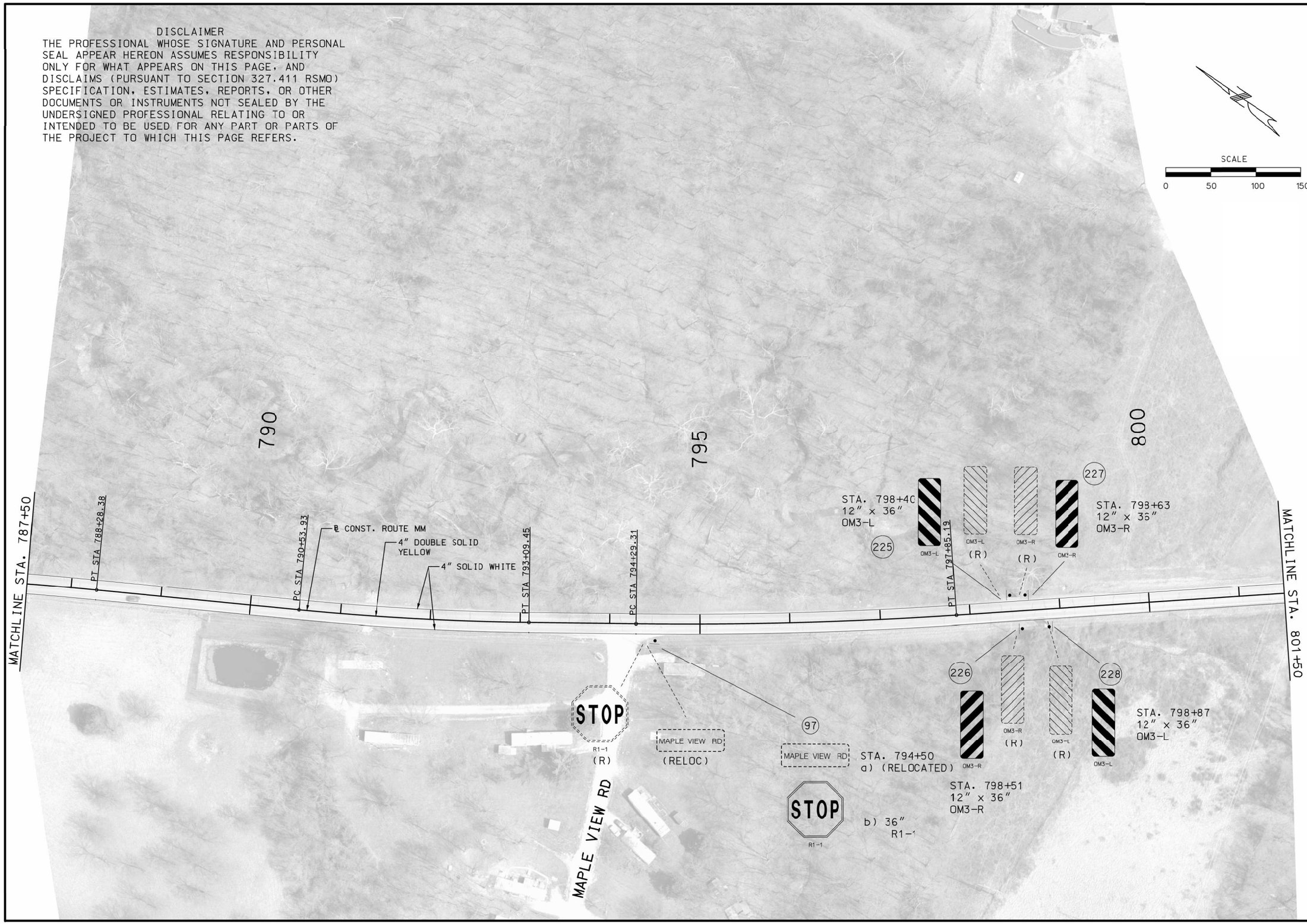

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	51

COUNTY
FRANK_IN

JOB NO.
J6S3368

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BRIDGE NO.

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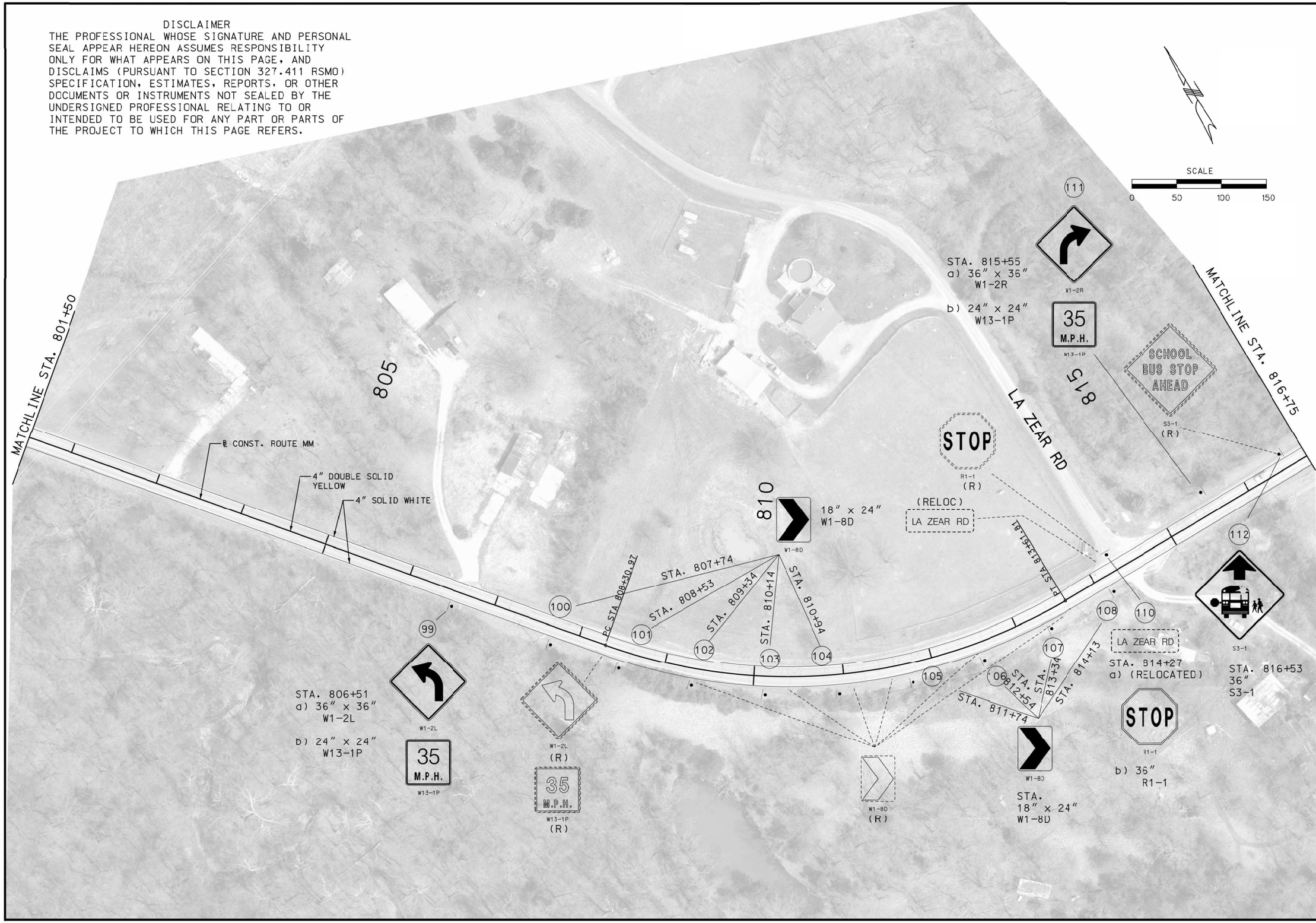

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	52

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 8 OF 28

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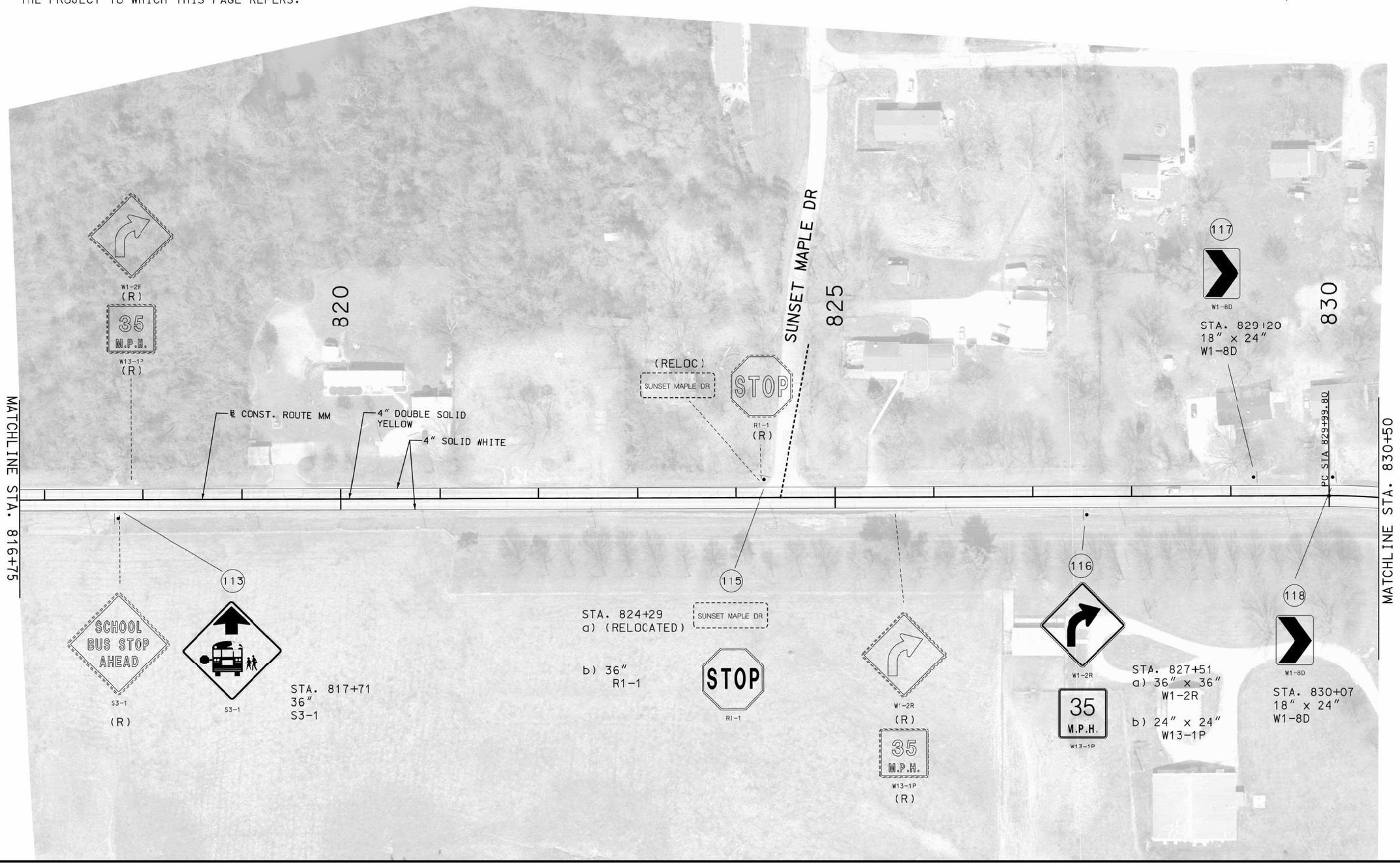

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ERICA J. RIDGWAY
NUMBER PE-2018003138

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COUNTY
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PROJECT NO.
BRIDGE NO.

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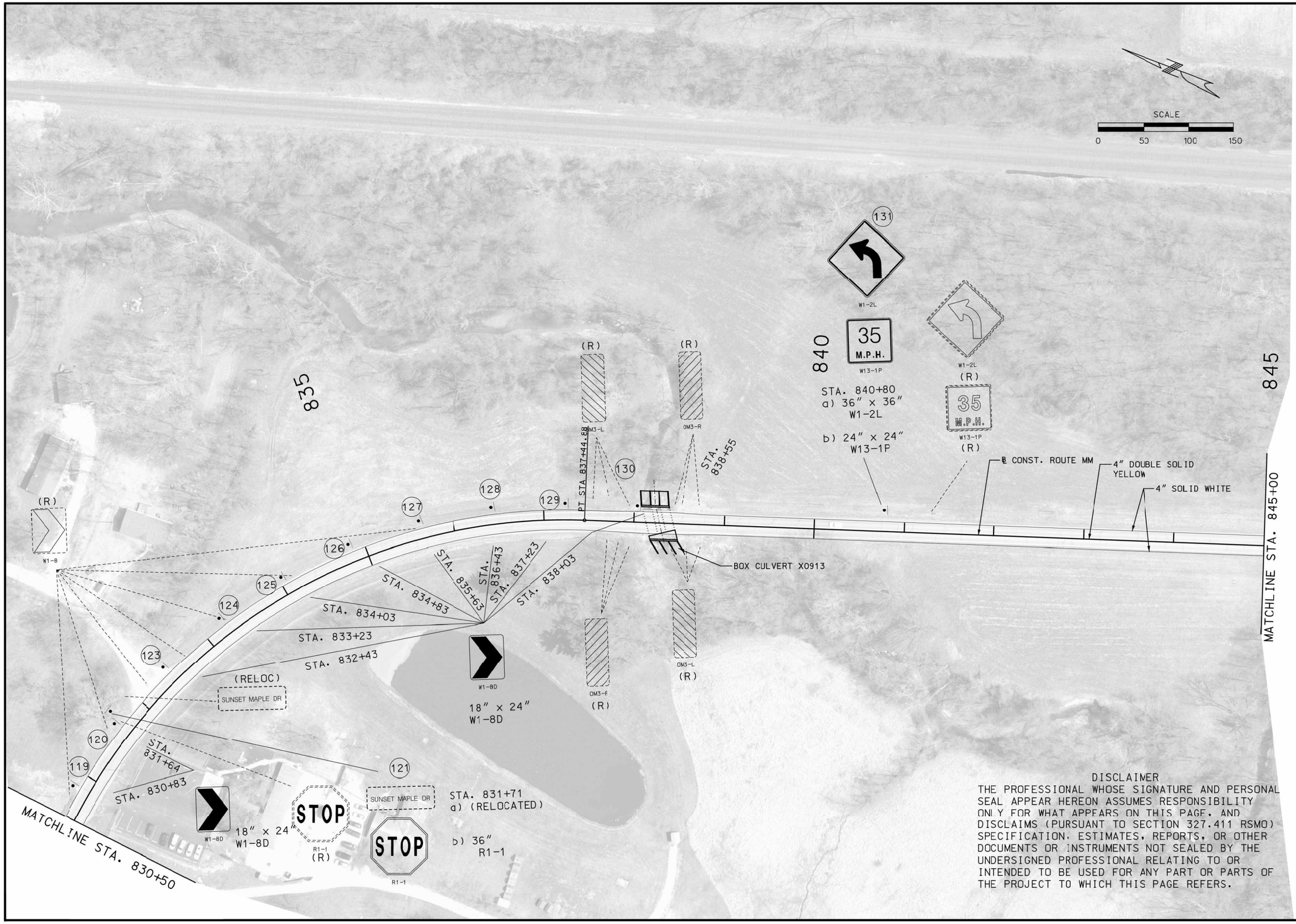
SHEET 9 OF 28



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ERICA J. RIDGWAY
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PROFESSIONAL ENGINEER

DATE PREPARED: 1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	54

COUNTY: FRANK_IN
JOB NO.: J6S3368
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

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ROUTE MM
SHEET 10 OF 28

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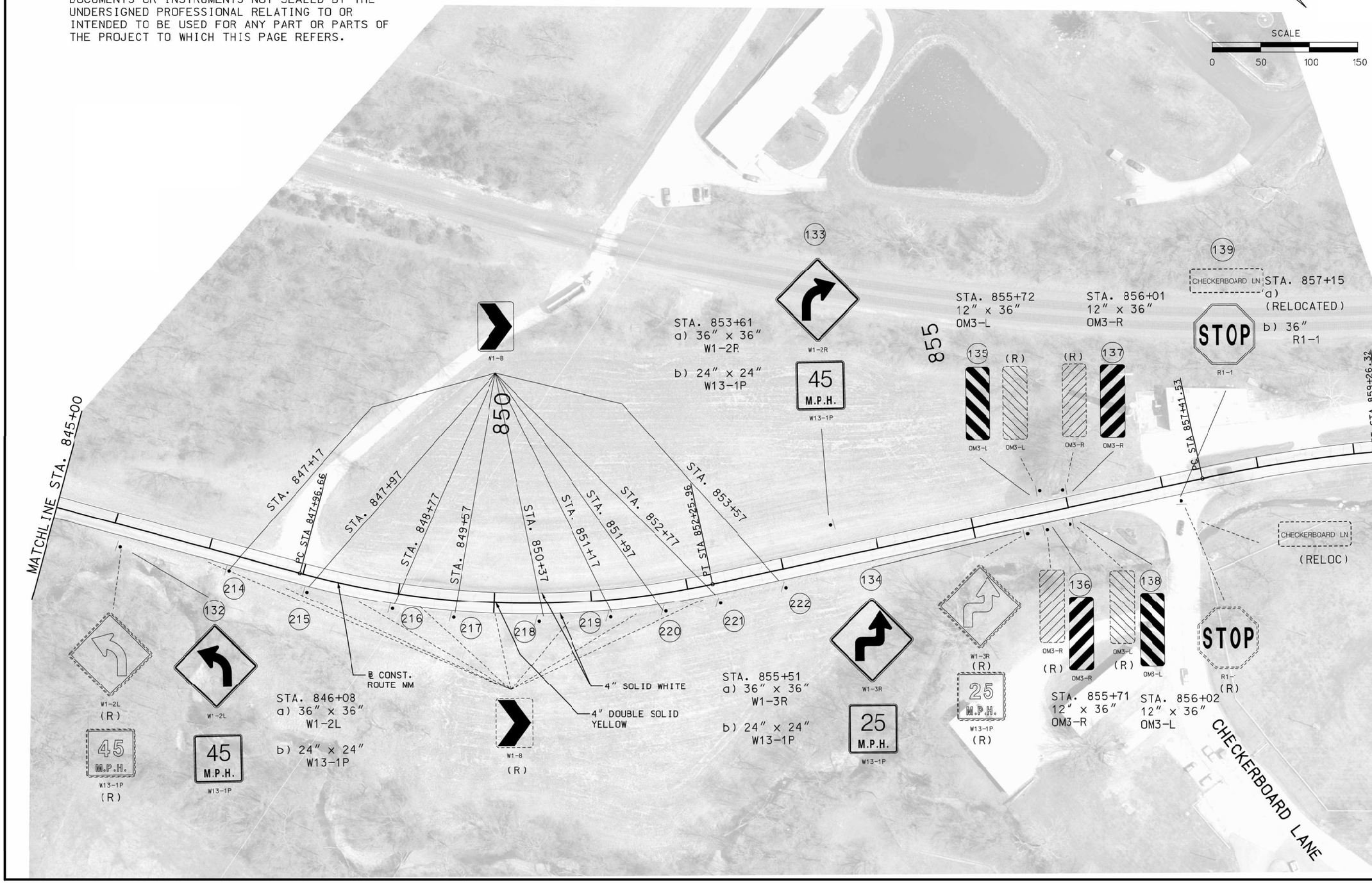

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STATE OF MISSOURI
ERICA J. RIDGWAY
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PROFESSIONAL ENGINEER

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ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	55

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.

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BRIDGE NO.

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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 11 OF 28

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SCALE
0 50 100 150

STATE OF MISSOURI
ERICA J. RIDGWAY
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PROFESSIONAL ENGINEER

DATE PREPARED
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ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	56

COUNTY
FRANK_IN
JOB NO.
J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 12 OF 28

MATCHLINE STA. 859+50

STA. 860+09
18" x 24"
W1-8D

860

DANFORTH DR

141

W1-8D

DANFORTH DR
(RELOC)

PC STA 860+21.96

W1-8D
(R)

146

147

144

145

STA. 860+69

STA. 861+29

STA. 861+89

148

STA. 862+55

STA. 862+49

142

DANFORTH DR
STA. 860+10
a) (RELOCATED)

STOP
R1-1
(R)

STOP
R1-1

b) 36"
R1-1

W1-8D
18" x 24"
W1-8D

18" x 24"
W1-8D

865

W1-8D

PT STA 863+19.39

149

STA. 863+06

STA. 863+15

PC STA 863+83.43

STA. 863+69

STA. 863+75

151

150

152

153

STA. 864+35

STA. 864+94

STA. 865+54

154

155

156

157

158

PT STA 867+08.12

STA. 867+29

STA. 866+74

STA. 866+14

W'-8D

159

W1-3R

STA. 870+28
a) 36" x 36"
W1-3R

b) 24" x 24"
W13-1P

25
M.P.H.
W13-1P

870

W1-3R
(R)

25
M.P.H.
W13-1P
(R)

OM3-L
(R)

OM3-R
(R)

BEGIN STA. 837+00 :
AERIAL DOES NOT MATCH
EXISTING CONDITION
STRIPING TO REFLECT
EXISTING CONDITIONS
IN FIELD

℄ CONST. ROUTE MM

OM3-R
(R)

OM3-L
(R)

4" DOUBLE SOLID
YELLOW

4" SOLID
WHITE

160

W1-2L

35
M.P.H.
W13-1P

STA. 870+70
a) 36" x 36"
W1-2L

b) 24" x 24"
W13-1P

W1-2L
(R)

35
M.P.H.
W13-1P
(R)

163

STOP
R1-1

STA. 872+53
36"
R1-1

STOP
R1-1
(R)

18" x 24"
W1-8D

MATCHLINE STA. 874+25

STA. 873+18

STA. 873+96

166

167

PC STA 872+51.26

STOP
R1-1
(R)

WILLIAM DANFORTH WAY
(RELOC)

161

STA. 871+57

STA. 872+37

162

W1-8D
18" x 24"
W1-8D

165

WILLIAM DANFORTH WAY

STA. 872+71
a) (RELOCATED)

STOP
R1-1

b) 36"
R1-1

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SCALE
0 50 100 150

MATCHLINE STA. 874+25

PT STA 874+46.41

168 W1-8D
STA. 874+75
18" x 24"
W1-8D

STRIPING TO REFLECT EXISTING CONDITIONS IN FIELD

169 W1-8D
STA. 875+55
18" x 24"
W1-8D

170 W1-4L
STA. 879+45
a) 36" x 36"
W1-4L
b) 24" x 24"
W13-1P
40 M.P.H. W13-1P

W1-4L (R)
40 M.P.H. W13-1P (R)

171 W1-2R
STA. 879+86
a) 36" x 36"
W1-2R
b) 24" x 24"
W13-1P
35 M.P.H. W13-1P

℄ CONST. ROUTE MM

880

W1-2R (R)
35 M.P.H. W13-1P (R)

END STA. 880+71
AERIAL DOES NOT MATCH EXISTING CONDITION

4" DOUBLE SOLID YELLOW

PC STA 881+42.71

PT STA 882+41.45

4" SOLID WHITE

PC STA 883+52.92

885

W1-8D (R)

172 STA. 882+43
173 STA. 883+22
174 STA. 884+01
175 STA. 884+81
176 STA. 885+61
177 STA. 886+41
178 STA. 887+21

PT STA 886+00.22

W1-8D
18" x 24"
W'-8D

179 W1-4L
STA. 888+35
a) 36" x 36"
W1-4L
b) 24" x 24"
W13-1P
40 M.P.H. W13-1P

W1-4L (R)
40 M.P.H. W13-1P (R)

$1000 MAXIMUM FINE and/or A YEAR IN JAIL FOR LITTERING
NoMORE Trash!
R5-26 (R)

MATCHLINE STA. 888+50

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STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	57

COUNTY
FRANK_IN
JOB NO.
J6S3368
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)

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SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 13 OF 28

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STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	58

COUNTY
FRANK_IN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
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SIGNING AND PAVEMENT MARKINGS
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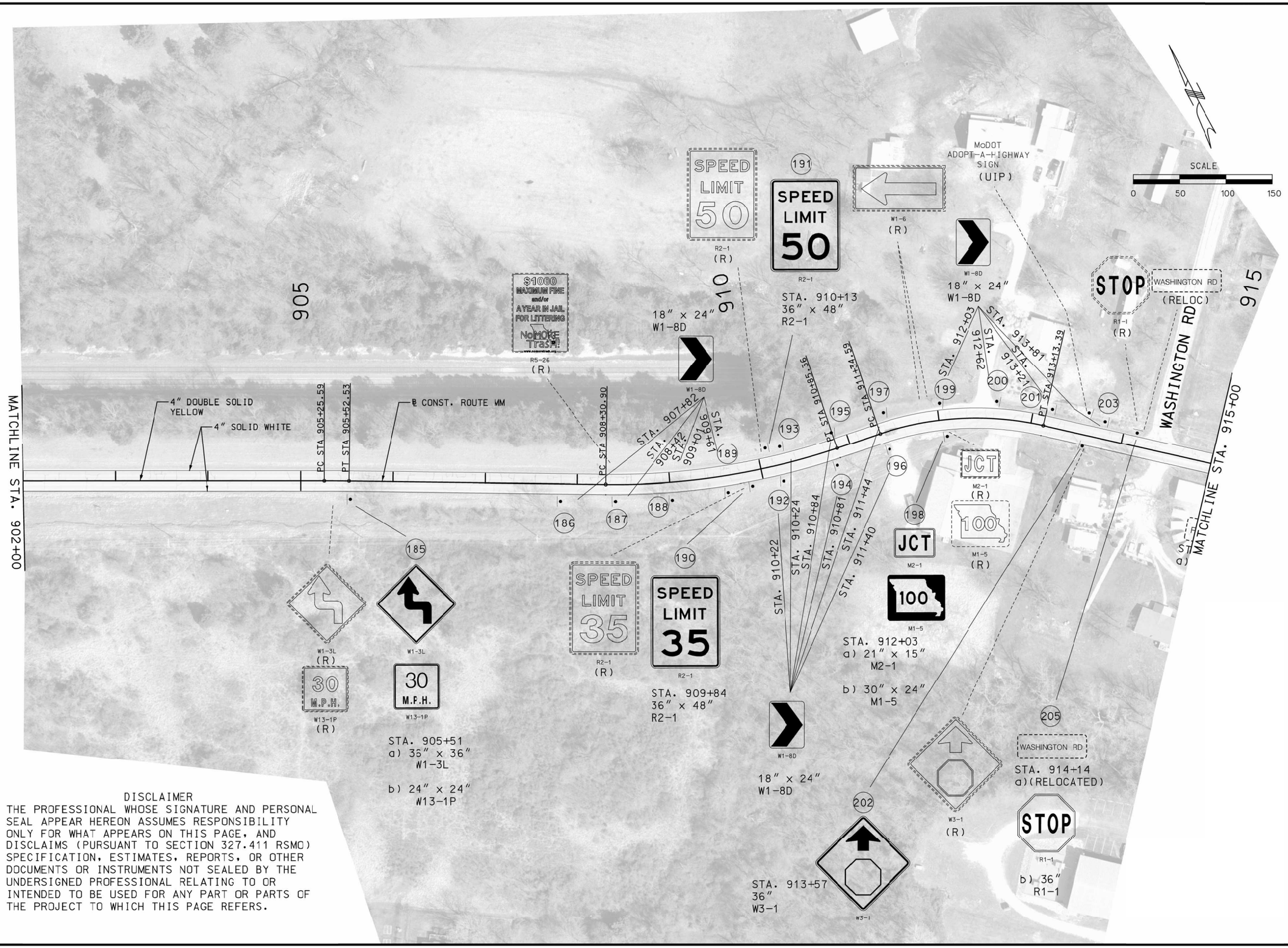
SHEET 14 OF 28



STA. 905+51
a) 36" x 36"
W1-3L

b) 24" x 24"
W13-1P

STA. 909+84
36" x 48"
R2-1

STA. 912+03
a) 21" x 15"
M2-1

b) 30" x 24"
M1-5

18" x 24"
W1-8D

STA. 913+57
36"
W3-1

STA. 914+14
a)(RELOCATED)

b) 36"
R1-1

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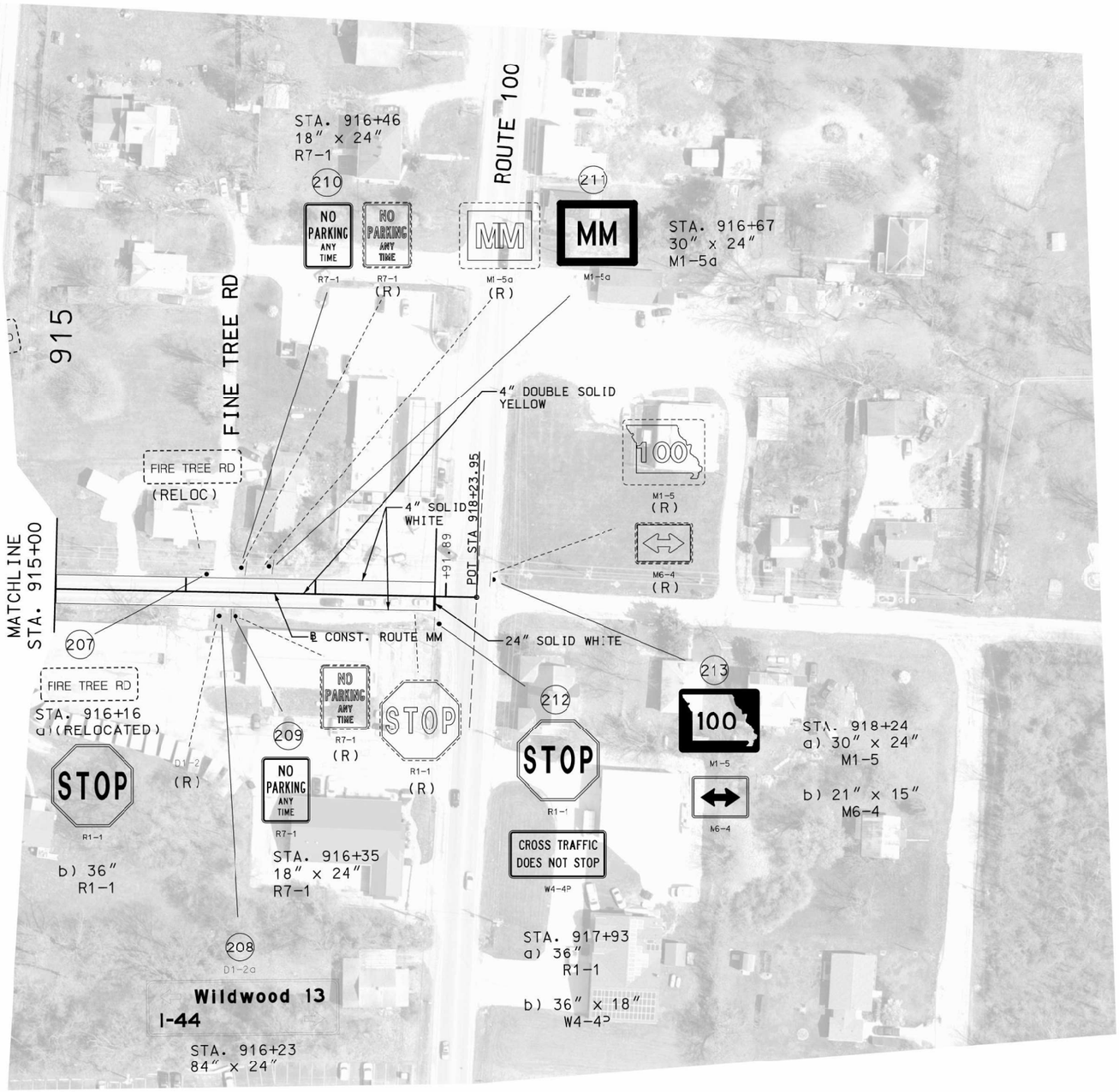

SCALE

0 50 100 150

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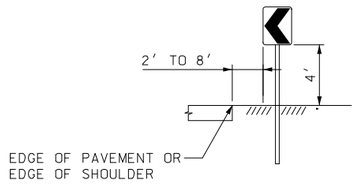
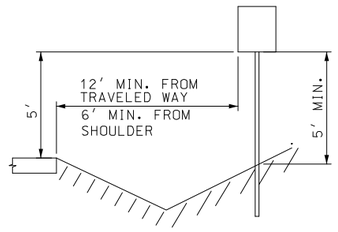
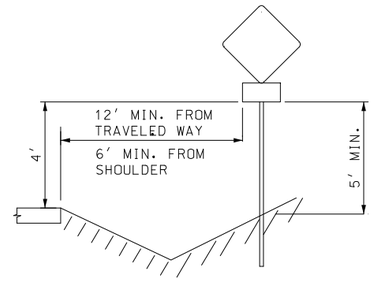


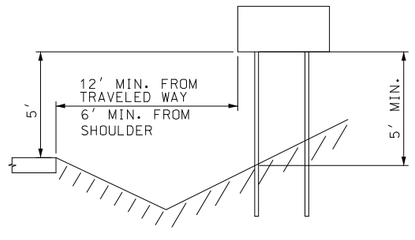
TYPICAL SIGN MOUNTING FOR
CHEVRONS



TYPICAL SIGN MOUNTING WITH
U-CHANNEL POST, NO CURB



TYPICAL SIGN MOUNTING WITH U-CHANNEL
POST, NO CURB FOR SIGN WITH
SUPPLEMENTAL PLAQUE



TYPICAL SIGN MOUNTING WITH
U-CHANNEL POST, NO CURB

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	61

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
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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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300
TREKK DESIGN GROUP, LLC

SIGNING AND
PAVEMENT MARKINGS
ROUTE MM
SHEET 17 OF 28

EFFECTIVE 07-01-2022

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)						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
																							2 IN. POST						2.5 IN. POST						
																										ANCHORS					ANCHORS		
SIGN NO.	SIGN SIZE	STATION	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 ¾" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	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	
1a	24"X24"	INT		ROUTE T																		15													
1b	21"X15"																																		
2a	36"X36"	700+54		ROUTE MM																		16													
2b	36"X18"																																		
3a	36"X36"	701+56		ROUTE MM																		17													
3b	24"X24"																																		
5	30"X24"	704+58		ROUTE MM																		14													
6a	21"X15"	708+54		ROUTE MM																		15													
6b	24"X24"																																		
7	18"X24"	709+80		ROUTE MM																		10													
8	18"X24"	710+60		ROUTE MM																		12													
9	18"X24"	711+40		ROUTE MM																															
10	18"X24"	712+20		ROUTE MM																		12													
11	18"X24"	713+00		ROUTE MM																															
12	18"X24"	713+80		ROUTE MM																		10													
13	36"X48"	714+50		ROUTE MM																		16													
14	18"X24"	714+60		ROUTE MM																		10													
15	18"X24"	715+40		ROUTE MM																		10													
16a	36"X36"	715+49		ROUTE MM																		17													
16b	24"X24"																																		
17a	36"X36"	719+01		ROUTE MM																		17													
17b	24"X24"																																		
18	18"X24"	720+36		ROUTE MM																		10													
19	18"X24"	720+96		ROUTE MM																		10													
20	18"X24"	721+72		ROUTE MM																		10													
21	18"X24"	722+52		ROUTE MM																		10													
22	18"X24"	723+32		ROUTE MM																		10													
23	18"X24"	723+92		ROUTE MM																		10													
24a	36"X36"	725+53		ROUTE MM																		17													
24b	24"X24"																																		
25a	36"X36"	728+14		ROUTE MM																		17													
25b	24"X24"																																		
26	18"X24"	730+18		ROUTE MM																		10													
27	18"X24"	730+83		ROUTE MM																		10													
28	12"X36"	731+07		ROUTE MM																		11													
29	48"X24"	731+28		ROUTE MM																		12													
30	48"X24"	731+49		ROUTE MM																		12													
31	18"X24"	732+03		ROUTE MM																		10													
32	12"X36"	732+17		ROUTE MM																		11													
33	12"X36"	732+45		ROUTE MM																		11													
34	18"X24"	732+63		ROUTE MM																		10													
35	18"X24"	733+23		ROUTE MM																		10													
36a	12"X36"	734+39		ROUTE MM																		11													
36b	12"X36"																																		
37a	36"X36"	734+76		ROUTE MM																		17													
37b	24"X24"																																		
38a	12"X36"	735+21		ROUTE MM																		11													
38b	12"X36"																																		
39a	12"X36"	735+69		ROUTE MM																		11													
39b	12"X36"																																		
40a	12"X36"	736+24		ROUTE MM																		11													
40b	12"X36"																																		
41	12"X36"	737+03		ROUTE MM																		11													
42a	18"X6"	742+62		ROUTE MM																		16													
42b	36"X36"	–																																	
44	12"X36"	748+57		ROUTE MM																		11													
45	12"X36"	748+76		ROUTE MM																		11													
46	12"X36"	748+93		ROUTE MM																		11													
				SUBTOTAL																		513													
				TOTAL																															

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* 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 DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE 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

D-29

ERICA J. RIDGWAY NUMBER PE-2018003138 PROFESSIONAL ENGINEER STATE OF MISSOURI

DATE PREPARED 2/5/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 62
COUNTY FRANKLIN
JOB NO. J6S3368
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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
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Tel:(314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 18 OF 28

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

EFFECTIVE 07-01-2022

902 SIGNAL SIGNS TABULATED ON D-37A SHEET

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
																							2 IN. POST						2.5 IN. POST							
																										ANCHORS					ANCHORS				
SIGN NO.	SIGN SIZE	STATION	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 ¾" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	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	
47	12″X36″	748+99		ROUTE MM																		11														
48	12″X36″	749+11		ROUTE MM																		11														
49	12″X36″	749+27		ROUTE MM																		11														
50	12″X36″	749+41		ROUTE MM																		11														
51	12″X36″	749+55		ROUTE MM																		11														
52	12″X36″	749+72		ROUTE MM																		11														
53	12″X36″	749+74		ROUTE MM																		11														
54	12″X36″	749+92		ROUTE MM																		11														
55	12″X36″	750+07		ROUTE MM																		11														
56a	36″X36″	750+91		ROUTE MM																		17														
56b	24″X24″																																			
57	36″X36″	751+54		ROUTE MM																		15														
58	18″X24″	751+89		ROUTE MM																		10														
59	18″X24″	752+50		ROUTE MM																		10														
60	18″X24″	753+14		ROUTE MM																		10														
61	18″X24″	753+74		ROUTE MM																		10														
62	18″X24″	754+34		ROUTE MM																		10														
63	18″X24″	754+94		ROUTE MM																		10														
64	18″X24″	755+54		ROUTE MM																		10														
65	18″X24″	755+55		ROUTE MM																		10														
66	18″X24″	756+14		ROUTE MM																		10														
67	36″X36″	756+96		ROUTE MM																		15														
68	18″X24″	756+66		ROUTE MM																		10														
69	18″X24″	757+26		ROUTE MM																		10														
70	18″X24″	757+86		ROUTE MM																		10														
71	18″X24″	758+45		ROUTE MM																		10														
72	18″X24″	759+05		ROUTE MM																		10														
73	18″X24″	759+64		ROUTE MM																		10														
74	18″X24″	760+24		ROUTE MM																		10														
75	18″X24″	760+84		ROUTE MM																		10														
76	18″X24″	761+43		ROUTE MM																		10														
77a	36″X36″	762+53		ROUTE MM																		17														
77b	24″X24″																																			
78a	36″X36″	769+31		ROUTE MM																		17														
78b	24″X24″																																			
79	18″X24″	770+53		ROUTE MM																		10														
80	18″X24″	771+13		ROUTE MM																		10														
81	18″X24″	771+72		ROUTE MM																		10														
82	18″X24″	772+32		ROUTE MM																		10														
83	48″X24″	772+85		ROUTE MM																		12														
84	18″X24″	772+97		ROUTE MM																		10														
85	18″X24″	773+52		ROUTE MM																		10														
86	18″X24″	774+12		ROUTE MM																		10														
87	18″X24″	774+72		ROUTE MM																		10														
88	18″X24″	775+33		ROUTE MM																		10														
89	18″X24″	775+80		ROUTE MM																		10														
90	48″X24″	775+92		ROUTE MM																		12														
91	18″X24″	776+62		ROUTE MM																		10														
92	18″X24″	777+12		ROUTE MM																		10														
93	18″X24″	777+73		ROUTE MM																		10														
94a	36″X36″	780+22		ROUTE MM																		17														
94b	24″X24″																																			
95a	24″X6″	786+26		ROUTE MM																		16														
95b	36″X36″																																			
97a	24″X6″	794+50		ROUTE MM																		16														
97b	36″X36″																																			
99a	36″X36″	806+51		ROUTE MM																		17														
99b	24″X24″																																			
100	18″X24″	807+74		ROUTE MM																		10														
101	18″X24″	808+53		ROUTE MM																		10														
				SUBTOTAL																		600														
				TOTAL																																

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** 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 DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE 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

D-29

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 2/5/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 63
COUNTY FRANKLIN
JOB NO. J6S3368
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)

TREKK DESIGN GROUP, LLC
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Tel:(314) 932-1226
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Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 19 OF 28

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

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	STATION	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 ¾" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	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	
102	18″X24″	809+34		ROUTE MM																		10														
103	18″X24″	810+14		ROUTE MM																		10														
104	18″X24″	810+94		ROUTE MM																		10														
105	18″X24″	811+74		ROUTE MM																		10														
106	18″X24″	812+54		ROUTE MM																		10														
107	18″X24″	813+34		ROUTE MM																		10														
108	18″X24″	814+13		ROUTE MM																		10														
110a	24″X6″	814+27		ROUTE MM																		16														
110b	36″X36″			ROUTE MM																																
111a	36″X36″	815+55		ROUTE MM																		17														
111b	24″X24″			ROUTE MM																																
112	36″X36″	816+53		ROUTE MM																		15														
113	36″X36″	817+71		ROUTE MM																		15														
115a	24″X6″	824+29		ROUTE MM																		16														
115b	36″X36″																																			
116a	36″X36″	827+51		ROUTE MM																		17														
116b	24″X24″																																			
117	18″X24″	829+20		ROUTE MM																		10														
118	18″X24″	830+07		ROUTE MM																		10														
119	18″X24″	830+83		ROUTE MM																		10														
120	18″X24″	831+64		ROUTE MM																		10														
121a	24″X6″	831+71		ROUTE MM																		16														
121b	36″X36″																																			
123	18″X24″	832+43		ROUTE MM																		10														
124	18″X24″	833+23		ROUTE MM																		10														
125	18″X24″	834+03		ROUTE MM																		10														
126	18″X24″	834+83		ROUTE MM																		10														
127	18″X24″	835+63		ROUTE MM																		10														
128	18″X24″	836+43		ROUTE MM																		10														
129	18″X24″	837+23		ROUTE MM																		10														
130	18″X24″	838+03		ROUTE MM																		10														
131a	36″X36″	840+80		ROUTE MM																		17														
131b	24″X24″																																			
132a	36″X36″	846+08		ROUTE MM																		17														
132b	24″X24″																																			
133a	36″X36″	853+61		ROUTE MM																		17														
133b	24″X24″																																			
134a	36″X36″	855+51		ROUTE MM																		17														
134b	24″X24″																																			
135	12″X36″	855+72		ROUTE MM																		11														
136	12″X36″	855+71		ROUTE MM																		11														
137	12″X36″	856+01		ROUTE MM																		11														
138	12″X36″	856+02		ROUTE MM																		11														
139a	48″X9″	857+15		ROUTE MM																		17														
139b	36″X36″																																			
141	18″X24″	860+09		ROUTE MM																		10														
142a	24″X6″	860+10		ROUTE MM																		16														
142b	36″X36″																																			
144	18″X24″	860+69		ROUTE MM																		10														
145	18″X24″	861+29		ROUTE MM																		10														
146	18″X24″	861+89		ROUTE MM																		10														
147	18″X24″	862+49		ROUTE MM																		10														
148	18″X24″	862+55		ROUTE MM																		10														
149	18″X24″	863+06		ROUTE MM																		10														
150	18″X24″	863+15		ROUTE MM																		10														
151	18″X24″	863+69		ROUTE MM																		10														
152	18″X24″	863+75		ROUTE MM																		10														
153	18″X24″	864+35		ROUTE MM																		10														
154	18″X24″	864+94		ROUTE MM																		10														
155	18″X24″	865+54		ROUTE MM																		10														
				SUBTOTAL																		577														
				TOTAL																																

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

DISCLAIMER
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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 DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE 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

D-29

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

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED
2/5/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	64

COUNTY
FRANKLIN

JOB NO.
J6S3368

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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel:(314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 20 OF 28

EFFECTIVE 07-01-2022

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)						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
																							2 IN. POST						2.5 IN. POST							
																										ANCHORS					ANCHORS				
SIGN NO.	SIGN SIZE	STATION	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	NO. EACH	2" X ¾" BARS @ 2.55 LBS PER FT 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		IN.	LF	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EA	
156	18"X24"	866+14		ROUTE MM																		10														
157	18"X24"	866+74		ROUTE MM																		10														
158	18"X24"	867+29		ROUTE MM																		10														
159a	36"X36"	870+28		ROUTE MM																		17														
159b	24"X24"																																			
160a	36"X36"	870+70		ROUTE MM																		17														
160b	24"X24"																																			
161	18"X24"	871+57		ROUTE MM																		10														
162	18"X24"	872+37		ROUTE MM																		10														
163	36"X36"	872+53		ROUTE MM																		15														
165a	42"X6"	872+71		ROUTE MM																		16														
165b	36"X36"																																			
166	18"X24"	873+16		ROUTE MM																		10														
167	18"X24"	873+96		ROUTE MM																		10														
168	18"X24"	874+75		ROUTE MM																		10														
169	18"X24"	875+55		ROUTE MM																		10														
170a	36"X36"	879+45		ROUTE MM																		17														
170b	24"X24"																																			
171a	36"X36"	879+86		ROUTE MM																		17														
171b	24"X24"																																			
172	18"X24"	882+43		ROUTE MM																		10														
173	18"X24"	883+22		ROUTE MM																		10														
174	18"X24"	884+01		ROUTE MM																		10														
175	18"X24"	884+81		ROUTE MM																		10														
176	18"X24"	885+61		ROUTE MM																		10														
177	18"X24"	886+41		ROUTE MM																		10														
178	18"X24"	887+21		ROUTE MM																		10														
179a	36"X36"	888+35		ROUTE MM																		17														
179b	24"X24"																																			
181a	36"X36"	895+45		ROUTE MM																		16														
181b	30"X6"																																			
182	48"X24"	899+36		ROUTE MM																		12														
184a	24"X6"	899+57		ROUTE MM																		16														
184b	36"X36"																																			
185a	36"X36"	905+51		ROUTE MM																		17														
185b	24"X24"																																			
186	18"X24"	907+82		ROUTE MM																		10														
187	18"X24"	908+42		ROUTE MM																		10														
188	18"X24"	909+01		ROUTE MM																		10														
189	18"X24"	909+61		ROUTE MM																		10														
190	36"X48"	909+84		ROUTE MM																		16														
191	36"X48"	910+13		ROUTE MM																		16														
192	18"X24"	910+22		ROUTE MM																		10														
193	18"X24"	910+24		ROUTE MM																		10														
194	18"X24"	910+81		ROUTE MM																		10														
195	18"X24"	910+84		ROUTE MM																		10														
196	18"X24"	911+40		ROUTE MM																		10														
197	18"X24"	911+44		ROUTE MM																		10														
198a	21"X15"	912+03		ROUTE MM																		15														
198b	30"X24"																																			
199	18"X24"	912+03		ROUTE MM																		10														
200	18"X24"	912+62		ROUTE MM																		10														
201	18"X24"	913+21		ROUTE MM																		10														
202	36"X36"	913+57		ROUTE MM																		15														
203	18"X24"	913+81		ROUTE MM																		10														
205a	30"X6"	914+14		ROUTE MM																		16														
205b	36"X36"																																			
207a	24"X6"	916+16		ROUTE MM																		16														
207b	36"X36"																																			
				SUBTOTAL																		571														
				TOTAL																																	

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

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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 DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE 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

D-29

ERICA J. RIDGWAY NUMBER PE-2018003138 PROFESSIONAL ENGINEER STATE OF MISSOURI
Erica Ridgway

DATE PREPARED 2/5/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 65
COUNTY FRANKLIN
JOB NO. J6S3368
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)

17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300
TREKK DESIGN GROUP, LLC

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 21 OF 28

EFFECTIVE 07-01-2022

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)						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
																							2 IN. POST						2.5 IN. POST							
																										ANCHORS					ANCHORS				
SIGN NO.	SIGN SIZE	STATION	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 ¾" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	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	
208	84"X24"	916+23		ROUTE MM																		30														
209	18"X24"	916+35		ROUTE MM																		13														
210	18"X24"	916+46		ROUTE MM																		13														
211	30"X24"	916+67		ROUTE MM																		14														
212a	36"X36"	917+93		ROUTE MM																		16														
212b	36"X18"																																			
213a	30"X24"	918+24		ROUTE MM																		14														
213b	21"X15"																																			
214	18"X24"	847+17		ROUTE MM																																
215	18"X24"	847+97		ROUTE MM																																
216	18"X24"	848+77		ROUTE MM																																
217	18"X24"	849+57		ROUTE MM																																
218	18"X24"	850+37		ROUTE MM																																
219	18"X24"	851+17		ROUTE MM																																
220	18"X24"	851+97		ROUTE MM																																
221	18"X24"	852+77		ROUTE MM																																
222	18"X24"	853+57		ROUTE MM																																
223	12"X36"	784+53		ROUTE MM																																
224	12"X36"	784+70		ROUTE MM																																
225	12"X36"	798+40		ROUTE MM																																
226	12"X36"	798+51		ROUTE MM																																
227	12"X36"	798+63		ROUTE MM																																
228	12"X36"	798+87		ROUTE MM																																
SUBTOTAL																						290														
TOTAL																						2518														

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** 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 DES. NO.	NOM. SIZE	POST WEIGHT LBS/FT	POST WEIGHT LBS/IN	STUB LENGTH	FOOTING DIA.	LEVEL GROUND DEPTH	LEVEL GROUND C.Y.	6:1 GRADE DEPTH	6:1 GRADE C.Y.	4:1 GRADE DEPTH	4:1 GRADE C.Y.	3:1 OR 2:1 GRADE DEPTH	3:1 OR 2:1 GRADE 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

D-29

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

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
Erica Ridgway

DATE PREPARED 2/5/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 66
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID. .
PROJECT NO. .
BRIDGE NO. .

DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 22 OF 28

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EFFECTIVE 10-01-2016

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: M1-5a	M6-4	R1-1	W4-4P	W1-2L	W13-1P	M4-6	M1-5a	M2-1	W1-8D	R2-1	W1-2R	W1-1R	OM3-R	W1-6	OM3-L	W1-1L
			SIGN DESCRIPTION, SIZES & NUMBER OF EACH																
1a	INT	ROUTE T	1																
1b				1															
2a	700+54	ROUTE MM			1														
2b						1													
3a	701+56	ROUTE MM					1												
3b								1											
5	704+58	ROUTE MM								1									
6a	708+54	ROUTE MM									1								
6b			1																
7	709+80	ROUTE MM										1							
8	710+60	ROUTE MM										1							
9	711+40	ROUTE MM										1							
10	712+20	ROUTE MM										1							
11	713+00	ROUTE MM										1							
12	713+80	ROUTE MM										1							
13	714+50	ROUTE MM											1						
14	714+60	ROUTE MM										1							
15	715+40	ROUTE MM										1							
16a	715+49	ROUTE MM												1					
16b								1											
17a	719+01	ROUTE MM					1												
17b								1											
18	720+36	ROUTE MM										1							
19	720+96	ROUTE MM										1							
20	721+72	ROUTE MM										1							
21	722+52	ROUTE MM										1							
22	723+32	ROUTE MM										1							
23	723+92	ROUTE MM										1							
24a	725+53	ROUTE MM												1					
24b								1											
25a	728+14	ROUTE MM													1				
25b								1											
26	730+18	ROUTE MM										1							
27	730+83	ROUTE MM										1							
28	731+07	ROUTE MM														1			
29	731+28	ROUTE MM															1		
30	731+49	ROUTE MM															1		
31	732+03	ROUTE MM										1							
32	732+17	ROUTE MM														1			
33	732+45	ROUTE MM																1	
34	732+63	ROUTE MM										1							
35	733+23	ROUTE MM										1							
36a	734+39	ROUTE MM														1			
36b																		1	
37a	734+76	ROUTE MM																	1
37b								1											
38a	735+21	ROUTE MM														1			
38b																		1	
39a	735+69	ROUTE MM														1			
39b																		1	
40a	736+24	ROUTE MM														1			
40b																		1	
41	737+03	ROUTE MM														1			
42a	742+62	ROUTE MM	N/A - RELOCATED																
42b					1														

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: 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
M1-5a		2	24" X 24"	8			
M6-4		2	21" X 15"	4			
R1-1		16	36"	144			
W4-4P		2	36" X 18"		9		
W1-2L		6	36" X 36"		54		
W13-1P		23	24" X 24"		92		
M1-5a		2	30" X 24"	10			
M2-1		2	21" X 15"	4			
R2-1		3	36" X 48"	36			
W1-2R		6	36" X 36"		54		
W1-8D		123	18" X 24"		369		
W1-1R		2	36" X 36"		18		
OM3-L		16	12" X 36"		48		
OM3-R		18	12" X 36"		54		
W1-6		4	48" X 24"		32		
W1-1L		2	36" X 36"		18		
S3-1		4	36" X 36"	36			
W1-3L		3	36" X 36"		27		
W1-3R		2	36" X 36"		18		
W1-4L		2	36" X 36"		18		
M1-5		2	30" X 24"	10			
W3-1		1	36" X 36"		9		
W1-7		1	48" X 24"		8		
R7-1		2	18" X 24"	6			
D3-1		1	18" X 6"	0.8			
D3-1		8	24" X 6"	8			
D3-1		2	30" X 6"	2.5			
D3-1		1	42" X 6"	1.8			
D3-1		1	48" X 9"	3			
D2-1		1	84" X 24"			14	
			TOTAL	274	828	14	

* ORANGE, YELLOW & YELLOW/GREEN

D-30

ERICA J. RIDGWAY NUMBER PE-2018003138 PROFESSIONAL ENGINEER STATE OF MISSOURI

Erica Ridgway

DATE PREPARED 2/5/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	67

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE
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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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 23 OF 28

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EFFECTIVE 10-01-2016

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: S3-1	W1-3L	R1-1	W4-4P	W1-2L	W13-1P	M4-6	M1-5a	M2-1	W1-8D	R2-1	W1-2R	W1-1R	OM3-R	W1-6	OM3-L	W1-1L
			SIGN DESCRIPTION, SIZES & NUMBER OF EACH																
44	748+57	ROUTE MM																1	
45	748+76	ROUTE MM																1	
46	748+93	ROUTE MM																1	
47	748+99	ROUTE MM														1			
48	749+11	ROUTE MM														1			
49	749+27	ROUTE MM														1			
50	749+41	ROUTE MM														1			
51	749+55	ROUTE MM														1			
52	749+72	ROUTE MM														1			
53	749+74	ROUTE MM																1	
54	749+92	ROUTE MM																1	
55	750+07	ROUTE MM																1	
56a	750+91	ROUTE MM		1															
56b								1											
57	751+54	ROUTE MM	1																
58	751+89	ROUTE MM										1							
59	752+50	ROUTE MM										1							
60	753+14	ROUTE MM										1							
61	753+74	ROUTE MM										1							
62	754+34	ROUTE MM										1							
63	754+94	ROUTE MM										1							
64	755+54	ROUTE MM										1							
65	755+55	ROUTE MM										1							
66	756+14	ROUTE MM										1							
67	756+96	ROUTE MM	1																
68	756+66	ROUTE MM										1							
69	757+26	ROUTE MM										1							
70	757+86	ROUTE MM										1							
71	758+45	ROUTE MM										1							
72	759+05	ROUTE MM										1							
73	759+64	ROUTE MM										1							
74	760+24	ROUTE MM										1							
75	760+84	ROUTE MM										1							
76	761+43	ROUTE MM										1							
77a	762+53	ROUTE MM		1															
77b								1											
78a	769+31	ROUTE MM																	1
78b								1											
79	770+53	ROUTE MM										1							
80	771+13	ROUTE MM										1							
81	771+72	ROUTE MM										1							
82	772+32	ROUTE MM										1							
83	772+85	ROUTE MM															1		
84	772+97	ROUTE MM										1							
85	773+52	ROUTE MM										1							
86	774+12	ROUTE MM										1							
87	774+72	ROUTE MM										1							
88	775+33	ROUTE MM										1							
89	775+80	ROUTE MM										1							
90	775+92	ROUTE MM															1		
91	776+62	ROUTE MM										1							
92	777+12	ROUTE MM										1							
93	777+73	ROUTE MM										1							
94a	780+22	ROUTE MM													1				
94b								1											
95a	786+26	ROUTE MM	N/A - RELOCATED																
95b					1														

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: 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

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EFFECTIVE 10-01-2016

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: S3-1	W1-3L	R1-1	W4-4P	W1-2L	W13-1P	M4-6	M1-5a	M2-1	W1-8D	R2-1	W1-2R	W1-1R	OM3-R	W1-3R	OM3-L	W1-1L
			SIGN DESCRIPTION, SIZES & NUMBER OF EACH																
97a	794+50	ROUTE MM	N/A - RELOCATED																
97b					1														
99a	806+51	ROUTE MM					1												
99b								1											
100	807+74	ROUTE MM										1							
101	808+53	ROUTE MM										1							
102	809+34	ROUTE MM										1							
103	810+14	ROUTE MM										1							
104	810+94	ROUTE MM										1							
105	811+74	ROUTE MM										1							
106	812+54	ROUTE MM										1							
107	813+34	ROUTE MM										1							
108	814+13	ROUTE MM										1							
110a	814+27	ROUTE MM	N/A - RELOCATED																
110b					1														
111a	815+55	ROUTE MM												1					
111b								1											
112	816+53	ROUTE MM	1																
113	817+71	ROUTE MM	1																
115a	824+29	ROUTE MM	N/A - RELOCATED																
115b					1														
116a	827+51	ROUTE MM												1					
116b								1											
117	829+20	ROUTE MM										1							
118	830+07	ROUTE MM										1							
119	830+83	ROUTE MM										1							
120	831+64	ROUTE MM										1							
121a	831+71	ROUTE MM	N/A - RELOCATED																
121b					1														
123	832+43	ROUTE MM										1							
124	833+23	ROUTE MM										1							
125	834+03	ROUTE MM										1							
126	834+83	ROUTE MM										1							
127	835+63	ROUTE MM										1							
128	836+43	ROUTE MM										1							
129	837+23	ROUTE MM										1							
130	838+03	ROUTE MM										1							
131a	840+80	ROUTE MM					1												
131b								1											
132a	846+08	ROUTE MM					1												
132b								1											
133a	853+61	ROUTE MM												1					
133b								1											
134a	855+51	ROUTE MM															1		
134b								1											
135	855+72	ROUTE MM																1	
136	855+71	ROUTE MM														1			
137	856+01	ROUTE MM														1			
138	856+02	ROUTE MM																1	
139a	857+15	ROUTE MM	N/A - RELOCATED																
139b					1														
141	860+09	ROUTE MM										1							
142a	860+10	ROUTE MM	N/A - RELOCATED																
142b					1														
144	860+69	ROUTE MM										1							
145	861+29	ROUTE MM										1							
146	861+89	ROUTE MM										1							

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: 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

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EFFECTIVE 10-01-2016

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: S3-1	W1-3L	R1-1	W4-4P	W1-2L	W13-1P	M4-6	M1-5a	M2-1	W1-8D	R2-1	W1-2R	W1-1R	OM3-R	W1-3R	W1-7	W1-4L
			SIGN DESCRIPTION, SIZES & NUMBER OF EACH																
147	862+49	ROUTE MM										1							
148	862+55	ROUTE MM										1							
149	863+06	ROUTE MM										1							
150	863+15	ROUTE MM										1							
151	863+69	ROUTE MM										1							
152	863+75	ROUTE MM										1							
153	864+35	ROUTE MM										1							
154	864+94	ROUTE MM										1							
155	865+54	ROUTE MM										1							
156	866+14	ROUTE MM										1							
157	866+74	ROUTE MM										1							
158	867+29	ROUTE MM										1							
159a	870+28	ROUTE MM															1		
159b								1											
160a	870+70	ROUTE MM					1												
160b								1											
161	871+57	ROUTE MM										1							
162	872+37	ROUTE MM										1							
163	872+53	ROUTE MM			1														
165a	872+71	ROUTE MM	N/A - RELOCATED																
165b		ROUTE MM			1														
166	873+16	ROUTE MM										1							
167	873+96	ROUTE MM										1							
168	874+75	ROUTE MM										1							
169	875+55	ROUTE MM										1							
170a	879+45	ROUTE MM																	1
170b								1											
171a	879+86	ROUTE MM												1					
171b								1											
172	882+43	ROUTE MM										1							
173	883+22	ROUTE MM										1							
174	884+01	ROUTE MM										1							
175	884+81	ROUTE MM										1							
176	885+61	ROUTE MM										1							
177	886+41	ROUTE MM										1							
178	887+21	ROUTE MM										1							
179a	888+35	ROUTE MM																	1
179b								1											
181a	895+45	ROUTE MM	N/A - RELOCATED																
181b		ROUTE MM			1														
182	899+36	ROUTE MM																1	
184a	899+57	ROUTE MM	N/A - RELOCATED																
184b		ROUTE MM			1														
185a	905+51	ROUTE MM		1															
185b								1											
186	907+82	ROUTE MM										1							
187	908+42	ROUTE MM										1							
188	909+01	ROUTE MM										1							
189	909+61	ROUTE MM										1							
190	909+84	ROUTE MM											1						
191	910+13	ROUTE MM											1						
192	910+22	ROUTE MM										1							
193	910+24	ROUTE MM										1							
194	910+81	ROUTE MM										1							
195	910+84	ROUTE MM										1							
196	911+40	ROUTE MM										1							
197	911+44	ROUTE MM										1							

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: 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
			TOTAL				

* ORANGE, YELLOW & YELLOW/GREEN

D-30

ERICA J. RIDGWAY NUMBER PE-2018003138 PROFESSIONAL ENGINEER STATE OF MISSOURI

DATE PREPARED 2/5/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	70

COUNTY FRANKLIN

JOB NO. J6S3368

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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 26 OF 28

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

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EFFECTIVE 10-01-2016

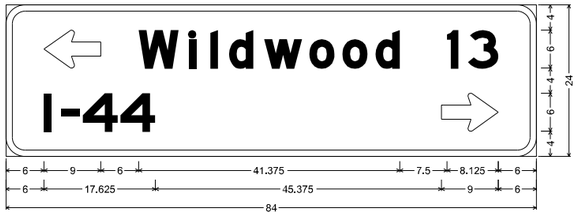
STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: M6-4	W1-3L	R1-1	W4-4P	W1-2L	W13-1P	M4-6	M1-5a	M2-1	W1-8D	R2-1	W1-2R	R7-1	OM3-L	OM3-R	M1-5	W3-1
			SIGN DESCRIPTION, SIZES & NUMBER OF EACH																
198a	912+03	ROUTE MM									1								
198b																		1	
199	912+03	ROUTE MM										1							
200	912+62	ROUTE MM										1							
201	913+21	ROUTE MM										1							
202	913+57	ROUTE MM																	1
203	913+81	ROUTE MM										1							
205a	914+14	ROUTE MM	N/A - RELOCATED																
205b					1														
207a	916+16	ROUTE MM	N/A - RELOCATED																
207b					1														
208	916+23	ROUTE MM	N/A - SPECIAL SIGN																
209	916+35	ROUTE MM													1				
210	916+46	ROUTE MM													1				
211	916+67	ROUTE MM								1									
212a	917+93	ROUTE MM			1														
212b						1													
213a	918+24	ROUTE MM																1	
213b			1																
214	847+17	ROUTE MM										1							
215	847+97	ROUTE MM										1							
216	848+77	ROUTE MM										1							
217	849+57	ROUTE MM										1							
218	850+37	ROUTE MM										1							
219	851+17	ROUTE MM										1							
220	851+97	ROUTE MM										1							
221	852+77	ROUTE MM										1							
222	853+57	ROUTE MM										1							
223	784+53	ROUTE MM															1		
224	784+70	ROUTE MM														1			
225	798+40	ROUTE MM														1			
226	798+51	ROUTE MM															1		
227	798+63	ROUTE MM															1		
228	798+87	ROUTE MM														1			

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: 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

SIGN NO.	208
STATION	916+23
ROADWAY	RTE MM SB



D1-2a ST-STRUCTURAL;
3.000" Radius, 1.000" Border, White on, Green;
Standard Arrow Custom 9.000" X 6.000" 180; "Wildwood", E Mod; "13", E Mod; "I-44", E Mod;
Standard Arrow Custom 9.000" X 6.000" 0;
Table of letter and object lefts

⇦	W	i	i	d	w	o	o	d	I	3
6.000	21.000	29.000	32.375	35.375	40.875	48.000	53.250	58.500	69.875	73.250

I	-	4	4	⇨
6.000	8.750	12.125	18.125	69.000

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/18/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	72

COUNTY
FRANKLIN
JOB NO.
J6S3368
CONTRACT ID.
.
PROJECT NO.
.
BRIDGE NO.
.

DESCRIPTION	DATE
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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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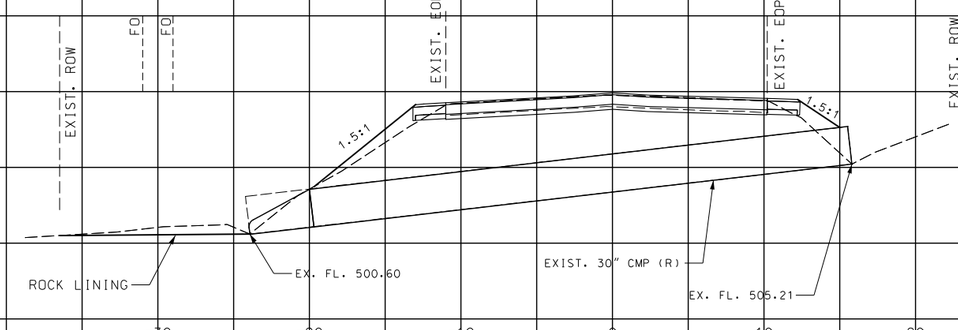
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

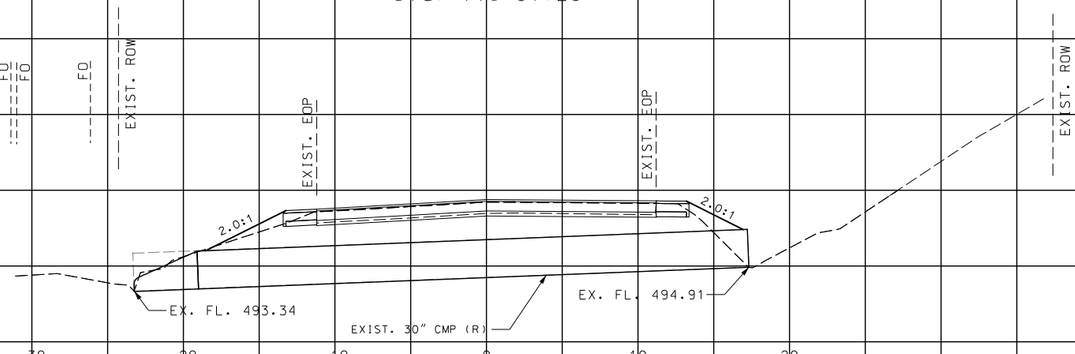
SIGNING AND PAVEMENT MARKINGS
ROUTE MM
SHEET 28 OF 28

NOTE:
REFER TO TYPICAL SECTIONS FOR PERMANENT AGGREGATE EDGE TREATMENT LOCATIONS

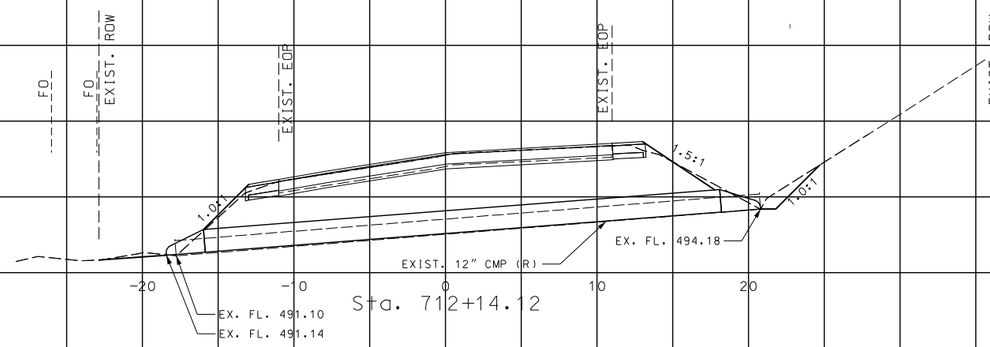
30" x 36' GR. B PIPE
1 - 30 IN. OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
12'L X 7'W X 1'D ROCK LINING
CL 3 EXC. = 46 C.Y.
ROCK FILL REQUIRED TO ESTABLISH SHOULDERS



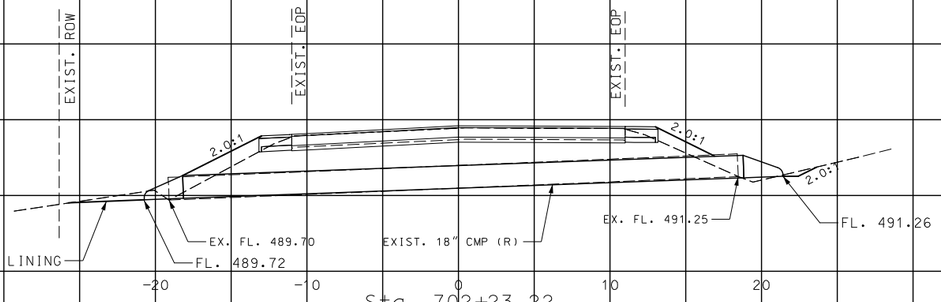
30" x 37' GR. B PIPE
1 - 30 IN. OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
CL 3 EXC. = 38 C.Y.
ROCK FILL REQUIRED TO ESTABLISH SHOULDERS



18" x 34' GR. B PIPE
2 - 18 IN. OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
CL 3 EXC. = 31 C.Y.
ROCK FILL REQUIRED TO ESTABLISH SHOULDERS



18" x 37' GR. B PIPE
2 - 18 IN. OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
5'L X 4'W X 1'D ROCK LINING
CL 3 EXC. = 23 C.Y.



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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	73

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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DESCRIPTION	DATE
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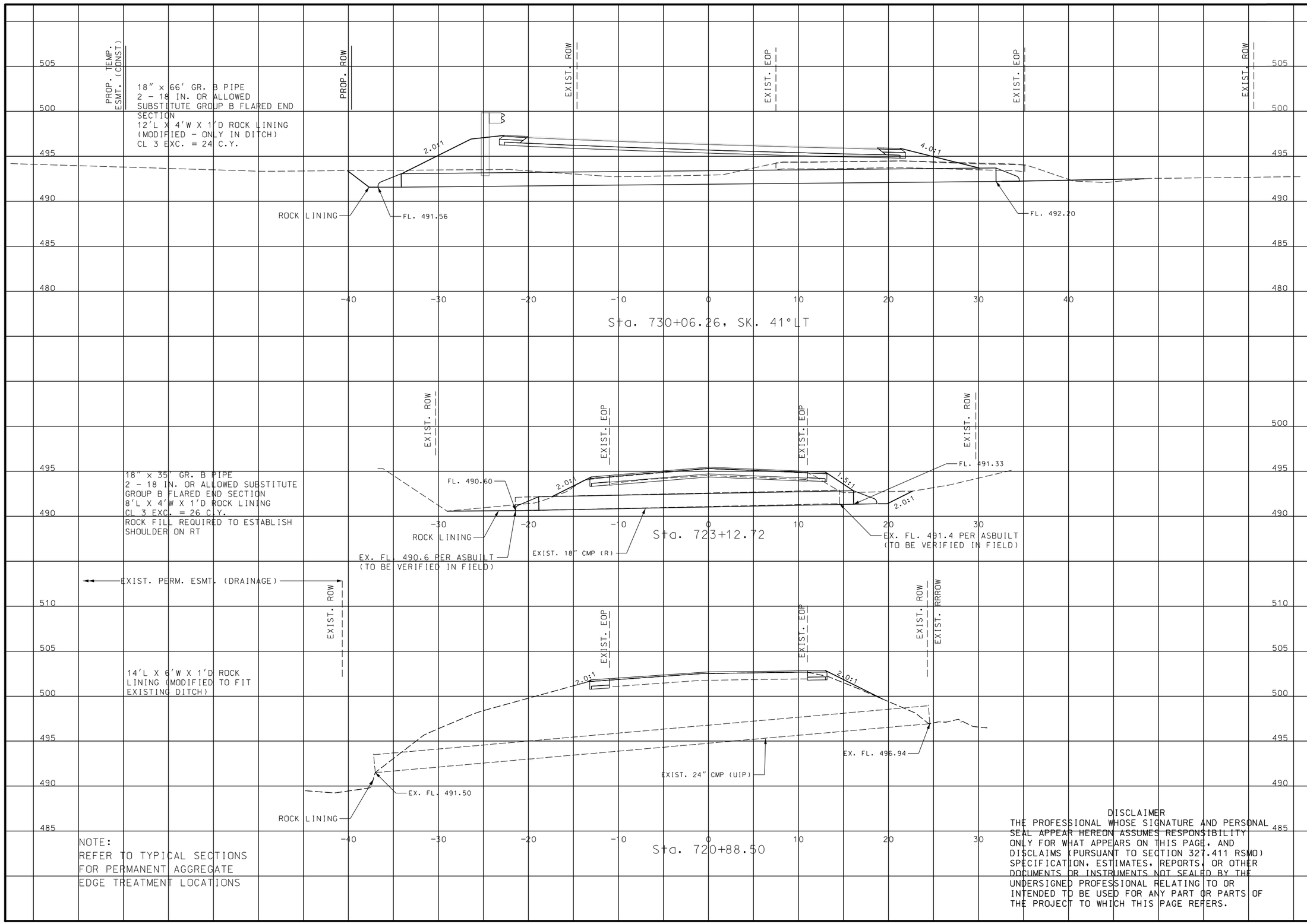
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

CULVERT SECTIONS
ROUTE MM
SHEET 1 OF 10



NOTE:
REFER TO TYPICAL SECTIONS FOR PERMANENT AGGREGATE EDGE TREATMENT LOCATIONS

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STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	7-4

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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TREK DESIGN GROUP, LLC

CULVERT SECTIONS
ROUTE MM
SHEET 2 OF 10

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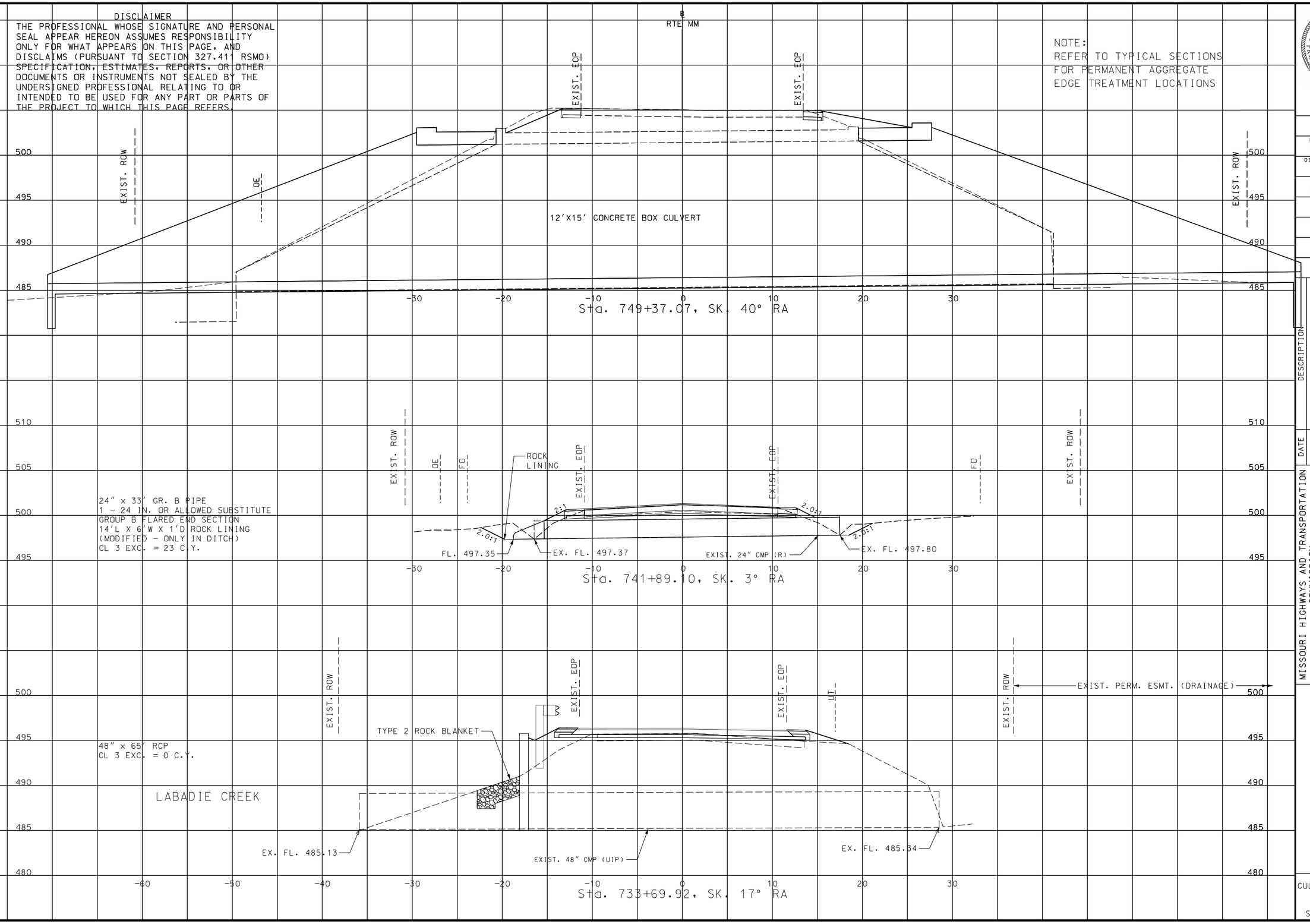

NOTE:
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STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

Erica Ridgway

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	75

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Fenton, MO 63026
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CULVERT SECTIONS
ROUTE MM
SHEET 3 OF 10

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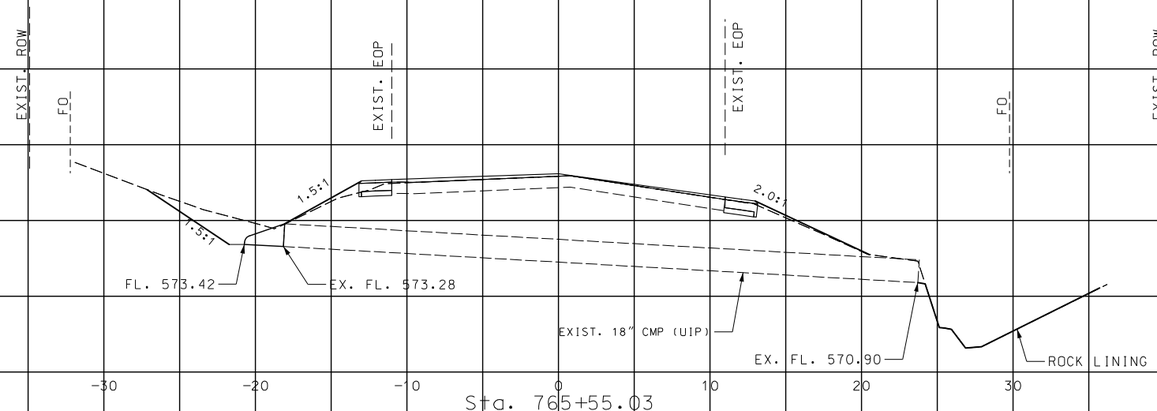
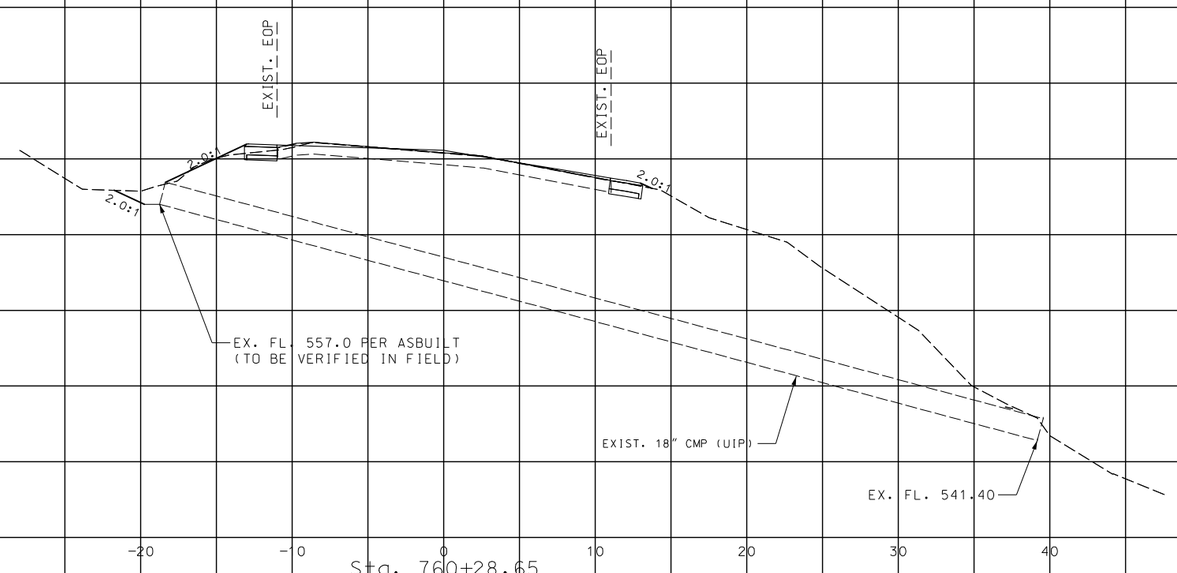
℄ RTE MM

NOTE:
REFER TO TYPICAL SECTIONS FOR PERMANENT AGGREGATE EDGE TREATMENT LOCATIONS

1 - 18 IN. OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
12'L X 4'W X 1'D ROCK LINING
(MODIFIED TO FIT DITCH)
CL 3 EXC. = 2 C.Y.
ROCK FILL REQUIRED TO ESTABLISH SHOULDER ON RT



Sta. 765+55.03



Sta. 760+28.65

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2018003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	76

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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CULVERT SECTIONS
ROUTE MM
SHEET 4 OF 10

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℄ RTE MM

NOTE:
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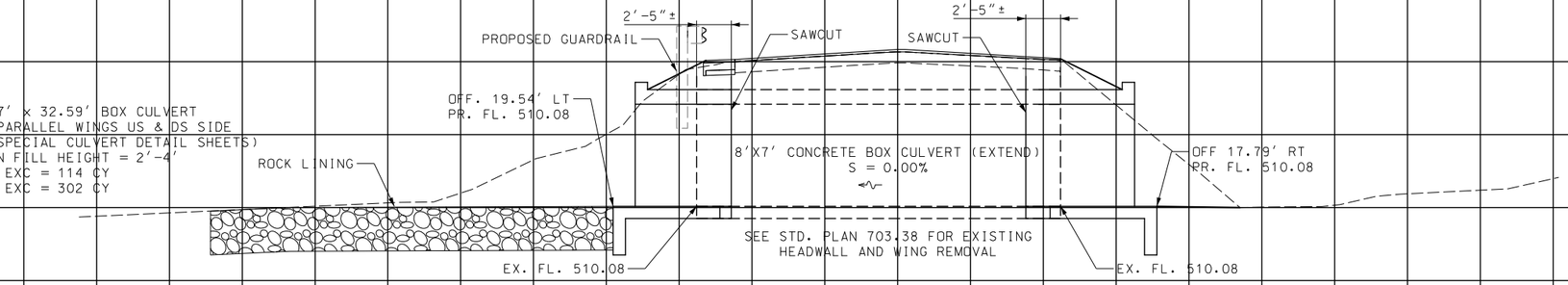

Sta. 784+62.25, SK. 10° LA

Sta. 771+78.40

ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	7-7

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CULVERT SECTIONS
ROUTE MM
SHEET 5 OF 10

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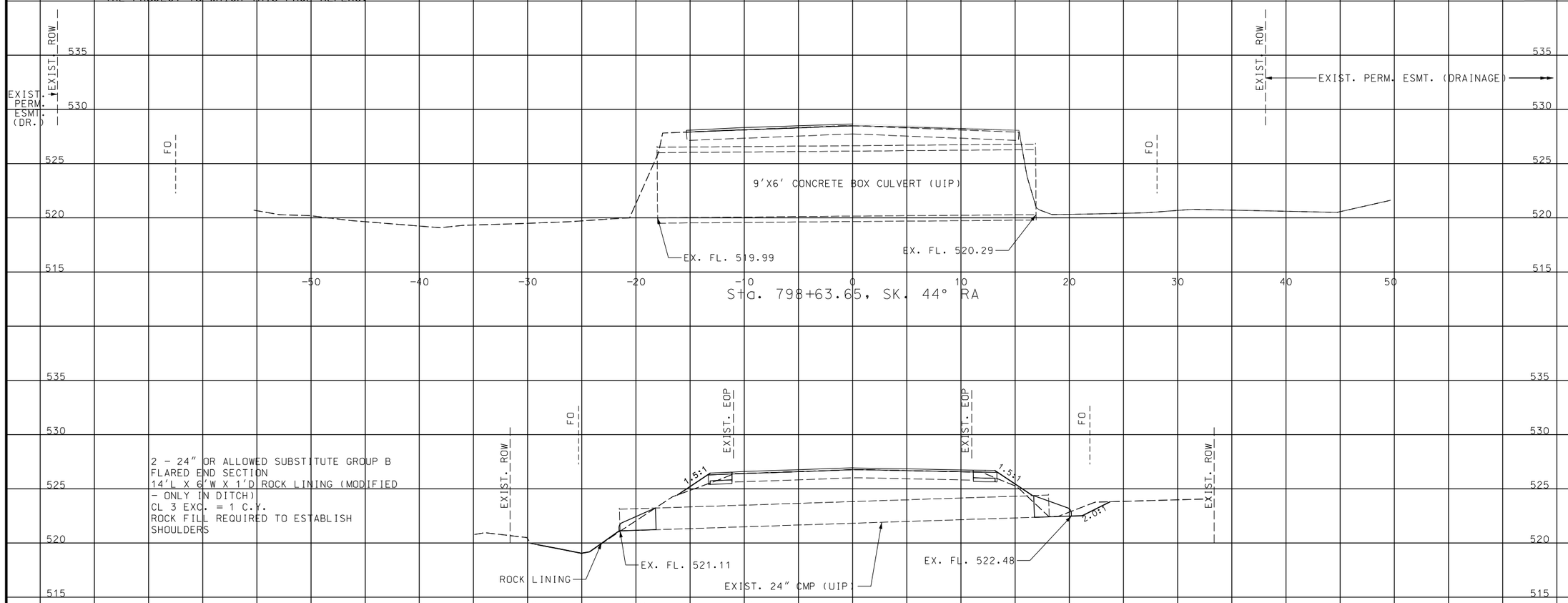
℄ RTE MM

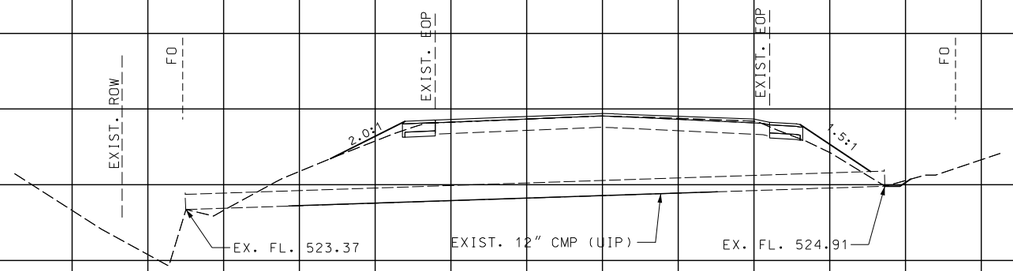
NOTE:
REFER TO TYPICAL SECTIONS FOR PERMANENT AGGREGATE EDGE TREATMENT LOCATIONS



Sta. 798+63.65, SK. 44° RA

2 - 24" OR ALLOWED SUBSTITUTE GROUP B FLARED END SECTION
14'L X 6'W X 1'D ROCK LINING (MODIFIED - ONLY IN DITCH)
CL 3 EXC. = 1 C.Y.
ROCK FILL REQUIRED TO ESTABLISH SHOULDERS

Sta. 796+75.48, SK. 9° LA



Sta. 791+32.33, SK. 5° LA

ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER
STATE OF MISSOURI

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	78

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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CULVERT SECTIONS
ROUTE MM
SHEET 6 OF 10

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NOTE:
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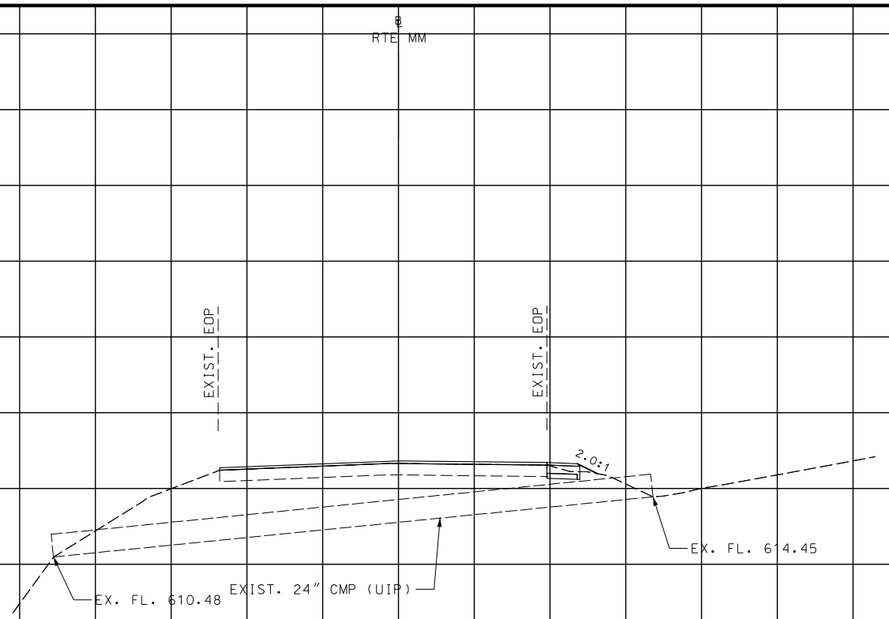

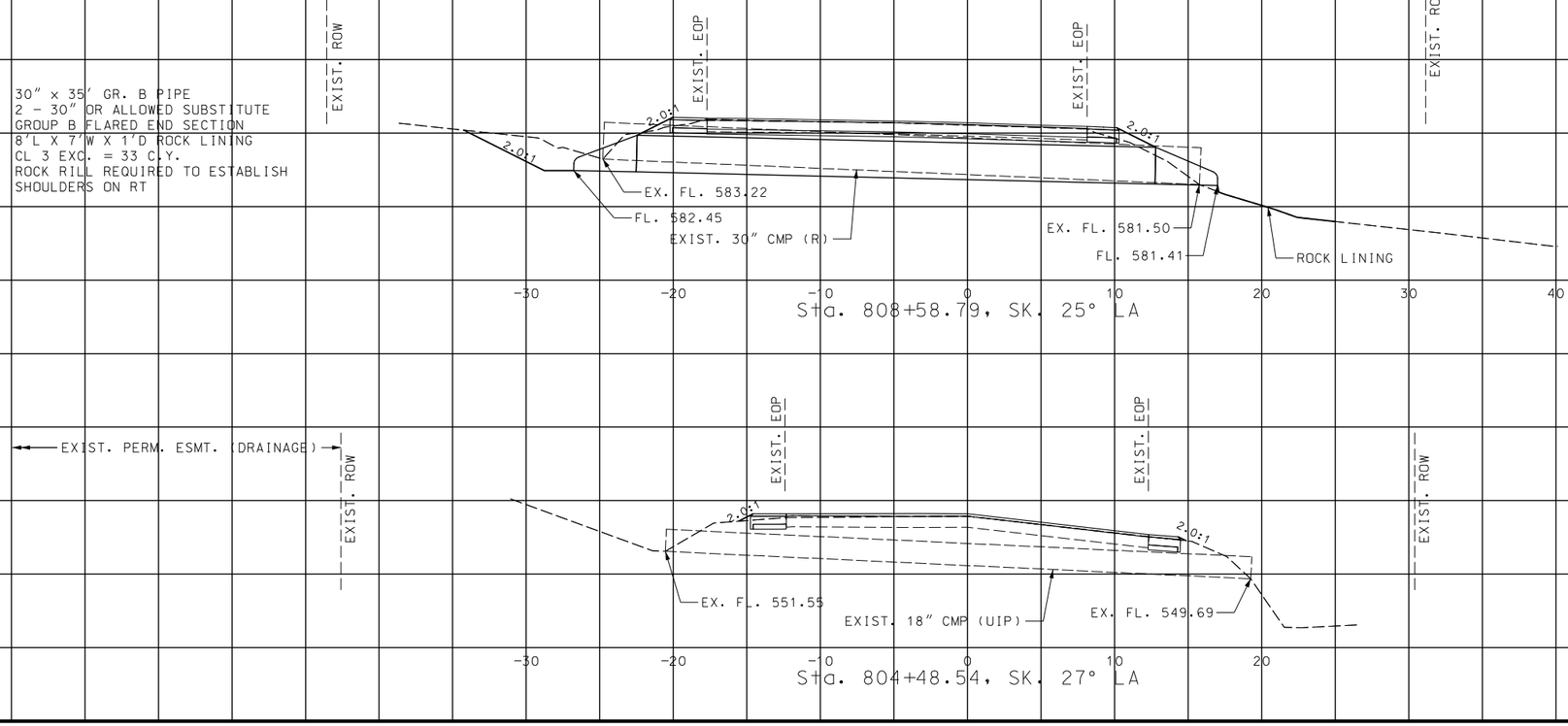

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	7.9

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
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CULVERT SECTIONS
ROUTE MM
SHEET 7 OF 10

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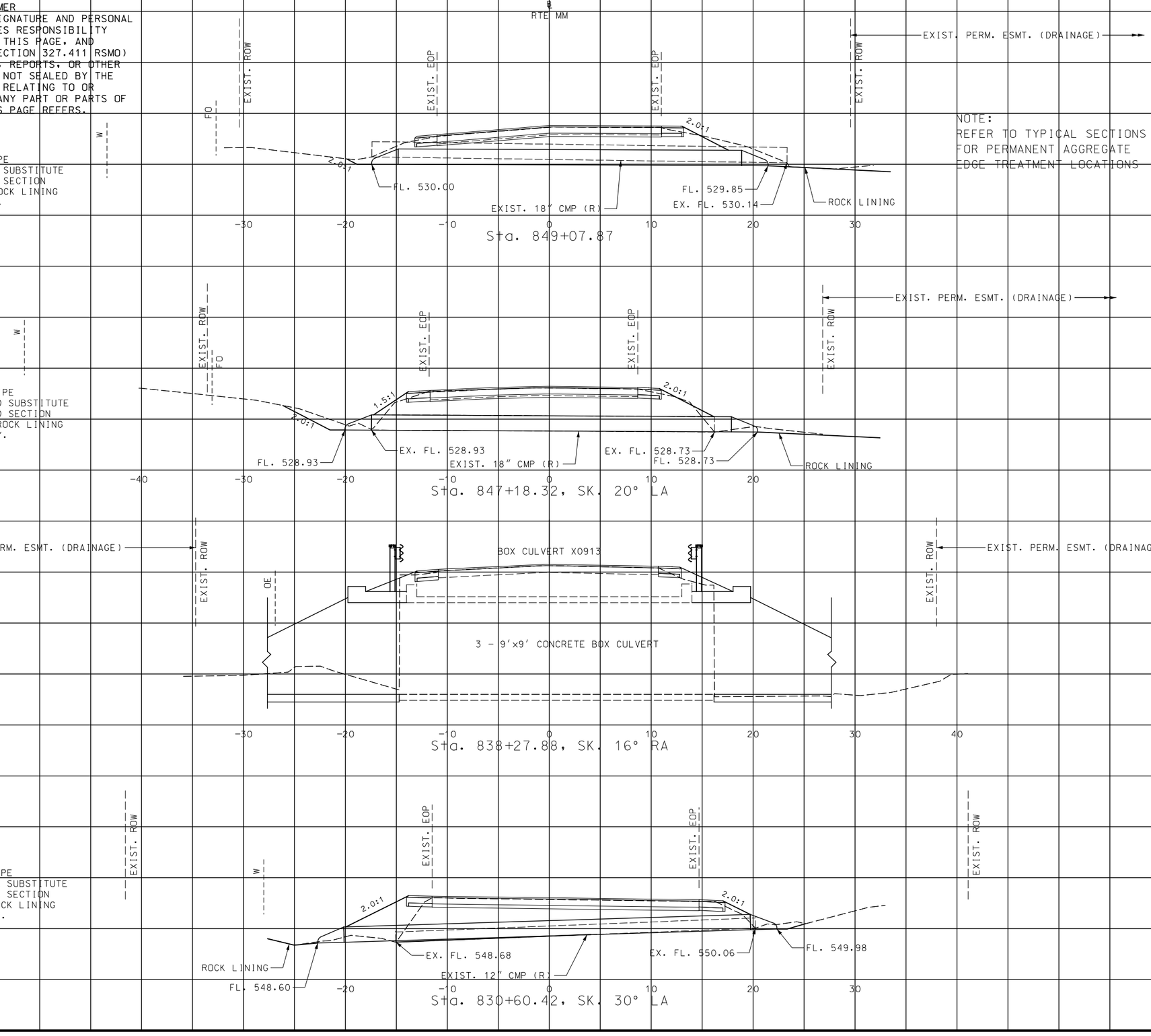

STATE OF MISSOURI
PROFESSIONAL ENGINEER
ERICA J. RIDGWAY
NUMBER PE-2010003138

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	80

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE
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JEFFERSON CITY, MO 65102
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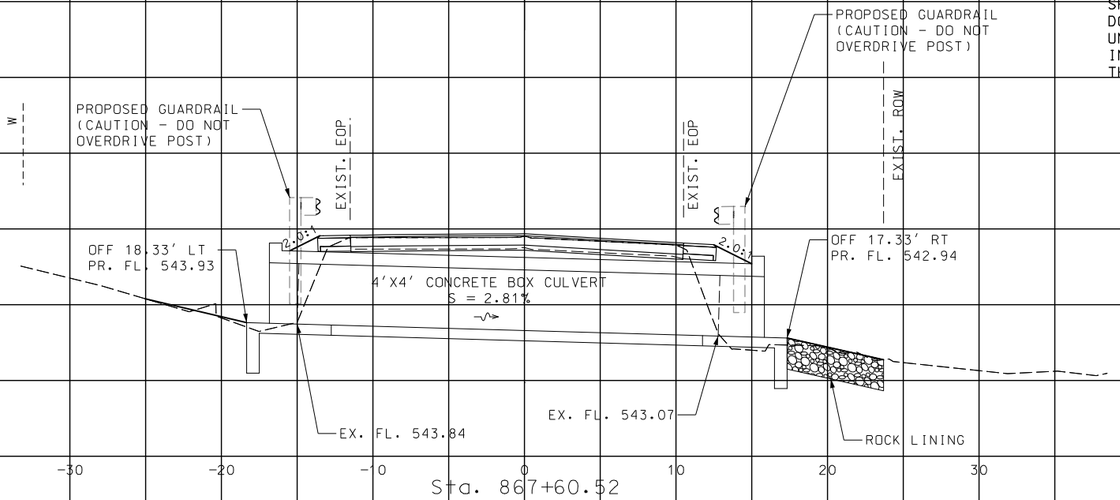
CULVERT SECTIONS
ROUTE MM
SHEET 8 OF 10

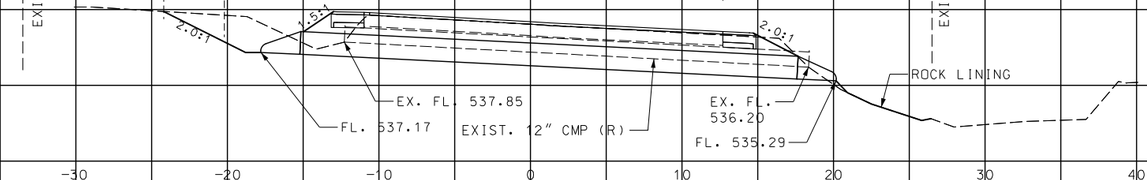
NOTE:
REFER TO TYPICAL SECTIONS FOR PERMANENT AGGREGATE EDGE TREATMENT LOCATIONS

℄ RTE MM



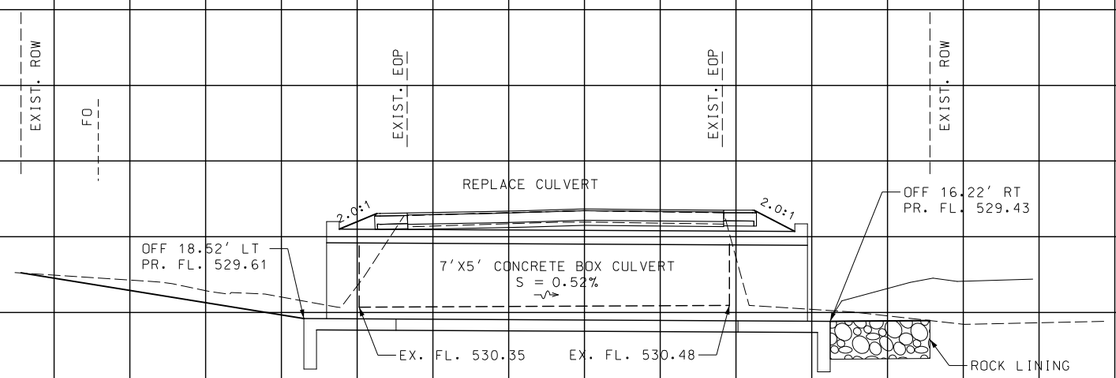
Sta. 867+60.52

4' x 4' x 31.00' BOX CULVERT
WITH PARALLEL WINGS US & DS SIDE
(SEE SPECIAL CULVERT DETAIL SHEETS)
DESIGN FILL HEIGHT = 2'
CL. 3 EXC = 11 CY
CL. 4 EXC = 141 CY



Sta. 860+83.45

18" x 33' GR. B PIPE
2 - 18" OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
7'L X 4'W X 1'D ROCK LINING
CL 3 EXC. = 19 C.Y.



Sta. 855+90.49

7' x 5' x 30.07' BOX CULVERT
WITH PARALLEL WINGS US & DS SIDE
(SEE SPECIAL CULVERT DETAIL SHEETS)
DESIGN FILL HEIGHT = 2'
CL. 3 EXC = 26 CY
CL. 4 EXC = 213 CY

NOTE: SEE PIPE CULVERT TYPICAL SECTION ON SHEET 22

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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	81

COUNTY
FRANKLIN
JOB NO.
J6S3368
CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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DATE	DESCRIPTION
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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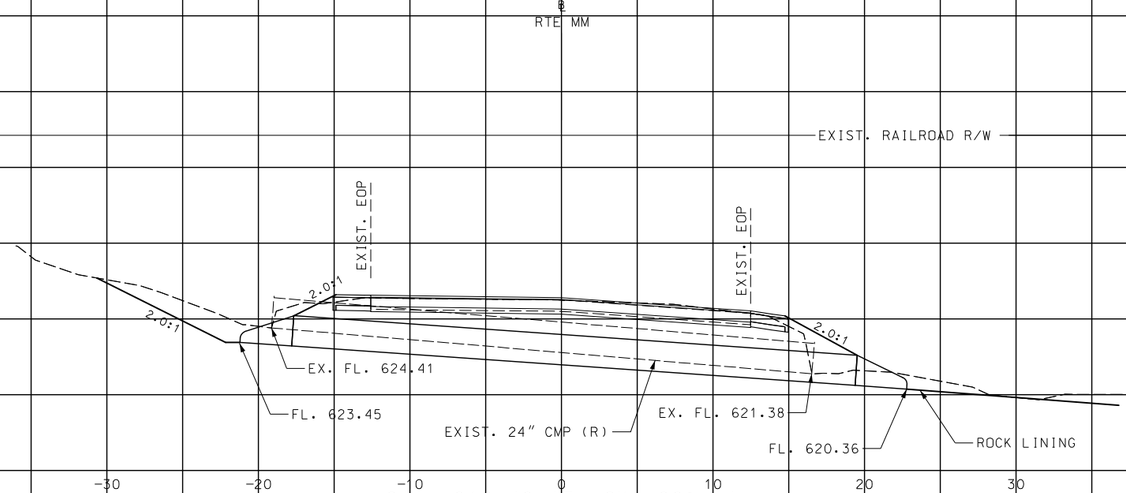
TREKK DESIGN GROUP, LLC

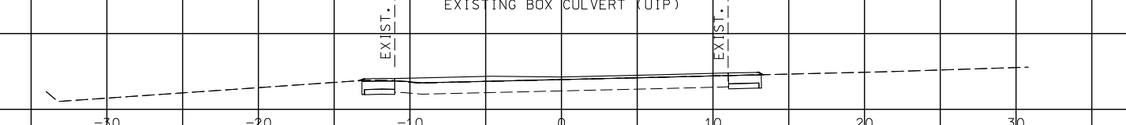
CULVERT SECTIONS
ROUTE MM
SHEET 9 OF 10

NOTE:
REFER TO TYPICAL SECTIONS
FOR PERMANENT AGGREGATE
EDGE TREATMENT LOCATIONS

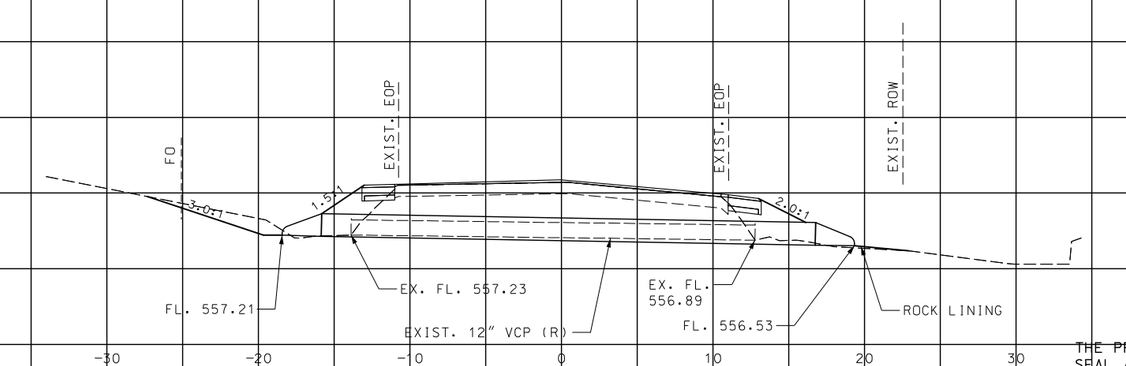
24" x 40' GR. B PIPE
2 – 24" OR ALLOWED SUBSTITUTE
GROUP B FLARED END SECTION
14'L X 6'W X 1'D ROCK LINING
CL 3 EXC. = 36 C.Y.



EXISTING 2.5' X 3.5' CONC.
BOX UNDER WATER



18" x 33' GR. B PIPE
2 – 18" OR ALLOWED
SUBSTITUTE GROUP B FLARED
END SECTION
3'L X 4'W X 1'D ROCK LINING
CL 3 EXC. = 18 C.Y.



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STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	82

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.
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PROJECT NO.
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BRIDGE NO.
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JEFFERSON CITY, MO 65102
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Fenton, MO 63026
Tel (314) 932-1256
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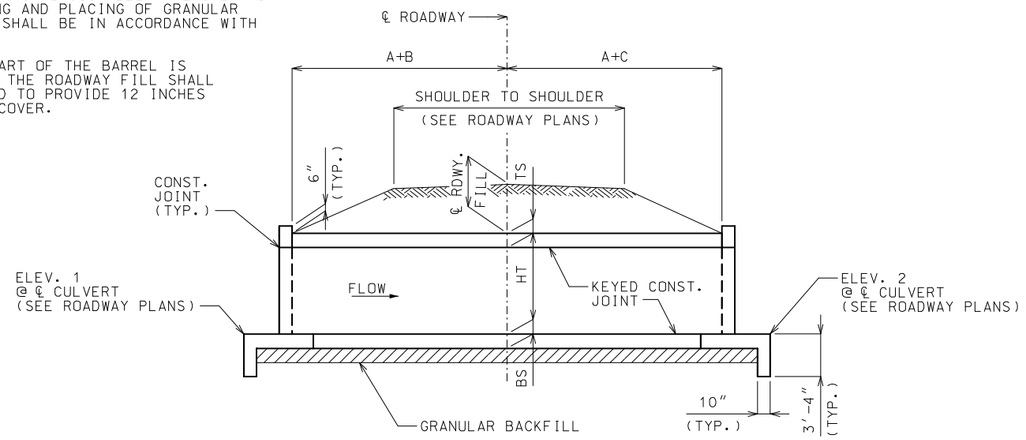
TREK DESIGN GROUP, LLC

CULVERT SECTIONS
ROUTE MM
SHEET 10 OF 10

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY, SEE CONSTRUCTION JOINT DETAIL.

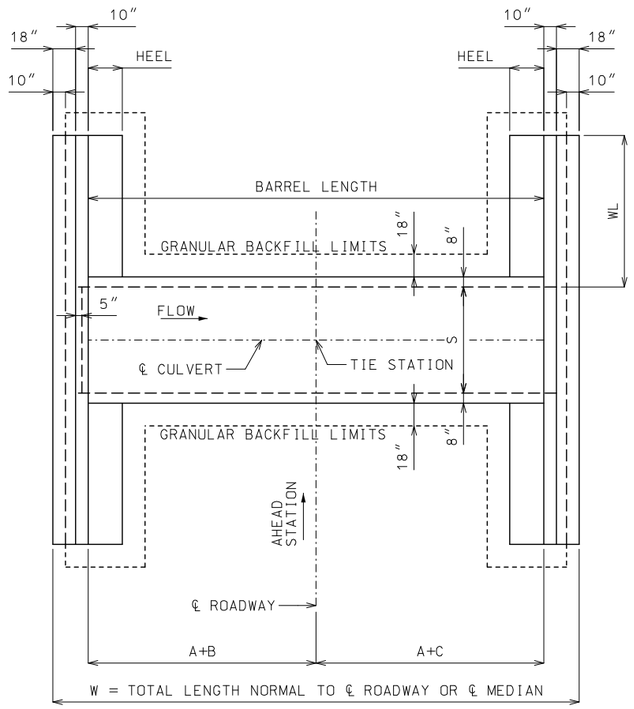
IF UNSUITABLE MATERIAL IS ENCOUNTERED, EXCAVATION OF UNSUITABLE MATERIAL AND FURNISHING AND PLACING OF GRANULAR BACKFILL SHALL BE IN ACCORDANCE WITH SEC 206.

IF ANY PART OF THE BARREL IS EXPOSED, THE ROADWAY FILL SHALL BE WARPED TO PROVIDE 12 INCHES MINIMUM COVER.



GENERAL ELEVATION A–A

CHANNEL BOTTOM SHALL BE GRADED WITHIN RIGHT OF WAY FOR TRANSITION OF CHANNEL BED TO CULVERT OPENINGS. CHANNEL BANKS SHALL BE TAPERED TO MATCH CULVERT OPENINGS.



PLAN OF LAYOUT DIMENSIONS CULVERTS STA. 855+90.49 AND STA. 867+60.52

STATION	WL	A+B	A+C	W	S	HT	DESIGN FILL	TS	BS	HEEL
855+90.49	12.00′	16.18′	13.89′	34.74′	7′	5′	2′	11″	9″	3′-9″
867+60.52	10.00′	16.00′	15.00′	35.67′	4′	4′	2′	10″	8″	3′-3″

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GENERAL NOTES:

DESIGN SPECIFICATIONS:
2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND 2010 INTERIM REVISIONS

DESIGN LOADING:
VEHICULAR = HL-93 MINUS LANE LOAD, EARTH = 120 LB/CF
EQUIVALENT FLUID PRESSURE = 30 LB/CF (MIN.), 60 LB/CF (MAX.)

DESIGN UNIT STRESSES:
CLASS B-1 CONCRETE (BOX CULVERT) f′c = 4,000 PSI
REINFORCING STEEL (GRADE 60) fy = 60,000 PSI

MISCELLANEOUS:
FOR REINFORCEMENT DETAILS, SEE SHEET 85. FOR SECTION DETAILS, SEE SHEET 86. FOR MEMBER THICKNESS, SEE 703.17.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

WHEN ALTERNATE PRECAST CONCRETE BOX CULVERT SECTIONS ARE USED, THE MINIMUM DISTANCE FROM INSIDE FACE OF HEADWALLS TO PRECAST SECTIONS MEASURED ALONG THE SHORTEST WALL SHALL BE 3 FEET. REINFORCEMENT AND DIMENSIONS FOR WINGS AND HEADWALLS SHALL BE IN ACCORDANCE WITH MISSOURI STANDARD PLANS.

SEE SHEET 86 FOR ADDITIONAL CULVERT LAYOUT VARIABLES

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 83
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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

DESCRIPTION | DATE | REV.

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

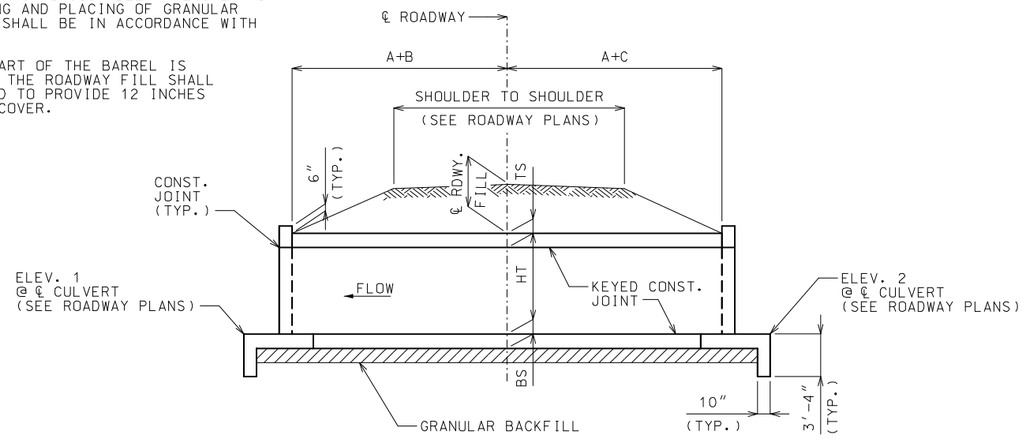
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300
TREK DESIGN GROUP, LLC

CULVERT DETAIL
ROUTE MM
SHEET 1 OF 4

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY, SEE CONSTRUCTION JOINT DETAIL.

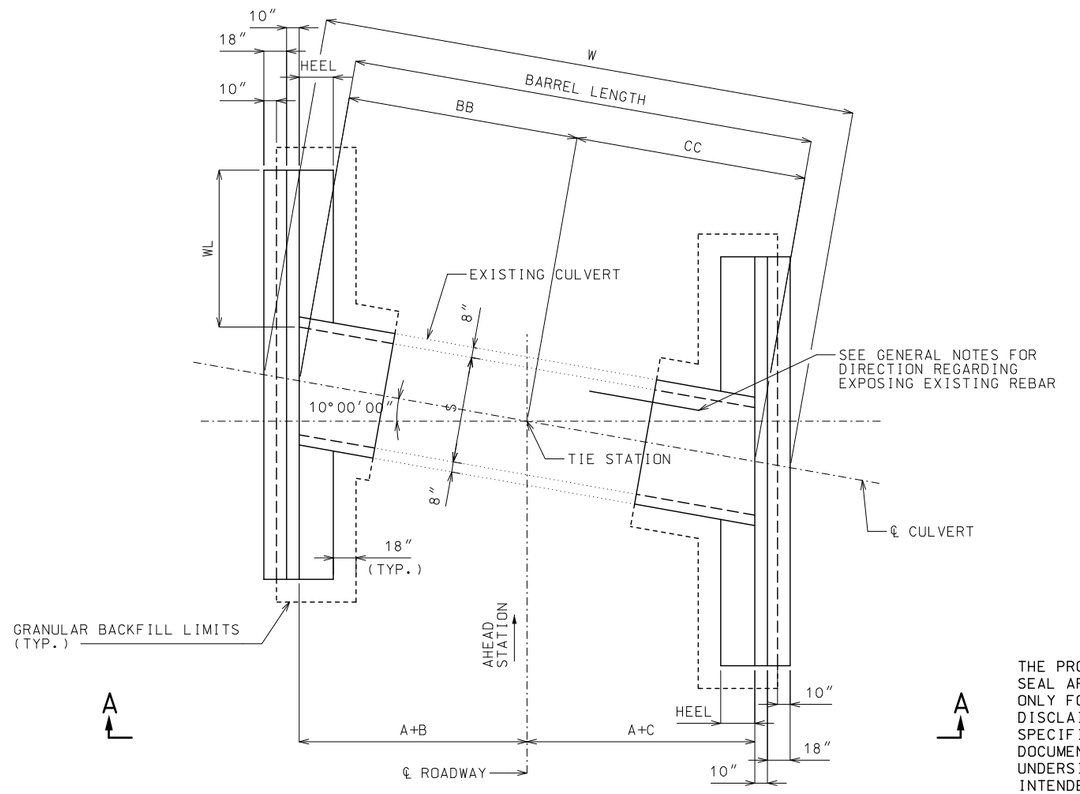
IF UNSUITABLE MATERIAL IS ENCOUNTERED, EXCAVATION OF UNSUITABLE MATERIAL AND FURNISHING AND PLACING OF GRANULAR BACKFILL SHALL BE IN ACCORDANCE WITH SEC 206.

IF ANY PART OF THE BARREL IS EXPOSED, THE ROADWAY FILL SHALL BE WARPED TO PROVIDE 12 INCHES MINIMUM COVER.



GENERAL ELEVATION A–A

CHANNEL BOTTOM SHALL BE GRADED WITHIN RIGHT OF WAY FOR TRANSITION OF CHANNEL BED TO CULVERT OPENINGS. CHANNEL BANKS SHALL BE TAPERED TO MATCH CULVERT OPENINGS.



PLAN OF LAYOUT DIMENSIONS CULVERT STA. 784+62.25

STATION	WL	BB	CC	W	S	HT	DESIGN FILL	TS	BS	HEEL
784+62.25	17.00′	17.17′	15.42′	37.33′	8′	7′	2′-4′	12″	10″	5′-0″

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GENERAL NOTES:

DESIGN SPECIFICATIONS:
2010 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND 2010 INTERIM REVISIONS

DESIGN LOADING:
VEHICULAR = HL-93 MINUS LANE LOAD, EARTH = 120 LB/CF
EQUIVALENT FLUID PRESSURE = 30 LB/CF (MIN.), 60 LB/CF (MAX.)

DESIGN UNIT STRESSES:
CLASS B-1 CONCRETE (BOX CULVERT) f′c = 4,000 PSI
REINFORCING STEEL (GRADE 60) fy = 60,000 PSI

MISCELLANEOUS:
FOR REINFORCEMENT DETAILS, SEE SHEET 85. FOR SECTION DETAILS, SEE SHEET 86. FOR MEMBER THICKNESS, SEE 703.17.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

WHEN ALTERNATE PRECAST CONCRETE BOX CULVERT SECTIONS ARE USED, THE MINIMUM DISTANCE FROM INSIDE FACE OF HEADWALLS TO PRECAST SECTIONS MEASURED ALONG THE SHORTEST WALL SHALL BE 3 FEET. REINFORCEMENT AND DIMENSIONS FOR WINGS AND HEADWALLS SHALL BE IN ACCORDANCE WITH MISSOURI STANDARD PLANS.

SEE SHEET 86 FOR ADDITIONAL CULVERT LAYOUT VARIABLES.

FOR CULVERT EXTENSION EXPOSE LONGITUDINAL REINFORCEMENT IN THE EXISTING CULVERT A MINIMUM OF 2′-5″ TO PROVIDE ADEQUATE SPLICE LENGTHS TO NEWLY PLACED REINFORCEMENT.

JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 84
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

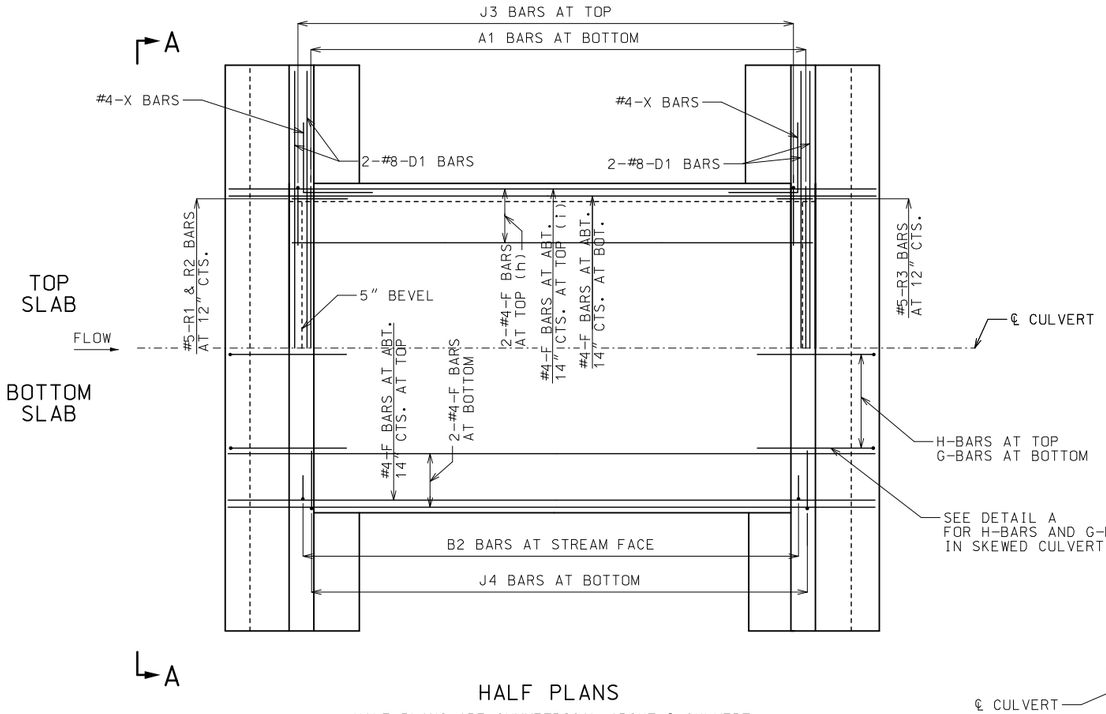
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

CULVERT DETAIL
ROUTE MM
SHEET 2 OF 4

REV.

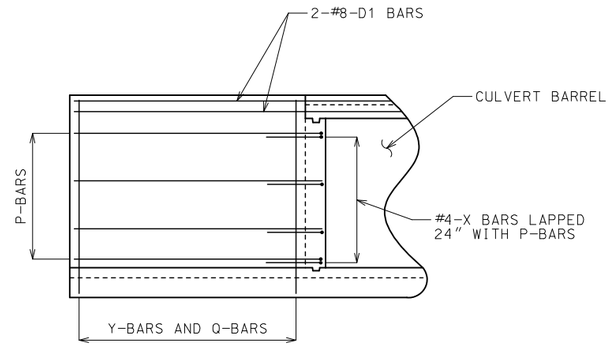


HALF PLANS

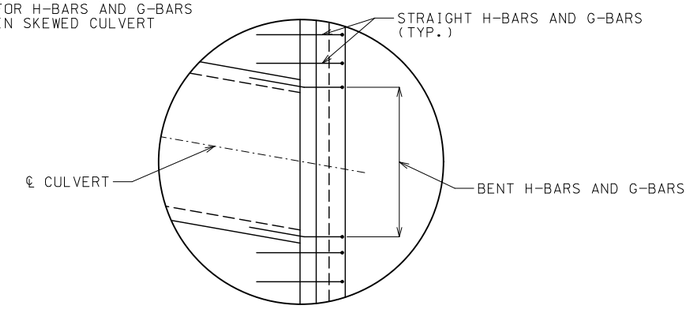
HALF PLANS ARE SYMMETRICAL ABOUT ℄ CULVERT.

NOTES:
REINFORCING FOR CULVERTS STA. 855+90.49 AND STA. 867+60.52 SHOWN. REINFORCING FOR CULVERT STA. 784+62.25 SIMILAR.

FOR CULVERT STA. 784+62.25 FIELD BEND G-BARS AND H-BARS ALONG THE SKEW AS SHOWN.
FOR CULVERT STA. 784+62.25, A-1 AND A-2 BARS REQUIRE SERIES WITHIN CONFINES OF SKEW AT ENDS OF CULVERT.

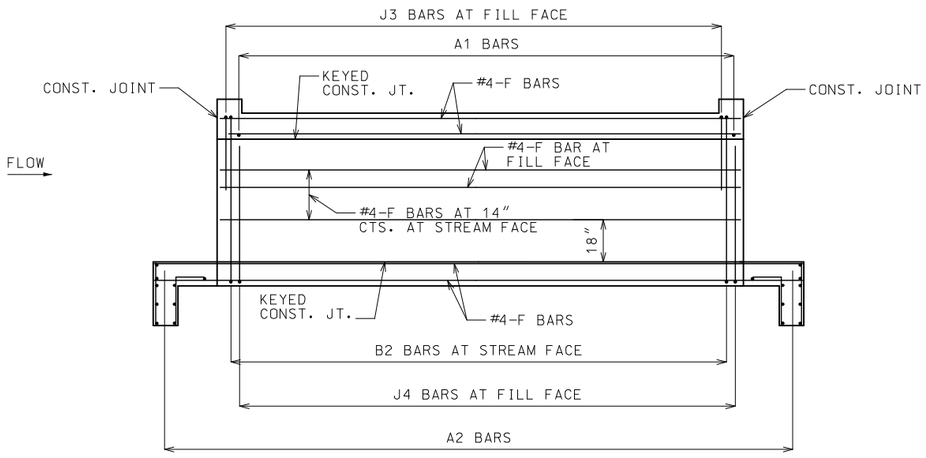


WING WALL ELEVATION A-A



DETAIL A

NOTE:
FIELD BEND G-BARS AND H-BARS ALONG THE SKEW WITHIN LIMITS OF BARREL



ELEVATION

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GENERAL NOTES:

FOR SECTIONS THRU BARREL, WINGS AND HEADWALLS, SEE SHEET 86. FOR BAR SIZES, SPACING AND DIMENSIONS OF ALL REINFORCEMENT SEE 703.17.

CONSTRUCTION JOINT KEY NOT SHOWN FOR CLARITY IN HALF PLANS AND ELEVATION. SEE SHEET 86 FOR DETAILS.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½".

LAP LONGITUDINAL BARS A MINIMUM OF 23" AT SPLICES.

BEVELED HEADWALL SHALL BE LOCATED AT UPSTREAM END.

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 85
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

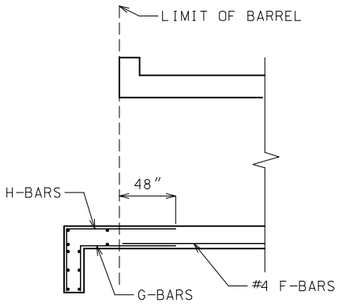
DESCRIPTION | DATE | REV.

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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

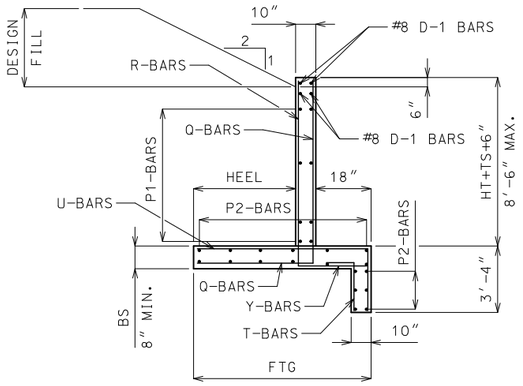
CULVERT DETAIL
ROUTE MM
SHEET 3 OF 4



STATION	G	H
784+62.25	#5′S @ 8″	#5′S @ 8″
855+90.49	#5′S @ 8″	#5′S @ 8″
867+60.52	#5′S @ 12″	#5′S @ 12″

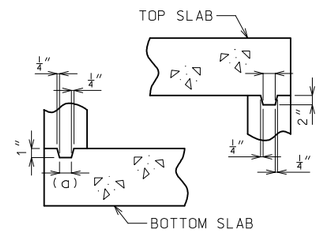
FOOTING REINFORCEMENT ALONG ℄

NOTE:
FOR CULVERT STA. 784+62.25, FIELD BEND H-BARS & G-BARS WITHIN THE CONFINES OF THE BARREL ALONG THE SKEW.



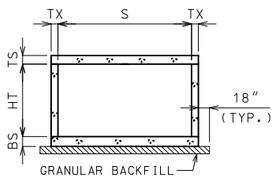
WINGWALL REINFORCEMENT

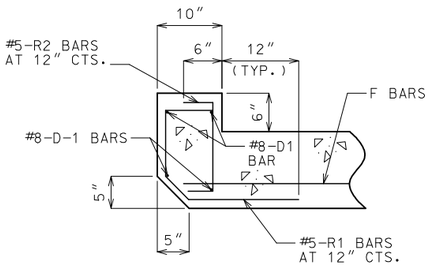
STATION	FTG	P	Q	R	U	T
784+62.25	7′-4″	#4′S @ 8″	#5′S @ 8″	#6′S @ 8″	#5′S @ 8″	#5′S @ 8″
855+90.49	6′-1″	#4′S @ 8″	#5′S @ 8″	#5′S @ 8″	#5′S @ 8″	#5′S @ 8″
867+60.52	5′-7″	#4′S @ 12″	#5′S @ 12″	#5′S @ 12″	#5′S @ 12″	#5′S @ 12″



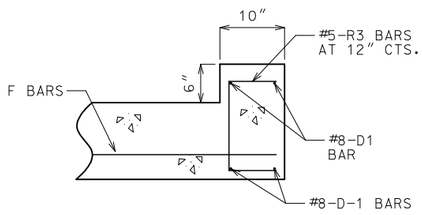
KEYED CONSTRUCTION JOINT

(a) APPROXIMATELY ONE-THIRD OF WALL THICKNESS

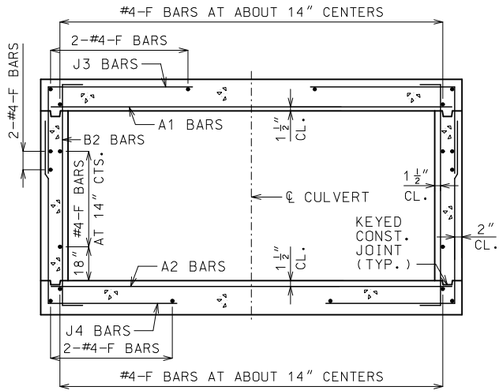




DOWNSTREAM HEADWALL REINFORCEMENT

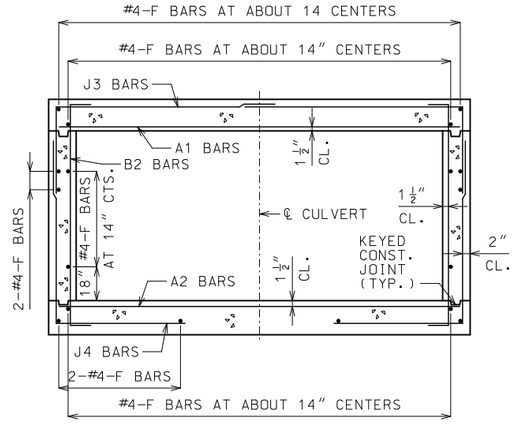


DOWNSTREAM HEADWALL REINFORCEMENT



BARREL REINFORCEMENT

FOR DESIGN FILL OVER 2′-0″



BARREL REINFORCEMENT

FOR DESIGN FILL 2′-0″ OR LESS

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GENERAL NOTES:

FOR MEMBER THICKNESS AND FOR BAR SIZES, SPACING AND DIMENSIONS OF ALL REINFORCEMENT, SEE 703.17.

BARREL AND WINGS SECTIONS ARE SYMMETRICAL ABOUT AND NORMAL TO ℄ CULVERT. HEADWALL SECTIONS ARE NORMAL TO LONG DIRECTION OF HEADWALL.

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1½″.

STATE OF MISSOURI
JEFF A. GARDNER
NUMBER PE-2016019369
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY ISSUED AND SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/18/2024
ROUTE MM | STATE MO
DISTRICT SL | SHEET NO. 86
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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

REV.	DESCRIPTION	DATE

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

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

CULVERT DETAIL
ROUTE MM
SHEET 4 OF 4

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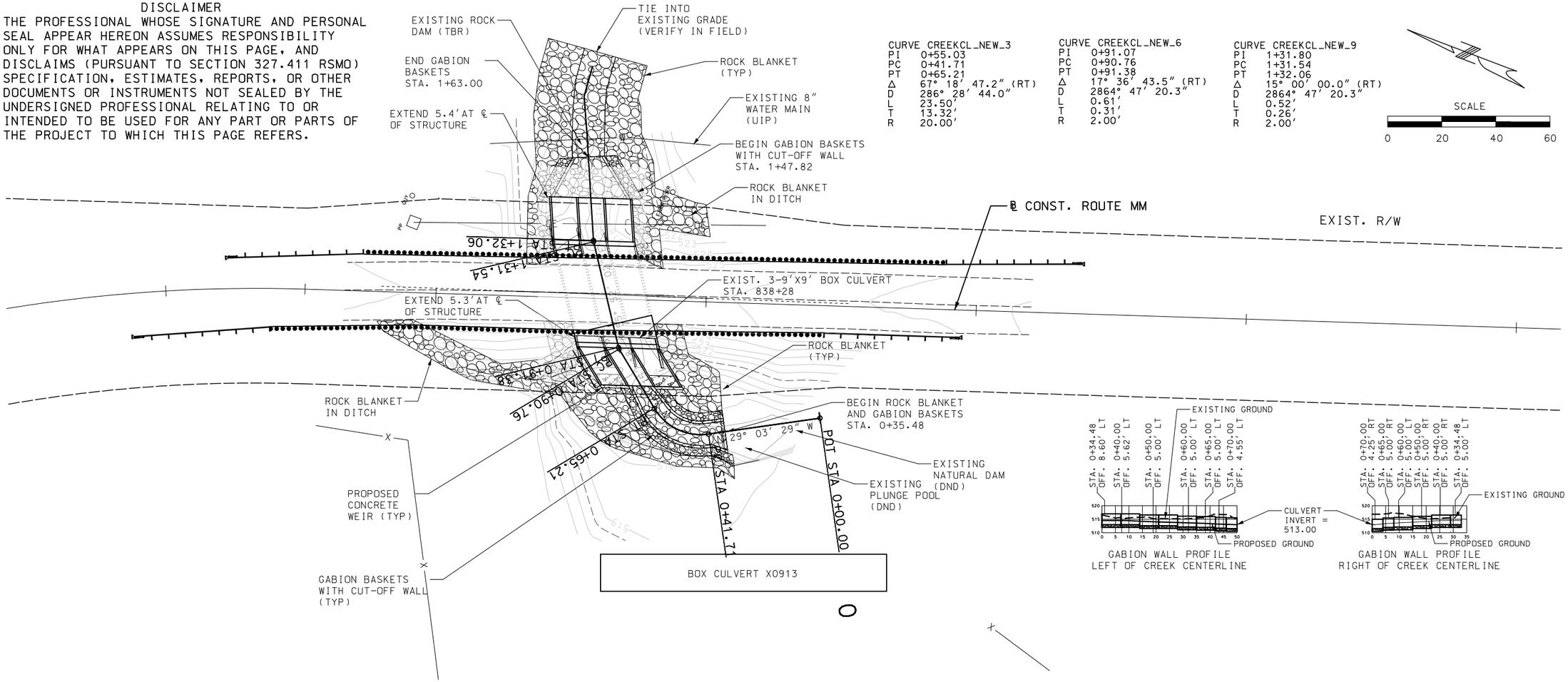


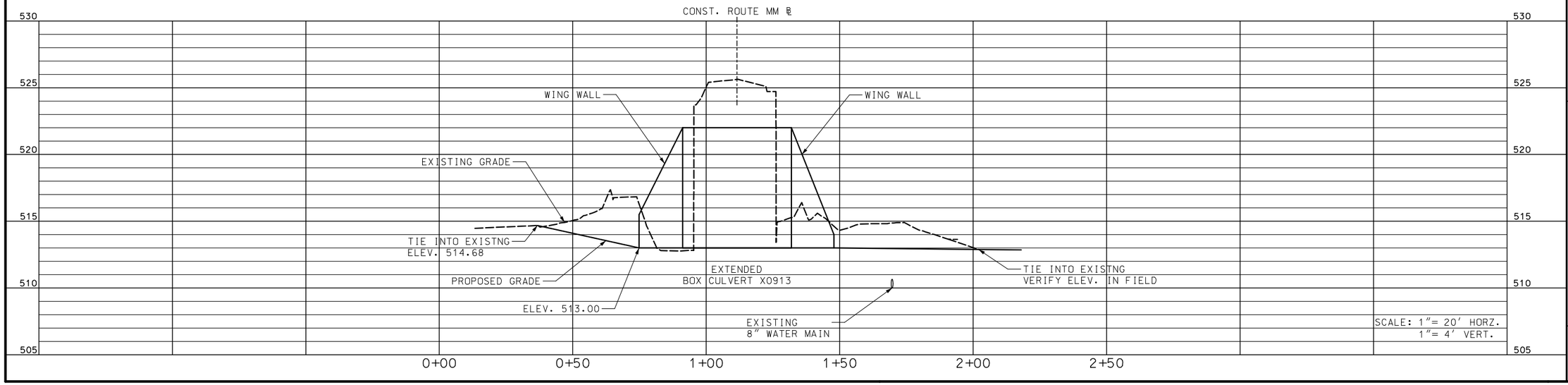
CURVE CREEKCL_NEW_3
PI 0+55.03
PC 0+41.71
PT 0+65.21
Δ 67° 18' 47.2" (RT)
D 286° 28' 44.0"
L 23.50'
T 13.32'
R 20.00'

CURVE CREEKCL_NEW_6
PI 0+91.07
PC 0+90.76
PT 0+91.38
Δ 17° 36' 43.5" (RT)
D 2864° 47' 20.3"
L 0.61'
T 0.31'
R 2.00'

CURVE CREEKCL_NEW_9
PI 1+31.80
PC 1+31.54
PT 1+32.06
Δ 15° 00' 00.0" (RT)
D 2864° 47' 20.3"
L 0.52'
T 0.26'
R 2.00'

GABION WALL PROFILE
LEFT OF CREEK CENTERLINE

GABION WALL PROFILE
RIGHT OF CREEK CENTERLINE



STATE OF MISSOURI
ERICA J. RIDGWAY NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	87

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

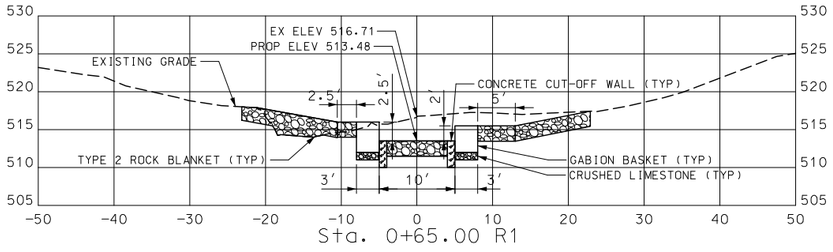
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

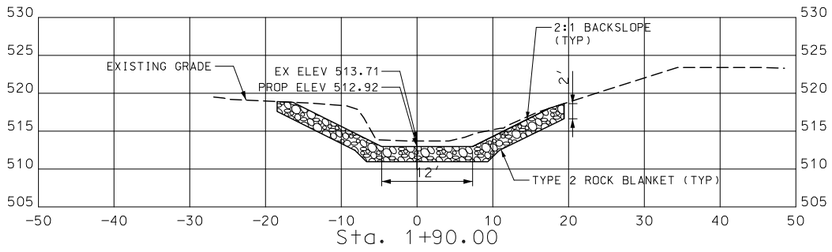
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekdesigngroup.com
Missouri Cert. of Authority 2002010300

TREK DESIGN GROUP, LLC

X0913
GABION PROFILE



Sta. 0+65.00 R1



Sta. 1+90.00

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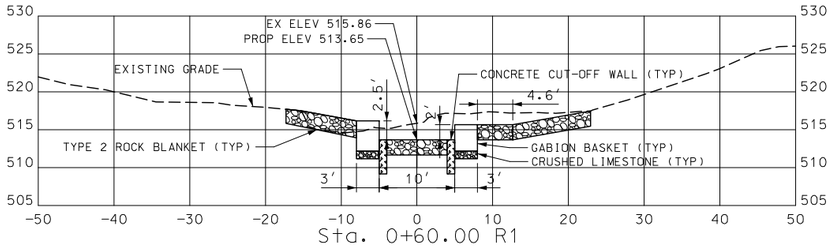
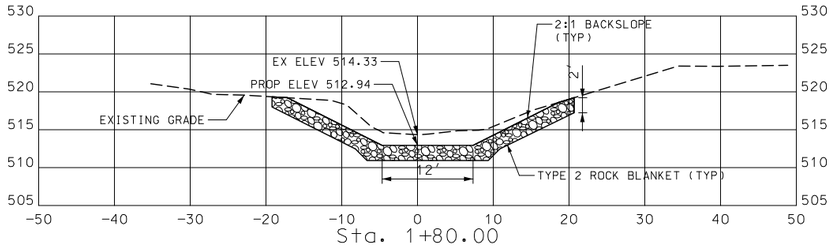
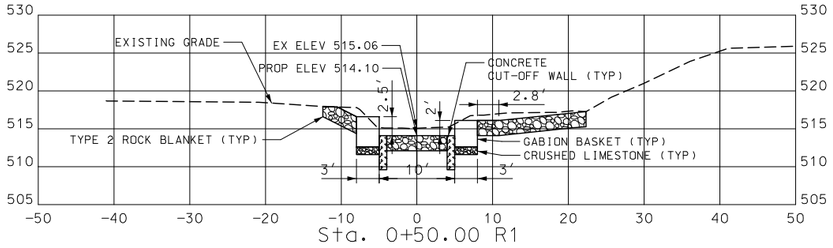


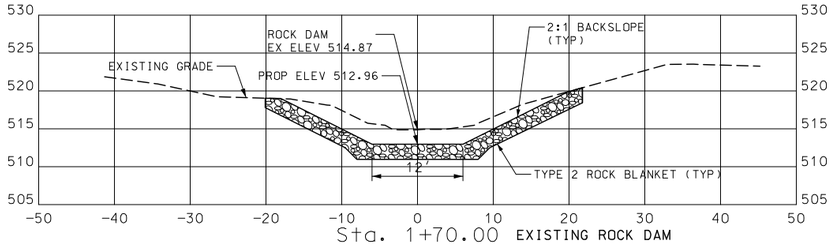
Sta. 0+60.00 R1



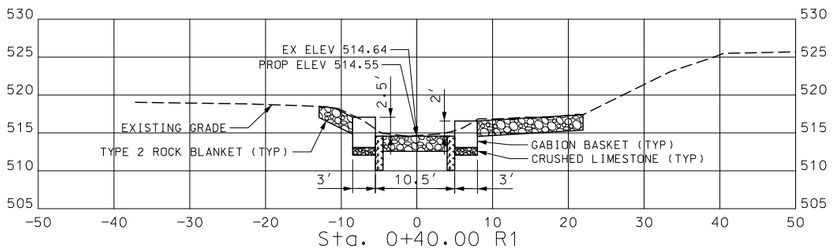
Sta. 1+80.00



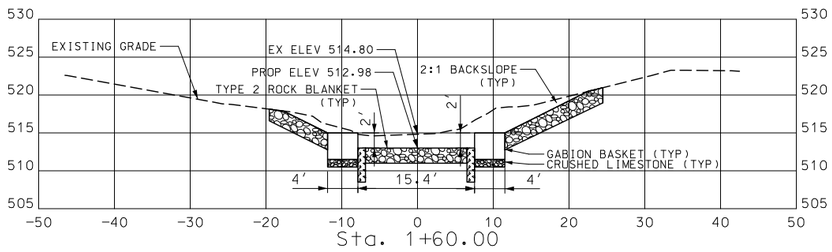
Sta. 0+50.00 R1



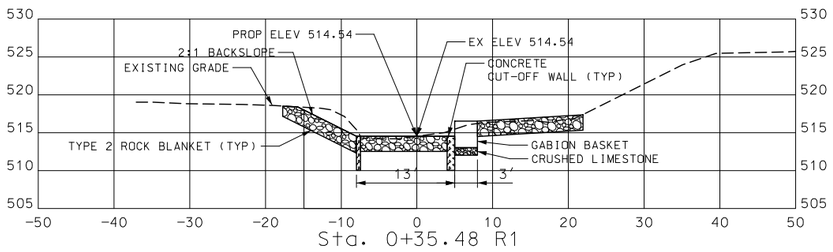
Sta. 1+70.00 EXISTING ROCK DAM



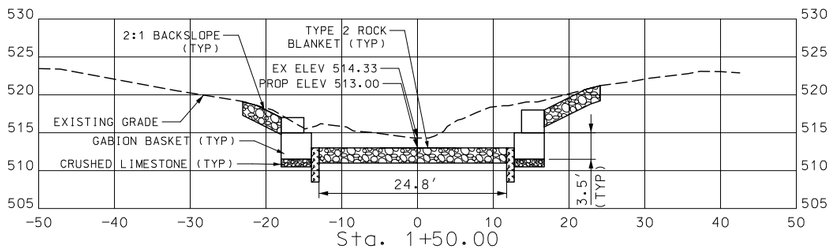
Sta. 0+40.00 R1



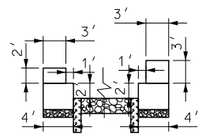
Sta. 1+60.00



Sta. 0+35.48 R1



Sta. 1+50.00



GABION DETAILS

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

STATE OF MISSOURI
ERICA J. RIDGWAY
NUMBER PE-2018003138
PROFESSIONAL ENGINEER

DATE PREPARED
1/19/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	88

COUNTY
FRANKLIN

JOB NO.
J6S3368

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)

TREKK DESIGN GROUP, LLC
17 Cassens Court
Fenton, MO 63026
Tel (314) 932-1226
www.trekkdesigngroup.com
Missouri Cert. of Authority 2002010300

X0913
CREEK SECTIONS

DISCLAIMER

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R = 284.18'
ARC L = 124.92'
CHORD = 123.92'
N31°41'13"W

+54.06
52.10' LT

+55.79
32.21' LT

+57.77
12.32' LT

RELOCATE INVENTORY WITHIN TEMP. EASEMENT AND NEW ROW

NEW R/W
R = 264.18'
ARC L = 96.41'
CHORD = 95.87'
N33°49'32"W

NO SHOULDER BEGIN STA. 730+77 LT

R = 244.18'
ARC L = 66.29'
CHORD = 66.08'
N36°30'11"W

+19.82
18.97' LT

+39.54
40.81' LT

+55.37
62.14' LT

R = 284.18'
ARC L = 52.99'
CHORD = 52.92'
N13°45'06"W

R = 264.18'
ARC L = 68.99'
CHORD = 68.79'
S15°53'25"E

R = 244.18'
ARC L = 86.58'
CHORD = 86.13'
S18°34'04"E

+97.58
64.92' LT

20.00'
S81°35'26"W

+98.32
44.94' LT

74.82'
S11°14'53"W

+98.94
29.96' LT

5.00'
S81°35'26"W

+99.16
24.97' LT

+62.41
32.25' LT

NO SHOULDER END STA. 732+89 LT/RT

69.70', N44°16'48"W
TEMP. EASEMENT

+92.72
52.63' LT

75.45'
S59°39'02"E

TYPE A CET (MASH)
72.75', N44°16'48"W
GUARDRAIL BEGIN STA. 729+26

+00.35
33.53' LT

GRADING LIMITS

(R&REL)
TYPE C CET

℄ RELOCATED ROUTE MM PAVEMENT REMOVAL

BEGIN RETAINING WALL STA. 731+90

67 LF OF 18" GROUP B PIPE STA. 730+06

EXIST. 15" CMP (R)

NW QUARTER OF NW QUARTER SEC. 31

NW QUARTER NW QUARTER SECTION 31
NE QUARTER NE QUARTER SECTION 36

(1) N/F FARINELLA, JOSEPH T. & ROSE F. TRUST
TOTAL AREA = 3.991 AC
0.153 AC NEW R/W
0.107 AC TEMP ESM'T
3.838 AC REMAINING

Ⓐ +72.96
28.85' LT
Ⓑ L = 5.00'
S45°43'12"W
Ⓒ +73.28
33.84' LT
Ⓓ L = 87.89'
N44°16'48"W

STA. 28+67.81 RANGE LINE

107.53'
N44°16'48"W

+93.05
40.44' LT

76.49'
N55°35'23"W

+14.24
29.20' LT

FARINELLA'S

725

NE QUARTER OF NE QUARTER SEC. 36

STA. 25+06.18 ℄ EXIST. R/W = STA. 725+00.00 ℄ RELOCATED ROUTE MM (0.19' LT)

EXIST. R/W

PAINT MARK LINE (0.8')

RAILROAD RIGHT-OF-WAY

UNION PACIFIC RAILROAD

NO SHOULDER BEGIN STA. 732+05 RT

75 LF CONCRETE BARRIER TYPE C W/ TYPE B GUTTER

(2) N/F UNION PACIFIC CORP
TOTAL AREA = UNKNOWN
0.045 AC PERMANENT EASEMENT (CONST. & MAINT.)
0.028 AC TEMP ESM'T
UNKNOWN AC REMAINING

SCALE 0 50 100 150

730

735

LABADIE CREEK

EXIST. 48" CMP (UIP) STA. 733+59

END RETAINING WALL STA. 733+86

MGS GUARDRAIL

℄ EXIST. R/W

TYPE A CET (MASH)

EXIST. R/W

LAKE DR

EX. PERM. ESMT. (DRAINAGE)

STA. 37+00 ℄ EXIST. R/W= STA. 736+90.04 ℄ RELOCATED ROUTE MM (3.17' LT)

MATCHLINE STA. 723+00

NO SHOULDER END STA. 723+40 RT

EXIST. 18" CMP BURIED (R&R)
STA. 723+12.72
18" GROUP B PIPE

SEE (3) TYPICAL SECTION

SEE (4) TYPICAL SECTION

SEE (5) TYPICAL SECTION

SEE (4) TYPICAL SECTION

SEE (6) TYPICAL SECTION

MATCHLINE STA. 738+00

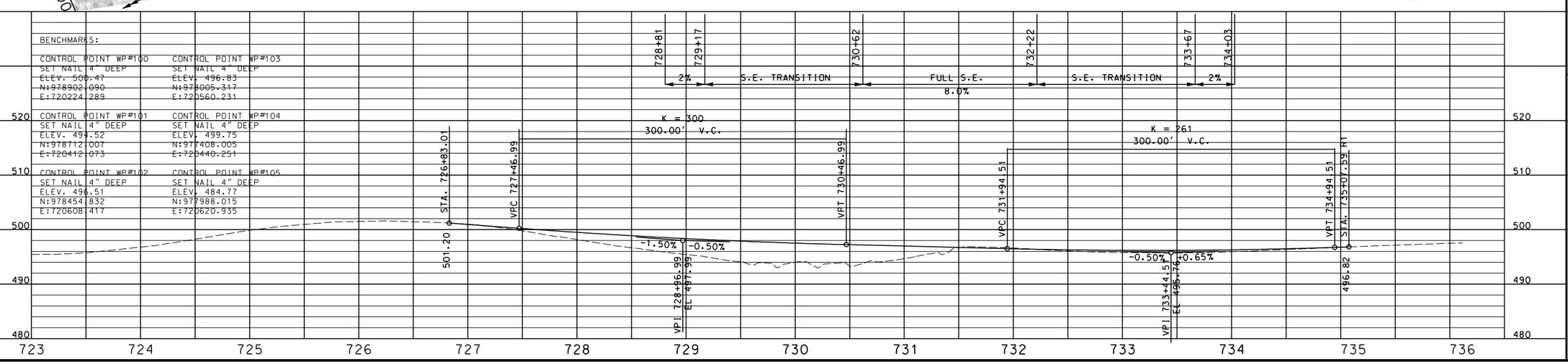
LAND CORNER TIE:
STATION 720+00.00 OF ROUTE MM IS LOCATED N 12°55'21"W, 2336.31 FEET OF A STONE AT THE EAST QUARTER CORNER OF SECTION 36, TOWNSHIP 44 NORTH, RANGE 1 EAST.
MLS DOC 600-39083

RW LIMITS FOR THIS PROJECT EXTEND FROM STA. 727+14.24 TO STA. 732+61.43

PAVEMENT REMOVAL

BENCHMARKS:

CONTROL POINT WP#100 SET NAIL 4" DEEP ELEV. 500.47 N:978902.090 E:720224.289	CONTROL POINT WP#103 SET NAIL 4" DEEP ELEV. 496.83 N:978005.317 E:720560.231
CONTROL POINT WP#101 SET NAIL 4" DEEP ELEV. 494.52 N:978712.007 E:720412.073	CONTROL POINT WP#104 SET NAIL 4" DEEP ELEV. 499.75 N:977408.005 E:720440.251
CONTROL POINT WP#102 SET NAIL 4" DEEP ELEV. 496.51 N:978454.832 E:720608.417	CONTROL POINT WP#105 SET NAIL 4" DEEP ELEV. 484.77 N:977988.015 E:720620.935



STATE OF MISSOURI
PHILIP ANDREW GROUT
NUMBER PE-2010018302
PROFESSIONAL ENGINEER
PROFESSIONAL LAND SURVEYOR
Philip A Grout

DATE PREPARED
1/14/2021

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
SL	89

COUNTY
FRANKLIN

JOB NO.
J6S3368

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)

5220 Oakland Avenue
St. Louis, MO 63110
314.863.3570

CDI ENGINEERING, INC.
CIVIL DESIGN, INC.
Missouri State Certificate of Authority #2002006804

ROW SHEET
ROUTE MM
SHEET 1 OF 2

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SCALE
0 50 100 150

835 840 845

TRIBUTARY TO LABADIE CREEK

EX. PERM. ESMT. (DRAINAGE)

PT STA 837+44.88

EXIST. R/W

EXIST. 3-9'X9' BOX CULVERT STA. 838+28 (UIP)

℄ CONST. ROUTE MM

MATCHLINE STA. 845+00

+47.61
30.24' RT

S 18° 45' 23" E

+71.12
35.84' RT

47.21'
S55°55'20"W

TEMPORARY EASEMENT (CONST.)

24.83'
S55°55'20"W

+77.68
59.79' RT

50.72'
S0°55'20"W

+59.84
75.84' RT

EX. PERM. ESMT. (DRAINAGE)

③
N/F
PURINA MILLS INC. C/O
LAND O LAKES

0.000 AC NEW R/W
0.000 AC PER. ESM'T
0.034 TEMP ESM'T
72.746 AC REMAINING

BEAUTY VIEW DR

BOX CULVERT X0913

SEE ⑥ TYPICAL SECTION

SEE ③ TYPICAL SECTION

SEE ③ TYPICAL SECTION

MATCHLINE STA. 830+75

RW LIMITS FOR THIS PROJECT EXTEND FROM STA. 837+71.12 TO STA. 838+24.43

STATE OF MISSOURI
PHILIP ANDREW GROUT
NUMBER PLS-2010018902
PROFESSIONAL LAND SURVEYOR
Philip A Grout

DATE PREPARED
1/14/2021

ROUTE	STATE
MM	MO

DISTRICT	SHEET NO.
SL	90

COUNTY
FRANKLIN

JOB NO.
J6S3368

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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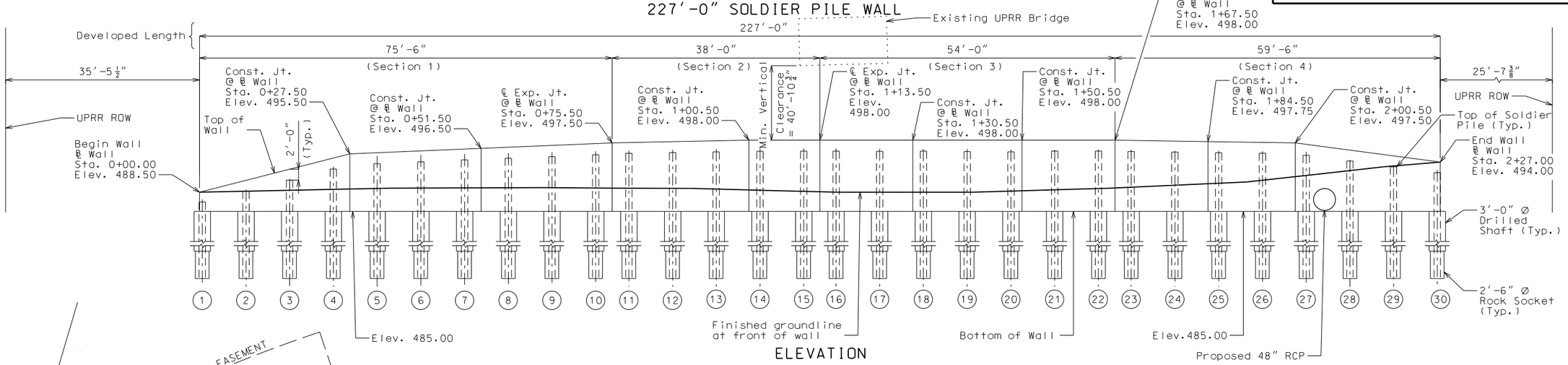
CDI ENGINEERS
CIVIL DESIGN, INC.
Missouri State Certificate of Authority #2002006804

ROW SHEET
ROUTE MM
SHEET 2 OF 2

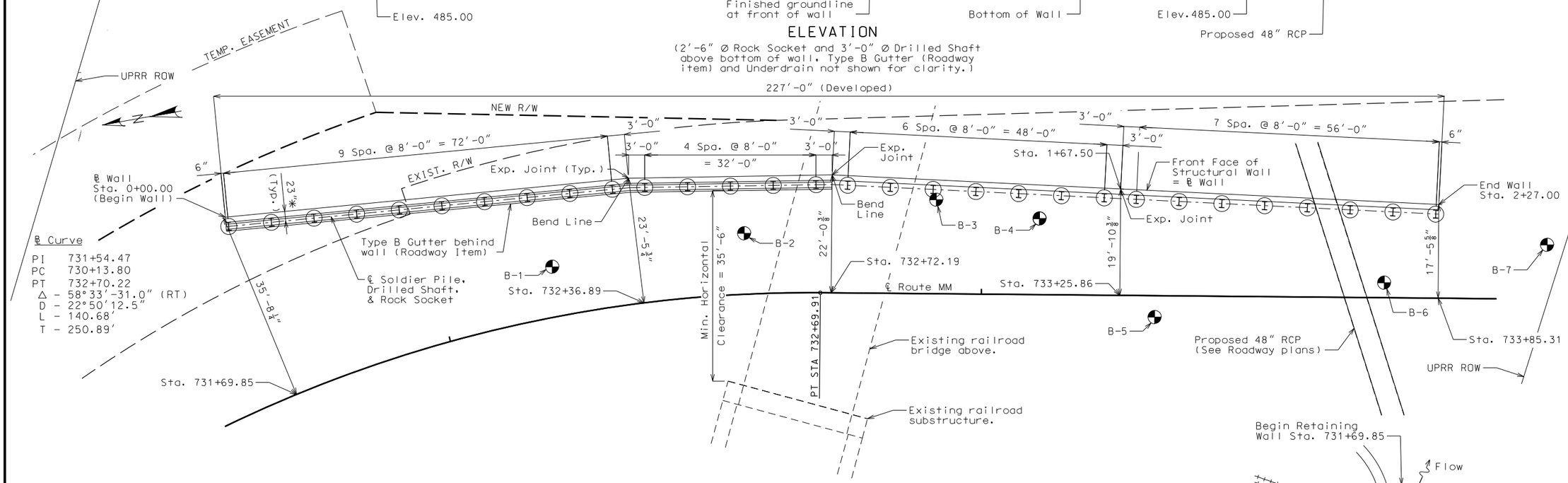
SEC/SUR: 31 TWP: 44N RGE: 2E

227'-0" SOLDIER PILE WALL



ELEVATION

(2'-6" Ø Rock Socket and 3'-0" Ø Drilled Shaft above bottom of wall, Type B Gutter (Roadway item) and Underdrain not shown for clarity.)



● Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheet(s) No. 9-17 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

The Commission does not represent or warrant that any such boring data accurately depicts the conditions to be encountered in constructing this project. A contractor assumes all risks it may encounter in basing its bid prices, time or schedule of performance on the boring data depicted here or those available from the district, or on any other documentation not expressly warranted, which the contractor may obtain from the Commission.

WALL PLAN

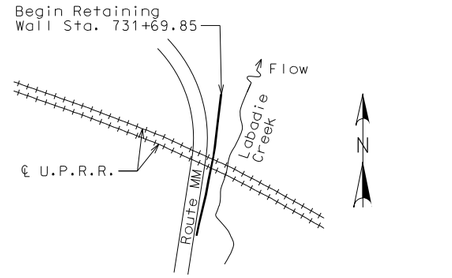
Notes:

Entire limits of proposed soldier pile wall are within railroad right-of-way.

Retaining wall construction methods shall account for limited acces near the railroad bridge. The clearance envelope around all bridge elements shall be a mininimum of 5'-0".

Contractor is responsible for protecting existing 48" CMP pipe during construction.

✳ Assumes vertical drain thickness is less than pile flange thickness. Adjust as necessary to maintain 12" (Min.) wall thickness.



LOCATION SKETCH

RETAINING WALL: ALONG ROUTE MM & LABADIE CREEK

ROUTE MM FROM ROUTE T TO ROUTE 100
ABOUT 0.6 MILES SOUTH OF ROUTE T
BEGINNING STATION 731+69.85

Designed KAS JAN 2023
Detailed DCS JAN 2023
Checked JGS JAN 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS BOTH SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	1

COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9083

DESCRIPTION
DATE

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

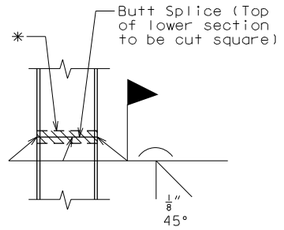
CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Estimated Quantities

Item		Total
Drilled Shafts (3ft. 0 in. Dia.)	linear foot	1,320.0
Rock Sockets (2 ft. 6 in. Dia.)	linear foot	150.0
Drainage System	lump sum	1
Misc. Galvanized Soldier Piles (W18x119)	linear foot	1,764
Class B Concrete (Retaining Walls)	cu. yard	91.0
Reinforcing Steel (Epoxy Coated)	pound	11,640

SUGGESTED CONSTRUCTION SEQUENCE:

1. Install temporary work pad or berm at Elev. 485.00 to get access for drilling equipment.
2. Drill holes for drilled shafts and rock sockets. Set soldier piles with welded shear connectors, per the plans in the hole. Use templates or other devices to hold the soldier pile within tolerance given in the Job Special Provisions.
3. Concrete the drilled shaft and rock socket up to the work pad elevation. Take care to support soldier pile within tolerances given in the Job Special Provisions when concreting.
4. Install reinforced concrete wall.
5. Install vertical drain behind wall and structural underdrain under wall.
6. Backfill wall with Select Granular Backfill.
7. Install Type B Concrete Gutter (Roadway Item).



STEEL PILE SPLICE
(If required)

* Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.

GENERAL NOTES:

Design Specifications:

2020 AASHTO LRFD Bridge Design Specifications (9th Edition)
Seismic Design Category B

Design Loading:

Earth = 125 pcf
Design Φ_f = 34° for the select granular backfill.

Design Unit Stresses:

Class B Concrete (Retaining Wall)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Structural Steel (ASTM A709, Grade 50)	fy = 50,000 psi

Joint Filler:

All joint filler shall be in accordance with Sec 1057 for preformed sponge rubber expansion and partition joint filler, except as noted.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2", unless otherwise shown.

All reinforcing steel shall be epoxy coated.

Miscellaneous:

See Roadway Plans for traffic control.

Excavation will be paid for as a Roadway Item. See Roadway Plans.

Shear connectors are included in the cost of Galvanized Soldier Piles (W18x119).

Shear connectors shall be in accordance with Sec 712, 1037 and 1080.

A different size pile may be used provided it has the same or greater bending and shear strength. No adjustments will be made to the contract unit price.

Contractor shall include design Φ_f (actual $\Phi_f \geq 34°$ and the total unit weight, γ_f, for the select granular backfill (reinforced backfill and wedge area backfill) for structural systems on shop drawings. Contractor shall identify source of select granular backfill material, submit proctor in accordance with AASHTO 99 (ASTM D698) and gradation with shop drawings. When backfill material is to coarse to develop a proctor curve the contractor shall determine the maximum dry density (relative density) in accordance with ASTM D4253 and ASTM D4254 and assume percent passing the 200 sieve for optimum water content.

Total unit weight, γ_f = (95% compaction) x (maximum dry density) x (1 + optimum water content)

Structural steel shall be galvanized in accordance with ASTM A123 and Sec 1081.

All drilled shafts shall be constructed at the locations and lengths shown on the plan. See Job Special Provisions for additional information on the shaft and post layout.

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS SEALED, SIGNED, AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

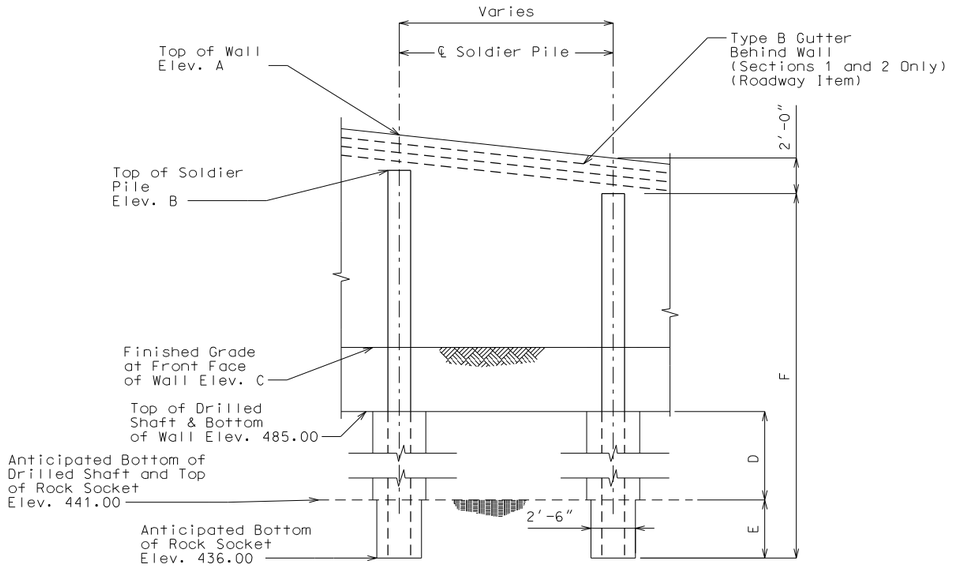
DESCRIPTION	DATE

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

CIVIL DESIGN, INC.
WBE / DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.3570
Missouri State Certificate of Authority #2002006804

WALL, DRILLED SHAFT, ROCK SOCKET AND SOLDIER PILE DATA

	Pile Number	℄ Wall Station	Top of Wall Elev. A	Top of Soldier Pile Elev. B	Finished Grade at Front Face of Wall Elev. C	Drilled Shaft Pay Limit (feet) Dim D	Rock Socket Pay Limit (feet) Dim E	Anticipated Soldier Pile Length (feet) Dim F	Soldier Pile Pay Length (feet)
Section 1	1	0+00.50	488.71	486.71	488.0	44.00	5.00	50.71	51.00
	2	0+08.50	490.65	488.65	487.5	44.00	5.00	52.65	53.00
	3	0+16.50	492.71	490.71	487.0	44.00	5.00	54.71	55.00
	4	0+24.50	494.74	492.74	486.0	44.00	5.00	56.74	57.00
	5	0+32.50	495.70	493.70	486.1	44.00	5.00	57.70	58.00
	6	0+40.50	496.03	494.03	486.2	44.00	5.00	58.03	59.00
	7	0+48.50	496.40	494.40	486.5	44.00	5.00	58.40	59.00
	8	0+56.50	496.73	494.73	486.7	44.00	5.00	58.73	59.00
	9	0+64.50	497.00	495.00	487.0	44.00	5.00	59.00	59.00
Section 2	10	0+72.50	497.33	495.33	487.2	44.00	5.00	59.33	60.00
	11	0+78.50	497.59	495.59	487.5	44.00	5.00	59.59	60.00
	12	0+86.50	497.73	495.73	487.7	44.00	5.00	59.73	60.00
	13	0+94.50	497.87	495.87	488.0	44.00	5.00	59.87	60.00
	14	1+02.50	498.00	496.00	488.2	44.00	5.00	60.00	60.00
	15	1+10.50	498.00	496.00	488.5	44.00	5.00	60.00	60.00
Section 3	16	1+16.50	498.00	496.00	488.5	44.00	5.00	60.00	60.00
	17	1+24.50	498.00	496.00	488.5	44.00	5.00	60.00	60.00
	18	1+32.50	498.00	496.00	488.5	44.00	5.00	60.00	60.00
	19	1+40.50	498.00	496.00	488.5	44.00	5.00	60.00	60.00
	20	1+48.50	498.00	496.00	488.9	44.00	5.00	60.00	60.00
	21	1+56.50	498.00	496.00	489.0	44.00	5.00	60.00	60.00
	22	1+64.50	498.00	496.00	489.3	44.00	5.00	60.00	60.00
Section 4	23	1+70.50	497.93	495.93	489.5	44.00	5.00	59.93	60.00
	24	1+78.50	497.83	495.83	489.7	44.00	5.00	59.83	60.00
	25	1+86.50	497.72	495.72	489.9	44.00	5.00	59.72	60.00
	26	1+94.50	497.62	495.62	490.8	44.00	5.00	59.62	60.00
	27	2+02.50	497.24	495.24	491.5	44.00	5.00	59.24	60.00
	28	2+10.50	496.20	494.20	492.5	44.00	5.00	58.20	59.00
	29	2+18.50	495.12	493.12	493.3	44.00	5.00	57.12	58.00
	30	2+26.50	494.06	492.06	493.7	44.00	5.00	56.06	57.00



PART ELEVATION OF SOLDIER PILE WALL

Notes:

Top of Rock Socket is at anticipated Top of Rock.

For location of piles, see Sheet No. 1.

For Typical Wall Details, see Sheet No. 6.

WALL ELEVATION DATA TABLE

Detailed MAR 2023
Checked MAR 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

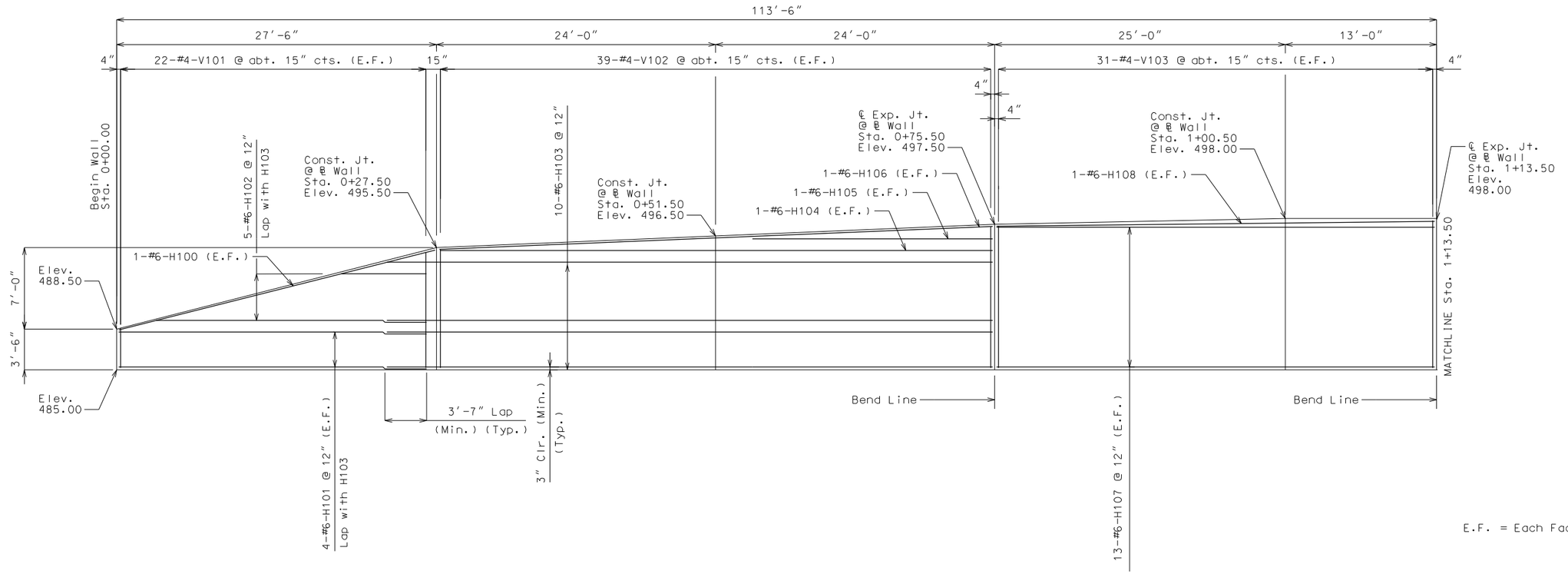
PROJECT NO.

BRIDGE NO.
A9083

DATE	DESCRIPTION

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

CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804



E.F. = Each Face

PART DEVELOPED ELEVATION

(Piles and Type B Gutter not shown for clarity.)
(Looking at back face of wall)

Notes:

For additional details, see Sheet No. 6.
Work this sheet with Sheet No. 5.

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS BEING SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

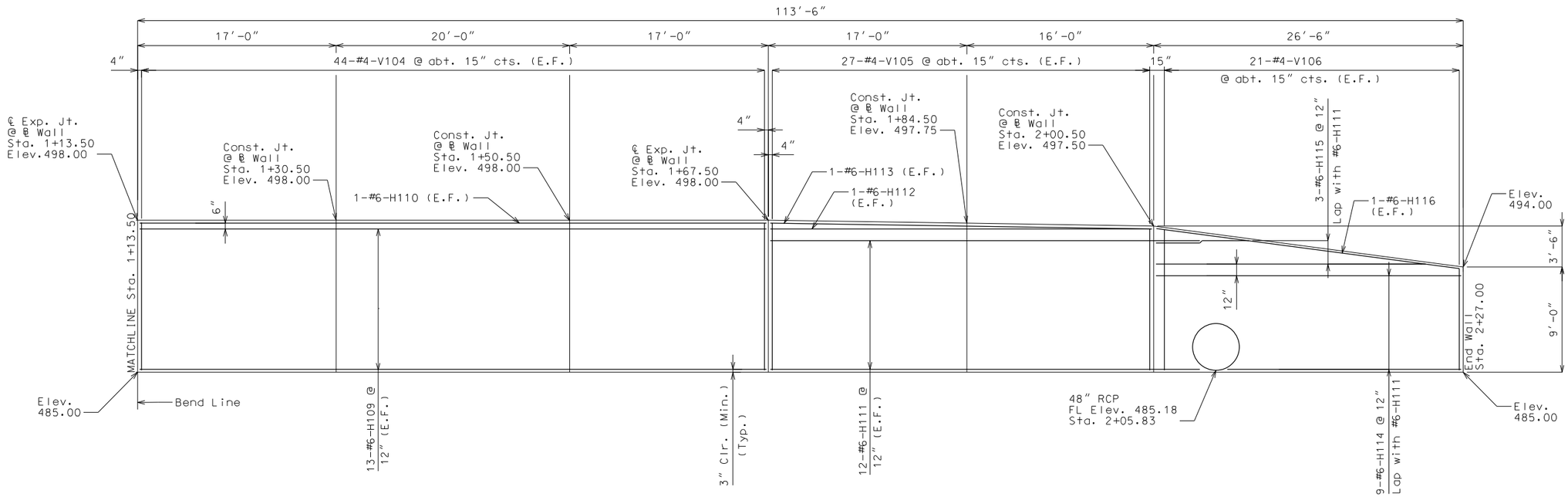
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed MAR 2023
Checked MAR 2023

CIP WALL DETAILS - SHEET 1

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



E.F. = Each Face

PART DEVELOPED ELEVATION

(Piles not shown for clarity.)
(Looking at back face of wall)

Notes:
Cut bars to fit around 48″ RCP opening
see Sheet No. 6 for details of pipe penetration.

Work this sheet with Sheet No. 4.

CIP WALL DETAILS - SHEET 2

Detailed MAR 2023
Checked MAR 2023

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

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	5

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION | DATE

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

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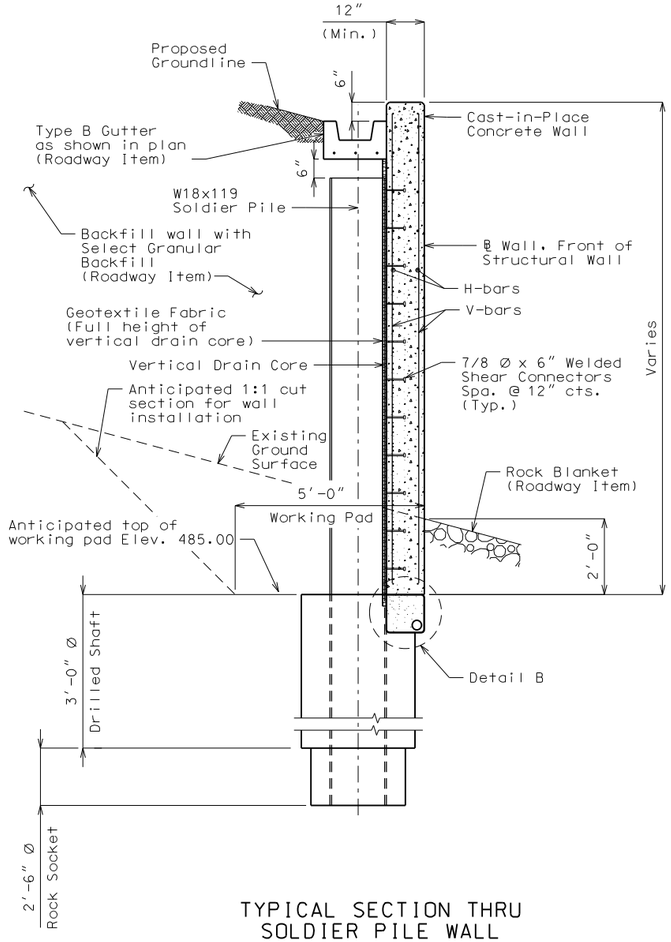
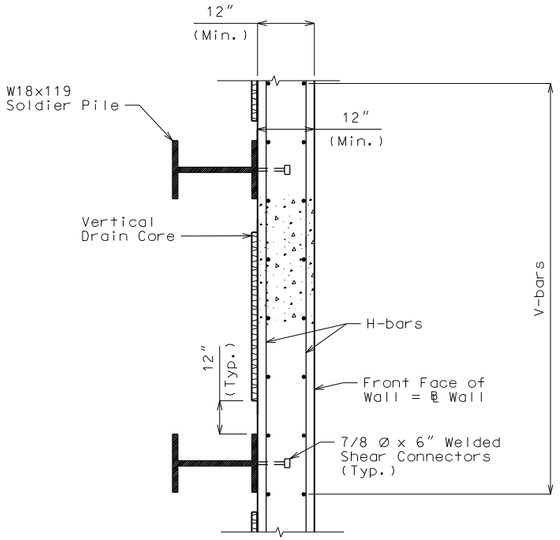
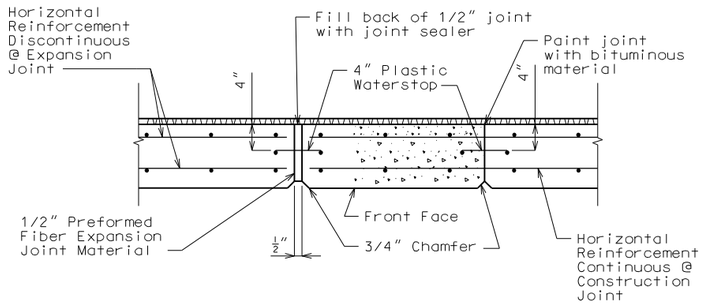


TYPICAL SECTION THRU SOLDIER PILE WALL

Note: For details of H-bars and V-bars see Sheets No. 4 and 5.

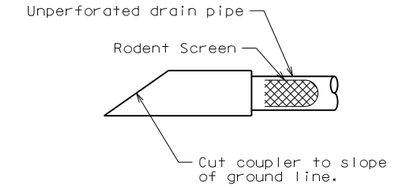


PART PLAN OF SOLDIER PILE WALL

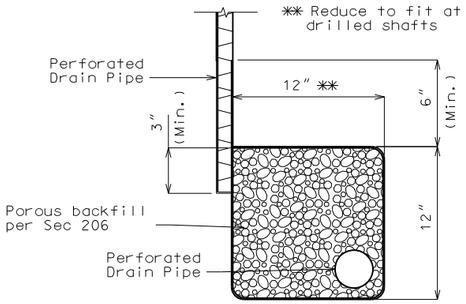


PART SECTION THRU WALL SHOWING JOINTS

Cost of water stop and expansion joint material shall be included in the contract unti price for other items. For location of joints, see Sheets No. 4 and 5.



DETAIL "C"



DETAIL B

Drainage System Notes:

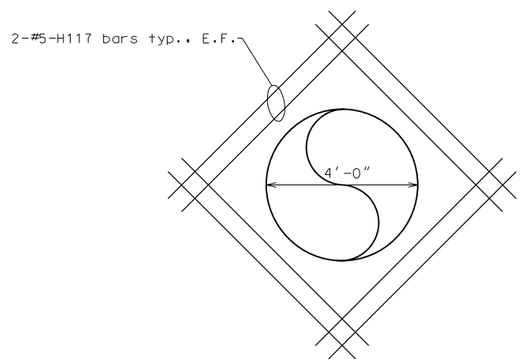
Cost of installing drainage system complete in place will be considered completely covered by the contract price of Drainage System.

Drain pipe may be either 6" diameter corrugated metallic-coated steel pipe underdrain, 4" diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4" diameter corrugated polyethylene (PE) drain pipe.

Slope pipe to drain and continue to daylight as approved by the Engineer.

Perforated pipe shall be placed as shown under wall and plain pipe shall be used from end of wall to end of pipe.

Vertical drain core shall be in accordance with Sec 1012.3.3.



PIPE PENETRATION DETAIL

Trim vertical and horizontal bars to clear pipe openings

TYPICAL DETAILS

Detailed MAR 2023
Checked MAR 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 6
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9083

DESCRIPTION | DATE

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

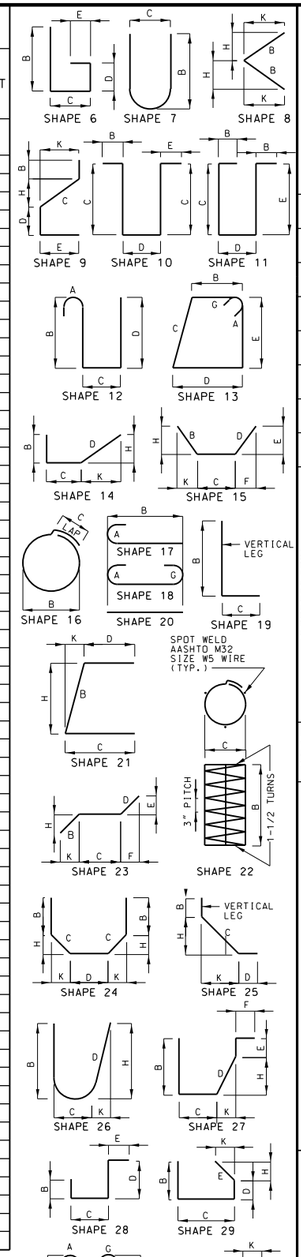
CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BILL OF REINFORCING STEEL

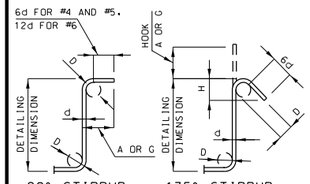
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
2	6	H100	Wall	E	20					28	0.000													28	0	28	0	84
8	6	H101	Wall	E	20					26	6.000													26	6	26	6	318
5	6	H102	Wall	E	20			V	2	7	4.000													7	4	7	4	230
			INCR=4'-0"							23	3.000													23	3	23	3	
20	6	H103	Wall	E	20					52	5.000													52	5	52	5	1575
2	6	H104	Wall	E	20					47	6.000													47	6	47	6	143
2	6	H105	Wall	E	20					20	8.000													20	8	20	8	62
2	6	H106	Wall	E	20					47	7.000													47	7	47	7	143
26	6	H107	Wall	E	20					37	4.000													37	4	37	4	1458
2	6	H108	Wall	E	20					37	5.000													27	5	27	5	112
26	6	H109	Wall	E	20					53	4.000													53	4	53	4	2083
2	6	H110	Wall	E	20					53	4.000													53	4	53	4	160
24	6	H111	Wall	E	20					36	7.000													36	7	36	7	1319
2	6	H112	Wall	E	20					32	4.000													32	4	32	4	97
2	6	H113	Wall	E	20					32	6.000													32	6	32	6	98
18	6	H114	Wall	E	20					26	2.000													26	2	26	2	707
3	6	H115	Wall	E	20			V	2	8	0.000													8	0	8	0	140
			INCR=7'-6"							23	0.000													23	0	23	0	
2	6	H116	Wall	E	20					26	2.000													26	2	26	2	79
8	5	H117	Pipe Pen	E	20					7	6.000													7	6	7	6	63
22	4	V101	Wall	E	20			V	2	3	5.000													3	5	3	5	196
			INCR=3.75"							9	11.000													9	11	9	11	
39	4	V102	Wall	E	20			V	2	10	2.000													10	2	10	2	581
			INCR=0.625"							12	1.500													12	2	12	2	
31	4	V103	Wall	E	20			V	2	12	2.500													12	3	12	3	513
			INCR=0.125"							12	7.000													12	7	12	7	
88	4	V104	Wall	E	20					12	7.000													12	7	12	7	740
27	4	V105	Wall	E	20			V	2	12	6.500													12	7	12	7	444
			INCR=0.25"							12	1.000													12	1	12	1	
21	4	V106	Wall	E	20			V	2	12	0.500													12	1	12	1	291
			INCR=2.00"							8	8.500													8	9	8	9	

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.

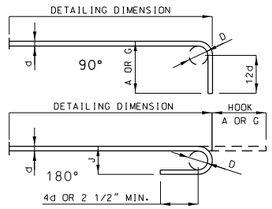


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	135° HOOK 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				
		ALL GRADES		
BAR SIZE	D (IN.)	180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#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"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

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.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
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.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 7
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9083

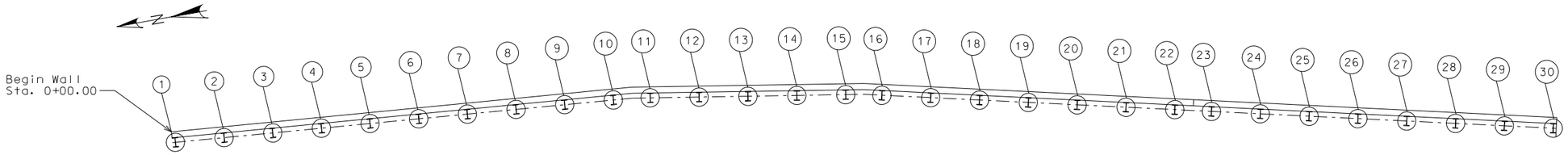
DESCRIPTION | DATE

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

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed MAR 2023
Checked MAR 2023

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



PART PLAN

As-Built Pile Data			
Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (Kips)	Remarks
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

As-Built Drilled Shaft Data				
Pile No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal

This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE AND DRILLED SHAFT DATA

Detailed KAS 2023
Checked JGS 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9083

DESCRIPTION | DATE

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

CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING LOG NO. B-1

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5201° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		1.2	92.5									
		1.5	92									
1						X	1	6	10-5-5 N=10 N_{60} 14	14	19.0	
						X	2	8	4-5-5 N=10 N_{60} 14	14	16.5	
				5								
						X	3	10	2-3-3 N=6 N_{60} 9	9	19.4	
						X	4	10	3-2-2 N=4 N_{60} 6	6	23.2	
				10								
						X	5	12	2-1-2 N=3 N_{60} 4	4	22.3	
				15								
						X	6	18	1-1-1 N=2 N_{60} 3	3	24.7	34-18-16
				20								
						X	7	18	3-2-2 N=4 N_{60} 6	6	26.7	
				25								

FILL - ASPHALT, approx. 14"

FILL - AGGREGATE BASE COURSE, approx. 4"

FILL - LEAN CLAY, with silt, brown and gray

7.0 86.5

SILTY SAND (SM), with clay, fine grained, brown and gray, loose

12.0 81.5

CLAYEY SAND (SC), with silt, fine grained, gray and brown, very loose to loose

22.0 71.5

SANDY LEAN CLAY (CL), trace silt, gray, soft to medium stiff

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS
None observed during drilling
30 feet after drilling

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-22-2021 | Boring Completed: 07-22-2021
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAININ.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

BORING LOG NO. B-1

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5201° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
						X	8	18	3-2-3 N=5 N_{60} 7	7	28.8	
				30								
						X	9	18	4-3-3 N=6 N_{60} 9	9	27.3	
				35								
				40								
				45								
				50								

SANDY LEAN CLAY (CL), trace silt, gray, soft to medium stiff *(continued)*

32.0 61.5

CLAYEY SAND (SC), with silt, fine grained, gray and brown, very loose to loose

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS
None observed during drilling
30 feet after drilling

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-22-2021 | Boring Completed: 07-22-2021
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAININ.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET +NO SEAL SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	9

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed MAR 2023
Checked MAR 2023

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

BORING LOG NO. B-1

Page 3 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5201° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (FT) / ELEVATION (Ft.)	DEPTH (FT)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2		**CLAYEY SAND (SC)**, with silt, fine grained, gray and brown, very loose to loose *(continued)*									
		53.0 / 40.5									
		Auger Refusal at 53 Feet				10	0	50/1"			

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS
None observed during drilling
▽ *30 feet after drilling*

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-22-2021 | Boring Completed: 07-22-2021
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING WALL.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

BORING LOG NO. B-2

Page 1 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5200° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (FT) / ELEVATION (Ft.)	DEPTH (FT)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		FILL - ASPHALT, approx. 12"									
		1.0 / 92.5									
		FILL - AGGREGATE BASE COURSE, approx. 4"									
		1.3 / 92									
1		**FILL - LEAN CLAY**, with silt, trace metal fragments, brown and gray				4	5-10-7 N=17 N_{60} 24	1		17.8	
		5.0 / 88.5									
		LEAN CLAY (CL), with silt, brown and gray, soft	5			8	5-3-5 N=8 N_{60} 11	2		15.7	
						12	2-1-2 N=3 N_{60} 4	3		26.1	
			10			14	2-1-2 N=3 N_{60} 4	4		26.3	
		12.0 / 81.5									
		SILTY CLAY (CL/ML), gray, soft				14	1-1-1 N=2 N_{60} 3	5		27.0	
2			15								
		17.0 / 76.5									
		SANDY LEAN CLAY (CL), with silt, gray, soft to medium stiff	20			18	1-1-1 N=2 N_{60} 3	6		29.4	
						18	3-1-3 N=4 N_{60} 6	7		26.7	42-18-24
			25								

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0 to 52.6 feet: Hollow-Stem Augers
52.6 to 57.5 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/22/2021.

WATER LEVEL OBSERVATIONS
None observed during or after drilling on 7/22/2021
None observed during drilling on 9/9/2022

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-09-2022 | Boring Completed: 09-09-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed MAR 2023
Checked MAR 2023

Sheet No. 10 of 17

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 1/9/2024
ROUTE: MM | STATE: MO
DISTRICT: BR | SHEET NO.: 10
COUNTY: FRANKLIN
JOB NO.: J6S3368
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A9083

DESCRIPTION | DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING LOG NO. B-2

Page 2 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5200° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		SANDY LEAN CLAY (CL), with silt, gray, soft to medium stiff *(continued)*									
		32.0 / 61.5	30			18	4-3-4 N=7 N_{60} 10	8		32.3	
		SANDY SILT (ML), with clay, gray, stiff									
		37.0 / 56.5	35			18	3-5-5 N=10 N_{60} 14	9		31.1	
2		**LEAN CLAY (CL)**, gray, very soft									
		42.0 / 51.5	40			2	0-0-0 N=0 N_{60} 0	10		28.5	
		CLAYEY GRAVEL (GC), fine to coarse grained, gray, very loose									
			45			3	0-0-0 N=0 N_{60} 0	11		27.4	
			50			2	0-0-0 N=0 N_{60} 0	12		23.9	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 52.6 feet: Hollow-Stem Augers
52.6 to 57.6 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/22/2021.

WATER LEVEL OBSERVATIONS
None observed during or after drilling on 7/22/2021
None observed during drilling on 9/9/2022

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-09-2022 | Boring Completed: 09-09-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

BORING LOG NO. B-2

Page 3 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5200° Longitude: -90.8481°
Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2		**CLAYEY GRAVEL (GC)**, fine to coarse grained, gray, very loose *(continued)*									
		52.0 / 41.5									
		52.6 / 41 **HIGHLY WEATHERED LIMESTONE**, gray				1	50/1"	13		17.8	
3		**LIMESTONE**, gray, moderately to slightly weathered	55			60	REC: 100% RQD: 83%	Run 1	4100		
		57.6 / 36									
		Boring Terminated at 57.6 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 52.6 feet: Hollow-Stem Augers
52.6 to 57.5 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:

WATER LEVEL OBSERVATIONS
None observed during or after drilling on 7/22/2021
None observed during drilling on 9/9/2022

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-09-2022 | Boring Completed: 09-09-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	11

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed MAR 2023
Checked MAR 2023

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

BORING LOG NO. B-3

Page 1 of 2

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5199° Longitude: -90.8481°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1		1.0	92									
		1.3	91.5									
						X	1	6	12-5-5 N=10 N_{60} 14	14	20.1	
						X	2	8	8-5-5 N=10 N_{60} 14	14	19.0	
		5.5	87.5	5								
						X	3	10	4-3-3 N=6 N_{60} 9	9	22.6	
						X	4	10	2-2-2 N=4 N_{60} 6	6	27.3	33-21-12
		12.0	81	10								
2						X	5	12	1-1-2 N=3 N_{60} 4	4	24.3	
				15								
						X	6	18	0-1-1 N=2 N_{60} 3	3	25.0	
				20								
					▽	X	7	18	2-2-2 N=4 N_{60} 6	6	24.1	
		25.0	68	25								

SANDY LEAN CLAY (CL), with silt, brown and gray, medium stiff to stiff

SANDY LEAN CLAY (CL), gray, soft

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS

▽ *23.5 feet during drilling*

▽ *24 feet after drilling*

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-22-2021 | Boring Completed: 07-22-2021

Drill Rig: DR721 | Driller: JM

Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAINING.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

BORING LOG NO. B-3

Page 2 of 2

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5199° Longitude: -90.8481°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2												
				30		X	8	18	2-2-3 N=5 N_{60} 7	7	33.1	
						X	9	18	5-3-3 N=6 N_{60} 9	9	29.5	
		35.0	58	35								

SILTY SAND (SM), with clay, gray, loose

Boring Terminated at 35 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS

▽ *23.5 feet during drilling*

▽ *24 feet after drilling*

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-22-2021 | Boring Completed: 07-22-2021

Drill Rig: DR721 | Driller: JM

Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAINING.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS SEALED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed MAR 2023
Checked MAR 2023

BORING LOG NO. B-4

Page 1 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO

SITE: Route MM Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5199° Longitude: -90.8481°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1		0.0	93									
		1.0	92									
		1.3	91.5									
		2.0	91				4	12-6-1 N=7 N_{60} 10	1		4.9	
		3.5	89.5									
							2	0-1-1 N=2 N_{60} 3	2		6.7	
				5								
							0	1-1-2 N=3 N_{60} 4	3			
							2	1-1-0 N=1 N_{60} 1	4		6.2	
		12.0	81	10								
		13.5	79.5				3	18-30-50 N=80 N_{60} 114	5		131.0	
		15.0	78	15								
		16.0	77									
2					▽		8	0-0-1 N=1 N_{60} 1	6		25.9	
				20								
							6	2-2-2 N=4 N_{60} 6	7		6.8	
				25								

FILL - ASPHALT, approx. 12"

FILL - AGGREGATE BASE COURSE, approx. 4"

FILL - POORLY GRADED GRAVEL, with sand, light brown to brown

VOID

FILL - POORLY GRADED GRAVEL, with sand, light brown to brown

FILL - LEAN CLAY WITH GRAVEL, brown

Wood was encountered from 13.5 to 16 feet

POORLY GRADED SAND (SP), trace clay, fine to coarse grained, gray, very loose to loose

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 49.5 feet: Hollow-Stem Augers
49.5 to 58 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/21/2021.

WATER LEVEL OBSERVATIONS

- ▽ *20 feet during drilling on 7/21/2021*
- ▽ *20 feet after drilling on 7/21/2021*
- ▼ *40 feet during drilling on 9/12/2022*

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022 | Boring Completed: 09-12-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

BORING LOG NO. B-4

Page 2 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO

SITE: Route MM Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5199° Longitude: -90.8481°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2		27.0	66									
				30			18	3-4-5 N=9 N_{60} 13	8		30.8	
				35								
		40.0	53				16	0-3-4 N=7 N_{60} 10	9		28.9	
				40	▼							
							13	9-15-23 N=38 N_{60} 54	10		8.8	
		48.5	44.5	45								
3		49.5	43.5				8	9-50/5"	11		20.4	
				50								

POORLY GRADED SAND (SP), trace clay, fine to coarse grained, gray, very loose to loose *(continued)*

SANDY LEAN CLAY (CL), gray, medium stiff to stiff

POORLY GRADED SAND WITH CLAY (SP-SC), with gravel, fine to coarse grained, brown and gray, dense

HIGHLY WEATHERED LIMESTONE, yellow brown and light gray

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 49.5 feet: Hollow-Stem Augers
49.5 to 58 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/21/2021.

WATER LEVEL OBSERVATIONS

- ▽ *20 feet during drilling on 7/21/2021*
- ▽ *20 feet after drilling on 7/21/2021*
- ▼ *40 feet during drilling on 9/12/2022*

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022 | Boring Completed: 09-12-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	13

COUNTY: FRANKLIN

JOB NO.: J6S3368

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A9083

NO.	DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed MAR 2023
Checked MAR 2023

BORING LOG NO. B-4

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5199° Longitude: -90.8481°
Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.)	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
3		52.5	40.5	**LIMESTONE**, gray and yellow brown, highly to moderately weathered *(continued)*				33	REC: 79% RQD: 12%	Run 1	4120		
3		58.0	35	**LIMESTONE**, light gray to gray, moderately to slightly weathered	55			60	REC: 100% RQD: 82%	Run 2			
				Boring Terminated at 58 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
0 to 49.5 feet: Hollow-Stem Augers
49.5 to 58 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:

WATER LEVEL OBSERVATIONS

- 20 feet during drilling on 7/21/2021
- 20 feet after drilling on 7/21/2021
- 40 feet during drilling on 9/12/2022

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022 | Boring Completed: 09-12-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

BORING LOG NO. B-5

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan
Latitude: 38.5198° Longitude: -90.8482°
Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.)	ELEVATION (Ft.)	DESCRIPTION	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (In.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		1.0	92	**FILL - ASPHALT**, approx. 11"								
1		1.3	91.5	**FILL - AGGREGATE BASE COURSE**, approx. 4" **FILL - POORLY GRADED GRAVEL**, with sand, light brown to brown		X	1	4	10-7-5 N=12 N_{60} 17	17	6.3	
1		5.0	88			X	2	2	8-8-9 N=17 N_{60} 24	24	3.1	
2				**SILTY CLAY (CL/ML)**, brown and gray, soft		X	3	2	2-2-1 N=3 N_{60} 4	4	18.3	
2						X	4	18	1-1-2 N=3 N_{60} 4	4	24.7	
2		17.0	76	**SILTY SAND (SM)**, with clay, gray, very loose to loose		X	5	18	1-1-2 N=3 N_{60} 4	4	26.2	32-23-9
						X	6	18	1-1-1 N=2 N_{60} 3	3	32.2	
					▽	X	7	18	0-0-0 N=0 N_{60} 0	0	25.9	

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS

- 24.5 feet during drilling
- 25 feet after drilling

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-21-2021 | Boring Completed: 07-21-2021
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAINING.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

KIMBERLY ANNE STREICHER
NUMBER PE-2005001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET ARE BEING ISSUED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	14

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION | DATE

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

CDI
CIVIL DESIGN, INC.
WE | DIE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed MAR 2023
Checked MAR 2023

BORING LOG NO. B-5

Page 2 of 2

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5198° Longitude: -90.8482°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.) / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2		**SILTY SAND (SM)**, with clay, gray, very loose to loose *(continued)*	30		X	8	18	2-1-2 N=3 N_{60} 4	4	28.9	
		35.0 / 58	35		X	9	18	3-3-3 N=6 N_{60} 9	9	26.3	
		Boring Terminated at 35 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow-Stem Auger

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency

WATER LEVEL OBSERVATIONS

24.5 feet during drilling

25 feet after drilling

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 07-21-2021 | Boring Completed: 07-21-2021
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING WALL.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

BORING LOG NO. B-6

Page 1 of 3

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5197° Longitude: -90.8482°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.) / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (in.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
1		**FILL - ASPHALT**, approx. 12" 1.0 / 92									
		FILL - AGGREGATE BASE COURSE, approx. 4" 1.3 / 91.5									
		FILL - POORLY GRADED GRAVEL, with clay, light brown to brown			X	4	9-5-5 N=10 N_{60} 14	1		4.7	
			5		X	6	4-2-3 N=5 N_{60} 7	2		4.8	
					X	3	5-12-10 N=22 N_{60} 31	3		7.3	
			10		X	3	8-10-18 N=28 N_{60} 40	4		5.1	
		11.0 / 82									
2		**LEAN CLAY (CL)**, with silt, gray, soft to medium stiff			X	18	1-1-1 N=2 N_{60} 3	5		27.6	
			15								
			20		X	18	2-2-2 N=4 N_{60} 6	6		33.4	35-23-12
					X	18	0-1-1 N=2 N_{60} 3	7		46.7	
			25								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 48 feet: Hollow-Stem Augers
48 to 53 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/21/2021.

WATER LEVEL OBSERVATIONS

None observed during or after drilling on 7/21/2021

45 feet during drilling on 9/12/2022

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022 | Boring Completed: 09-12-2022
Drill Rig: DR721 | Driller: JM
Project No.: 15215126

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING WALL 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	15

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
WE ♡ DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed MAR 2023
Checked MAR 2023

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

BORING LOG NO. B-6

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO

SITE: Route MM Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5197° Longitude: -90.8482°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.) / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2		**LEAN CLAY (CL)**, with silt, gray, soft to medium stiff *(continued)* 27.0 / 66									
2		**SANDY FAT CLAY (CH)**, gray, soft to medium stiff			X	18	1-2-2 N=4 N_{60} 6	8		44.9	
2		35.0 / 58	30		X	18	4-3-3 N=6 N_{60} 9	9		43.2	77-26-51
2		**FAT CLAY (CH)**, trace sand, gray, medium stiff to very stiff	35		X	18	4-4-4 N=8 N_{60} 11	10		37.9	68-22-46
2		with limestone fragments at Sample 11	40		X	12	7-9-12 N=21 N_{60} 30	11		12.5	
2		48.0 / 45	45								
3		**LIMESTONE**, with chert, light gray to gray, moderately to slightly weathered	50								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 48 feet: Hollow-Stem Augers
48 to 53 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

WATER LEVEL OBSERVATIONS

None observed during or after drilling on 7/21/2022

45 feet during drilling on 9/12/2022

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:
92.5% Hammer efficiency
Data above 35 feet was obtained during our first exploration on 7/21/2021.

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022	Boring Completed: 09-12-2022
Drill Rig: DR721	Driller: JM
Project No.: 15215126	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING WALL 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

BORING LOG NO. B-6

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO

SITE: Route MM Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5197° Longitude: -90.8482°

Surface Elev.: 93.0 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.) / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	Recovery (In.)	FIELD TEST RESULTS	SAMPLE NUMBER	UNCONFINED COMPRESSIVE STRENGTH (psi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
3		**LIMESTONE**, with chert, light gray to gray, moderately to slightly weathered *(continued)* 53.0 / 40				54	REC: 90% RQD: 35%	Run 1	3990		
		Boring Terminated at 53 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
0 to 48 feet: Hollow-Stem Augers
48 to 53 feet: NQ2 Core Barrel

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.

WATER LEVEL OBSERVATIONS

None observed during or after drilling on 7/21/2022

45 feet during drilling on 9/12/2022

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were measured in the field using a surveyor's level and grade rod.

Notes:

Terracon
11600 Lilburn Park Rd
Saint Louis, MO

Boring Started: 09-12-2022	Boring Completed: 09-12-2022
Drill Rig: DR721	Driller: JM
Project No.: 15215126	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 15215126 ROUTE MM RETAINING WALL 2ND EXPLORATION.GPJ TERRACON_DATATEMPLATE.GDT 10/12/22

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	16

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
WBE / DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

Detailed MAR 2023
Checked MAR 2023

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

BORING LOG NO. B-7

Page 1 of 2

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5197° Longitude: -90.8482°

Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
		1.0	92.5									
		1.3	92									
1			**FILL - ASPHALT**, approx. 12"									
			FILL - AGGREGATE BASE COURSE, approx. 4"									
			FILL - SILTY SAND, with clay, trace gravel, gray and brown				1	8	3-4-5 N=9 N_{60} 13	13	23.6	
							2	8	2-1-2 N=3 N_{60} 4	4	24.5	
		5.0	88.5	5								
			SILT (ML), with clay, gray, soft				3	12	1-1-1 N=2 N_{60} 3	3	22.8	
							4	14	1-1-1 N=2 N_{60} 3	3	27.1	
				10								
							5	14	1-2-2 N=4 N_{60} 6	6	28.1	34-24-10
				15								
2		17.0	76.5									
			SILTY SAND (SM), with clay, fine grained, gray, very loose to loose				6	18	1-1-1 N=2 N_{60} 3	3	27.4	
				20								
							7	18	2-2-3 N=5 N_{60} 7	7	28.3	
				25								

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method: Hollow-Stem Auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).	Nctes: 92.5% Hammer efficiency	
Abandonment Method: Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.	See Supporting Information for explanation of symbols and abbreviations.		
WATER LEVEL OBSERVATIONS	Elevations were measured in the field using a surveyor's level and grade rod.	Boring Started: 07-21-2021	Boring Competed: 07-21-2021
None observed during drilling	Terracon	Drill Rig: DR721	Driller: JM
▽ *33.5 feet after drilling*	11600 Lilburn Park Rd Saint Louis, MO	Project No.: 15215126	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAINING.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

BORING LOG NO. B-7

Page 2 of 2

PROJECT: Route MM Retaining Wall

CLIENT: Missouri Department of Transportation (MODOT)
Jefferson City, MO

SITE: Route MM
Labadie, MO

LOCATION See Exploration Plan

Latitude: 38.5197° Longitude: -90.8482°

Surface Elev.: 93.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	SAMPLE NUMBER	RECOVERY (in.)	FIELD TEST RESULTS	N_{60}	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI
2			**SILTY SAND (SM)**, with clay, fine grained, gray, very loose to loose *(continued)*	30			8	18	2-2-3 N=5 N_{60} 7	7	35.9	
					▽		9	18	2-3-5 N=8 N_{60} 11	11	39.7	
		35.0	58.5	35								
			Boring Terminated at 35 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic

Advancement Method: Hollow-Stem Auger	See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).	Notes: 92.5% Hammer efficiency	
Abandonment Method: Boring backfilled with cement-bentonite grout upon completion and surface capped with asphalt.	See Supporting Information for explanation of symbols and abbreviations.		
WATER LEVEL OBSERVATIONS	Elevations were measured in the field using a surveyor's level and grade rod.	Boring Started: 07-21-2021	Boring Completed: 07-21-2021
None observed during drilling	Terracon	Drill Rig: DR721	Driller: JM
▽ *33.5 feet after drilling*	11600 Lilburn Park Rd Saint Louis, MO	Project No.: 15215126	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG 15215126 ROUTE MM RETAINING.GPJ TERRACON_DATATEMPLATE.GDT 8/6/21

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	17

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A9083

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BORING DATA

Note: For locations of borings, see Sheet No. 1.

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

Detailed MAR 2023
Checked MAR 2023

SEC/SUR: 6 TWP: 43N RGE: 2E

U.I.P. EXISTING 3(9′ X 9′) REINFORCED CONCRETE BOX CULVERT AND EXTEND UPSTREAM AND DOWNSTREAM

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2010 AASHTO LRFD Bridge Design Specifications
and 2010 Interim Revisions

Culvert Condition Rating = 6

DESIGN LOADING:
Existing = H-10 AASHO 1944
New Construction = HL-93 minus lane load
Earth = 120 lb/cf
Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)
Design Fill Height = 3.1′

DESIGN UNIT STRESSES:
Class B-1 concrete (Box Culvert) f′c = 4.000 psi
Reinforcing Steel (Grade 60) fy = 60.000 psi

REINFORCING STEEL:
Minimum clearance to reinforcing steel shall be 1½″ unless otherwise shown.

TRAFFIC HANDLING:
Traffic to be maintained on existing structure during construction. See roadway plans for traffic control.

CHANNEL CLEANOUT:
Channel bottom shall be graded within the right of way for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings. (Roadway Item)

MISCELLANEOUS:
If any part of the barrel is exposed, the roadway fill shall be warped to provide 12 inches minimum cover. (Roadway Item)

Bottom of top slab, top of bottom slab, and inside face of walls shall be built flush with old structure.

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

Contractor shall verify all dimensions in field before ordering material.

Box culvert extension shall be cast-in-place. Precast units shall not be permitted.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

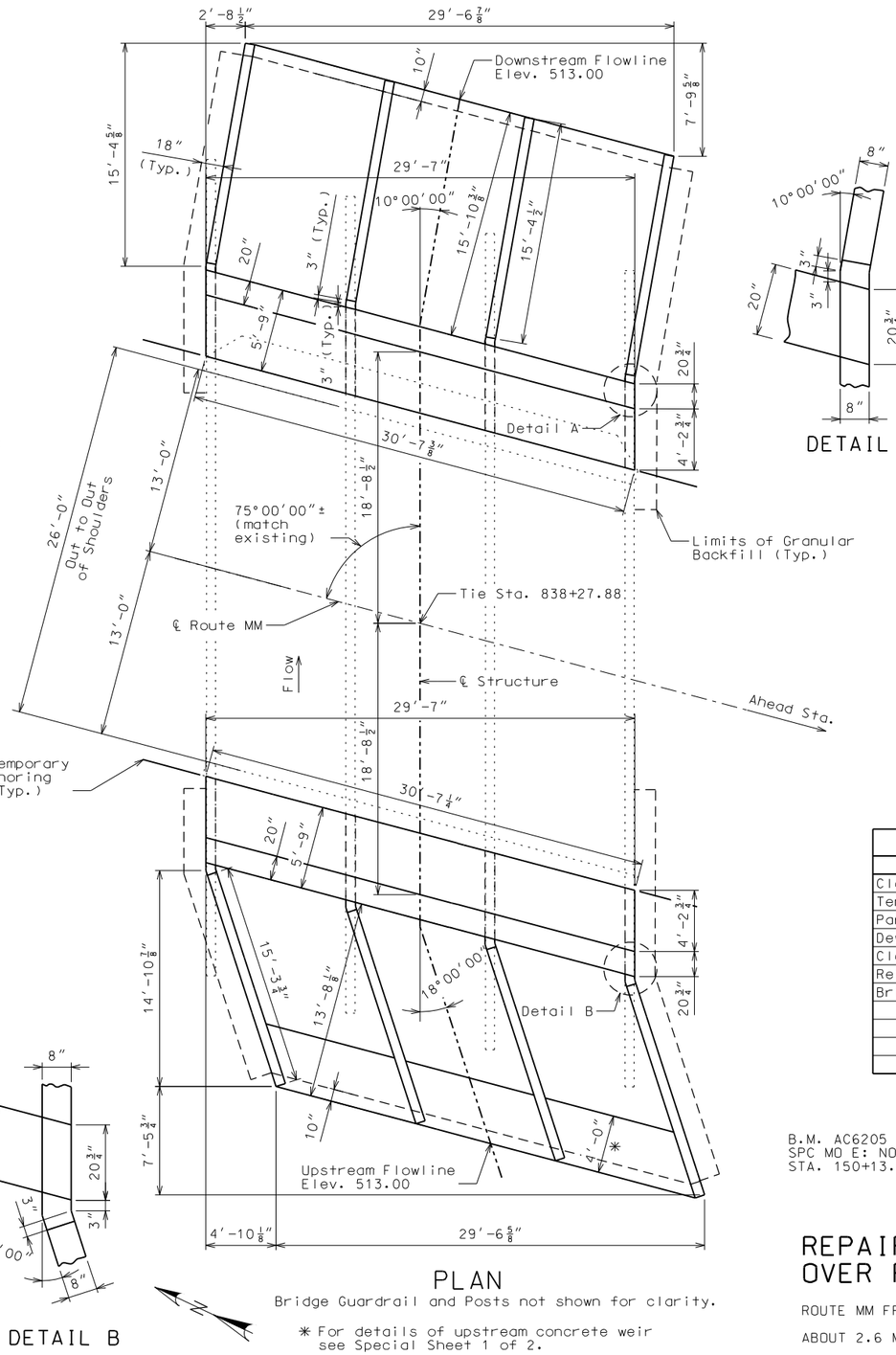
This structure is in an NFIP regulated floodplain and a Floodplain Development Permit is required.

Drawing not to scale. Follow dimensions.

All elevations are shown in feet unless otherwise noted.

If any part of the top slab is exposed, the roadway fill shall be warped to provide 12″ minimum cover (Roadway item).

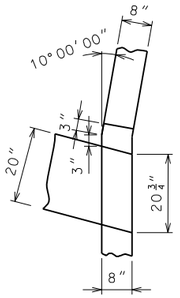
Box culvert extension shall be cast-in-place. Precast units will not be permitted.



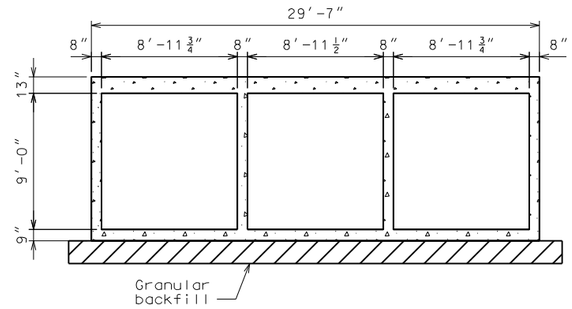
PLAN

Bridge Guardrail and Posts not shown for clarity.

* For details of upstream concrete weir see Special Sheet 1 of 2.



DETAIL A



SECTION THRU BOX

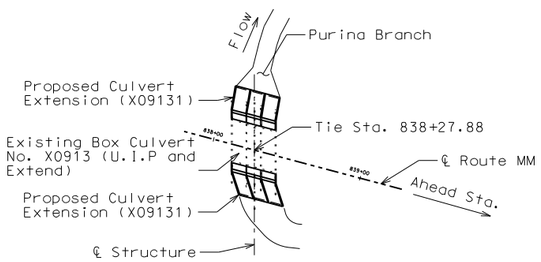
(Normal to ℄ Structure)

Keyed construction joint not shown for clarity.

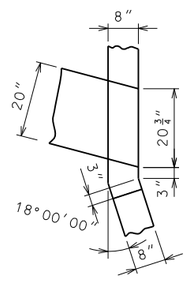
Hydrologic Data
Drainage Area = 1.5 mi²
Design Flood Frequency = 50 years
Design Flood Discharge = 1210 cfs
Design Flood (D.F.) Elevation = 524.43
Base Flood (100-year)
Base Flood Elevation = NA
Base Flood Discharge = 1300 cfs
Estimated Backwater = 11.22 ft
Average Velocity thru Opening = 7.35 ft/s
Roadway Overtopping
Overtopping Flood Discharge = 1711 cfs
Overtopping Flood Frequency = 100 years
Overtopping Flood Elevation = 526.19

Estimated Quantities

Item		Quantity
Class 4 Excavation	cu. yard	25
Temporary Shoring	lump sum	1
Partial Removal of Culvert-Bridge Concrete	lump sum	1
Dewatering	lump sum	1
Class B-1 Concrete (Culverts-Bridge)	cu. yard	85.2
Reinforcing Steel (Culverts-Bridge)	pound	15,800
Bridge Guardrail (Thrie Beam)	linear foot	63



LOCATION SKETCH



DETAIL B

B.M. AC6205 – SURVEY DISK SET IN TOP OF CONCRETE MONUMENT STAMPED FR-58 1994 SPC MO E: NORTHING = 295771.906 EASTING = 220580.474, ELEV. 532.00 (NAVD 88) STA. 150+13.54, 61.80′ LT OF RTE. MM ℄

REPAIRS TO CULVERT-BRIDGE: ROUTE MM OVER PURINA BRANCH

ROUTE MM FROM ROUTE T TO ROUTE 100

ABOUT 2.6 MILES SOUTH OF ROUTE T

TIE STATION 838+27.88± (MATCH EXISTING)

STD. 606.00	
STD. 606.70	

Designed KAS APR 2023
Detailed KAS APR 2023
Checked JGS MAY 2023

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

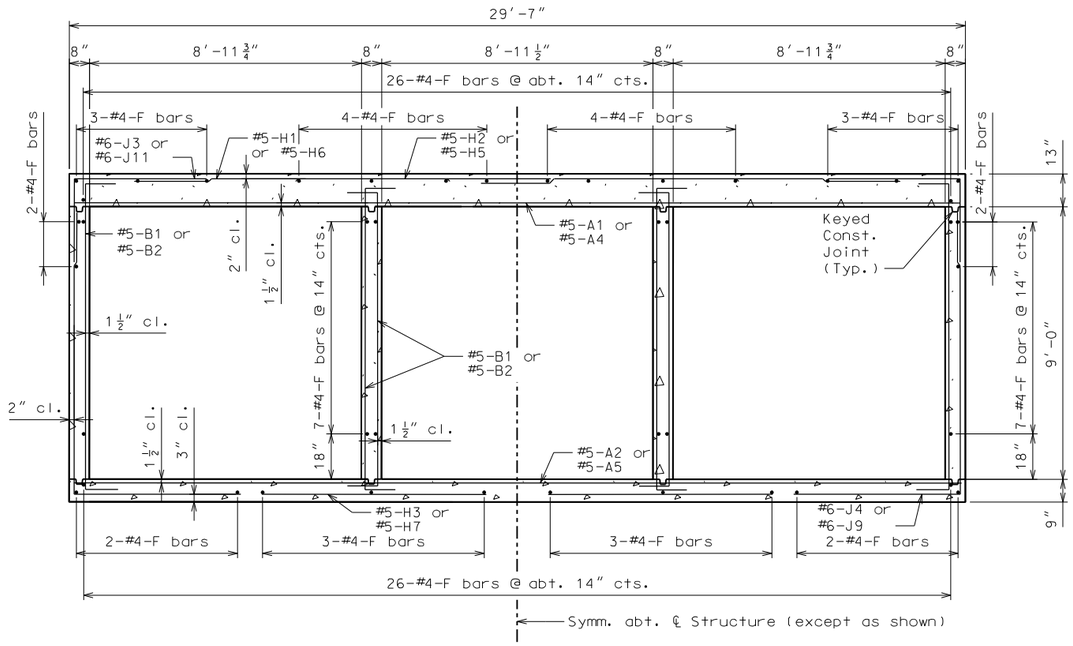
STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2005001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09131

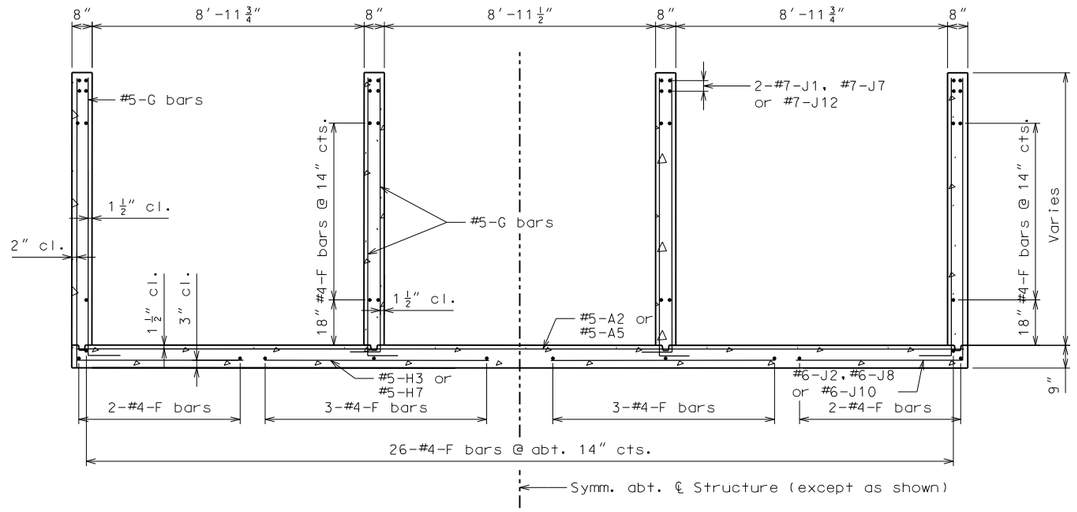
DESCRIPTION | DATE

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

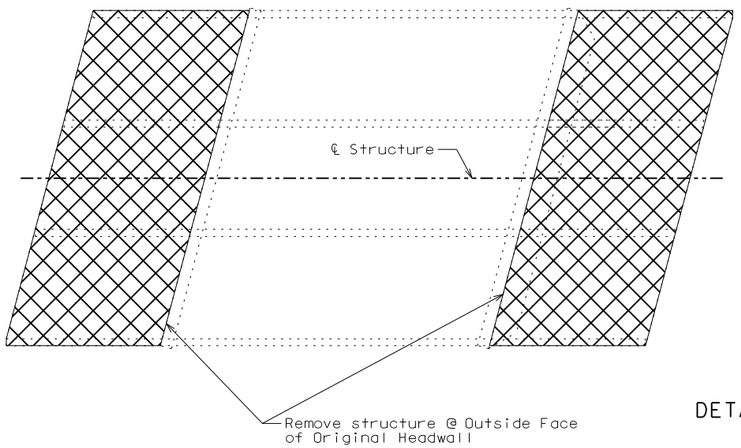
CDI
CIVIL DESIGN, INC.
WBE / DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

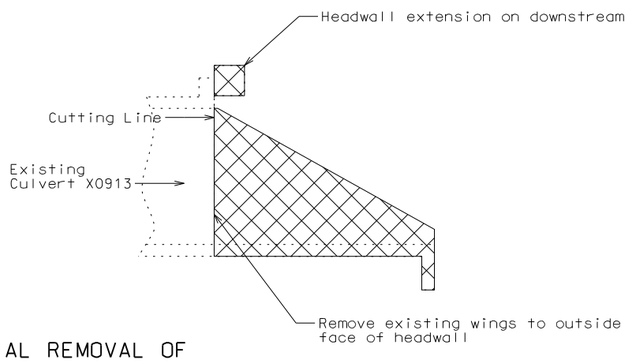


TYPICAL SECTION THRU NEW TOP SLAB, BOTTOM SLAB AND WALLS



TYPICAL SECTION THRU NEW BOTTOM SLAB AND WINGS



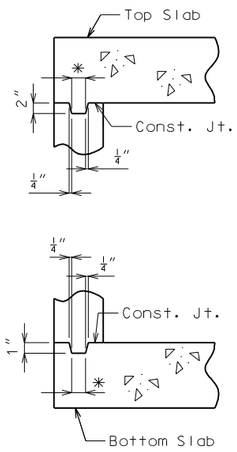


DETAILS OF PARTIAL REMOVAL OF CULVERT CONCRETE

Notes for concrete removal:

Hatching indicates those portions of the existing culvert which are to be removed.

The cost of removing existing wingwalls, bottom slab and toe walls will be considered completely covered by the contract lump sum price for Partial Removal of Culvert-Bridge Concrete.



KEYED CONSTRUCTION JOINTS

Exterior wall shown, interior wall similar

✳ Approximately one third of wall thickness

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2005001105
PROFESSIONAL ENGINEER
THIS SHEET WAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	2

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09131

DESCRIPTION	DATE

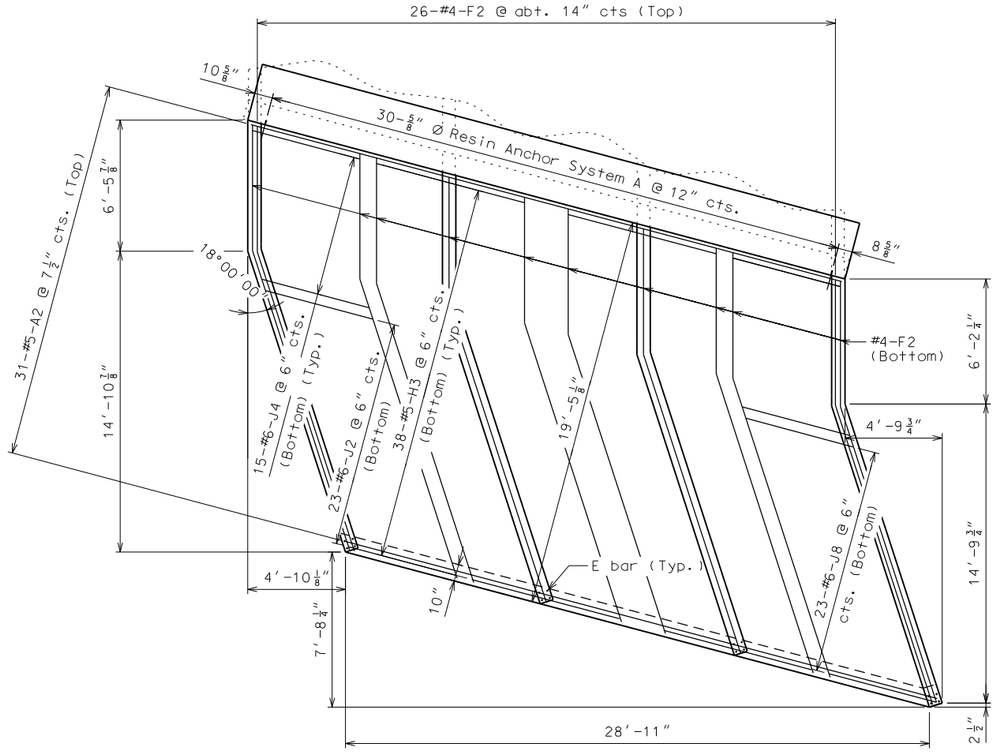
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed APR 2023
Checked MAY 2023

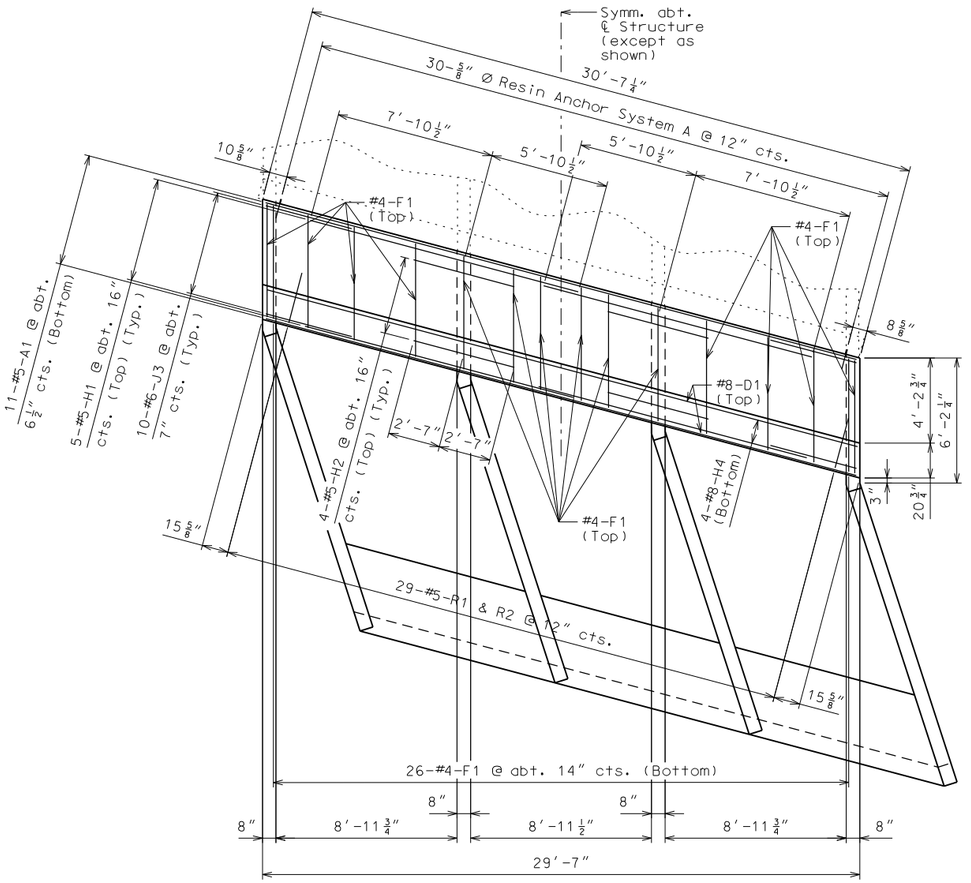
Note: This drawing is not to scale. Follow dimensions.

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09131\B_X09131_002_J6S3368_Sections_Removals.dgn 4:01:07 PM 1/9/2024



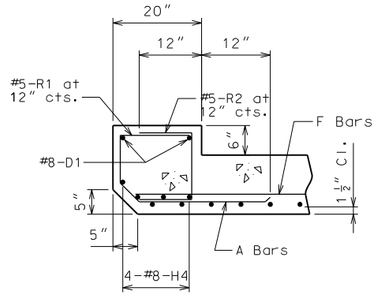
PLAN OF BOTTOM SLAB

Keyed construction joint omitted for clarity.



PLAN OF TOP SLAB

Keyed construction joint omitted for clarity.



SECTION THRU
UPSTREAM HEADWALL

Notes:

For details of Keyed Construction Joints, see Sheet No. 2.

For details of Resin Anchor Systems and elevations of wingwalls, see Sheet No. 4.

DETAILS OF UPSTREAM EXTENSION

Detailed APR 2023
Checked MAY 2023

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

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09131\B_X09131_003_J6S3368_Upstream_Extension.dgn 4:01:08 PM 1/9/2024

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN DIGITALLY SIGNED AND SHALL NOT BE MODIFIED

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	3

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09131

DESCRIPTION

DATE

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

CDI
CIVIL DESIGN, INC.
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5220 Oakland Avenue
St. Louis, MO 63110
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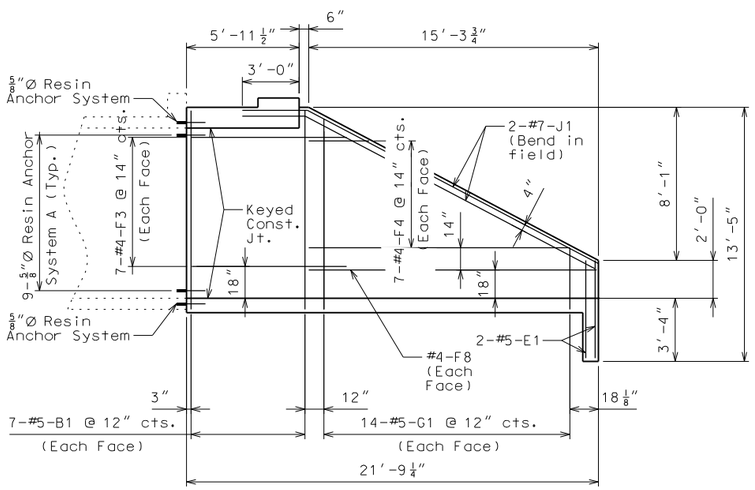
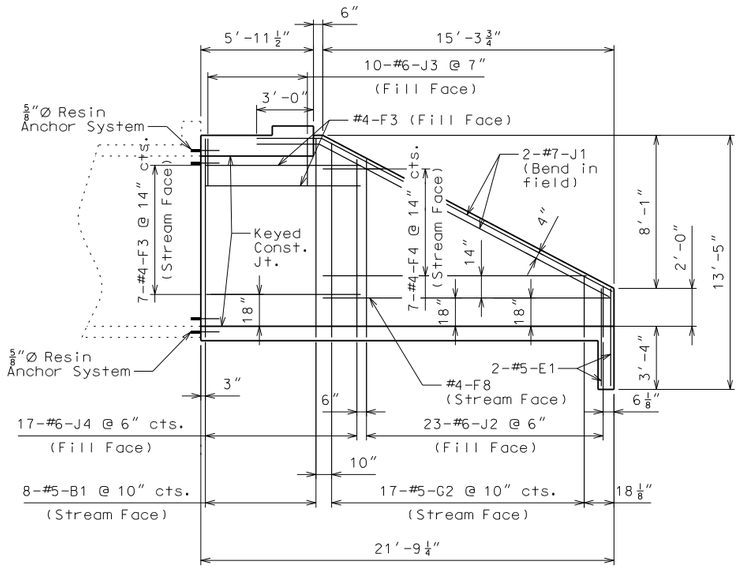
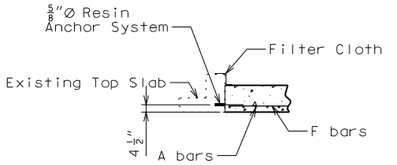
Missouri State Certificate of Authority #2002006804



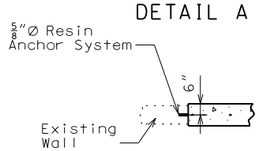
PART DEVELOPED ELEVATION OF UPSTREAM
INTERIOR WING WALL SOUTH CELL
Horizontal dimensions measured along south face of wing.



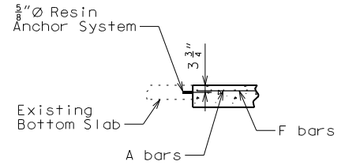
PART DEVELOPED ELEVATION OF UPSTREAM
EXTERIOR WING WALL SOUTH CELL
Horizontal dimensions measured along south face of wing.



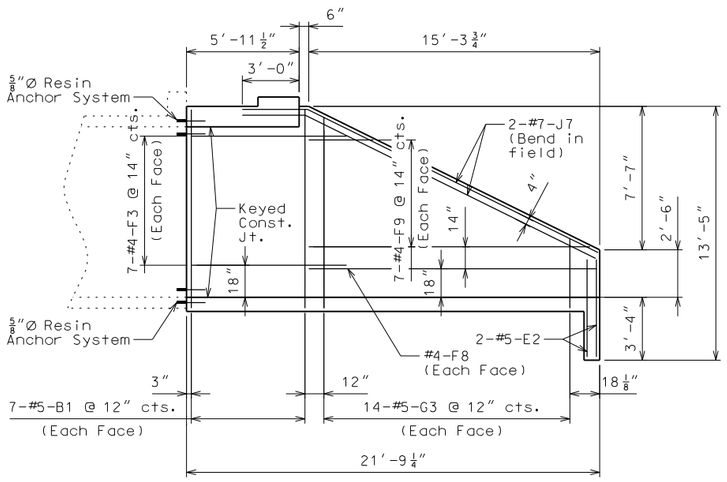
DETAIL A



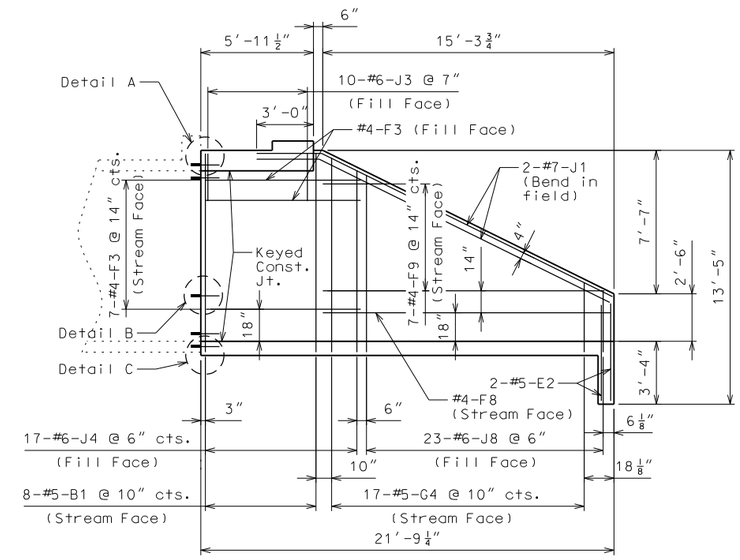
DETAIL B
(Shown in plan)



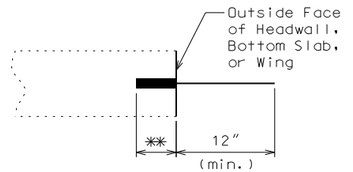
DETAIL C



PART DEVELOPED ELEVATION OF UPSTREAM
INTERIOR WING WALL NORTH CELL
Horizontal dimensions measured along south face of wing.



PART DEVELOPED ELEVATION OF UPSTREAM
EXTERIOR WING WALL NORTH CELL
Horizontal dimensions measured along south face of wing.



System A
(96 req'd for upstream side)

DETAILS OF RESIN ANCHOR SYSTEM

** Manufacturer's recommended embedment length (5″ min.)

Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems will be considered completely covered by the contract unit price for Class B-1 Concrete (Culverts-Bridge).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5″.

A #5 Grade 60 reinforcing bar shall be substituted for the ⅝″ Ø threaded rod.

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS densitometer SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 4
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09131

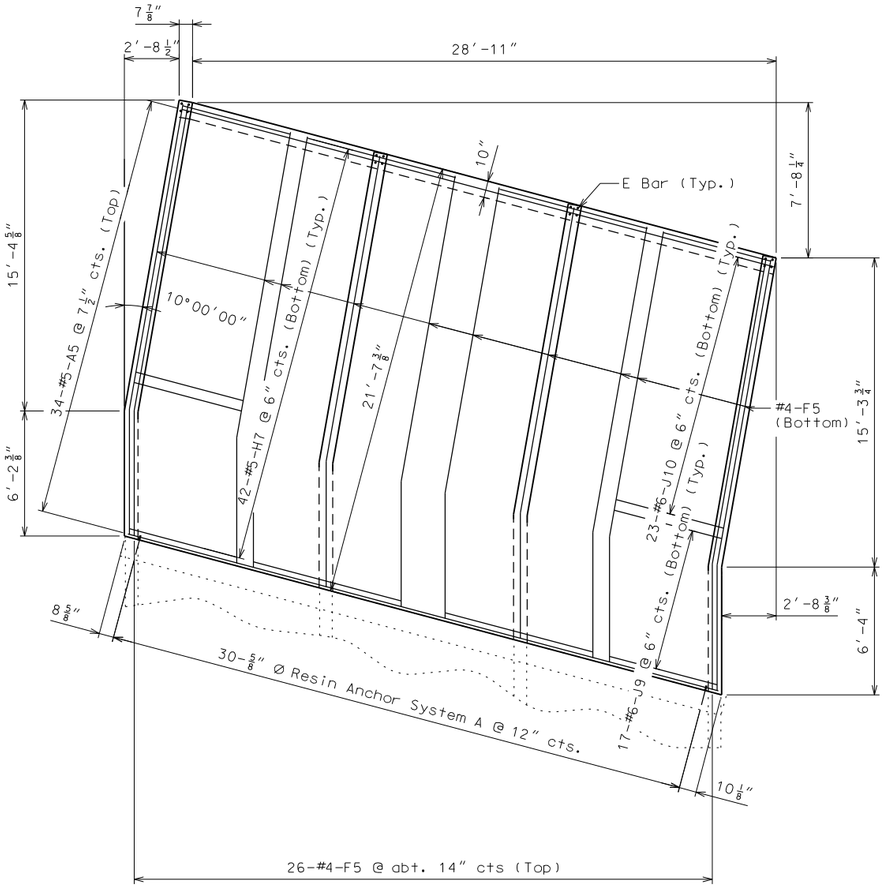
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
CDI CIVIL DESIGN, INC. WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed APR 2023
Checked MAY 2023

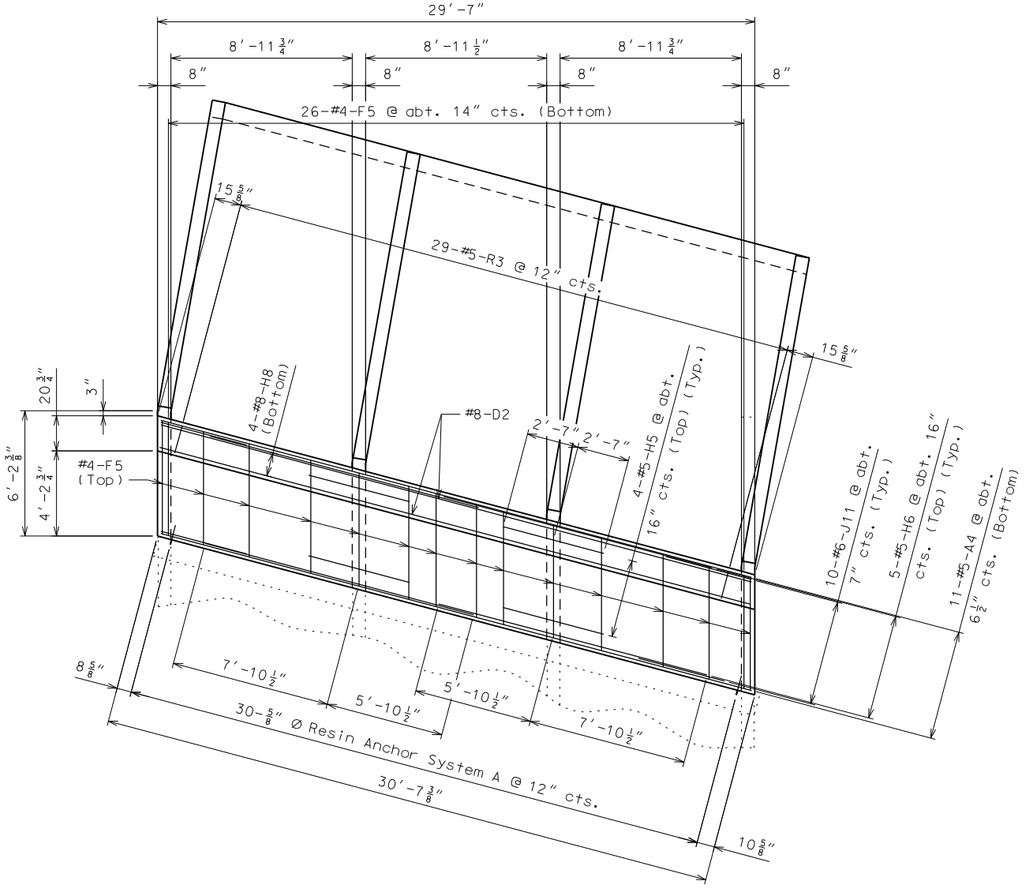
Note: This drawing is not to scale. Follow dimensions.

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09131\B_X09131_004_J6S3368_Upstream_Wings.dgn 4:01:09 PM 1/9/2024



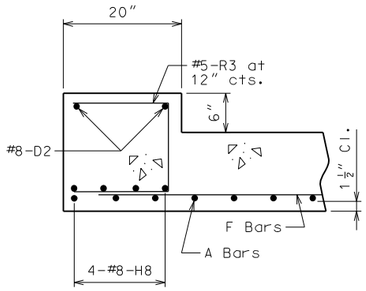
PLAN OF BOTTOM SLAB

Keyed construction joint omitted for clarity.
✳ Splay bars at the specified spacing.



PLAN OF TOP SLAB

Keyed construction joint omitted for clarity.



SECTION THRU DOWNSTREAM HEADWALL

Notes:

For details of Keyed Constructin Joints, see Sheet No. 2.

For details of Resin Anchor Systems and elevations of wingwalls, see Sheet No. 6.

DETAILS OF DOWNSTREAM EXTENSION

Detailed APR 2023
Checked MAY 2023

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

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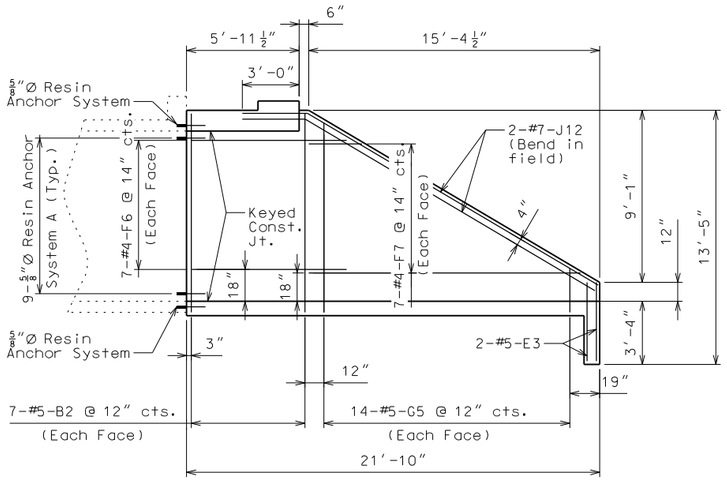
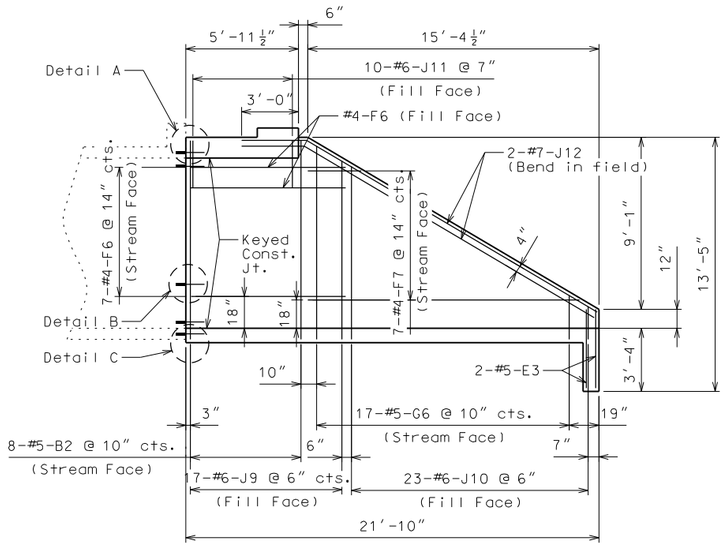
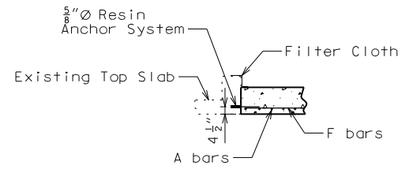
STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, DATED AND AUTHENTICATED
DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 5
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09131
DESCRIPTION
DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804



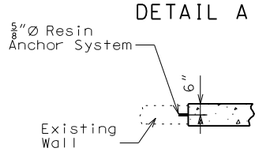
PART DEVELOPED ELEVATION OF DOWNSTREAM
INTERIOR WING WALL
Horizontal dimensions measured along north side of wing.



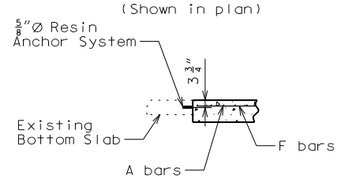
PART DEVELOPED ELEVATION OF DOWNSTREAM
EXTERIOR WING WALL
Horizontal dimensions measured along north side of wing.



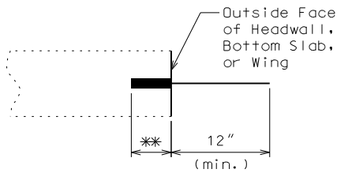
DETAIL A



DETAIL B
(Shown in plan)



DETAIL C



System A
(96 req'd for downstream side)

DETAILS OF RESIN ANCHOR SYSTEM

** Manufacturer's recommended embedment length (5″ min.)

Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems will be considered completely covered by the contract unit price for Class B-1 Concrete (Culverts-Bridge).

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5″.

A #5 Grade 60 reinforcing bar shall be substituted for the ⅝″ Ø threaded rod.

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED AND DATED ELECTRONICALLY

DATE PREPARED
1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
FRANKLIN

JOB NO.
J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
X09131

DATE	DESCRIPTION

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

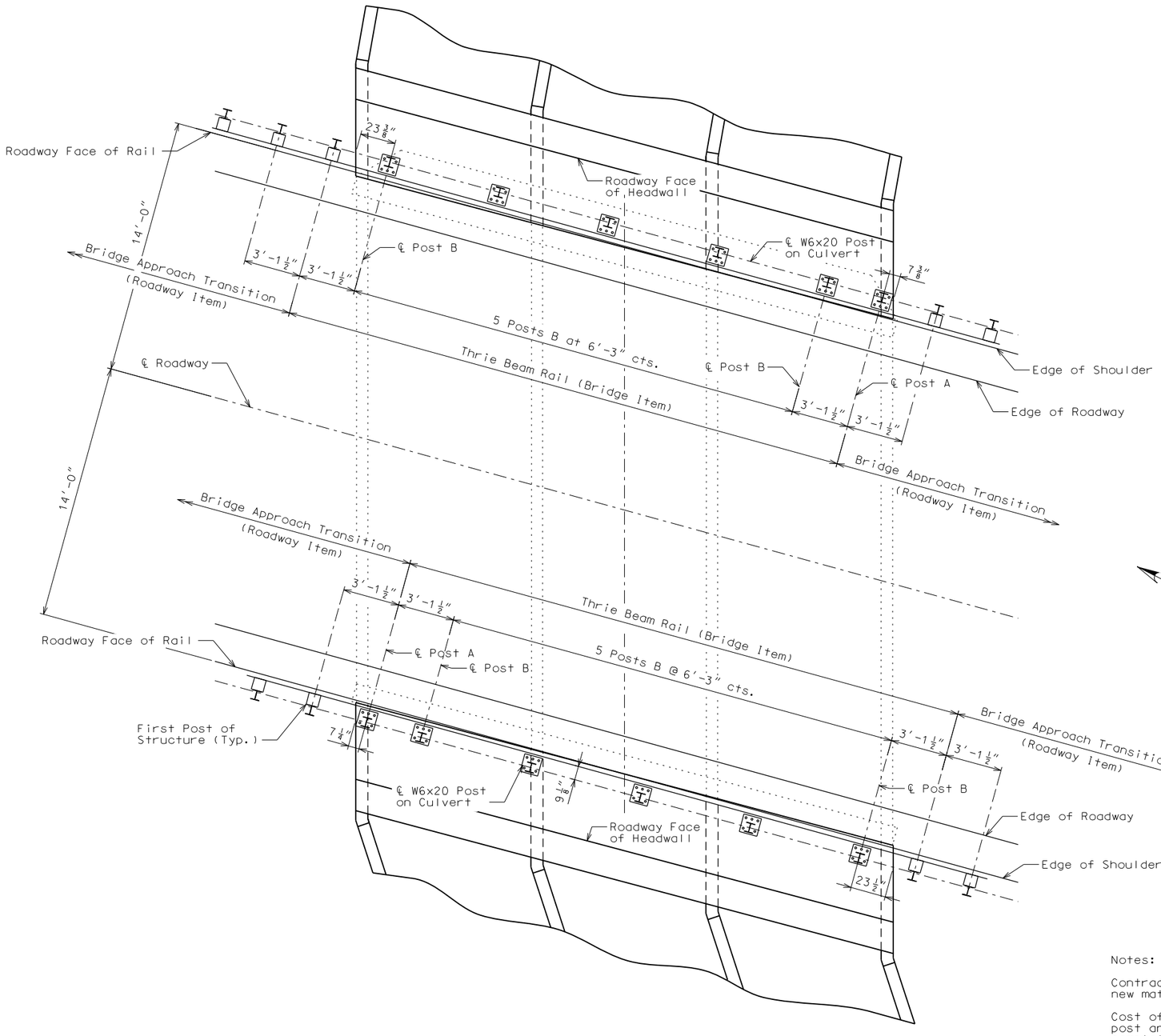
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed APR 2023
Checked MAY 2023

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

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09131\B_X09131_006_J6S3368_Downstream_Wings.dgn 4:01:10 PM 1/9/2024

SEC/SUR: 6 TWP: 43N RGE: 2E



PART PLAN OF BOX CULVERT EXTENSION SHOWING POST LOCATIONS

(C8x11.5 Cap Rail not shown for clarity.)

Notes:

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

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

See Sheets No. 8 and 9 for details of Post A & B, thrie beam, and splice.

Designed KAS APR 2023
Detailed KAS APR 2023
Checked JGS MAY 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	7

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09131

DATE	DESCRIPTION

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

CDI
CIVIL DESIGN, INC.
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5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
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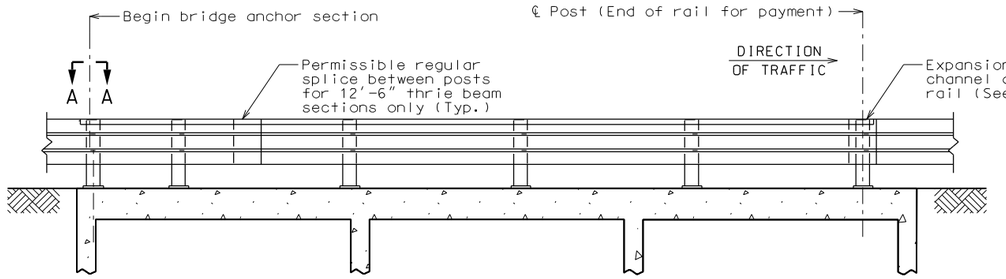
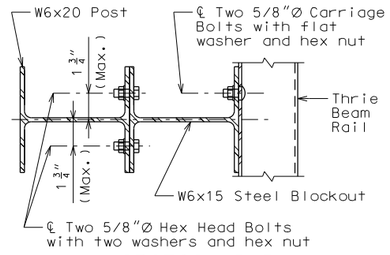
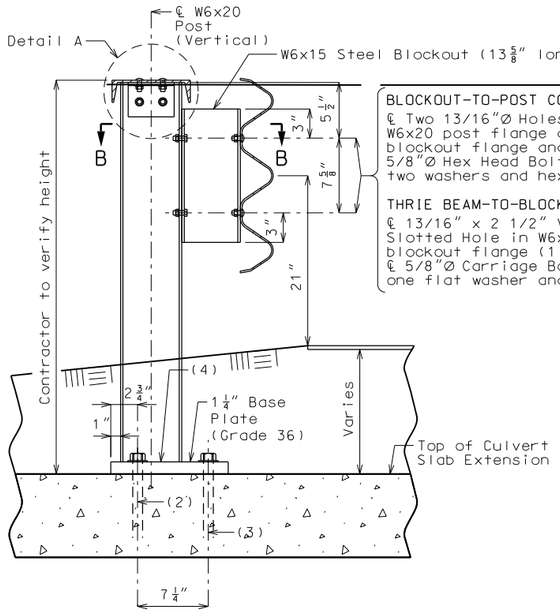


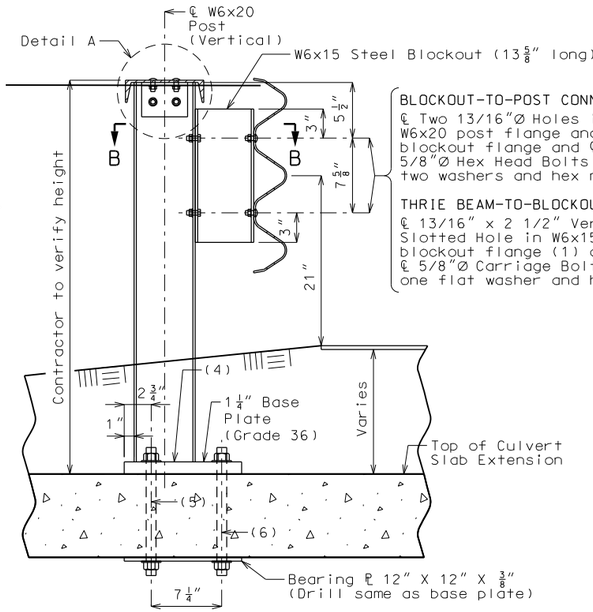
ELEVATION OF THRIE BEAM RAIL



SECTION B-B



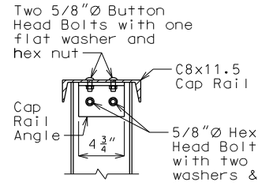
PART SECTION AT RAIL POST A



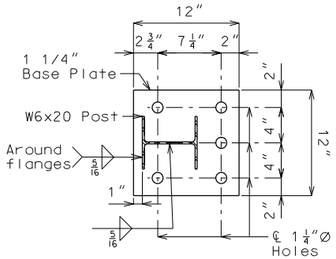
PART SECTION AT RAIL POST B

BLOCKOUT-TO-POST CONN.
℄ Two 13/16"Ø Holes in W6x20 post flange and W6x15 blockout flange and ℄ Two 5/8"Ø Hex Head Bolts with two washers and hex nut

THRIE BEAM-TO-BLOCKOUT CONN.
℄ 13/16" x 2 1/2" Vertical Slotted Hole in W6x15 blockout flange (1) and ℄ 5/8"Ø Carriage Bolt with one flat washer and hex nut



DETAIL A



BASE PLATE

See Sheet No. 7 for rail post spacing.

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

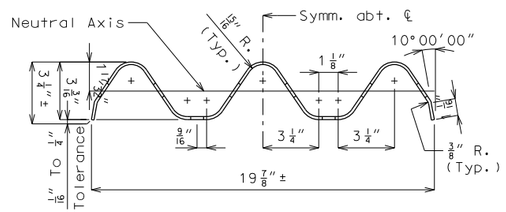
(2) ℄ Two Resin Anchor Systems each to include:
- 1 1/8" Ø (Min.) Drilled Hole in slab or as recommended by manufacturer
- 1 1/4" Ø Hole in plate
- 1" Ø A449 high Strength Threaded Rod snug tight and embedded 8 inches in slab
- Hex Nut and 2 1/2" Hardened Locking Washer

(3) ℄ 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 plate
- 1" Ø A449 High Strength Threaded Rod snug tight and embedded 8 inches in slab
- Hex Nut and 2 1/2" Hardened Locking Washer

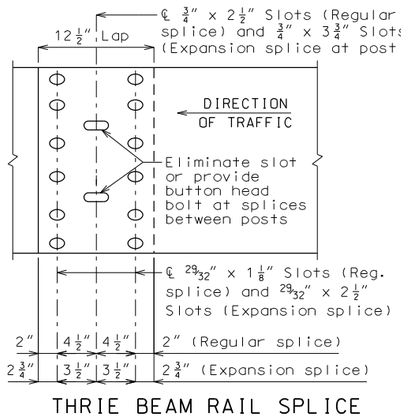
(4) Bevel bottom of post (slope 2% or slab elevation).

(5) ℄ Two High Strength Bolts each to include:
- 1 1/8" Ø (Min.) Drilled Hole in slab
- 1 1/4" Ø Hole in plate and bearing plate
- 1" Ø A325 High Strength Bolts with Hex Nut and 2 1/2" Hardened Locking Washer

(6) ℄ Three High Strength Bolts each to include:
- 1 1/8" Ø (Min.) Drilled Hole in slab
- 1 1/4" Ø Hole in plate and bearing plate
- 1" Ø A325 High Strength Bolts with Hex Nut and 2 1/2" Hardened Locking Washer



SECTION THRU THRIE BEAM RAIL



THRIE BEAM RAIL SPLICE

General Notes:

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

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, reinforcement and elastomeric material will be considered completely covered by the contract unit price for Bridge Guardrail (Thrie Beam).

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 be 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.

At the thrie beam connection to blockout on wings, 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 shall be made at either the first or second post on either side of the joint and on structure at bridge ends. When the splice is made at the second post, an expansion slot shall be provided in the thrie beam rail for connection to the first post to allow for movement.

In addition to the expansion provisions at the expansion joints, expansion splices in the thrie beam rail and the channel shall be provided at other locations so that the maximum length without expansion provisions does not exceed 200 feet.

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 606.00 for details not shown.

KIMBERLY ANNE STREICHER
NUMBER PE-2005001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ORIGINALLY ISSUED AND DATED ELECTRONICALLY.

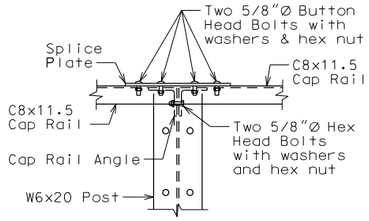
DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 8
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09131

DESCRIPTION	DATE

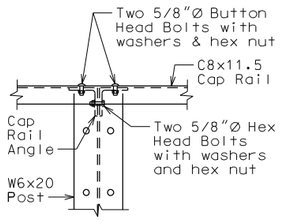
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
CDI CIVIL DESIGN, INC. MBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed APR 2023
Checked MAY 2023

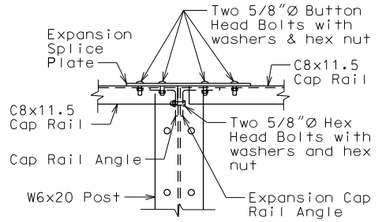
Note: This drawing is not to scale. Follow dimensions.



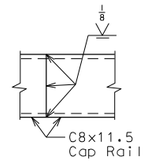
ELEVATION OF TYPICAL SPLICE



ELEVATION OF RAIL POST CONNECTION

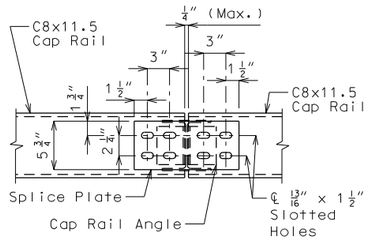


ELEVATION OF EXPANSION SPLICE



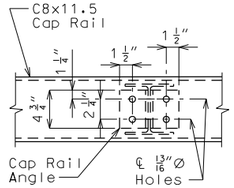
OPTIONAL SPLICE

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

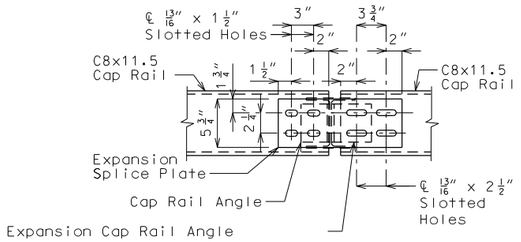


PLAN OF TYPICAL SPLICE

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

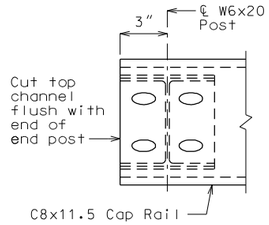


PLAN OF RAIL POST CONNECTION



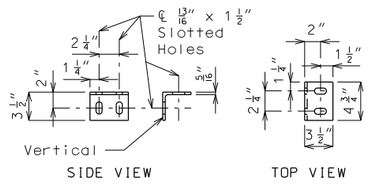
PLAN OF EXPANSION SPLICE

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



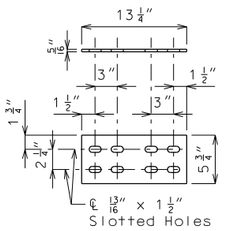
PLAN A-A

For location of Plan A-A, see Sheet No. __.

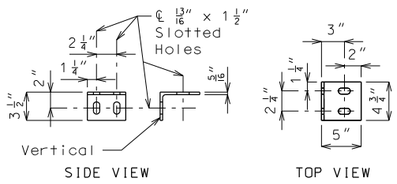


CAP RAIL ANGLE

L3 1/2x3 1/2x5/16

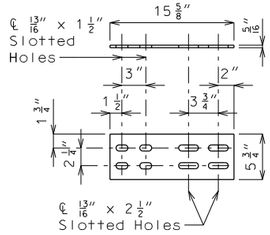


SPLICE PLATE



EXPANSION CAP RAIL ANGLE

L5x3 1/2x5/16



EXPANSION SPLICE PLATE

Detailed APR 2023
Checked MAY 2023

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

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS ORIGINALLY SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	9

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09131

DESCRIPTION | DATE

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

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			UPSTREAM																
			EXTENSION																
			TOP SLAB																
11	5	A1	TOP SLAB		20					30 3.000							30 3	30 3	347
40	4	F1	TOP SLAB		20					5 7.250							5 7	5 7	150
10	5	H1	TOP SLAB		20					13 9.000							13 9	13 9	144
8	5	H2	TOP SLAB		20					5 2.000							5 2	5 2	43
			HEADWALL																
2	8	D1	HEADWALL		20					30 3.000							30 3	30 3	162
29	5	R1	HEADWALL		27	S				17.000	11.750	6.000	2 2.500		4.250	4.250	5 1	4 11	149
29	5	R2	HEADWALL		10	S					10.500	20.000					3 1	2 11	88
4	8	H4	HEADWALL		20					30 3.000							30 3	30 3	323
			BOTTOM SLAB																
31	5	A2	BOTTOM SLAB		20					30 3.000							30 3	30 3	979
36	4	F2	BOTTOM SLAB		14						6 2.625	15 6.875			4 9.750	14 9.750	21 10	21 9	523
76	5	H3	BOTTOM SLAB		20					7 5.000							7 5	7 5	588
			WALLS																
44	5	B1	WALLS		10	S					12.000	10 6.000					12 6	12 4	566
8	5	E1	WALLS		20					3 11.000							3 11	3 11	33
8	5	E2	WALLS		20					4 5.000							4 5	4 5	37
46	4	F3	WALLS		14	S					6 1.250	2 3.250			8.375	2 2.000	8 5	8 4	256
21	4	F4	WALLS		20			V	3	3 2.375							3 2	3 2	180
			INCR=21.5"							13 11.25							13 11	13 11	
6	4	F8	WALLS		20					15 2.500							15 3	15 3	61
21	4	F9	WALLS		20			V	3	3 5.000							3 5	3 5	128
			INCR=23"							14 11.000							14 11	14 11	
28	5	G1	WALLS		19	S		V	2	3 3.000	12.000						4 3	4 2	224
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28	5	G3	WALLS		19	S		V	2	3 8.625	12.000						4 9	4 8	229
			INCR=5.25"							10 1.250	12.000						11 1	11 0	
17	5	G4	WALLS		19	S		V	1	3 8.625	12.000						4 9	4 7	142
			INCR=5.25"							10 3.750	12.000						11 4	11 2	
8	7	J1	WALLS		20					20 9.000							20 9	20 9	339
23	6	J2	WALLS		19			V	1	2 8.625	5 6.000						8 3	8 1	398
			INCR=3.625"							9 4.000	5 6.000						14 10	14 8	
20	6	J3	WALLS		19					2 9.000	4 4.500						7 2	7 0	210
34	6	J4	WALLS		19					9 5.000	5 6.000						14 11	14 11	761
8	7	J7	WALLS		20					20 7.000							20 7	20 7	337
23	6	J8	WALLS		19			V	1	3 2.375	5 6.000						8 8	8 6	400
			INCR=3.375"							9 4.375	5 6.000						14 10	14 8	

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT. IN.	C FT. IN.	D FT. IN.	E FT. IN.	F FT. IN.	H FT. IN.	K FT. IN.	NOMINAL LENGTH FT. IN.	ACTUAL LENGTH FT. IN.	WEIGHT LBS.
			DOWNSTREAM																
			EXTENSION																
			TOP SLAB																
11	6	A4	TOP SLAB		20					0 3.000							30 3	30 3	500
40	4	F5	TOP SLAB		20					5 7.250							5 7	5 7	149
8	5	H5	TOP SLAB		20					5 2.000							5 2	5 2	43
10	5	H6	TOP SLAB		20					13 9.000							13 9	13 9	144
			HEADWALL																
2	8	D2	HEADWALL		20					30 3.000							30 3	30 3	162
29	5	R3	HEADWALL		10	S					17.000	16.000					4 1	4 0	121
4	8	H8	HEADWALL		20					30 3.000							30 3	30 3	323
			BOTTOM SLAB																
34	5	A5	BOTTOM SLAB		20					30 3.000							30 3	30 3	1073
36	4	F5	BOTTOM SLAB		14						6 2.625	15 4.250			2 8.500	15 4.625	21 7	21 6	517
84	5	H7	BOTTOM SLAB		20					7 5.000							7 5	7 5	650
			WALLS																
44	5	B2	WALLS		10						12.000	10 6.000					12 6	12 4	566
16	5	E2	WALLS		20					3 11.000							3 11	3 11	65
46	4	F6	WALLS		14						6 1.250	2 3.250			4.750	2 2.875	8 5	8 4	256
42	4	F7	WALLS		20	S		V	6	2 9.875							2 10	2 10	241
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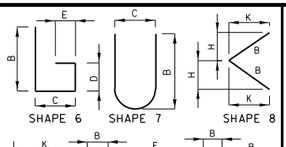
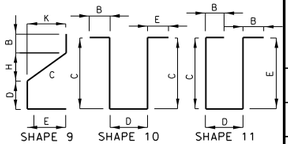
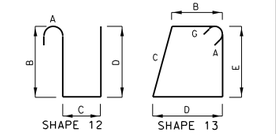
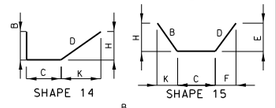
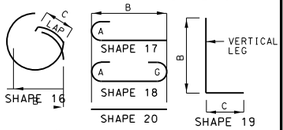
56	5	G5	WALLS		19	S		V	4	2 4.000	12.000						3 4	3 3	400
			INCR=6.5"							9 4.500	12.000						10 5	10 4	
34	5	G6	WALLS		19	S		V	2	2 4.000	12.000						3 4	3 3	254
			INCR=6.0"							10 2.625	12.000						11 3	11 2	
34	6	J9	WALLS		19					9 5.000	5 6.000						14 11	14 9	753
46	6	J10	WALLS		19			V	2	21.000	5 6.000						7 3	7 1	745
			INCR=4.0"							9 1.750	5 6.000						14 8	14 6	
20	6	J11	WALLS		19					2 9.000	4 4.500						7 2	7 0	210
16	7	J12	WALLS		20					21 3.000							21 3	21 3	695
			TOTALS																
	4																		2461
	5																		7021
	6																		3977
	7																		1371
	8																		970
			TOTAL																15800
			TOTAL	E															0

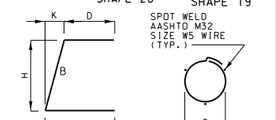


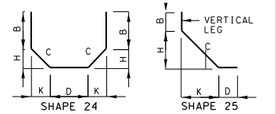


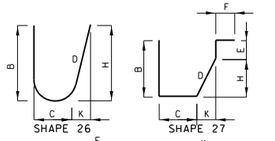


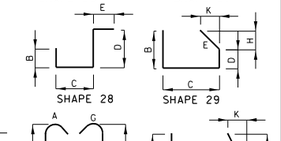


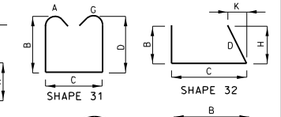


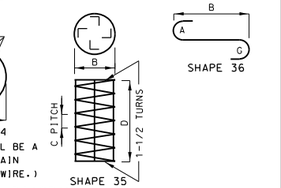




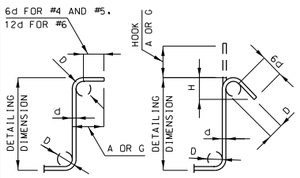






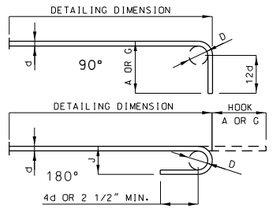


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK 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				
		ALL GRADES		
BAR SIZE	D (IN.)	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#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"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

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.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
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.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.

Detailed MAR 2023
Checked MAR 2023

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

KIMBERLY ANNE STREICHER
STATE OF MISSOURI
NUMBER PE-2009001105
PROFESSIONAL ENGINEER
THE SHEET HAS BEEN SIGNED SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	10

COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09131

DESCRIPTION | DATE

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

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

SEC/SUR: 36 TWP: 44N RGE: 1E

U.I.P. EXISTING 2(12′ X 15′) REINFORCED CONCRETE BOX CULVERT AND EXTEND UPSTREAM AND DOWNSTREAM

GENERAL NOTES:

DESIGN SPECIFICATIONS:
2010 AASHTO LRFD Bridge Design Specifications
and 2010 Interim Revisions

Culvert Condition Rating = 5

DESIGN LOADING:
Existing = H-10 AASHO 1944
New Construction = HL-93 minus lane load
Earth = 120 lb/cf
Equivalent Fluid Pressure = 30 lb/cf (min.), 60 lb/cf (max.)
Design Fill Height = 2.9′

DESIGN UNIT STRESSES:
Class B-1 concrete (Box Culvert) f′c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

REINFORCING STEEL:
Minimum clearance to reinforcing steel shall be 1½″ unless otherwise shown.

TRAFFIC HANDLING:
Traffic to be maintained on existing structure during construction. See roadway plans for traffic control.

CHANNEL CLEANOUT:
Channel bottom shall be graded within easement for transition of channel bed to culvert openings. Channel banks shall be tapered to match culvert openings. (Roadway Item)

MISCELLANEOUS:
Bottom of top slab, top of bottom slab, and inside face of walls shall be built flush with old structure.

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

Contractor shall verify all dimensions in field before ordering material.

Box culvert extension shall be cast-in-place. Precast units shall not be permitted.

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

If unsuitable material is encountered, excavation of unsuitable material and furnishing and placing of granular backfill shall be in accordance with Sec 206.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved bituminous paint.

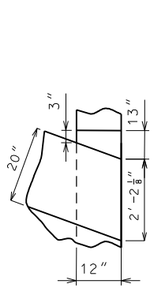
This structure is in an NFIP regulated floodplain and a Floodplain Development Permit is required.

Drawing not to scale. Follow dimensions.

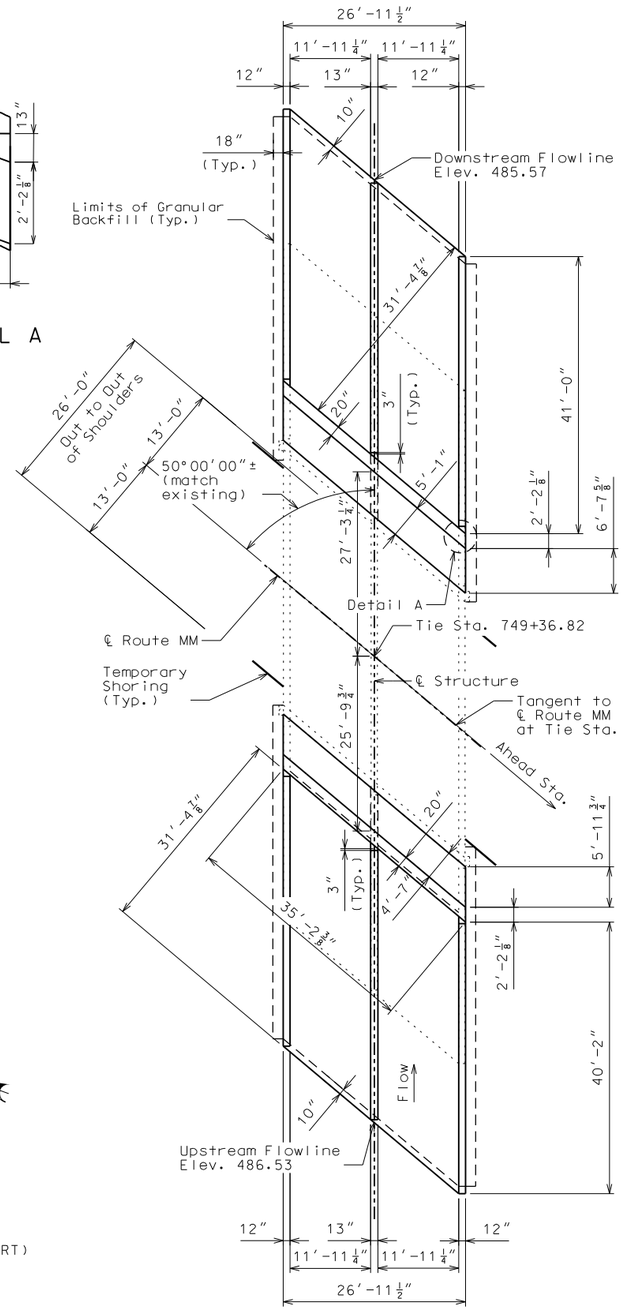
All elevations are shown in feet unless otherwise noted.

If any part of the barrel is exposed, the roadway fill shall be warped to provide 12″ minimum cover (Roadway item).

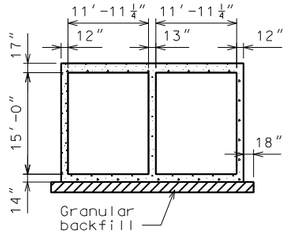
Box culvert extension shall be cast-in-place.
Precast units will not be permitted.



DETAIL A



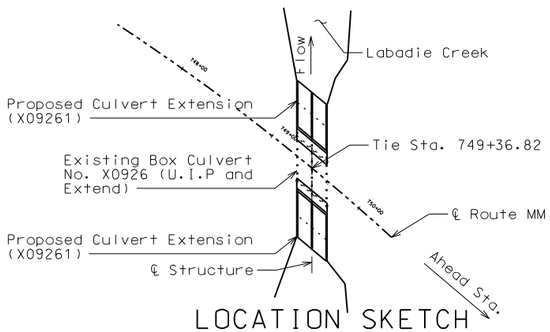
PLAN



SECTION THRU BOX
(Normal to ℄ Structure)

Keyed construction joint not shown for clarity.

Hydrologic Data
Drainage Area = 4.6 mi²
Design Flood Frequency = 50 years
Design Flood Discharge = 2460 cfs
Design Flood (D.F.) Elevation = 498.57
Base Flood (100-year)
Base Flood Elevation = 500.00
Base Flood Discharge = 3150 cfs
Estimated Backwater = 7.90 ft
Average Velocity thru Opening = 5.80 ft/s
Roadway Overtopping
Overtopping Flood Discharge = 4689 cfs
Overtopping Flood Frequency = 500 years
Overtopping Flood Elevation = 504.60



LOCATION SKETCH

CURVE DATA
℄ ROUTE MM

PI = 748+67.60
PC = 747+16.76
PT = 750+17.81
Δ = 9°04′42.2″ (RT)
D = 3°00′56.0″
L = 301.05′
T = 150.84′
R = 1,900.00′

Estimated Quantities		
Item		Quantity
Class 4 Excavation	cu. yard	74
Temporary Shoring	lump sum	1
Partial Removal of Culvert-Bridge Concrete	lump sum	1
Dewatering	lump sum	1
Penetrating Concrete Sealer	sq. yard	454
Class B-1 Concrete (Culverts-Bridge)	cu. yard	262.3
Substructure Repair (Unformed)	sq. ft.	18
Epoxy Pressure Injecting	linear foot	150
Reinforcing Steel (Culverts-Bridge)	pound	42,850

B.M. AC6205 - SURVEY DISK SET IN TOP OF CONCRETE MONUMENT STAMPED FR-58 1994
SPC MO E: NORTHING = 295771.906 EASTING = 220580.474, ELEV. 532.00 (NAVD 88)
STA. 150+13.54, 61.80′ LT OF RTE. MM ℄

REPAIRS TO CULVERT-BRIDGE: ROUTE MM OVER LABADIE CREEK

ROUTE MM FROM ROUTE T TO ROUTE 100

ABOUT 0.93 MILES SOUTH OF ROUTE T

TIE STATION 749+36.82± (MATCH EXISTING)

Designed KAS APR 2023
Detailed KAS APR 2023
Checked JGS MAY 2023

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

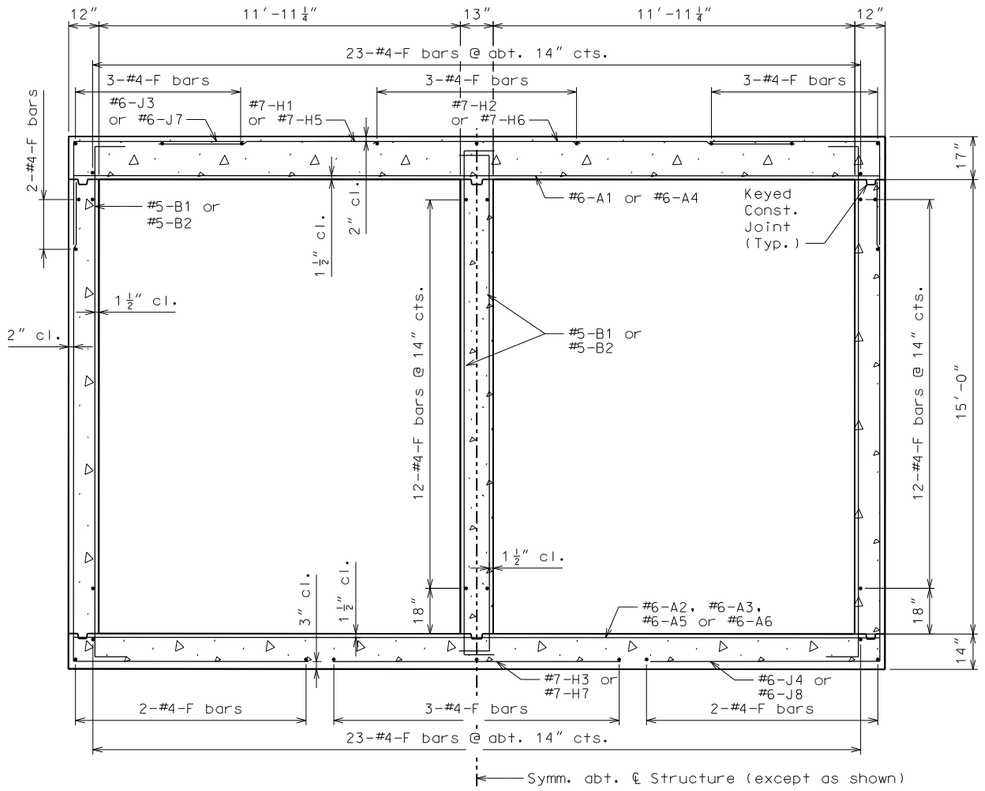
STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09261

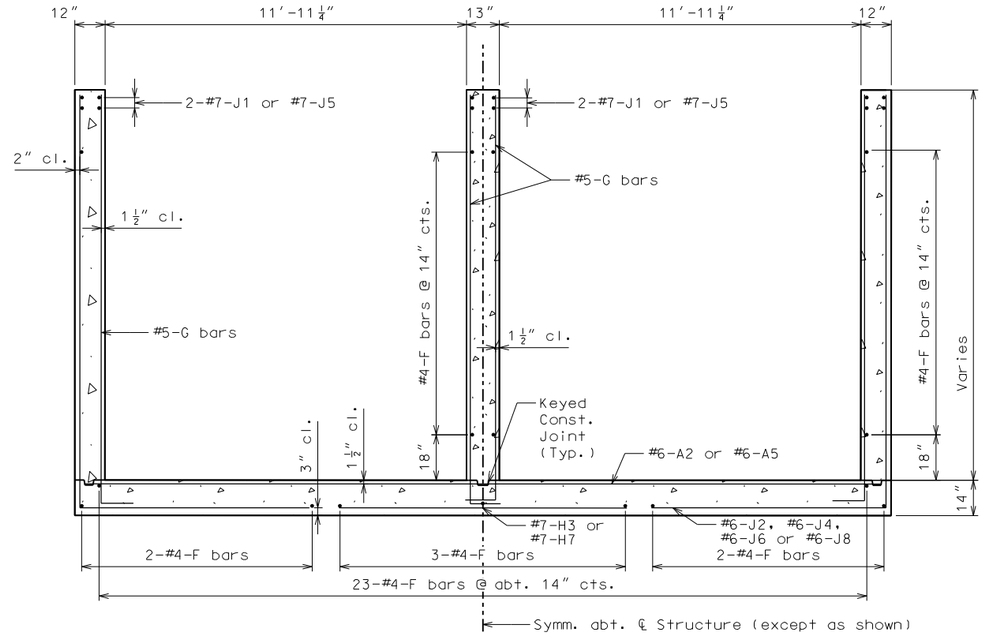
DESCRIPTION | DATE

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

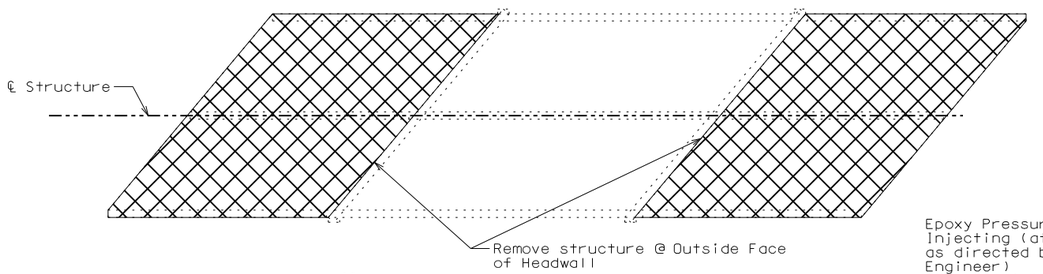
CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804



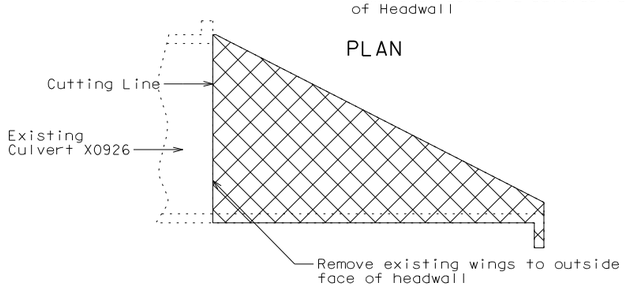
TYPICAL SECTION THRU NEW TOP SLAB, BOTTOM SLAB AND WALLS



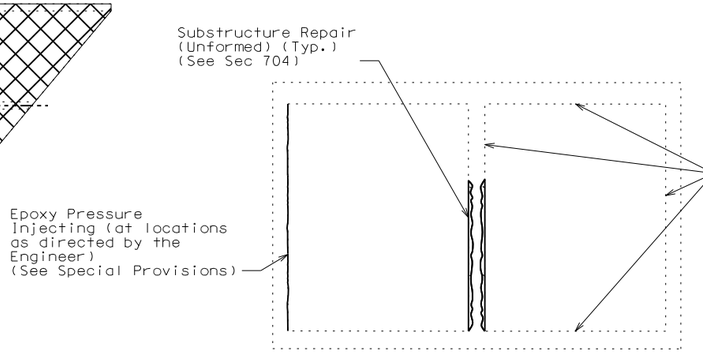
TYPICAL SECTION THRU NEW BOTTOM SLAB AND WINGS



PLAN



ELEVATION

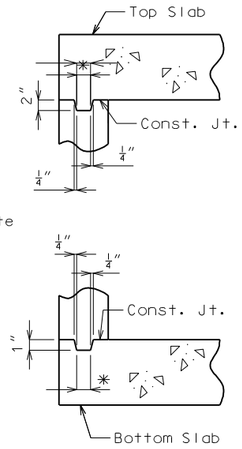


TYPICAL SECTION SHOWING UNFORMED REPAIR

Notes for concrete removal:

Hatching indicates those portions of the existing culvert which are to be removed.

The cost of removing existing wingwalls, bottom slab and toe walls will be considered completely covered by the contract lump sum price for Partial Removal of Culvert-Bridge Concrete.



KEYED CONSTRUCTION JOINTS

Exterior wall shown, interior wall similar

✳ Approximately one third of wall thickness

DETAILS OF PARTIAL REMOVAL OF CULVERT CONCRETE

Detailed APR 2023
Checked MAY 2023

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

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ELECTRONICALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	2

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09261

DESCRIPTION	DATE

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

CDI
CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

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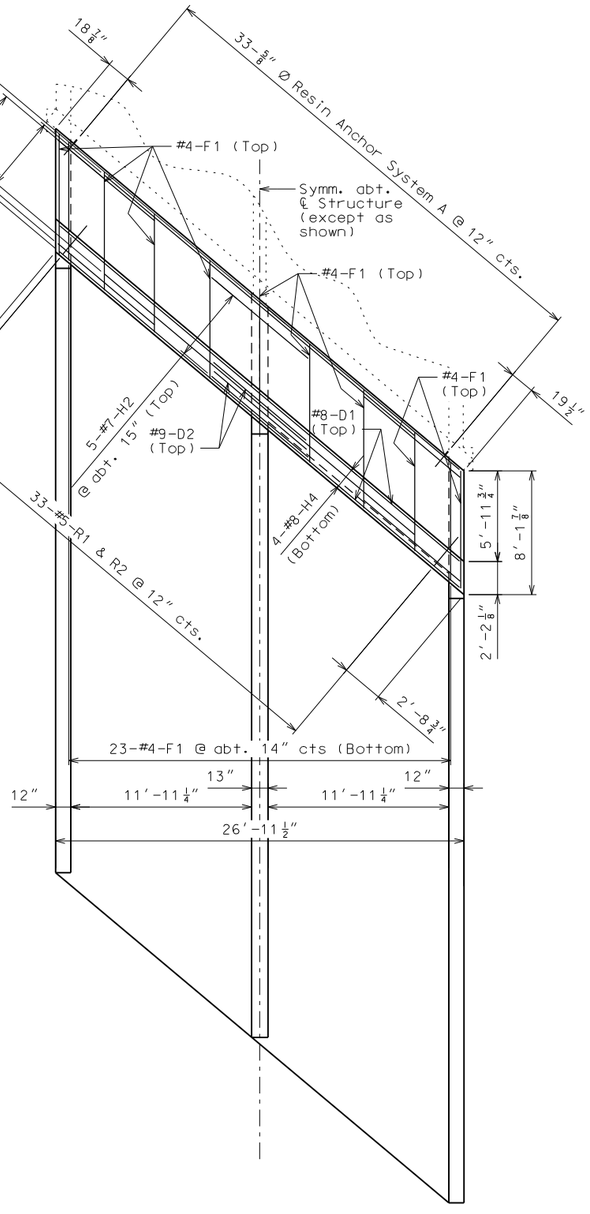
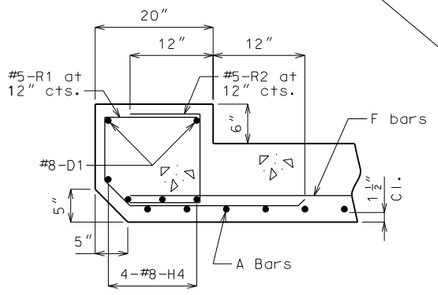


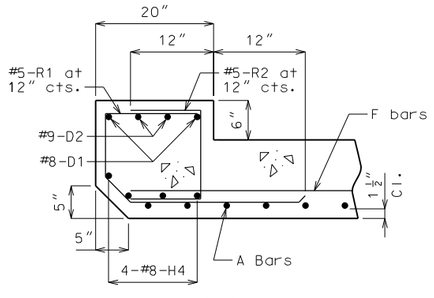
PLAN OF TOP SLAB

Keyed construction joint omitted for clarity.



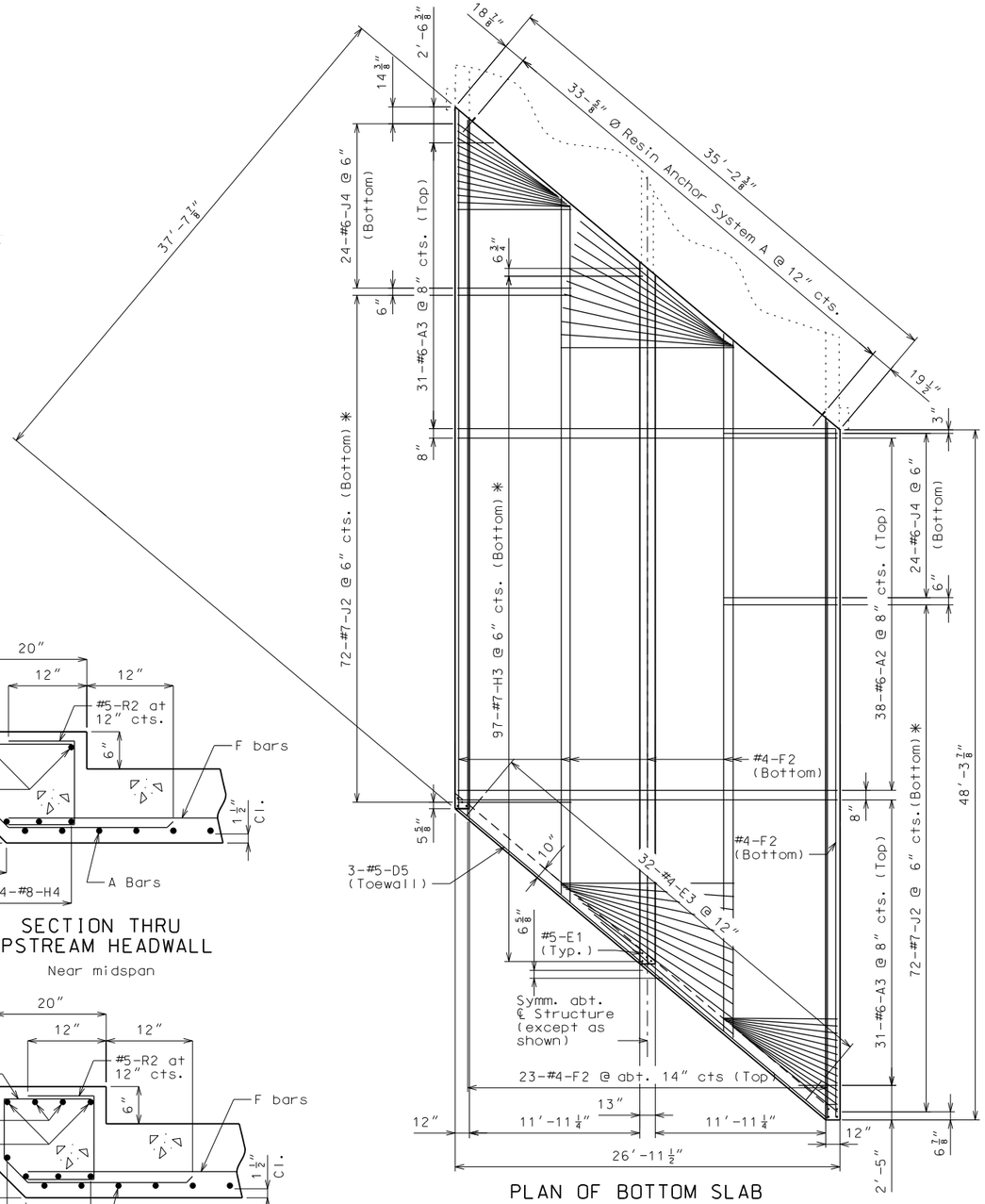
SECTION THRU UPSTREAM HEADWALL

Near midspan



SECTION THRU UPSTREAM HEADWALL

Near interior wall



PLAN OF BOTTOM SLAB

Keyed construction joint omitted for clarity.

✱ Splay bars at the specified spacing. Field cut bars as necessary to maintain 2 1/2" min. clear between bars.

Notes:

For Detail of Keyed Construction Joint, see Sheet No. 2. For details of Resin Anchor System and elevations of wing walls, see Sheet No. 4.

DETAILS OF UPSTREAM EXTENSION

Detailed APR 2023
Checked MAY 2023

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

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09261\B_X09261_003_J6S3368_Upstream_Extension.dgn 4:03:41 PM 1/9/2024

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED ELECTRONICALLY AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	3

COUNTY: FRANKLIN
JOB NO.: J6S3368
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: X09261

NO.	DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT
CDI
CIVIL DESIGN, INC.
WBE / DBE
5220 Oakland Avenue
St. Louis, MO 63110
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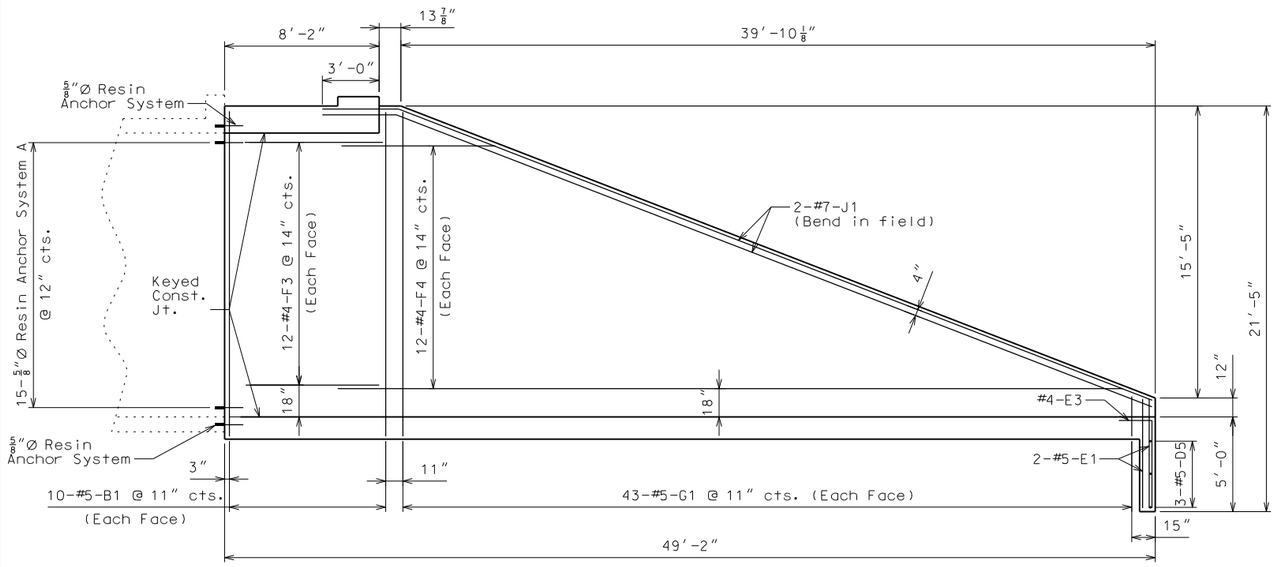
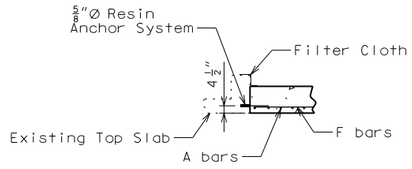
Missouri State Certificate of Authority #2002006804

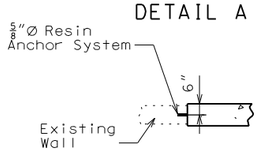


PART ELEVATION OF UPSTREAM INTERIOR WING WALL

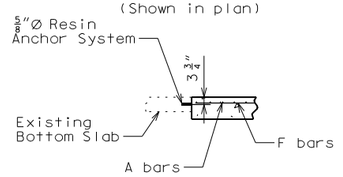
Horizontal dimensions measured along north face of wing.



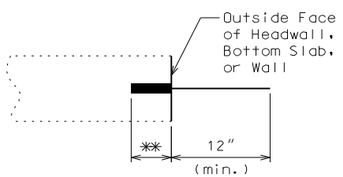
DETAIL A



DETAIL B
(Shown in plan)



DETAIL C



System A
(111 req'd for upstream side)

DETAILS OF RESIN ANCHOR SYSTEM

** Manufacturer's recommended embedment length (5″ min.)

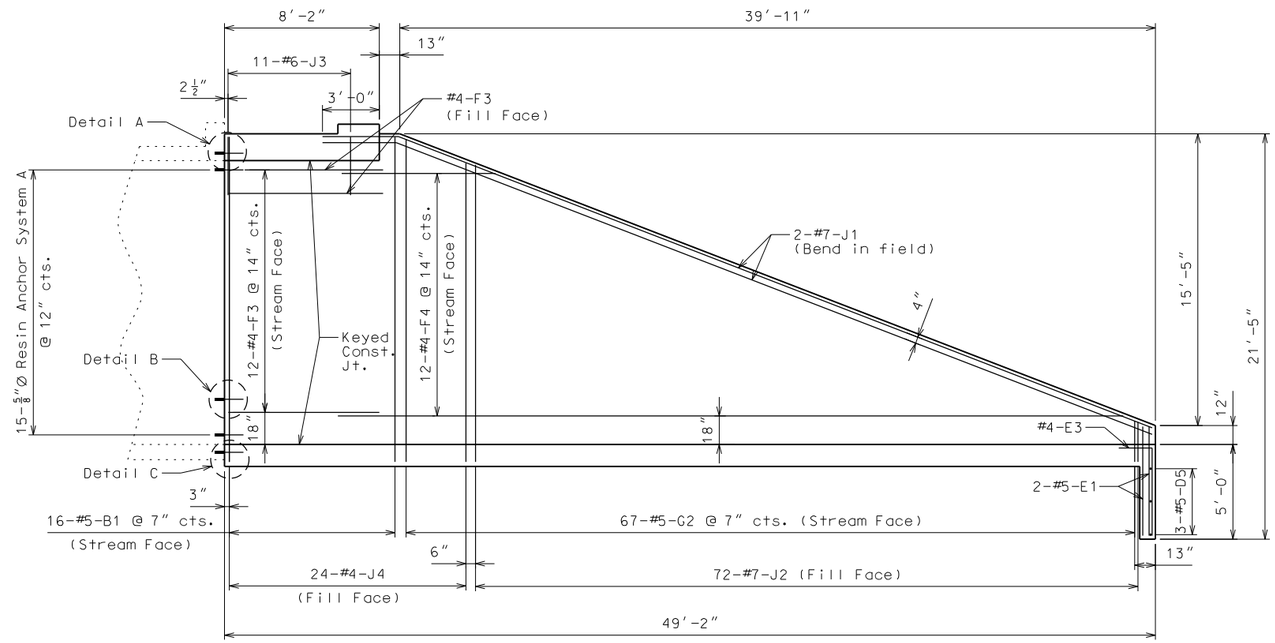
Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems will be considered completely covered by the contract unit price for Class B-1 Concrete (Culverts-Bridge).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5″.

A #5 Grade 60 reinforcing bar shall be substituted for the 5/8″ Ø threaded rod.



PART ELEVATION OF UPSTREAM EXTERIOR WING WALL

Horizontal dimensions measured along north face of wing.

KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS SEALED, SIGNED, DATED AND DIGITALLY AUTHENTICATED

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	4

COUNTY: FRANKLIN

JOB NO.: J6S3368

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: X09261

DESCRIPTION	DATE

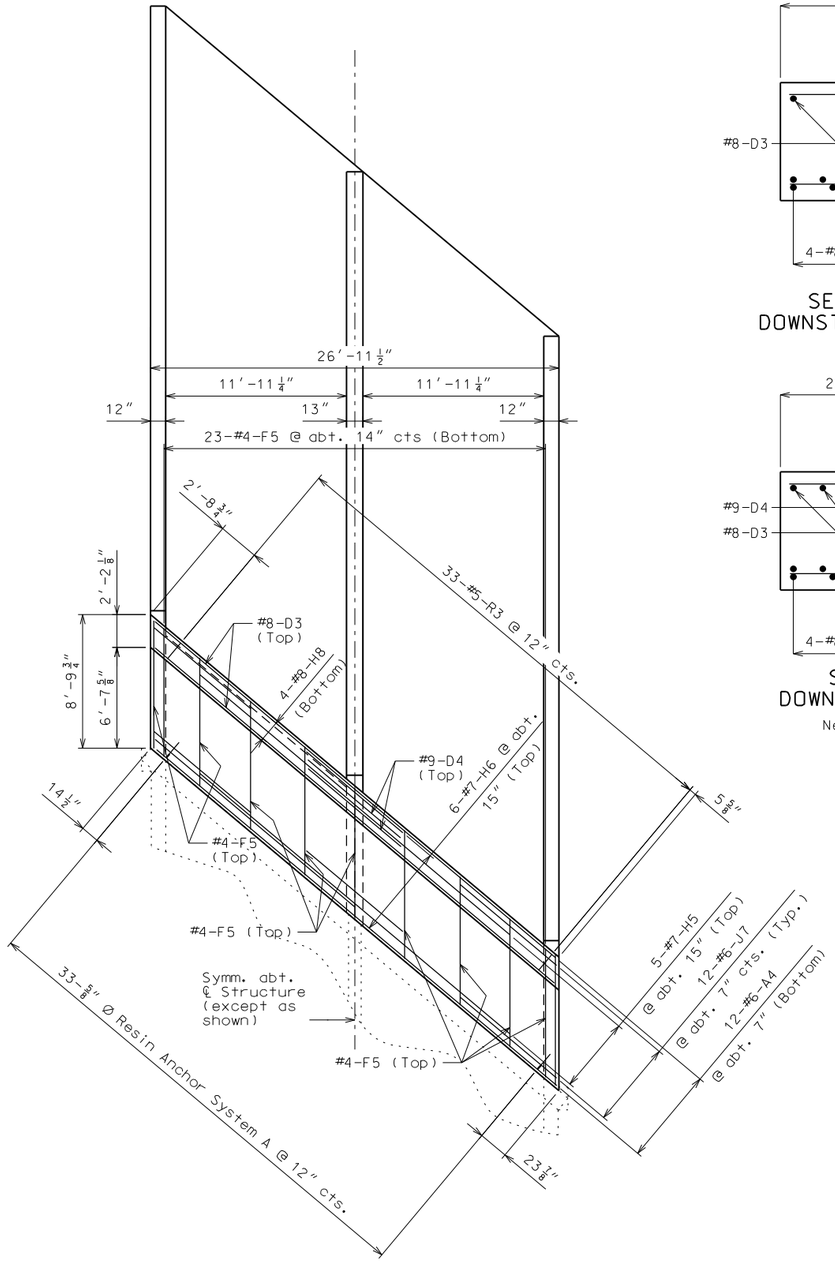
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed APR 2023
Checked MAY 2023

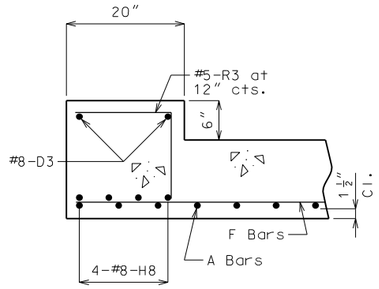
Note: This drawing is not to scale. Follow dimensions.

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09261\B_X09261_004_J6S3368_Upstream_Wings.dgn 10:15:39 AM 1/10/2024



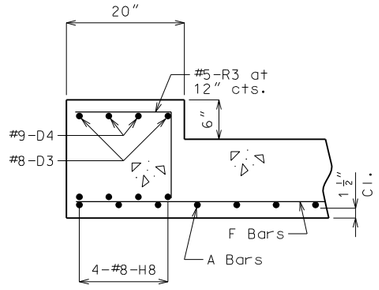
PLAN OF TOP SLAB

Keyed construction joint omitted for clarity.



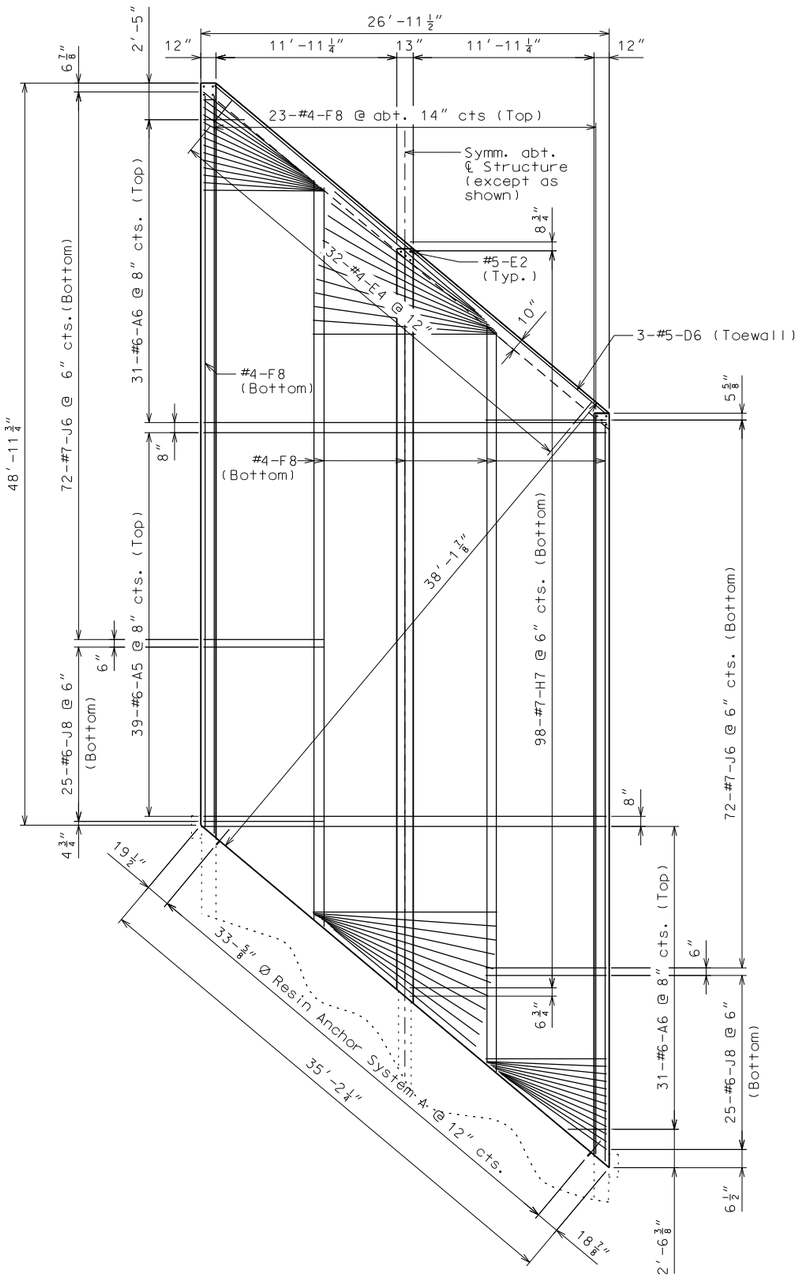
SECTION THRU DOWNSTREAM HEADWALL

Near midspan



SECTION THRU DOWNSTREAM HEADWALL

Near interior wall



PLAN OF BOTTOM SLAB

Keyed construction joint omitted for clarity.

✳ Splay bars at the specified spacing. Field cut bars as necessary to maintain 2 1/2″ min. clear between bars.

DETAILS OF DOWNSTREAM EXTENSION

Notes:

For Detail of Keyed Construction Joint, see Sheet No. 2. For details of Resin Anchor System and elevations of wing walls, see Sheet No. 6.

Detailed APR 2023
Checked MAY 2023

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

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09261\B_X09261_005_J6S3368_Downstream_Extension.dgn 4:03:42 PM 1/9/2024

STATE OF MISSOURI
KIMBERLY ANNE STREICHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	5

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

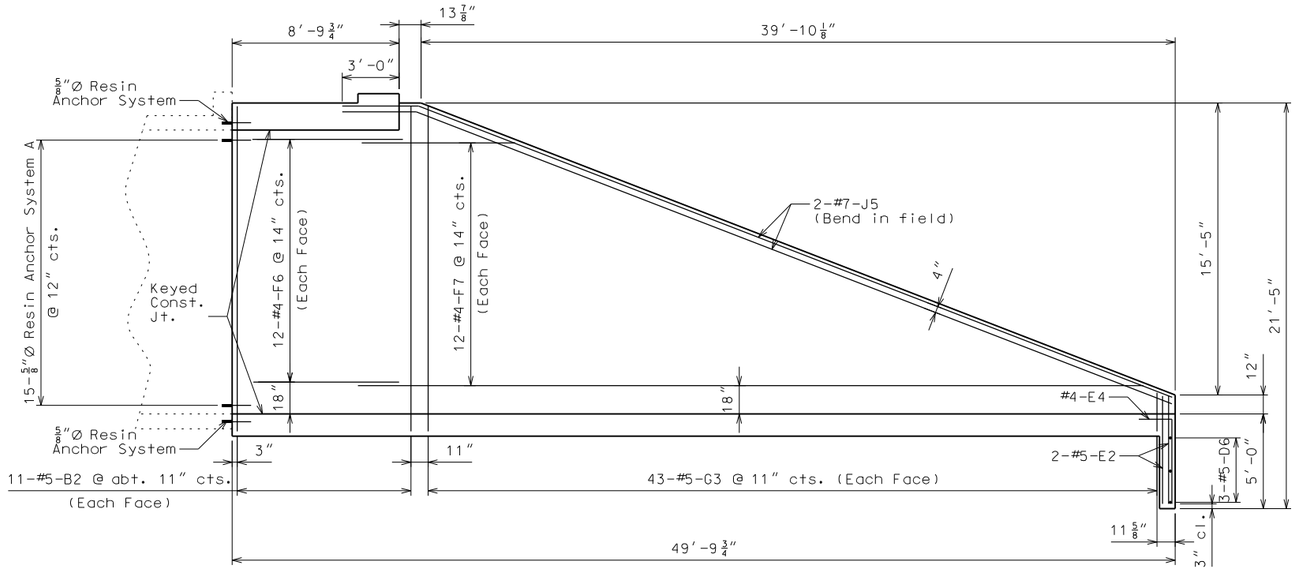
PROJECT NO.

BRIDGE NO. X09261

DATE	DESCRIPTION

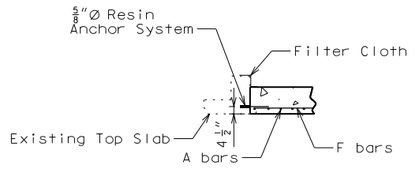
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

CDI CIVIL DESIGN, INC.
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

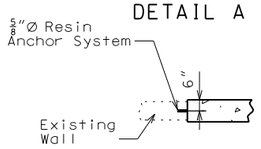


PART ELEVATION OF DOWNSTREAM INTERIOR WING WALL

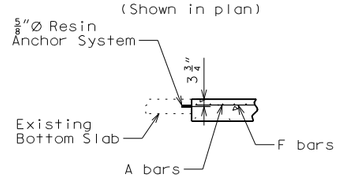
Horizontal dimensions measured along south face of wing.



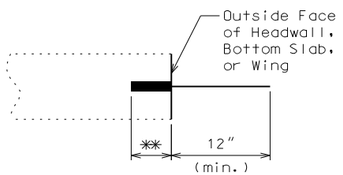
DETAIL A



DETAIL B
(Shown in plan)



DETAIL C



System A
(111 req'd for downstream side)

DETAILS OF RESIN ANCHOR SYSTEM

** Manufacturer's recommended embedment length (5″ min.)

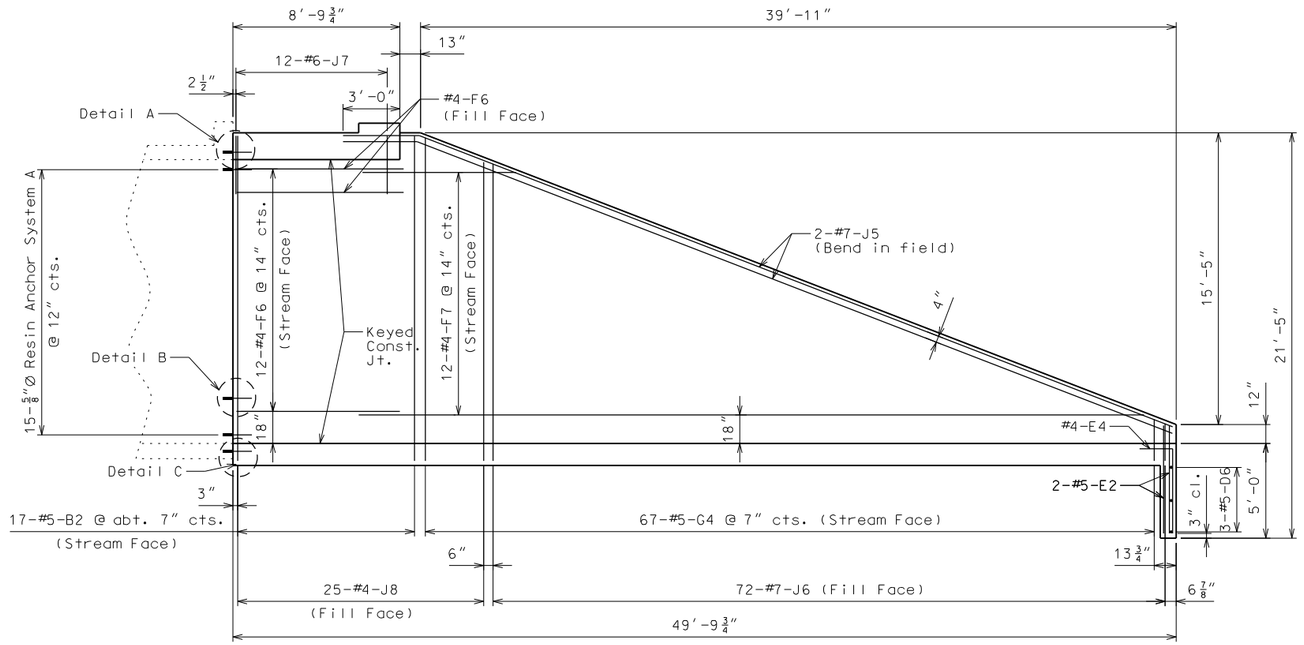
Notes:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems will be considered completely covered by the contract unit price for Class B-1 Concrete (Culverts-Bridge).

The minimum embedment depth in concrete with f′c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5″.

A #5 Grade 60 reinforcing bar shall be substituted for the ⅝″ Ø threaded rod.



PART ELEVATION OF DOWNSTREAM EXTERIOR WING WALL

Horizontal dimensions measured along south face of wing.

Detailed APR 2023
Checked MAY 2023

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

P:\Transportation\4017 - Route MM Franklin County\CADD\Project Drawings\Structures\Final\Culvert X09261\B_X09261_006_J6S3368_Downstream_Wings.dgn 10:15:42 AM 1/10/2024

STATE OF MISSOURI
KIMBERLY ANNE STRECHER
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024
ROUTE MM | STATE MO
DISTRICT BR | SHEET NO. 6
COUNTY FRANKLIN
JOB NO. J6S3368
CONTRACT ID.
PROJECT NO.
BRIDGE NO. X09261

DESCRIPTION | DATE

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

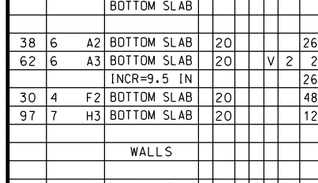
CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			UPSTREAM																									
			EXTENSION																									
			TOP SLAB																									
11	6	A1	TOP SLAB		20					34	9.500													34	10	34	10	576
32	4	F1	TOP SLAB		20					7	9.500													7	10	7	10	167
5	7	H1	TOP SLAB		20					26	9.000													26	9	26	9	274
5	7	H2	TOP SLAB		20					8	4.000													8	4	8	4	85
			HEADWALL																									
2	8	D1	HEADWALL		20					34	9.500													34	10	34	10	186
2	9	D2	HEADWALL		20					9	0.000													9	0	9	0	61
33	5	R1	HEADWALL		27	S				17.000		15.750		6.000		2	2.500			4.250		4.250		5	5	5	3	180
33	5	R2	HEADWALL		10	S						10.500		20.000										3	5	3	3	112
4	8	H4	HEADWALL		20					34	9.500													34	10	34	10	372
			BOTTOM SLAB																									
38	6	A2	BOTTOM SLAB		20					26	7.500													26	8	26	8	1522
62	6	A3	BOTTOM SLAB		20			V	2	2	9.000													2	9	2	9	
			INCR=9.5 IN							26	7.000													26	7	26	7	1365
30	4	F2	BOTTOM SLAB		20					48	10.000													48	10	48	10	979
97	7	H3	BOTTOM SLAB		20					12	2.000													12	2	12	2	2414
			WALLS																									
52	5	B1	WALLS		10	S						12.000	17	2.000										18	2	18	0	976
12	5	E1	TOEWALL		20					4	7.000													4	7	4	7	57
32	4	E3	TOEWALL		19	S				4	8.000	21.000												6	5	6	4	135
3	5	D5	TOEWALL		20					33	8.000													33	8	33	8	105
52	4	F3	WALLS		20					8	4.500													8	5	8	5	292
48	4	F4	WALLS		20			V	4	8	1.000													8	1	8	1	
			INCR=36.5 IN							41	6.000													41	6	41	6	796
86	5	G1	WALLS		19	S		V	2	17	0.000	12.000												18	0	17	10	
			INCR=4.25 IN							2	1.250	12.000												3	1	3	0	934
132	5	G2	WALLS		19	S		V	2	17	0.250	12.000												18	0	17	10	
			INCR=2.75 IN							2	3.500	12.000												3	1	3	1	1446
12	7	J1	WALLS		20					46	10.000													46	10	46	10	1148
144	7	J2	WALLS		19			V	2	15	8.000	7	11.500											23	8	23	6	
			INCR=4.250 IN							23	625	7	11.500											9	11	9	9	4893
22	6	J3	WALLS		19					3	1.000	8	4.000											11	5	11	3	372
48	6	J4	WALLS		19					15	10.000	7	11.500											23	10	23	8	1706

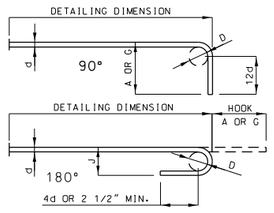
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			DOWNSTREAM																									
			EXTENSION																									
			TOP SLAB																									
12	6	A4	TOP SLAB		20					34	9.500													34	10	34	10	628
32	4	F5	TOP SLAB		20					8	5.250													8	5	8	5	180
5	7	H5	TOP SLAB		20					26	9.000													26	9	26	9	274
6	7	H6	TOP SLAB		20					8	4.000													8	4	8	4	102
			HEADWALL																									
2	8	D3	HEADWALL		20					34	9.500													34	10	34	10	186
2	9	D4	HEADWALL		20					9	0.000													9	0	9	0	61
33	5	R3	HEADWALL		10	S						17.000		20.000										4	6	4	4	149
4	8	H8	HEADWALL		20					34	9.500													34	10	34	10	372
			BOTTOM SLAB																									
39	6	A5	BOTTOM SLAB		20					26	7.500													26	8	26	8	1562
62	6	A6	BOTTOM SLAB		20			V	2	2	9.000													2	9	2	9	
			INCR=9.5 IN							26	6.000													26	6	26	6	1362
30	4	F8	BOTTOM SLAB		20					48	10.000													48	10	48	10	979
98	7	H7	BOTTOM SLAB		20					12	2.000													12	2	12	2	2437
			WALLS																									
56	5	B2	WALLS		10							12.000	17	2.000										18	2	18	0	1109
12	5	E2	TOEWALL		20					4	7.000													4	7	4	7	57
32	4	E4	TOEWALL		19	S				4	8.000	21.000												6	5	6	4	135
3	5	D6	TOEWALL		20					33	8.000													33	8	33	8	105
52	4	F6	WALLS		20					8	0.000													8	0	8	0	278
48	4	F7	WALLS		20	S		V	4	8	1.000													8	1	8	1	
			INCR=36.5 IN							41	6.000													41	6	41	6	796
86	5	G3	WALLS		19	S		V	2	17	0.000	12.000												18	2	17	10	
			INCR=4.25 IN							2	1.250	12.000												3	2	3	0	934
134	5	G4	WALLS		19	S		V	2	17	0.250	12.000												18	0	17	10	
			INCR=2.75 IN							2	3.500	12.000												3	4	3	2	1467
12	7	J5	WALLS		20					46	10.000													46	10	46	10	1448
144	7	J6	WALLS		19			V	2	15	8.000	7	11.500											23	8	23	6	
			INCR=2.25 IN								23.625	7	11.500											9	11	9	9	4893
24	6	J7	WALLS		19					3	1.000	8	4.000											11	5	11	3	406
50	6	J8	WALLS		19					15	10.000	7	11.500											23	10	23	8	1777
			TOTALS																									
	4																											4737
	5																											7633
	6																											11275
	7																											17968
	8																											1116
	9																											122
			TOTAL																									42851
			TOTAL	E																								0



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK 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				
		ALL GRADES		
BAR SIZE	D (IN.)	180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#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"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

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.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

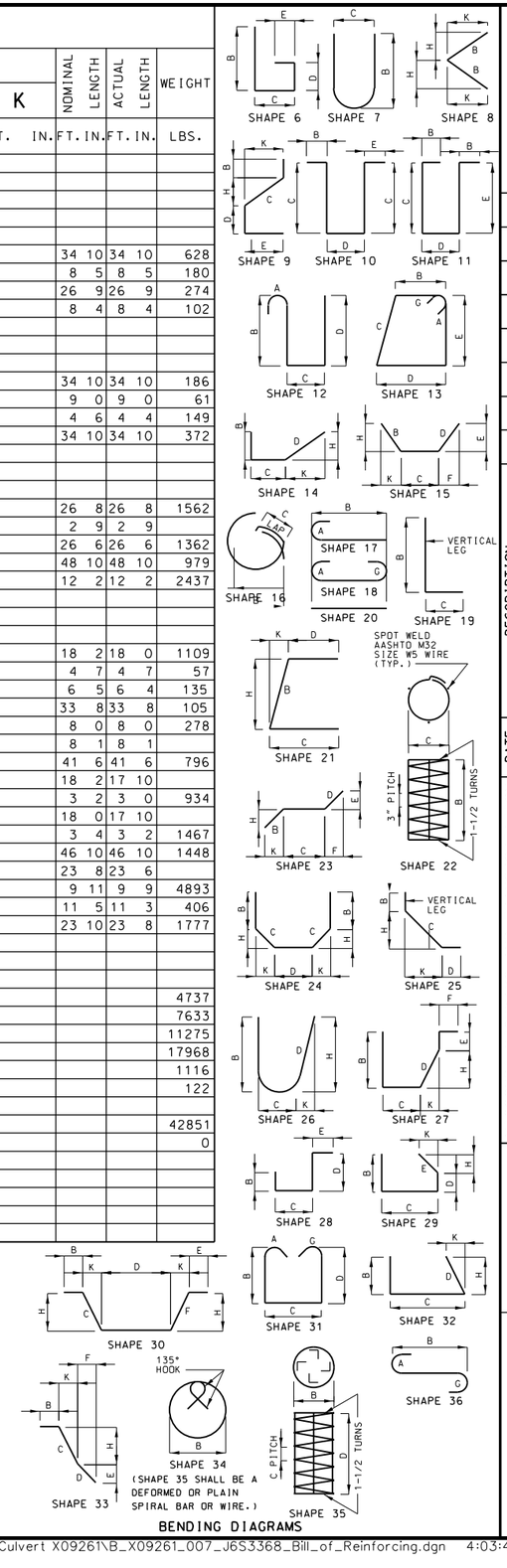
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS.

REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.



BENDING DIAGRAMS

KIMBERLY ANNE STREICHER
STATE OF MISSOURI
NUMBER PE-2003001105
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 1/9/2024

ROUTE	STATE
MM	MO
DISTRICT	SHEET NO.
BR	7

COUNTY FRANKLIN

JOB NO. J6S3368

CONTRACT ID.

PROJECT NO.

BRIDGE NO. X09261

DESCRIPTION

DATE

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

CDI
CIVIL DESIGN, INC.
WBE | DBE
5220 Oakland Avenue
St. Louis, MO 63110
314.863.5570
Missouri State Certificate of Authority #2002006804

Detailed MAR 2023
Checked MAR 2023

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