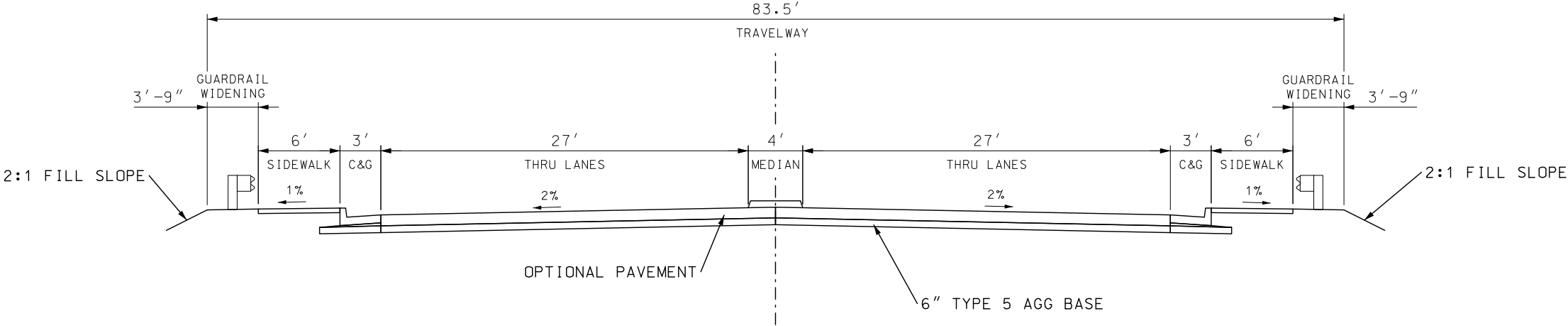
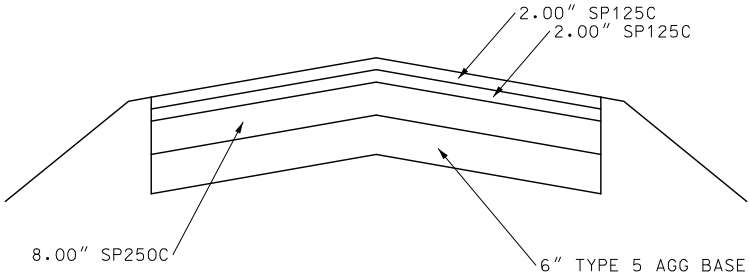




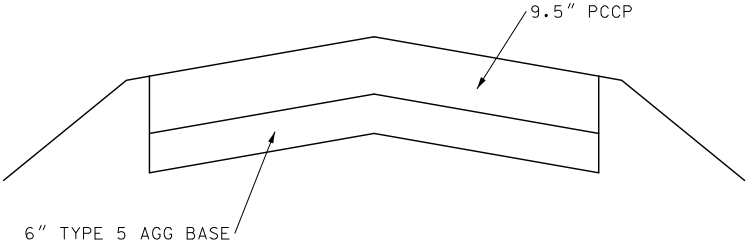
ROUTE 413
STA. 506+03.18 - 508+06.01
STA. 510+81.31 - 512+28.20

LEFT GUARDRAIL WIDENING TRANSITIONS 0' TO 3'-9" STA 506+76.25 TO STA 506+95.00
RIGHT GUARDRAIL WIDENING TRANSITIONS 0' TO 3'-9" STA 505+63.00 TO STA 505+78.00
LEFT GUARDRAIL WIDENING TRANSITIONS 3'-9" TO 0' STA 514+48.20 TO STA 514+63.20
RIGHT GUARDRAIL WIDENING TRANSITIONS 3'-9" TO 0' STA 513+53.20 TO STA 513+68.20
END RAISED MEDIAN STA 510+70.52

ASPHALT OPTION

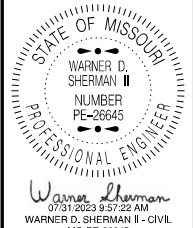


CONCRETE OPTION



ASPHALT OPTION		
TYPE	ASPHALT PERCENTAGE	CONVERSION FACTOR
2.00" SP125C (PG70-22)	5.2%	1.985 TONS/CY
2.00" SP125C (PG70-22)	5.2%	1.985 TONS/CY
8.00" SP250C (PG64-22)	4.2%	2.010 TONS/CY
6" TYPE 5 AGG BASE	-	-

CONCRETE OPTION		
9.5" PCCP		
6" TYPE 5 AGG BASE		



DATE PREPARED 7/31/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 2
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

DATE	DESCRIPTION

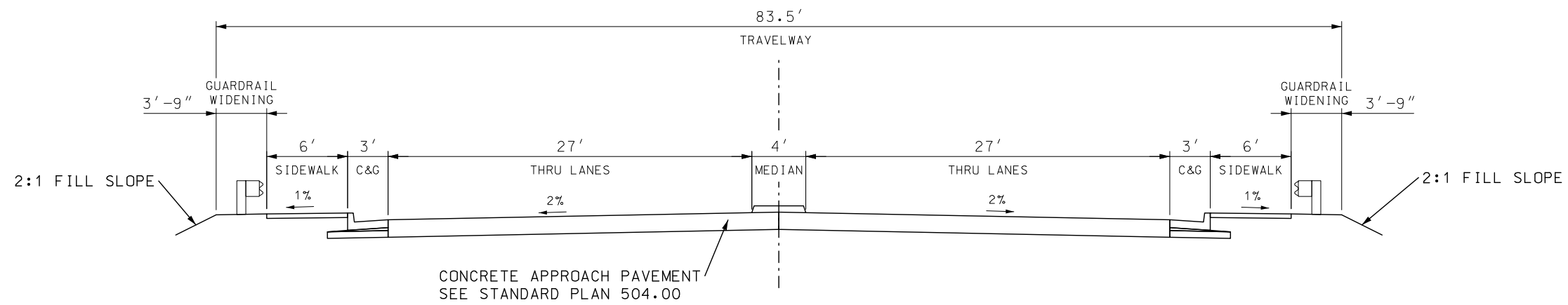
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

NOT TO SCALE

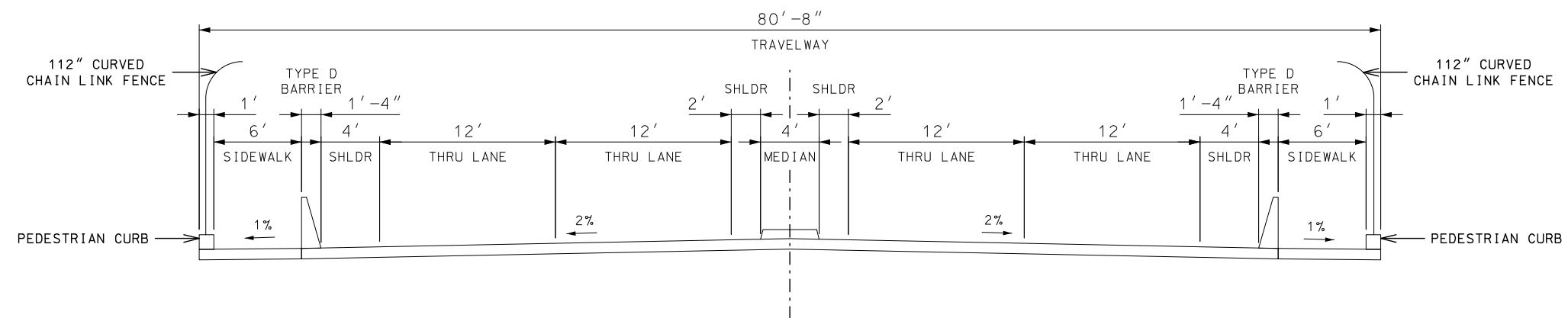
TYPICAL SECTION
SHEET 1 OF 6

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



CONCRETE APPROACH PAVEMENT

STA. 508+06.01 - 508+31.35
STA. 510+55.98 - 510+81.31



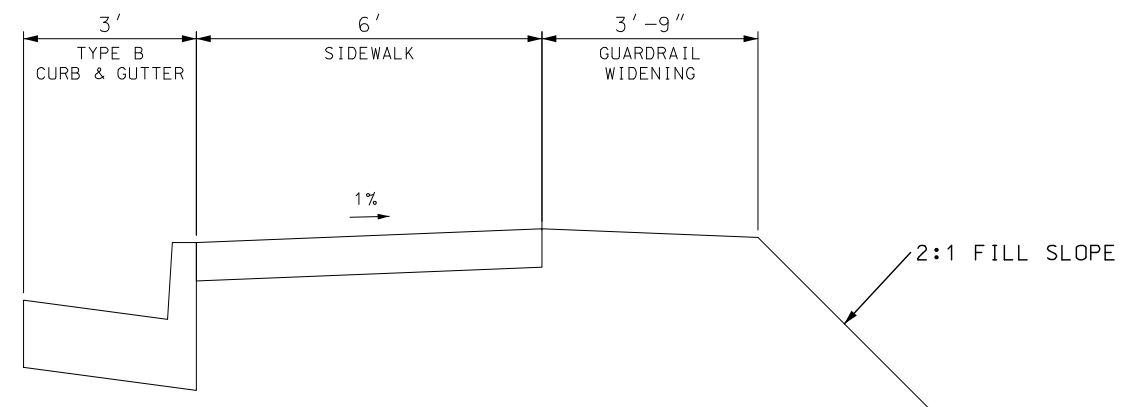
BRIDGE A8935

STA. 508+51.35 - 510+35.98

BRIDGE APPROACH SLAB

STA. 508+31.35 - 508+51.35
STA. 510+35.98 - 510+55.98

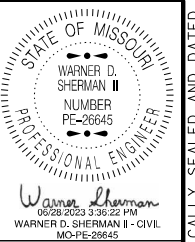
SIDEWALK



NO GUARDRAIL WIDENING WHERE GUARDRAIL IS NOT BEING PLACED
SEE TYPICAL SHEET 1 FOR GUARDRAIL WIDENING TRANSITIONS

NOT TO SCALE

TYPICAL SECTION
SHEET 2 OF 6



DATE PREPARED
6/12/2023
ROUTE 413 STATE MO
DISTRICT SW SHEET NO. 2

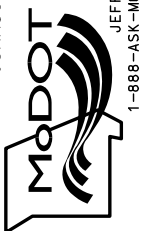
COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

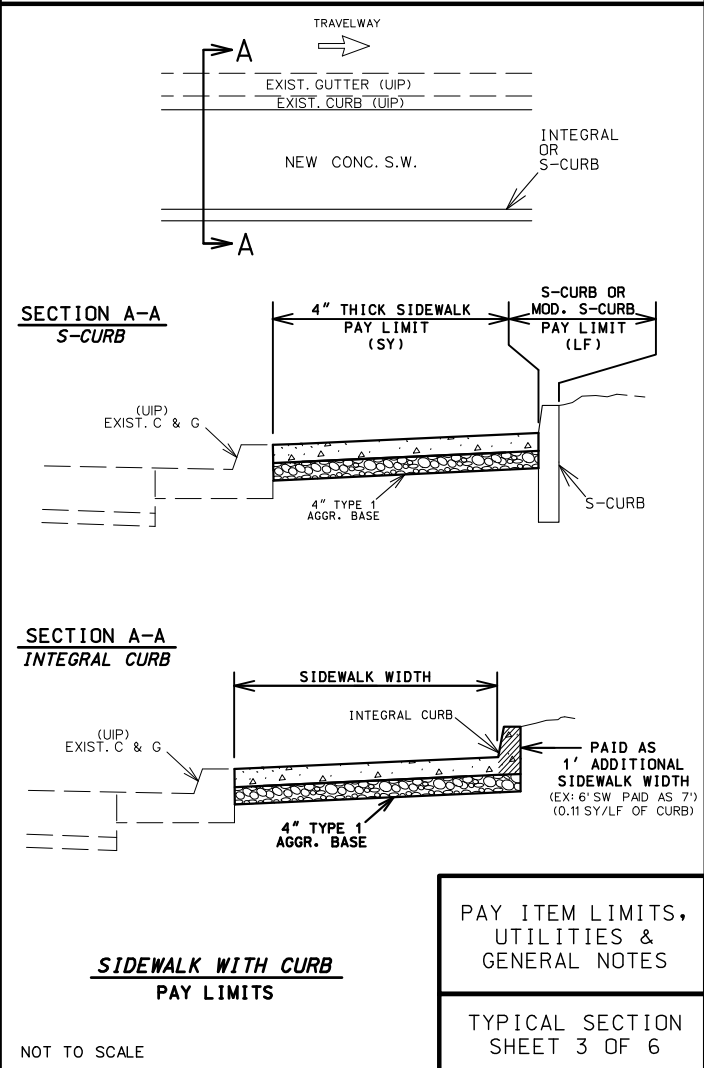
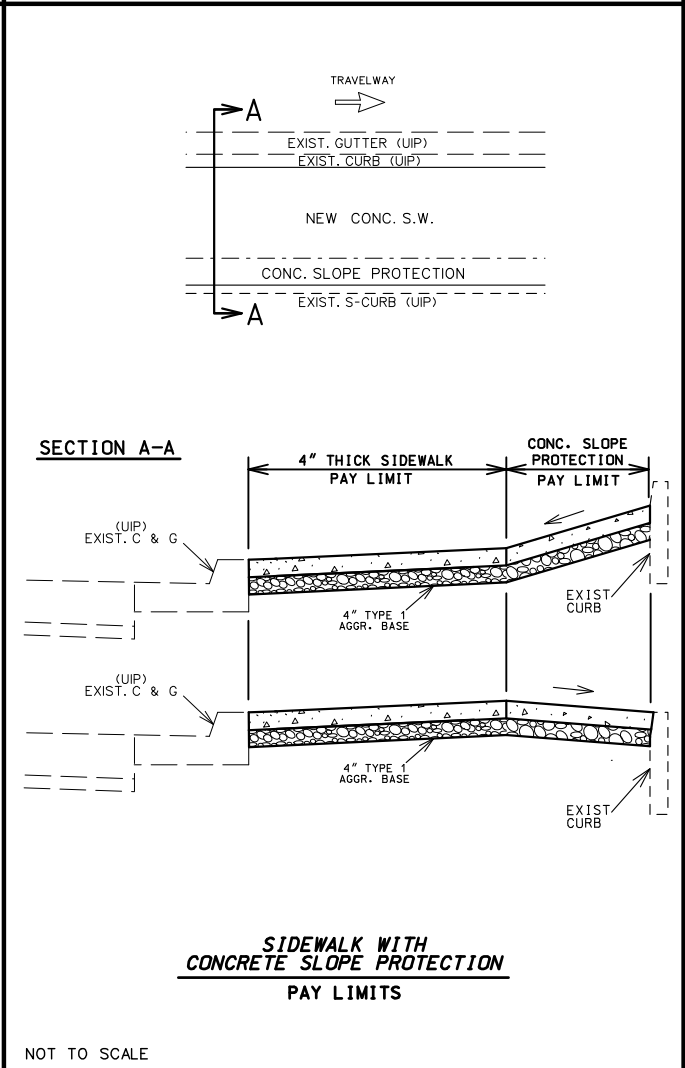
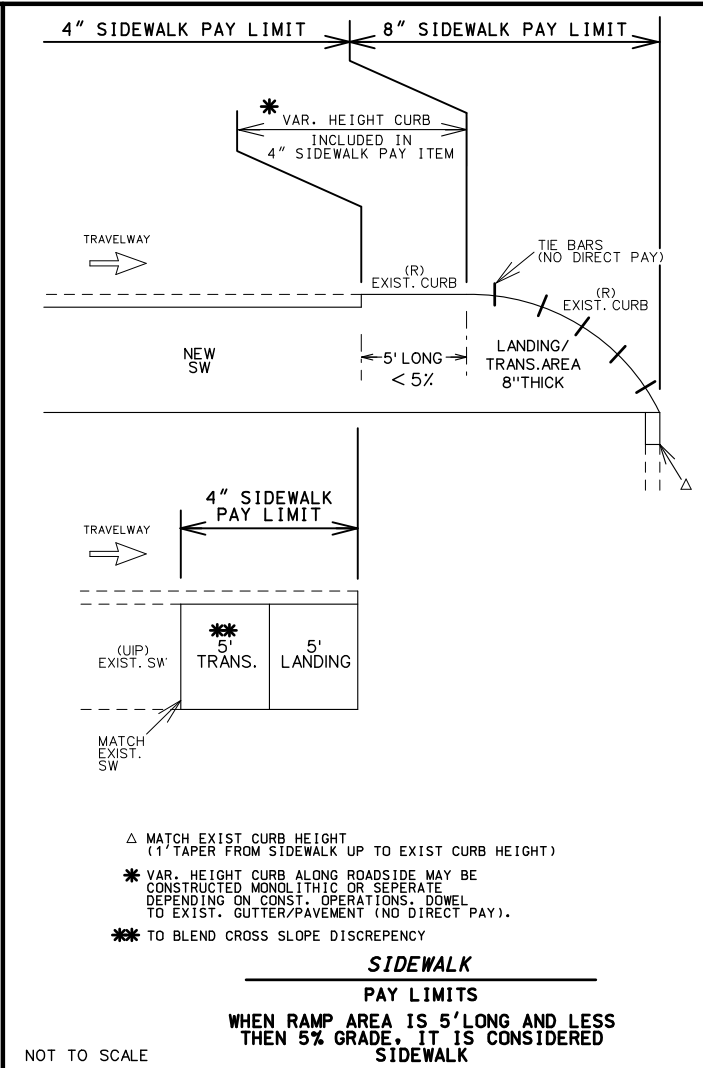
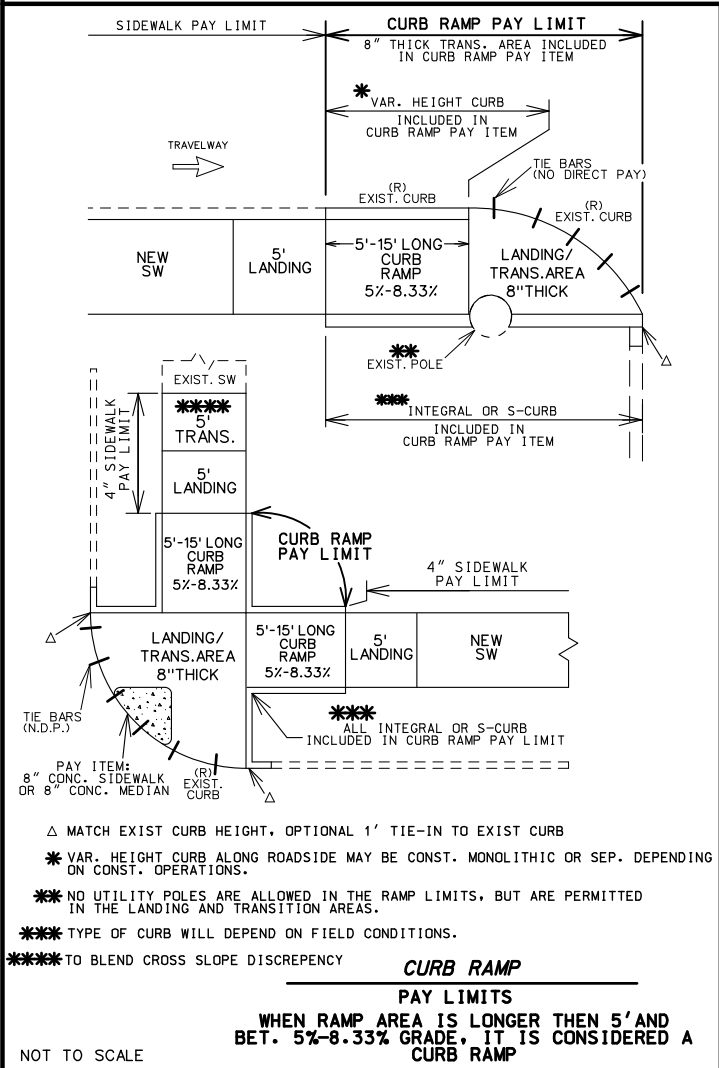
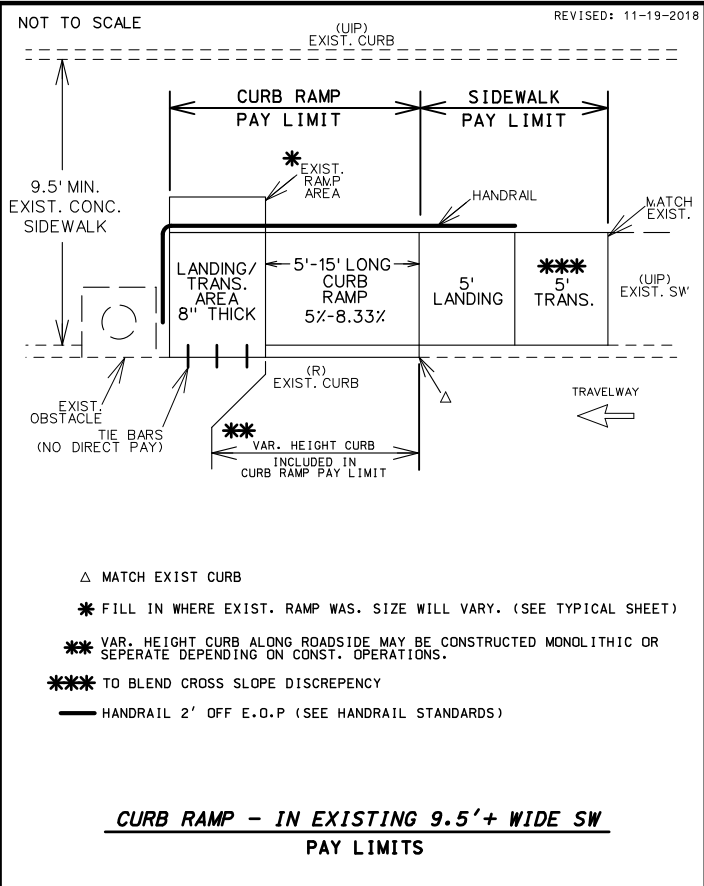
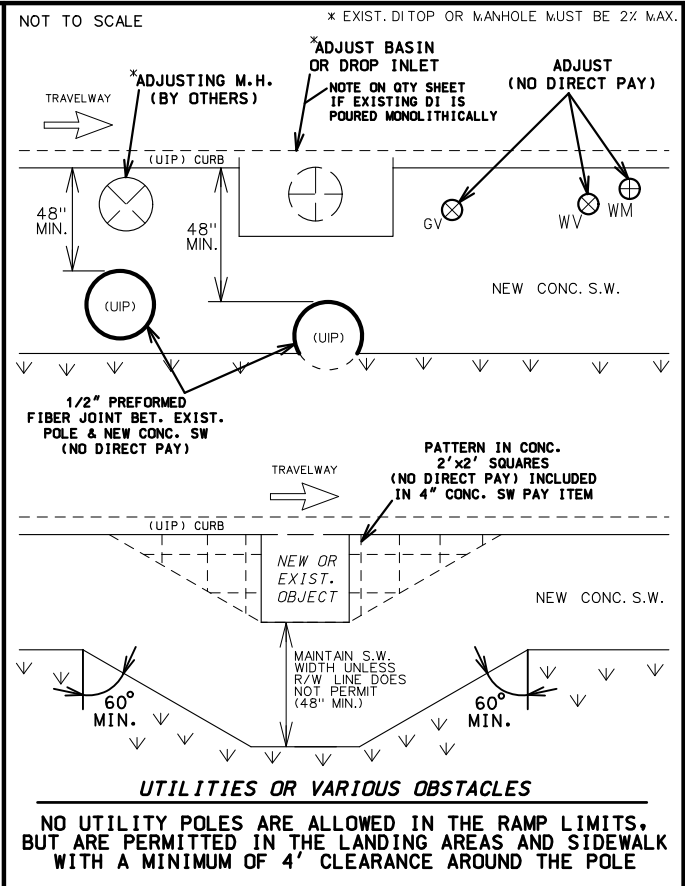
DESCRIPTION	DATE

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.

1. CONCRETE SIDEWALK, CURB RAMP AND DETECTABLE WARNING DEVICE (TRUNCATED DOMES) DETAILS SHALL CONFORM TO ADA REQUIREMENTS UNLESS NOTED OTHERWISE IN THESE PLANS. FOR SIDEWALK JOINT AND CURB DETAILS, SEE STANDARD PLAN 609.00.
2. TINTED CONCRETE SHALL NOT BE USED. TRUNCATED DOMES SHALL BE OF A COLOR CONTRASTING WITH UNTINTED CONCRETE AND APPROVED BY THE ENGINEER. TRUNCATED DOMES ARE REQ'D. AT STREET INTERSECTIONS AND COMMERCIAL ENTRANCES WITH TRAFFIC CONTROL ONLY. (STOP/YIELD SIGNS OR SIGNALS)
3. CONCRETE SHALL BE IN ACCORDANCE WITH SEC. 608 & SEC. 609. CURING COMPOUND SHALL BE TRANSPARENT.
4. ALL CONCRETE SIDEWALK AND CURB RAMP/TRANSITION/LANDING AREAS SHALL BE 4" THICK, WITH THE EXCEPTION OF THE BOTTOM TRANSITION WHICH TIES INTO THE EXISTING PAVED APPROACH AND ROADWAY. THIS TRANSITION, OR LANDING AREA, MUST BE 8" THICK IF IT FALLS WITHIN THE RADIUS OF THE APPROACH AND SITS AT THE BACK OF CURB OF THE ROADWAY. ALL CONCRETE SIDEWALK AND CURB RAMP/TRANSITION/LANDING AREAS SHALL BE ON 4" TYPE 1 AGGREGATE BASE.
5. AGGREGATE BASE DENSITY - CONTRACTOR SHALL EXERCISE GOOD COMPACTIVE EFFORT AS APPROVED BY THE ENGINEER. DENSITY REQUIREMENTS BY NUCLEAR METHOD WILL NOT BE REQUIRED DUE TO WORK AREA CONSTRAINTS.
6. CONCRETE CURB RAMP - WIDTH = 5' MIN. LENGTH = 5' MIN. TO 15' PREFERRED MAX. (16' MAX.)
RUNNING SLOPE = >5% (MIN.) TO 8.33% (MAX.) UNIFORMLY DOWN THE LENGTH OF THE RAMP.
- CONCRETE LANDING - WIDTH = TO MATCH PROPOSED CURB RAMP AND SIDEWALK WIDTH LENGTH = 5' MIN.
SLOPE IN ALL DIRECTIONS = 1% PREFERRED (2% MAX.) UNLESS TIED TO ROADWAY EXCEPTION.
7. ALL EXISTING UTILITIES SHALL BE USED IN PLACE UNLESS OTHERWISE NOTED. ALL MANHOLE OR VALVE COVER, ETC. ELEVATIONS SHALL BE ADJUSTED AS REQUIRED IF THEY ARE LOCATED WITHIN THE IMPROVEMENT AREA.
8. "PREFORMED FIBER JOINT" SHALL BE IN ACCORDANCE WITH SEC. 1057 FOR PREFORMED FIBER JOINT EXPANSION JOINT FILLER.
9. REINFORCING STEEL TIE BARS SHALL BE IN ACCORDANCE WITH SECTION 706. ALL REINFORCING STEEL SHALL BE EPOXY COATED AND USED AS APPROVED BY THE ENGINEER. WHERE TIE BARS ARE USED, THE CONCRETE SHALL BE 8" THICK (NO DIRECT PAY).
10. CONSTRUCTION AND LENGTH OF EACH CURB RAMP INCLUDING LANDINGS AND TRANSITION AREAS SHALL BE AS SHOWN ON THE PLANS UNLESS DIFFERING FIELD CONDITIONS ARE FOUND OR AS APPROVED BY THE ENGINEER. CURB RAMP CROSS SLOPES SHALL BE 1% PREFERRED (2% MAX.) TOWARD THE STREET. CURB RAMPS ARE TO BE FORMED UP AND HAVE A TRUE AND STRAIGHT LINE.
11. SIDEWALK AND CONCRETE CURB SHALL BE POURED MONOLITHICALLY. THE CONTRACTOR SHALL MATCH EXISTING GROUND SLOPES ADJACENT TO THE CURB RAMPS OR USE AN ALTERNATE METHOD APPROVED BY THE ENGINEER.
12. S-CURB 12"-30" HIGH (MODIFIED S-CURB) WILL REQUIRE #4 REINFORC. BARS ON MAX. 12" CENTERS - SEE DETAIL (NO DIRECT PAY)
13. SODDED SLOPES AT EDGES OF SIDEWALK OR S-CURB SHOULD BE GRADED TO BE 6:1 MIN.



STATE OF MISSOURI
WARNER D. SHERMAN II
NUMBER PE-26645
PROFESSIONAL ENGINEER

DATE PREPARED
6/12/2023

ROUTE
413

STATE
MO

DISTRICT
SW

SHEET NO.
2

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

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

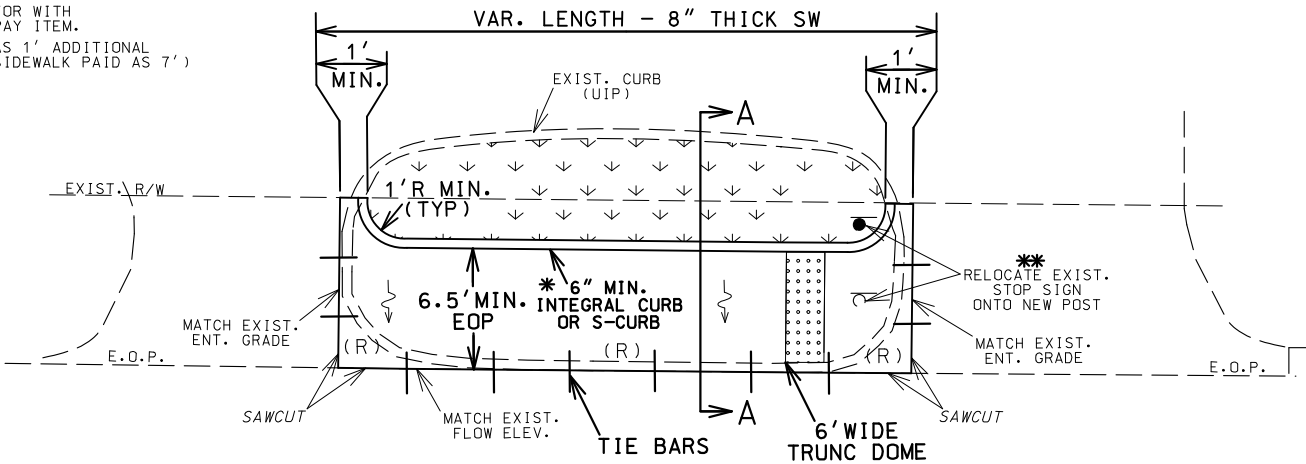
NOTES FOR MODIFIED SIDEWALK:

1. REMOVE EXIST. CURB & RAISED ISLAND WITHIN LIMITS SHOWN.
2. AREA INSIDE FINAL CURB TO BE REPAIRED OR REPLACED WITH EXISTING SURFACE MATERIAL. GRADE TO DRAIN.
3. CONSTRUCT 8" THICK CONC. SIDEWALK FLUSH WITH EXIST. CONC. PAVED APPROACH.
4. CONSTRUCT CURB ADJACENT TO MODIFIED SIDEWALK.
5. MODIFIED SIDEWALK PAID FOR AS 8" SIDEWALK.
6. 6' MINIMUM WIDTH.
7. NO DIRECT PAY FOR SAW CUTS AND TIE BARS (ON 12" CENTERS MAX.)
8. TRUNCATED DOMES ARE USED ONLY AT STREETS & ENTRANCES UTILIZING STOP SIGNS OR SIGNALS.
9. X-SLOPE 1% PREFERRED (2% MAX.)
10. USE S-CURB IF CONSTRUCTING CURB ON R/W LINE.

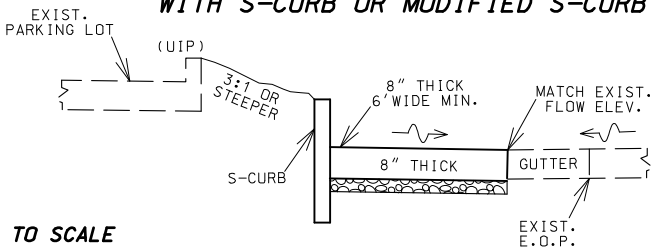
* INTEGRAL CURB IS PAID FOR WITH THE 8" CONC. SIDEWALK PAY ITEM.
INTEGRAL CURB IS PAID AS 1' ADDITIONAL SIDEWALK WIDTH (EX. 6'SIDEWALK PAID AS 7')
(0.11 SY/LF OF CURB)

TYPICAL
MODIFIED SIDEWALK
8" THICK

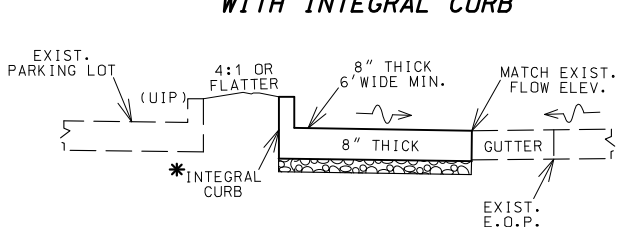
** TRUNCATED DOMES ARE USED ONLY AT STREETS & ENTRANCES UTILIZING STOP/YIELD SIGNS OR SIGNALS.



SECTION A-A
WITH S-CURB OR MODIFIED S-CURB



SECTION A-A
WITH INTEGRAL CURB



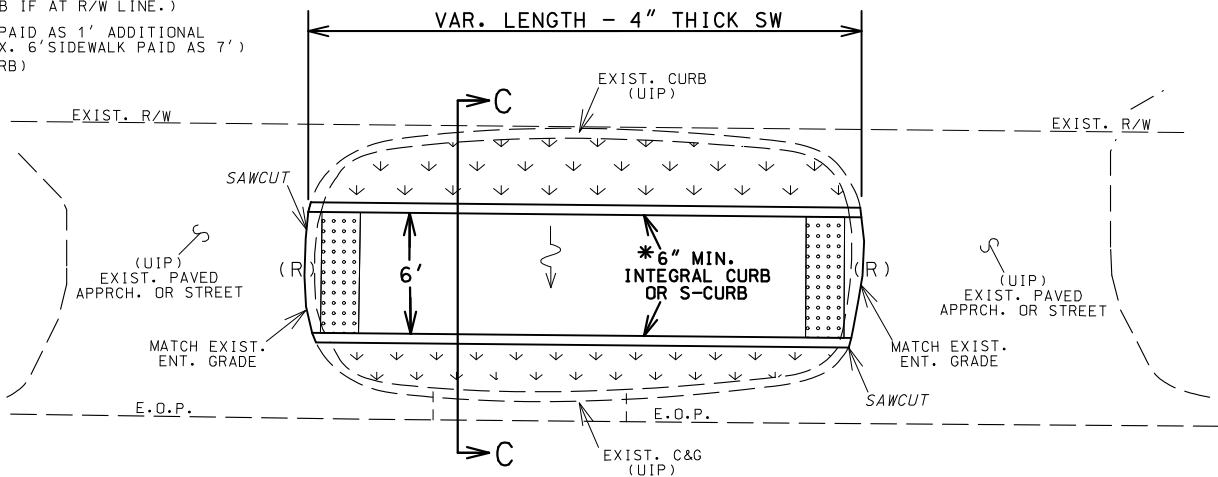
NOT TO SCALE

NOTES FOR CUT-THRU SIDEWALK:

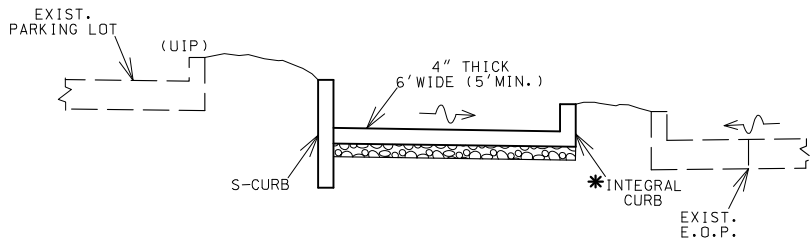
1. REMOVE EXIST. CURB & RAISED ISLAND WITHIN LIMITS SHOWN.
2. AREA INSIDE FINAL CURB TO BE REPAIRED OR REPLACED WITH EXISTING SURFACE MATERIAL. GRADE TO DRAIN.
3. CONSTRUCT 4" THICK CONC. SIDEWALK FLUSH WITH EXIST. CONC. PAVED APPROACH.
4. CONSTRUCT CURB ON BOTH SIDES ADJACENT TO SIDEWALK.
5. CUT-THRU SIDEWALK PAID FOR AS 4" SIDEWALK.
6. 6' PREFERRED WIDTH (5' MIN.)
7. SAW CUTS (NO DIRECT PAY).
8. TRUNCATED DOMES ARE USED ONLY AT STREETS & ENTRANCES UTILIZING STOP SIGNS OR SIGNALS.
9. X-SLOPE 1% PREFERRED (2% MAX.)
10. USE S-CURB IF CONSTRUCTING CURB ON R/W LINE.

* INTEGRAL CURB IS PAID FOR AS 4" CONC. SIDEWALK PAY ITEM. S-CURB IS PAID FOR AS ITS OWN PAY ITEM.
(ALWAYS USE S-CURB IF AT R/W LINE.)
INTEGRAL CURB IS PAID AS 1' ADDITIONAL SIDEWALK WIDTH (EX. 6'SIDEWALK PAID AS 7')
(0.11 SY/LF OF CURB)

TYPICAL
CUT-THRU SIDEWALK

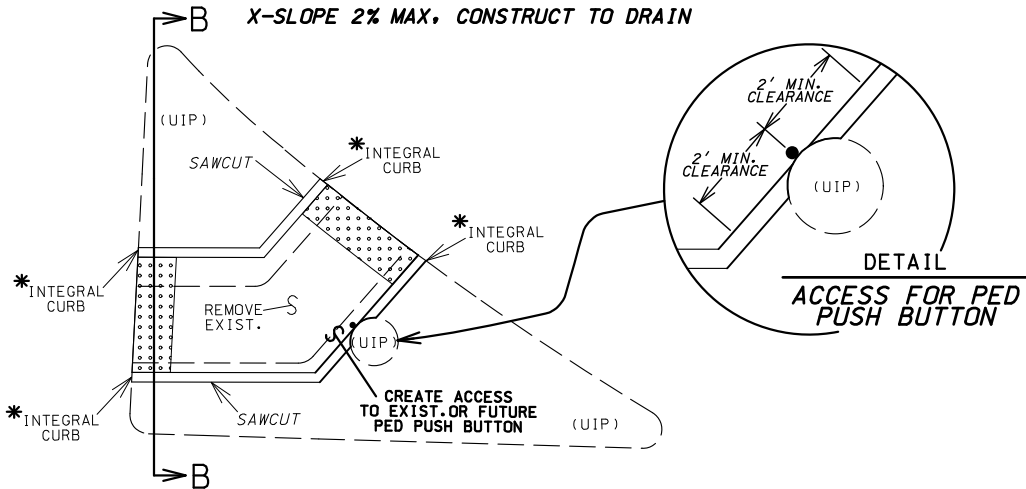


SECTION C-C
WITH S-CURB OR INTEGRAL

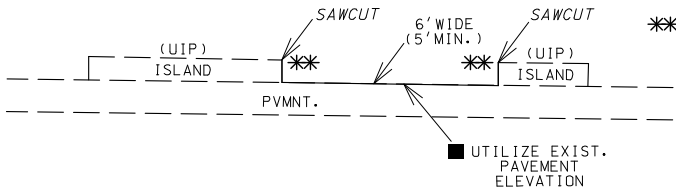


NOT TO SCALE

TYPICAL
ISLAND CUT-THRU SIDEWALK
X-SLOPE 2% MAX. CONSTRUCT TO DRAIN



SECTION B-B
ISLAND CUT-THRU SIDEWALK
FOR EXISTING 'PINNED-ON' ISLAND

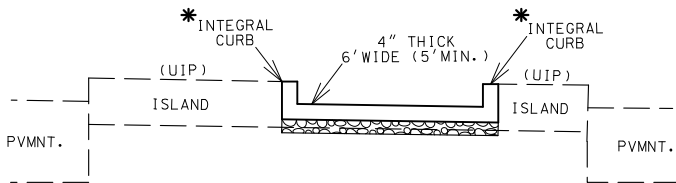


■ SMALL QTY. HAS BEEN INCLUDED FOR 8" THICK SIDEWALK TO ADDRESS ANY UNFORSEEN PVMNT. REPAIRS OR DIFFERENCES IN ELEVATION. (UNDERRUN IF FIELD CONDITIONS DO NOT WARRANT)

** NO INTEGRAL CURB, AGGR. OR LIN. GRADING REQUIRED IF THE ISLAND IS 'PINNED-ON'

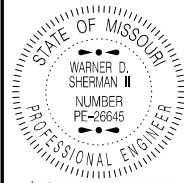
* INTEGRAL CURB IS PAID FOR WITH THE 4" CONC. SIDEWALK PAY ITEM.
INTEGRAL CURB IS PAID AS 1' ADDITIONAL SIDEWALK WIDTH (EX. 6'SIDEWALK PAID AS 7')
(0.11 SY/LF OF CURB)

SECTION B-B
ISLAND CUT-THRU SIDEWALK



MODIFIED SIDEWALK
AND
SIDEWALK CUT-THRU'S

TYPICAL SECTION
SHEET 6 OF 6



Warner D. Sherman
06/28/2023 9:40:32 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 2

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

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.

DRAINAGE														
				CURB AND GUTTER	CURB	PRECAST DROP INLET	12 IN. PIPE	12 IN. PIPE	12 IN. FES	CLASS 3	TYPE 2 ROCK DITCH LINER			
				TYPE B	INLET	(2'X2')	GROUP A	GROUP B	GROUP A	EXCAVATION	FURNISHING	PLACING	PAVED DITCH	
SHEET	STATION	STATION	LOCATION	LF	EA	LF	LF	LF	EA	CY	CY	CY	SY	REMARKS
4	502+54.21	503+65.98	LT	123.1										
4	504+58.31	508+39.32	LT	236.1										
4	504+74.00	505+00.00	RT					3.5						EXTEND EXIST PIPE
48-50	505+00.00	508+37.66	LT		2	11.9	387.1		1	458.3	2.0	2.0		
4	505+74.22	508+23.38	RT	220.2										
51-52	506+10.00	508+20.93	RT		1	8.8	265.9		1.0	247.1				
4	507+17.85	508+85.62	RT										105.5	REMOVE AND REPLACE
53-55	510+26.21	517+00.87	RT		2	10.0	630.5			726.5				
5	510+48.01	515+24.20	RT	476.2										
5	510+63.95	514+55.10	LT	391.2										
56-58	510+72.72	517+00.67	LT		2	10.1	617.5			731.6				
6-7	515+33.53	521+77.99	LT	644.5										
6-8	517+08.25	527+72.57	RT	1064.3										
59-60	520+01.01	523+50.52	RT		2		339.6			326.2				
61-62	520+01.08	523+48.00	LT		2		337.0			327.6				
7-8	522+59.36	523+62.22	LT	102.9										
8	523+91.00	525+46.61	LT	155.7										
8	526+04.19	526+08.55	LT	4.4										
8	526+78.60	527+87.82	LT	109.2										
9	528+16.67	531+49.11	LT	338.6										
9	528+70.26	531+76.73	RT	306.5										
63-64	528+84.00	531+49.44	RT		2		255.5			295.8				
65-66	528+84.00	531+49.26	LT		2		254.6			392.9				
9	531+53.72	531+67.59	LT	29.5										
TOTAL				4202.4	15	40.8	3087.7	3.5	2	3506.0	2.0	2.0	105.5	
USE				4203	15	41	3088	4	2	3506	2	2	106	

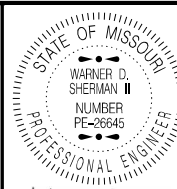
EROSION CONTROL												
				SILT FENCE	ROCK DITCH CHECK	SEDIMENT REMOVAL	CURB INLET CHECK	SEEDING - WARM GRASSES	SEEDING - COOL GRASSES	MULCHING		
SHEET	STATION	STATION	LOCATION	LF	LF	CY	EA	ACRE	ACRE	ACRE	REMARKS	
29	502+49.62	503+83.24	LT	161.1		1.6						
29	503+73.85		RT		4.2	1.0						
29-30	504+53.95	508+53.76	LT	403.4	3.0	5.0	2.0					
29-30	505+45.19	508+61.22	RT	320.0	3.0	4.2	1.0					
30-31	510+14.40	514+58.42	LT	449.9	3.0	5.5	1.0					
30-34	510+54.67	531+51.34	RT		15.0	5.0	6.0					
31	515+40.07	516+83.43	LT	143.4	3.0	2.4	1.0					
32	517+27.94	521+85.62	LT	460.6	6.0	6.6	1.0					
33-34	523+45.22	531+51.28	LT				4.0					
33	524+70.88	525+52.53	LT	81.7		0.8						
33	525+96.12	526+23.15	LT	27.0		0.3						
4-6	506+03.18	512+28.20	LT/RT					0.17	0.71	0.88		
TOTAL				2047.1	37.2	32.4	16	0.17	0.71	0.88		
USE				2048	38	33	16	0.2	0.7	0.9		

ROCK BLANKET					
			TYPE 2 ROCK BLANKET	PERMANENT EROSION	
			FURNISHING	PLACING	CONTROL GEOTEXTILE
SHEET	STATION	STATION	CY	CY	SY
5	508+16.60	509+06.00	578.1	578.1	867.1
5	509+79.73	510+70.91	591.5	591.5	887.2
TOTAL			1169.6	1169.6	1754.3
USE			1170	1170	1755

CONCRETE MEDIAN STRIP				
			6" CONCRETE	
			MEDIAN STRIP	
SHEET	STATION	STATION	SY	REMARKS
4	504+75.97	508+51.35	278.5	
5	510+35.98	510+70.52	15.2	
TOTAL			293.7	
USE			294	

EARTHWORK					
			UNCLASSIFIED EXCAVATION	COMPACTING EMBANKMENT	COMPACTING IN CUT
SHEET	STATION	STATION	CY	CY	STA
4	506+03.18	508+69.24			2.66
4-6	506+03.18	512+28.20	4616.0	2971.4	
5-6	510+26.70	512+28.20			2.02
TOTAL			4616.0	2971.4	4.68
USE			4616	2972	4.7

SUMMARY OF QUANTITIES
SHEET 2 OF 4



Warner D. Sherman
07/17/2023 7:27:54 AM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
7/17/2023

ROUTE 413
DISTRICT SW
STATE MO
SHEET NO. 3

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

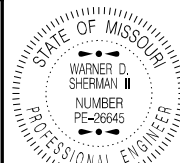
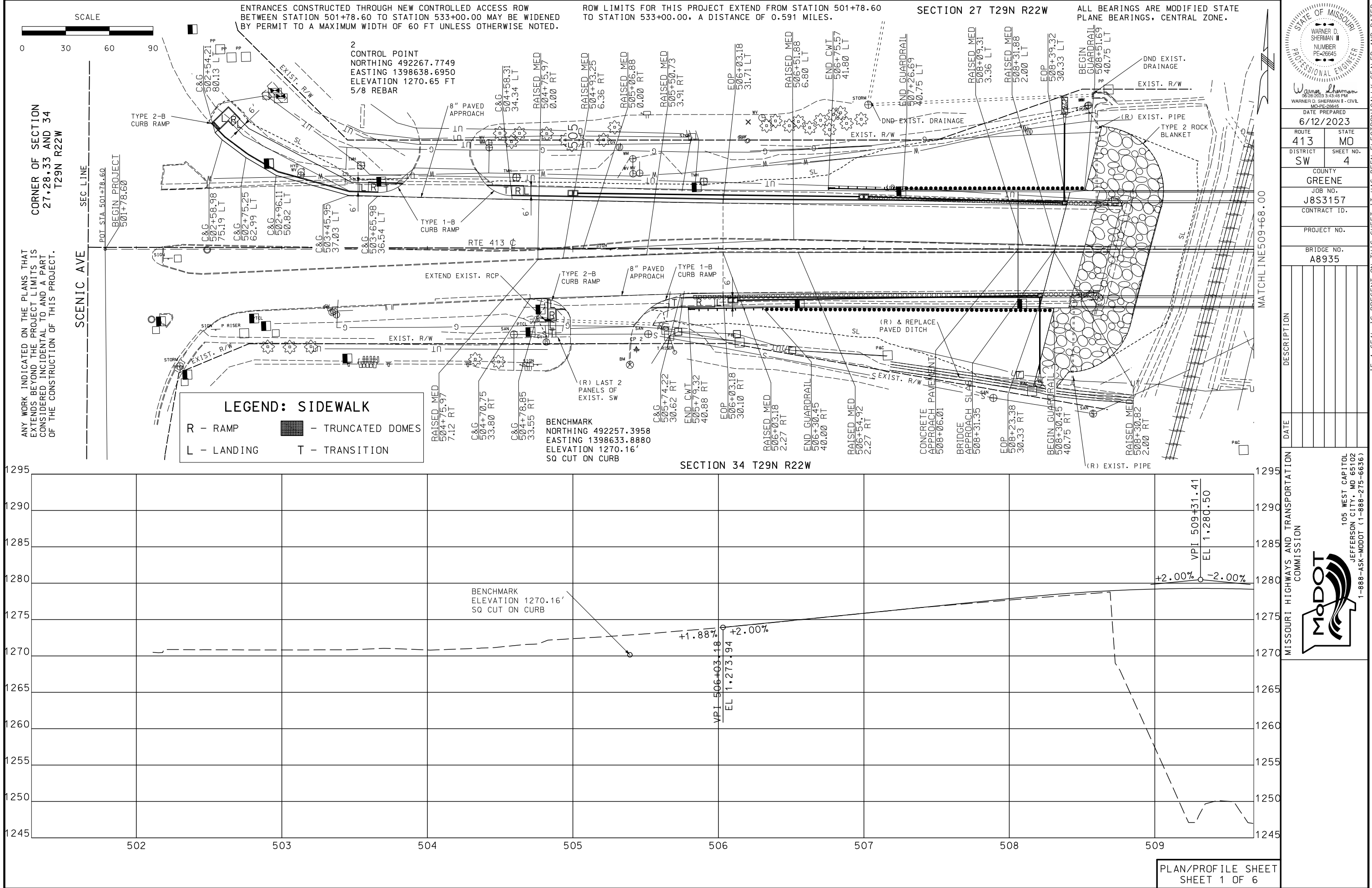
BRIDGE NO.
A8935

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.



WARNER D. SHERMAN
06/28/2023 3:43:48 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 4

COUNTY GREENE

JBS3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

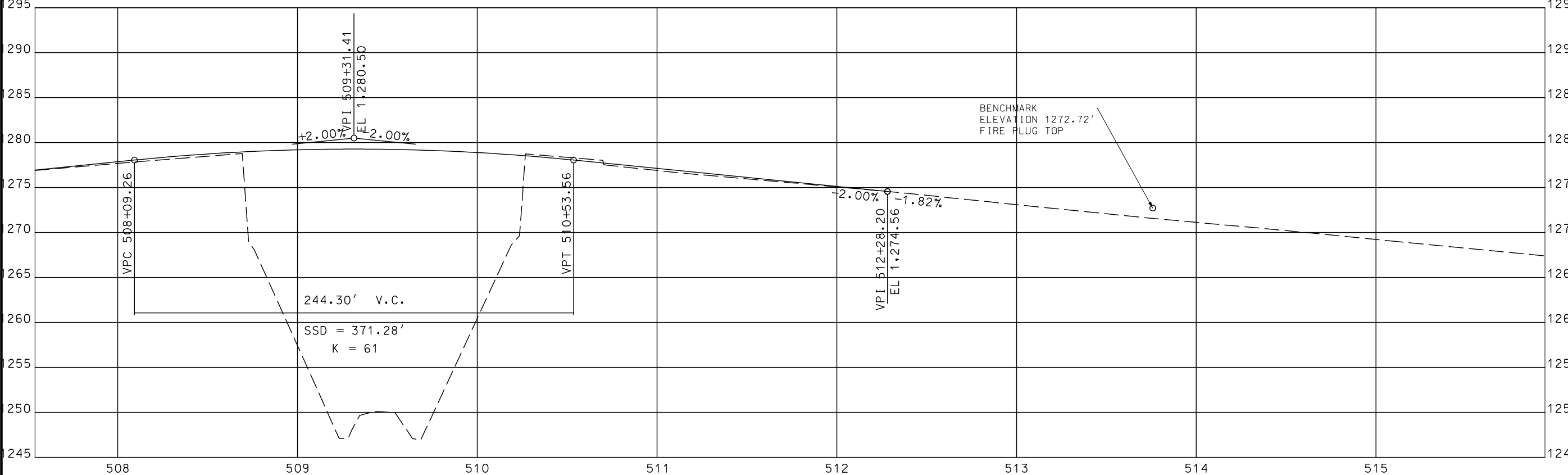
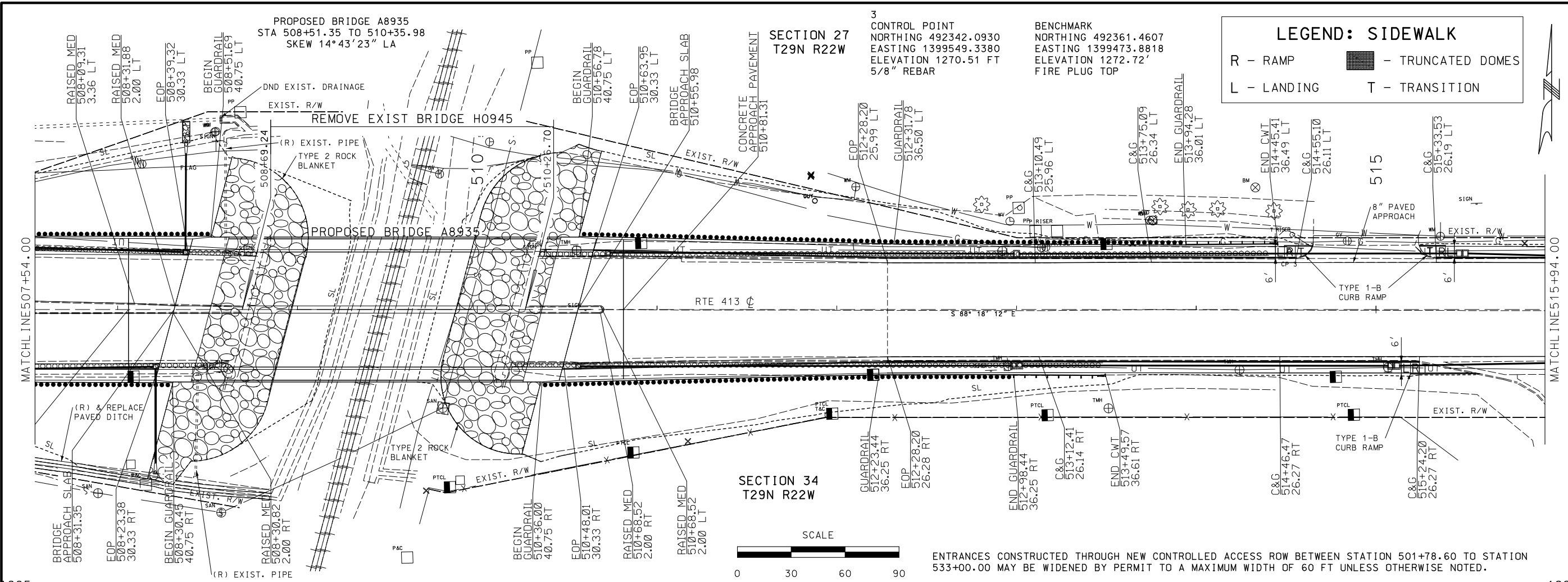
JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

PLAN/PROFILE SHEET

SHEET 1 OF 6

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



STATE OF MISSOURI
WARNER D. SHERMAN
PE-26645
PROFESSIONAL ENGINEER

DATE PREPARED
6/12/2023

ROUTE
413

DISTRICT
SW

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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.

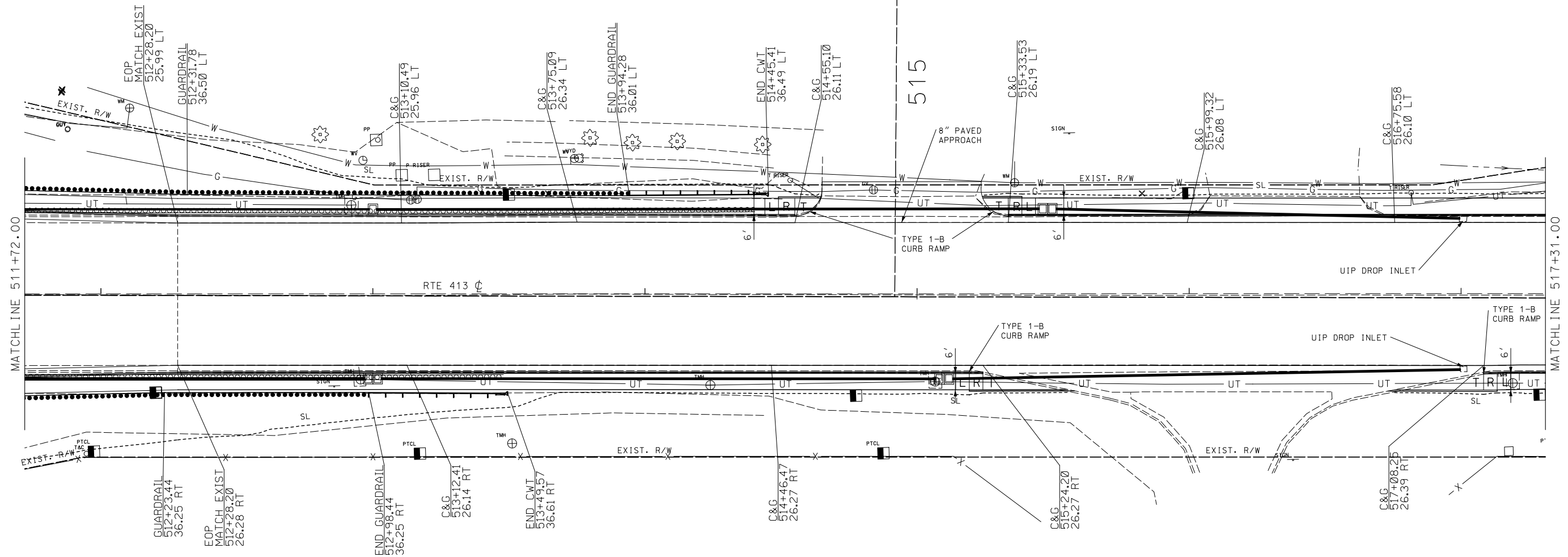
3
CONTROL POINT
NORTHING 492342.0930
EASTING 1399549.3380
ELEVATION 1270.51 FT
5/8" REBAR

BENCHMARK
NORTHING 492361.4607
EASTING 1399473.8818
ELEVATION 1272.72'
FIRE PLUG TOP

LEGEND: SIDEWALK
R - RAMP
L - LANDING
- TRUNCATED DOMES
T - TRANSITION

R - RAMP - TRUNCATED DOMES
L - LANDING T - TRANSITION

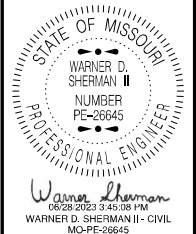
1/4 1/4 SEC LINE



SCALE

0 20 40 60

PLAN/PROFILE SHEET
SHEET 3 OF 6



DATE PREPARED	
6/12/2023	
ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	6
COUNTY	
GREENE	
JOB NO.	
J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A8935	

[illegible]

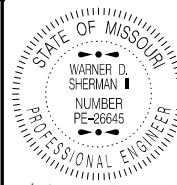
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



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.



WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 7

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

PLAN/PROFILE SHEET
SHEET 4 OF 6

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

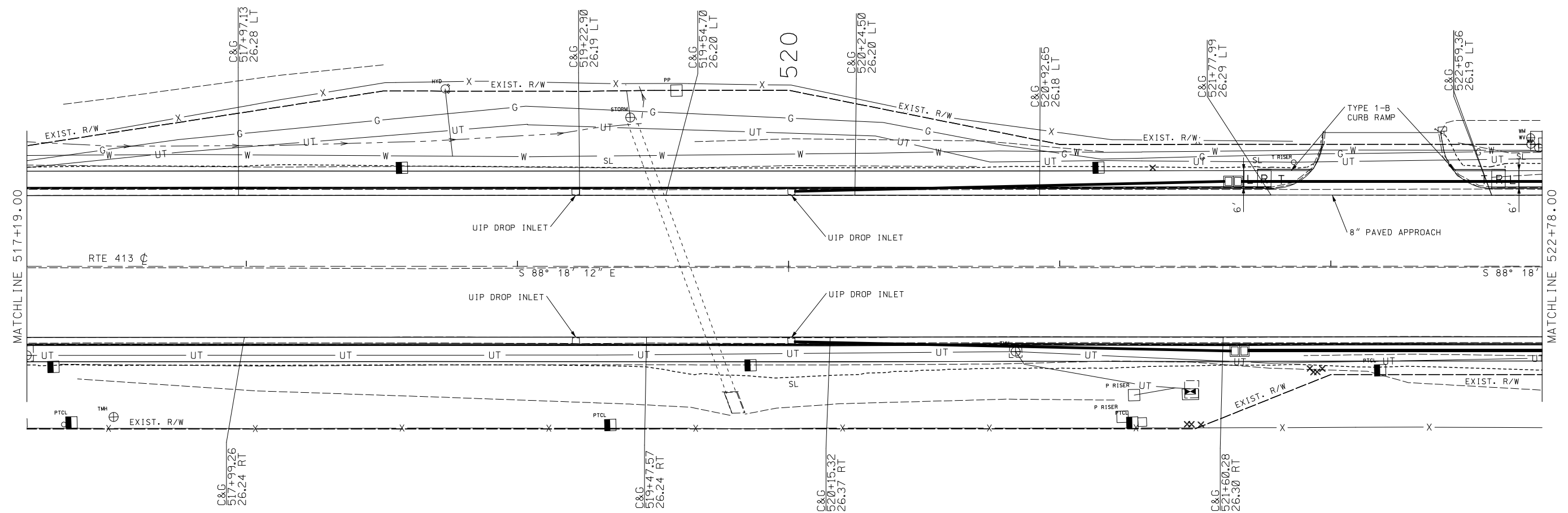


SECTION 27 T29N R22W

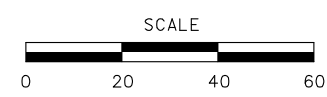
LEGEND: SIDEWALK

- R - RAMP
L - LANDING
T - TRANSITION
-  - TRUNCATED DOMES

ENTRANCES CONSTRUCTED THROUGH NEW
CONTROLLED ACCESS ROW BETWEEN STATION
501+78.60 TO STATION 533+00.00 MAY BE
WIDENED BY PERMIT TO A MAXIMUM WIDTH OF
60 FT UNLESS OTHERWISE NOTED.



SECTION 34 T29N R22W



PLAN/PROFILE SHEET
SHEET 4 OF 6



SECTION 27 T29N R22W

"THE APPROXIMATE LOCATION OF PROPERTY LINES AS SHOWN ON THE PLANS ARE BASED ON THE BEST KNOWN INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETNESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE"

②
MORRIS INVESTMENTS 3 LLC
(COMMUNICATION SOLUTIONS)
NO TAKINGS

COMMERCIAL ENTRANCE
STA. 504+10.93 LT.
TYPE II DRIVEWAY, NO SKEW
W = 44', -4.8% GRADE
CONCRETE SURFACE
25' RADIUS LT. & RT.

505

CORNER OF SECTION
27,28,33 AND 34
T29N R22W

SEC LINE
SCENIC AVE

POT STA 501+78.60
BEGIN PROJECT
501+78.60

S 88° 18' 12" E

RTE 413

MATCHLINE 506+58.00

AGREE SPRINGFIELD LLC
(KUM & GO)

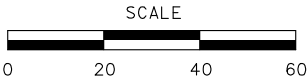
①
M&J GARDNER PROP LLC
(DOMINO'S PIZZA)
0.03 AC (1,127 SF) TEMP ESM'T. (CONST)
0.52 AC (22,652 SF) REMAINING

③
D & Z PROPERTIES LLC
0.07 AC (3,007 SF) TEMP ESM'T. (CONST)
5.10 AC (222,156 SF) REMAINING

SECTION 34 T29N R22W

COMMERCIAL ENTRANCE
STA. 505+24.06 RT.
TYPE II DRIVEWAY, NO SKEW
W = 44', -3.2% GRADE
CONCRETE SURFACE
20' RADIUS LT.
35' RADIUS RT.
18" GROUP A PIPE
W/ 2-18" GROUP A F.E.S.

RIGHT OF WAY
SHEET 1 OF 6



Warner D. Sherman
06/28/2023 3:47:54 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 10

COUNTY GREENE

JOB NO. J8S3157

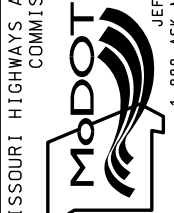
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

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.

②
MORRIS INVESTMENTS 3 LLC
SEE SHEET 10

⑤
PRESTRESSED CASTING CO
0.02 AC (774 SF) NEW RIGHT OF WAY
24.64 AC (1,073,318 SF) REMAINING

④
UNION PACIFIC RR
0.52 AC (22,582 SF) TEMP ESM'T. (CONST)

⑦
GBS PROPERTY CO., LLC
0.15 AC (6,463 SF) NEW RIGHT OF WAY
15.66 AC (682,150 SF) REMAINING

SECTION 27 T29N R22W

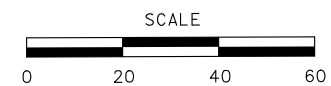
SECTION 34 T29N R22W

③
D & Z PROPETIES LLC
SEE SHEET 10

⑥
USA
0.02 AC (727 SF) PERM ESM'T. (SIDEWALK)
0.27 AC (12,024 SF) TEMP PERMIT (CONST)
259.80 AC (11,304,137 SF) REMAINING

MATCHLINE 506+25.00

MATCHLINE 511+84.00



RIGHT OF WAY
SHEET 2 OF 6



Warner D. Sherman
06/28/2023 3:48:25 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE
413

STATE
MO

DISTRICT
SW

SHEET NO.
11

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

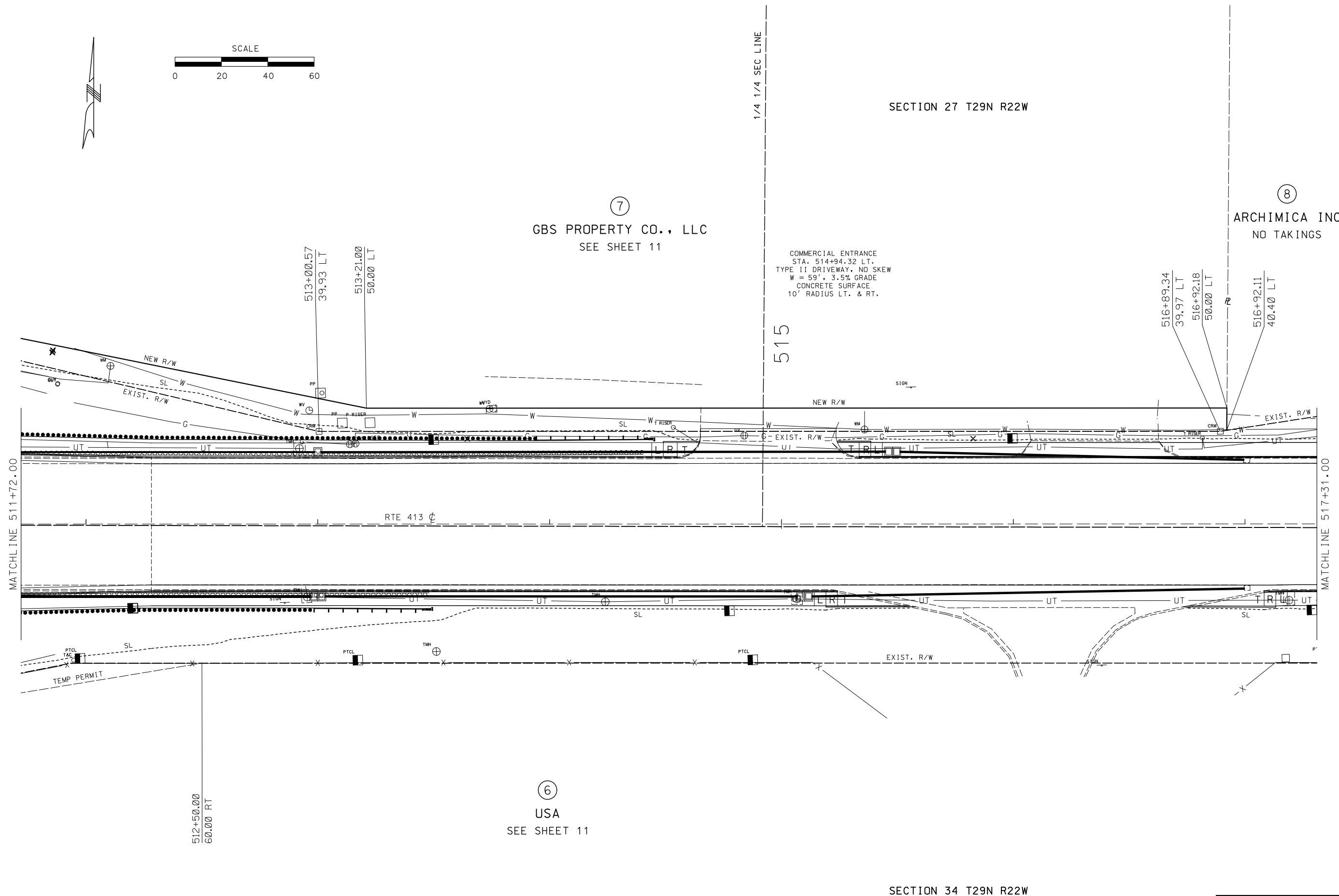
DATE

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.



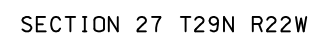
SECTION 27 T29N R22W

7
GBS PROPERTY CO., LLC
SEE SHEET 11

8
ARCHIMICA INC
NO TAKINGS

SECTION 34 T29N R22W

	
Warner D. Sherman 06/29/2023 3:49:01 PM WARNER D. SHERMAN II - CIVIL MO-PE-26645	
DATE PREPARED 6/12/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 12
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	



8
ARCHIMICA INC
NO TAKINGS

COMMERCIAL ENTRANCE
STA. 522+18.68 LT.
TYPE II DRIVEWAY, NO SKEW
W = 44', 10.9% GRADE
CONCRETE SURFACE
19' RADIUS LT. & RT.

(9)

HAMBURG PROPERTIES LLC
(RED'S GIANT HAMBURG)
0.02 AC (931 SF) TEMP ESM'T. (CONST)
1.39 AC (60,549 SF) REMAINING

521+86.47	58.00 LT
521+86.28	45.00 LT
522+58.00	45.00 LT
522+58.00	58.00 LT

MAINTAIN ACCESS TO MAILBOX
SEE JOB SPECIAL PROVISIONS

MATCHLINE 517+19.00

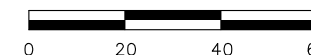
	MATCHLINE	522+78.00
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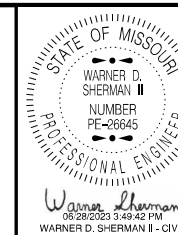
⑥
USA
SEE SHEET 11

SECTION 34 T29N R22W

SCALE



RIGHT OF WAY
SHEET 4 OF 6



MO-PE-26645
DATE PREPARED
6/12/2023

ROUTE	STATE
413	MO

DISTRICT	SHEET NO.
SW	13

SW	TS
COUNTY	
GREENE	

GREENE
JOB NO.
18S3157

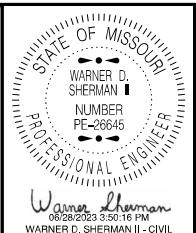
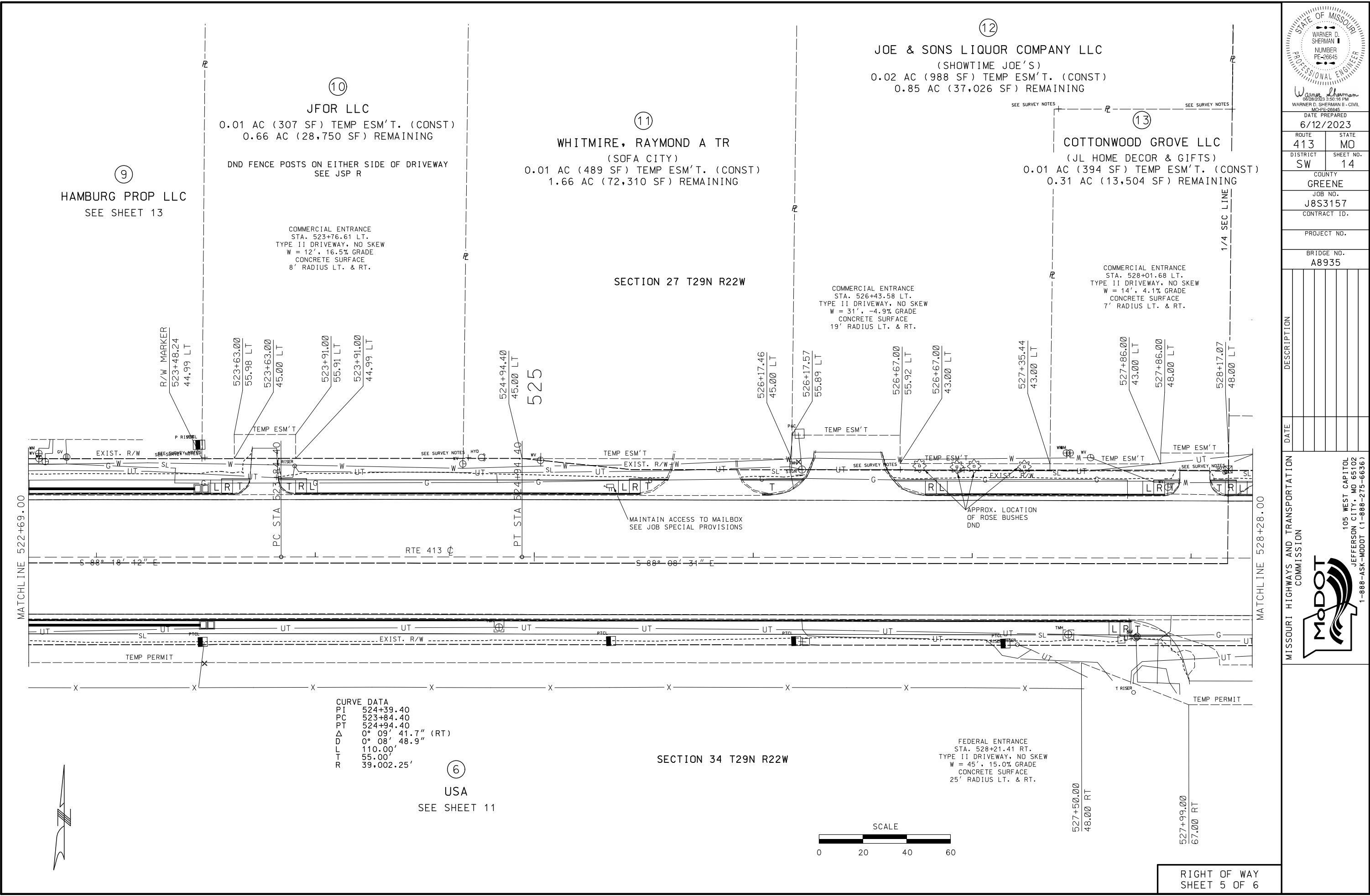
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CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A803E[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

[illegible]



DATE PREPARED	
6/12/2023	
ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	14
COUNTY	
GREENE	
JOB NO.	
J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A8935	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

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

ALL PROJECT COORDINATES HAVE BEEN PROJECTED FROM THE MISSOURI STATE PLANE COORDINATE (SPC) SYSTEM OF 1983 USING AN AVERAGE PROJECT PROJECTION (GRID TO GROUND) FACTOR. TO GET BACK TO STATE PLANE COORDINATES, MULTIPLY THE PROJECT COORDINATES BY THE AVERAGE GRID FACTOR AS SHOWN IN THE "REFERENCE CONTROL INFORMATION" PORTION OF THIS TABLE.

PROJECT COORDINATE INFORMATION	
COORDINATE SYSTEM	MODIFIED STATE PLANE
HORIZONTAL DATUM	NAD83
VERTICAL DATUM	NAVD88
GEOID MODEL	GEOID 2012A
ELEVATIONS DETERMINED BY	GPS
PROJECT PROJECTION FACTOR	1.00005850

REFERENCE CONTROL INFORMATION	
COORDINATE SYSTEM	MISSOURI STATE PLANE
CONTROL STATION	MODOT GNSS
DESIGNATION	MODOT SPRINGFIELD CORS ARP
CORS_ID	MOSF
PID	DL5388
LATITUDE	37°14' 30.33"
LONGITUDE	93°13' 47.54"
NORTHING (M)	156530.8730
EASTING (M)	435242.8820
ZONE	2402 (MO-CENTRAL)
PROJECT AVERAGE GRID FACTOR	0.99992269

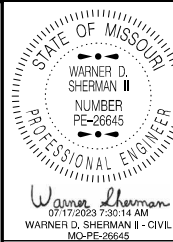
EXAMPLE OF PROJECT COORDINATE TO S.P.C.

PROJECT NORTHING X AVERAGE GRID FACTOR
= STATE PLANE NORTHING
PROJECT EASTING X AVERAGE GRID FACTOR
= STATE PLANE EASTING

EXAMPLE: CONTROL POINT 2
N 492,267.77 X 0.99992269 = N 492,229.71
E 1,398,638.70 X 0.9992269 = E 1,398,530.57

LINEAR UNIT CONVERSION
1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING								
SHEET NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND)			DESCRIPTION	GPK POINT ID
				NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)		
PROJECT CONTROL POINTS								
4	505+43.73	RT	68.86	492,267.7749	1,398,638.6950	1,270.65	CP 2 5/8 REBAR	
5	514+51.77	LT	32.39	492,342.0930	1,399,549.3380	1,270.51	CP3 5/8" REBAR	
ALIGNMENTS								
4	501+78.60	413 ⌀	0.00	492,347.4154	1,398,275.7631	1,270.51	413 POB	
4	506+03.18	413 ⌀	0.00	492,334.8454	1,398,700.1578	1,273.94	413 CONSTRUCTION JOINT, TIE TO EXISTING	
4-5	508+09.26	414 ⌀	0.00	492,328.7444	1,398,906.1427	1,278.06	413 PVC	
4-5	509+31.41	413 ⌀	0.00	492,325.1280	1,399,028.2391	1,280.50	413 PVI	
5	510+53.56	413 ⌀	0.00	492,321.5117	1,399,150.3356	1,278.06	413 PVT	
5-6	512+28.20	413 ⌀	0.00	492,316.3412	1,399,324.9020	1,274.56	413 CONSTRUCTION JOINT, TIE TO EXISTING	
8	523+84.40	413 ⌀	0.00	492,282.1111	1,400,480.5962	1,269.40	413 PC	
8	524+39.40	413 ⌀	0.04	492,280.4828	1,400,535.5721	1,270.10	413 PI	
8	524+94.40	413 ⌀	0.00	492,278.6994	1,400,590.5432	1,270.60	413 PT	
	541+58.40	413 ⌀	0.00	492,224.7447	1,402,253.6682	1,263.12	413 POE	



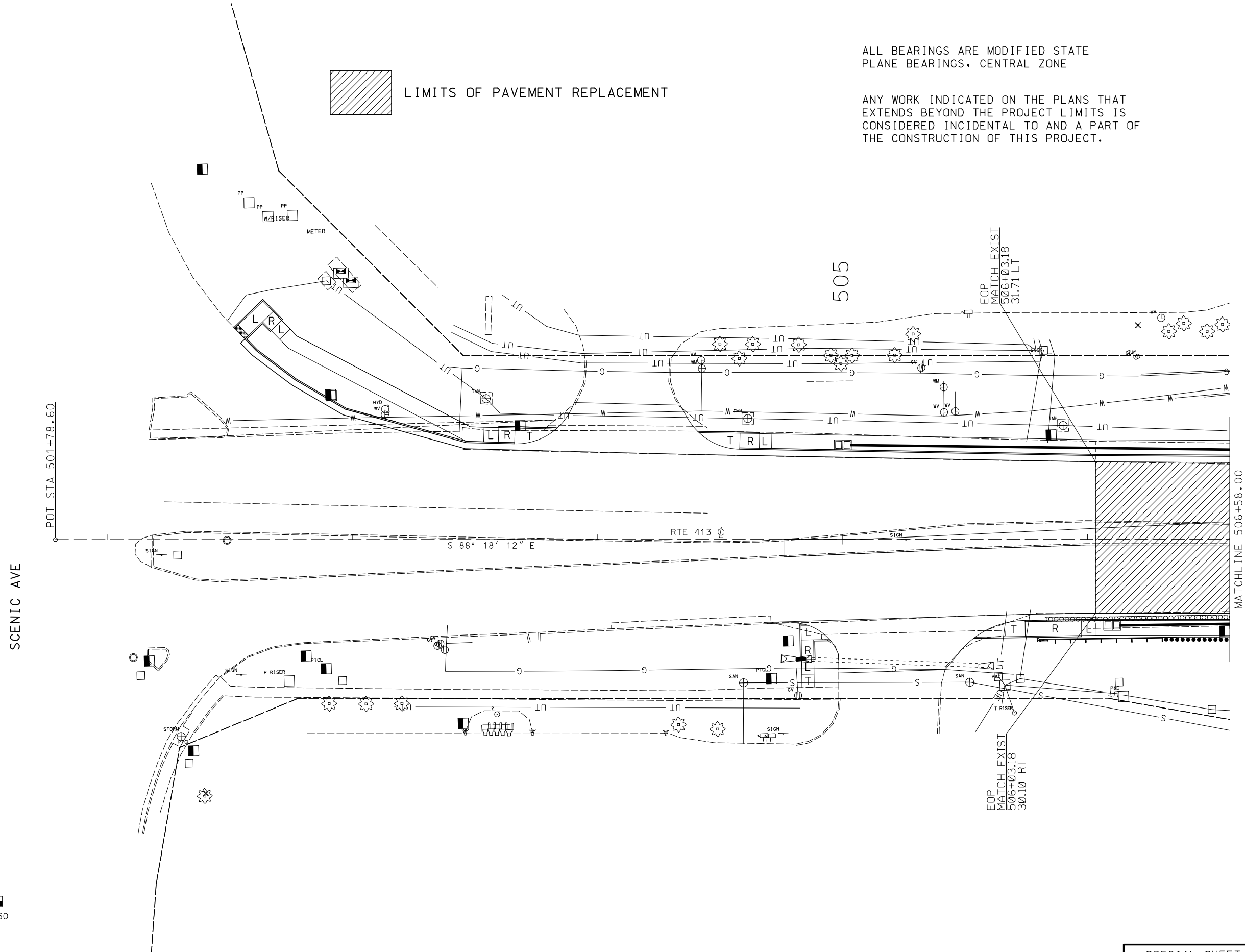
DATE PREPARED 7/17/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 16
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

DESCRIPTION	DATE						

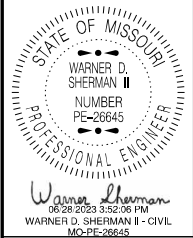
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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.



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



DATE PREPARED 6/12/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 17

COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

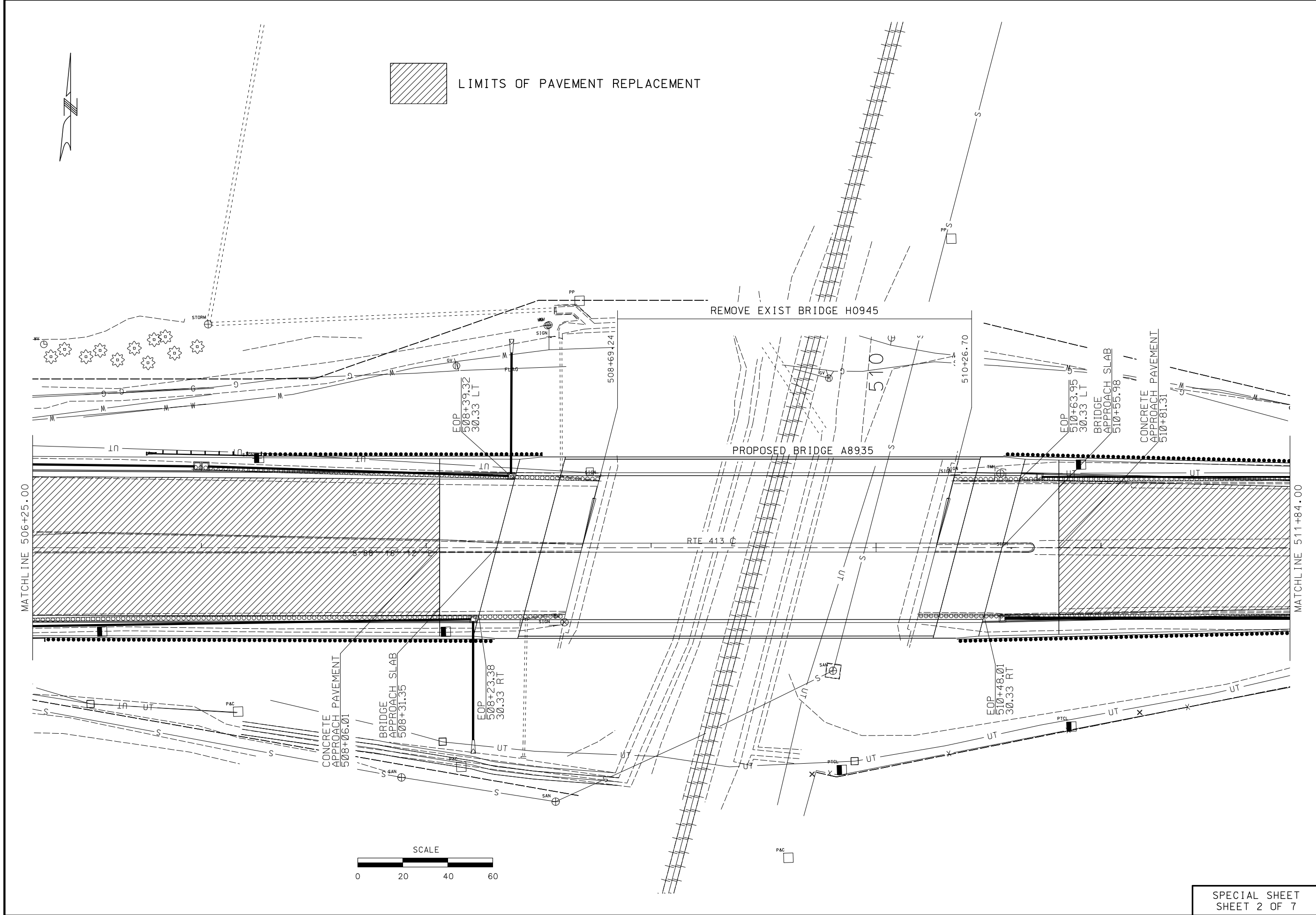
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

[illegible]

SPECIAL SHEET
SHEET 1 OF 7



STATE OF MISSOURI

WARNER D. SHERMAN II

NUMBER PE-26645

PROFESSIONAL ENGINEER

Warner D. Sherman

06/28/2023 9:52:56 PM

WARNER D. SHERMAN II - CIVIL

MO-PE-26645

DATE PREPARED	
6/12/2023	
ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	18
COUNTY	
GREENE	
JOB NO.	
J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A8935	

DATE	DESCRIPTION

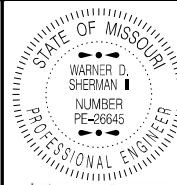
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

SPECIAL SHEET
SHEET 2 OF 7

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



Warner D. Sherman
06/28/2023 3:53:30 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 19

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

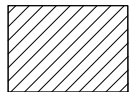
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



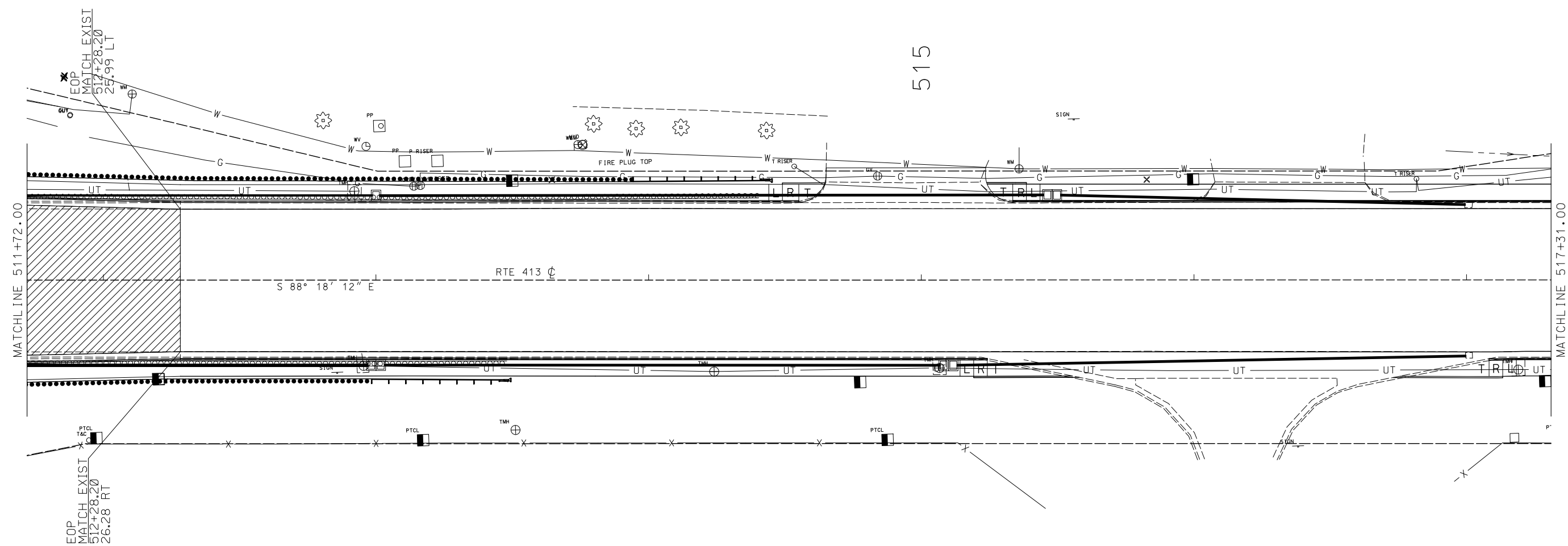
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

SPECIAL SHEET
SHEET 3 OF 7

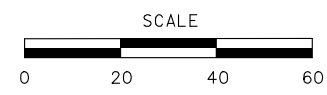
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

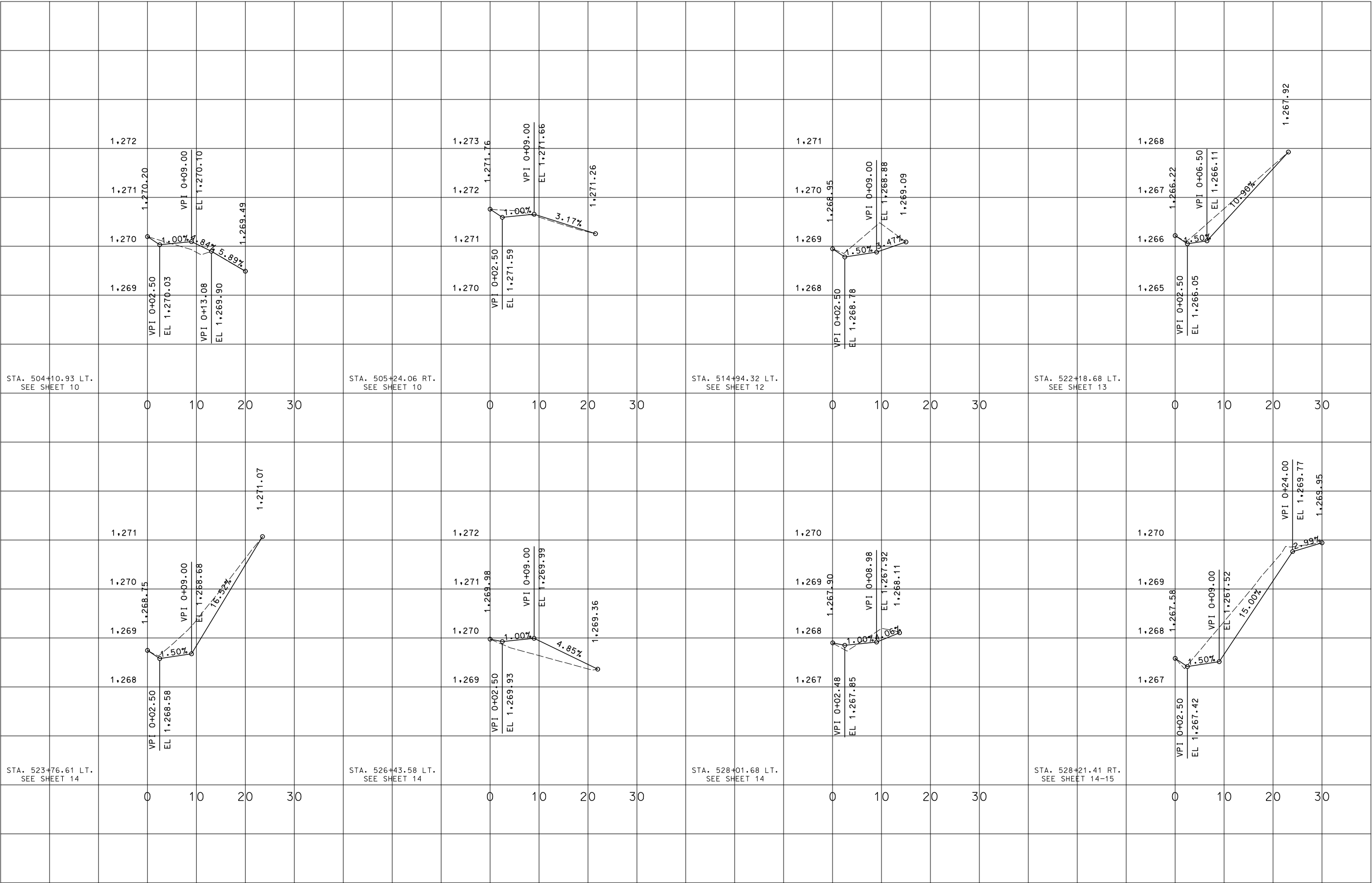


LIMITS OF PAVEMENT REPLACEMENT

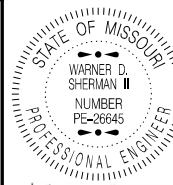


515





DRIVEWAY PROFILES
SPECIAL SHEET
SHEET 4 OF 7



Warner D. Sherman
06/28/2023 3:54:05 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO
DISTRICT SW SHEET NO. 20

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

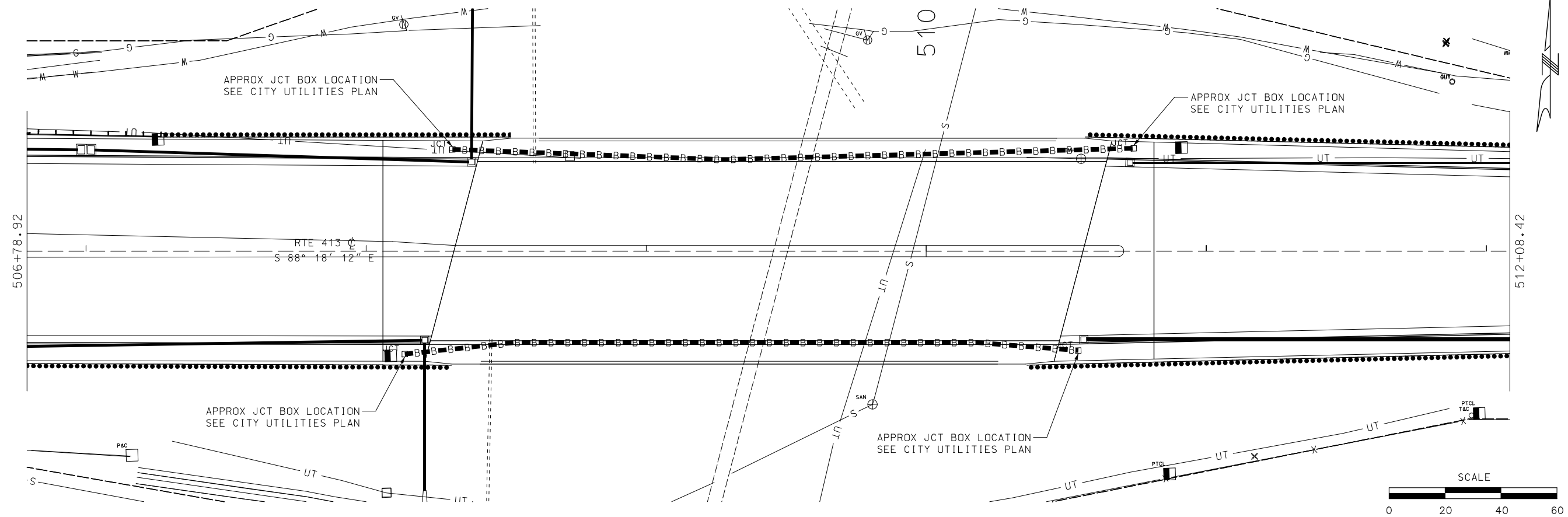
DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION



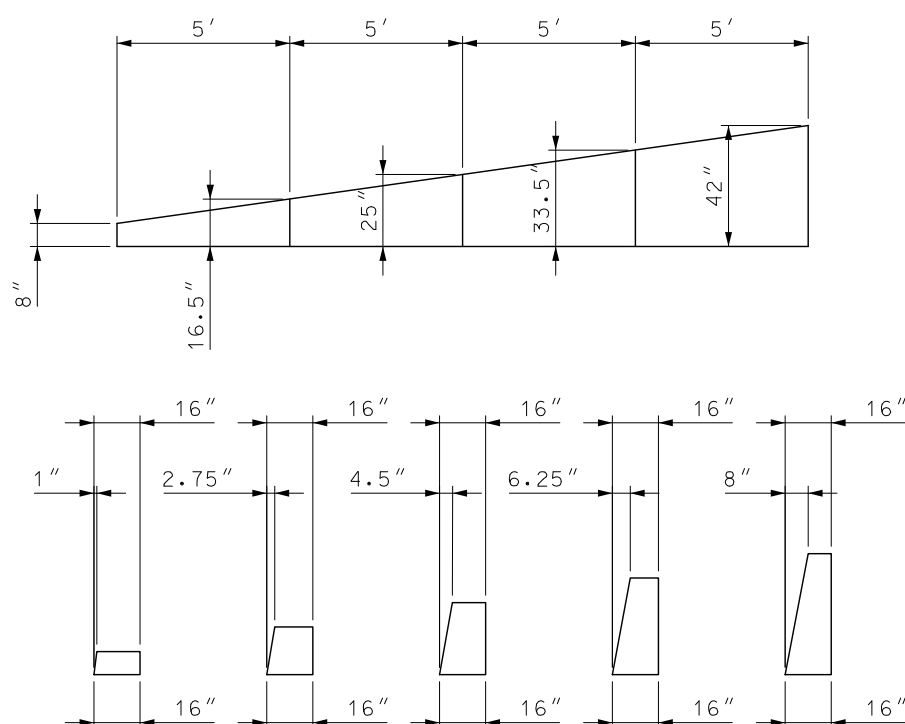
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

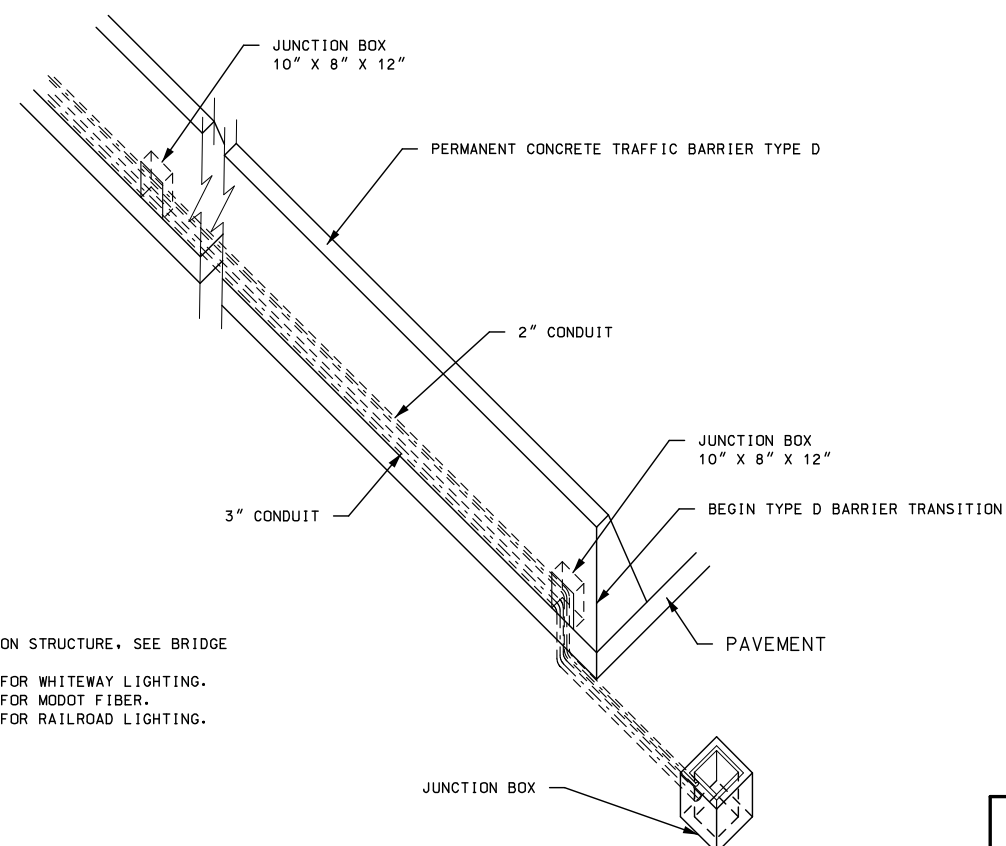


	
Warner Sherman 06/28/2023 3:54:39 PM WARNER D. SHERMAN II - CIVIL MO-PE-26645	
DATE PREPARED	
6/12/2023	
ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	21
COUNTY	
GREENE	
JOB NO.	
J853157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A8935	
DESCRIPTION	
DATE	

TYPE D BARRIER TRANSITION

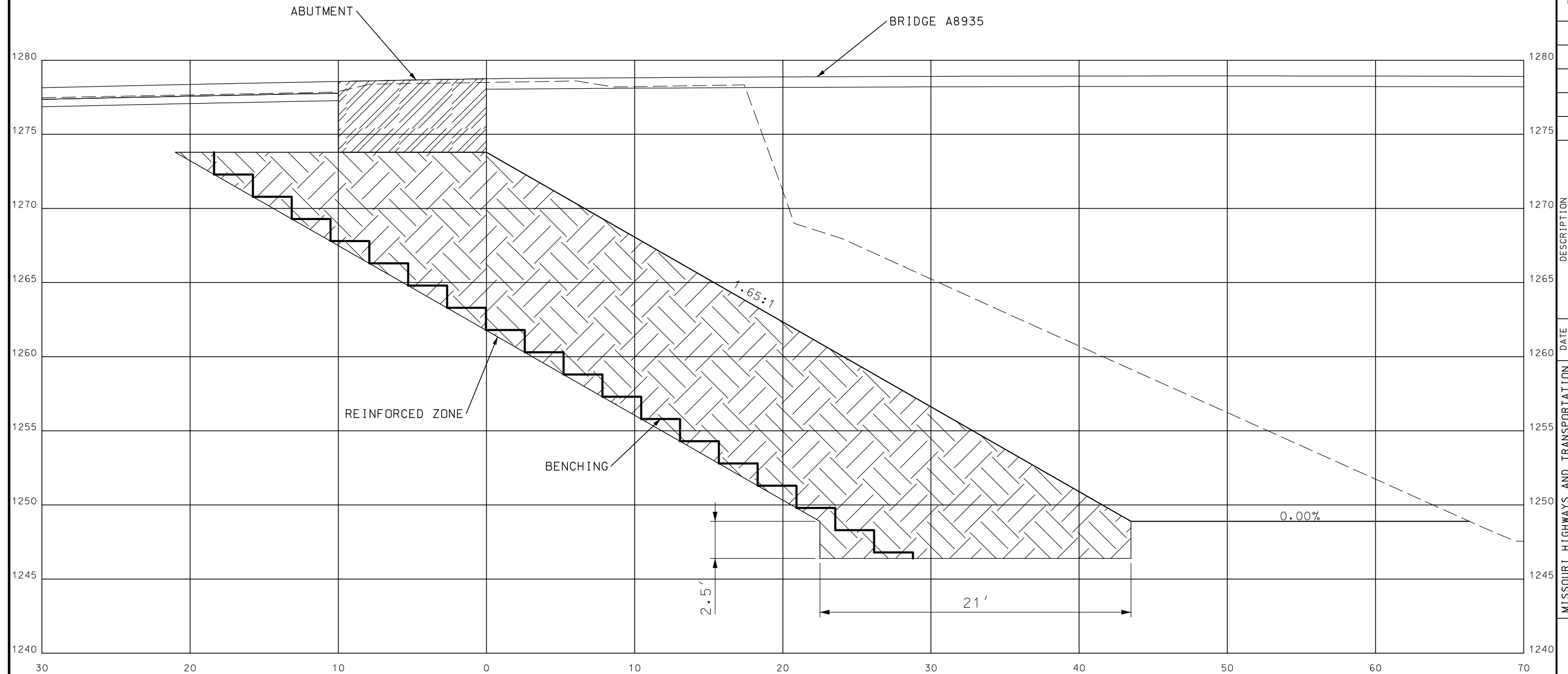


CONDUIT IN TYPE D BARRIER DETAIL



- NOTES:
1. FOR ADDITIONAL DETAILS FOR CONDUIT ON STRUCTURE, SEE BRIDGE PLANS AND CITY UTILITIES PLANS.
 2. 2" CONDUIT ON BOTH SIDES OF BRIDGE FOR WHITEWAY LIGHTING.
 3. 3" CONDUIT ON NORTH SIDE OF BRIDGE FOR MODOT FIBER.
 4. 3" CONDUIT ON SOUTH SIDE OF BRIDGE FOR RAILROAD LIGHTING.

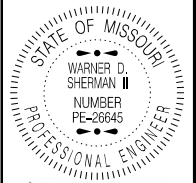
WEST END BENT REINFORCEMENT DETAIL



NOTES

1. THIS SHEET IS FOR REFERENCE ONLY. SEE GEOTECHNICAL REPORT AND BRIDGE PLANS FOR MORE INFORMATION.
2. PILING ISOLATION SHOULD EXTEND TO AN APPROXIMATE ELEVATION OF 1,259 FEET.
3. GEOTEXTILE FABRIC SHALL UNDERLIE THE TYPE 2 ROCK BLANKET.

SPECIAL SHEET
SHEET 6 OF 7



Warner Sherman
06/28/2023 3:55:16 PM
WARNER D. SHERMAN II - CIVIL

MO-PE-26645
DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
--------------	-------------

DISTRICT SW	SHEET NO. 22
COUNTY	

COUNTY
GREENE
JOB NO.

J8S3157
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
AB03E

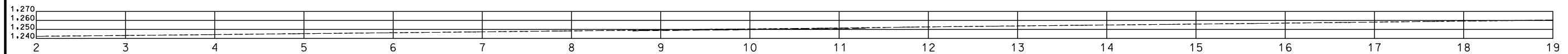
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

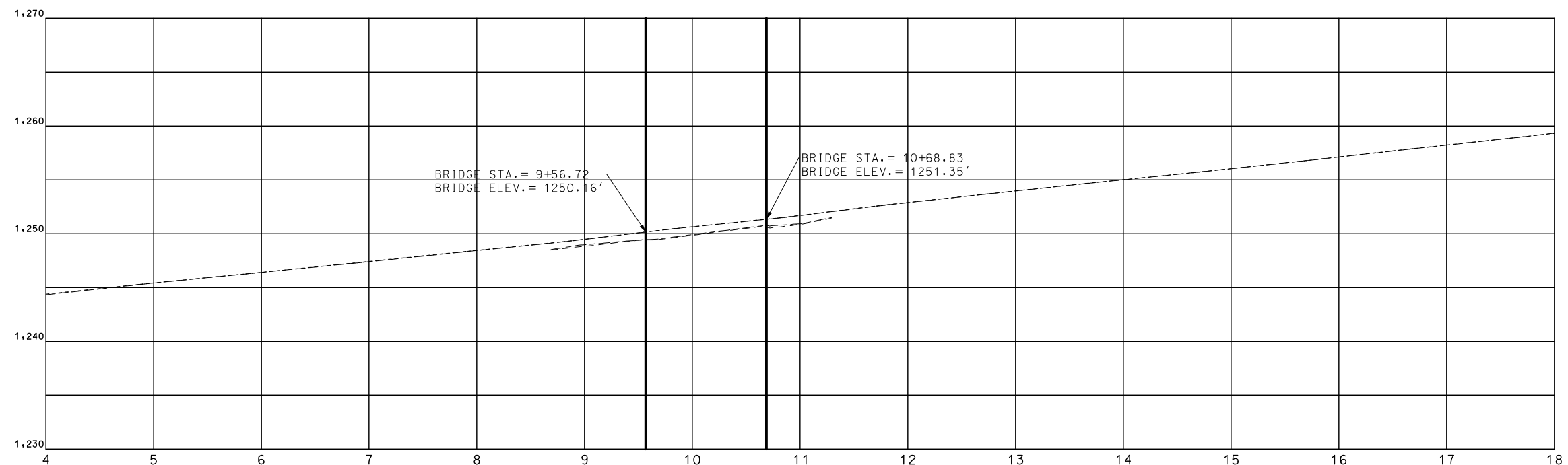
 105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

EXIST. RR PROFILE



SCALE:
HORIZONTAL 1"=100'
VERTICAL 1"=100'



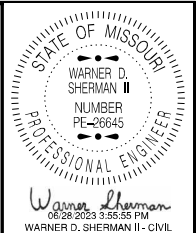
SCALE:
HORIZONTAL 1"=100'
VERTICAL 1"=10'

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-----EXIST. RR PROFILE RT
---EXIST. RR PROFILE LT
---EXIST. RR PROFILE RT TERRAIN MODEL
---EXIST. RR PROFILE LT TERRAIN MODEL

```

SPECIAL SHEET
SHEET 7 OF 7



MO-PE-26645
DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 23

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.	A8935
------------	-------

[illegible]

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.



W020-3
(20)



A W R S



W020-3a
(20A)

TYPE III MOVABLE BARRICADE
WITH TYPE B WARNING LIGHTS



SPECIAL
(56N)

Completed as Promised

42 IN X 6 IN

(60A)



CHANGEABLE MESSAGE BOARD

**BRIDGE
Improvements**



SUMMER 2023

96 IN X 48 IN

(60)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-1

(50A)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-1L

(50B)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-3

(50C)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-1R

(50D)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-1

(50E)

DETOUR

MD4-8

NORTH

M3-1



M1-5



M6-2R

(50L)

DETOUR

MD4-8

SOUTH

M3-3



M1-5



M6-1

(50F)

DETOUR

MD4-8

SOUTH

M3-3



M1-5



M6-1L

(50G)

DETOUR

MD4-8

SOUTH

M3-3



M1-5



M6-3

(50H)

DETOUR

MD4-8

SOUTH

M3-3



M1-5



M6-1R

(50J)

DETOUR

MD4-8

SOUTH

M3-3



M1-5



M6-1

(50K)

DETOUR

MD4-8

SOUTH

M3-3



M1-5

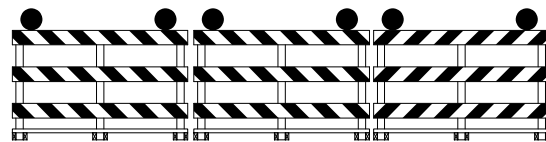


M6-2R

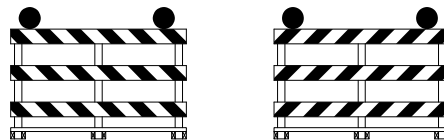
(50M)

SIGN (60) PLACED BEFORE SOFT
CLOSURES DURING CONSTRUCTION

SIGN (60) & (60A) AS SHOWN AFTER CONSTRUCTION



TYPE III MOVABLE BARRICADES
FULL CLOSURE



TYPE III MOVABLE BARRICADES
SOFT CLOSURE (STAGGERED)



W020-2
(18)

END
DETOUR

MD4-8a

(52)

ROAD
CLOSED

R11-2

(29)

ROAD CLOSED
TO
THRU TRAFFIC

R11-4

(55A)

ROAD CLOSED
1 MILES AHEAD
LOCAL TRAFFIC ONLY

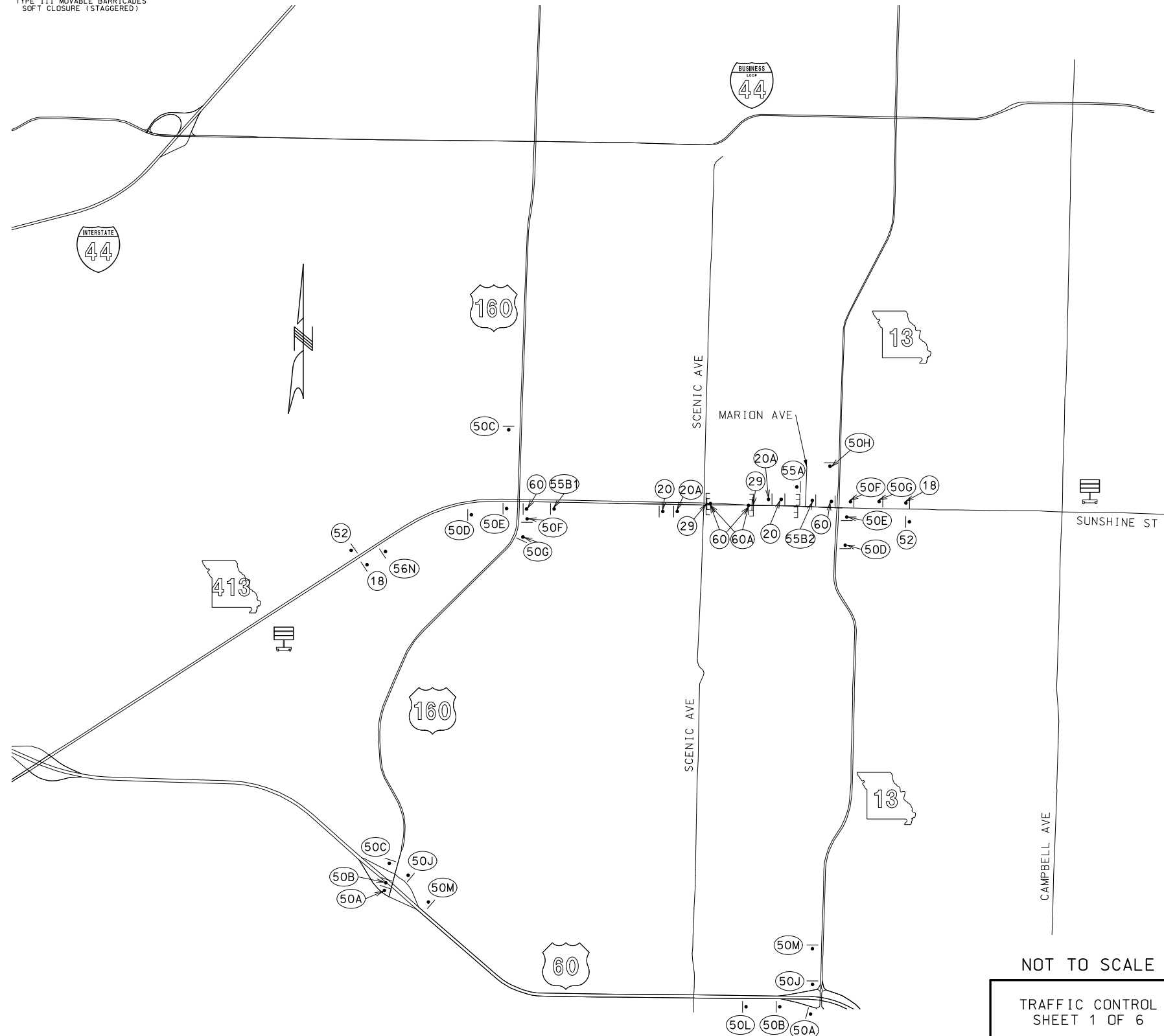
R11-3a

(55B1)

ROAD CLOSED
0.5 MILES AHEAD
LOCAL TRAFFIC ONLY

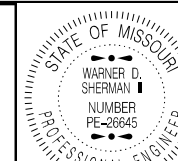
R11-3a

(55B2)



NOT TO SCALE

TRAFFIC CONTROL
SHEET 1 OF 6



Warner D. Sherman
06/26/2023 3:56:28 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/26/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 24

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

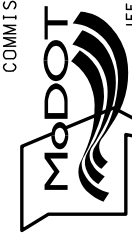
PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



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

TYPICAL CLOSURE OF EXISTING BRIDGES OR NON-TRAVERSABLE ROADS

SPEED NORMAL POSTED (MPH)	SIGN SPACING (FT.)		TAPER LENGTH (FT.)		OPTIONAL BUFFER LENGTH (FT.) (B)	CHANNELIZER SPACING (FT.)	
	UNDIVIDED (S)	DIVIDED (S)	SHOULDER (T1)	LANE (T2)		TAPERS	BUFFER/ WORK AREAS
0-35	200	200	-	-	250	-	-
40-45	350	500	-	-	360	-	-
50-55	500	1000	-	-	495	-	-
60-70	1000	SA - 1000 SB - 1500 SC - 2640	-	-	730	-	-

TYPE OF ROADWAY	SIGN HEIGHT	MAXIMUM WORK ZONE LENGTH (L)
URBAN	1' PORTABLE 7' POST	1 MI.
RURAL UNDIVIDED	1' PORTABLE 5' POST	3 MI.

REFER TO EPG 606.1.3.5 CLOSURES OF EXISTING STREETS, ROADS, AND BRIDGES OR NON-TRAVERSABLE ROADS FOR BRIDGE AND/OR ROAD CLOSURES DESIGNATED NON-TRAVERSABLE

(1) THE ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY SIGN SHOULD BE LOCATED AT THE FIRST STATE ROUTE OR, UPON THE DISCRETION OF THE SUPERVISOR, ANY OTHER INTERSECTION IN ADVANCE OF THE CLOSURE.

(2) ADDITIONAL BARRICADES MAY BE USED AND OFFSET TO FACILITATE ACCESS FOR LOCAL TRAFFIC, ETC.

(3) THE USE OF TYPE D GUARDRAIL AND TYPE 4 OBJECT MARKERS VERSUS TYPE III BARRICADES AND TEMPORARY CONCRETE TRAFFIC BARRIERS ARE DEPENDENT UPON THE DISTRICT/CENTRAL OFFICE REPLACEMENT SCHEDULE.

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

FOR ADVANCE WARNING RAIL SYSTEM, REFER TO EPG 616.6.2.2 FLAGS AND ADVANCE WARNING RAIL SYSTEM (AWRS).

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 606.00 GUARDRAIL TYPE D FOR GUARDRAIL AND POST-MOUNTED TYPE III BARRICADES.

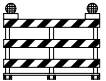
REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 616.10 TEMPORARY TRAFFIC CONTROL DEVICES FOR TYPE III BARRICADES.

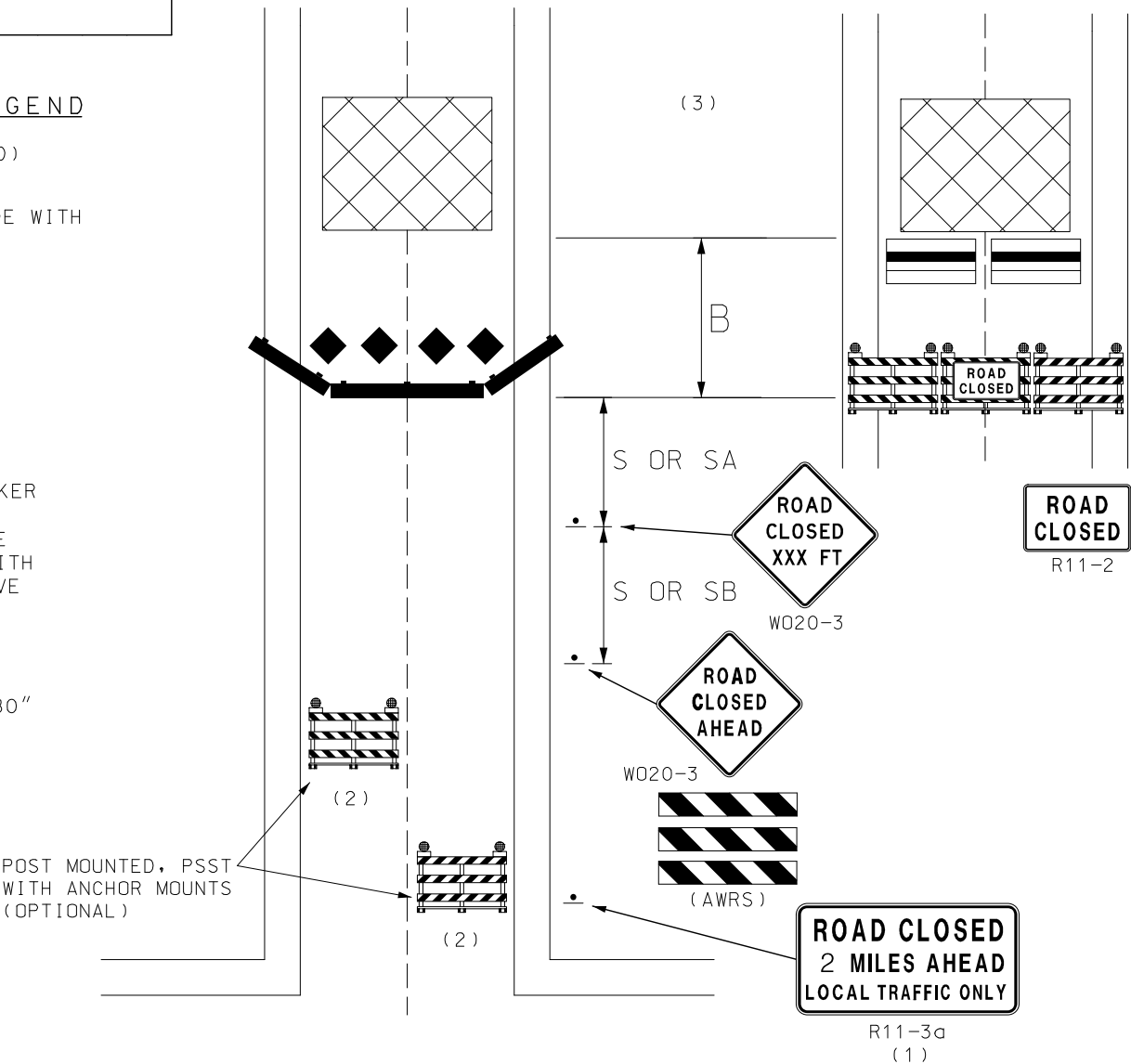
REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 903.03 SIGN MOUNTING DETAILS DELINEATORS OBJECT MARKERS FOR TYPE 4 OBJECT MARKER.

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 617.20 TEMPORARY CONCRETE TRAFFIC BARRIER FOR CONCRETE BARRIERS.

REFER TO STANDARD PLANS FOR HIGHWAY CONSTRUCTION 1042 HIGHWAY SIGN MATERIAL FOR 6-INCH WIDE, 10-12-FOOT LONG RED RETROFLECTIVE SHEETING.

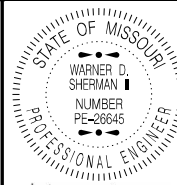
TRAFFIC CONTROL LEGEND

	SIGN (SINGLE SIDED)
	TYPE III BARRICADE WITH WARNING LIGHTS
	WORK SPACE
	TYPE D GUARDRAIL
	TYPE 4 OBJECT MARKER
	TEMPORARY CONCRETE TRAFFIC BARRIER WITH RED RETROFLECTIVE SHEETING
	ASTM TYPE IV 6" RED REFLECTIVE SHEETING WITH 0.080" ALUMINUM BACKING



NOT TO SCALE

TRAFFIC CONTROL
SHEET 2 OF 6



Warner D. Sherman
06/28/2023 3:57:03 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE
413

STATE
MO

DISTRICT
SW

SHEET NO.
25

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

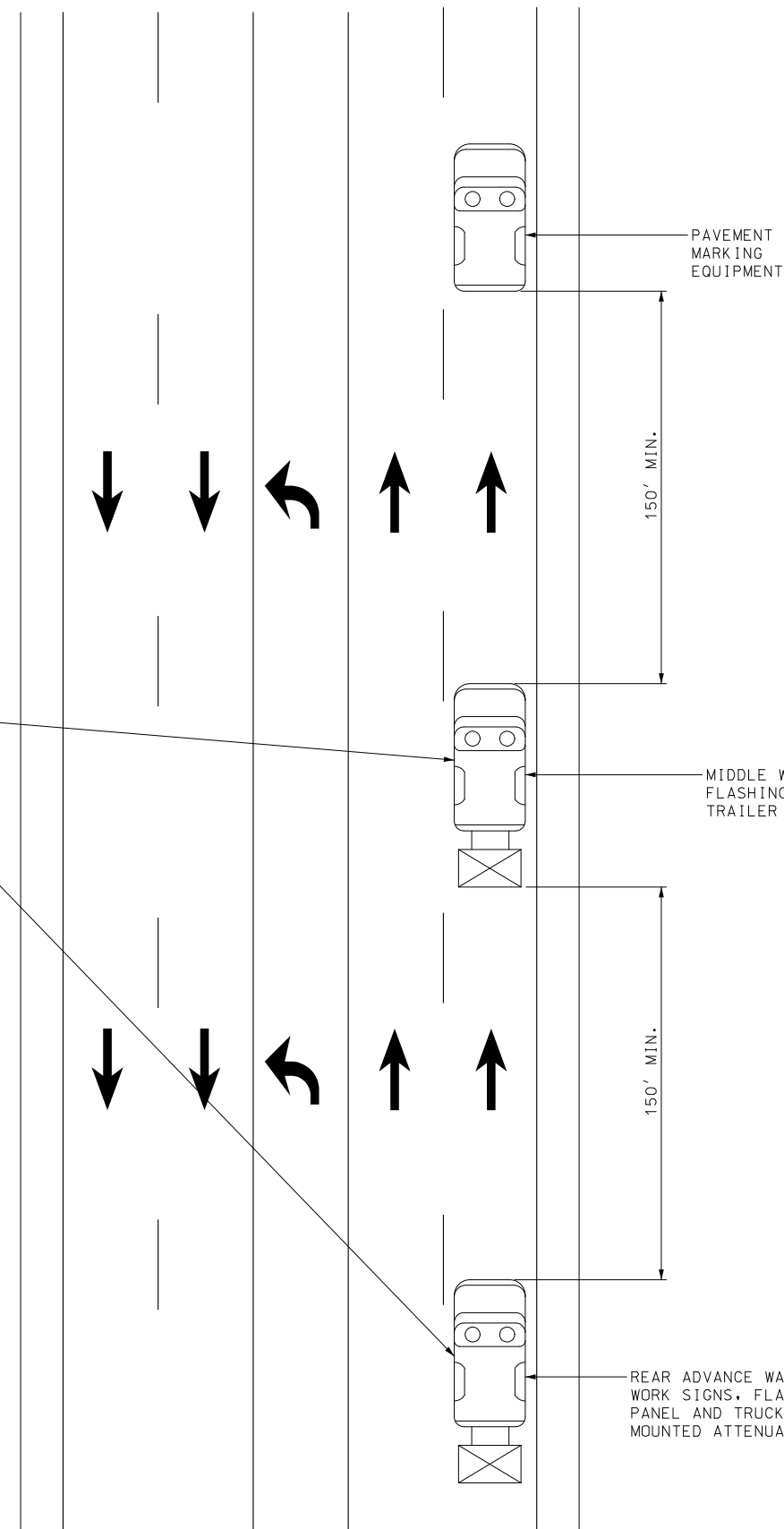
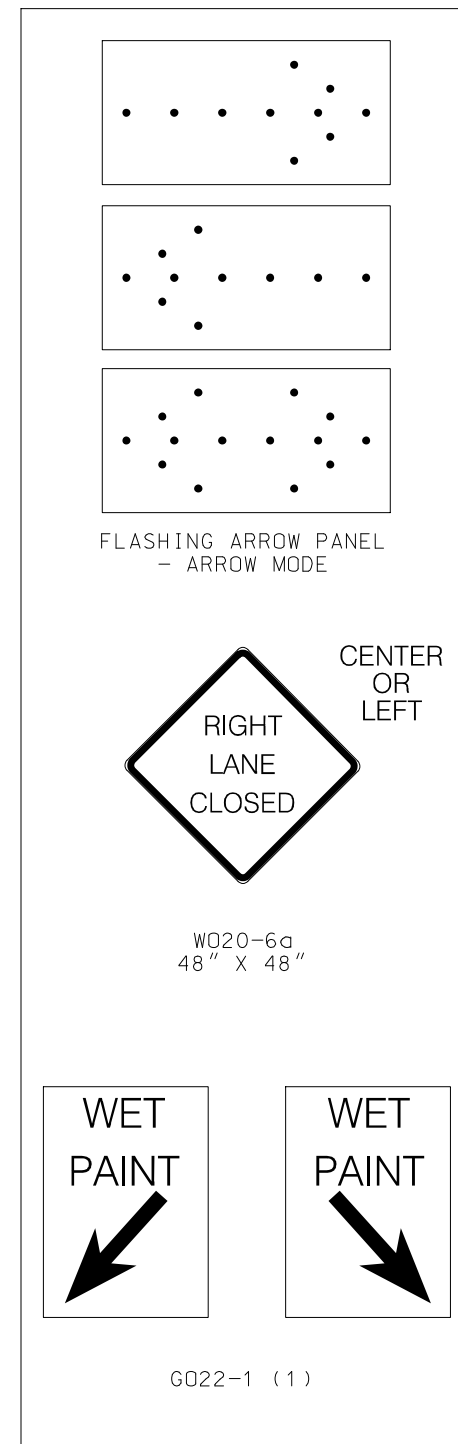
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

MODOT

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



NOTES:
UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PROVIDE ADDITIONAL
PROTECTIVE TRUCKS EQUIPPED WITH PROPER WARNING DEVICES.

PROTECTIVE TRUCK AND WORK VEHICLES SHALL DISPLAY HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH-INTENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

FLASHING ARROW PANELS AND SIGNS SHALL BE INCIDENTAL TO TRUCK MOUNTED ATTENUATORS, WHEREVER USED. NO ADDITIONAL PAYMENT SHALL BE MADE.

(1) WET PAINT SIGNS ARE INSTALLED TO INDICATE THE SIDE IN WHICH THE PAVEMENT MARKING MATERIAL IS BEING APPLIED. AT THE CONTRACTOR'S OPTION, A FRONT FACING WET PAINT SIGN MAY BE INSTALLED ON THE LEFT SIDE OF THE PAVEMENT MARKING EQUIPMENT.

(2) REAR ADVANCE WARNING TRUCK IS POSITIONED AT THE NO TRACK POINT OF THE PAVEMENT MARKING MATERIAL, OR VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE, OR SPACING SHOWN.

FLASHING ARROW PANELS SHALL, AS A MINIMUM, BE TYPE B, WITH A SIZE OF 60 X 30 INCHES.

VEHICLE-MOUNTED SIGNS SHALL BE MOUNTED IN A MANNER SUCH THAT THEY ARE NOT OBSCURED BY EQUIPMENT OR SUPPLIES. SIGN LEGENDS ON VEHICLE-MOUNTED SIGNS SHALL BE COVERED OR TURNED FROM VIEW WHEN WORK IS NOT IN PROGRESS.

A FLASHING ARROW BOARD SHALL BE USED WHEN A FREEWAY LANE IS CLOSED. WHEN MORE THAN ONE LANE CLOSED, A SEPARATE FLASHING ARROW PANEL BOARD SHALL BE USED FOR EACH CLOSED LANE.

NOT TO SCALE

CENTERLINE AND/OR LANE LINE STRIPING ON MULTI-LANE UNDIVIDED HIGHWAYS

TRAFFIC CONTROL
SHEET 3 OF 6



Warner Sherman
06/28/2023 3:57:35 PM
WARNER D. SHERMAN II - CIVIL
MQ-PF-26645

DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
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DISTRICT	SHEET NO.
SW	26

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.	0000151
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PROJECT NO.

BRIDGE NO.	A8935
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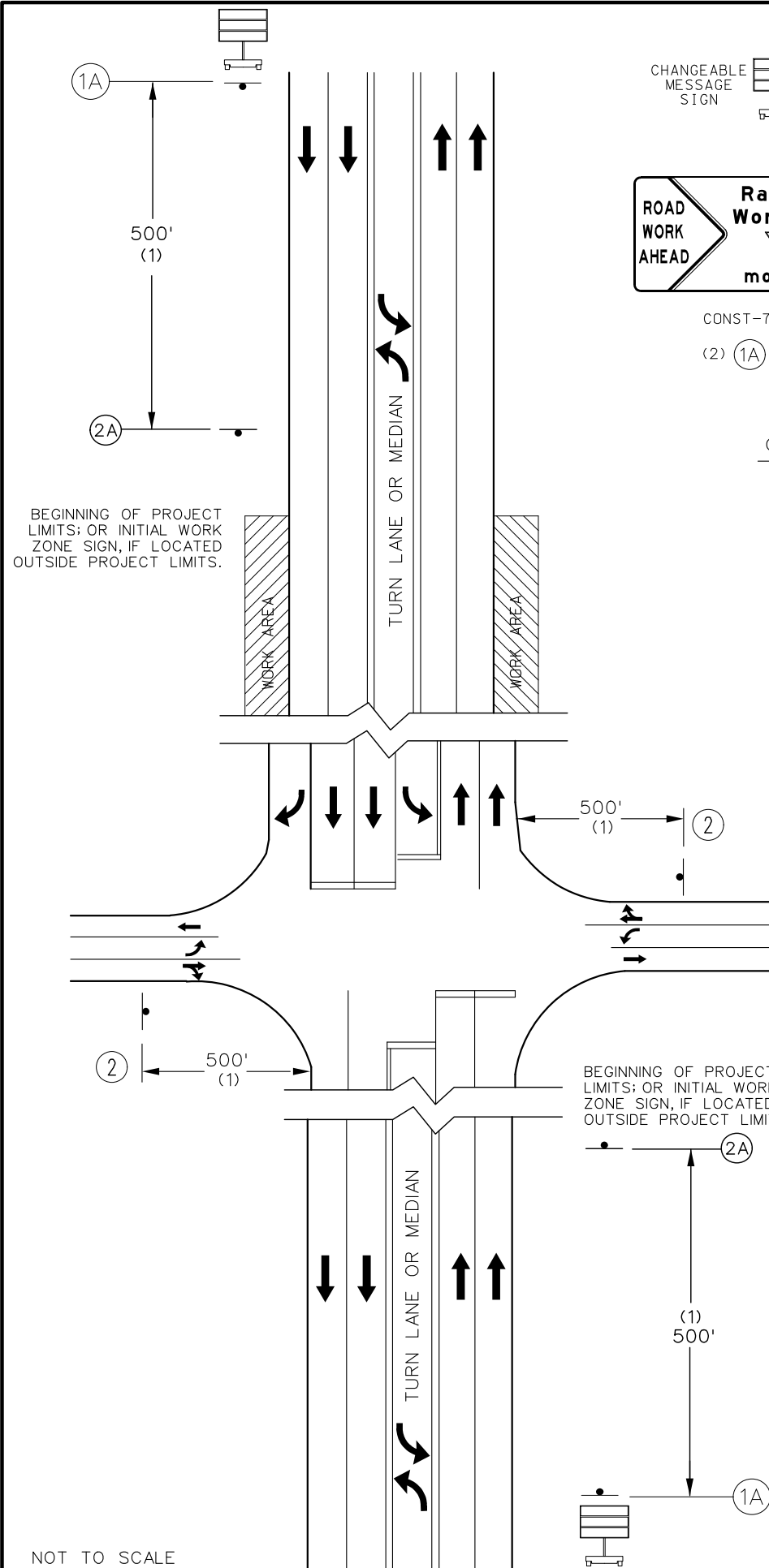
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

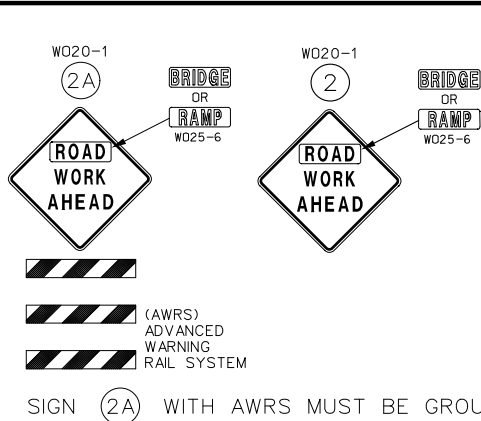
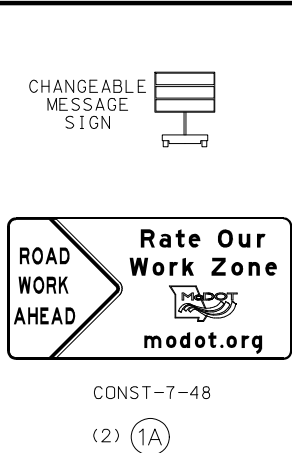
 105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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

REV.



NOT TO SCALE



GENERAL NOTES:

1. ANY EXISTING SIGNING THAT CONFLICTS WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.
 2. ALTERNATE TRAFFIC CONTROL MAY BE USED AS NEEDED AT THE APPROVAL OF THE ENGINEER.
 3. SEE STANDARD DRAWING 616.10 AND 620.10 FOR ADDITIONAL DETAILS, AND 903.03 FOR SIGN AND SIGN MOUNTING REQUIREMENTS.
 4. SPEED LIMIT SIGNS INDICATING THE NORMAL SPEED LIMIT SHALL BE INSTALLED AT THE END OF THE WORK ZONE, PROVIDED NO FURTHER WORK ZONES WILL BE ENCOUNTERED WITHIN THE NEXT 1/2 MILE.
 5. TEMPORARY SPEED LIMIT SIGNS SHALL BE COVERED OR REMOVED WHEN THE CONDITIONS REQUIRING REDUCED SPEEDS DO NOT EXIST.
 6. NO DIRECT PAYMENT WILL BE MADE FOR THE RELOCATION OF CHANNELIZERS, CONST. SIGNS OR FLASHING ARROW PANEL.
 7. NO DIRECT PAYMENT WILL BE MADE FOR TEMPORARY STOP OR YIELD SIGNS AS NEEDED TO MAINTAIN EXISTING STOP/YIELD CONDITIONS AS APPROVED BY THE ENGINEER.
 8. ALL SIGNS, EXCEPT "RATE OUR WORK ZONE" SIGN, SHALL BE PORTABLE MOUNT AND ARE TO BE MOVED AS WORK PROGRESSES, UNLESS OTHERWISE NOTED. ALL TRAFFIC CONTROL ITEMS SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS.
 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING PROPER TRAFFIC CONTROL SETUPS THROUGHOUT CONSTRUCTION AS DESCRIBED IN THESE PLANS OR AS APPROVED BY THE ENGINEER. ALL TRAFFIC CONTROL SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 10. WHERE MINIMUM LANE WIDTHS CANNOT BE ACHIEVED ON THE SIDE STREETS, THE CONTRACTOR SHALL CLOSE HALF OF THE APPROACH AND POSITION A FLAGGER AT EACH END OF THE WORK AREA. LOCATION TO BE DETERMINED BY THE ENGINEER. ADVANCE FLAGGER SIGNING SHALL BE INSTALLED AS OUTLINED IN THE MUTCD.
 11. THE CONTRACTOR SHALL MAINTAIN PUBLIC ACCESS TO ALL BUSINESSES AND STREETS. NO STREET OR ENTRANCE SHALL BE COMPLETELY BLOCKED.
 12. ALL PEDESTRIAN TRAFFIC CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE CURB RAMP & SIDEWALK IS OPENED FOR PEDESTRIAN TRAVEL.
 13. PEDESTRIAN TRAFFIC CONTROL SIGNS MAY BE MOUNTED ON PORTABLE MOUNTS AT 1 FT. PROVIDED THEY DO NOT INTERFERE WITH PEDESTRIAN MOVEMENT OR BE OBSTRUCTED BY PARKING. OTHERWISE, SIGNS SHALL BE MOUNTED AT 7 FT.
 14. SPACING & DISTANCES OF TRAFFIC CONTROL DEVICES ARE APPROXIMATE. THE EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD & APPROVED BY THE ENGINEER.
- (1) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCE WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED.
- (2) THE "RATE OUR WORK ZONE" SIGN IS PLACED 500 FEET BEFORE THE BEGINNING OF PROJECT LIMITS, THE ROAD WORK AHEAD SIGN OR ROAD WORK NEXT XX MILES SIGN. IF USED, THIS SIGN WILL BE OUTSIDE OF THE PROJECT LIMITS.
- THE "RATE OUR WORK ZONE" SIGN IS AVAILABLE IN TWO SIZES DEPENDING ON ROADWAY CONDITIONS. THE 48" X 24" SIGN IS USED ON LOW VOLUME ROUTES THAT CARRY 400 AADT OR LESS, ON PROJECTS THAT HAVE A DURATION OF 4 WEEKS OR LESS OR IN URBAN AREAS WHERE THERE IS INSUFFICIENT RIGHTS OF WAY FOR A SIX FOOT WIDE SIGN. THE 72" X 36 IN. VERSION OF THE SIGN IS USED IN ALL OTHER APPLICATIONS, BUT CAN ALSO BE USED IN PLACE OF THE 48" X 24" SIGN IF ADDED EMPHASIS IS DEEMED NECESSARY.

BEGIN/END OF PROJECT SIGNING
MULTI-LANE

EFFECTIVE: 06-08-2016
REVISED (ADA): 01-04-2017

SIGN SPACING FOR ADVANCE SIGN SERIES		
SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OR SIGNED CONDITION.		
SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.		
SPEED MPH (S)	NON-DIVIDED HIGHWAYS	DIVIDED HIGHWAYS
0-35	200 FT	200 FT
40-45	350 FT	500 FT
50-55	500 FT	1000 FT
60-70	1000 FT	1000 FT

STATE OF MISSOURI

WARNER D. SHERMAN

NUMBER PE-26645

PROFESSIONAL ENGINEER

Warner D. Sherman

06/28/2023 3:58:17 PM

WARNER D. SHERMAN II - CIVIL

MO-PE-26645

DATE PREPARED

6/12/2023

ROUTE

413

STATE

MO

DISTRICT

SW

SHEET NO.

27

COUNTY

GREENE

JOB NO.

J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A8935

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.

SIGNING REFLECTS
DAY OR NIGHT
TIME WORKING HOURS

EFFECTIVE: 06-08-2016
REVISED (ADA): 12-04-2021

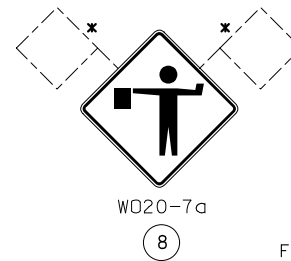
TAPER LENGTHS AND SPACING FOR CHANNELIZERS							
PERMANENT POSTED SPEED MPH	MINIMUM LANE TAPER LENGTH			MINIMUM SHOULDER TAPER LENGTH BASED ON 10' SHOULDER	BUFFER LENGTH FT.	MAXIMUM CHANNELIZER SPACING	
	10'	11'	12'			THROUGH TAPER	THROUGH WORK AREA
0-35	205'	225'	245'	70'	280'	35'	40'
40-45	450'	495'	540'	150'	400'	40'	80'
50-55	550'	605'	660'	185'	560'	50'	80'
60-70	700'	770'	840'	235'	840'	60'	120'

SIGN SPACING FOR ADVANCE SIGN SERIES (1) (2)		
PERMANENT POSTED SPEED MPH	UNDIVIDED HIGHWAYS	DIVIDED HIGHWAYS
0-35	200'	200'
40-45	350'	500'
50-55	500'	1000'
60-70	1000'	SA - 1000' SB - 1500' SC - 2640'

NOTES:

(1) SPACING BETWEEN SIGNS AND SPACING BETWEEN LAST SIGN AND FLAGGER, BEGINNING OF TAPER, OF SIGNED CONDITION.

(2) SPACINGS MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

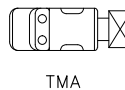


FLAGGER

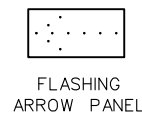
* SIGN W020-7A (FLAGGER SYMBOL) FLAGS ARE INCIDENTAL TO THE SIGN. NO DIRECT PAY.

DIRECTIONAL INDICATOR BARRICADES

CHANNELIZERS



TMA



FLASHING
ARROW PANEL

NIGHT TIME WORK HOURS
7 PM - 6 AM

NOTES:

SEE BEGIN/END OF PROJECT SIGNING SHEET FOR ADDITIONAL SIGNS.

IN TAPER SECTIONS: QUANTITY OF TRIMLINE CHANNELIZERS IS DOUBLED WHEN COMPARED TO MAX. CHANNELIZER SPACING IN THE CHART.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM LANE CLOSURES (NO DIRECT PAY)

NO DIRECT PAYMENT WILL BE MADE FOR THE RELOCATION OF CHANNELIZERS, CONST. SIGNS, OR FLASHING ARROW PANEL.

NO DIRECT PAYMENT WILL BE MADE FOR TEMPORARY STOP OR YIELD SIGNS AS NEEDED TO MAINTAIN EXISTING STOP/YIELD CONDITIONS AS APPROVED BY THE ENGINEER.

FOR SHORT TERM OPERATIONS WHERE IT IS NOT FEASIBLE TO MODIFY PAVEMENT MARKING, DEVICE SPACING ARE ONE-HALF OF THE SPACING SHOWN IN TABLE.

SPEED LIMIT SIGNS INDICATING THE NORMAL SPEED LIMIT SHALL BE INSTALLED AT THE END OF THE WORK ZONE, PROVIDED NO FURTHER WORK ZONES WILL BE ENCOUNTERED WITHIN THE NEXT 1/2 MILE.

ALL SIGNS, EXCEPT "RATE OUR WORK ZONE" SHALL BE PORTABLE MOUNT AND ARE TO BE MOVED AS WORK PROGRESSES, UNLESS OTHERWISE NOTED. ALL TRAFFIC CONTROL ITEMS SHALL BE REMOVED FROM THE ROADWAY DURING NON-WORKING HOURS.

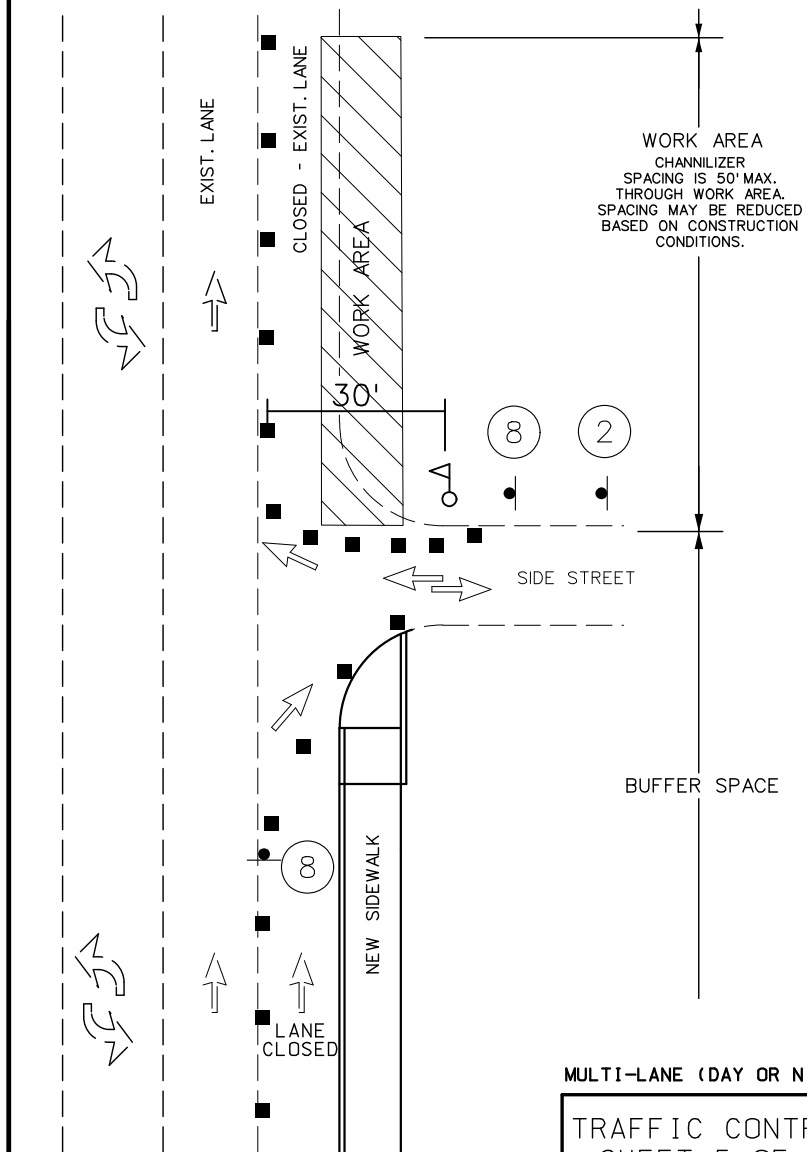
WORK WILL REQUIRE LANE CLOSURES UNLESS OTHERWISE APPROVED BY ENGINEER.

LAYOUT IS TYPICAL FOR EITHER DIRECTION. ALTERNATE TRAFFIC CONTROL MAY BE USED AS NEEDED AT THE APPROVAL OF THE ENGINEER. SEE STANDARD DRAWING 616.10 FOR ADDITIONAL DETAILS.

THE 40' MAX. CHANNELIZER SPACING WITHIN THE WORK ZONE AREA MAY BE REDUCED BASED ON CONSTRUCTION CONDITIONS.

(1) SIGN 5 MAY BE OMITTED IN LOW SPEED URBAN AREAS WHERE THERE IS NOT SUFFICIENT SPACE FOR THE FULL SIGN SERIES.

SIDE STREET FLAGGING DETAIL



Warner D. Sherman
06/28/2023 3:58:49 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 28

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT

TRAFFIC CONTROL SHEET 5 OF 6

NOT TO SCALE

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

1. NO DIRECT PAYMENT WILL BE MADE FOR ORANGE SAFETY FENCE AS REQUIRED AROUND EXCAVATION OF SIDEWALK & CURB RAMP AREAS.
2. SEE JSP's FOR PEDESTRIAN TRAFFIC DEVICES.
3. WORKING AREAS SHALL BE GUARDED FROM PEDESTRIAN ACCESS BY BARRICADE FENCING 36" TO 48" IN HEIGHT WITH A GAP NO GREATER THAN 6" FROM THE GROUND AND HOLES NO GREATER THAN 4" IN ANY DIRECTION.
4. PEDESTRIAN ACCESS ON SIDEWALK SHALL BE PROVIDED WITH A WIDTH NOT LESS THAN 4' OF SMOOTH STABLE SURFACING ADJACENT TO BARRICADE FENCING FOR ACCESS TO THE MAIN BUILDING.
5. SIDEWALK RAMP CLOSURES FOR RECONSTRUCTION SHALL BE PERFORMED WITH ADA COMPLIANT MOVEABLE BARRICADES. TWO BARRICADES PER PEDESTRIAN APPROACH. ONE SIDEWALK CLOSED SIGN WILL BE PLACED UPON ONE BARRICADE FOR EACH APPROACH, NO MORE THAN ONE 5' SECTION OF SIDEWALK RAMP SHALL BE CLOSED LEADING TO THE MAIN BUILDING AT ANY TIME ADJACENT TO THE WORK AREA.

NOT TO SCALE

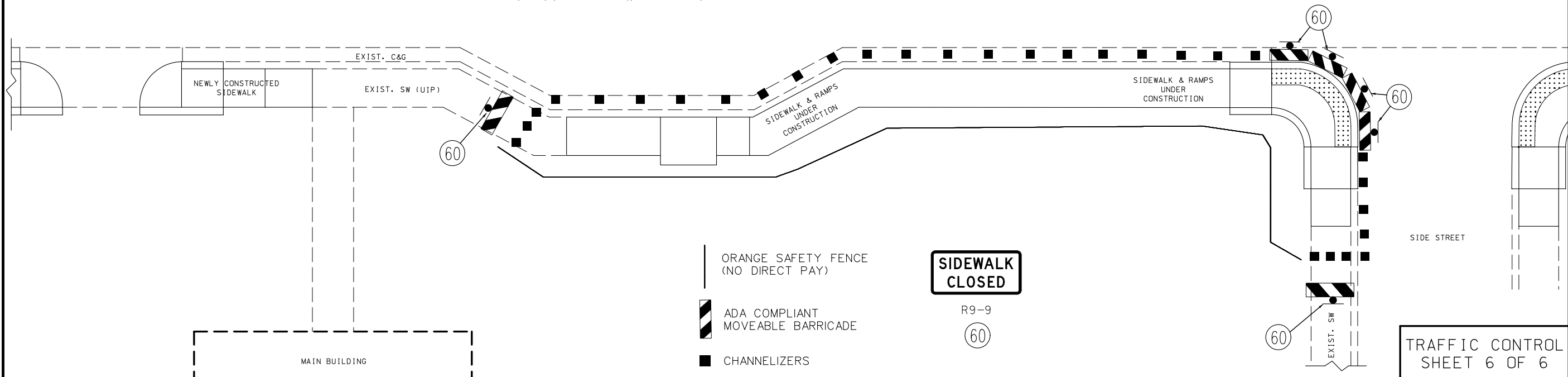
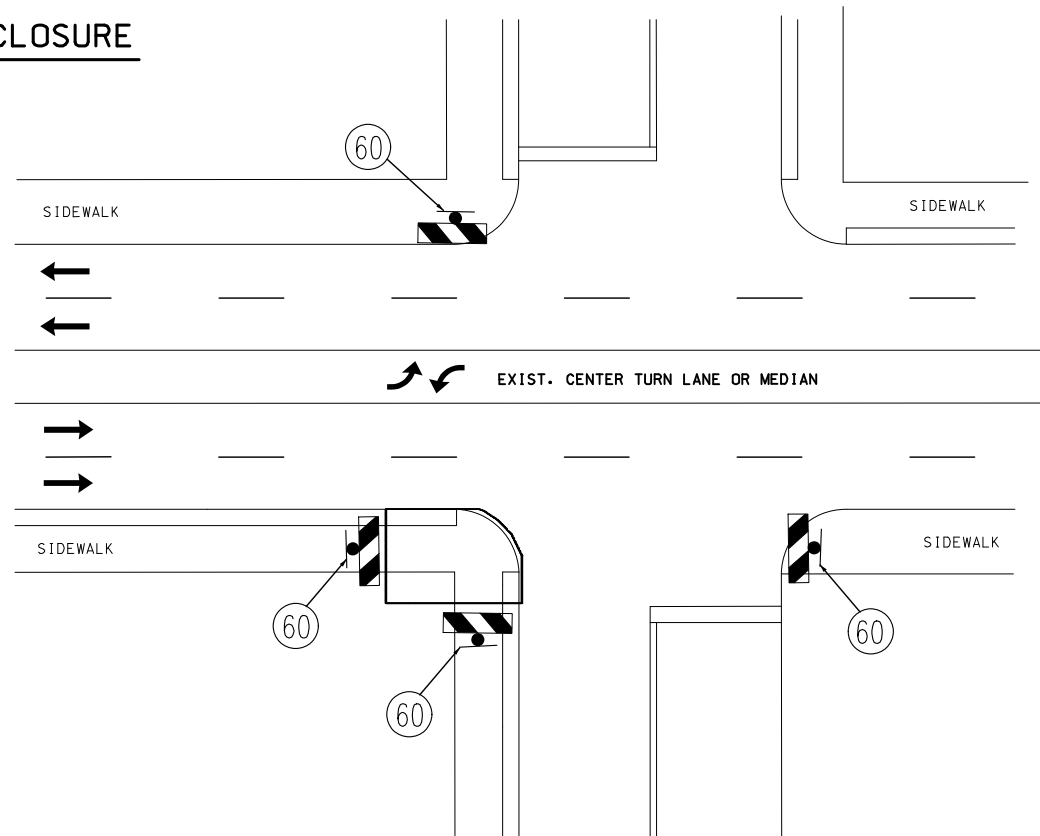


Diagram illustrating a supported foundation fence system. The diagram shows a grid of rectangular sections, representing the fence panels, supported by vertical posts. Key dimensions and components are labeled:

- 6' MAX. T-POST SPACING:** Dimension across the top of the grid.
- 6' T-POST:** Dimension for the vertical posts on the left and right sides.
- BARRICADE SUPPORTED FOUNDATION THE FENCE UP-RIGHT F:** Text on the right side of the diagram.

NO DIRECT PAY.
PLASTIC SAFETY NETTING USED FOR
BARRICADE FENCING SHALL BE
SUPPORTED WITH T-POST, ADEQUATE
FOUNDATIONS, AND BALLAST SO THAT
THE FENCE REMAINS TAUT AND IN AN
UP-RIGHT POSITION.

Diagram illustrating the dimensions and components of a closed sidewalk sign:

- Sign dimensions: 34" - 38" (height) and 6' MIN. (width).
- Sign text: "SIDEWALK CLOSED" and "R9-9".
- Labels:
 - CONTINUOUS SMOOTH RAIL FOR HAND TRAILING
 - DETECTABLE EDGE
 - 2" MAX. FROM TREAD

1. WARNING LIGHTS SHALL NOT BE ATTACHED TO ADA COMPLIANT BARRICADES.
2. CHEVRON RAILS ON THE ADA COMPLIANT BARRICADES MUST BE 8" WIDE MIN. AND MEET TYPE 3 RETRO-REFLECTIVE SHEETING AND COLOR CONTRAST BARRICADE RAILS AS SHOWN. THE TOP RAIL MUST PROVIDE A SMOOTH CONTINUOUS RAIL SURFACE SUITABLE FOR HAND TRAILING WITH NO SPLINTERS, BURRS, OR SHARP EDGES. A MINIMUM OF TWO 8" WIDE RAILS IS REQUIRED.
3. NO TRIPPING HAZARDS FROM THE BARRICADES ARE ALLOWED WITHIN THE PEDESTRIAN SPACE. THIS MEANS NO FEET OR BARS USED TO HOLD THE RAILS OR SUPPORT THE DEVICE ARE ALLOWED WITHIN THE WALKWAY. ALL FEET AND BALLASTS WILL NEED TO BE BEHIND THE DEVICE.
4. THE BARRICADE MUST BE THE FULL WIDTH OF THE CLOSED SIDEWALK.

REVISÉ: 11-19-2018



Warner Sherman
06/28/2023 3:59:27 PM
WARNER D. SHERMAN II - CIVIL
MO-BF-26645

DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 29

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

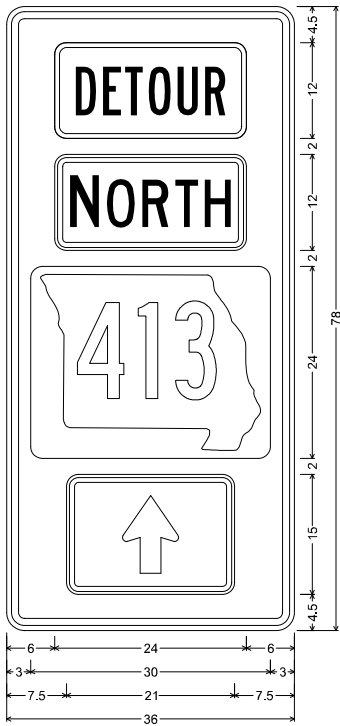
BRIDGE NO.	A8935
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[illegible]

MoDOT
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

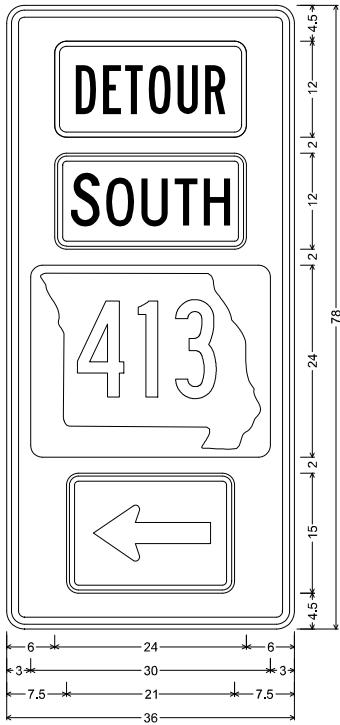
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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



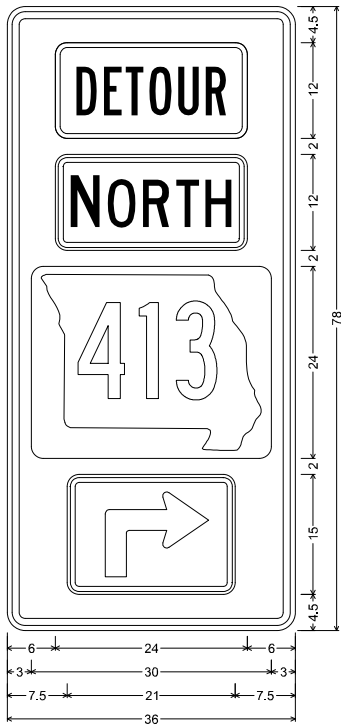
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2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



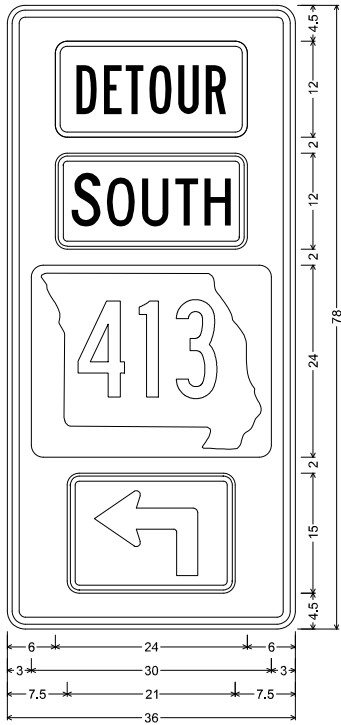
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2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



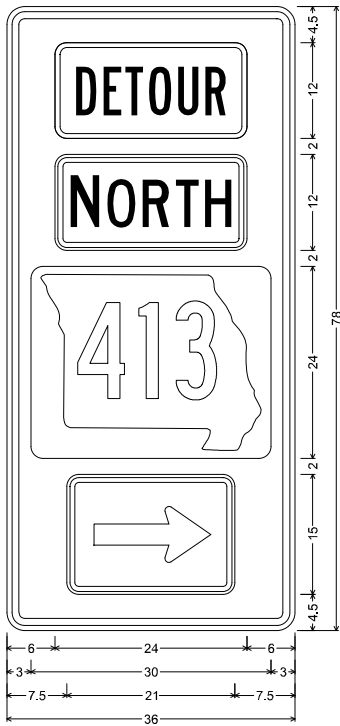
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2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



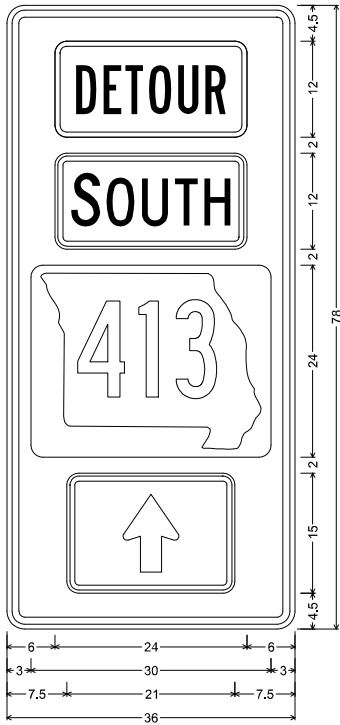
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2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



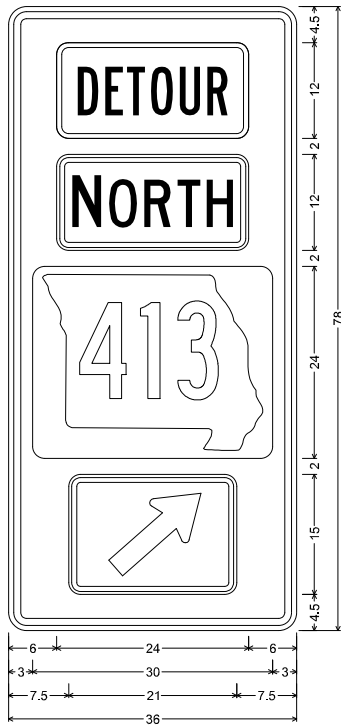
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Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



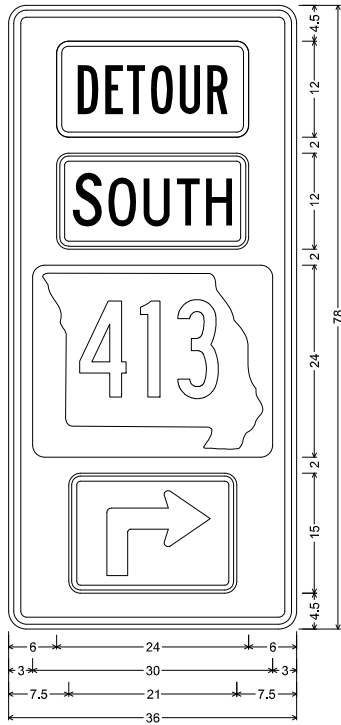
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2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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3,000	ROADWAY	VAR
7,500		



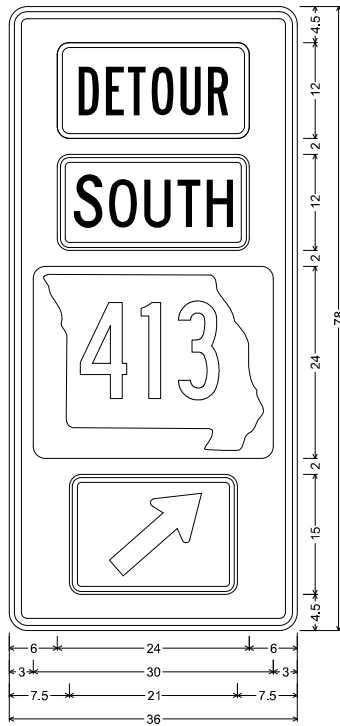
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Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



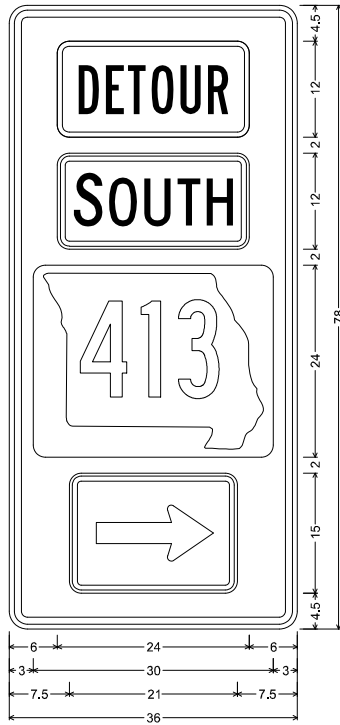
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Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



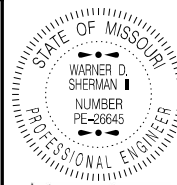
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Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



MO4-11 SHF-FLAT SHEET FLUORESCENT:
2,250" Radius, 0,875" Border, 0,625" Indent, Black on, Orange;
Table of letter and object lefts

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6,000	STATION	VAR
3,000	ROADWAY	VAR
7,500		



Warner D. Sherman
06/28/2023 4:00:52 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 31

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

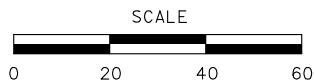
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



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



CORNER OF SECTION
27,28,33 AND 34
T29N R22W

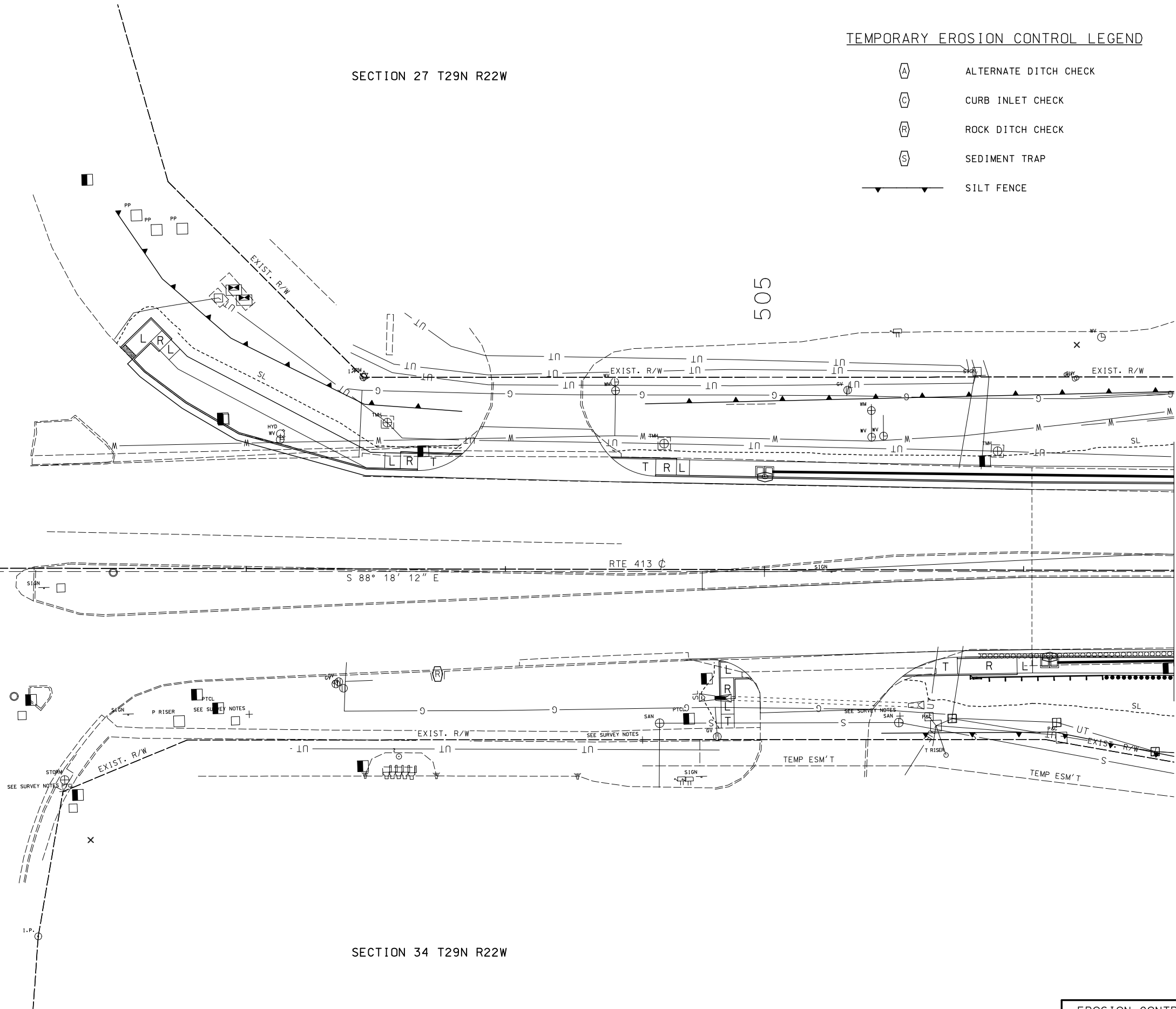


SCENIC AVE

SEC LINE

POT STA 501+78.60

BEGIN PROJECT
501+78.60



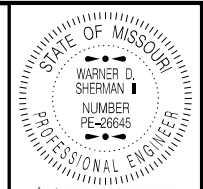
SECTION 27 T29N R22W

SECTION 34 T29N R22W

505

TEMPORARY EROSION CONTROL LEGEND

- (A) ALTERNATE DITCH CHECK
- (C) CURB INLET CHECK
- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- SL SILT FENCE



Warner D. Sherman
06/28/2023 4:01:27 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 32

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

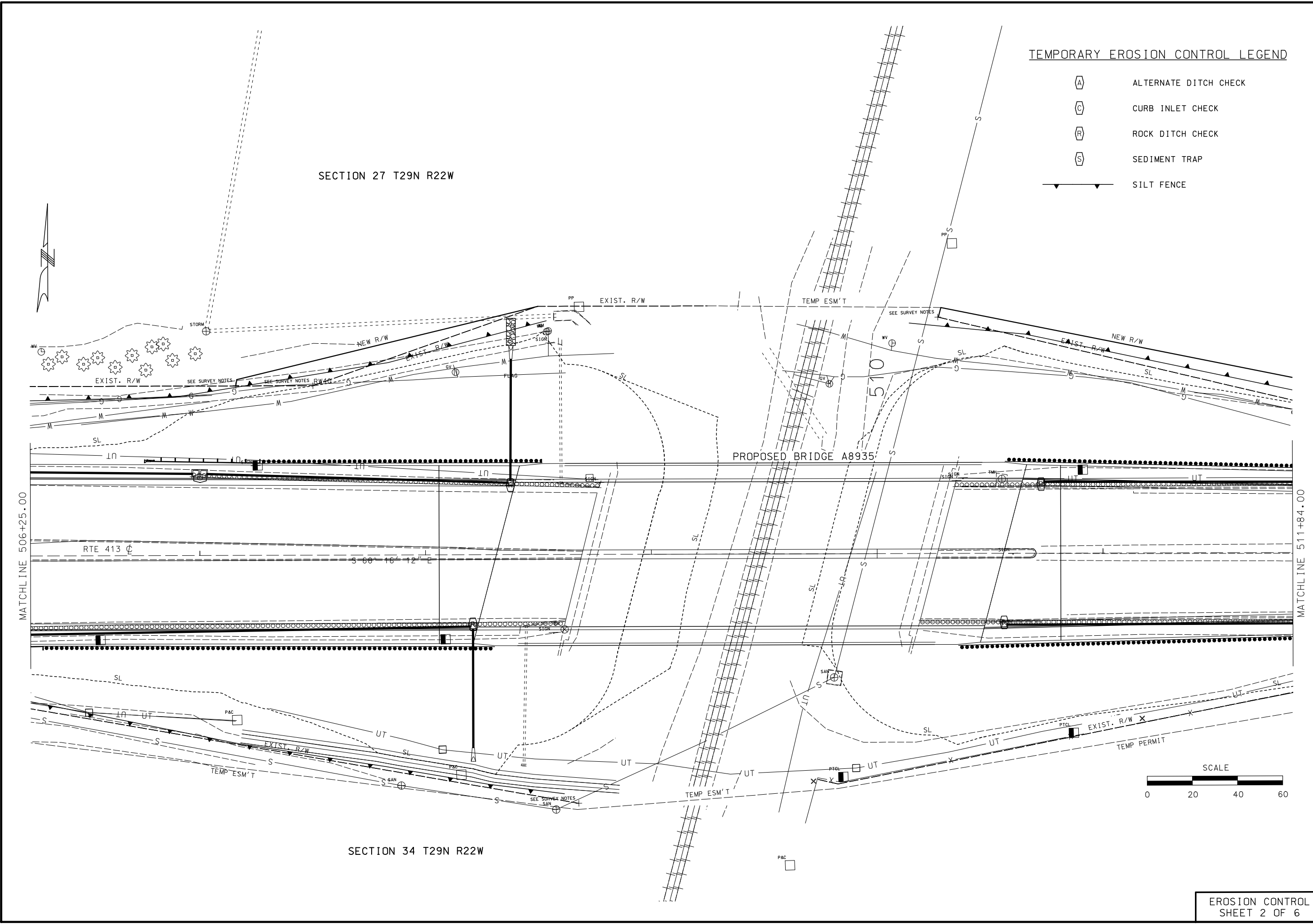
BRIDGE NO. A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

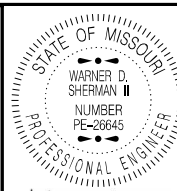
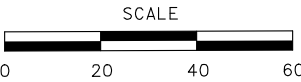
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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



TEMPORARY EROSION CONTROL LEGEND

- ALTERNATE DITCH CHECK
- CURB INLET CHECK
- ROCK DITCH CHECK
- SEDIMENT TRAP
- SILT FENCE



Warner D. Sherman
06/28/2023 4:02:00 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	33

COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.

PROJECT NO.

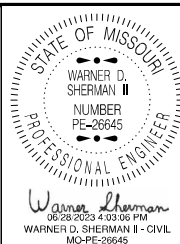
BRIDGE NO.
A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITAL
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.



DATE PREPARED 6/12/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 35
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

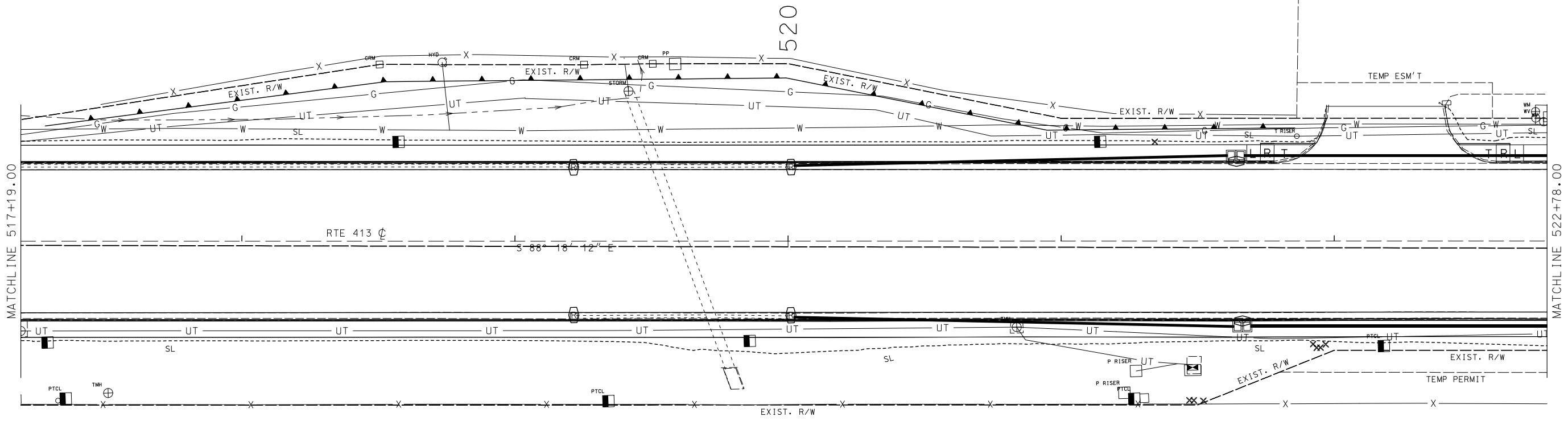
MoDOT

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.

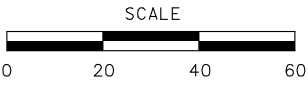
TEMPORARY EROSION CONTROL LEGEND

- (A) ALTERNATE DITCH CHECK
- (C) CURB INLET CHECK
- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- ▲— SILT FENCE



SECTION 27 T29N R22W

SECTION 34 T29N R22W

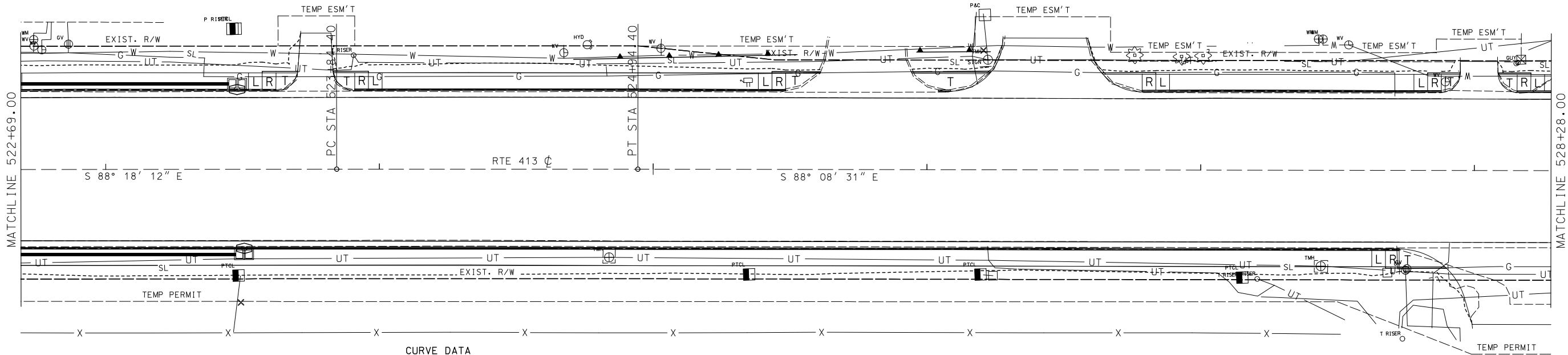


TEMPORARY EROSION CONTROL LEGEND

- (A) ALTERNATE DITCH CHECK
- (C) CURB INLET CHECK
- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- ▽ SILT FENCE

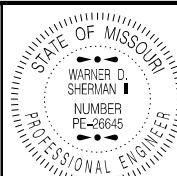
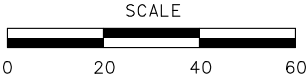
SECTION 27 T29N R22W

525



CURVE DATA
PI 524+39.40
PC 523+84.40
PT 524+94.40
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D 0° 08' 48.9"
L 110.00'
T 55.00'
R 39,002.25'

SECTION 34 T29N R22W



Warner D. Sherman
06/28/2023 4:03:48 PM
WARNER D. SHERMAN II - CIVIL
MO-FE-26645

DATE PREPARED
6/12/2023

ROUTE	STATE
413	MO
DISTRICT	SHEET NO.
SW	36

COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.

PROJECT NO.

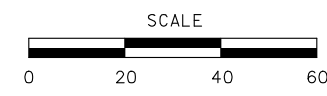
BRIDGE NO.
A8935

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.

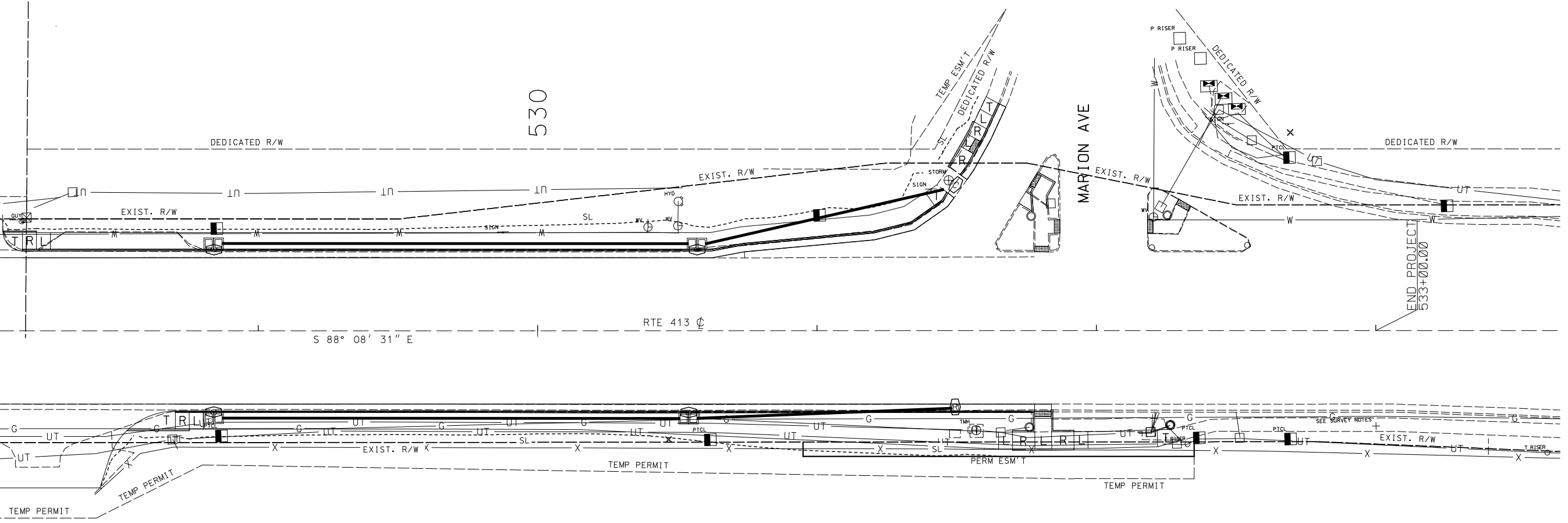


SECTION 27 T29N R22W

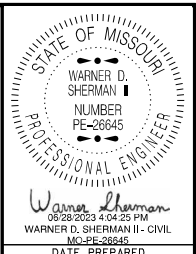
TEMPORARY EROSION CONTROL LEGEND

- (A) ALTERNATE DITCH CHECK
- (C) CURB INLET CHECK
- (R) ROCK DITCH CHECK
- (S) SEDIMENT TRAP
- ▲— SILT FENCE

MATCHLINE 528+07.00



SECTION 34 T29N R22W



DATE PREPARED
6/28/2023

ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 37

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

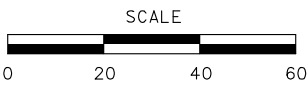
BRIDGE NO.
A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

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



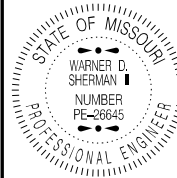
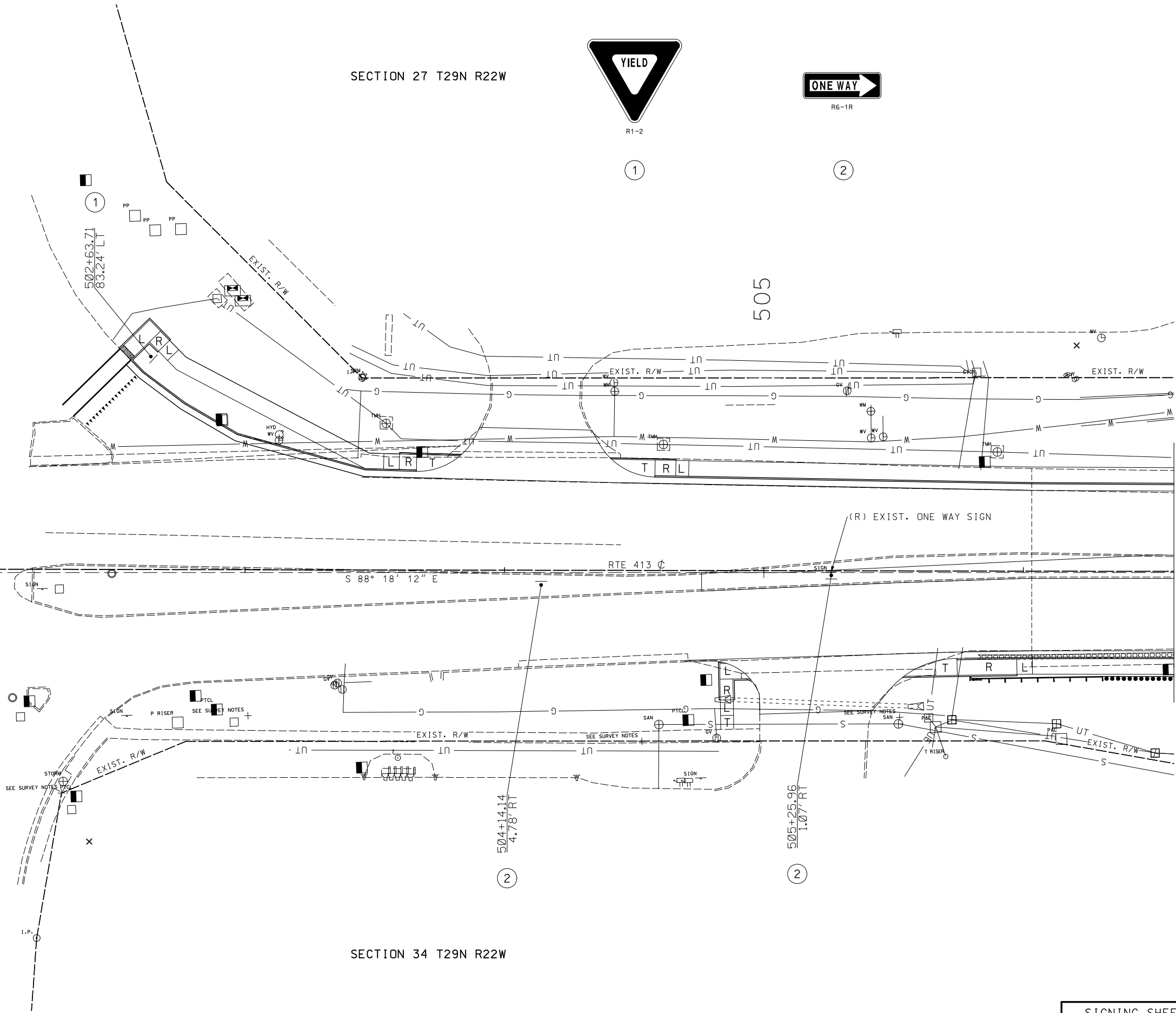
CORNER OF SECTION
27, 28, 33 AND 34
T29N R22W

SCENIC AVE

SEC LINE

POT STA 501+78.60

BEGIN PROJECT
501+78.60



Warner D. Sherman
06/28/2023 4:05:05 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 38

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

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1-888-ASK-MODOT (1-888-275-6636)

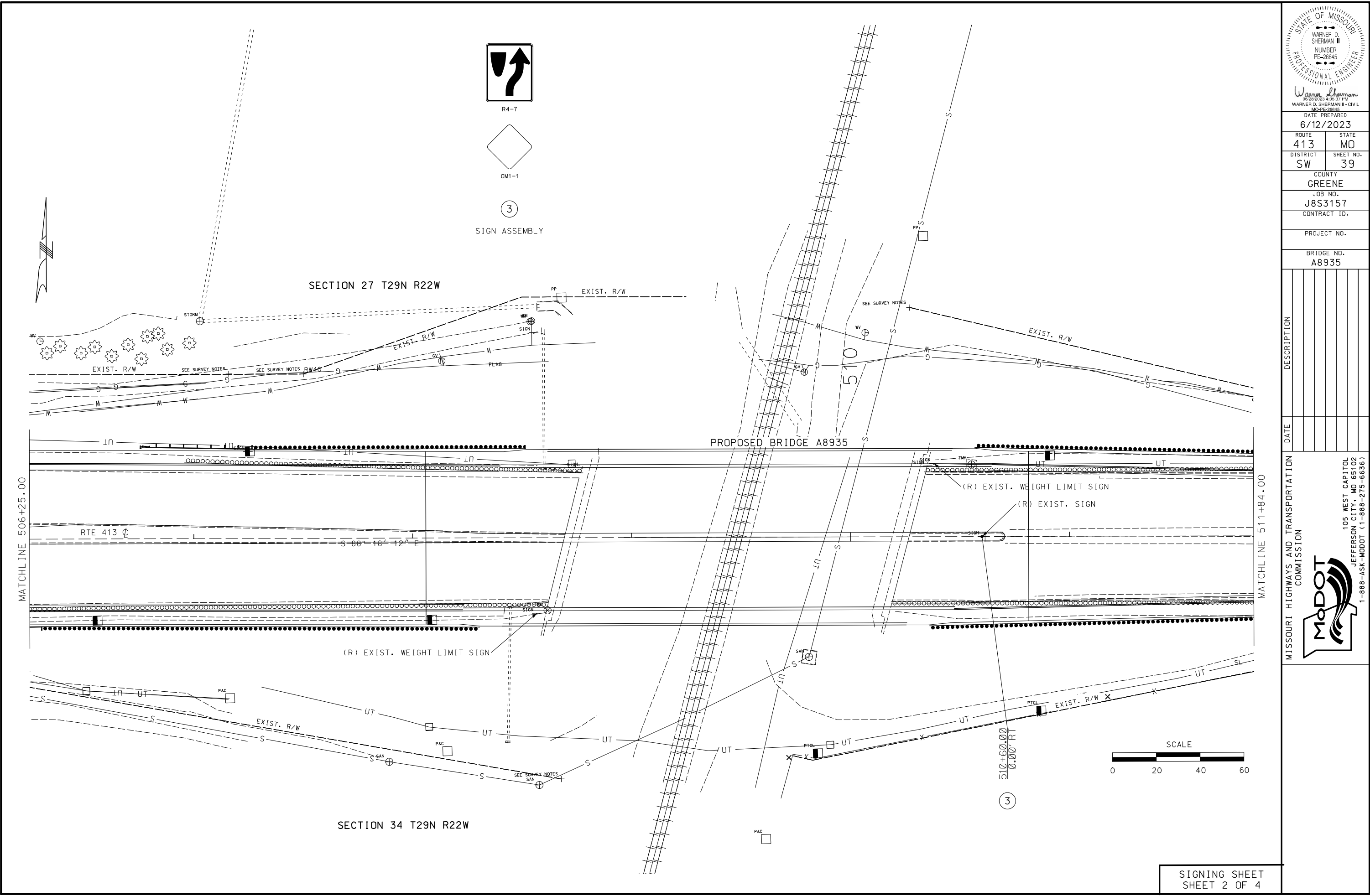
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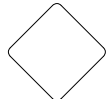
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1-888-ASK-MODOT (1-888-275-6636)

SIGNING SHEET
SHEET 1 OF 4



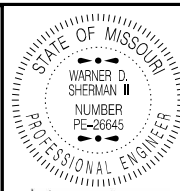
R4-7



OM1-1

3

SIGN ASSEMBLY



Warner D. Sherman
06/28/2023 4:05:37 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 39

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

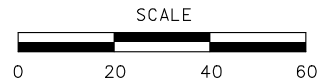
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

SIGNING SHEET
SHEET 2 OF 4

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



Scenic Ave
NEXT SIGNAL

D3-2



R3-9b

4

4

5

REMOVE & RELOCATE SIGN
& POST TO NEW LOCATION
STA. 512+09.18
OFF. 35.66' LT

512+08.00
44.00' LT

515

MATCHLINE 511+72.00

MATCHLINE 517+31.00

RTE 413 C

(R) EXIST. SIGN

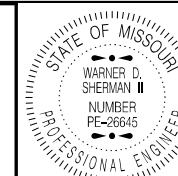
512+85.00
42.00' RT

5

SECTION 27 T29N R22W

SECTION 34 T29N R22W

SIGNING SHEET
SHEET 3 OF 4



Warner D. Sherman
06/28/2023 4:08:10 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 40

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

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.



R1-2

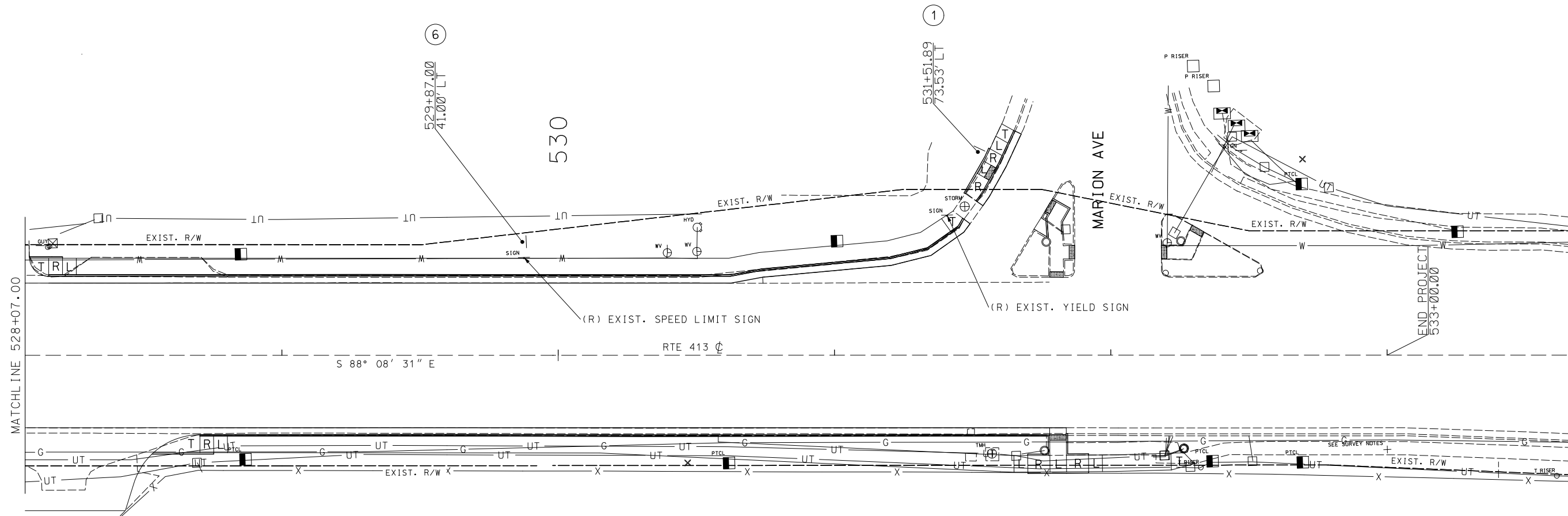
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R2-1

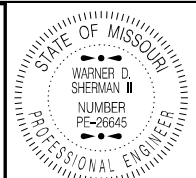
6

SECTION 27 T29N R22W



SECTION 34 T29N R22W

SIGNING SHEET
SHEET 4 OF 4



Warner D. Sherman
06/28/2023 4:08:43 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/28/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 41

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

[illegible]

MO-PE-26645
DATE PREPARED
6/12/2023

DISTRICT	SHEET NO
SW	43

JOB NO.
J8S3157

PROJECT NO.

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[illegible][illegible]

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REPORT

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DUKE UNIVERSITY



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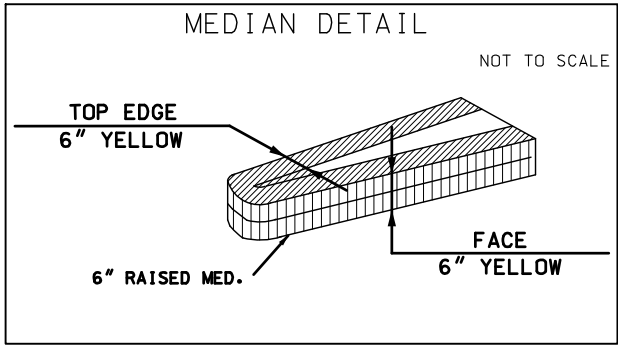
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1

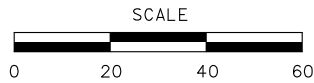
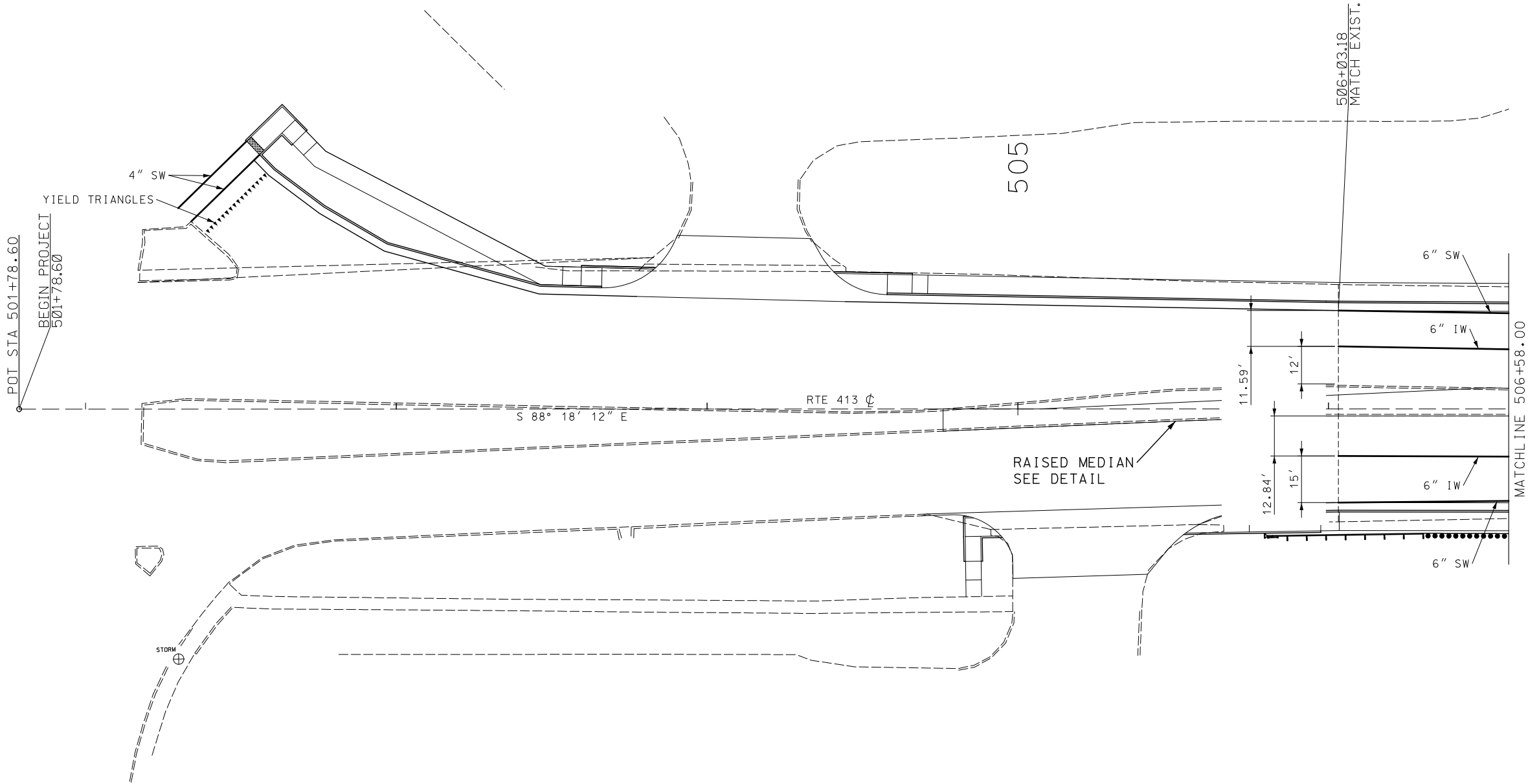
* ORANGE, YELLOW & YELLOW/GREEN



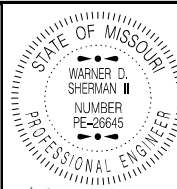
SW = SOLID WHITE
IW = INTERMITTENT WHITE
SY = SOLID YELLOW
DSY = DOUBLE SOLID YELLOW



SCENIC AVE



PAVEMENT MARKING
SHEET 1 OF 4



Warner D. Sherman
06/28/2023 4:08:21 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 44

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

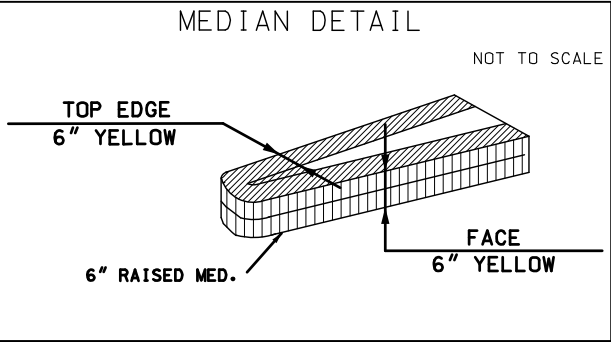
BRIDGE NO. A8935

DATE	DESCRIPTION

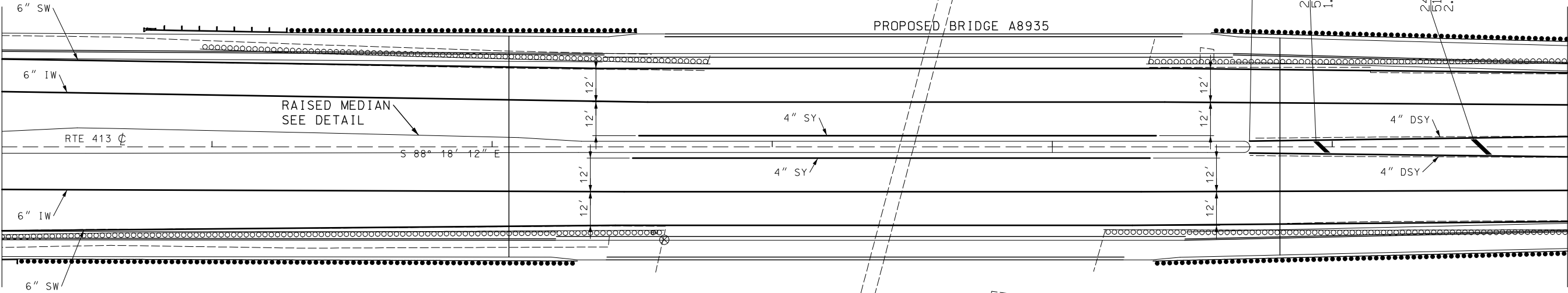
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

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

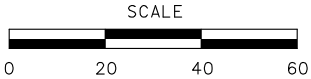


MATCHLINE 506+25.00

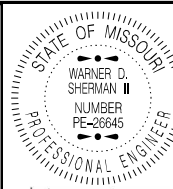


MATCHLINE 511+84.00

SW = SOLID WHITE
IW = INTERMITTENT WHITE
SY = SOLID YELLOW
DSY = DOUBLE SOLID YELLOW



PAVEMENT MARKING
SHEET 2 OF 4



Warner D. Sherman
06/28/2023 4:10:10 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 45

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

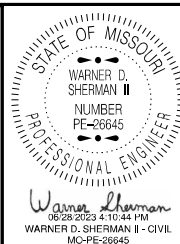
BRIDGE NO.
A8935

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

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



DATE PREPARED 6/12/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 46
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

DATE	DESCRIPTION

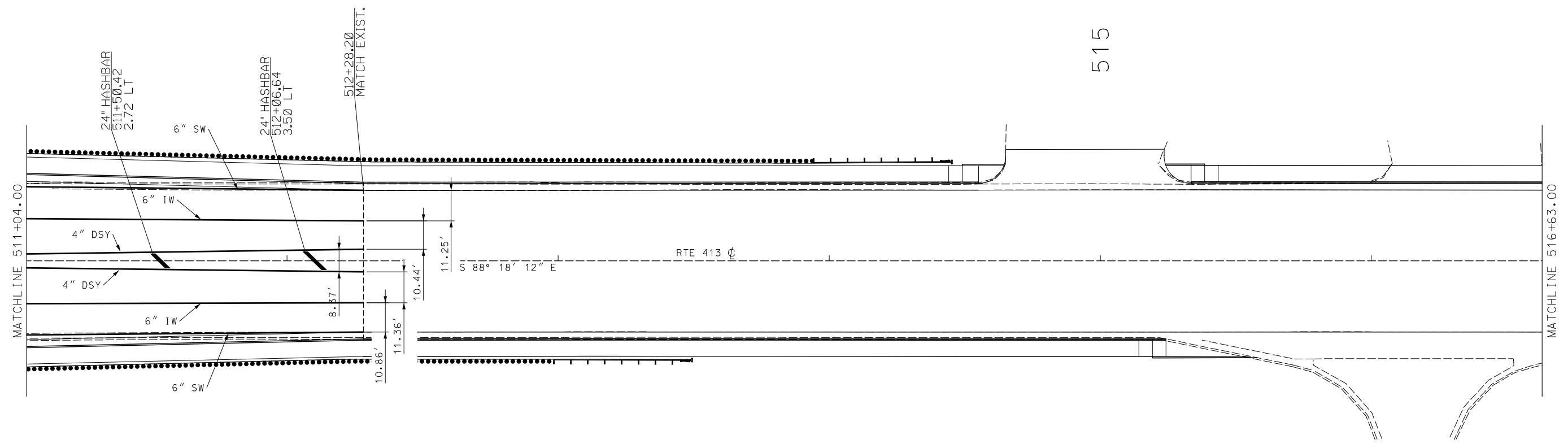
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



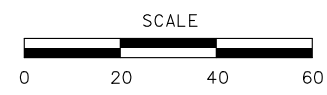
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

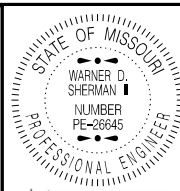
PAVEMENT MARKING
SHEET 3 OF 4

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



SW = SOLID WHITE
IW = INTERMITTENT WHITE
SY = SOLID YELLOW
DSY = DOUBLE SOLID YELLOW





Warner D. Sherman
06/26/2023 4:11:20 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/26/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 47

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DATE	DESCRIPTION

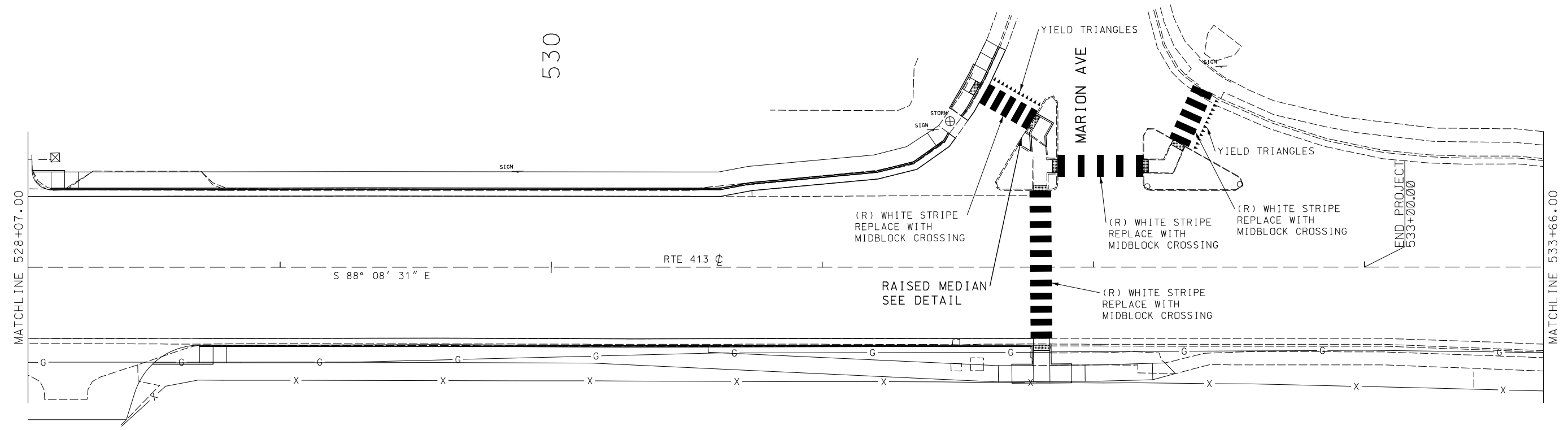
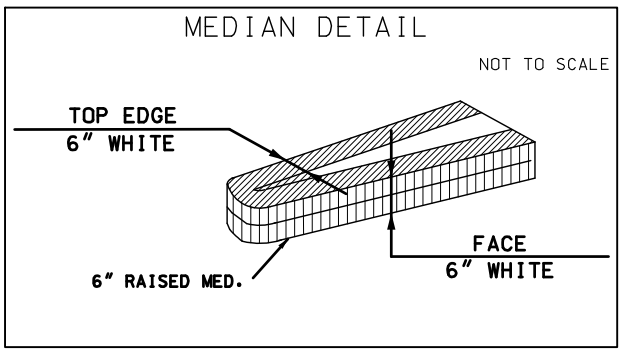
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



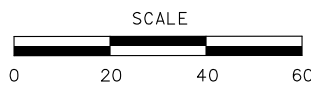
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

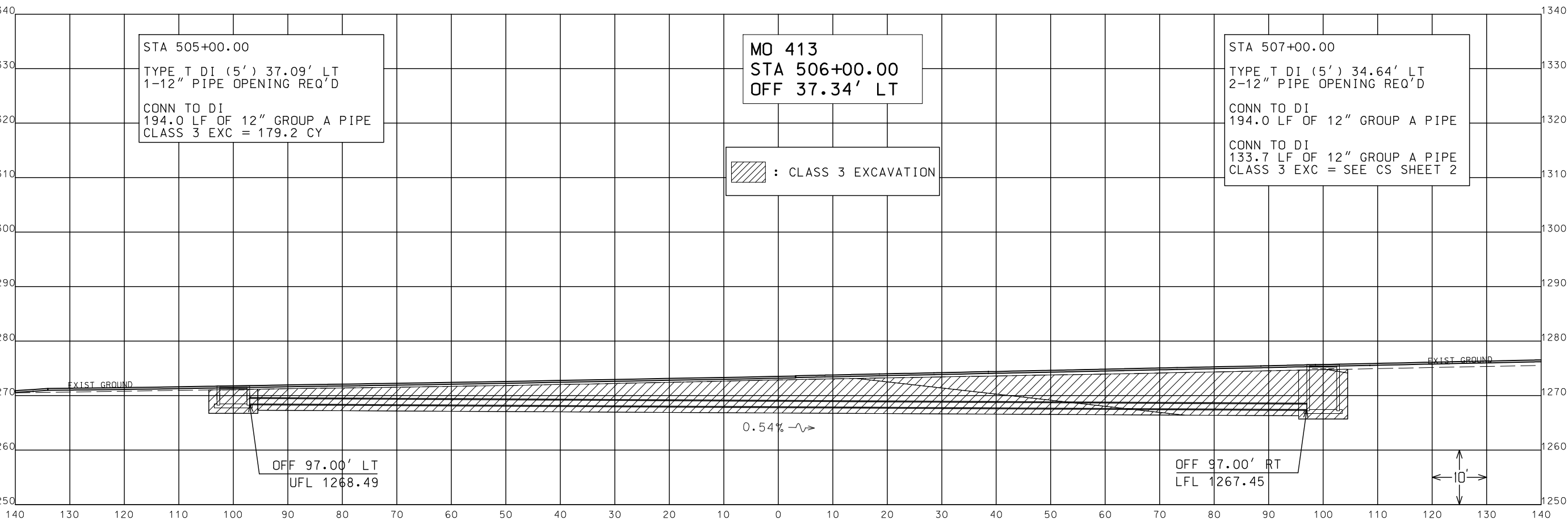
PAVEMENT MARKING
SHEET 4 OF 4

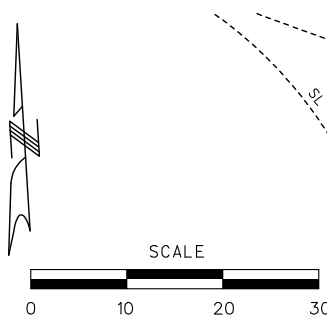
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



SW = SOLID WHITE
IW = INTERMITTENT WHITE
SY = SOLID YELLOW
DSY = DOUBLE SOLID YELLOW



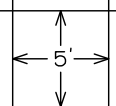
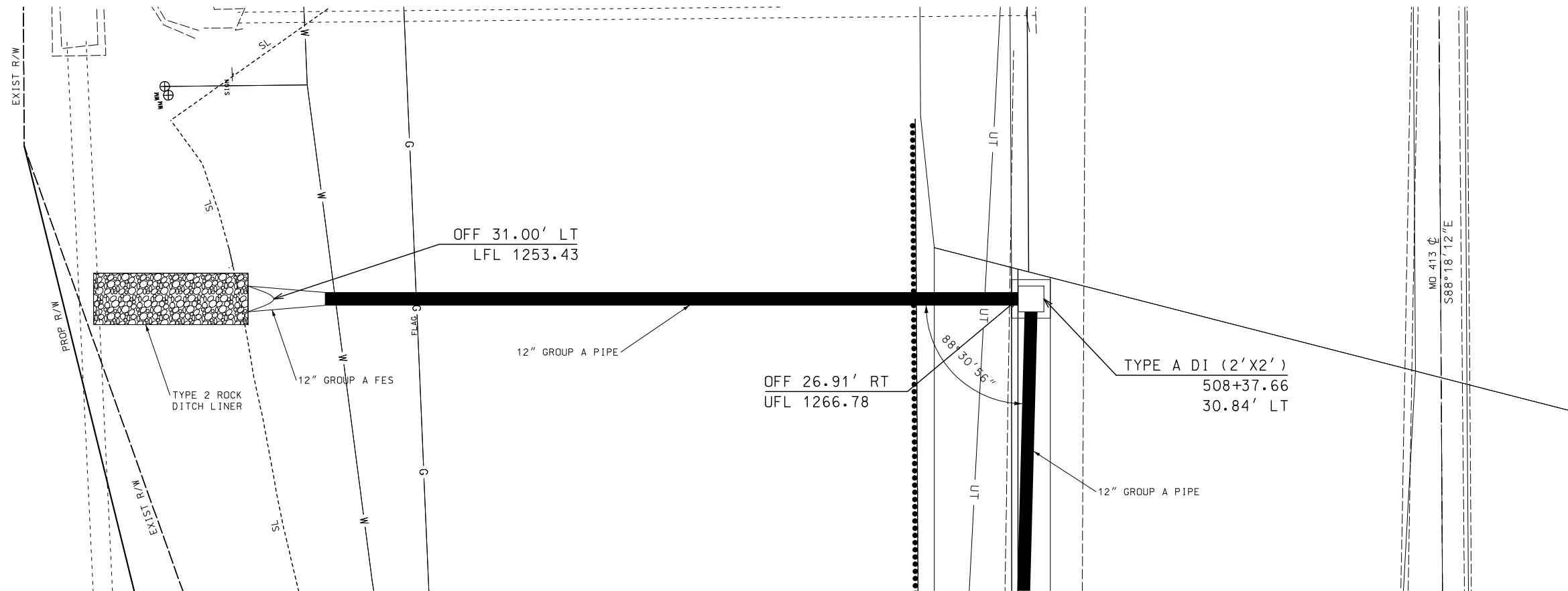




CULVERT SECTION
SHEET 2 OF 19

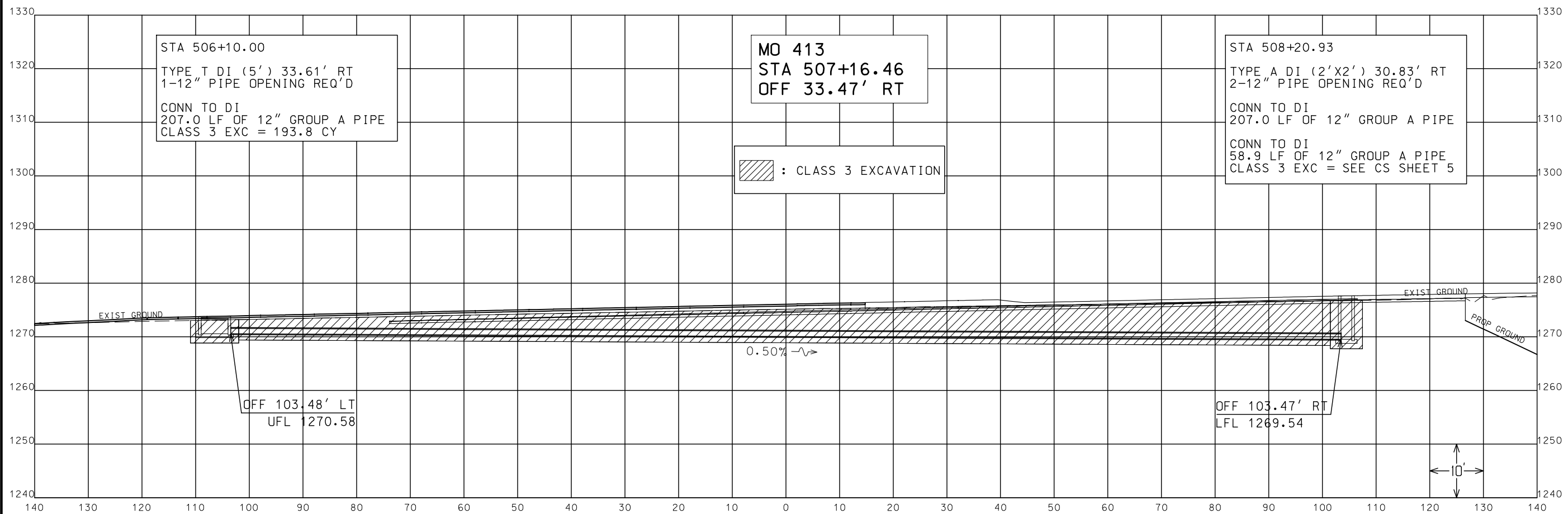
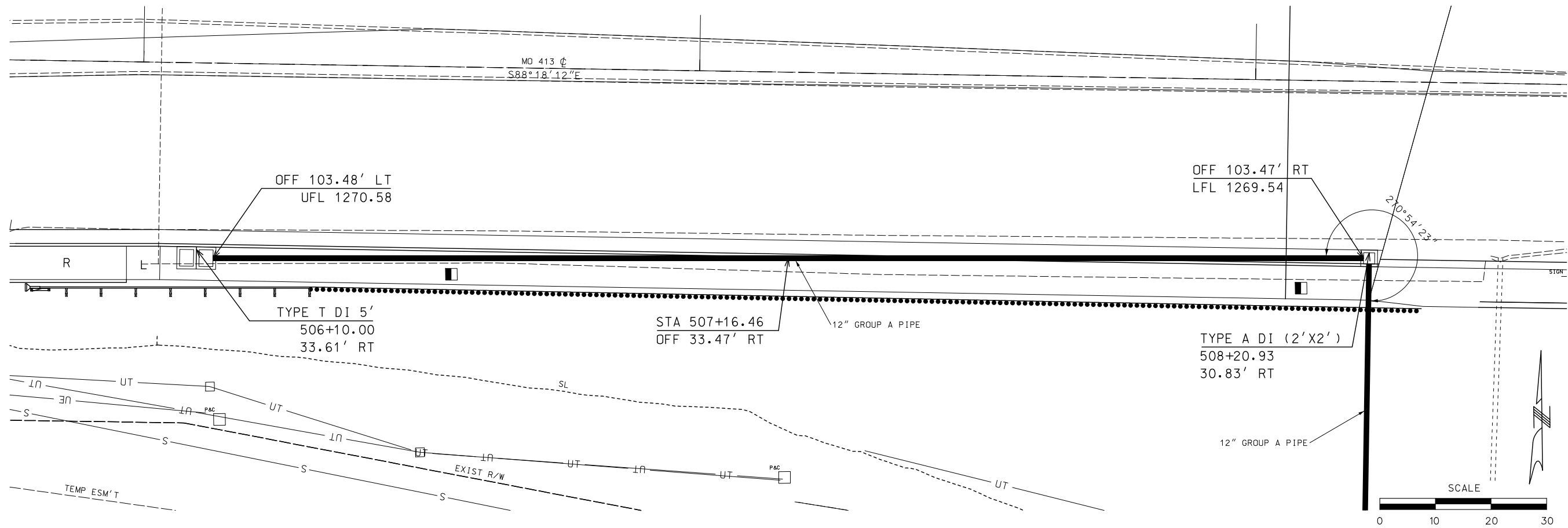
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[illegible]

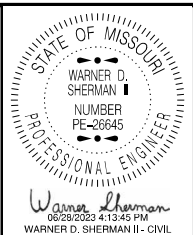


CULVERT SECTION
SHEET 3 OF 19

[illegible]



CULVERT SECTION
SHEET 4 OF 19



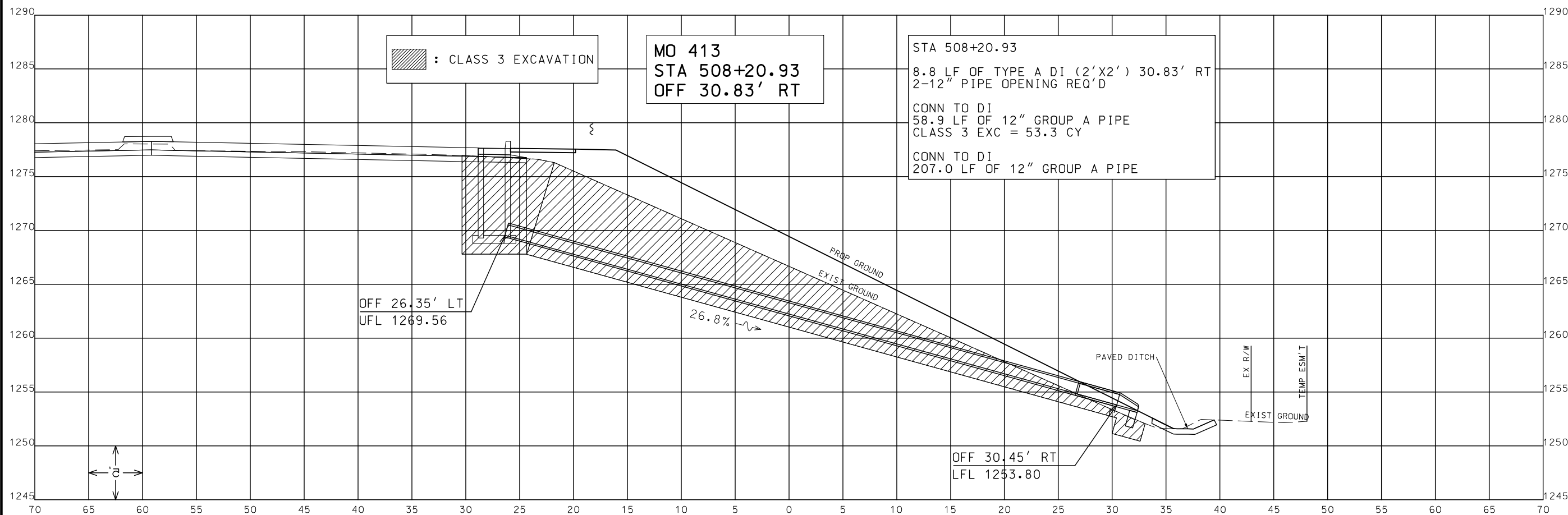
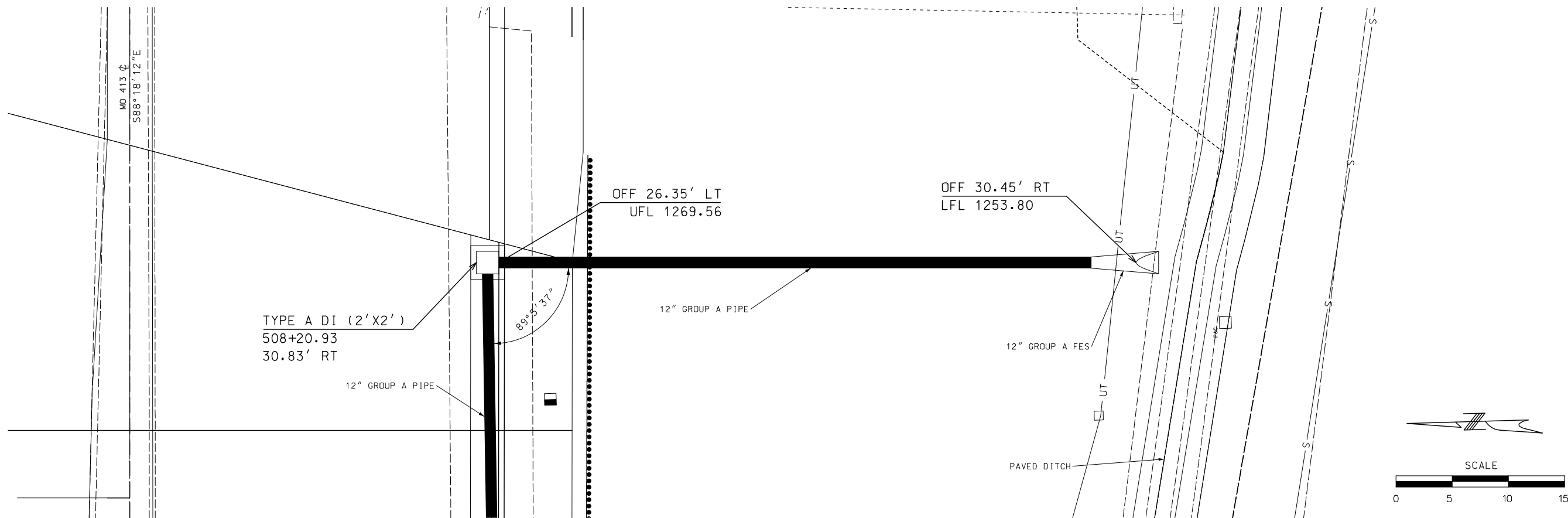
DATE PREPARED 6/12/2023	
ROUTE 413	STATE MO
DISTRICT SW	SHEET NO. 51
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

DATE	DESCRIPTION

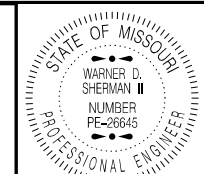
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



CULVERT SECTION
SHEET 5 OF 19



Warner D. Sherman
06/28/2023 4:14:19 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/12/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 52

COUNTY GREENE

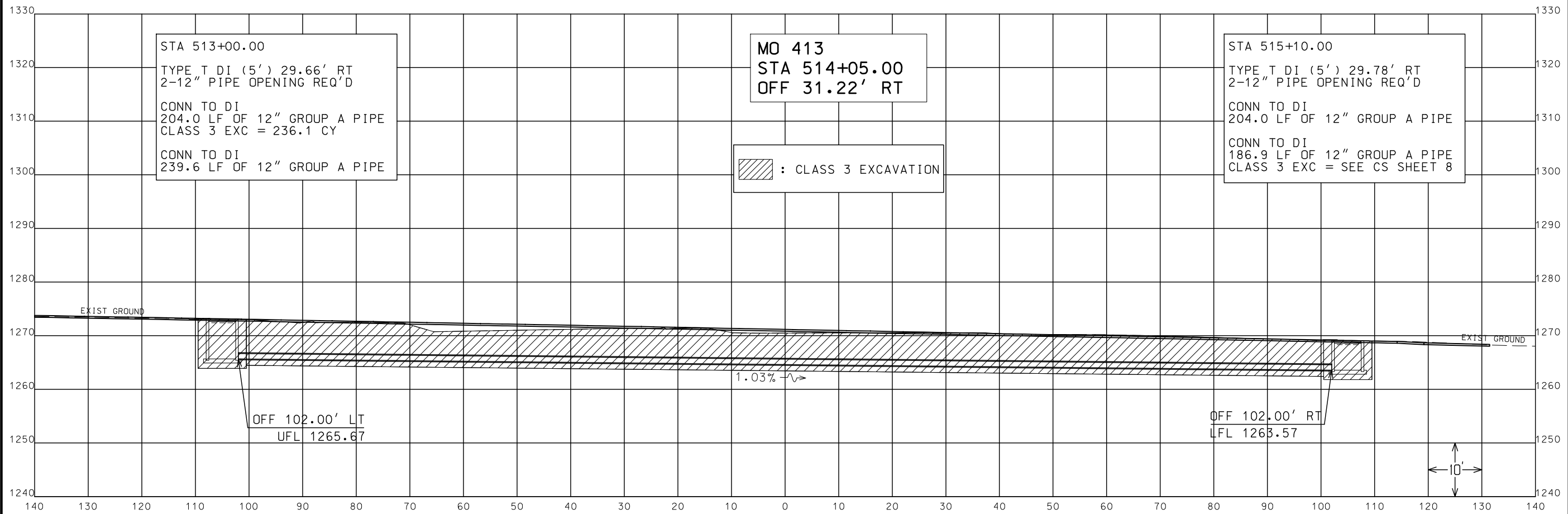
JOB NO. J8S3157

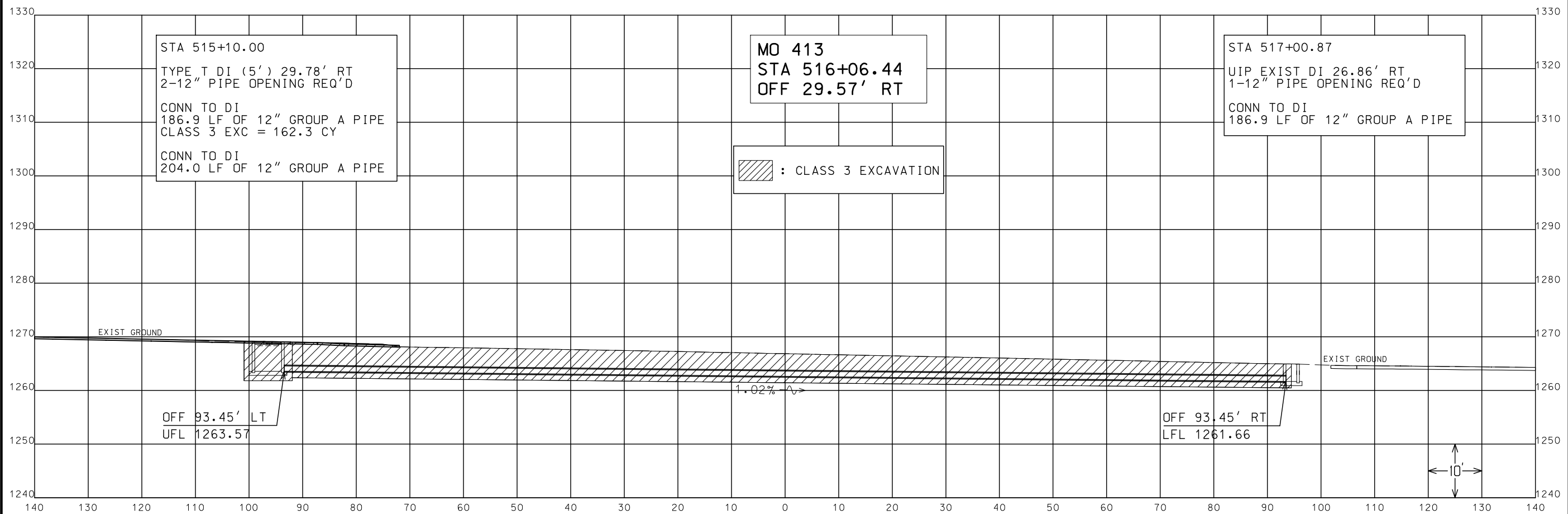
CONTRACT ID.

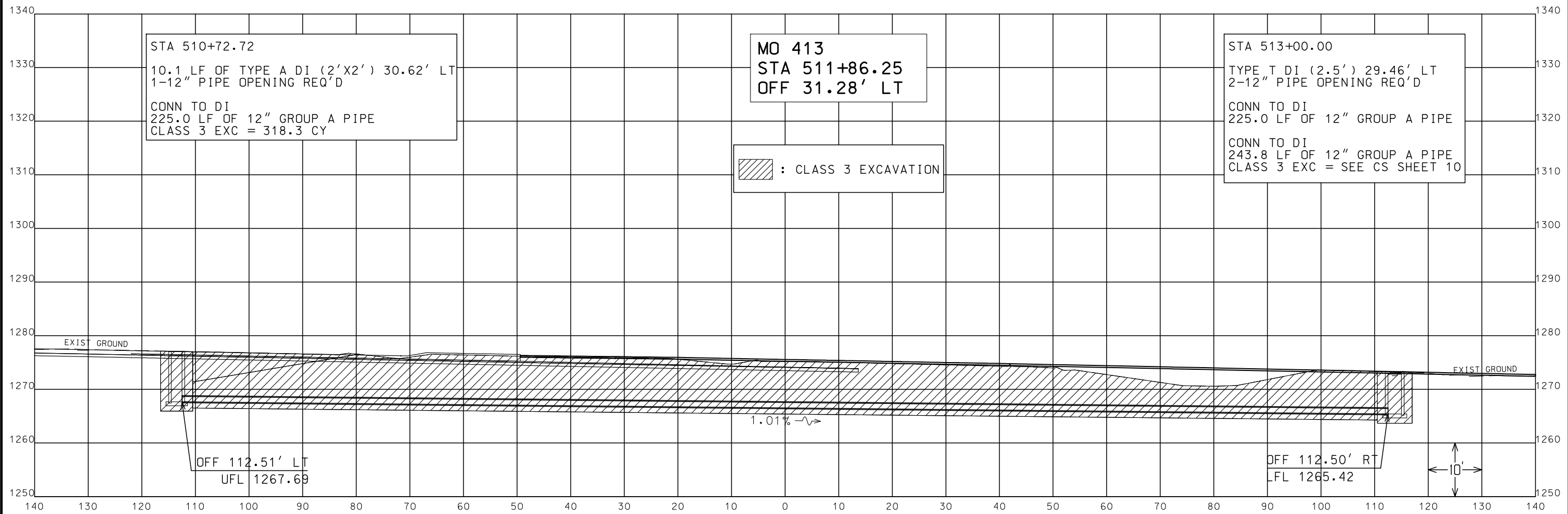
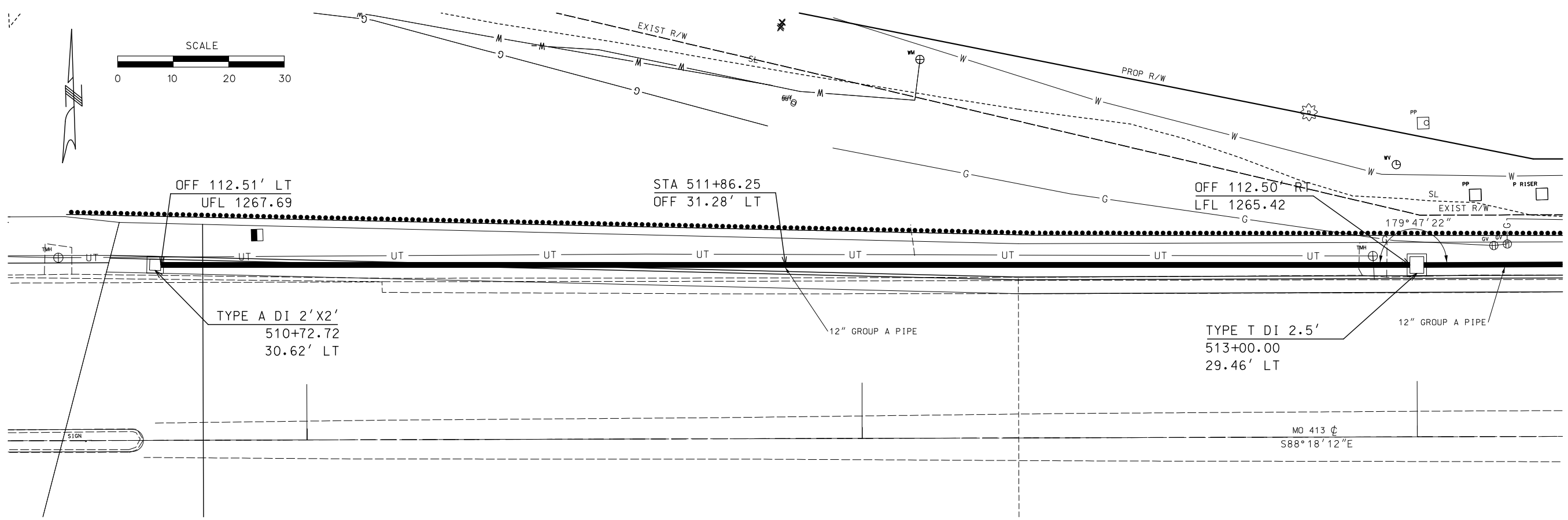
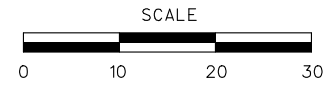
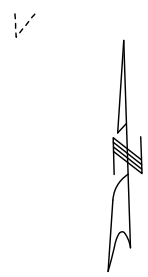
PROJECT NO.

BRIDGE NO. A8935

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







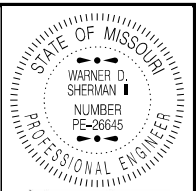
STA 510+72.72
10.1 LF OF TYPE A DI (2'X2') 30.62' LT
1-12" PIPE OPENING REQ'D
CONN TO DI
225.0 LF OF 12" GROUP A PIPE
CLASS 3 EXC = 318.3 CY

MO 413
STA 511+86.25
OFF 31.28' LT
: CLASS 3 EXCAVATION

STA 513+00.00
TYPE T DI (2.5') 29.46' LT
2-12" PIPE OPENING REQ'D
CONN TO DI
225.0 LF OF 12" GROUP A PIPE
CONN TO DI
243.8 LF OF 12" GROUP A PIPE
CLASS 3 EXC = SEE CS SHEET 10

10'
10'

CULVERT SECTION
SHEET 9 OF 19



Warner D. Sherman
06/28/2023 4:16:48 PM
WARNER D. SHERMAN II - CIVIL
NO-PE-26645

DATE PREPARED
6/12/2023
ROUTE 413 STATE MO
DISTRICT SW SHEET NO. 56

COUNTY GREENE
JOB NO. J8S3157
CONTRACT ID.

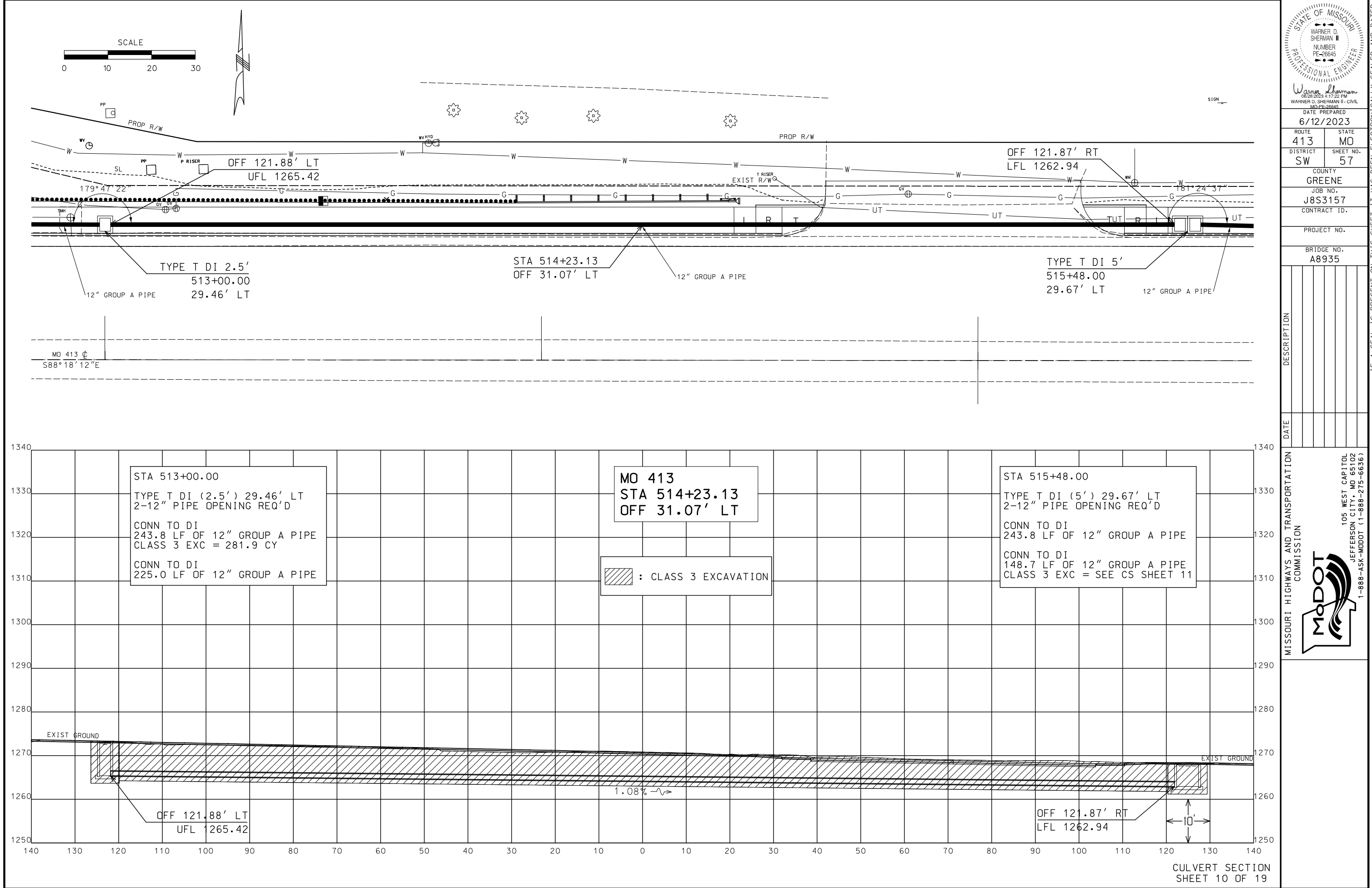
PROJECT NO.
BRIDGE NO. A8935

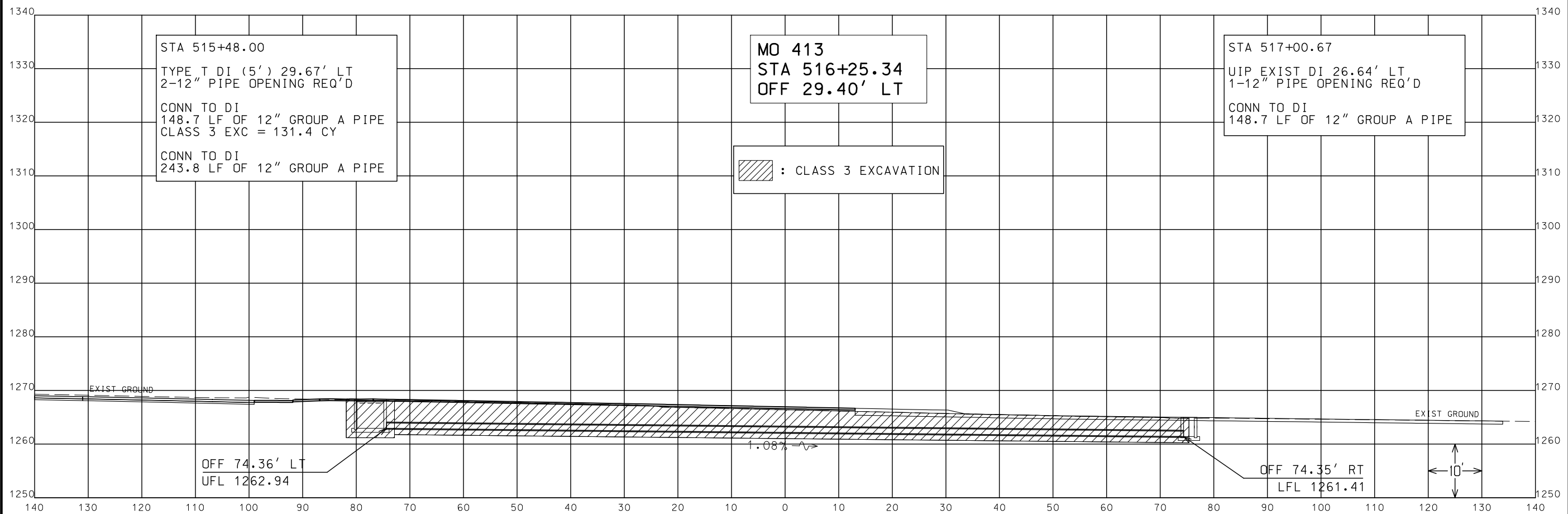
DATE	DESCRIPTION

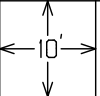
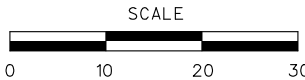
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

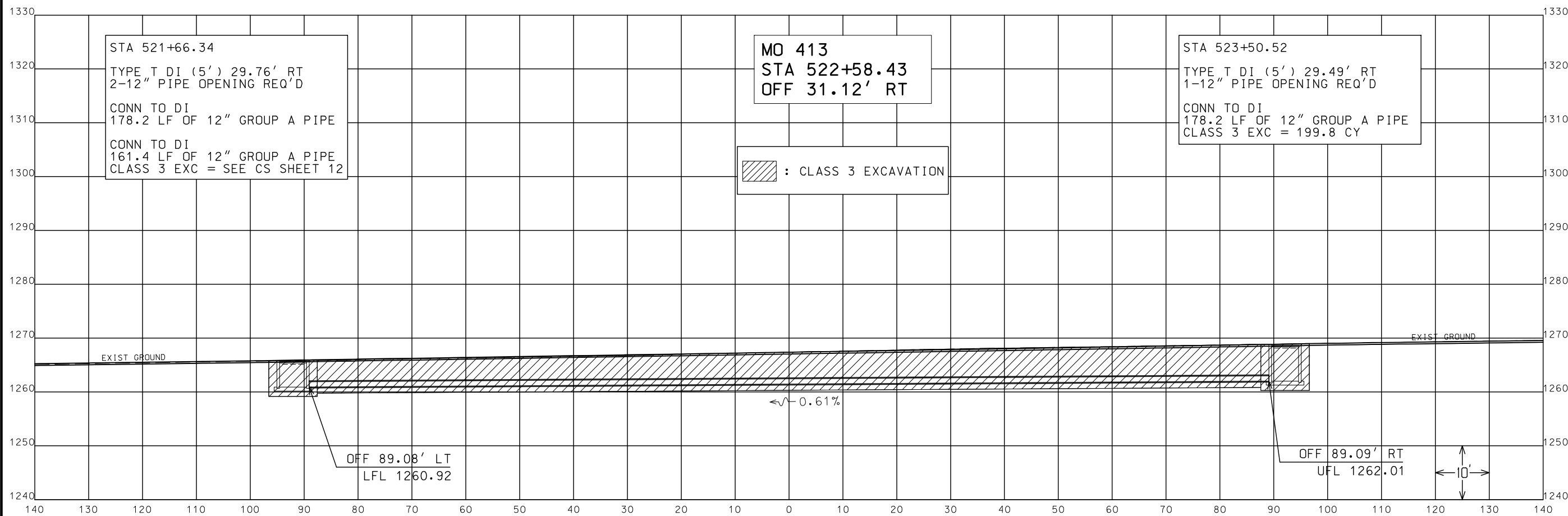
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

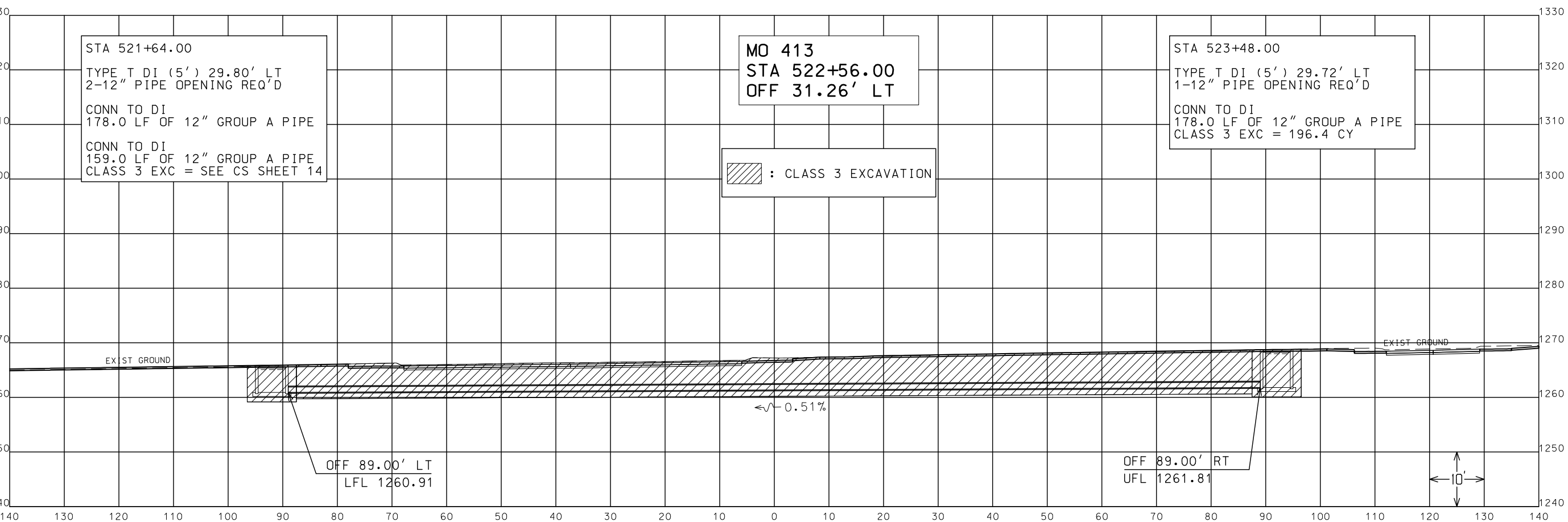
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

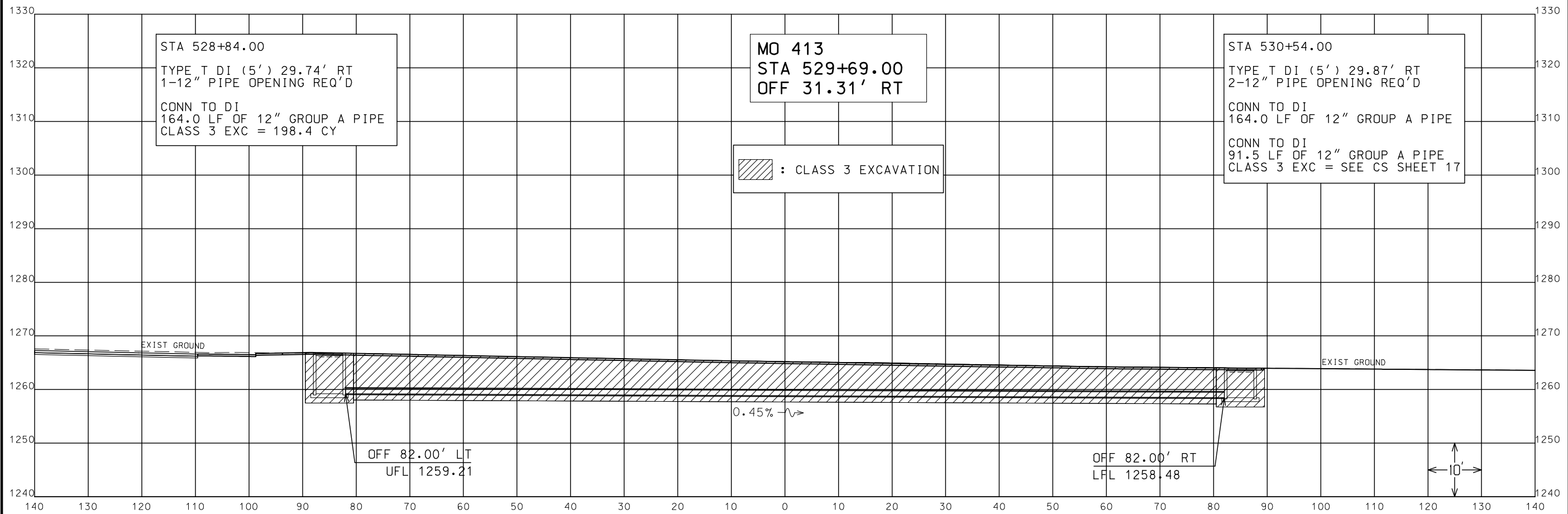
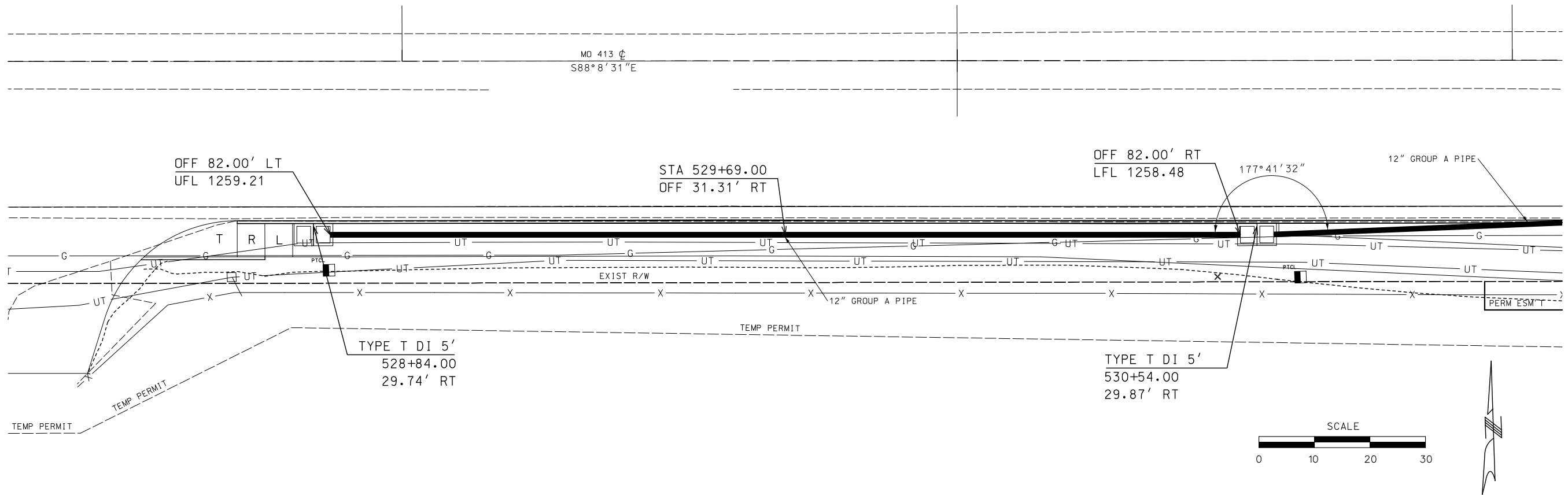












STATE OF MISSOURI

WARNER D. SHERMAN II

NUMBER PE-26645

PROFESSIONAL ENGINEER

Warner D. Sherman

06/28/2023 4:20:50 PM

WARNER D. SHERMAN II - CIVIL

MO-PE-26645

DATE PREPARED

6/12/2023

ROUTE

413

STATE

MO

DISTRICT

SW

SHEET NO.

63

COUNTY

GREENE

JOB NO.

J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

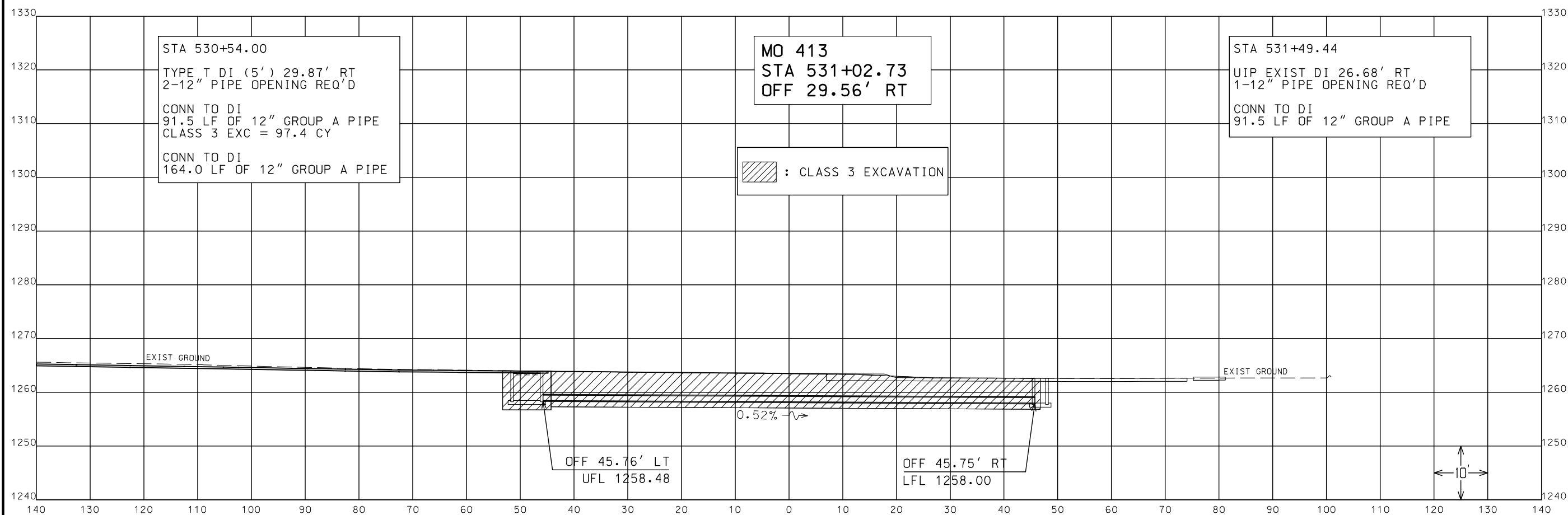
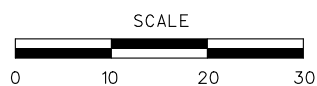
105 WEST CAPITOL

JEFFERSON CITY, MO 65102

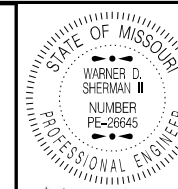
1-888-ASK-MODOT (1-888-275-6636)

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

CULVERT SECTION
SHEET 16 OF 19



CULVERT SECTION
SHEET 17 OF 19



Warner Sherman
06/28/2023 4:21:27 PM
WARNER D. SHERMAN II - CIV

MO-PE-26645
DATE PREPARED
6/12/2023

ROUTE	STATE
413	MO

DISTRICT	SHEET NO.
SW	64

COUNTY
GREENE

JOB NO.
J8S3157

0035151
CONTRACT ID.

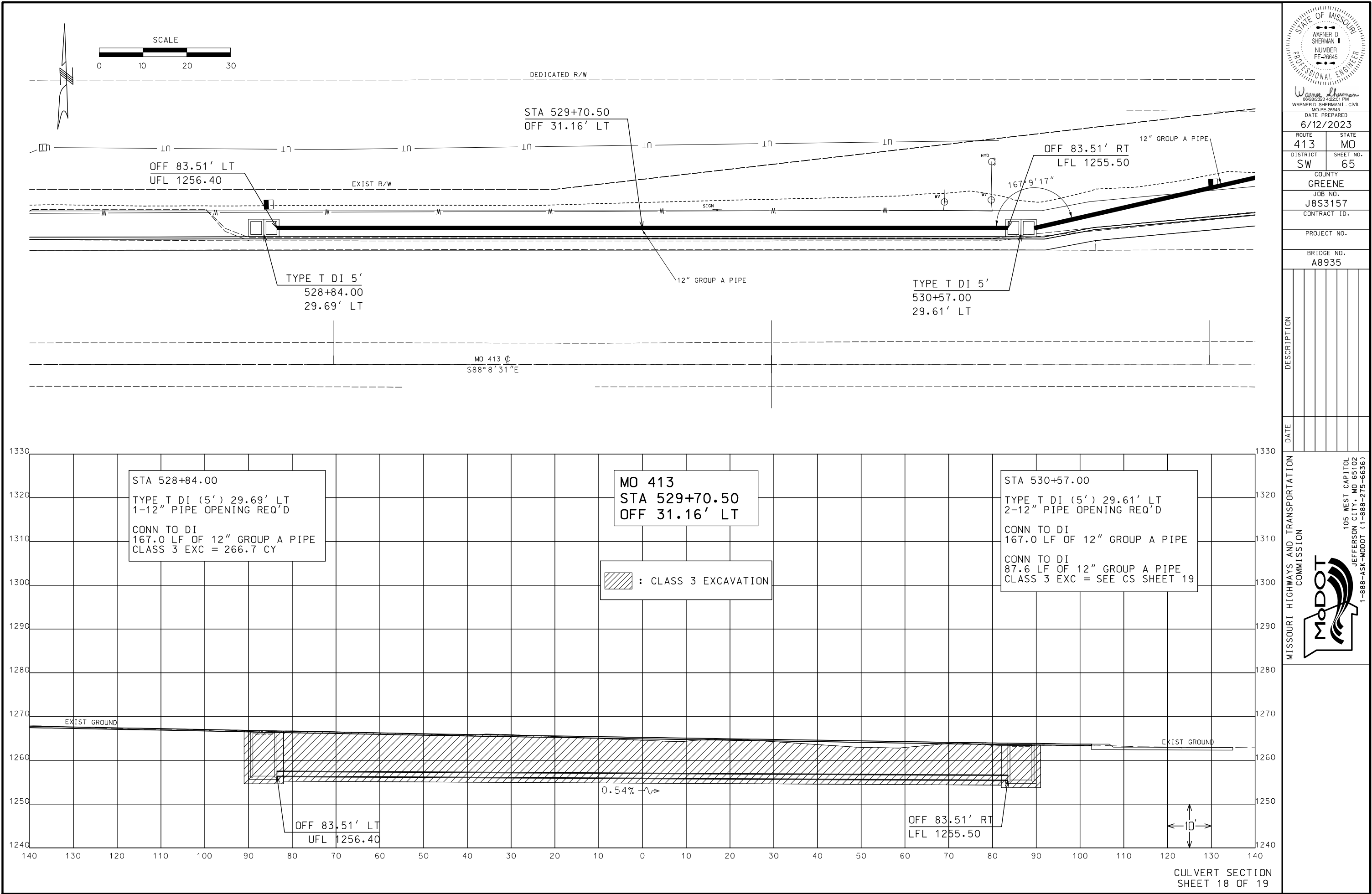
PROJECT NO.

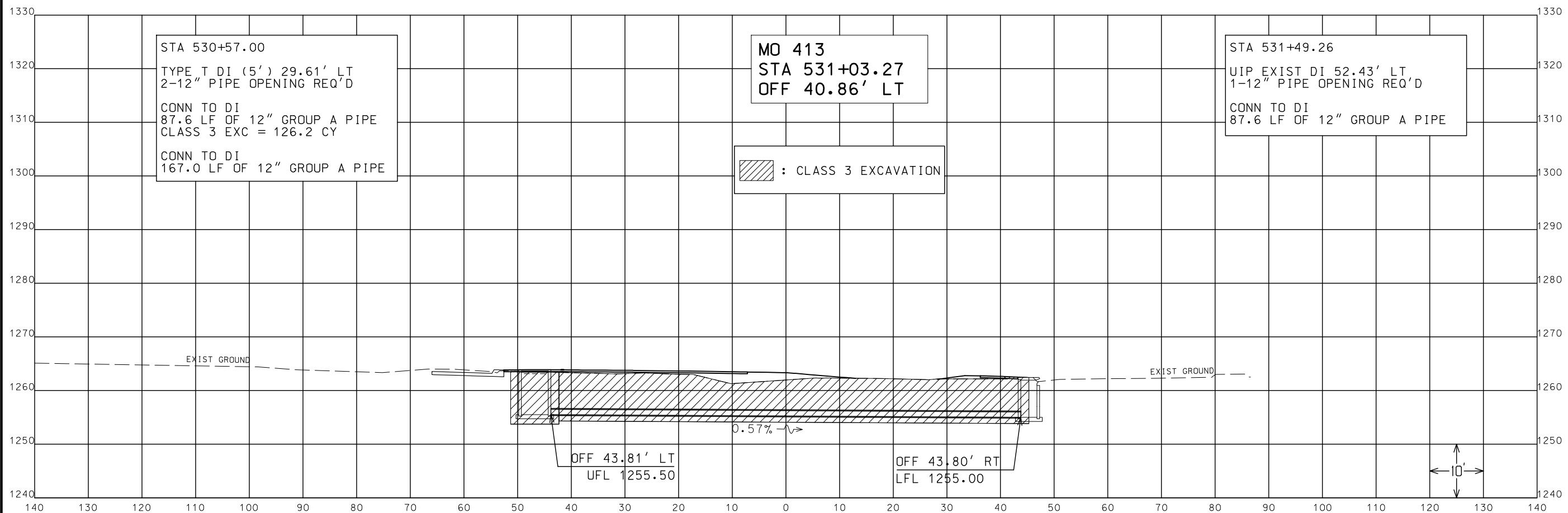
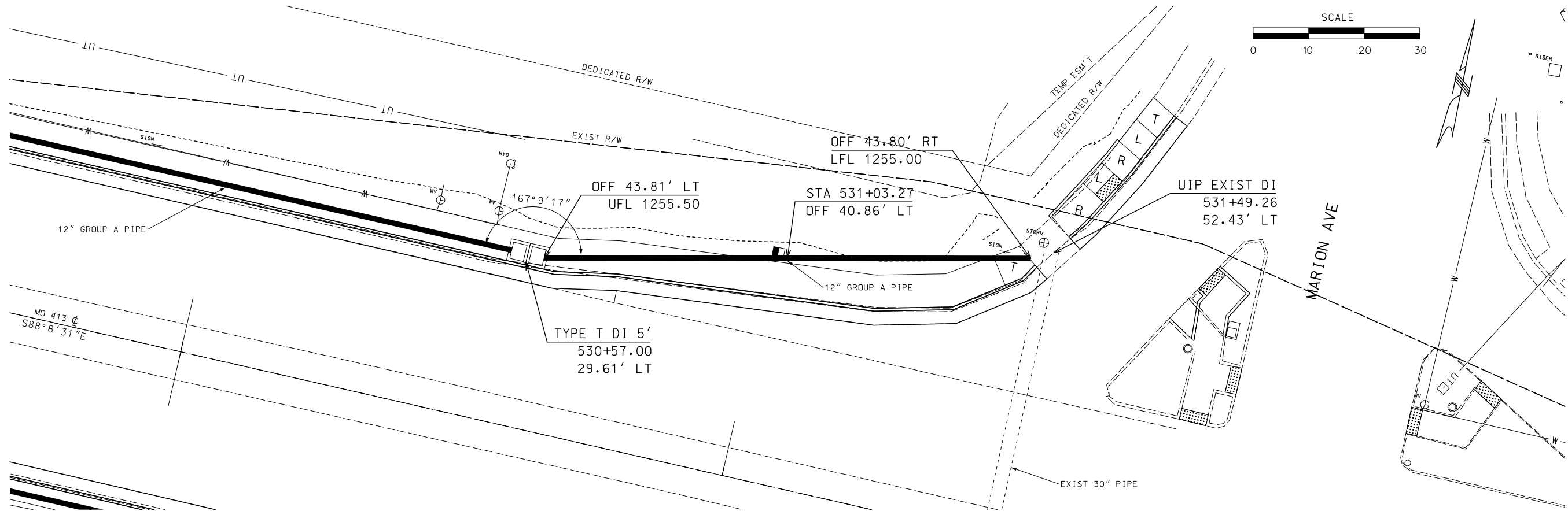
BRIDGE NO.
A8935

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

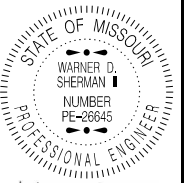
105 WEST CAPITOL
JEFFERSON CITY, MD 65102
1-888-ASK-MODOT (1-888-275-6636)

[illegible]





CULVERT SECTION
SHEET 19 OF 19



Warner D. Sherman
06/28/2023 4:22:40 PM
WARNER D. SHERMAN II - CIVIL
MO-PE-26645

DATE PREPARED
6/28/2023

ROUTE 413 STATE MO

DISTRICT SW SHEET NO. 66

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

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

CITY UTILITIES UNDERGROUND DISTRIBUTION CONSTRUCTION
E25 ~ 797943 ~ UGD ~ 107000

1 **INSTALL:** 1 EACH SR1-RG
NOTE: FIELD VERIFY GROUND WIRE EXISTS, FOR 240V-TO-GROUND WW LIGHTING CIRCUIT.

2 **INSTALL:** 1 EACH GP28-10-1 (28" POLE WITH 10' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

17 **INSTALL:** 1 EACH SP1-RG

19 **INSTALL:** 1 EACH GP28-12-1 (28" POLE WITH 12' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

20 **INSTALL:** 1 EACH SP1-RG

22 **INSTALL:** 1 EACH GP28-6-1 (28" POLE WITH 6' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)
NOTE: DO NOT INSTALL BREAK-AWAY BASE AT BRIDGE.

23 **INSTALL:** 1 EACH SP1-RG

24 **INSTALL:** 1 EACH GP28-10-1 (28" POLE WITH 10' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

25 **INSTALL:** 1 EACH GP28-10-1 (28" POLE WITH 10' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

26 **INSTALL:** 1 EACH GP28-12-1 (28" POLE WITH 12' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

27 **INSTALL:** 1 EACH GP28-12-1 (28" POLE WITH 12' ARM)
1 EACH LED-B3 (L.E.D. STREETLIGHT)
1 EACH BAB-1 (BREAK-AWAY BASE)
1 EACH HW-C-010-B (HARDWARE KIT)
1 EACH FUSE-Y-1 (FUSE AND CONNECTORS)

28 **INSTALL:** 1 EACH SP1-RG

1-17 **INSTALL:** 10 FEET UG-WWRG

17-23 **INSTALL:** 105 FEET UG-WWRG

17-22 **INSTALL:** 420 FEET UG-WWRG

22-39 **INSTALL:** 373 FEET UG-WWRG
NOTE: REFER TO SHEET 2 TO FOR LOC. #39.

23-25 **INSTALL:** 189 FEET UG-WWRG

23-28 **INSTALL:** 360 FEET UG-WWRG

28-44 **INSTALL:** 503 FEET UG-WWRG
NOTE: REFER TO SHEET 2 TO FOR LOC. #44.

CONTRACTOR UNDERGROUND DISTRIBUTION CONSTRUCTION
E11 ~ 797942/893166 ~ UGD ~ 107000/108010

1 **INSTALL:** 1 EACH SR-2CP

2 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V
NOTE: REPLACE EXISTING FOUNDATION.

4 **REMOVE:** 1 EACH CONCRETE FOUNDATION

5 **REMOVE:** 1 EACH CONCRETE FOUNDATION

6 **REMOVE:** 1 EACH CONCRETE FOUNDATION

7 **REMOVE:** 1 EACH CONCRETE FOUNDATION

8 **REMOVE:** 1 EACH CONCRETE FOUNDATION

16 **REMOVE:** 1 EACH CONCRETE FOUNDATION

17 **INSTALL:** 1 EACH SP-2C
4 EACH P224-90V
1 EACH 2P
NOTE: STUB OUT AND CAP SPARE ELBOW.

18 **INSTALL:** 1 EACH P218-45H (45° ELBOW)

19 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V

20 **INSTALL:** 1 EACH SP-SW
2 EACH P218-45V
NOTE: FIELD DETERMINE EXACT LOCATION AT SIDEWALK.

21 **NOTE:** CONDUIT/TRENCH TRANSITION TO BRIDGE CONDUIT. EXPANSION/DEFLECTION FITTINGS PER BRIDGE PLANS, WITH ELECTRIC JUNCTION BOX (MIN. 10"X8"X12") IN OUTSIDE FACE OF WALL. REFER TO BRIDGE PLANS FOR DETAILS.

22 **INSTALL:** 1 EACH INTEGRAL FOUNDATION AT BRIDGE.
2 EACH P295-90V
NOTE: STREETLIGHT FOUNDATION AT BRIDGE. REFER ALSO TO MODOT BRIDGE PLANS.

CONTRACTOR UNDERGROUND DISTRIBUTION CONSTRUCTION
E11 ~ 797942/893166 ~ UGD ~ 107000/108010

23 **INSTALL:** 1 EACH SP-2C
3 EACH P224-90V

24 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V

25 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V
1 EACH 2P
NOTE: STUB OUT AND CAP SPARE ELBOW.

26 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V

27 **INSTALL:** 1 EACH CF24-6-115-B
2 EACH P224-90V

28 **INSTALL:** 1 EACH SP-SW
2 EACH P218-45V

29 **NOTE:** CONDUIT/TRENCH TRANSITION TO BRIDGE CONDUIT. EXPANSION/DEFLECTION FITTINGS PER BRIDGE PLANS, WITH ELECTRIC JUNCTION BOX (MIN. 10"X8"X12") IN OUTSIDE FACE OF WALL. REFER TO BRIDGE PLANS FOR DETAILS.

1-17 **INSTALL:** 10 FEET UT-S24
10 FEET PVC-2

17-21 **INSTALL:** 390 FEET UT-S24
390 FEET PVC-2

17-23 **INSTALL:** 105 FEET OEBS (BORE, MINIMUM 24" DEEP)
105 FEET CONTRCTR (ONE 2" HDPE CONDUIT)

23-25 **INSTALL:** 189 FEET UT-S24
189 FEET PVC-2

23-29 **INSTALL:** 370 FEET UT-S24
370 FEET PVC-2

CITY UTILITIES OVERHEAD DISTRIBUTION CONSTRUCTION
E25 ~ 798068/893096 ~ OHD ~ 107000/108010

2 **REMOVE:** 1 EACH WW25S-6
1 EACH STLT-CLMP

4 **REMOVE:** 1 EACH WW25S-6
1 EACH STLT-CLMP

5 **REMOVE:** 1 EACH WW25S-6
1 EACH STLT-CLMP

6 **REMOVE:** 1 EACH WW25P-RO

7 **REMOVE:** 1 EACH WW25S-10
1 EACH STLT-CLMP

8 **REMOVE:** 1 EACH WW25P-RO

9 **INSTALL:** 1 EACH LED-B3
REMOVE: 1 EACH #107092 (250W HPS LUMINAIRE)

10 **INSTALL:** 1 EACH LED-B3
REMOVE: 1 EACH #107092 (250W HPS LUMINAIRE)

11 **INSTALL:** 1 EACH LED-B3
REMOVE: 1 EACH #107092 (250W HPS LUMINAIRE)

13 **INSTALL:** 1 EACH LED-B3
1 EACH LED-PC
REMOVE: 1 EACH #107092 (250W HPS LUMINAIRE)

16 **REMOVE:** 1 EACH WW25P-RO

1-1A **NOTE TO GIS:** SHOW THIS SPAN OF SECONDARY.

1-2 **REMOVE:** 20 FEET OH-4DPX

1-3 **NOTE:** RESAG SECONDARY AND WW CIRCUITS TO GET MID-SPAN CLEARANCE FROM COMMUNICATIONS.

3-5 **REMOVE:** 202 FEET OH-4DPX

3-6 **REMOVE:** 109 FEET OH-4DPX

6-9 **REMOVE:** 363 FEET OH-4DPX

6-33 **REMOVE:** 330 FEET OH-4DPX
NOTE: REFER TO SHEET 2 TO FOR LOC. #33.

8-12 **REMOVE:** 78 FEET OH-4DPX

11-14 **INSTALL:** 53 FEET OH-4DPX
NOTE: SAG TO REDUCED TENSION.

12-13 **NOTE:** CONNECT SECONDARY FROM TRANSFORMER.
NOTE TO GIS: SHOW AS SECONDARY, INSTEAD OF WW CIRCUIT.

14-15 **INSTALL:** 190 FEET OH-4DPX

GENERAL NOTES

1 CITY UTILITIES CONTACTS:
** **ELECTRIC CONDUIT INSPECTION 417-450-7347 ****
** **CONTACT 24 HOURS PRIOR TO INSPECTIONS AND RECEIVING C.U. MATERIAL ****
ENGINEERING: ERIC COCHRAN, 417-831-8612.

2 ALL CONTRACTOR WORK SHALL BE DONE IN COMPLIANCE WITH C.U. SPECIFICATIONS. C.U. ELECTRIC DISTRIBUTION CONSTRUCTION STANDARDS AND HOW-TO VIDEOS CAN BE FOUND AT <https://www.cityutilities.net/business/construction/> OR SCAN QR CODE.

3 C.U. ELECTRIC LINE ENGINEERING DRAWINGS ARE DIAGRAMMATIC AND SHOULD NOT BE SCALED.

4 C.U. ELECTRIC SYMBOLS LEGEND CAN BE FOUND IN "GENERAL SPECIFICATIONS" SECTION OF C.U. ELECTRIC DISTRIBUTION CONSTRUCTION STANDARDS.

5 C.U. WILL FURNISH RISER STAND-OFF BRACKETS, SECONDARY PEDESTAL(S), E-LOC(S), RGS TO PVC ADAPTER(S), AND BELL END(S) FOR CONTRACTOR INSTALLATION. CONTRACTOR SHALL LOAD & TRANSPORT CITY UTILITIES MATERIAL FROM STOREROOM AT 742 N. BELCREST TO JOB SITE. FURNISHED MATERIAL FROM MATERIAL YARD IS TYPICALLY OPEN BETWEEN THE HOURS OF 9 AM AND 3 PM. CONTRACTOR SHALL FURNISH TRENCH BACKFILL MATERIAL. CONTRACTOR TO REFERENCE SIX DIGIT PROJECT NUMBERS "CONDUIT BY OTHERS" IN TITLE BLOCK AT PICKUP.

6 CONTRACTOR SHALL TRENCH AS INDICATED IN NOTES, AND/OR BORE STREETS, DRIVEWAYS, PARKING LOTS, ETC. AS REQ'D.

7 CONTRACTOR SHALL PRIMER ALL PVC-PVC CONNECTIONS PRIOR TO CEMENTING.

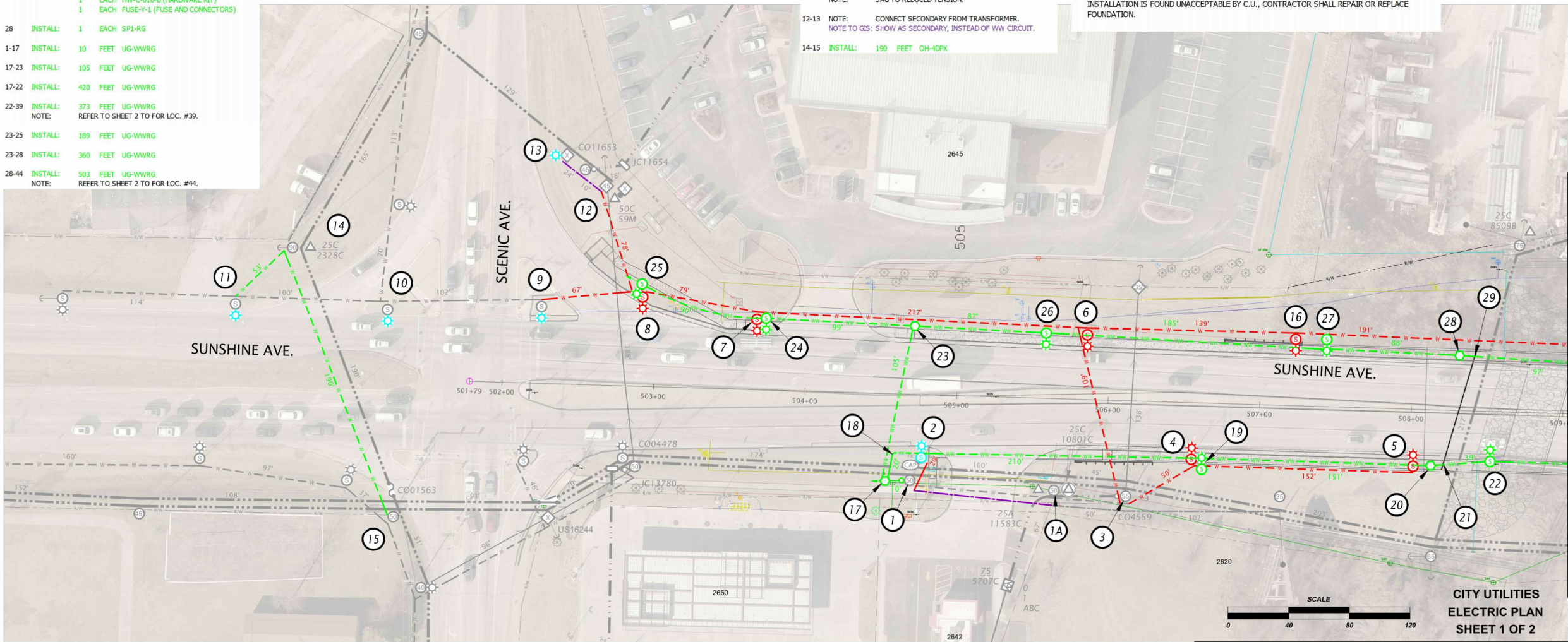
8 CONTRACTOR SHALL INSTALL A PULL STRING IN ALL CONDUITS TO ENSURE THE INTEGRITY OF THE CONDUIT SYSTEM.

9 IF C.U. ENCOUNTERS PROBLEMS WITH THESE FACILITIES DURING THE INITIAL INSTALLATION OF CABLES, ELBOWS, ETC., CONTRACTOR SHALL REPAIR/REPLACE CONDUIT SYSTEM, TRANSFORMER PAD, JUNCTION BOX, ETC. PER C.U. REQUIREMENTS.

10 CONTRACTOR SHALL CONTACT C.U. PRIOR TO BACKFILLING TRENCH. CONTRACTOR MAY BE REQUIRED TO EXPOSE CONDUIT INFRASTRUCTURE TO VERIFY SIZE, DEPTH, ETC. IF TRENCH IS BACKFILLED PRIOR TO INSPECTION.

11 IN LIEU OF PVC CONDUIT, HIGH DENSITY POLYETHYLENE CONDUIT (HDPE) SDR-11 AND FITTINGS MAY BE SUBSTITUTED FOR CONDUIT SPECIFIED IN NOTES (EXCLUDING RISERS). CONTRACTOR SHALL FURNISH ALL POLYETHYLENE CONDUIT MATERIAL AND C.U.-APPROVED FITTINGS. PIPE SHALL BE BLACK PIPE WITH RED STRIPE. CONTRACTOR SHALL GET APPROVAL FROM INSPECTOR BEFORE SUBSTITUTION OF PVC CONDUIT. ANY ADDITIONAL COST INCURRED BY THE USE OF HDPE PIPE SHALL BE BORNE BY THE CONTRACTOR.

12 ALL STREETLIGHT ANCHOR BOLTS SHALL BE GALVANIZED. CONTRACTOR SHALL ENSURE THAT STREETLIGHT CONCRETE FOUNDATIONS HAVE SUFFICIENT ANCHOR BOLT LENGTH AND PROPER BOLT CIRCLE FOR POLE INSTALLATION. IF ANCHOR BOLT INSTALLATION OR CONCRETE BASE INSTALLATION IS FOUND UNACCEPTABLE BY C.U., CONTRACTOR SHALL REPAIR OR REPLACE FOUNDATION.



EXISTING
INSTALL
REMOVE
REPLACE
or TRANSFER
NOTE TO
G.I.S. DEPT.

ELECTRIC LINE CONSTRUCTION		PROJECT NUMBERS		
1/4 SEC. SEC-TWN-RNG. SW, 27-29-22	☒ LOCATES REQD	WORK TYPE	OH	UG
CONSTRUCTION: ☒ OVERHEAD ☒ UNDERGROUND	☐ CUSTOMER TREE TRIM	TRANSMISSION		
MAXIMUM VOLTAGE: ☒ 0V ☐ 120V ☐ 240V ☐ 7.62KV	☐ CU TREE TRIM	DISTRIBUTION	798068 893096	797943 ELOC04
SUB/FEEDER(S): GOL-2	☐ SPRINGNET - WORK REQD	CONDUIT (BY OTHERS)	7000318	7000319 ELOC01
CREW LEADER:	☐ CATV - WORK REQD	STREETLIGHT	797943	ELOC04
COMPLETION DATE:	☐ PHONE - WORK REQD	OTHER	893166	
	☒ MoDOT PERMIT REQD			
	☐ EASEMENT REQD			

STATE OF MISSOURI

R. ERIC COCHRAN

PROFESSIONAL ENGINEER

E-028959

06-21-23

ENGINEER: ERIC COCHRAN

LICENSE NO.: E-28959

DATE

6-21-23

ROUTE

413

STATE

MO

DISTRICT

SW

SHEET NO.

CU-E1

COUNTY

GREENE

JOB NO.

J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

SUNSHINE AVE

MODOT IMPROVEMENTS

RELOCATE FACILITIES, INCLUDING UNDERGROUND CONDUIT AND FOUNDATIONS FOR STREETLIGHTING

DATE: 6-21-23

SCALE: 1" = 40'

MAP NO.: SW-E03.SWF03

DRAWING NO.: 88245

REVISIONS: 222005

DESIGNED BY: COCHRAN

CHECKED BY: LINDSEY

***SPECIAL NOTE:** CONDUIT ELBOW(S), CONDUIT COUPLINGS AND CONDUIT PLUGS ARE **NOT** INCLUDED IN THE ELECTRIC QUANTITIES BID ITEM ESTIMATE. THESE ITEMS SHALL BE CONSIDERED INCIDENTAL TO OTHER BID ITEMS. ADJUST CORRESPONDING BID PRICES FOR PEDESTAL(S), JUNCTION CABINET(S), CONDUIT OR ETC. AS NECESSARY TO COVER COST OF INCIDENTAL ITEMS.

GENERAL NOTES:

1. LOCATIONS ARE APPROXIMATE, TO THE CENTER OF THE EQUIPMENT. CONTRACTOR SHALL STAKE ALL ITEMS LISTED, UNLESS NOTED OTHERWISE.
2. CONTACT C.U. CONTRACT INSPECTOR IF LOCATION CONFLICTS WITH NEW CONSTRUCTION OR EXISTING CONDITIONS.
3. IF STAKED LOCATION DOESN'T MATCH LOCATION AS DESCRIBED, CONTACT C.U. INSPECTOR TO CLARIFY ANY DISCREPANCIES.
4. MAINTAIN A MINIMUM OF 12" CLEARANCE FROM EXISTING UNDERGROUND UTILITIES.

ENGINEER: ERIC COCHRAN
LICENSE NO.: E-28959

ROUTE 413	STATE MO
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COUNTY
GREENE

CONTRACT ID.

BRIDGE NO.	
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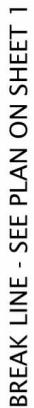
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DESIGNED BY
COCHRANE
REVIEWED BY
LINDSAY

CONTRACTOR UNDERGROUND DISTRIBUTION CONSTRUCTION				
E11 ~ 797942/893166 ~ UGD ~ 107000/108010				
31	REMOVE:	1	EACH	CONCRETE FOUNDATION
34	REMOVE:	1	EACH	CONCRETE FOUNDATION
35	REMOVE:	1	EACH	CONCRETE FOUNDATION
36	INSTALL:	1	EACH	INTEGRAL FOUNDATION AT BRIDGE.
		2	EACH	P295-90V
	NOTE:	STREETLIGHT FOUNDATION AT BRIDGE. REFER ALSO TO MODOT BRIDGE PLANS.		
37	NOTE:	CONDUIT/TRENCH TRANSITION TO BRIDGE CONDUIT. EXPANSION/DEFLECTION FITTINGS PER BRIDGE PLANS, WITH ELECTRIC JUNCTION BOX (MIN. 10"X8"X12") IN OUTSIDE FACE OF WALL. REFER TO BRIDGE PLANS FOR DETAILS.		
38	INSTALL:	1	EACH	SP-5W
		2	EACH	P218-45V
	NOTE:	FIELD DETERMINE EXACT LOCATION AT SIDEWALK.		
39	INSTALL:	1	EACH	CF24-6-115-B
		2	EACH	P224-90V
		1	EACH	2P
	NOTE:	STUB OUT AND CAP SPARE ELBOW.		
40	INSTALL:	1	EACH	INTEGRAL FOUNDATION AT BRIDGE.
		2	EACH	P295-90V
	NOTE:	STREETLIGHT FOUNDATION AT BRIDGE. REFER ALSO TO MODOT BRIDGE PLANS.		
41	NOTE:	CONDUIT/TRENCH TRANSITION TO BRIDGE CONDUIT. EXPANSION/DEFLECTION FITTINGS PER BRIDGE PLANS, WITH ELECTRIC JUNCTION BOX (MIN. 10"X8"X12") IN OUTSIDE FACE OF WALL. REFER TO BRIDGE PLANS FOR DETAILS.		
42	INSTALL:	1	EACH	SP-5W
		2	EACH	P218-45V
	NOTE:	FIELD DETERMINE EXACT LOCATION AT SIDEWALK.		
43	INSTALL:	1	EACH	CF24-6-115-B
		2	EACH	P224-90V
44	INSTALL:	1	EACH	CF24-6-115-B
		2	EACH	P224-90V
		1	EACH	2P
	NOTE:	STUB OUT AND CAP SPARE ELBOW.		
48	INSTALL:	1	EACH	SR-2CP
49	INSTALL:	1	EACH	SP-2C
		2	EACH	P224-90V
37-39	INSTALL:	179	FEET	UT-S24
		179	FEET	PVC-2
41-43	INSTALL:	267	FEET	UT-S24
		267	FEET	PVC-2
48-49	INSTALL:	5	FEET	UT-S24
				PVC-2

<u>CITY UTILITIES OVERHEAD DISTRIBUTION CONSTRUCTION</u>				
E25 ~ 798068/893096 ~ OHD ~ 107000/108010				
30	REMOVE:	1	EACH	WW25P-RO
31	REMOVE:	1	EACH	WW25P-RO
33	REMOVE:	1	EACH	WW25P-RO
34	REMOVE:	1	EACH	WW25P-RO
35	REMOVE:	1	EACH	WW25P-RO
		1	EACH	DG-L1
		1	EACH	ANC-1
30-31	REMOVE:	234	FEET	OH-4DPX
31-32	REMOVE:	33	FEET	OH-4DPX
33-35	REMOVE:	435	FEET	OH-4DPX

CITY UTILITIES UNDERGROUND DISTRIBUTION CONSTRUCTION					
E25 ~ 797943 ~ UGD ~ 107000					
36	INSTALL:	1	EACH	GP28-6-1 (28' POLE WITH 6' ARM)	
		1	EACH	LED-B3 (L.E.D. STREETLIGHT)	
		1	EACH	HW-C-010 (HARDWARE KIT)	
		1	EACH	FUSE-Y-1 (FUSE AND CONNECTORS)	
	NOTE:	DO NOT INSTALL BREAK-AWAY BASE AT BRIDGE.			
38	INSTALL:	1	EACH	SP-RG	
39	INSTALL:	1	EACH	GP28-12-1 (28' POLE WITH 12' ARM)	
		1	EACH	LED-B3 (L.E.D. STREETLIGHT)	
		1	EACH	BAB-1 (BREAK-AWAY BASE)	
		1	EACH	HW-C-010-B (HARDWARE KIT)	
		1	EACH	FUSE-Y-1 (FUSE AND CONNECTORS)	
40	INSTALL:	1	EACH	GP28-6-1 (28' POLE WITH 6' ARM)	
		1	EACH	LED-B3 (L.E.D. STREETLIGHT)	
		1	EACH	HW-C-010 (HARDWARE KIT)	
		1	EACH	FUSE-Y-1 (FUSE AND CONNECTORS)	
	NOTE:	DO NOT INSTALL BREAK-AWAY BASE AT BRIDGE.			
42	INSTALL:	1	EACH	SP-RG	
43	INSTALL:	1	EACH	GP28-12-1 (28' POLE WITH 12' ARM)	
		1	EACH	LED-B3 (L.E.D. STREETLIGHT)	
		1	EACH	BAB-1 (BREAK-AWAY BASE)	
		1	EACH	HW-C-010-B (HARDWARE KIT)	
		1	EACH	FUSE-Y-1 (FUSE AND CONNECTORS)	
44	INSTALL:	1	EACH	GP28-12-1 (28' POLE WITH 12' ARM)	
		1	EACH	LED-B3 (L.E.D. STREETLIGHT)	
		1	EACH	BAB-1 (BREAK-AWAY BASE)	
		1	EACH	HW-C-010-B (HARDWARE KIT)	
		1	EACH	FUSE-Y-1 (FUSE AND CONNECTORS)	
45	NOTE:	MODOT CONSTRUCTION WILL PREVENT REQUIRED FRONT/DOOR SIDE CLEARANCE FROM CABINET. ROTATE CABINET 180 DEGREES TO MAINTAIN REQUIRED CLEARANCE. LABEL CABINET ACCORDINGLY IF PHASES ARE REVERSED IN CABINET.			



ELECTRIC LINE CONSTRUCTION					PROJECT NUMBERS				
1N SEC, SEC-TWY-NW: SW, 27-29-22					☒ LOCATES REGD	WORK TYPE	OH	UG	PROJ
CONSTRUCTION: ☐ OVERHEAD ☐ UNDERGROUND					☐ CUSTOMER TREE TRIM	TRANSMISSION			
MAXIMUM VOLTAGE: ☐ 0V ☐ 120V ☐ 240V ☐ 7.62KV					☐ CU TREE TRIM		786068 893096	779743	ELOC04
☐ 13.2KV ☐ 69KV ☐ 161KV ☐ 345KV					☐ SPRINGM - WORK REGD	DISTRIBUTION	7000318	7000319	ELOC01
SUBFEEDER(S): GOL-2					☐ CATV - WORK REGD	CONDUIT (BY OTHERS)	779742 893166		ELOC04
☐ HOT LINE TAG AVAILABLE: ☐					☐ PHONE - WORK REGD				
SUBFEEDER(S):					☒ MoDOT PERMIT REGD	STREETLIGHT			
CREW LEADER:					☐ EASEMENT REGD	OTHER			
COMPLETION DATE:									



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED

04/11/2023

ROUTE	STATE
117	MO

413	MU
413	MU

PROJECT	SHEET NO.
BR	1

COUNTY

GREENE

JOB NO.

J8S3157

[illegible]

**MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION**

MoDOT

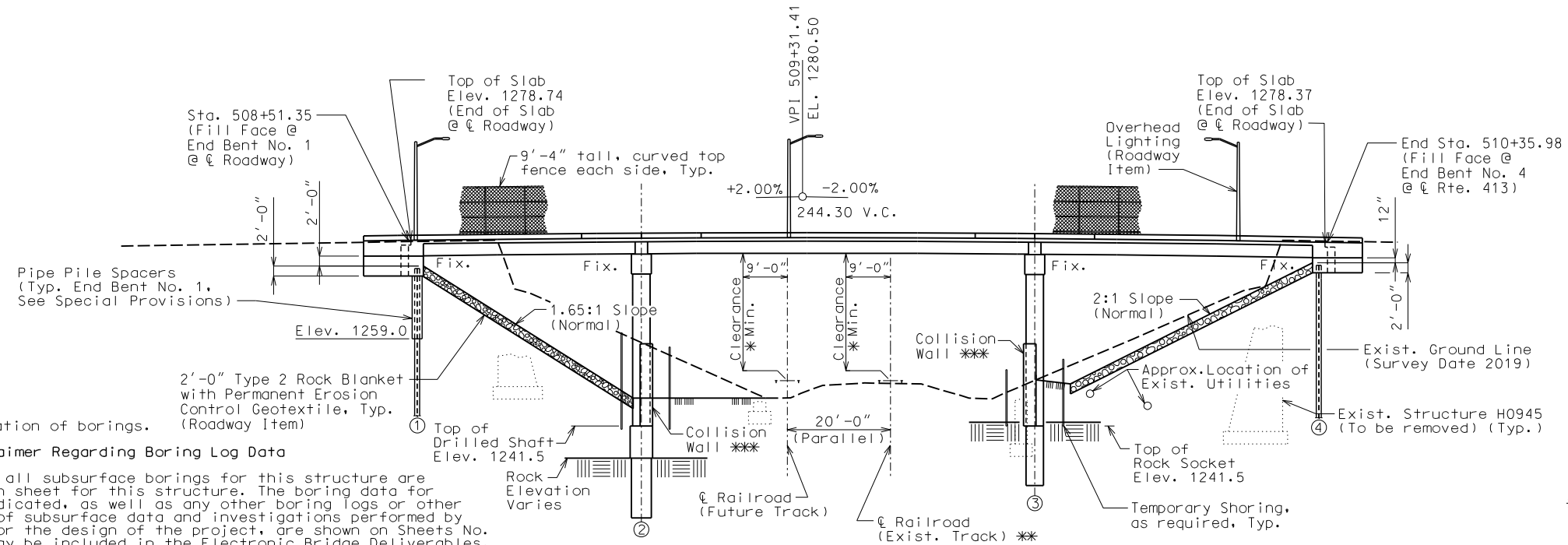
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



**VEENSTRA
& KIMM INC.**

P.O. Box 236
Liberty, Missouri 64069
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. F00362673

(45' -79' -57') PRESTRESSED CONCRETE SPREAD BOX BEAM SPANS



Notes:

Existing Bridge No. H0945 to be removed per Standard Specifications.

Roadway fill shall be completed to the final roadway section and up to the elevation of the bottom of the concrete beam within the limits of the structure and for not less than 25 feet in back of the fill face of the end bents before any piles are driven for any bents falling within the embankment section.

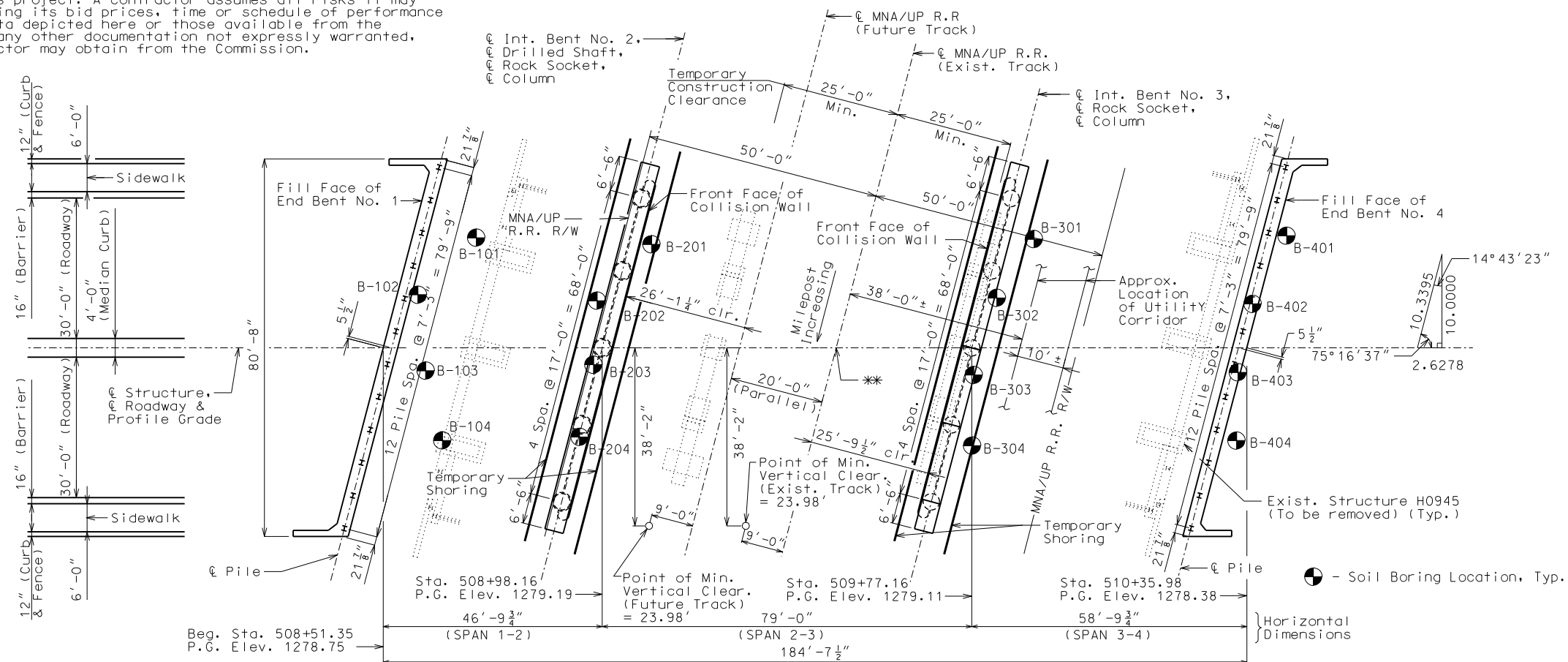
For General Notes, Location Sketch,
Foundation Data, Railroad Notes,
Estimated Quantities and Estimated
Quantities for Slab on Concrete
Beam, see Sheet No. 2.

* Final vertical clearance from top of rails to bottom of superstructure shall be at least 23'-4". Track elevations should be verified in the field prior to construction to determine if the final vertical clearance shown will be obtained.

** Sta. 509+48.16 @ Rte. 413 =
Sta. 10+12.78 @ MNA/UP R.R.
(Mile Post 508.4)

*** Bent 2, Top of Collision Wall Elev. 1258.0
Bent 3, Top of Collision wall Elev. 1258.0

GENERAL ELEVATION



GENERAL PLAN

B.M.
CUT "□" ON CURB
STA. 505+39.2, 79.4' RT.
ELEV. 1270.10

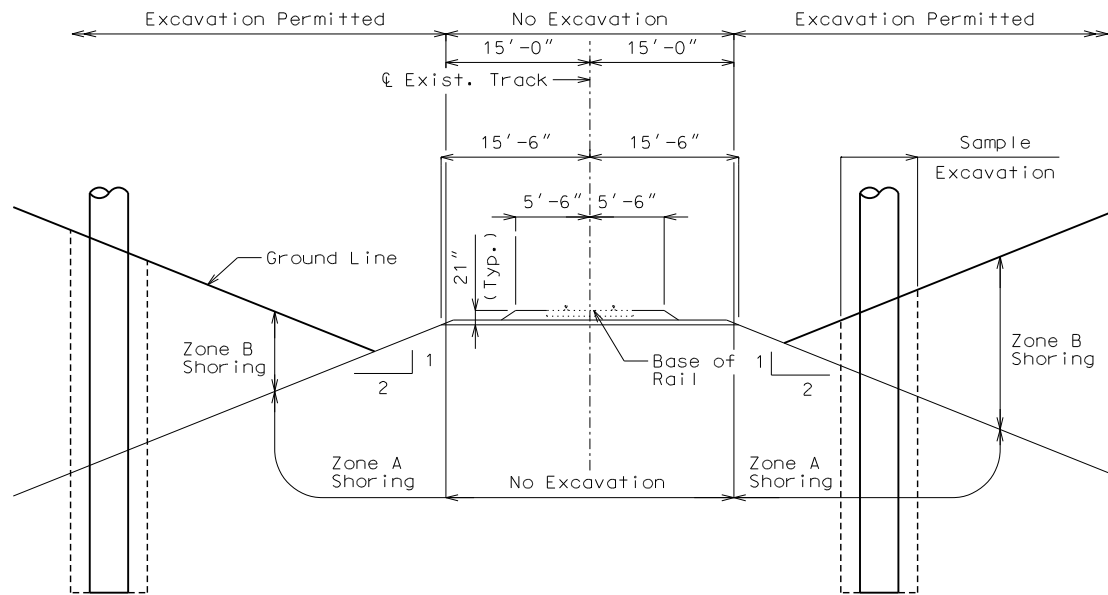
BRIDGE: ROUTE 413 OVER MNA/UP RAILROAD TRACK

ROUTE 413 (W. SUNSHINE STREET) FROM ROUTE 160
TO ROUTE 13. ABOUT 0.6 MILES WEST OF ROUTE 13.
BEGINNING STA. 508+51.35 (ROUTE 413)

Designed	Nov.	2022
Detailed	Dec.	2022
Checked	Dec.	2022

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

Sheet No. 1 of 56



TRACK PROTECTION SHORING REQUIREMENTS

LIVE LOAD PRESSURE COOPER E80 LOAD

Vertical pressure q shall be based on a distribution width L_d .
 L_d is the length of tie plus H_1 .
 H_1 is the height from the bottom of tie to the top of the shoring.
 H_2 is the depth of point being evaluated with the Boussinesq equation.
 S is a distance perpendicular from centerline of track to the face of shoring.
 D is from top of shoring to one foot below dredge line.
 Z_p is the minimum embedment depth.
Length of tie is 9'-0".
 q is the intensity of strip load due to E80 Railroad live load and shall be calculated as follows:

For $H_1 = 0$, L_d = length of tie; therefore,

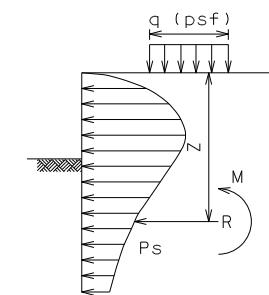
$$q = \frac{80,000 \text{ lb}}{(5'-0'')(9'-0'')} = 1.778 \text{ psf}$$

For $H_1 > 0$, L_d = length of tie + H_1 ; therefore,

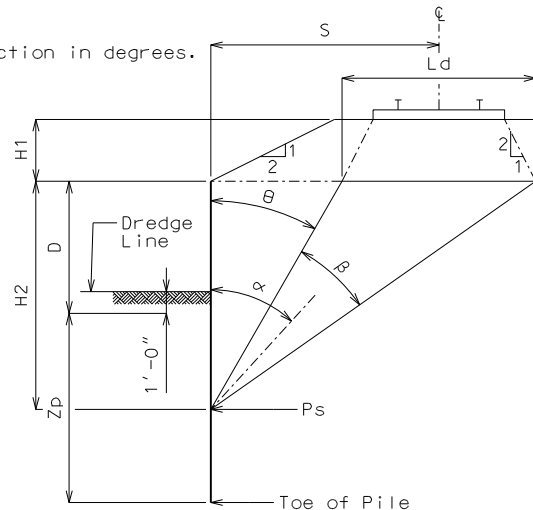
$$q = \frac{80,000 \text{ lb}}{(5'-0'')(L_d)}$$

CASE 1: Lateral live load pressure P_s , due to E80 loading for track parallel to shoring system is calculated using the Boussinesq Strip Load Equation.
 $P_s = (2q/\pi) (\beta - \sin\beta\cos2\alpha)$
 α and β are angles measured in radians, $\alpha = \theta + \beta/2$

CASE 2: Live load pressure due to E80 loading for track at a right angle to the shoring system can be calculated using the following equation:
 $P_s = KAq$
where $KA = \tan^2(45 - \phi/2)$
 ϕ is the angle of internal friction in degrees.



EQUIVALENT LOADING



PRESSURE DISTRIBUTION FOR COOPER E80 LOADING

TRACK PROTECTION SHORING

All dimensions are measured perpendicular to ℓ of track.

Prior to commencing any work, the contractor shall submit for approval by the Railroad detailed plans indicating the nature and extent of the track protection shoring proposed. The contractor shall install the temporary shoring system per the approved plans. Design of the temporary shoring system to comply with GUIDELINES FOR TEMPORARY SHORING 2021.

For excavations which encroach into Zone A, shoring plans shall be accompanied by design calculations. Plans and calculations must be signed and stamped by a Professional Engineer registered in the state where the work will be performed.

All shoring within the limits of Zone A must be placed prior to start of excavation.

Zone A:
Shoring must be designed for Railroad live load surcharge in addition to OSHA Standard loads for excavation in Zone A. No sloping cuts allowed.
APPLICABLE RAILROAD LIVE LOAD:
Cooper E80

Zone B:
Shoring to comply with OSHA requirements & UPRR Shoring Guidelines. Sloping cuts allowed.

Construction Notes:

NOTICE: ALL WORK BY THE AGENCY OR THEIR CONTRACTOR MUST BE PERFORMED WITHOUT DISRUPTING RAILROAD OPERATIONS AND/OR INFRASTRUCTURE. ALL MEANS AND METHODS MUST BE CONSIDERED BY THE AGENCY OR THEIR CONTRACTOR. CONSTRUCTION METHODS THAT PUT RAILROAD OPERATIONS AND INFRASTRUCTURE AT RISK WILL NOT BE ALLOWED. COST IS NOT THE DETERMINING FACTOR FOR THE RAILROAD.

1. Construction within the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operations, enabling the track(s) to remain open to traffic per the Railroad's requirements.

2. The proposed project shall not increase the quantity and/or characteristics of the flow in the Railroad's ditches and/or drainage structures.

3. The elevation of the existing top-of-rail profile shall be verified before beginning construction. All discrepancies shall be brought to the attention of the Railroad prior to construction.

4. The Contractor must submit a proposed method of erosion and sediment control and have the method approved by the Railroad.

5. All shoring systems that impact the Railroad's operations and/or supports the Railroad's embankment shall be designed and constructed per current Railroad Guidelines for Temporary Shoring. The method of shoring permissible is dependent upon the availability of track windows, if any.

6. All demolitions within the Railroad's right-of-way and/or demolition that may impact the Railroad's tracks or operations shall be in compliance with the Railroad's Demolition Guidelines. Demolition activities shall be designed to cause no interruptions to the Railroad's operation, enabling the track(s) to remain open to traffic per the Railroad's requirements. The method of demolition permissible is dependent upon the availability of track windows, if any.

7. Erection over the Railroad's right-of-way shall be designed to cause no interruption to the Railroad's operation, enabling the track(s) to remain open to traffic per the Railroad's requirements. The method of erection permissible is dependent on the availability of track windows, if any.

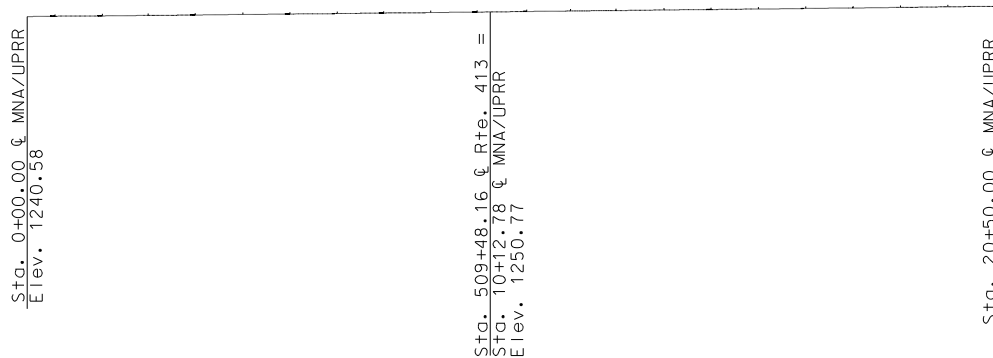
8. Railroad requirements do not allow work within 50 feet of track centerline when a train passes the work site and all personnel must clear the area within 25 feet of the track centerline and secure all equipment.

9. Construction activities, including falsework/formwork, are not allowed within the "Minimum Construction Clearance Envelope" as they would otherwise disrupt Railroad operations.

10. All permanent clearances shall be verified before project closing. All discrepancies shall be brought to the attention of the Railroad.

11. Email Before You Dig. Prior to excavation, disrupting, or working on the Railroad property the contractor shall locate and protect UPRR facilities sending requests to the UPRR "Call Before You Dig" (CBUD) email. Guidance can be found at the following web address: www.upr.com/CBUD.

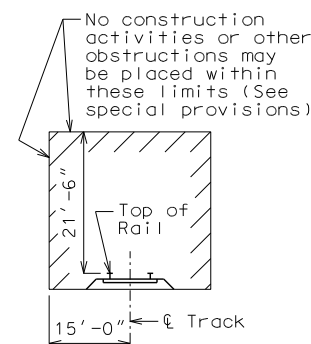
NOTICE: All construction submittals shall be reviewed and approved by the Agency prior to the submitting to the Railroad for review and approval.



TRACK PROFILE
(Along MNA/UP top of high rail)

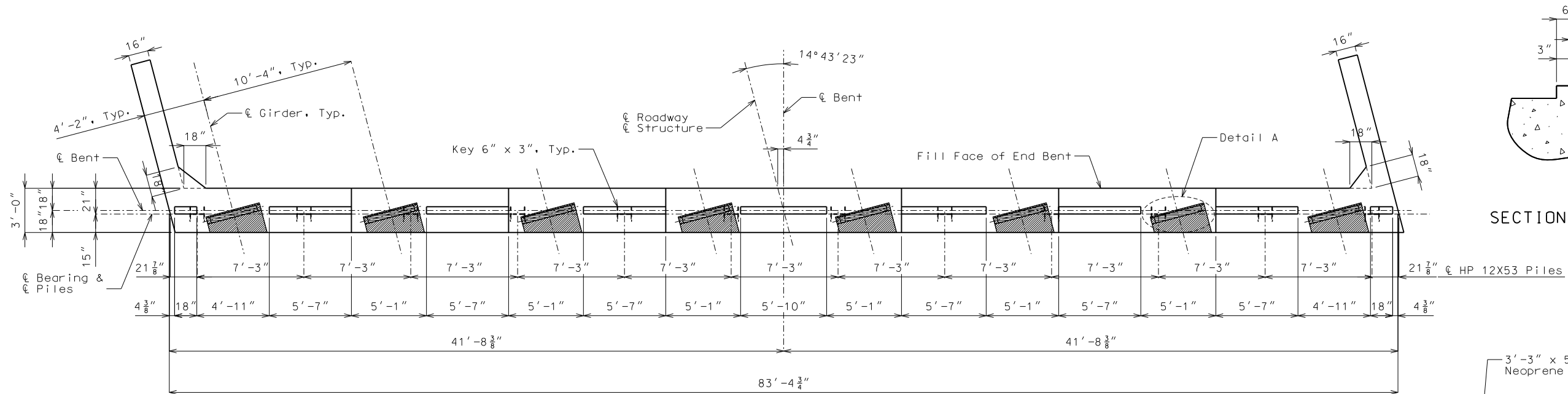
MNA/UP SURVEY POINTS "TOP OF HIGH RAIL"

STATION	ELEVATION	STATION	ELEVATION
0+00.00	1240.58	10+50.00	1251.15
0+50.00	1241.09	11+00.00	1251.70
1+00.00	1241.64	11+50.00	1252.32
1+50.00	1242.07	12+00.00	1252.90
2+00.00	1242.49	12+50.00	1253.44
2+50.00	1242.92	13+00.00	1253.97
3+00.00	1243.36	13+50.00	1254.50
3+50.00	1243.87	14+00.00	1255.02
4+00.00	1244.38	14+50.00	1255.52
4+50.00	1244.91	15+00.00	1256.04
5+00.00	1245.43	15+50.00	1256.58
5+50.00	1245.92	16+00.00	1257.13
6+00.00	1246.41	16+50.00	1257.69
6+50.00	1246.92	17+00.00	1258.24
7+00.00	1247.43	17+50.00	1258.78
7+50.00	1247.95	18+00.00	1259.34
8+00.00	1248.46	18+50.00	1259.92
8+50.00	1248.96	19+00.00	1260.57
9+00.00	1249.49	19+50.00	1261.26
9+50.00	1250.08	20+00.00	1261.73
10+00.00	1250.64	20+50.00	1262.15



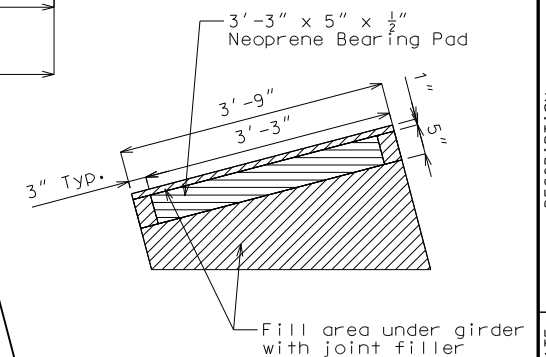
MINIMUM CONSTRUCTION CLEARANCE ENVELOPE
(Normal to railroad)
(Not to scale)

RAILROAD REQUIREMENTS

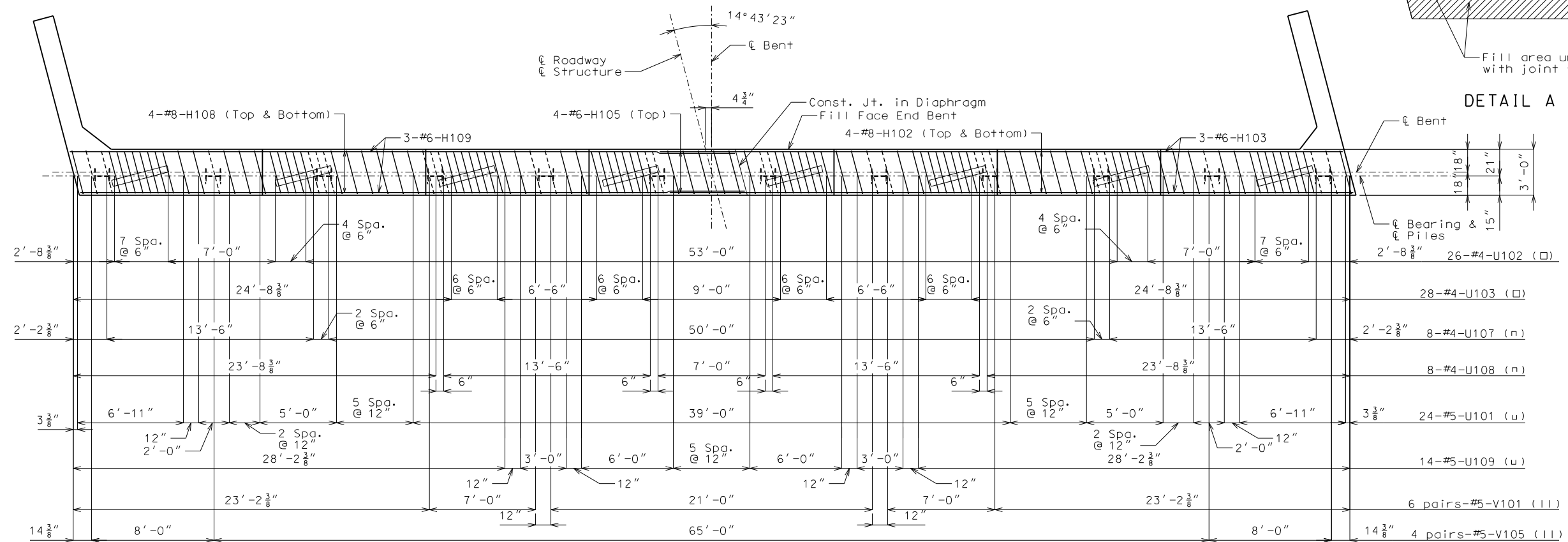


PLAN OF BEAM

SECTION THRU KEY



DETAIL A



PLAN OF BEAM SHOWING REINFORCEMENT

(Pile anchors not shown for clarity)
Note: All U bars and V bar pairs in the End Bent shall be placed parallel to the girders.

DETAILS OF END BENT NO. 1

NOTES:

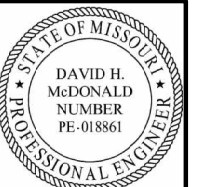
Reinforcing steel shall be shifted to clear piles. U bars shall clear piles by at least 1 1/2 inch.

For details of End Bent No. 1 not shown, see Sheets No. 4, 6 & 7.

Detailed Nov. 2022
Checked Dec. 2022

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

Sheet No. 5 of 56



THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE
413

DISTRICT
BR

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

1-888-ASK-MODOT (1-888-275-6636)

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

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1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

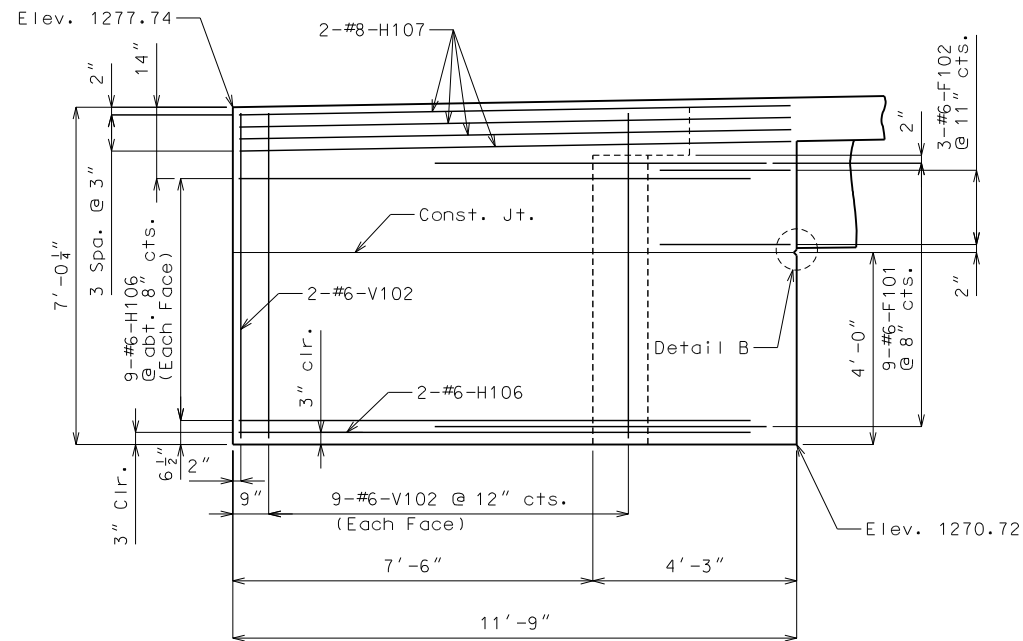
1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

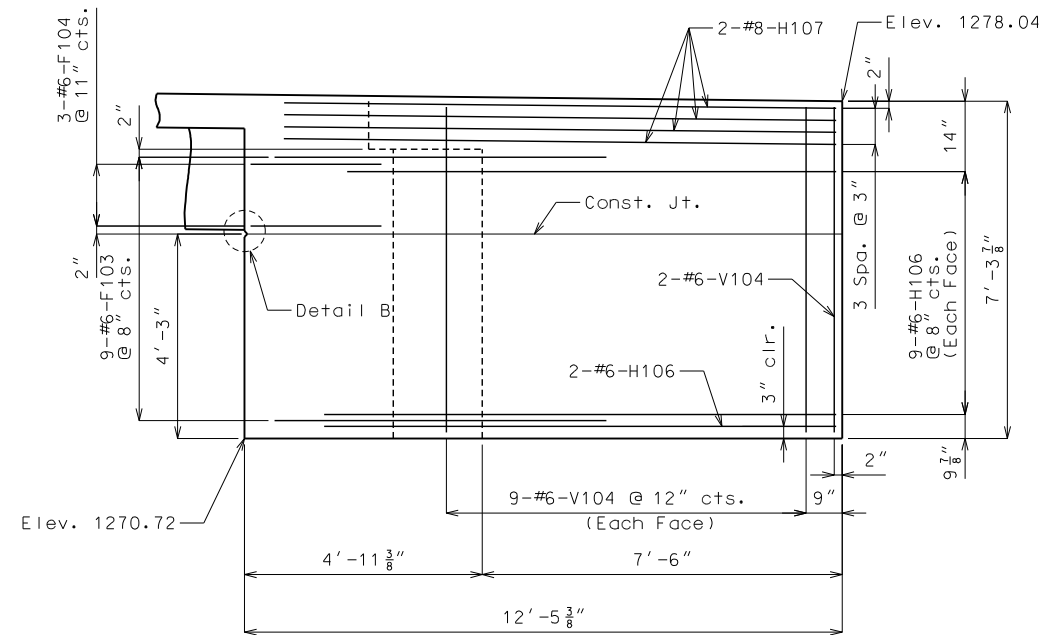
1-888-ASK-MODOT (1-888-275-6636)

1-888-ASK-MODOT (1-888-275-6636)

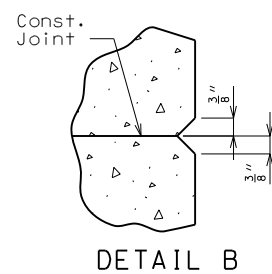
1-888-ASK-MODOT (1-888-275-6636)



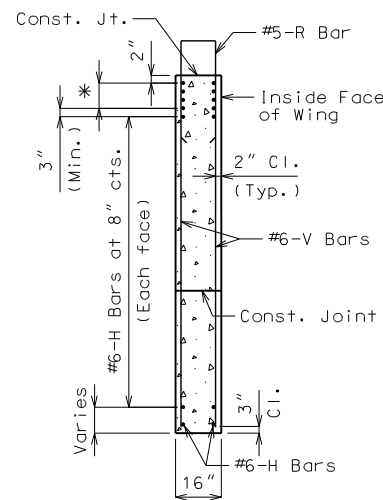
ELEVATION A-A



ELEVATION B-B

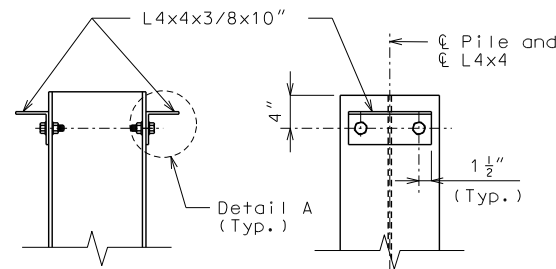


DETAIL B

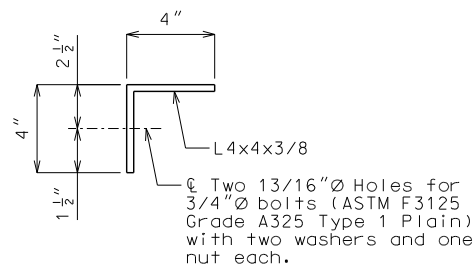


TYPICAL SECTION THRU WING

* #8-H Bars at 3" cts. (Each face)(Place with grade)

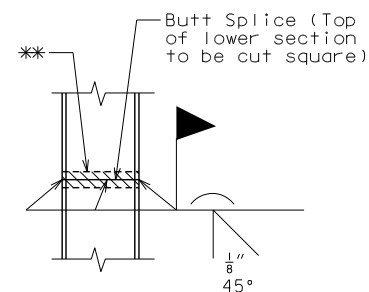


DETAILS OF HP PILE ANCHORS



DETAIL A

Galvanizing angles, bolts, washers and nuts will not be required.



STEEL PILE SPLICE (If required)

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

Note:

For location of Elevation A-A and Elevation B-B, see Sheet No. 4.

For details of End Bent No. 1 not shown, see Sheets No. 4, 5 & 6.

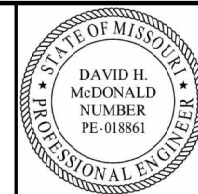
For reinforcement of the Concrete Curb, see Sheet No. 32.

DETAILS OF END BENT NO. 1

Detailed Nov. 2022
Checked Dec. 2022

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

Sheet No. 7 of 56



THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE
413

STATE
MO

DISTRICT
BR

SHEET NO.
7

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

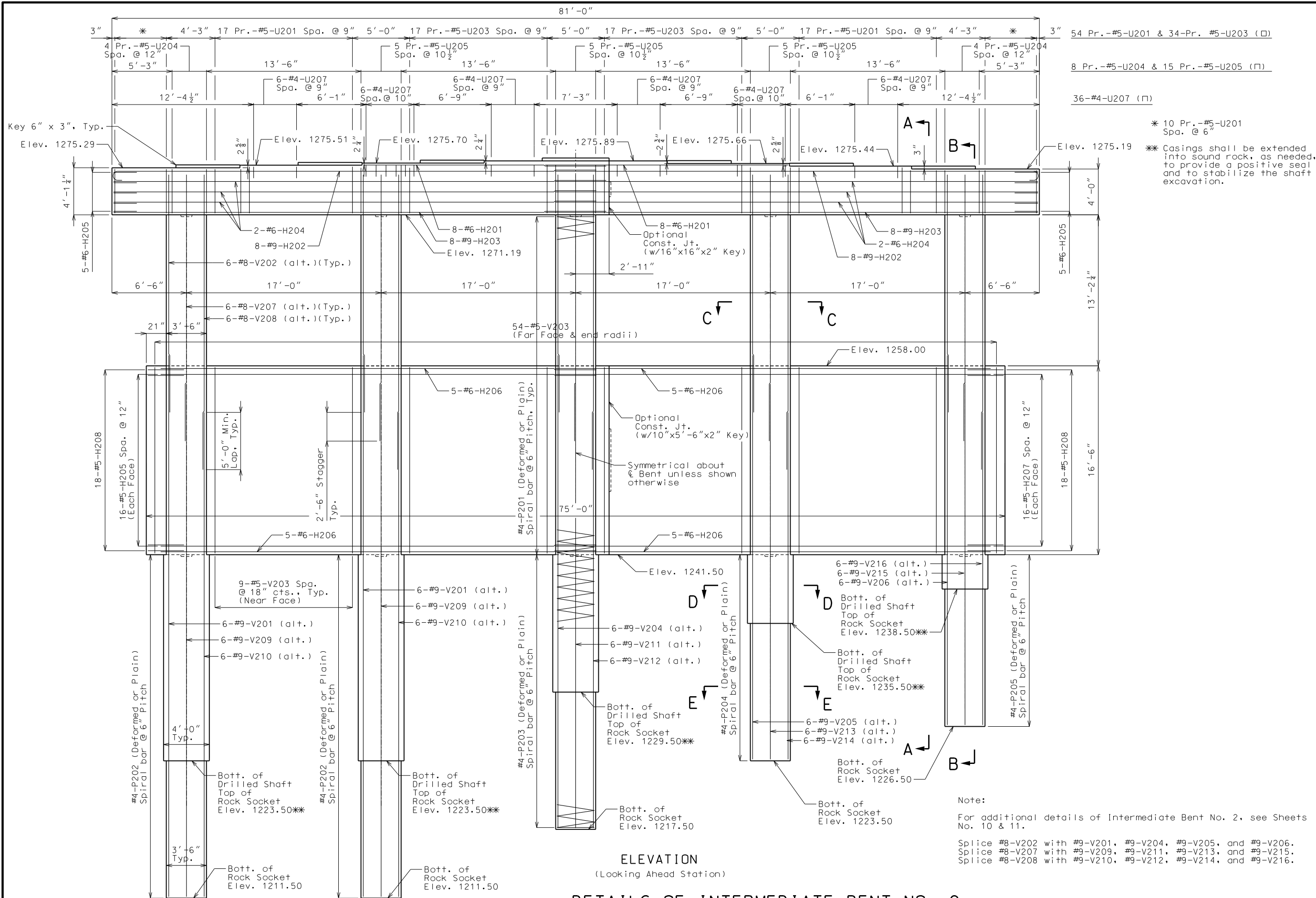
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MO DOT

VEENSTRA & KIMM INC.

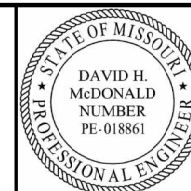
Liberty, Missouri 64069
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. F00362673



Detailed Nov. 2022
Checked Dec. 2022

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

Sheet No. 9 of 56



THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE 413 STATE MO
DISTRICT BR SHEET NO. 9

COUNTY GREENE
JOB NO. J8S3157
CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

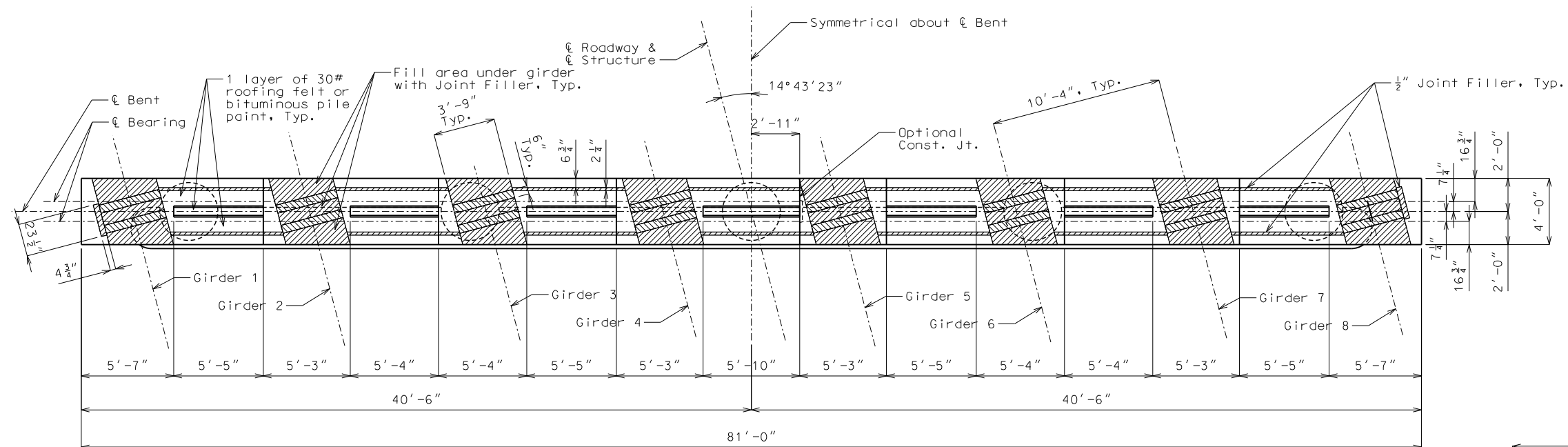
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

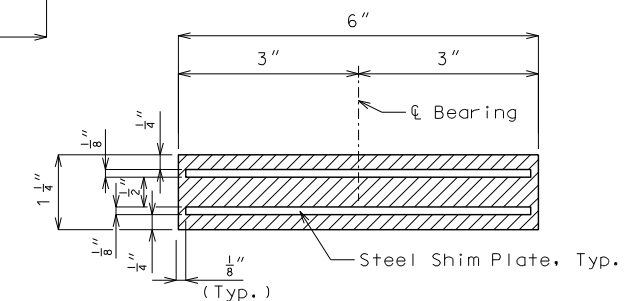
MO DOT

VEENSTRA & KIMM INC.

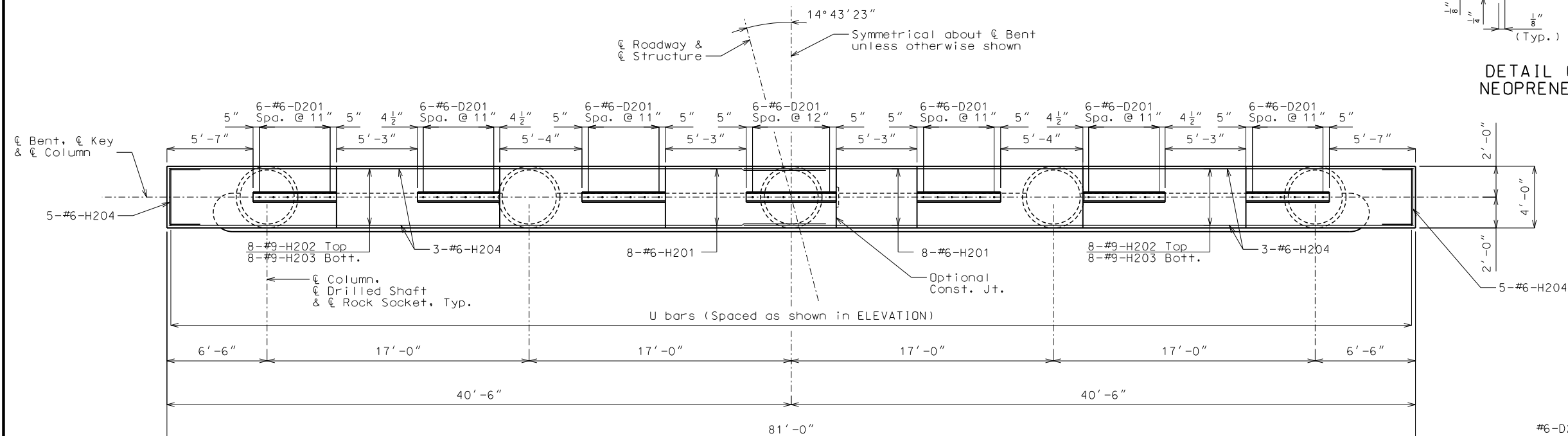
Liberty, Missouri 64069
P.O. Box 236
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. F00362673



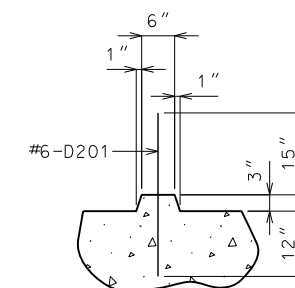
PLAN SHOWING BEARINGS



DETAIL OF LAMINATED NEOPRENE BEARING PAD



PLAN SHOWING BEARINGS



SECTION THRU KEY

Notes:

For steps 2 inches or more, use
2 1/4 x 1/2 inch joint filler up
vertical face.

For Details of Intermediate Bent
No. 2 not shown, see Sheets
No. 9 & 11.

DETAILS OF INTERMEDIATE BENT NO. 2



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 10

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935[illegible]

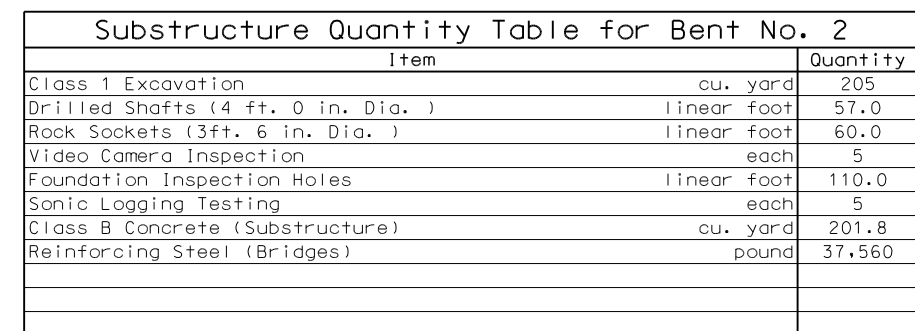
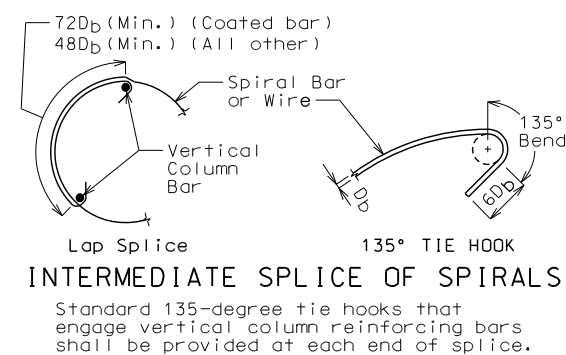
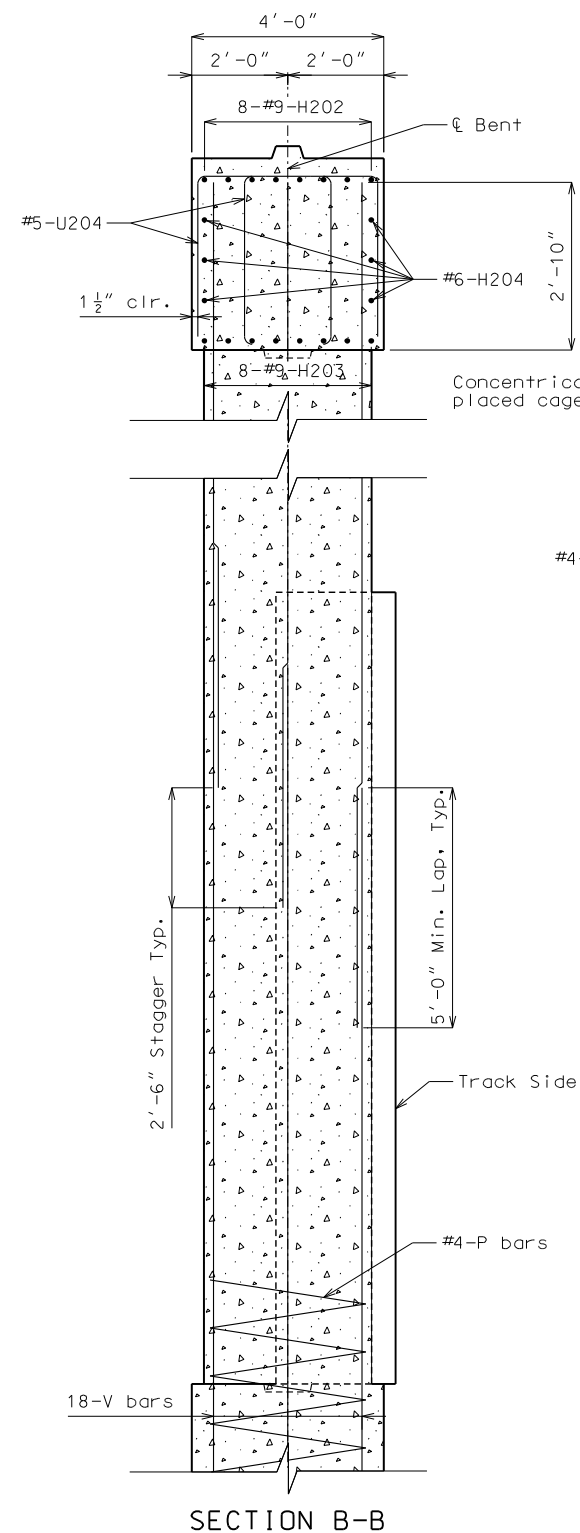
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

 105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6638)



**VEENSTRA
& KIMM INC.**

P.O. Box 236
Liberty, Missouri 64069
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. F00362673

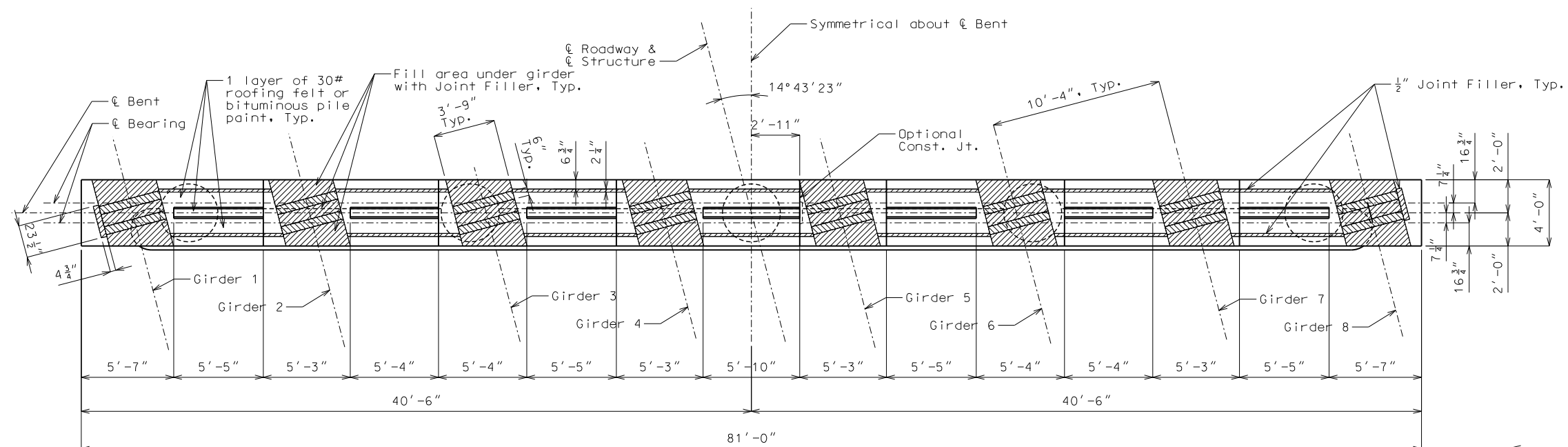


Reinforcing steel for drilled shafts & rock sockets are included in the substructure quantities.

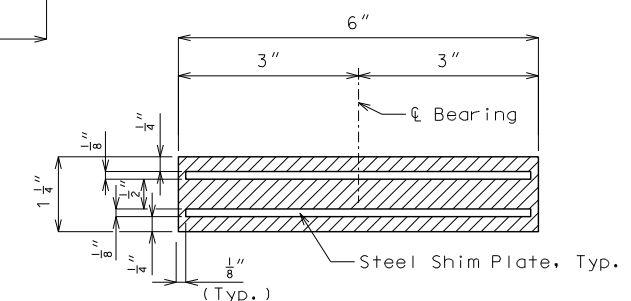
Sheet No. 11 of 56



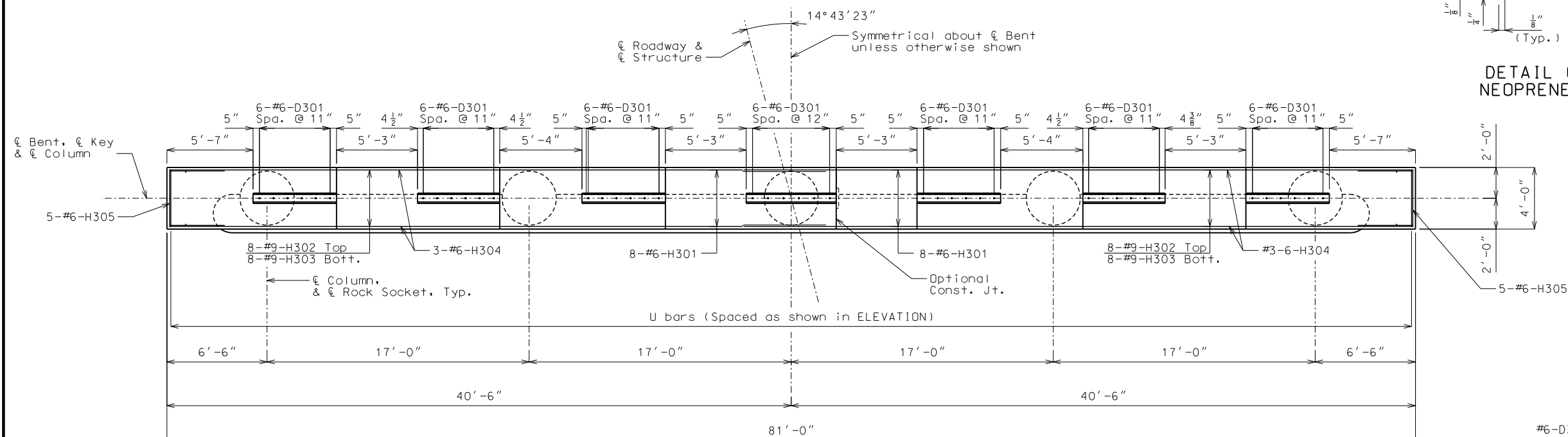




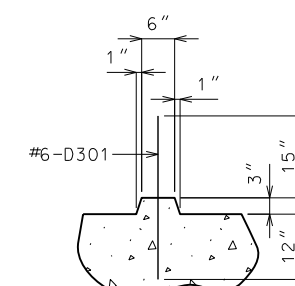
PLAN SHOWING BEARINGS



DETAIL OF LAMINATED
NEOPRENE BEARING PAD



PLAN SHOWING BEARINGS



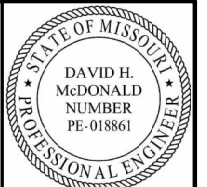
SECTION THRU KEY

Notes:

For steps 2 inches or more, use
2 1/4 x 1/2 inch joint filler up
vertical face.

For Details of Intermediate Bent
No. 3 not shown, see Sheets
No. 12 & 14.

DETAILS OF INTERMEDIATE BENT NO. 3



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED

04/11/2023

ROUTE	STATE
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413	MO
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STRICT	SHEET NO.
DD	13

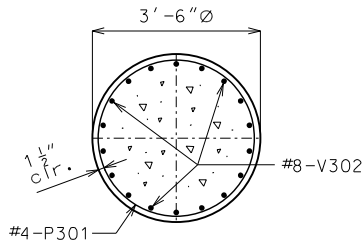
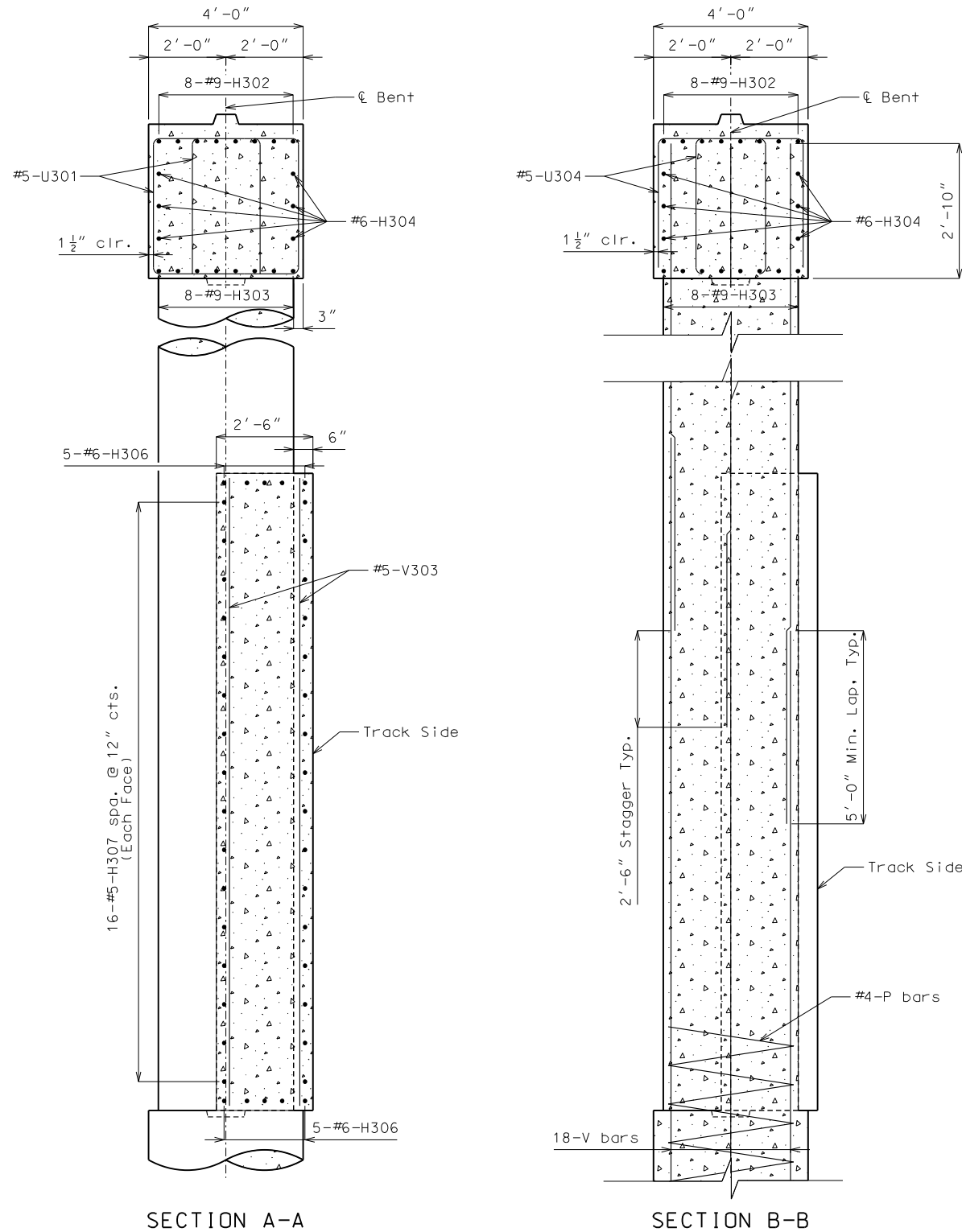
BR	13
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COUNTY
CREENE

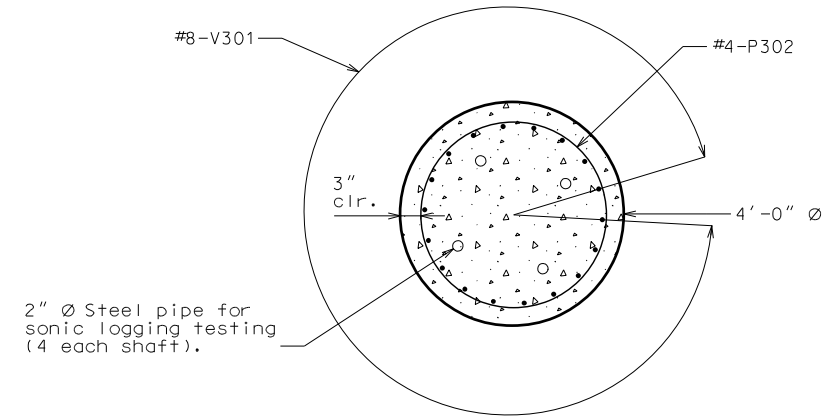
GREENE

JOB NO.
1853157

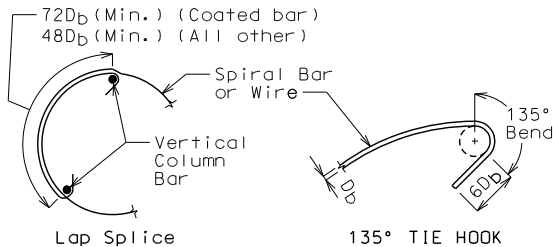
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SECTION C-C



SECTION D-D



INTERMEDIATE SPLICE OF SPIRALS

Standard 135-degree tie hooks that engage vertical column reinforcing bars shall be provided at each end of splice.

Substructure Quantity Table for Bent No. 3		
Item		Quantity
Class 1 Excavation	cu. yard	185
Class 1 Excavation in Rock	cu. yard	15
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	60.0
Video Camera Inspection	each	5
Foundation Inspection Holes	linear foot	110.0
Sonic Logging Testing	each	5
Class B Concrete (Substructure)	cu. yard	200.8
Reinforcing Steel (Bridges)	pound	33,430

These quantities are included in the Estimated Quantities table on Sheet No. 2.

Reinforcing steel for rock sockets are included in the substructure quantities.

Notes:

An additional 4 feet has been added to V301 bar length and P302 spiral bar length in the quantities, if required, for possible change in rock socket lengths. The additional V-bar and spiral P-bar lengths shall be cut off if not required.

Sonic logging testing shall be performed on all rock sockets.

For additional details of Intermediate Bent No. 3, see Sheets No. 12 & 13.

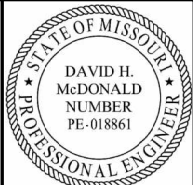
For locations of Sections A-A, B-B, C-C & D-D, see Sheet No. 12.

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Dec. 2022
Checked Dec. 2022

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

Sheet No. 14 of 56



THIS SHEET HAS BEEN
SIGNED, SEALED, AND DATED
ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE
413

STATE
MO

DISTRICT
BR

SHEET NO.
14

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

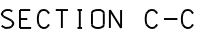
MO DOT

VEENSTRA
& KIMM INC.

Liberty, Missouri 64069

816-781-0643 (FAX)

Certificate of Authority No. F00362673

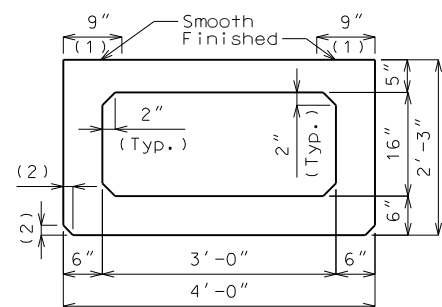


For details of End Bent No. 4 not shown,
see Sheets No. 15, 16 & 18.

Sheet No. 17 of 56



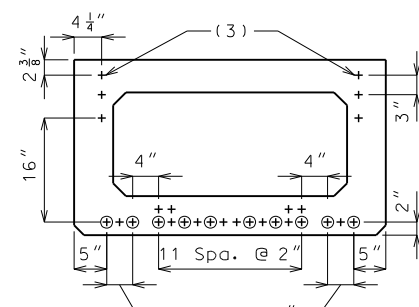
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



DIMENSIONS

(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.

(2) 1 $\frac{1}{2}$ " (Typ.) ($\frac{3}{4}$ " Optional)



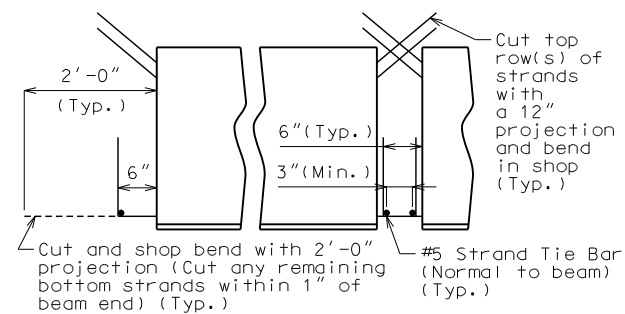
STRAND ARRANGEMENT

(3) 3/8"Ø Support Strands
(Required) (Tensioned
to 8 kips/strand)

All strands are fully bonded unless otherwise noted.

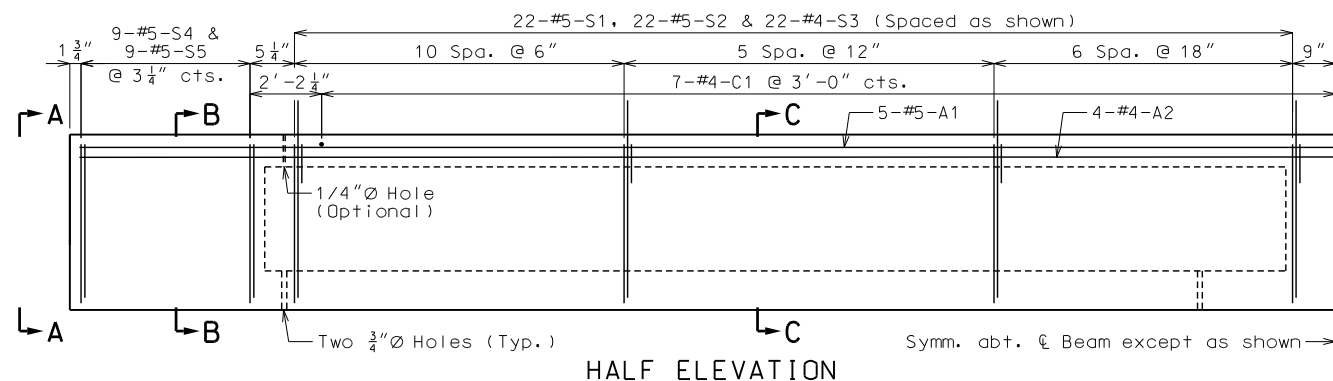
+ Indicates prestressing strand.

O Indicates cut and shop bend
with 2'-0" projection.

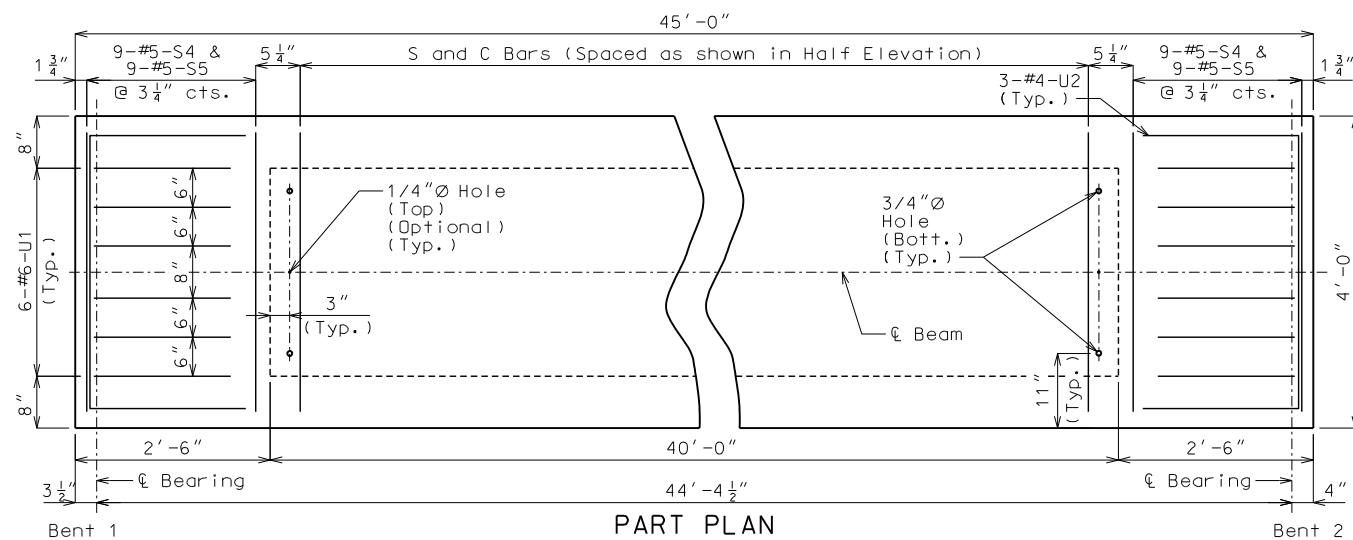


END BENT INTERMEDIATE BENT
STRANDS AT BEAM ENDS

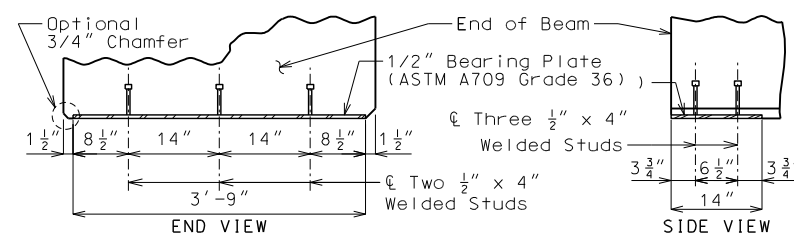
BILL OF REINFORCING STEEL – EACH BEAM				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
5	5 A1	44' - 10"	20	
4	4 A2	44' - 10"	20	
13	4 C1	3' - 7"	20	
44	5 S1	7' - 4"	10	
44	5 S2	7' - 9"	51	
44	4 S3	4' - 6"	50	SHAPE 10
18	5 S4	7' - 4"	10	
18	5 S5	7' - 4"	10	
12	6 U1	5' - 1"	10	SHAPE 20
6	4 U2	7' - 4"	10	



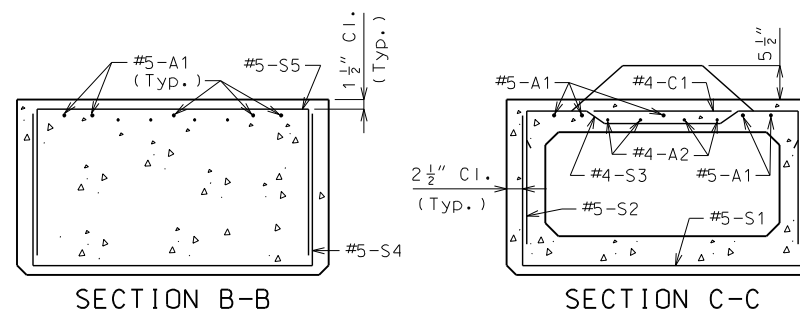
HALF ELEVATION



PART PLAN

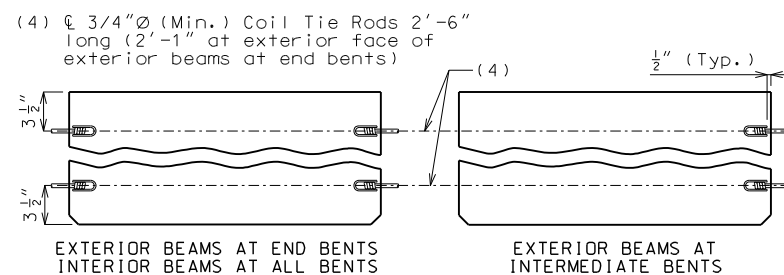


BEARING PLATE



SECTION B-B

SECTION C-C



COIL TIES

All dimensions are out to out. Use symmetry for dimensions not shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest inch.

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

All reinforcement shall be Grade 60.

All S2 bars shall be epoxy coated.

General Notes:

Concrete for prestressed beams shall be Class A-1 with $f'_c = 8000$ psi and $f'_{ci} = 6500$ psi.

Use 26, 0.6"Ø Grade 270 strands
with an initial prestress force of
1143 kips.

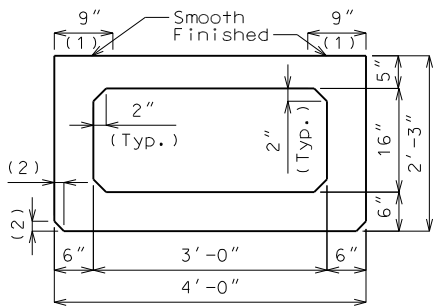
Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

Exterior and interior beams are the same except: coil ties, application of bond breaker.

For Beam Camber Diagram, see Sheet
No. 25.

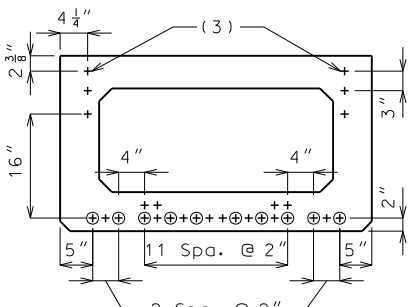
For location of coil ties at concrete bent diaphragms, see Sheets No. 4 and 22.



DIMENSIONS

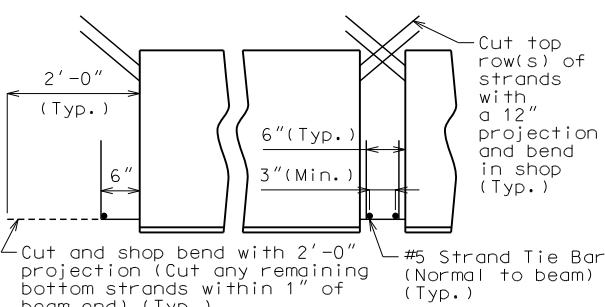
(1) Fabricator shall apply a bond breaker to this region excluding where joint filler will be applied.

(2) 1 1/2" (Typ.) (3/4" Optional)



STRAND ARRANGEMENT

(3) 3/8"Ø Support Strands (Required) (Tensioned to 8 kips/strand)
All strands are fully bonded unless otherwise noted.
+ Indicates prestressing strand.
O Indicates cut and shop bend with 2'-0" projection.



STRANDS AT BEAM ENDS

BILL OF REINFORCING STEEL - EACH BEAM					BENDING DIAGRAM
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE		
5	5 A1	56'-10"	20		
4	4 A2	56'-10"	20		
17	4 C1	3'-7"	20		
62	5 S1	7'-4"	10		
62	5 S2	7'-9"	51		
62	4 S3	4'-6"	50		
18	5 S4	7'-4"	10		
18	5 S5	7'-4"	10		
12	6 U1	5'-1"	10		
6	4 U2	7'-4"	10		

SHAPE 10

SHAPE 20

SHAPE 50

SHAPE 51

All dimensions are out to out. Use symmetry for dimensions not shown.

Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

Actual lengths are measured along centerline of bar to the nearest inch.

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

All reinforcement shall be Grade 60.

All S2 bars shall be epoxy coated.

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8000 psi and f'ci = 6500 psi.

Use 26, 0.6"Ø Grade 270 strands with an initial prestress force of 1143 kips.

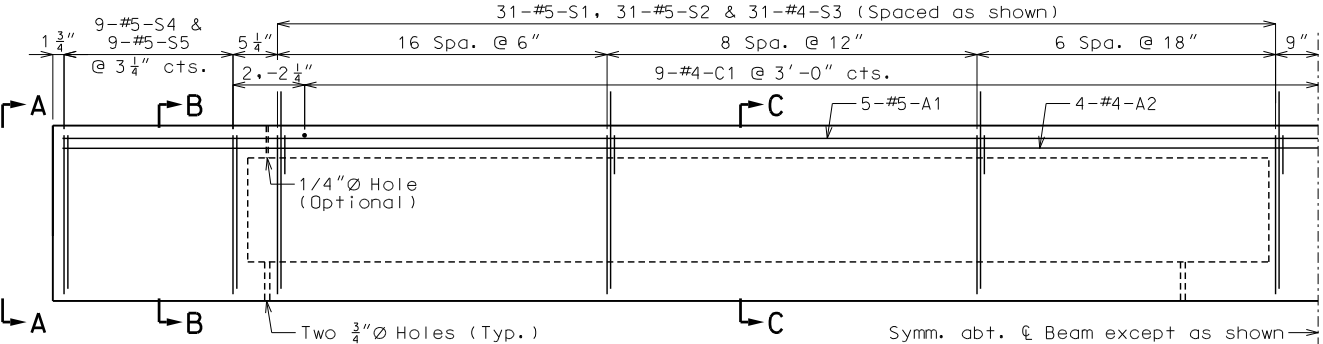
Pretensioned members shall be in accordance with Sec 1029.

Fabricator shall be responsible for location and design of lifting devices.

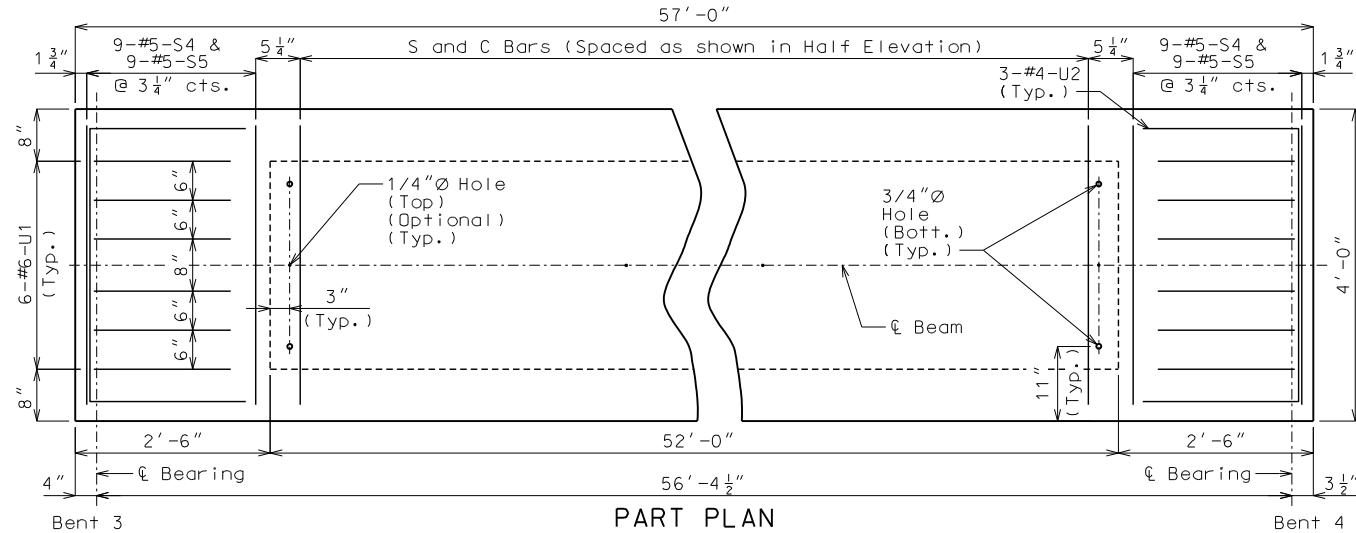
Exterior and interior beams are the same except: coil ties, application of bond breaker.

For Beam Camber Diagram, see Sheet No. 25.

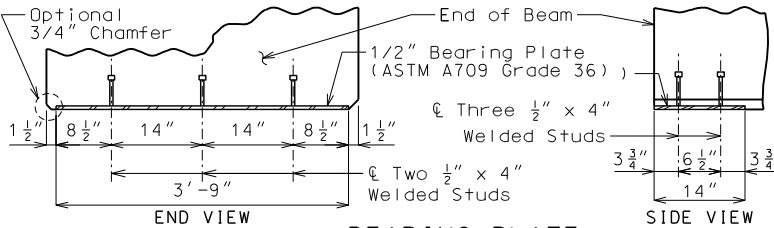
For location of coil ties at concrete bent diaphragms, see Sheets No. 15 and 22.



HALF ELEVATION



PART PLAN



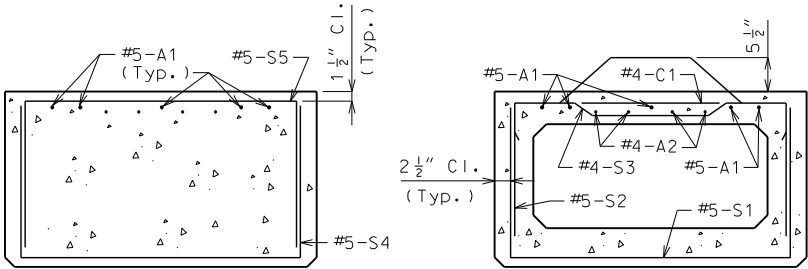
BEARING PLATE

Detailed Nov. 2022
Checked Dec. 2022

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

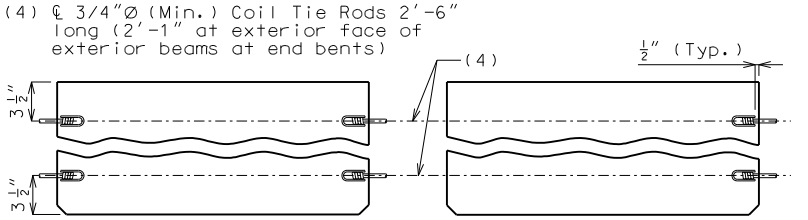
SPREAD BOX BEAMS - SPANS (3-4)

Strands not shown for clarity.



SECTION B-B

SECTION C-C



EXTERIOR BEAMS AT END BENTS
INTERIOR BEAMS AT ALL BENTS

EXTERIOR BEAMS AT INTERMEDIATE BENTS

COIL TIES

STATE OF MISSOURI
PROFESSIONAL ENGINEER
DAVID H. McDONALD
NUMBER
PE-018861

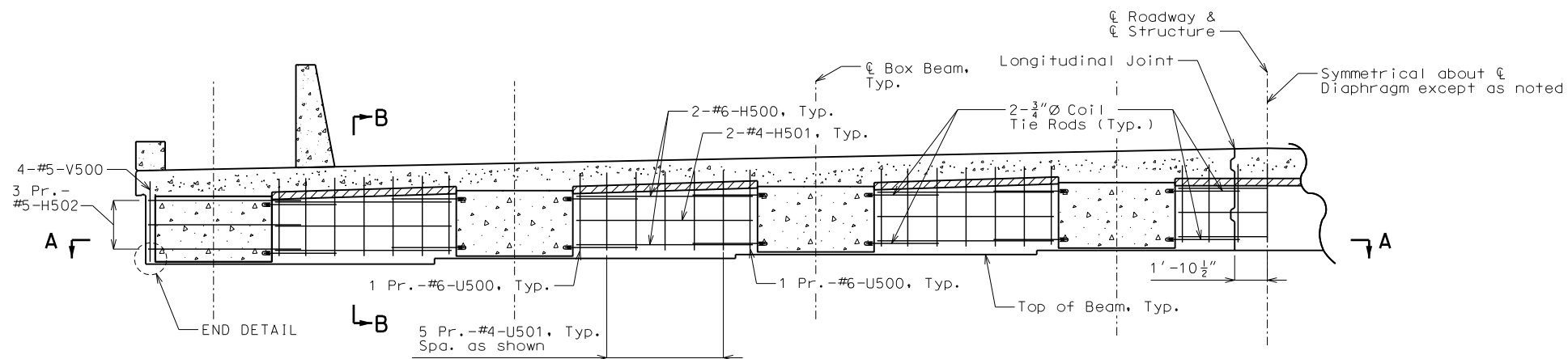
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ELECTRONICALLY.
DATE PREPARED
04/11/2023
ROUTE
413
STATE
MO
DISTRICT
BR
SHEET NO.
21
COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A8935

DESCRIPTION
DATE

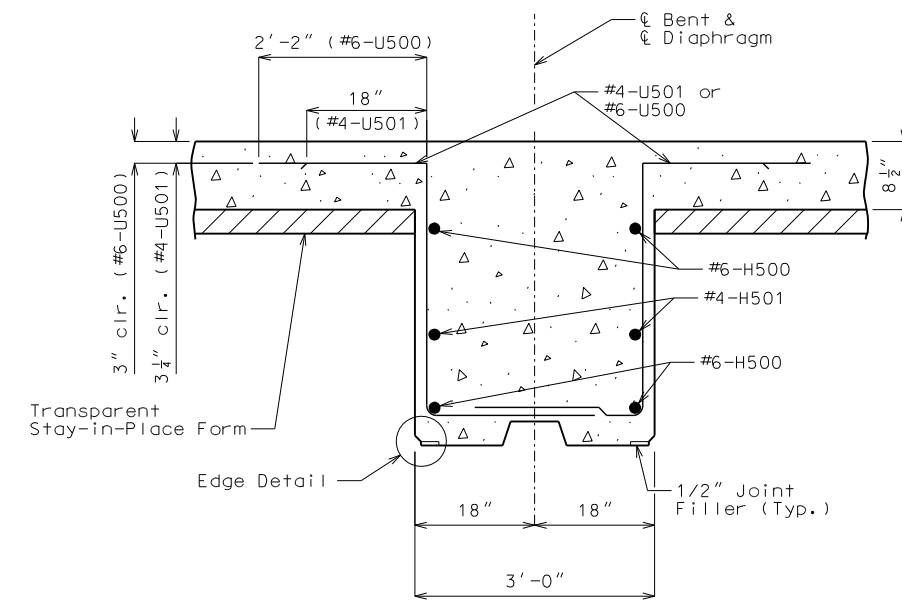
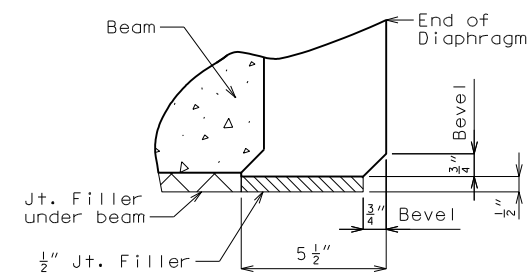
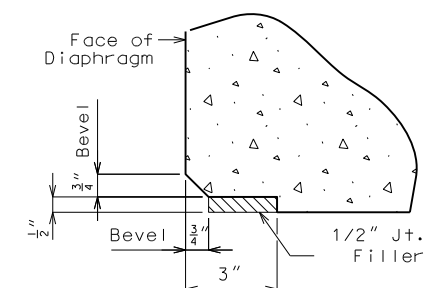
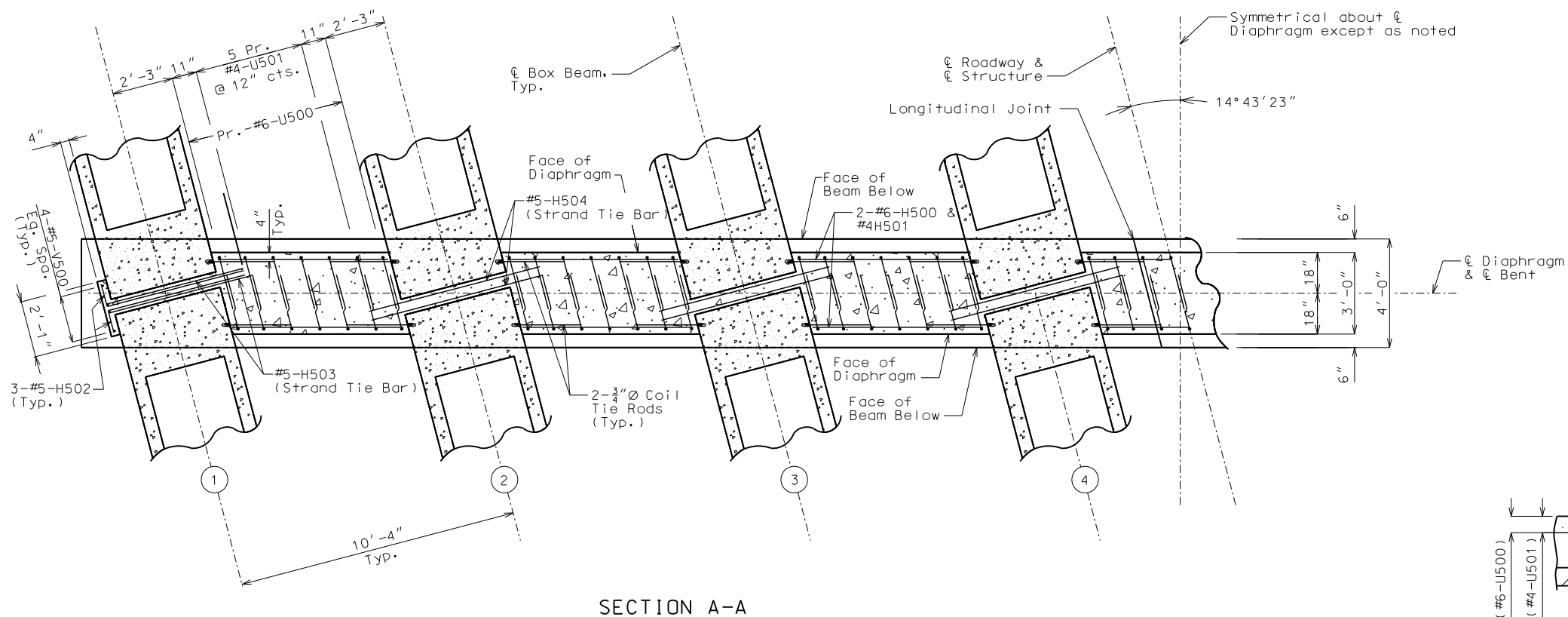
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA
& KIMM INC.

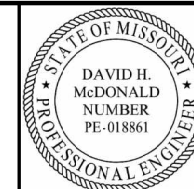
Liberty, Missouri 64069
P.O. Box 236
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. F00362673



SECTION NEAR INTERMEDIATE BENTS NO. 2 & 3



DETAILS OF DIAPHRAGMS AT INTERMEDIATE BENTS NO. 2 & 3



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DATE PREPARED
04/11/2023

ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 22

COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.

PROJECT NO.

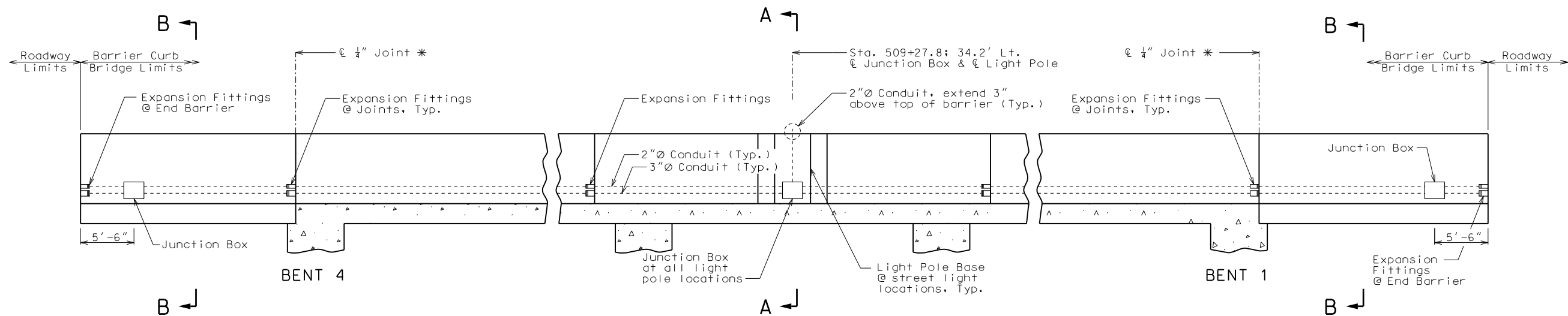
BRIDGE NO.
A8935

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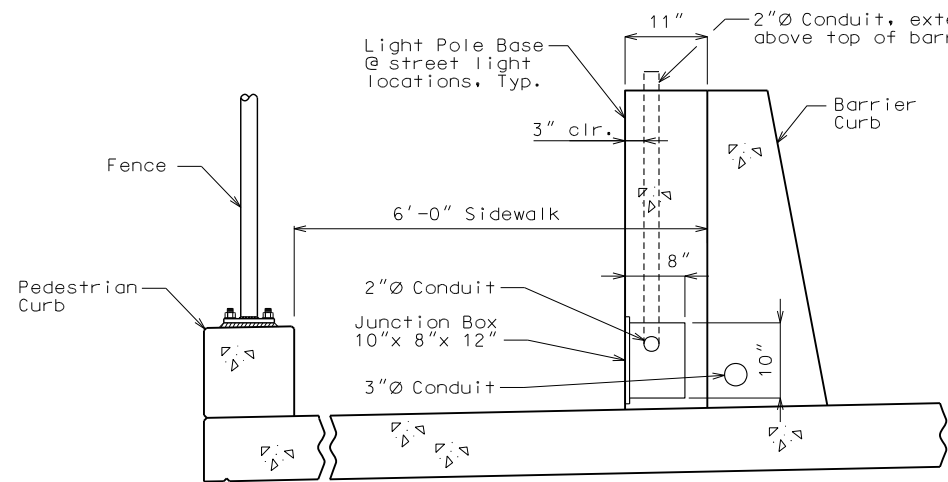

 MISSOURI HIGHWAYS AND TRANSPORTATION
 COMMISSION
 105 WEST CAPITOL
 JEFFERSON CITY, MO 65102



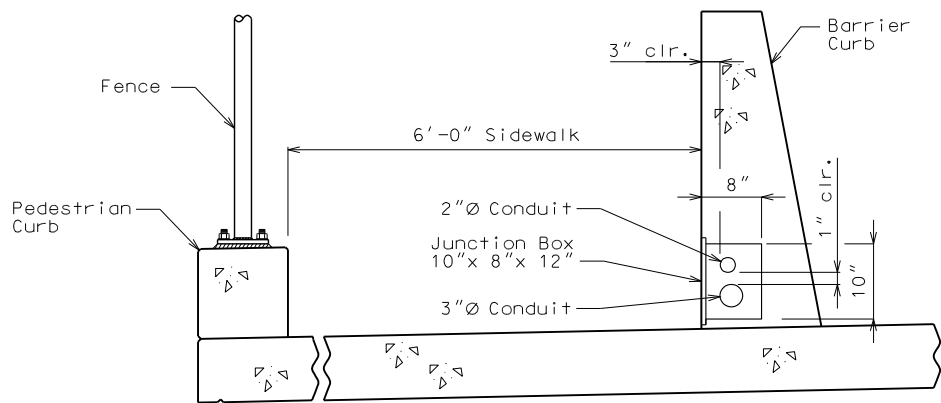
K VEENSTRA & KIMM INC.
P.O. Box 236 Liberty, Missouri 64069
816-781-6182 816-781-0643 (FAX)
Certificate of Authority No. F00362673



PART ELEVATION OF JUNCTION BOX & CONDUIT IN LEFT BARRIER
(LOOKING SOUTH)



PART SECTION A-A

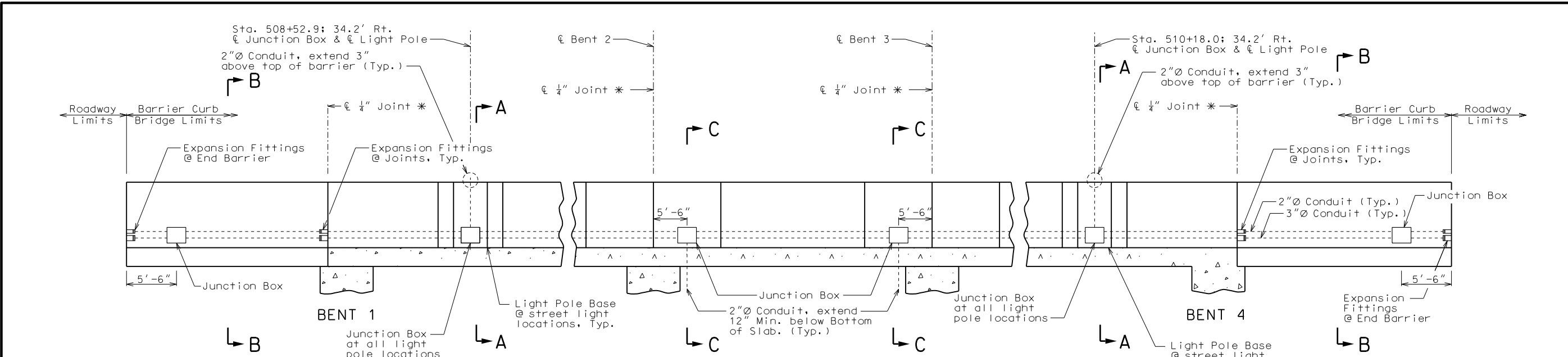


PART SECTION B-B

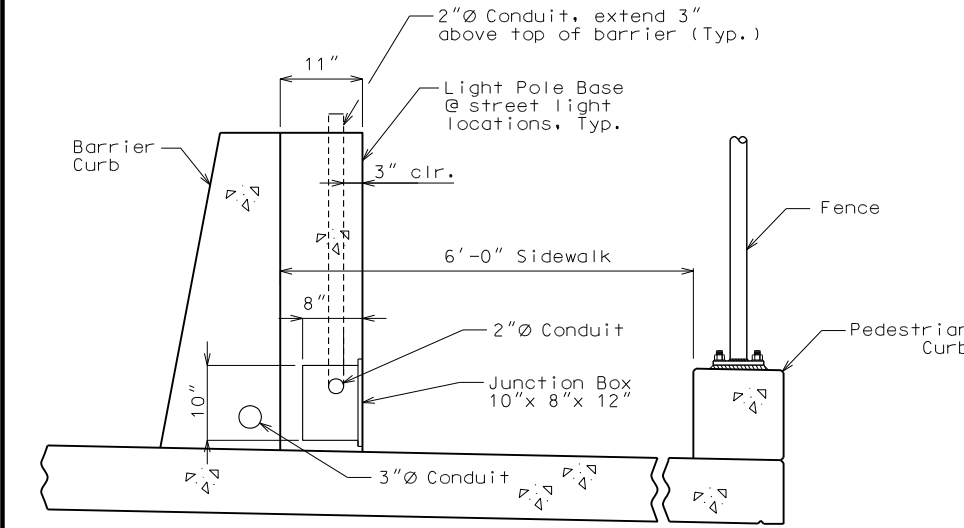
DETAILS OF CONDUIT SYSTEM (LEFT BARRIER)

General Notes:

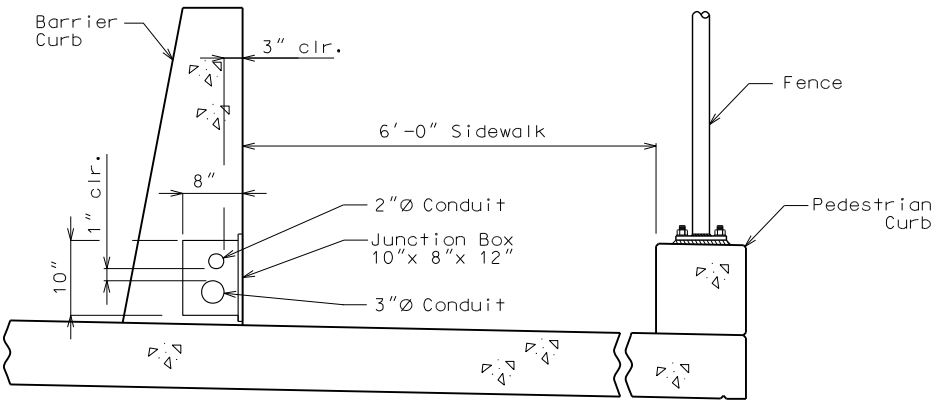
- All conduit shall be rigid non-metallic Schedule 40 heavy wall polyvinyl chloride (PVC) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters Laboratories, Inc., (UL) label.
- Shift reinforcing steel in the field where necessary to clear conduit and junction boxes.
- Expansion fittings shall be placed as shown and set in accordance with the manufacturer's requirements and based on the air temperature at the time of setting given an estimated total expansion movement of 1 inch at filled joints using a maximum temperature range of 150°F and a maximum temperature of 120°F.
- All end bent and barrier junction boxes shall be PVC molded in accordance with Sec. 1062 and designed for flush surface mounting. the conduit terminations shall be permanent or separable. the terminations and covers shall be of watertight construction and shall meet requirements for NEMA 4 enclosures.
- Placement of junction boxes and covers, complete in place, shall be flush with the sidewalk face of the barrier or the light pole blister. Junction boxes and covers may be recessed up to 4".
- Drainage shall be provided at low points or other critical locations of all conduits and all junction boxes in accordance with Sec 707. All conduits shall be sloped to drain where possible.
- Junction box size shown on plan may require special order. No other size may be substituted.
- MoDOT Construction Personnel: Indicate in field and on bridge plans for future work the exact location of buried conduit at ends of bridge that are capped and not immediately used.
- Payment for furnishing and installing Conduit System, complete-in-place, will be considered completely covered by the contract lump sum price for Conduit System on Structure.
- For light pole base details, see Sheet 30.
- * - For Joint locations, see Barrier Curb Sheet 29.



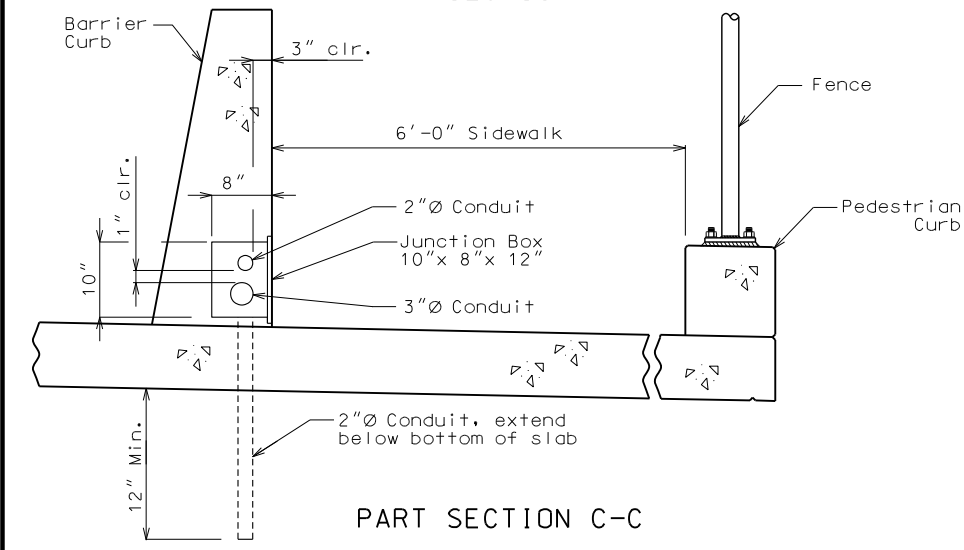
PART ELEVATION OF JUNCTION BOX & CONDUIT IN RIGHT BARRIER
(LOOKING NORTH)



PART SECTION A-A



PART SECTION B-B



PART SECTION C-C

DETAILS OF CONDUIT SYSTEM (RIGHT BARRIER)

General Notes:

All conduit shall be rigid non-metallic Schedule 40 heavy wall polyvinyl chloride (PVC) with 3" minimum cover in concrete. Each section of conduit shall bear the Underwriters Laboratories, Inc., (UL) label.

Shift reinforcing steel in the field where necessary to clear conduit and junction boxes.

Expansion fittings shall be placed as shown and set in accordance with the manufacturer's requirements and based on the air temperature at the time of setting given an estimated total expansion movement of 1 inch at filled joints using a maximum temperature range of 150°F and a maximum temperature of 120°F.

All end bent and barrier junction boxes shall be PVC molded in accordance with Sec. 1062 and designed for flush surface mounting. The conduit terminations shall be permanent or separable. The terminations and covers shall be of watertight construction and shall meet requirements for NEMA 4 enclosures.

Placement of junction boxes and covers, complete in place, shall be flush with the sidewalk face of the barrier or the light pole blister. Junction boxes and covers may be recessed up to 1/4".

Drainage shall be provided at low points or other critical locations of all conduits and all junction boxes in accordance with Sec 707. All conduits shall be sloped to drain where possible.

Junction box size shall be 10"x8"x12". This size may require special order. No other size may be substituted.

MoDOT Construction Personnel: Indicate in field and on bridge plans for future work the exact location of buried conduit at ends of bridge that are capped and not immediately used.

Payment for furnishing and installing Conduit System, complete-in-place, will be considered completely covered by the contract lump sum price for Conduit System on Structure.

For light pole base details, see Sheet 30.

* - For Joint locations, see Barrier Curb Sheet 29.

STATE OF MISSOURI

DAVID H. McDONALD

NUMBER PE-018861

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED 04/11/2023

ROUTE 413 STATE MO

DISTRICT BR SHEET NO. 24

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

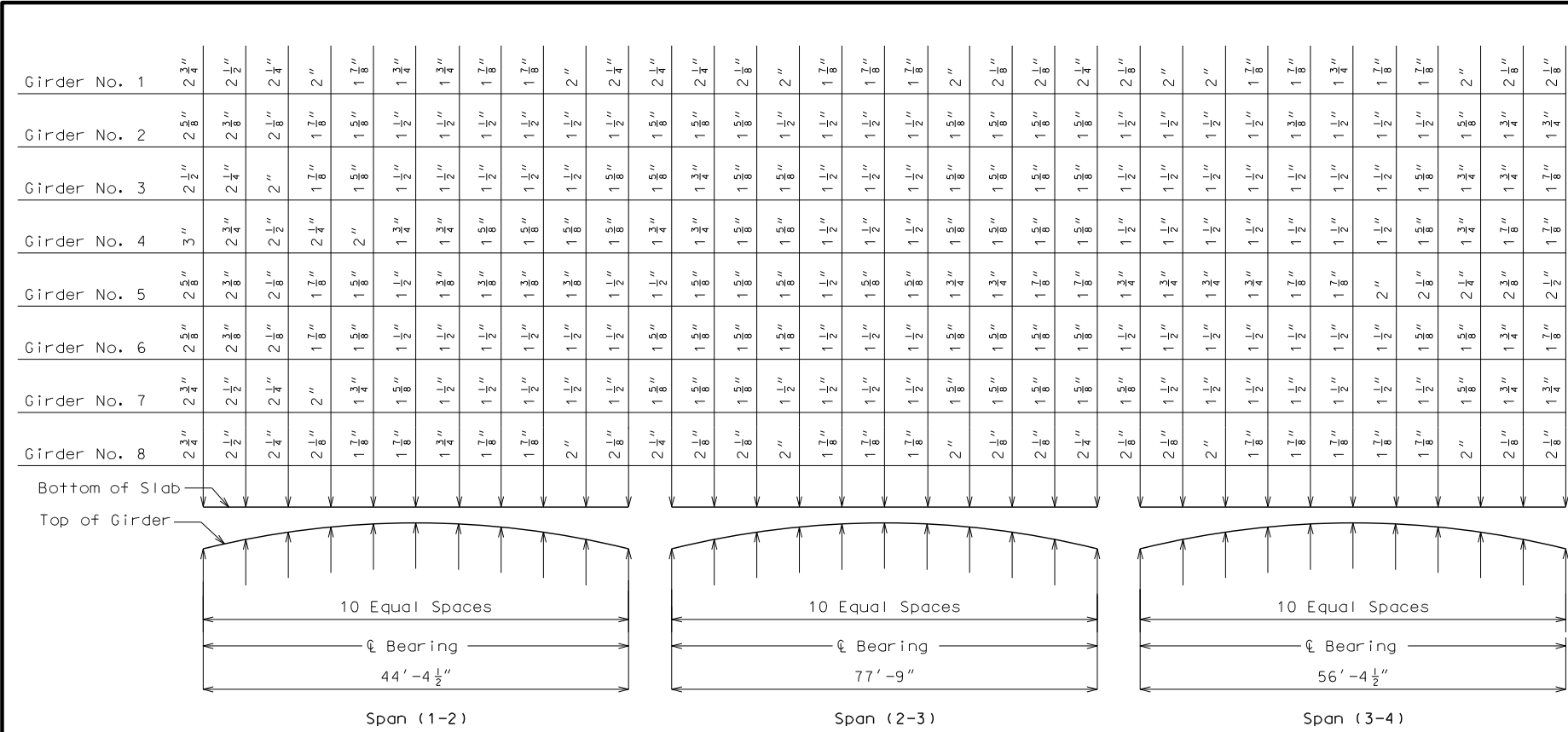
1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA & KIMM INC.

Liberty, Missouri 64069

P.O. Box 236 816-781-6182 816-781-0643 (FAX)

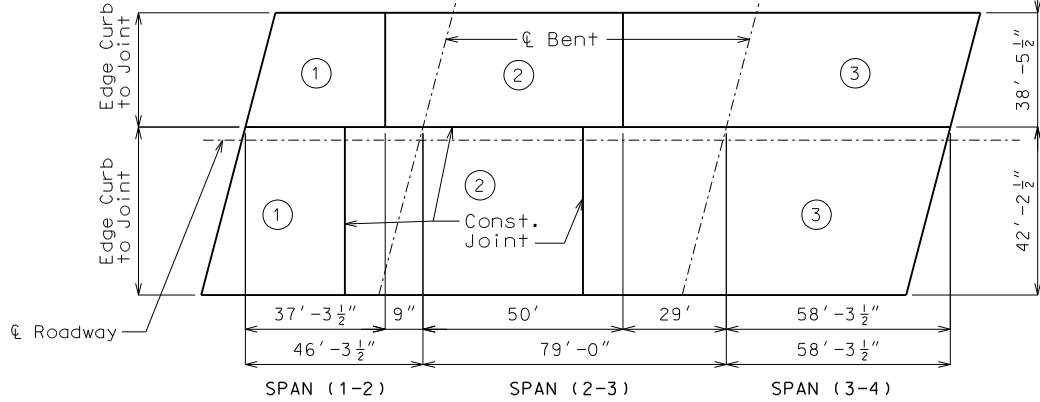
Certificate of Authority No. F00362673



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If beam camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. The haunch shall be limited to ensure the projecting beam reinforcement is embedded in the slab at least 2 inches. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade adjustment.

Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.



Basic Sequence	Sequence of Pours			Min. Rate of Pour Cu. Yds./Hr. With Retarder
	1	2	3	
Alternate pours to the basic sequence are subject to the approval of the engineer in accordance with Sec 703.	End to 2	1 to 3	2 to End	25
Alternate A Pours	1 + 2	3	2 to End	26.2
Alternate B Pours	1 + 2 + 3	End to End		26.2

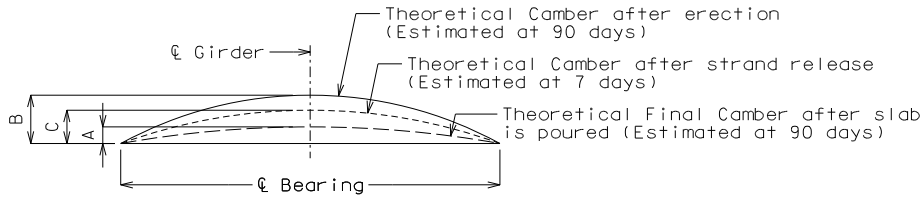
The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

The concrete diaphragm at the intermediate bents and integral end bents shall be poured a minimum of 30 minutes and a maximum of 2 hours before the slab is poured.

The longitudinal construction joint may be omitted with the approval of the engineer. When the longitudinal construction joint is omitted, the minimum rate of pour for alternate pouring sequences shall be increased by a factor of 1.9.

SLAB POURING SEQUENCE

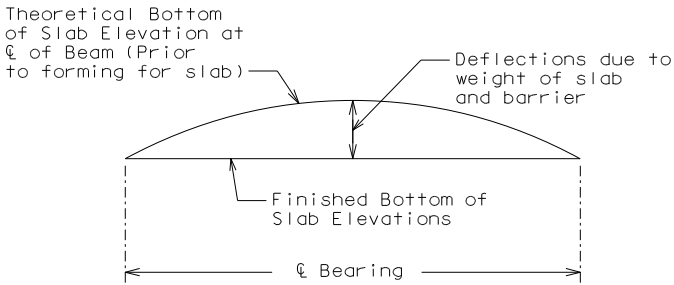
BEAM CAMBER DIAGRAM & MISC. SLAB DETAILS



BEAM CAMBER DIAGRAM

Conversion Factors for Girder Camber (Estimated at 90 days):

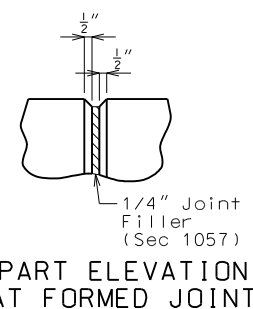
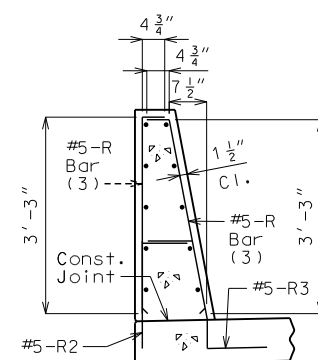
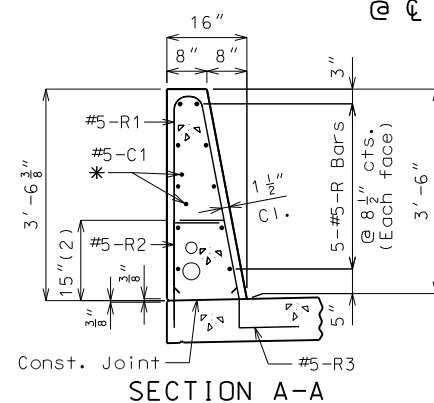
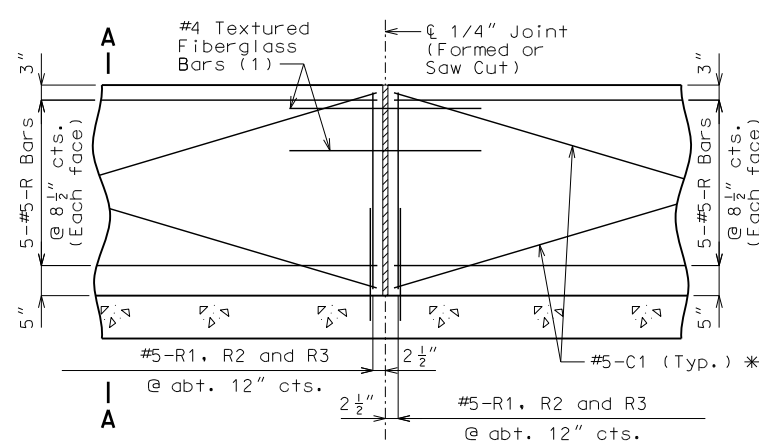
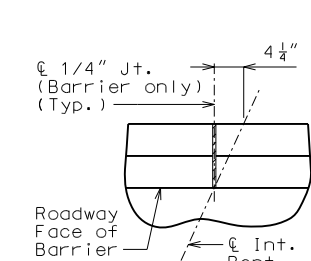
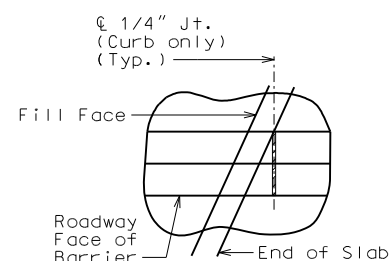
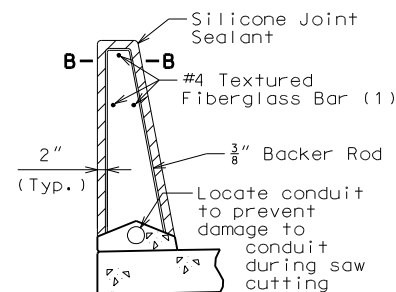
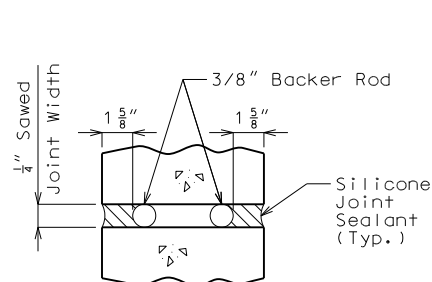
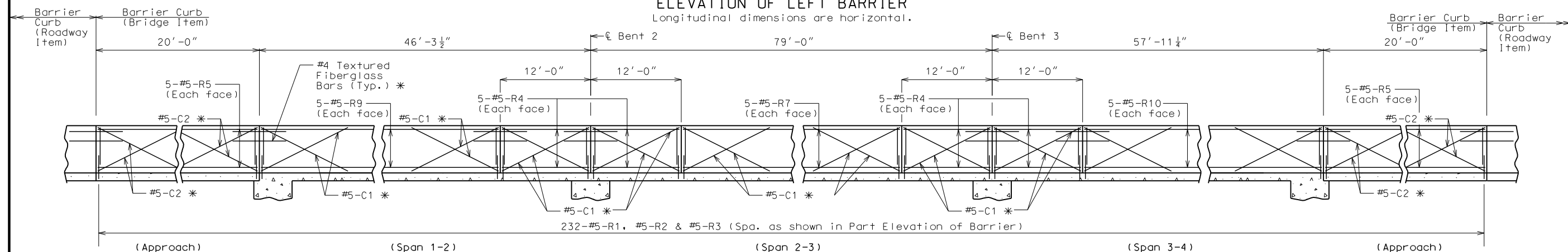
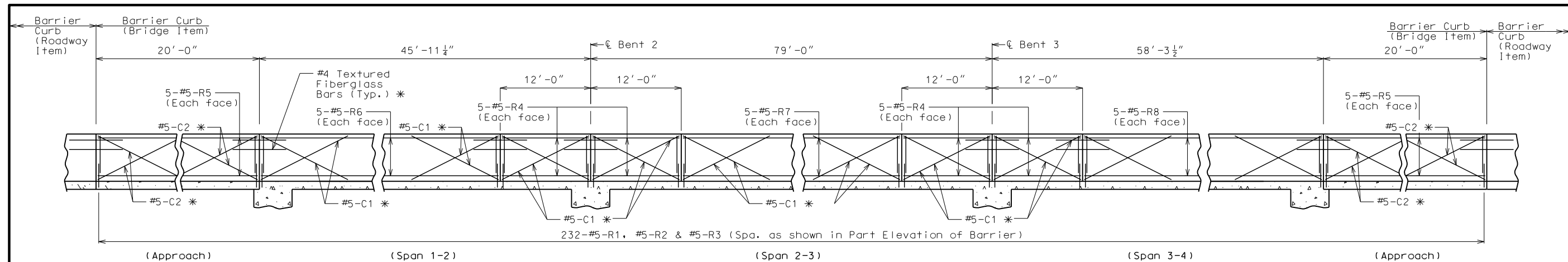
0.1 pt. = 0.314 x 0.5 pt.
0.2 pt. = 0.593 x 0.5 pt.
0.3 pt. = 0.813 x 0.5 pt.
0.4 pt. = 0.952 x 0.5 pt.



TYPICAL SLAB ELEVATIONS DIAGRAM

Theoretical Bottom of Slab Elevations at Centerline of Beam (Prior to forming for slab) (Estimated at 90 days)										
Beam Number	Span (1-2) (44'-4 1/2" & Brg. - & Brg.)									
	& Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90
1	1277.49	1277.54	1277.60	1277.64	1277.68	1277.72	1277.75	1277.78	1277.80	1277.81
2	1277.64	1277.69	1277.75	1277.80	1277.84	1277.88	1277.91	1277.94	1277.96	1277.98
3	1277.81	1277.87	1277.93	1277.98	1278.02	1278.06	1278.10	1278.13	1278.15	1278.17
4	1277.98	1278.04	1278.10	1278.16	1278.20	1278.25	1278.28	1278.31	1278.34	1278.38
5	1277.95	1278.01	1278.07	1278.13	1278.18	1278.22	1278.26	1278.29	1278.32	1278.35
6	1277.71	1277.77	1277.83	1277.89	1277.94	1277.99	1278.03	1278.06	1278.09	1278.12
7	1277.46	1277.53	1277.59	1277.65	1277.71	1277.76	1277.80	1277.83	1277.87	1277.92
8	1277.24	1277.31	1277.38	1277.44	1277.50	1277.55	1277.59	1277.63	1277.66	1277.69
Beam Number	Span (2-3) (77'-9" & Brg. - & Brg.)									
	& Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90
1	1277.83	1277.92	1278.00	1278.05	1278.08	1278.07	1278.04	1277.97	1277.88	1277.76
2	1278.00	1278.10	1278.19	1278.25	1278.28	1278.28	1278.25	1278.18	1278.09	1277.97
3	1278.19	1278.30	1278.39	1278.45	1278.49	1278.49	1278.46	1278.40	1278.31	1278.19
4	1278.39	1278.49	1278.59	1278.66	1278.69	1278.70	1278.68	1278.62	1278.53	1278.42
5	1278.37	1278.48	1278.58	1278.65	1278.69	1278.70	1278.68	1278.63	1278.54	1278.43
6	1278.15	1278.26	1278.36	1278.44	1278.49	1278.50	1278.48	1278.43	1278.35	1278.24
7	1277.93	1278.04	1278.15	1278.23	1278.28	1278.29	1278.28	1278.23	1278.15	1278.05
8	1277.73	1277.84	1277.95	1278.02	1278.07	1278.09	1278.08	1278.04	1277.97	1277.77
Beam Number	Span (3-4) (56'-4 1/2" & Brg. - & Brg.)									
	& Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90
1	1277.62	1277.58	1277.54	1277.49	1277.43	1277.36	1277.27	1277.18	1277.08	1276.96
2	1277.82	1277.79	1277.75	1277.70	1277.65	1277.58	1277.50	1277.40	1277.30	1277.19
3	1278.05	1278.02	1277.99	1277.94	1277.89	1277.82	1277.74	1277.65	1277.55	1277.44
4	1278.28	1278.25	1278.22	1278.18	1278.13	1278.06	1277.99	1277.90	1277.80	1277.69
5	1278.30	1278.28	1278.25	1278.21	1278.16	1278.09	1278.02	1277.94	1277.84	1277.74
6	1278.11	1278.09	1278.06	1278.03	1277.98	1277.92	1277.85	1277.77	1277.67	1277.57
7	1277.93	1277.91	1277.88	1277.85	1277.80	1277.74	1277.68	1277.60	1277.51	1277.41
8	1277.76	1277.74	1277.72	1277.69	1277.64	1277.59	1277.52	1277.45	1277.36	1277.27

Elevations are based on a constant slab thickness of 8 1/2" and include allowance for theoretical dead load deflections due to weight of slab (including precast panel) and barrier curb.



General Notes:

* Slip-formed option only.

Conventional forming or slip forming may be used. Saw cut joints may be used with conventional forming.

Top of barrier shall be built parallel to grade and barrier joints (except at end bents) normal to grade.

All exposed edges of barrier shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for Type D Barrier per linear foot.

Concrete in barrier shall be Class B-1.

Measurement of barrier is to the nearest linear foot for each structure, measured along the outside top of slab from end of approach slab to end of approach slab.

Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered completely covered by the contract unit price for Type D Barrier.

Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

For slip-formed option, both sides of barrier shall have a vertically broomed finish and the top shall have a transversely broomed finish.

Plastic waterstop shall not be used with saw cut joints.

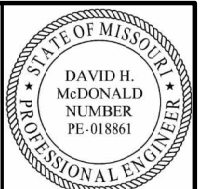
Conduit required in both Left and Right Barriers. For Conduit details, see Sheet 23 and 24.

Detailed Dec. 2022
Checked Dec. 2022

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

TYPE D BARRIER

Sheet No. 29 of 56



THIS SHEET HAS BEEN
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DATE PREPARED
04/11/2023

ROUTE
413

DISTRICT
BR

COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

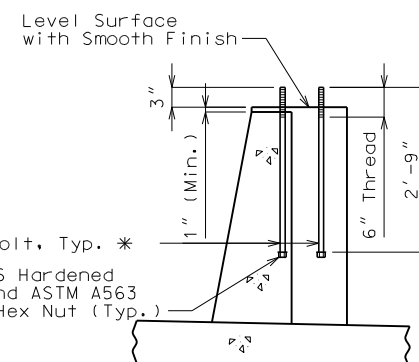
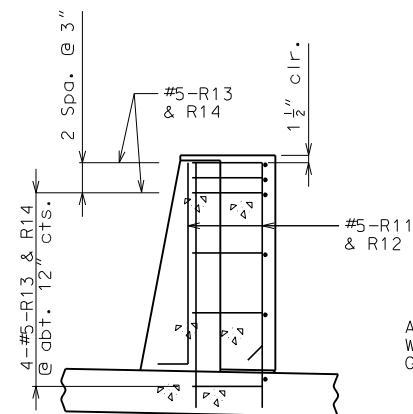
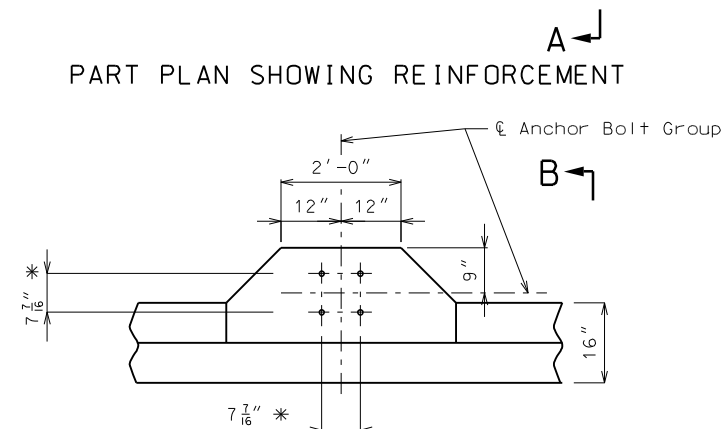
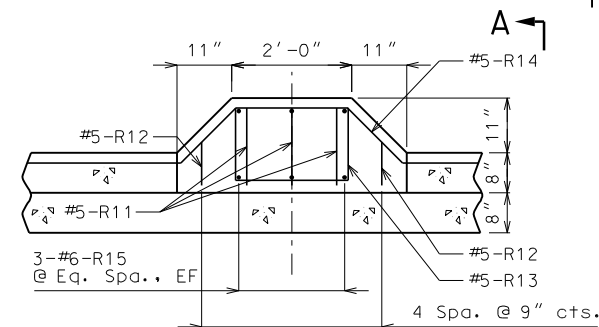
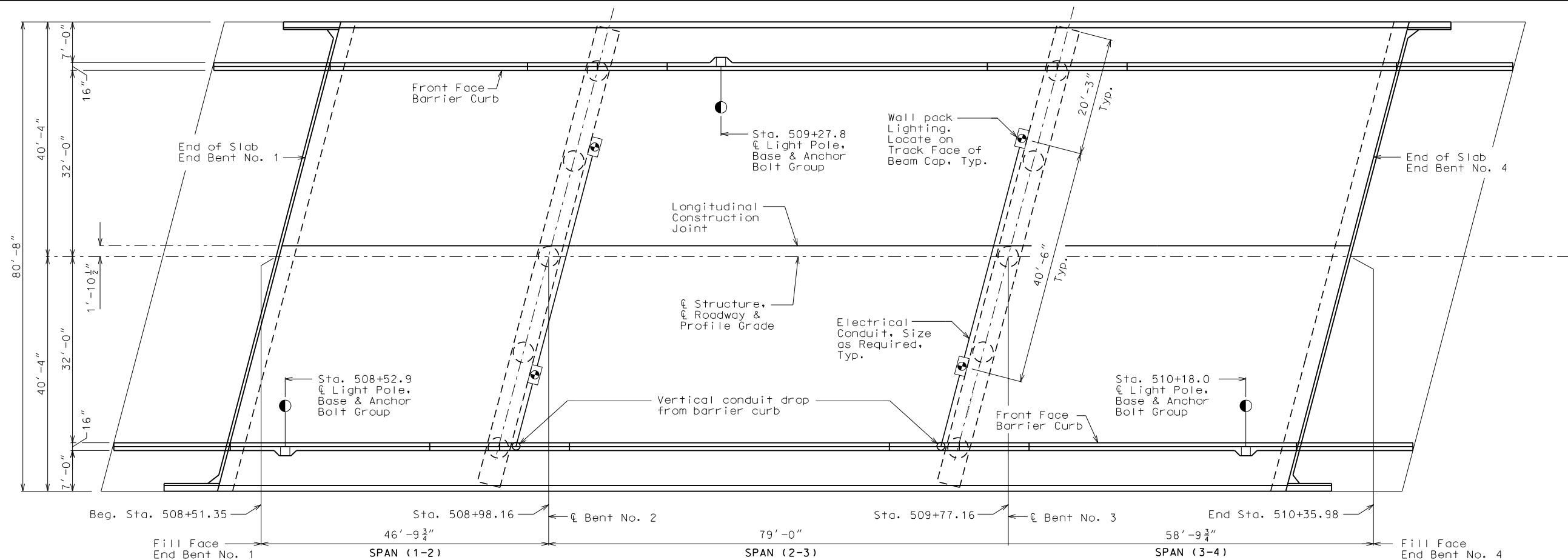
VEENSTRA & KIMM INC.

Liberty, Missouri 64069

P.O. Box 236
816-781-6182

816-781-0643 (FAX)

Certificate of Authority No. F00362673



General Notes:

* Anchor Bolt size and spacing shown are for City Utilities furnished and installed Light Poles. Contractor to verify size and spacing of Anchor Bolts to be installed prior to construction.

Conduit in Barrier Curbs not shown for clarity.

Anchor bolts and nuts shall be AASHTO M314-90 Grade 55.

Anchor bolts, nuts and washers shall be fully galvanized.

Cost of underpass luminaires complete in place shall be considered completely covered by the contract unit price for Luminaire (150 Watt).

Lighting poles, bracket arms and luminaires mounted on the Type D Barrier shall be furnished and installed by others.

Cost of furnishing and placing electrical wiring and other appurtenances for the Lighting installations will be considered completely covered by contract unit price for other items.

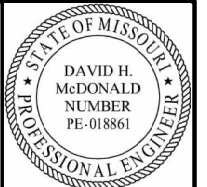
Cost of light pole bases complete in place shall be considered completely covered by the contract unit price for Type D Barrier.

Cost of furnishing and placing anchor bolts for light standard will be considered completely covered by contract unit price for other items.

Cost of furnishing and placing conduit will be considered completely covered by contract unit price for Conduit System on Structure.

Top of light standard supports shall be made horizontal; anchor bolts shall be placed vertically.

For Conduit Layout, See sheets No. 23 & 24.



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ROUTE	STATE
413	MO

DISTRICT BR	SHEET NO. 30
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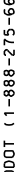
COUNTY
GREENE

JOB NO.
J8S3157

CONTRACT ID.

PROJECT NO.

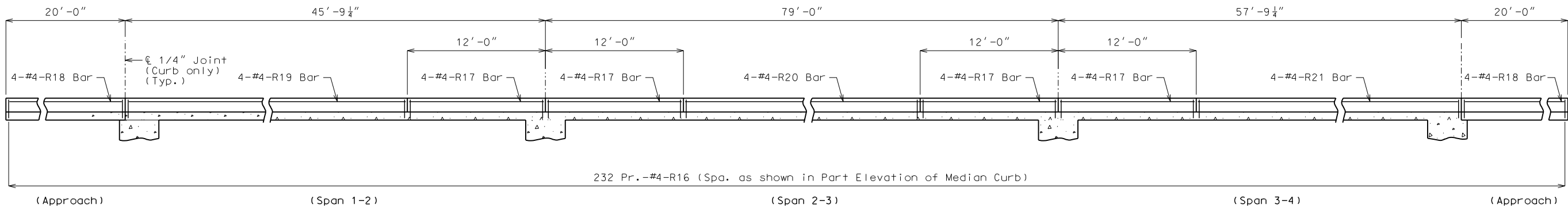
BRIDGE NO.
A8935

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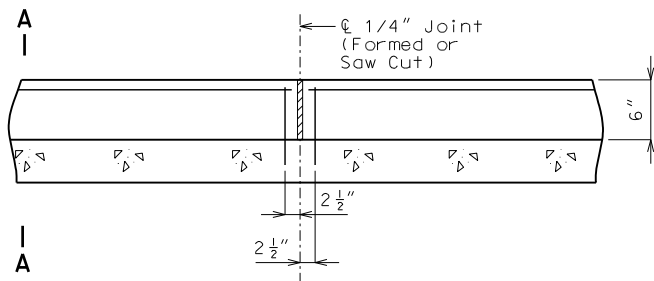
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

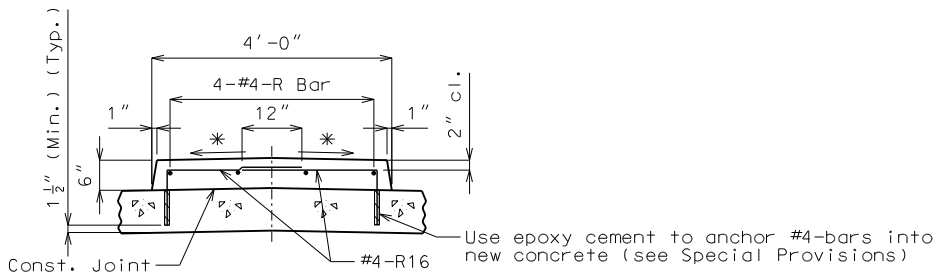
VEENSTRA & KIMM INC.
 Liberty, Missouri 64069
 816-781-0643 (FAX)
 816-781-6182
 Certificate of Authority No. F00362673



ELEVATION OF MEDIAN CURB
Longitudinal dimensions are horizontal.



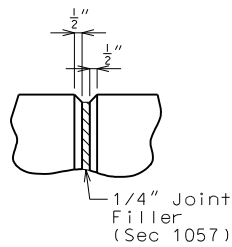
PART ELEVATION OF MEDIAN CURB



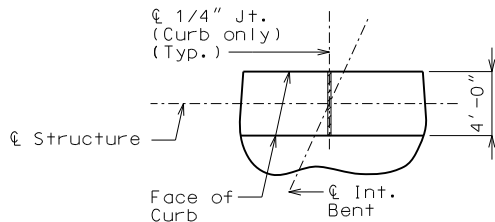
SECTION A-A

Use a minimum lap of 2'-2" for #4 horizontal barrier bars.

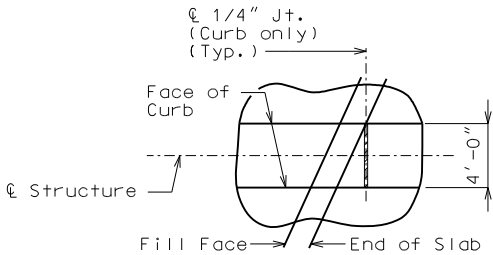
* 1/8" per foot



PART ELEVATION AT FORMED JOINT



PART PLAN SHOWING JOINT LOCATION @ INT. BENT



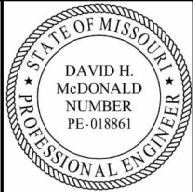
PART PLAN SHOWING JOINT LOCATION @ END OF SLAB

MEDIAN CURB STRIP

Detailed Dec. 2022
Checked Dec. 2022

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

Sheet No. 31 of 56



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04/11/2023

ROUTE 413 STATE MO

DISTRICT BR SHEET NO. 31

COUNTY GREENE

JOB NO. J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA & KIMM INC.

Liberty, Missouri 64069

816-781-6182 816-781-0643 (FAX)

Certificate of Authority No. F00362673

General Notes:

Median curb joints shall be normal to grade.

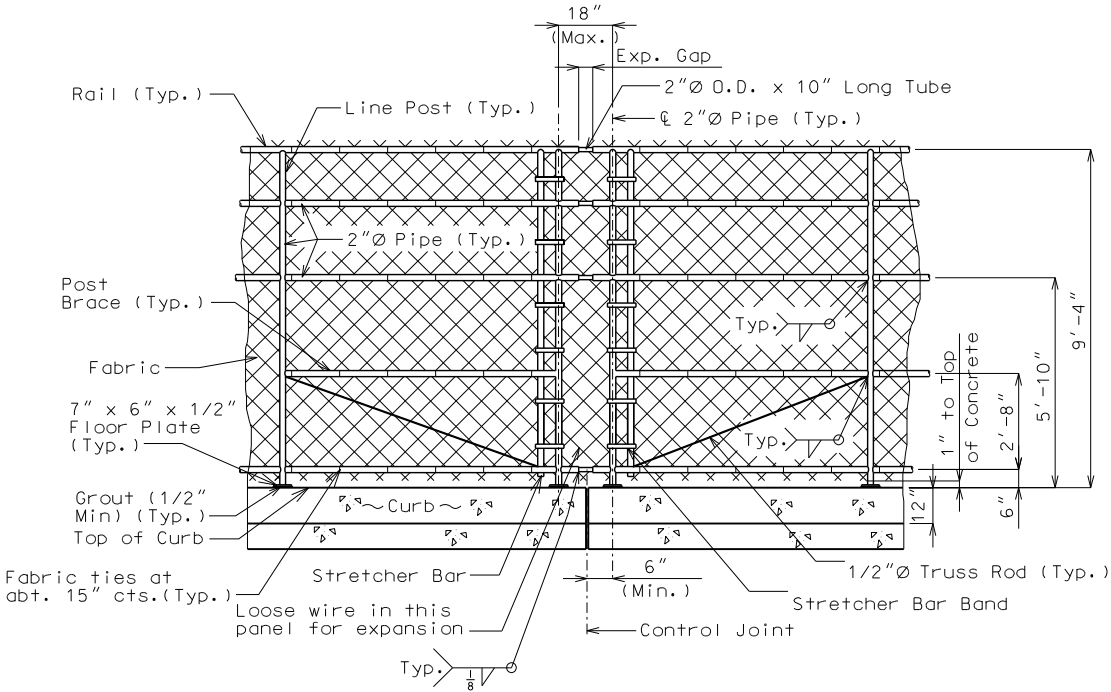
All exposed edges of median curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.

Payment for all concrete and reinforcement, complete in place, will be considered completely covered by the contract unit price for 6 in. Concrete Median Strip per square yard.

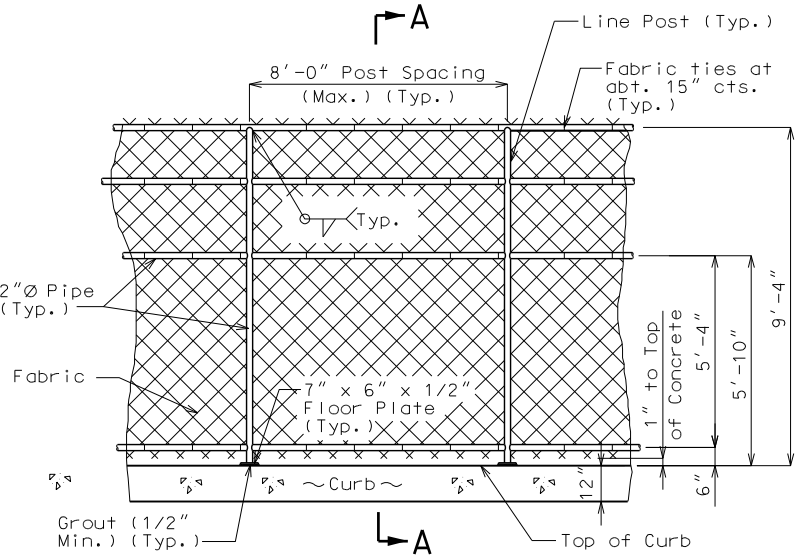
Concrete in median curb shall be Class B-1.

Measurement of median curb is measured along the centerline of structure from end of bridge approach slab to end of bridge approach slab.

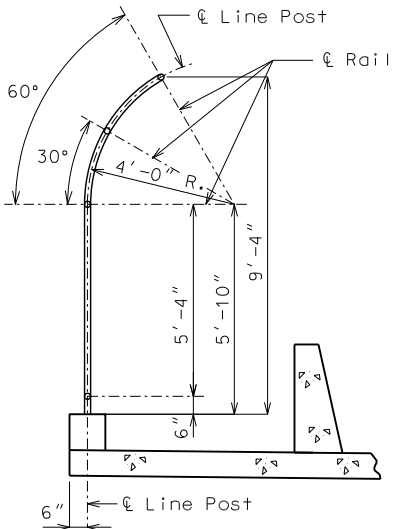
Plastic waterstop shall not be used with saw cut joints.



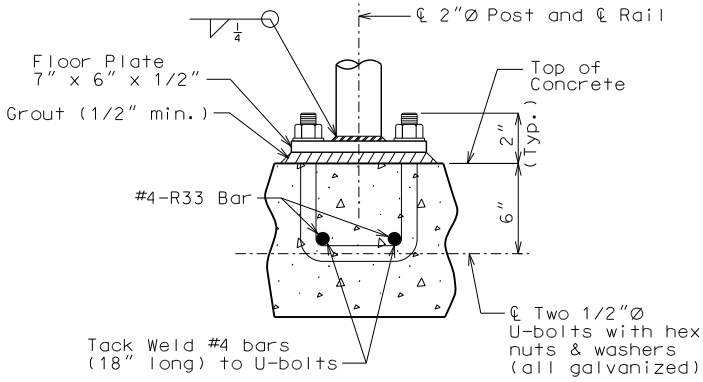
ELEVATION AT CONTROL JOINT



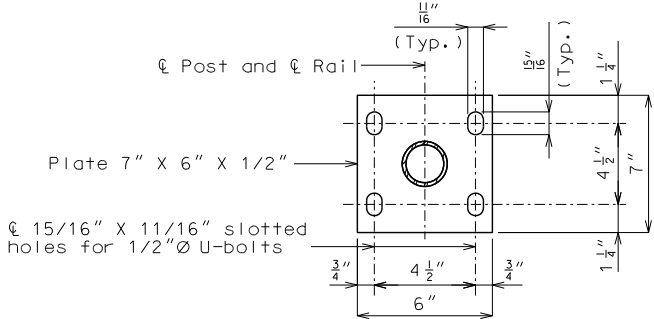
ELEVATION SHOWING POST SPACING



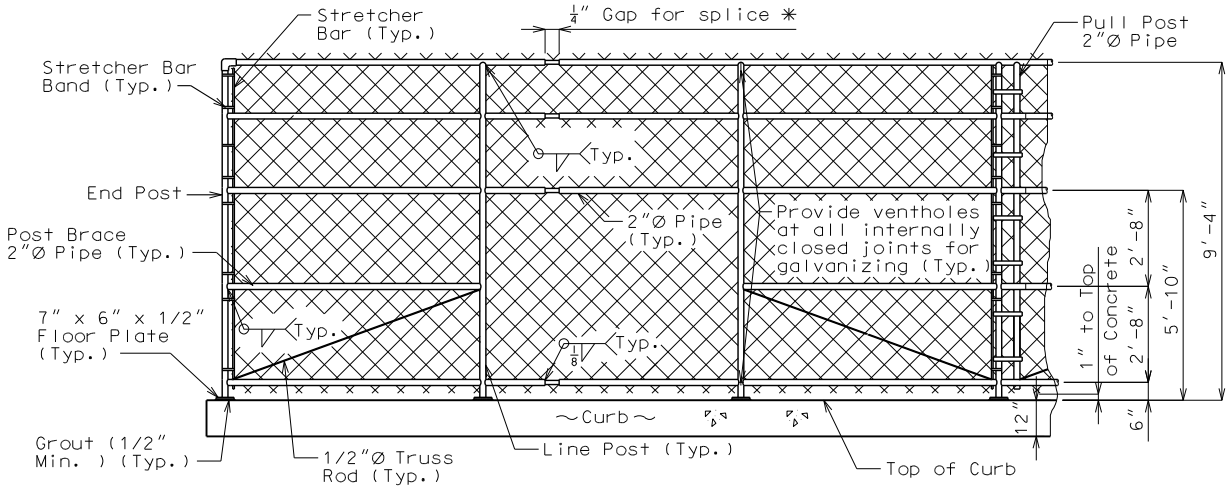
SECTION A-A



POST CONNECTION (TYPICAL)



PLAN OF FLOOR PLATE



ELEVATION AT SPLICE

* At about 30'-0" centers with at least one splice gap between pull or end posts.

GENERAL NOTES:

Pedestrian guard fence (Chain link type) shall be in accordance with Sec 1043 except all fabric shall have the top and bottom edges knuckled.

All posts shall be vertical. Grout of 1/2" minimum thickness shall be placed under floor plates to provide for vertical alignment of posts.

Payment for furnishing, galvanizing and erecting the fence and frame complete with anchor bolts and washers will be considered completely covered by the contract unit price for (112 in.) Curved Top Pedestrian Fence (Structures) per linear foot.

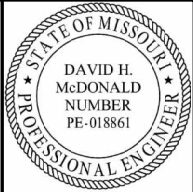
Dimensions of pedestrian guard fence are measured horizontally.

The maximum spacing allowed between pull posts and end posts is 100 ft. Post brace and 1/2"Ø truss rod are required for panels adjacent to pull posts and end posts only.

Connect the lower end of the 1/2"Ø truss rod to the bottom of the pull posts and end posts to which the stretcher bar is attached.

(112 in.) Curved Top Pedestrian Fence (Structures) will be measured to the nearest linear foot along the top outside edge of the Concrete Curb (Bridge Rail) from end to end.

Core wire size for wire fabric shall be 6 gage minimum.



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ROUTE

413

STATE

MO

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SHEET NO.

33

COUNTY

GREENE

JOB NO.

J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A8935

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION

COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

MoDOT

VEENSTRA & KIMM INC.

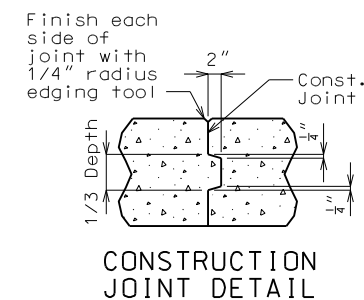
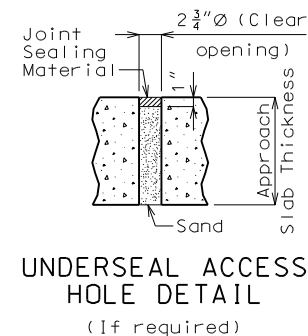
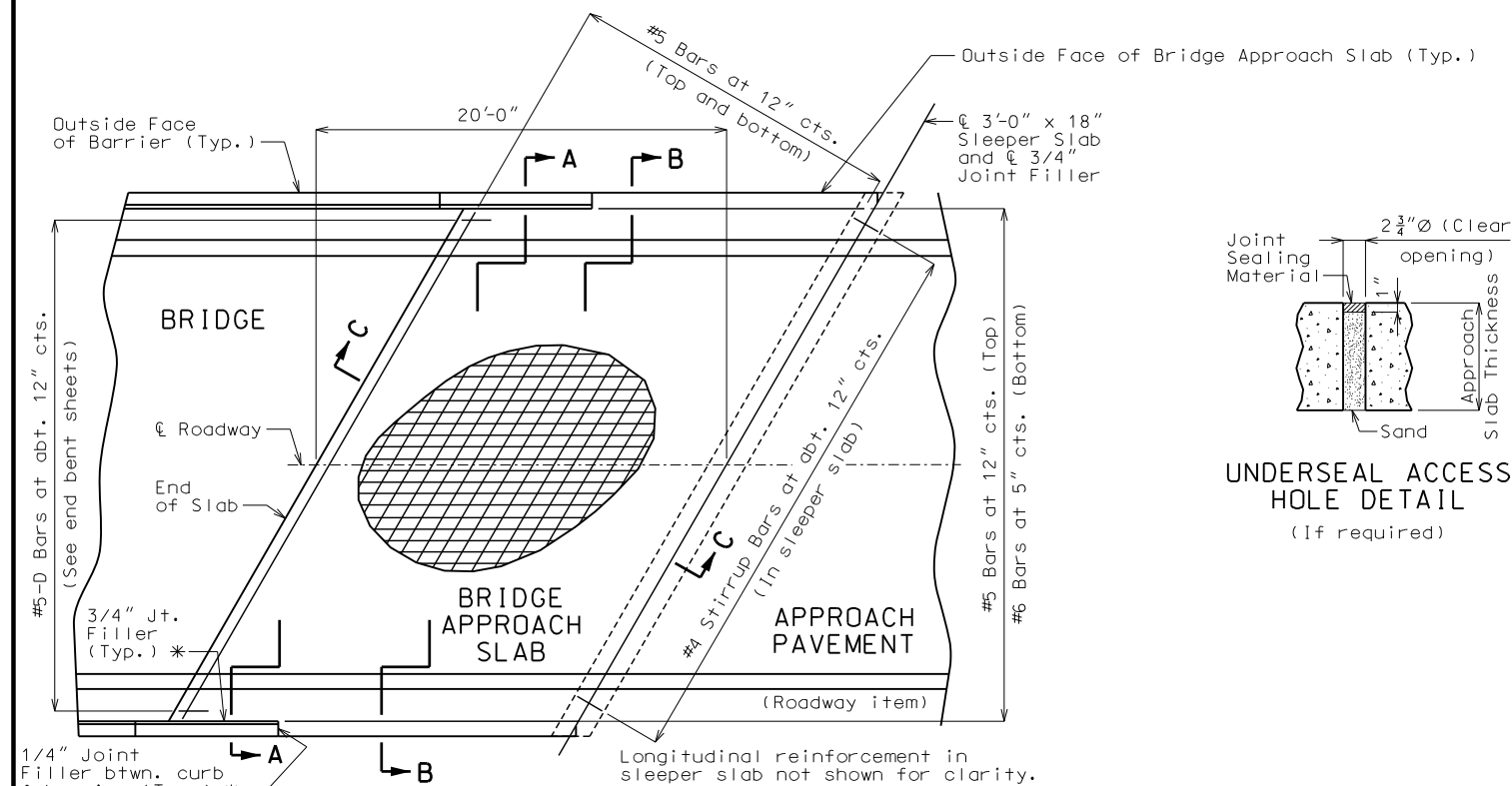
Liberty, Missouri 64069

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816-781-6182

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General Notes:

All concrete for the bridge approach slab and sleeper slab shall be in accordance with Sec 503 ($f'_c = 4,000$ psi).

The reinforcing steel in the bridge approach slab and the sleeper slab shall be epoxy coated Grade 60 with $f_y = 60,000$ psi.

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

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

The reinforcing steel in the bridge approach slab and the sleeper slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #5 bars 29" or by mechanical bar splice.

Mechanical bar splices shall be in accordance with Sec 710.

All joint filler shall be in accordance with Sec 1057 for preformed fiber expansion joint filler except as noted.

The contractor shall pour and satisfactorily finish the bridge slab before placing the bridge approach slab.

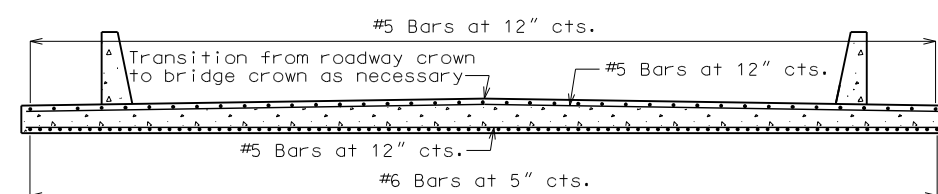
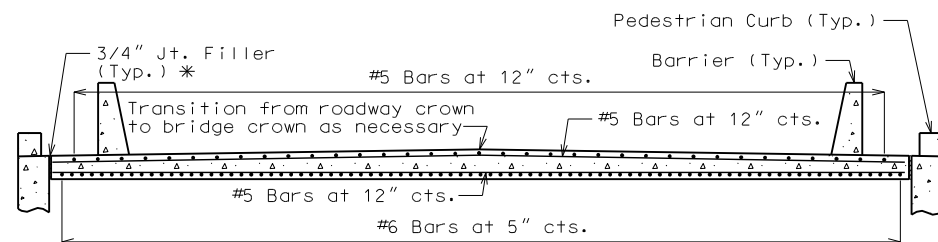
Longitudinal construction joints in approach slab and sleeper slab shall be aligned with longitudinal construction joints in bridge slab.

For concrete approach pavement details, see roadway plans.

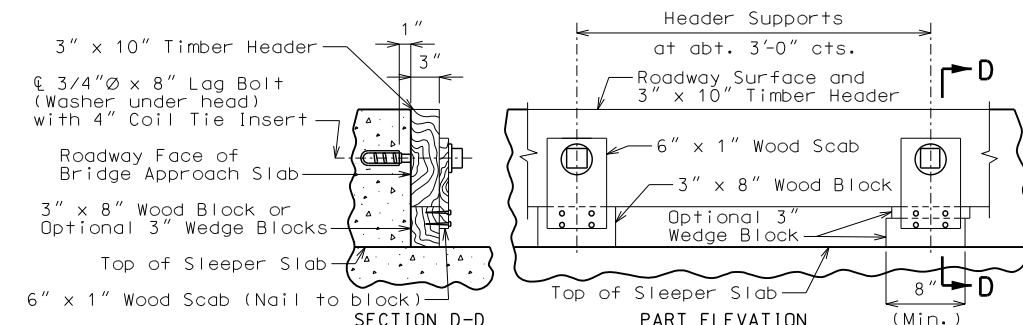
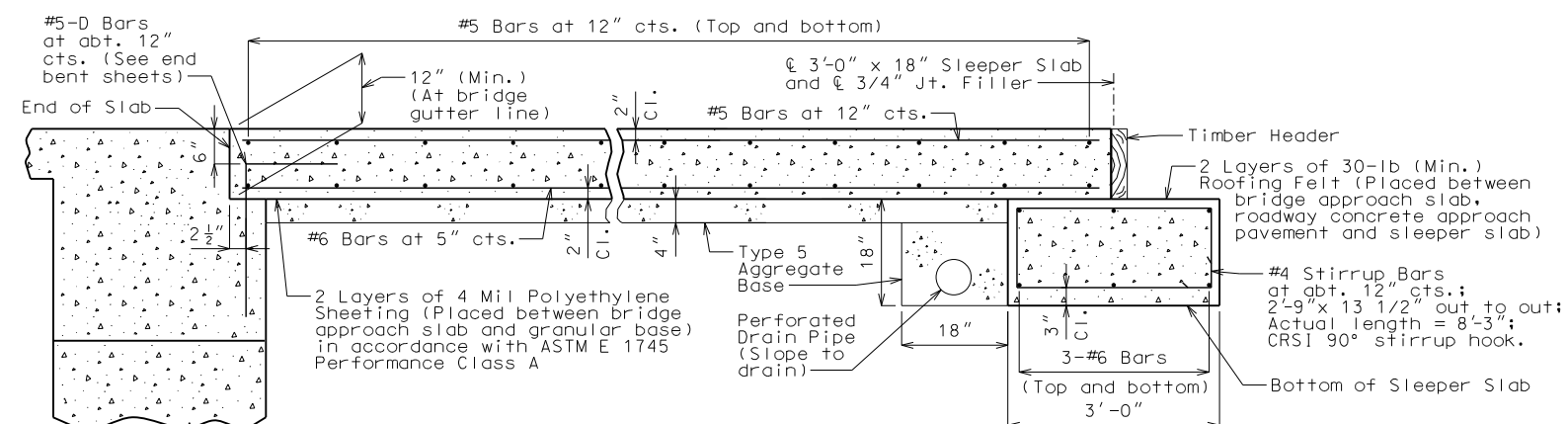
See Missouri Standard Plan 609.00 for details of Type A curb.

Payment for furnishing all materials, labor and excavation necessary to construct the approach slab, including the timber header, filler slab, underdrain, Type 5 aggregate base, joint filler and all other appurtenances and incidental work as shown on this sheet, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Major) per square yard.

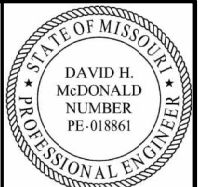
* Seal joint between vertical face of approach slab and wing with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.



With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



Remove timber header when concrete pavement is placed.



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04/11/2023

ROUTE	STATE
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413	MO
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DISTRICT	SHEET NO.
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BR	34
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DR	ST
COUNTY	

GREENE

GREENE
JOB NO.

[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



**VEENSTRA
& KIMM INC.**

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 B5215104 MODOT BRIDGE A893.GPJ TERRACON_DATATEMPLATE.GDT 4/26/22

BORING LOG NO. 101													Page 1 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3291° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
1		DEPTH 0.2 ASPHALT (2.75") 1278+/- 1.3 CONCRETE (12.75") 1276.5+/- 1.5 AGGREGATE BASE COURSE 1276.5+/- FILL - LEAN CLAY WITH GRAVEL (CL), trace sand, dark brown to red brown, soft 6.0 FILL - FAT CLAY (CH), trace sand and gravel, dark red, medium stiff to stiff 1272+/-												
			5		X	10	3-1-2 N=3 N ₆₀ 4			N/A	23.4			
			10		X	10	2-2-2 N=4 N ₆₀ 5			0.5 (HP)	44.7			
			15		X	11	12-6-6 N=12 N ₆₀ 16			N/A	28.7			
			20		X	7	3-2-5 N=7 N ₆₀ 10			N/A	48.7			
			25		X	8	2-10-5 N=15 N ₆₀ 21			N/A	40.7			
Stratification lines are approximate. In-situ, the transition may be gradual.													Hammer Type: Automatic	
Advancement Method: 3" I.D. hollow stem augers and NQ core barrel			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82%							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS No free water observed during augering							Boring Started: 03-04-2022		Boring Completed: 03-04-2022					
							Drill Rig: DR840		Driller: DH					
							Project No.: B5215104							

BORING LOG NO. 101													Page 2 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3291° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
2		DEPTH 23.7 FILL - FAT CLAY (CH), trace sand and gravel, dark red, medium stiff to stiff (continued) 1249.5+/- 31.5 LEAN CLAY WITH GRAVEL (CL), trace sand, dark brown, stiff 1246.5+/- 36.0 FAT CLAY WITH GRAVEL (CH), dark red, stiff 1242+/- 46.0 LIMESTONE, with fossils, trace chert nodules and stylolites, gray, fine to medium crystalline, moderately fractured, extremely close to close fracture spacing, thick bedding, slightly weathered at fractures and stylolites 1232+/-												
			30		X	12	4-6-5 N=11 N ₆₀ 15			1.5 (HP)	25.1			
			35		X	12	8-4-5 N=9 N ₆₀ 12			3.0 (HP)	43.3			
			40					100	46					
			45					100	70					
Boring Terminated at 46 Feet														
Stratification lines are approximate. In-situ, the transition may be gradual.													Hammer Type: Automatic	
Advancement Method: 3" I.D. hollow stem augers and NQ core barrel			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82%							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS No free water observed during augering							Boring Started: 03-04-2022		Boring Completed: 03-04-2022					
							Drill Rig: DR840		Driller: DH					
							Project No.: B5215104							

BORING DATA

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

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

Sheet No. 39 of 56

Detailed Nov. 2022
Checked Dec. 2022

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.
DATE PREPARED
04/11/2023
ROUTE
413
STATE
MO
DISTRICT
BR
SHEET NO.
39
COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A8935

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

VEENSTRA & KIMM INC.
Liberty, Missouri 64069
P.O. Box 236
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. F00362673

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT CUSTOM LOG-2021 B5215104 MODOT BRIDGE A893.GPJ TERRACON DATATEMPLATE.GDT 4/26/22

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. MODOT_CUSTOM_LOG-2021 B5215104 MODOT BRIDGE A893.GPJ TERRACON DATATEMPLATE.GDT 4/26/22



THIS SHEET HAS BEEN
SIGNED, SEALED AND DATED
ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 40

COUNTY
GREENE

JOB NO.
J8S3157

PROJECT NO.

BRIDGE NO.
A8935

[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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



**VEENSTRA
& KIMM INC.**

P.O. Box 236
Liberty, Missouri 64069
816-781-0682 816-781-0643 (FAX)
Certificate of Authority No. F00362673

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

Sheet No. 40 of 56

BORING LOG NO. 103										Page 1 of 2		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS
		Latitude: 37.1827° Longitude: -93.3292°										
		Approximate Surface Elev.: 1278 (Ft.) +/-										LL-PL-P
		DEPTH ELEVATION (Ft.)										
1		0.2' ASPHALT (1.75") 1278+/-										
		1.2 CONCRETE (13.0") 1277+/-										
		1.5 AGGREGATE BASE COURSE 1276.5+/-										
		FILL - GRAVELLY LEAN CLAY WITH SAND (CL), brown to reddish brown, stiff to very stiff										
			5			5	50/5"			0.75 (HP)	23.1	
		6.5 FILL - SANDY FAT CLAY WITH GRAVEL (CH), brown and red, soft to medium stiff 1271.5+/-										
			10			4	0-1-0 N=1 N60 1			N/A	28.2	
2		15 FILL - SANDY FAT CLAY WITH GRAVEL (CH), brown and red, soft to medium stiff 1271.5+/-										
			15			9	1-2-2 N=4 N60 5			1.25 (HP)	29.8	
			20			7	2-1-3 N=4 N60 5			N/A	31.2	
		becoming stiff below 21 feet										
			25			8	3-6-6 N=12 N60 16			N/A	42.2	
		26.0 1252+/-										
Stratification lines are approximate. In-situ, the transition may be gradual.												
Hammer Type: Automatic												
Advancement Method: 4.5" O.D. central flight augers			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.									
WATER LEVEL OBSERVATIONS No free water observed			Terracon 4765 W Junction St Springfield, MO				Boring Started: 02-28-2021		Boring Completed: 02-28-2021			
							Drill Rig: DR840		Driller: DH			
							Project No.: B5215104					

BORING LOG NO. 103										Page 2 of 2		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3292° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
3		GRAVELLY LEAN CLAY WITH SAND (CL) , gray and brown, medium stiff	30		X	8	4-4-3 N=7 N ₆₀ 10			1.75 (HP)	19.6	
		FAT CLAY (CH) , trace sand and gravel, dark red, stiff	35		X	18	5-5-7 N=12 N ₆₀ 16			3.75 (HP)	43.1	
		Auger Refusal at 35.5 Feet										
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic												
Advancement Method: 4.5" O.D. central flight augers			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 provided by others.				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed												
			Boring Started: 02-28-2021				Boring Completed: 02-28-2021					
			Drill Rig: DR840				Driller: DH					
			Project No.: B5215104									

 DAVID H. McDONALD NUMBER PE-018861		THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.	
		DATE PREPARED 04/11/2023	
ROUTE 413	STATE MO		
DISTRICT BR	SHEET NO. 41		
COUNTY GREENE			
JOB NO. J8S3157			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO. A8935			
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION  105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)			
 VEENSTRA & KIMM INC.		P.O. Box 236 Liberty, Missouri 64069 816-781-6182 816-781-0643 (FAX) Certificate of Authority No. F00362673	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 B5215104 MODOT BRIDGE A893.GPJ TERRACON_DATATEMPLATE.GDT 4/26/22

BORING LOG NO. 104													Page 1 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3291° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
1		0.3 ASPHALT (3.5") 1277.5+/- 1.2 CONCRETE (11.25") 1277+/- 1.5 AGGREGATE BASE COURSE 1276.5+/- FILL - LEAN CLAY (CL) , trace sand and gravel, brown to red brown, soft to medium stiff												
			5		X	11	2-2-3 N=5 N ₆₀ 7			N/A	20.0			
2		11.0 FILL - GRAVELLY LEAN CLAY WITH SAND (CL) , red and dark brown, medium stiff	10		X	10	1-2-2 N=4 N ₆₀ 5			N/A	25.9	37-16-21		
			15		X	5	3-3-3 N=6 N ₆₀ 8			N/A	26.3			
			20		X	13	2-3-5 N=8 N ₆₀ 11			N/A	27.9			
			25		X	4	3-3-3 N=6 N ₆₀ 8			N/A	31.4			
Stratification lines are approximate. In-situ, the transition may be gradual.													Hammer Type: Automatic	
Advancement Method: 4.5" O.D. central flight augers			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS <i>No free water observed</i>							Boring Started: 02-22-2022		Boring Completed: 02-22-2022					
			4765 W Junction St Springfield, MO				Drill Rig: DR840		Driller: DH					
			Project No.: B5215104											

BORING LOG NO. 104													Page 2 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3291° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
		FAT CLAY WITH GRAVEL (CH) , trace sand, dark red, medium stiff to stiff (<i>continued</i>)	30		X	2	2-2-3 N=5 N ₆₀ 7			N/A	30.6			
			35		X	14	5-6-50/4"			1.25 (HP)	31.1			
4		34.8 LIMESTONE , gray, highly weathered 1243+/- 35.5 LIMESTONE 1242.5+/- Auger Refusal at 35.5 Feet												
Stratification lines are approximate. In-situ, the transition may be gradual.													Hammer Type: Automatic	
Advancement Method: 4.5" O.D. central flight augers			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS <i>No free water observed</i>							Boring Started: 02-22-2022		Boring Completed: 02-22-2022					
			4765 W Junction St Springfield, MO				Drill Rig: DR840		Driller: DH					
			Project No.: B5215104											

BORING DATA

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

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

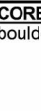
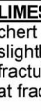
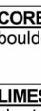
Sheet No. 42 of 56

Detailed Nov. 2022
Checked Dec. 2022

TH'S SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.
DATE PREPARED
04/11/2023
ROUTE
413
STATE
MO
DISTRICT
BR
SHEET NO.
42
COUNTY
GREENE
JOB NO.
J8S3157
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A8935

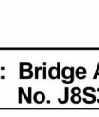
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

VEENSTRA & KIMM INC.
Liberty, Missouri 64069
P.O. Box 236
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. F00362673

BORING LOG NO. 201										Page 3 of 3		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3290° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (ksi)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
3		CORE LOSS , wash away from possible boulders, cobbles, gravel and clay (<i>continued</i>)										
		55.0 1223.5+/-	55									
		LIMESTONE , highly weathered										
		58.0 1220.5+/-	60									
		LIMESTONE , with fossils, trace stylolites and chert nodules, gray, medium to coarse crystalline, slightly fractured, extremely close to very close fracture spacing, thick bedding, slightly weathered at fractures and stylolites										
4			65									
		71.0 1207.5+/-	70									
3		CORE LOSS , wash away from possible boulders, cobbles, gravel and clay										
		73.0 1205.5+/-	75									
4		LIMESTONE , with fossils, trace stylolites and chert nodules, gray, medium to coarse crystalline, slightly fractured, extremely close to very close fracture spacing, thick bedding, slightly weathered at fractures and stylolites										
		75.0 1203.5+/-										
		Boring Terminated at 75 Feet										
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic												
Advancement Method: Casing advancer and NQ core barrel			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 provided by others.				Notes: Hammer Efficiency: 82%					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed during augering							Boring Started 03-03-2022		Boring Completed: 03-03-2022			
							Drill Rig: DR840		Driller: DH			
							Project No.: B5215104					

BORING LOG NO. 202										Page 1 of 2		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3290° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
1		0.2' ASPHALT (2.25") 1278.5+/- 12' CONCRETE (12.25") 1277.5+/- AIR										
			5									
			10									
			15									
			20									
2		20.5' FILL - LEAN CLAY WITH GRAVEL (CL), trace sand, dark brown, medium stiff to stiff, possible cobbles 1258+/-	25			7	8-8-15 N=23 N ₆₀ 31			>4.5	32.5	
Stratification lines are approximate. In-situ, the transition may be gradual.												Hammer Type: Automatic
Advancement Method: 3" I.D. hollow stem augers			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 provided by others.				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed			Terracon 4765 W Junction St Springfield, MO				Boring Started: 03-01-2022		Boring Completed: 03-01-2022			
							Drill Rig: DR840		Driller: DH			
							Project No.: B5215104					

[illegible]

BORING LOG NO. 202													Page 2 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS	
		Latitude: 37.1828° Longitude: -93.3290°												
		Approximate Surface Elev.: 1278.5 (Ft.) +/-											LL-PL-P	
		DEPTH	ELEVATION (Ft.)											
2		FILL - LEAN CLAY WITH GRAVEL (CL), trace sand, dark brown, medium stiff to stiff, possible cobbles (continued)												
		32.0	1246.5+/-	30		3	50/4"				N/A	5.7		
3		GRAVELLY LEAN CLAY WITH SAND (CL), brown, medium stiff to hard												
				35		13	18-4-4 N=8 N ₆₀ 11				1.5 (HP)	17.4		
				40		9	8-12-7 N=19 N ₆₀ 26				N/A	21.1		
		FAT CLAY (CH), brownish red, stiff												
		42.5	1236+/-	45		18	5-4-10 N=14 N ₆₀ 19				2.75 (HP)	50.2		
		49.1	1229.5+/-			1	50/1"				N/A	14.7		
		Auger Refusal at 49.1 Feet												
Stratification lines are approximate. In-situ, the transition may be gradual.													Hammer Type: Automatic	
Advancement Method: 3" I.D. hollow stem augers				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock						
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.										
WATER LEVEL OBSERVATIONS No free water observed				 4765 W Junction St. Springfield, MO				Boring Started: 03-01-2022		Boring Completed: 03-01-2022				
		Drill Rig: DR840						Driller: DH						
						Project No.: B5215104								

<

STATE OF MISSOURI DAVID H. McDONALD NUMBER PE-018861 PROFESSIONAL ENGINEER	
THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.	
DATE PREPARED 04/11/2023	
ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 45
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	

BORING DATA

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

Detailed Nov. 2022
Checked Dec. 2022

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

Sheet No. 45 of 56

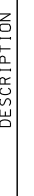
BORING LOG NO. 203										Page 2 of 2					
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO										
SITE: Hwy 413 over MNA Railroad Springfield, MO															
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan		DEPTH (Ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS		
		Latitude: 37.1827° Longitude: -93.3290°	Approximate Surface Elev.: 1278.5 (Ft.) +/-										LL-PL-P		
		DEPTH	ELEVATION (Ft.)												
2		27.5	1251+/-	FILL - GRAVELLY LEAN TO FAT CLAY WITH SAND (CL/CH), brown and red, stiff (continued)											
		CLAYEY GRAVEL WITH SAND (GC), brown, medium dense													
3		35.0	1243.5+/-	SILT WITH CLAY AND SAND (ML), brown, medium stiff to stiff											
		37.5	1241+/-	FAT CLAY (CH), trace sand and gravel, dark red, medium stiff to stiff											
		46.5	1232+/-	Auger Refusal at 46.5 Feet											
Stratification lines are approximate. In-situ, the transition may be gradual.														Hammer Type: Automatic	
Advancement Method: 3" I.D. hollow stem augers				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS No free water observed								Boring Started: 03-01-2022 Boring Completed: 03-01-2022							
								Drill Rig: DR840 Driller: DH							
								Project No.: B5215104							

BORING LOG NO. 204										Page 1 of 3		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3290° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
1		0.3' ASPHALT (3.25") 1.0' CONCRETE (8.25") AIR	0.3 1.0 5 10 15 20 25									
2		21.5 FILL - LEAN CLAY WITH GRAVEL (CL), reddish brown, medium stiff 24.0 FILL - FAT CLAY WITH GRAVEL (CH), with cobbles, red to brown red, medium stiff to stiff	21.5 24.0		8	3-13-21 N=34 N ₆₀ 47			N/A	31.6		
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic												
Advancement Method: Casing advancer and NQ core barrel				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 provided by others.				Notes: Hammer Efficiency: 82%				
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed during augering								Boring Started: 02-21-2022 Boring Completed: 02-21-2022 Drill Rig: DR840 Driller: DH Project No.: B5215104				

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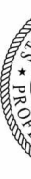
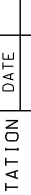
BORING LOG NO. 204										Page 2 of 3		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3290° Approximate Surface Elev.: 1278.5 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
2		FILL - FAT CLAY WITH GRAVEL (CH) , with cobbles, red to brown red, medium stiff to stiff (continued) 32.0 1246.5+/-	30		9		3-3-4 N=7 N ₆₀ 10			N/A	33.2	
3		LEAN CLAY (CL) , trace roots, sand, and gravel, gray brown to red brown, medium stiff 37.0 1241.5+/-	35		18		2-2-3 N=5 N ₆₀ 7			N/A	23.4	32-17-15
		FAT CLAY (CH) , trace sand and gravel, dark red 39.3 1239+/-										
		LIMESTONE , highly weathered 40.3 1238+/-	40		9		3-50/4"			N/A	62.2	
4		LIMESTONE , with fossils, trace stylolites, gray, fine to medium crystalline, slightly fractured, extremely close to very close fracture spacing, medium bedding, slightly weathered at fractures and stylolites, highly weathered chert layer from 40.9'-41'	45					100	97			
			50									
Stratification lines are approximate. In-situ, the transition may be gradual.					Hammer Type: Automatic							
Advancement Method: Casing advancer and NQ core barrel Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			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 provided by others.			Notes: Hammer Efficiency: 82%						
WATER LEVEL OBSERVATIONS No free water observed during augering			 4765 W Junction St. Springfield, MO			Boring Started: 02-21-2022			Boring Completed: 02-21-2022			
						Drill Rig: DR840			Driller: DH			
						Project No.: B5215104						

BORING LOG NO. 204												
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO						
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3290° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS
		DEPTH ELEVATION (FL)										LL-PL-P
4		LIMESTONE, with fossils, trace stylolites, gray, fine to medium crystalline, slightly fractured, extremely close to very close fracture spacing, medium bedding, slightly weathered at fractures and stylolites (<i>continued</i>) trace white to light gray chert layers below 56.5'	55					100	69			
			60									
			65					51	39			
3		CORE LOSS, wash away from possible boulders, cobbles, gravel and clay	70									
		Boring Terminated at 70.3 Feet										
Stratification lines are approximate. In-situ, the transition may be gradual.						Hammer Type: Automatic						
Advancement Method: Casing advancer and NQ core barrel			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 provided by others.			Notes: Hammer Efficiency: 82%						
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed during augering						Boring Started: 02-21-2022 Boring Completed: 02-21-2022						
			4765 W Junction St Springfield, MO			Drill Rig: DR840 Driller: DH						
						Project No.: B5215104						

	
THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.	
DATE PREPARED 04/11/2023	
ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 47
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	

BORING LOG NO. 301										Page 1 of 3		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan	DEPTH (Ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (ksi)	WATER CONTENT (%)	ATTERBERG LIMITS
		Latitude: 37.1828° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/-										LL-PL-P
		DEPTH ELEVATION (Ft.)										
1		0.2' ASPHALT (2.5") 0.9' CONCRETE (8.5") AIR	1278.5 +/- 1277.5 +/-									
Stratification lines are approximate. In-situ, the transition may be gradual.												
Hammer Type: Automatic												
Advancement Method: 3.0" I.D. hollow stem augers and NQ core barrel				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82%				
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.								
WATER LEVEL OBSERVATIONS No free water observed during augering				 4765 W Junction St. Springfield, MO				Boring Started: 03-02-2022				
								Boring Completed: 03-03-2022				
								Drill Rig: DR840				
								Driller: DH				
								Project No.: B5215104				

BORING LOG NO. 301						Page 2 of 3											
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)				CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO													
SITE: Hwy 413 over MNA Railroad Springfield, MO																	
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP ^a (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS				
		Latitude: 37.1828° Longitude: -93.3287°															
		Approximate Surface Elev.: 1278.5 (Ft.) +/-															
		DEPTH	ELEVATION (FL)										LL-PL-P				
		<u>AIR</u> (continued)															
		27.5	1251+/-														
2		<u>FILL - GRAVELLY LEAN CLAY (CL)</u> , dark brown, medium stiff															
		31.5	1247+/-			X	8	3-3-2 N=5 N ₆₀ 7			N/A	23.8					
3		<u>FAT CLAY (CH)</u> , trace sand and gravel, red and brown, medium stiff															
		36.0	1242.5+/-														
		<u>LIMESTONE</u> , with fossils, trace stylolites, gray, fine to medium crystalline, slightly fractured, extremely close to close fracture spacing, thick bedding, slightly weathered at fractures and stylolites															
									90	54							
4																	
									96	70							
		Stratification lines are approximate. In-situ, the transition may be gradual.															
Advancement Method: 3.0" I.D. hollow stem augers and NQ core barrel				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82%									
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.													
WATER LEVEL OBSERVATIONS No free water observed during augering				 4765 W Junction St Springfield, MO				Boring Started: 03-02-2022 Boring Completed: 03-03-2022									
								Drill Rig: DR840 Driller: DH									
								Project No.: B5215104									

	
THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.	
DATE PREPARED 04/11/2023	
ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 48
COUNTY GREENE	
JOB NO. J8S3157	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A8935	
DESCRIPTION	
DATE	
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION	
	
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-275-6636)	
	
VEENSTRA & KIMM INC.	
P.O. Box 236 Liberty, Missouri 64069 816-781-6182 816-781-0643 (FAX) Certificate of Authority No. F00362673	

BORING LOG NO. 302													Page 2 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS		
		DEPTH ELEVATION (Ft.)										LL-PL-PI		
		AIR (continued)												
		27.5 1251+/-												
2		FILL - FAT CLAY WITH GRAVEL (CH), trace sand, dark brown to red brown, medium stiff to stiff	30											
		32.0 1246.5+/-								N/A	22.1			
3		FAT CLAY WITH SAND (CH), trace gravel, dark red to red brown, stiff	35											
		36.0 1242.5+/-												
Auger Refusal at 36 Feet														
Stratification lines are approximate. In-situ, the transition may be gradual.														
Hammer Type: Automatic														
Advancement Method: 3" I.D. hollow stem augers		See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock.										
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete		See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.												
WATER LEVEL OBSERVATIONS				Boring Started: 03-02-2022		Boring Completed: 03-02-2022								
No free water observed				Drill Rig: DR840		Driller: DH								
				Project No.: B5215104										

BORING LOG NO. 303													Page 1 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS		
		DEPTH ELEVATION (Ft.)										LL-PL-PI		
1		0.2 ASPHALT (2.0") 1278.5+/-												
		1.1 CONCRETE (11.25") 1277.5+/-												
		AIR												
Stratification lines are approximate. In-situ, the transition may be gradual.														
Hammer Type: Automatic														
Advancement Method: 3" I.D. hollow stem augers		See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock.										
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete		See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.												
WATER LEVEL OBSERVATIONS				Boring Started: 03-02-2022		Boring Completed: 03-02-2022								
No free water observed				Drill Rig: DR840		Driller: DH								
				Project No.: B5215104										

BORING DATA

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

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

Sheet No. 50 of 56

Detailed Nov. 2022
Checked Dec. 2022

THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.
DATE PREPARED
04/11/2023
ROUTE 413
STATE MO
DISTRICT BR
SHEET NO. 50
COUNTY GREENE
JOB NO. J8S3157
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8935

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

VEENSTRA & KIMM INC.
Liberty, Missouri 64069
P.O. Box 236
816-781-6182
816-781-0643 (FAX)
Certificate of Authority No. F00362673

BORING LOG NO. 303										Page 2 of 2		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan	DEPTH (Ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (ksf)	WATER CONTENT (%)	ATTERBERG LIMITS
		Latitude: 37.1827° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/- DEPTH ELEVATION (Ft.)										LL-PL-P
		AIR (continued)										
		29.0 1249.5+/-										
2		FILL - GRAVELLY LEAN CLAY (CL), brown, medium stiff										
		32.5 1246+/-										
4		LIMESTONE, gray, highly weathered			X 3	50-50/2"				N/A	6.4	
		34.5 1244+/-										
		Auger Refusal at 34.5 Feet										
Stratification lines are approximate. In-situ, the transition may be gradual.												Hammer Type: Automatic
Advancement Method: 3" I.D. hollow stem augers			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 provided by others.				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete												
WATER LEVEL OBSERVATIONS No free water observed			Terracon 4765 W Junction St. Springfield, MO				Boring Started: 03-02-2022 Drill Rig: DR840 Project No.: B5215104		Boring Completed: 03-02-2022 Driller: DH			

BORING LOG NO. 304								Page 1 of 2									
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO											
SITE: Hwy 413 over MNA Railroad Springfield, MO																	
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan				DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (ksi)	WATER CONTENT (%)	ATTERBERG LIMITS		
		Latitude: 37.1827° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/-													LL-PL-P		
		DEPTH ELEVATION (Ft.)															
1		0.2' ASPHALT (2.5") 1278.5+/-															
		0.9' CONCRETE (8.5") 1277.5+/-															
		AIR															
Stratification lines are approximate. In-situ, the transition may be gradual.																Hammer Type: Automatic	
Advancement Method: 4.5" O.D. central flight augers						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 provided by others.						Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete						 4765 W Junction St Springfield, MO						Boring Started: 02-22-2022 Boring Completed: 02-22-2022					
WATER LEVEL OBSERVATIONS												Drill Rig: DR840 Driller: DH					
While drilling												Project No.: B5215104					

[illegible]

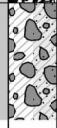
BORING LOG NO. 304										Page 2 of 2		
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)					CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3287° Approximate Surface Elev.: 1278.5 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (Isf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
		DEPTH ELEVATION (Ft.) <u>AIR (continued)</u>										
		27.8 1250.5+/-										
2		FILL - LEAN CLAY WITH GRAVEL (CL), trace sand, brown to red brown, soft	30									
			35	▽	X	3	2-2-1 N=3 N ₆₀ 4			N/A	22.7	
		36.5 1242+/-										
		LIMESTONE Auger Refusal at 36.5 Feet				2	50/2"			N/A	24.0	
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic												
Advancement Method: 4.5" O.D. central flight augers			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.									
WATER LEVEL OBSERVATIONS							Boring Started: 02-22-2022 Boring Completed: 02-22-2022					
▽ While drilling							Drill Rig: DR840 Driller: DH					
			4765 W Junction St. Springfield, MO				Project No.: B5215104					

BORING LOG NO. 401								Page 1 of 2				
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO						
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3285° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS
		DEPTH ELEVATION (Ft.)										LL-PL-P
1		0.3' ASPHALT (3.0") 1278+/- 1.2 CONCRETE (11.5") 1277+/- 1.6 AGGREGATE BASE COURSE 1276.5+/- FILL - LEAN CLAY WITH SAND (CL), trace gravel, dark brown to gray, soft to medium stiff										
		gravelly below 8.5 feet	5	X	11		1-1-2 N=3 N60 4			0.25 (HP)	26.6	
			10	X	3		3-2-3 N=5 N60 7			N/A	21.1	
2		FILL - FAT CLAY WITH GRAVEL (CH), trace sand, dark red and gray brown, soft to medium stiff										
			15	X	10		1-3-3 N=6 N60 8			0.25 (HP)	35.2	
			20	X	5		1-2-2 N=4 N60 5			N/A	28.6	
3		LEAN CLAY (CL), trace sand and gravel, dark brown, medium stiff										
			25	X	12		2-2-3 N=5 N60 7			N/A	32.3	
Stratification lines are approximate. In-situ, the transition may be gradual.												
Hammer Type: Automatic												
Advancement Method: 3.0" I.D. hollow stem augers			See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock					
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete			See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.									
WATER LEVEL OBSERVATIONS			Terracon 4765 W Junction St Springfield, MO				Boring Started: 03-02-2022 Boring Completed: 03-02-2022					
While sampling; perched water table							Drill Rig: DR840 Driller: DH					
							Project No.: B5215104					

		THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.	
		DATE PREPARED 04/11/2023	
ROUTE 413	STATE MO		
DISTRICT BR	SHEET NO. 52		
COUNTY GREENE			
JOB NO. J8S3157			
CONTRACT ID.			
PROJECT NO.			
BRIDGE NO. A8935			
DESCRIPTION			
DATE			
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
105 WEST CAPITOL JEFFERSON CITY, MO 65102 1-888-ASK-MODOT (1-888-2715-6636)			
P.O. Box 236 Liberty, Missouri 64069 816-781-6182 816-781-0643 (FAX) Certificate of Authority No. F00362873		Veenstra & Kimm Inc.	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT: MODOT_CUSTOM_LOG-2021 B5215104 MODOT BRIDGE A893.GPJ TERRACON_DATATEMPLATE.GDT 4/26/22

BORING LOG NO. 401													Page 2 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3285° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
		DEPTH ELEVATION (Ft.) 26.5 1251.5+/-												
3		FAT CLAY (CH), trace sand and gravel, dark red, stiff LIMESTONE Auger Refusal at 33 Feet	30		X	18	3-4-5 N=9 N ₆₀ 12			3.25 (HP)	48.0			
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic														
Advancement Method: 3.0" I.D. hollow stem augers		See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock.										
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete		See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.												
WATER LEVEL OBSERVATIONS		 4765 W Junction St Springfield, MO		Boring Started: 03-02-2022		Boring Completed: 03-02-2022								
While sampling: perched water table				Drill Rig: DR840		Driller: DH								
				Project No.: B5215104										

BORING LOG NO. 402													Page 1 of 2	
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO														
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1828° Longitude: -93.3285° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-PI		
		DEPTH ELEVATION (Ft.) 0.2 1278+/- 1.3 1276.5+/- 1.6 1276.5+/-												
1		ASPHALT (2.0") CONCRETE (13.25") AGGREGATE BASE COURSE FILL - LEAN TO FAT CLAY WITH GRAVEL (CL/CH), trace sand, dark brown to reddish brown, medium stiff FILL - FAT CLAY (CH), trace gravel, gray and brown to reddish brown, medium stiff GRAVELLY LEAN CLAY WITH SAND (CL), with chert layers, brown to reddish brown, very stiff	5		X	8	1-2-2 N=4 N ₆₀ 5			1.0 (HP)	27.4			
		6.0 1272+/-												
2			10		X	12	2-2-2 N=4 N ₆₀ 5			0.75 (HP)	41.2	66-26-40		
			15		X	8	2-2-3 N=6 N ₆₀ 7			0.5 (HP)	35.5			
			20		X	8	3-2-2 N=4 N ₆₀ 5			1.25 (HP)	41.7			
3			25		X	7	14-14-14 N=28 N ₆₀ 38			N/A	21.2			
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic														
Advancement Method: 3" I.D. hollow stem augers		See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).		Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock.										
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete		See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.												
WATER LEVEL OBSERVATIONS		 4765 W Junction St Springfield, MO		Boring Started: 03-01-2022		Boring Completed: 03-01-2022								
No free water observed				Drill Rig: DR840		Driller: DH								
				Project No.: B5215104										

BORING DATA

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

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

Sheet No. 53 of 56

Detailed Nov. 2022
Checked Dec. 2022



THIS SHEET HAS BEEN SIGNED, SEALED, AND DATED ELECTRONICALLY.

DATE PREPARED
04/11/2023

ROUTE 413	STATE MO
DISTRICT BR	SHEET NO. 53

COUNTY
GREENE

J8S3157

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8935

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



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

VEENSTRA & KIMM INC.

Liberty, Missouri 64069
816-781-0643 (FAX)
Certificate of Authority No. F00362673

BORING LOG NO. 402											Page 2 of 2					
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO										
SITE: Hwy 413 over MNA Railroad Springfield, MO																
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan				DEPTH (Ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (ksf)	WATER CONTENT (%)	ATTERBERG LIMITS	
		Latitude: 37.1828° Longitude: -93.3285° Approximate Surface Elev.: 1278 (Ft.) +/- DEPTH ELEVATION (Ft.)													LL-PL-P	
3		GRAVELLY LEAN CLAY WITH SAND (CL), with chert layers, brown to reddish brown, very stiff (continued) 28.0 1250+/-														
Auger Refusal at 28 Feet																
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic																
Advancement Method: 3" I.D. hollow stem augers						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 provided by others.						Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock				
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete																
WATER LEVEL OBSERVATIONS No free water observed						 4765 W Junction St. Springfield, MO						Boring Started: 03-01-2022 Boring Completed: 03-01-2022				
												Drill Rig: DR840 Driller: DH				
												Project No.: B5215104				

BORING LOG NO. 403																									
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)						CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO																			
SITE: Hwy 413 over MNA Railroad Springfield, MO																									
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3286° Approximate Surface Elev.: 1278 (Ft.) +/-				DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS										
															LL-PL-P										
1		0.2' ASPHALT (2.0") 1278+/-				5																			
		1.2' CONCRETE (12.0") 1277+/-																							
		1.4' AGGREGATE BASE COURSE 1276.5+/-																							
2		FILL - GRAVELLY LEAN CLAY (CL) , trace sand, brown to reddish brown, medium stiff to stiff				10																			
3		17.0' FILL - GRAVELLY FAT CLAY (CH) , trace sand, red and gray, stiff 1261+/-				20																			
3		24.0' LEAN CLAY (CL) , trace sand and gravel, dark brown to reddish brown, medium stiff to stiff 1254+/-				25																			
Stratification lines are approximate. In-situ, the transition may be gradual.						Hammer Type: Automatic																			
Advancement Method: 3" I.D. hollow stem augers						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 provided by others.				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock															
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete																									
WATER LEVEL OBSERVATIONS While sampling																									

[illegible]

BORING LOG NO. 403															
Page 2 of 2															
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)								CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO							
SITE: Hwy 413 over MNA Railroad Springfield, MO															
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3286° Approximate Surface Elev.: 1278 (Ft.) +/-		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS		
		DEPTH	ELEVATION (Ft.)										LL-PL-P		
3		27.0	1251+/-	27 30 35 40											
		FAT CLAY (CH), trace sand, dark red, stiff to hard			X	18	4-6-9 N=15 N60 21		3.5 (HP)	44.3	80-35-45				
		highly weathered limestone layer from 34.8 ft. to 35 ft.			X	18	3-3-14 N=17 N60 23		3.0 (HP)	48.7					
					X	16	12-16-19 N=35 N60 48		N/A	22.9					
		43.0	1235+/-												
Auger Refusal at 43 Feet															
Stratification lines are approximate. In-situ, the transition may be gradual. Hammer Type: Automatic															
Advancement Method: 3" I.D. hollow stem augers				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).				Notes: Hammer Efficiency: 82% Auger refusal on possible cobble, boulder, or bedrock							
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.											
WATER LEVEL OBSERVATIONS				 4765 W Junction St: Springfield, MO				Boring Started 03-01-2022				Boring Completed: 03-01-2022			
While sampling								Drill Rig: DR840				Driller: DH			
								Project No.: B5215104							

BORING LOG NO. 404							Page 1 of 2					
PROJECT: Bridge A8935 Replacement (MoDOT Project No. J8S3157)				CLIENT: Missouri Department of Transportation (MODOT) Jefferson City, MO								
SITE: Hwy 413 over MNA Railroad Springfield, MO												
MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 37.1827° Longitude: -93.3286° Approximate Surface Elev.: 1278 (Ft.) +/-	DEPTH (FT.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	REC (%)	RQD (%)	LABORATORY HP (tsf)	WATER CONTENT (%)	ATTERBERG LIMITS LL-PL-P
		DEPTH ELEVATION (Ft.) 0.2' ^ ASPHALT (2.5") 1278+/- 1.3' CONCRETE (12.5") 1277+/- FILL - LEAN CLAY WITH GRAVEL (CL), with cobbles, trace sand, reddish brown, medium stiff										
1												
		6.5' FILL - FAT CLAY WITH GRAVEL (CH), trace sand, reddish brown, stiff										
2		becoming with cobbles below 13.5 feet										
		18.0' FILL - FAT CLAY WITH SAND AND GRAVEL (CH), reddish brown, stiff										
		21.0' LEAN CLAY WITH SILT (CL), trace sand and gravel, gray and brown, stiff										
3												
Stratification lines are approximate. In-situ, the transition may be gradual.				Hammer Type: Automatic								
Advancement Method: 4.5" O.D. central flight augers and NQ core barrel				See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (if any).				Notes: Hammer Efficiency: 82%				
Abandonment Method: Boring backfilled with bentonite chips Surface capped with concrete				See Supporting Information for explanation of symbols and abbreviations. Elevations were provided by others.								
WATER LEVEL OBSERVATIONS No free water observed during augering				Terracon 4765 W Junction St Springfield, MO				Boring Started: 02-21-2022		Boring Completed: 02-21-2022		
								Drill Rig: DR840		Driller: DH		
				Project No.: B5215104								

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