MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY

ST. LOUIS COUNTY

T45N, R6E

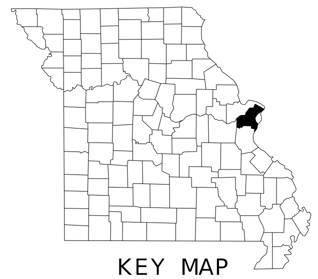
DESIGN DESIGNATION

I-270 EB TO I-170 SB

A.A.D.T. - 2024 = 16,418
A.A.D.T. - 2044 = 20,358
D.H.V. = 10.6%
T = 7.1%
V = 60 M.P.H.
D = 100%

FUNCTIONAL CLASSIFICATION- INTERSTATE HIGHWAY

NO NEW RIGHT OF WAY TO BE ACQUIRED FOR THIS PROJECT



KEY MAP
LOCATION OF ST. LOUIS COUNTY

DISCLAIMER
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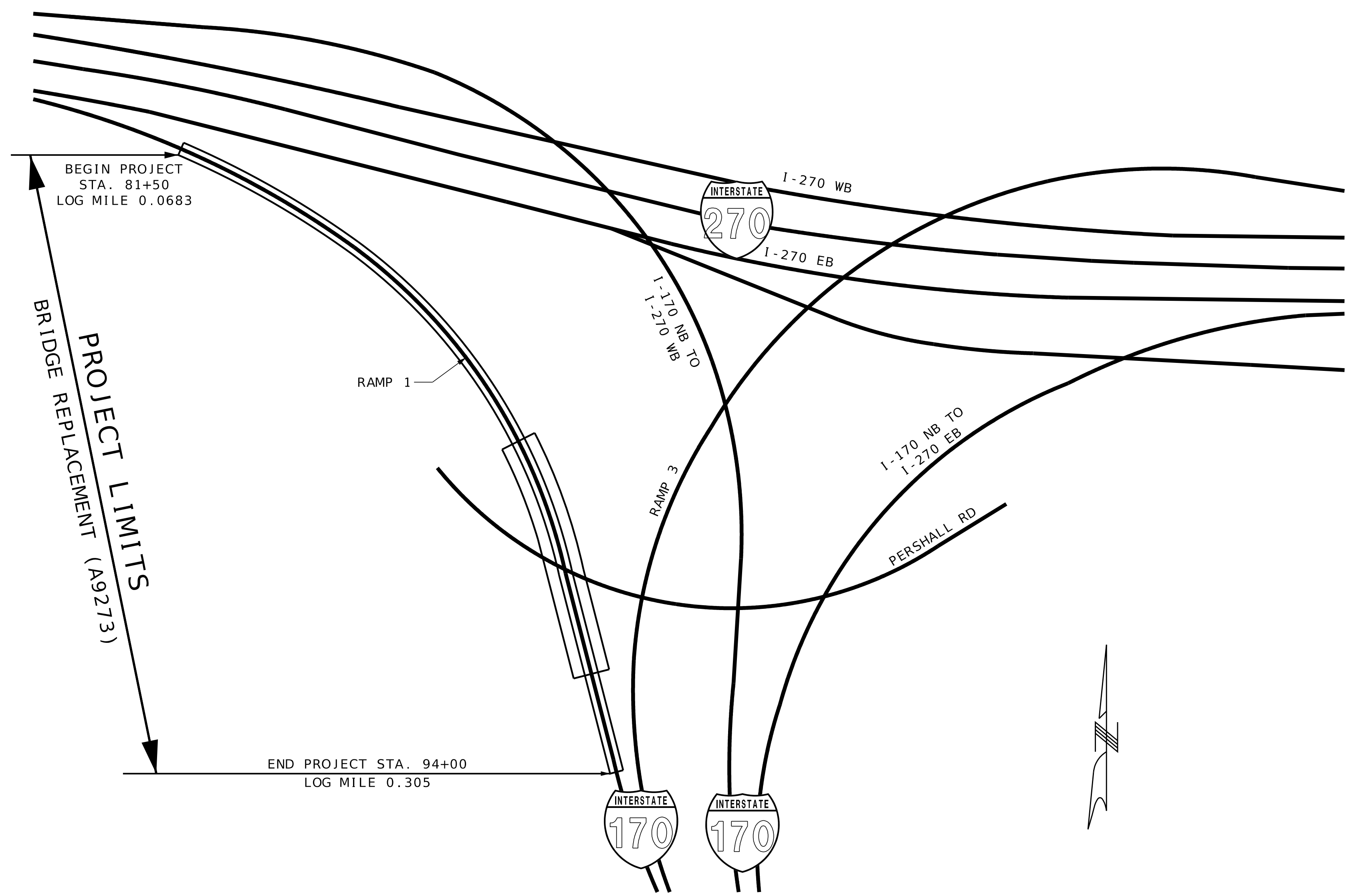


THE EXISTENCE AND APPROXIMATE LOCATION OF UTILITY FACILITIES KNOWN TO EXIST, AS SHOWN ON THE PLANS, ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY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

CONVENTIONAL SYMBOLS
(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
GUARD CABLE		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	FO	FO
OVERHEAD CABLE TV	OTV	OTV
UNDERGROUND CABLE TV	UTV	UTV
OVERHEAD TELEPHONE	OT	OT
UNDERGROUND TELEPHONE	UT	UT
OVERHEAD POWER	OE	OE
UNDERGROUND POWER	UE	UE
SANITARY SEWER	S	S
STORM SEWER	SS	SS
GAS	G	G
WATER	W	W
MANHOLE	SAN	
FIRE HYDRANT	HYD	
WATER VALVE	WV	
WATER METER	WM	
DROP INLET		
DITCH BLOCK		
GROUND MOUNTED SIGN	SIGN	
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL	PED	
FENCE		
CHAIN LINK	V	
WOVEN WIRE	X	
GATE POST		
BENCHMARK	BM	

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

INDEX OF SHEETS

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 81+50.00	
END OF PROJECT	STA. 94+00.00	
APPARENT LENGTH		1250.00 FEET
EQUATIONS AND EXCEPTIONS:		0.00 FEET
TOTAL CORRECTIONS		0.00 FEET
NET LENGTH OF PROJECT		1250.00 FEET
STATE LENGTH		0.237 MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES		1.0 ACRES

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/24/2024 2:53:53 PM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	
10/24/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	1
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

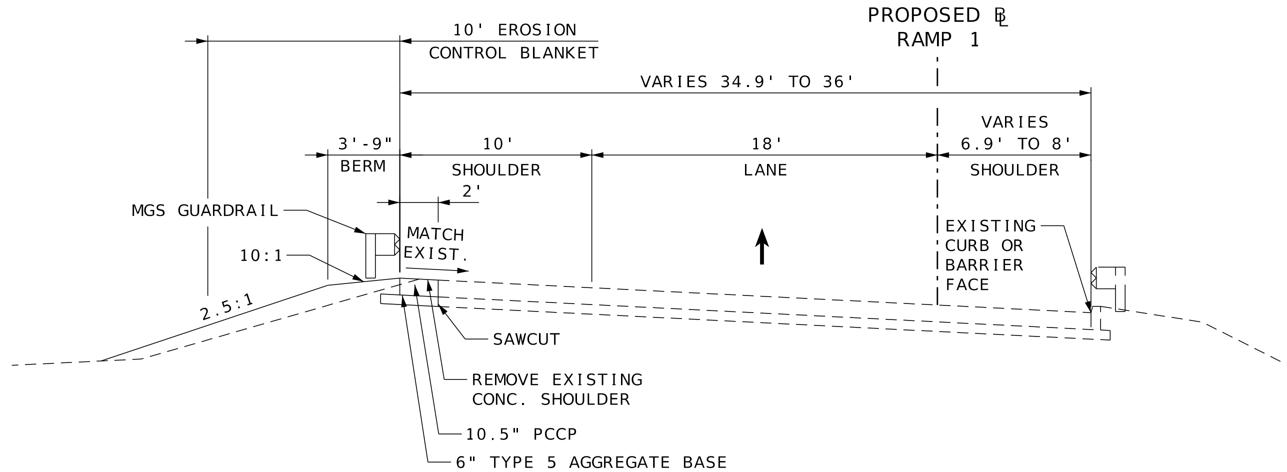
DESCRIPTION

DATE

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

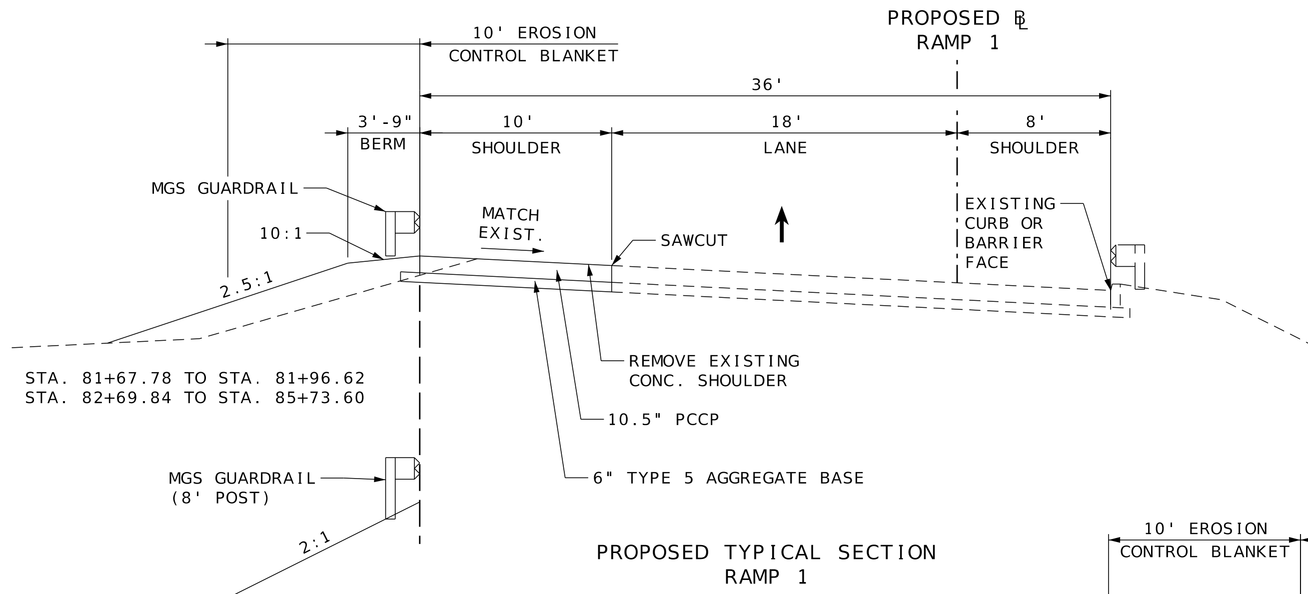
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

c:\bms\efkmoen01\jennifer archibald\dms03755\001_TL_J6I3624B_i1.dgn 2:18:16 PM 10/24/2024



PROPOSED TYPICAL SECTION
RAMP 1

STA. 81+22.80 TO STA. 81+67.78

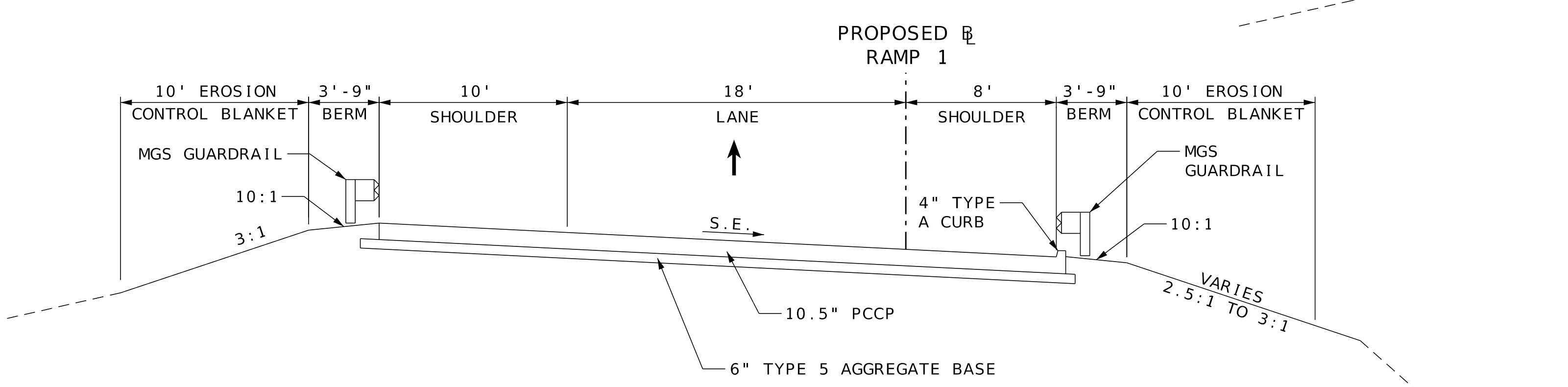


STA. 81+67.78 TO STA. 81+96.62
STA. 82+69.84 TO STA. 85+73.60

STA. 81+96.62 TO STA. 82+69.84
NOTE - TRANSITION BERM IN 20'

PROPOSED TYPICAL SECTION
RAMP 1

STA. 81+67.78 TO STA. 85+73.60



PROPOSED TYPICAL SECTION
RAMP 1

STA. 85+73.60 TO STA. 88+51.52

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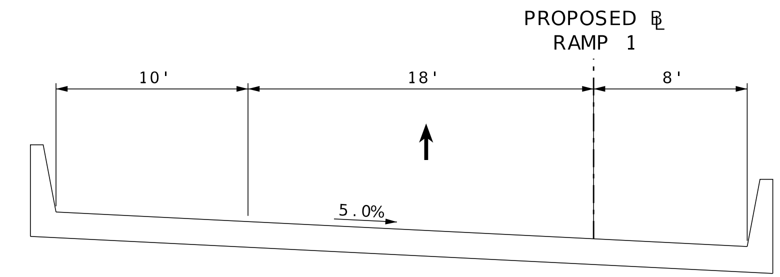
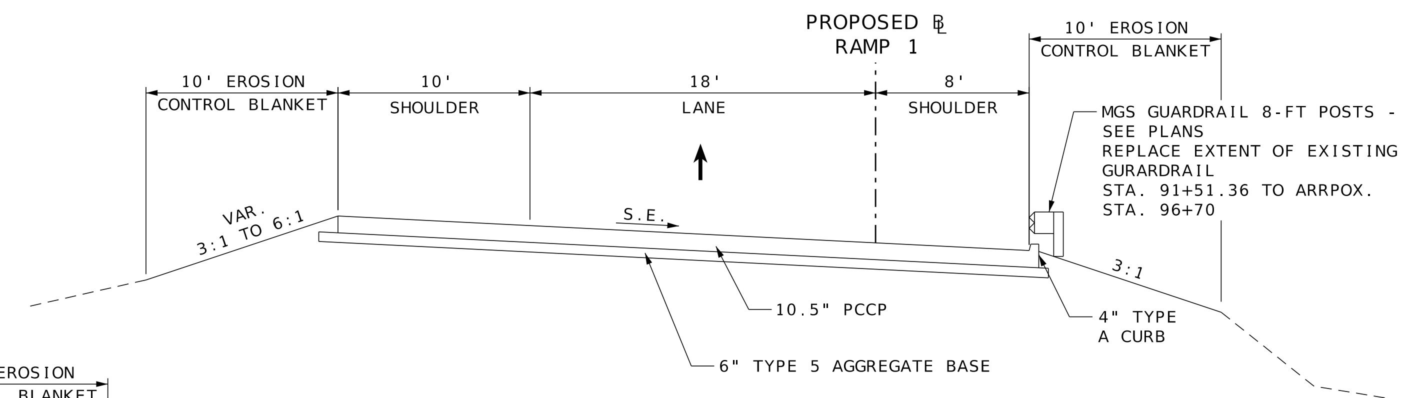


PROPOSED TYPICAL SECTION
RAMP 1

STA. 88+97.15 TO STA. 91+30.36

BRIDGE OMMISSION STA. 88+51.52 TO STA. 91+88.85
FOR PAVED APPROACHES, APPROACH SLABS & BRIDGE



PROPOSED TYPICAL SECTION
RAMP 1

STA. 91+88.85 TO STA. 92+83.45

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

12/03/2024 6:36:12 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED 11/26/2024	
ROUTE I-170	STATE MO
DISTRICT SL	SHEET NO. 2
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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MoDOT

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TYPICAL SECTIONS
SHEET 1 OF 2

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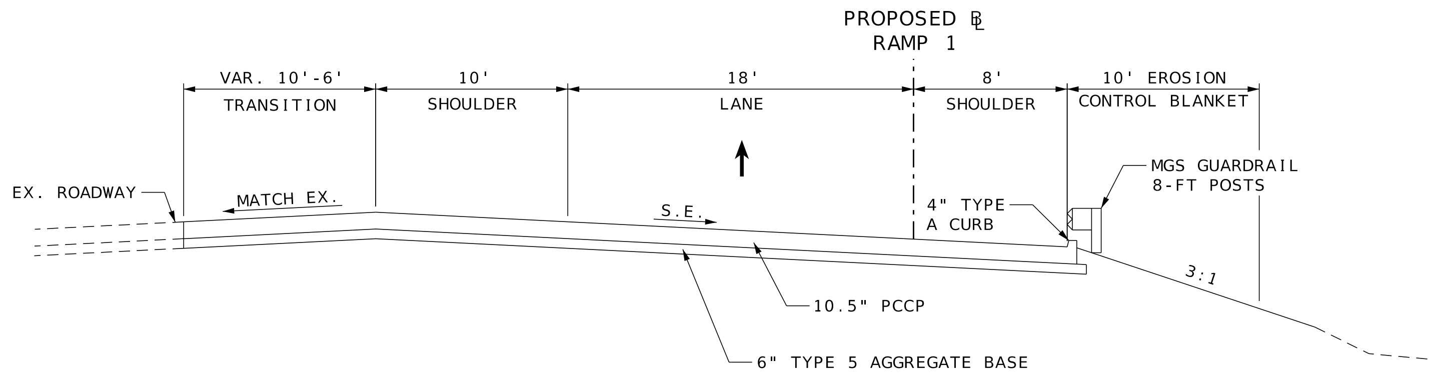
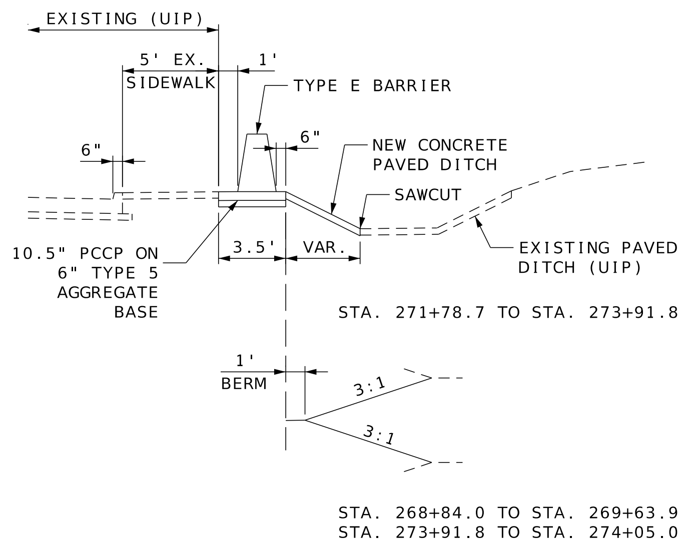
12/03/2024 6:36:45 AM
Paul J. Kronlage - Civil
MO PE - 023328



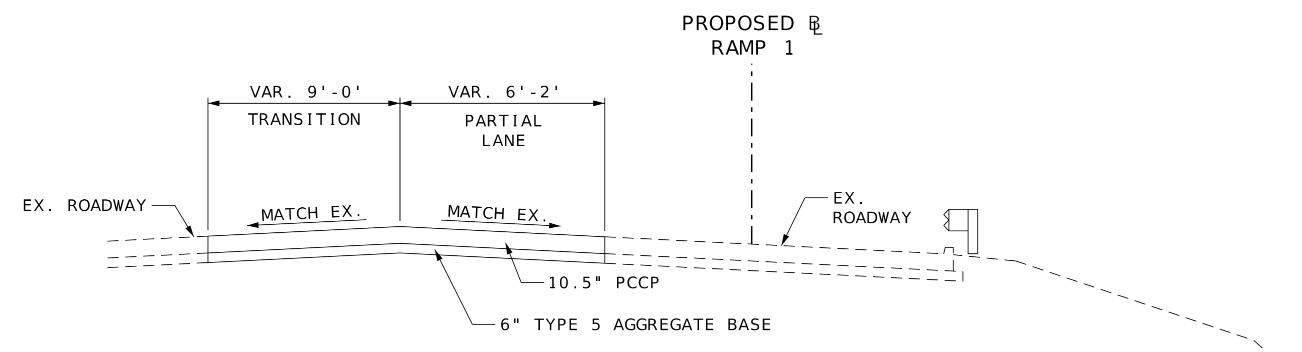
PROPOSED TYPICAL SECTION
RAMP 1

STA. 92+83.45 TO STA. 93+09.07



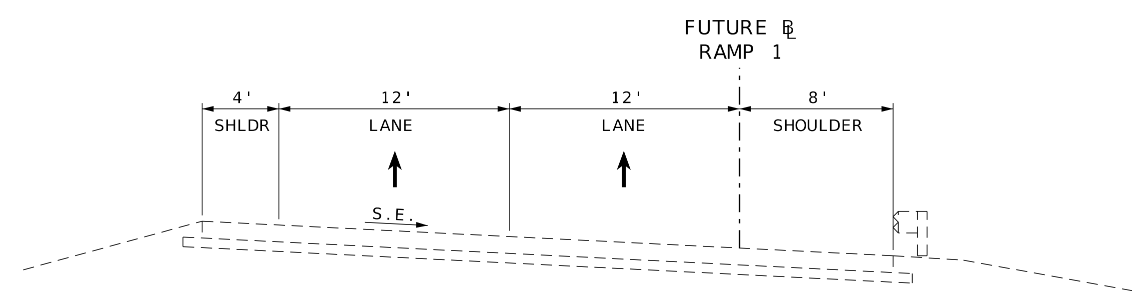
PROPOSED TYPICAL SECTION
PERSHALL RD

STA. 268+84.0 TO STA. 274+05.0

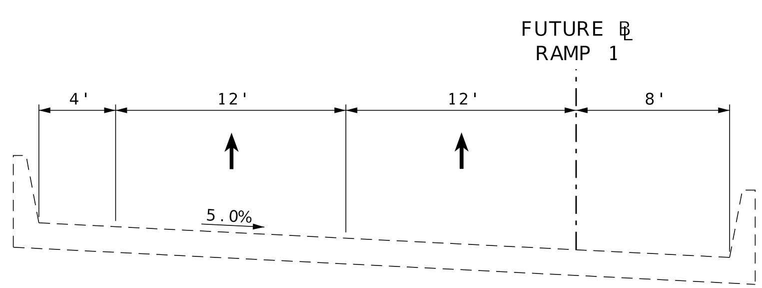


PROPOSED TYPICAL SECTION
RAMP 1

STA. 93+09.07 TO STA. 94+34.83



FUTURE PAVEMENT MARKING TYPICAL
(FOR INFORMATION)
RAMP 1



FUTURE PAVEMENT MARKING TYPICAL
(FOR INFORMATION)
RAMP 1

DATE PREPARED	11/26/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	2
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

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

REMOVAL OF IMPROVEMENTS

SHEET NO.	STA	STA	LOC	ROADWAY	L.F.	S.F.	EACH	DESCRIPTIONS
4-5	80+75	88+96	LT	RAMP 1	838			GUARDRAIL
4	81+23	85+74	LT	RAMP 1		3066		CONCRETE PAVEMENT
4	81+95		LT	RAMP 1			1	SIGN, POST & FOOTING
4	82+14		RT	RAMP 1			1	SIGN, POST & FOOTING
4	82+93		LT	RAMP 1			1	SIGN, POST & FOOTING
4	83+91		LT	RAMP 1			1	SIGN, POST & FOOTING
4	84+96		LT	RAMP 1			1	SIGN, POST & FOOTING
4-5	85+48	88+66	RT	RAMP 1	318			GUARDRAIL
4-5	85+74	88+95	LT&RT	RAMP 1		9476		CONCRETE PAVEMENT, APPROACH, SLAB & CURB
4	85+96	85+99	RT	RAMP 1		141		CONCRETE FLUME
4	86+02		LT	RAMP 1			1	SIGN, POST & FOOTING
4	86+95		LT	RAMP 1			1	SIGN, POST & FOOTING
4	87+41		RT	RAMP 1			1	SIGN, POST & FOOTING
5	87+88		LT	RAMP 1			1	SIGN, POST & FOOTING
5	88+83		LT	RAMP 1			1	SIGN, POST & FOOTING
5	268+21	269+69	LT	PERSHALL		6167		CONCRETE SLOPE PROTECTION
5	267+87	270+05	LT	PERSHALL	209			CHAIN LINK FENCE
5	268+60	269+66	RT	PERSHALL	109			GUARDRAIL
5	269+66	270+66	RT	PERSHALL	106			CONCRETE U-GUTTER
5	269+34	270+66	RT	PERSHALL		6489		CONCRETE SLOPE PROTECTION
5	91+33	94+35	LT&RT	RAMP 1		6320		CONCRETE PAVEMENT, APPROACH, SLAB & CURB
5-6	91+41	96+65	RT	RAMP 1	528			GUARDRAIL
6	92+72		LT	RAMP 1			1	SIGN, POST & FOOTING
6	271+79	274+02	RT	PERSHALL	231			GUARDRAIL
6	271+79	273+92	RT	PERSHALL		1177		PAVED DITCH
4-5	81+23	85+74	LT&RT	RAMP 1	496			FULL DEPTH SAWCUT 9"
4	85+94	86+00	RT	RAMP 1	6			FULL DEPTH SAWCUT 9"
5	268+21	269+69	LT	PERSHALL	142			FULL DEPTH SAWCUT 4"
5	270+66		RT	PERSHALL	3			FULL DEPTH SAWCUT 12"
5	270+66		RT	PERSHALL	92			FULL DEPTH SAWCUT 4"
6	271+79	273+88	RT	PERSHALL	222			FULL DEPTH SAWCUT 6"
5-6	92+01	94+35	LT&RT	RAMP 1	372			SAWCUT
				PAY TOTAL	1 LUMP SUM			

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MOBILIZATION	1 L.S.
ADDITIONAL MOBILIZATION FOR SEEDING	2 EA.
CONTRACTOR FURNISHED SURVEYING AND STAKING	1 L.S.
SEEDING - COOL SEASON GRASSES	1 AC.
TEMPORARY SEEDING	0.5 AC.
MULCHING	1.5 AC.

CONCRETE APPROACH PAVEMENT

SHEET NO.	ROADWAY	STATION	STATION	LOC	CONCRETE APPROACH PAVEMENT S.Y.	REMARKS
5	RAMP 1	88+51.52	88+76.49	LT/RT	148.67	
5	RAMP 1	91+50.36	91+88.85	LT/RT	120.44	
				SUBTOTAL	269.11	
				PAY TOTAL	269.1	

PAVEMENT

SHEET NO.	ROADWAY	STATION	STATION	LOC	CONCRETE PAVEMENT 10.5 IN. NON-REINFORCED (15 FT. JOINTS) S.Y.	TYPE 5 AGGREGATE BASE (6 IN. THICK) S.Y.	REMARKS
4	RAMP 1	81+22.75	85+73.60	LT	577.11	577.1	SHOULDER REPLACEMENT
4-5	RAMP 1	85+73.60	88+51.52	LT/RT	1123.89	1123.9	
5-6	RAMP 1	91+88.85	93+09.07	LT/RT	456.11	456.1	
5-6	RAMP 1	92+02.00	94+34.85	LT	183.89	183.9	RAMP 3 SHOULDER & GORE
5	PERSHALL	268+84.00	269+63.70	RT	32.11	32.1	
6	PERSHALL	271+78.66	274+05.00	RT	102.33	102.3	
				SUBTOTAL	2475.44	2475.4	
				PAY TOTAL	2475.4	2475	

CURB & GUTTER

SHEET NO.	ROADWAY	STATION	STATION	LOC	INTEGRAL CURB (6 IN HEIGHT AND UNDER) TYPE A L.F.	CONCRETE GUTTER TYPE A L.F.	REMARKS
4-5	RAMP 1	85+74	88+52	RT	276.0		
5-6	RAMP 1	91+89	93+09	RT	120.0		
5	PERSHALL	269+64	270+65	RT		106.0	
				SUBTOTAL	396.0	106.0	
				PAY TOTAL	396	106	

CONCRETE SLOPE PROTECTION

SHEET NO.	ROADWAY	STATION	STATION	LOC	SLOPE PROTECTION S.Y.	REMARKS
5	PERSHALL	268+33	269+98	LT	807.7	
5	PERSHALL	269+68	270+69	RT	700.2	
5	PERSHALL	TBD	TBD		100.0	LOCATIONS TO BE DETERMINED BY ENGINEER
				SUBTOTAL	1607.9	
				PAY TOTAL	1608	

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

Paul J. Kronlage
12/03/2024 6:34:25 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	11/26/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	3
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

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

MoDOT

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Civil Engineering Design
13523 Barrett Parkway Dr
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Phone 314-394-3100
Fax 314-394-3199
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SUMMARY OF QUANTITIES
SHEET 1 OF 4

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TYPE 1 ROCK DITCH LINER, 8" THICK

SHEET NO.	ROADWAY	STATION	STATION	LOC	FURNISHING TYPE 1 ROCK DITCH LINER C.Y.	PLACING TYPE 1 ROCK DITCH LINER C.Y.	PERMANENT EROSION CONTROL GEOTEXTILE S.Y.	REMARKS
4	RAMP 1	85+94.70	85+99.70	RT	5.5	5.5	34.9	DRAIN FLUME
5	RAMP 1	88+47.50	88+52.50	RT	5.4	5.4	34.0	DRAIN FLUME
5	RAMP 1	91+87.85	91+92.85	RT	1.7	1.7	10.2	DRAIN FLUME
6	RAMP 1	93+07.07	93+12.07	RT	2.7	2.7	16.9	DRAIN FLUME
				SUBTOTAL	15.30	15.30	96.0	
				PAY TOTAL	15	15	96	

EARTHWORK

XS SHEET NO	ROADWAY	LOC.	CLASS A EXCAVATION C.Y.	FILL C.Y.	COMPACTING EMBANKMENT C.Y.	REMARKS
1-24	RAMP 1	LT/RT	1050	511	511	
	RAMP 1	LT/RT	98	0	0	ADD YARDAGE
	RAMP 1	LT/RT	199	212	212	ADD YARDAGE FOR BRIDGE ENDS
		SUBTOTALS	1347	723	723	
		PAY TOTALS	1347		723	

NOTE: ASSUMING 25% SHRINKAGE

COMPACTING IN CUT

SHEET NO.	ROADWAY	STATION	STATION	LOC	COMPACTING IN CUT STA.	REMARKS
4-5	RAMP 1	81+68	88+97	LT/RT	7.29	
5-6	RAMP 1	91+30	94+35	LT/RT	3.05	
				SUBTOTAL	10.34	
				PAY TOTAL	10.3	

EROSION CONTROL

SHEET NO.	ROADWAY	STATION	STATION	LOC	SEDIMENT TRAP EXCAVATION C.Y.	SEDIMENT TRAP ROCK C.Y.	ALTERNATE DITCH CHECK L.F	TYPE 1D EROSION CONTROL BLANKET S.Y.	SILT FENCE L.F.	SEDIMENT REMOVAL C.Y.	REMARKS
15	RAMP 1	81+00		LT			18			1.0	
15	RAMP 1	81+12	90+31	LT					985	9.9	
15	RAMP 1	85+43	85+93	RT					95	1.0	
15	RAMP 1	85+96		RT	3.56	4.74				5.0	
15	RAMP 1	86+02	88+45	RT					325	3.3	
15	RAMP 1	88+46		RT	3.56	4.74				5.0	
15	RAMP 1	88+48	89+00	RT				241.9			
15	RAMP 1	88+75	90+27	LT				191.4			
15	RAMP 1	90+17	91+87	RT					180	1.8	
15	RAMP 1	90+21	91+41	RT				143.9			
15	RAMP 1	91+67	91+88	RT				38.9			
15	RAMP 1	91+75	92+01	LT					35	0.4	
15	RAMP 1	91+90		RT	3.56	4.74				5.0	
15	RAMP 1	91+94	92+09	RT					140	1.4	
15	RAMP 1	91+94	92+63	RT				124.1			
15	RAMP 1	93+12		RT	3.56	4.74				5.0	
15	RAMP 1	93+15	93+54	RT					55	0.6	
15	PERSHALL	267+82	270+18	LT			27			3.0	
15	PERSHALL	268+86	270+70	RT			27			3.0	
15	PERSHALL	271+99	273+71	RT			81			6.0	
2	RAMP 1	81+23	88+73	LT/RT				1666.7			
2	RAMP 1	91+41	94+34	LT/RT				651.1			
				SUBTOTAL	14.2	19.0	153.0	3058.0	1815.0	51.4	
				PAY TOTAL	14.2	19.0	153	3058	1815	51	

STATE OF MISSOURI
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Paul J. Kronlage
12/03/2024 9:54:13 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	11/13/2024
ROUTE: I-170	STATE: MO
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SHEET 2 OF 4

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12/03/2024 6:35:40 AM
Paul J. Kronlage - Civil
MO PE - 023328

CONCRETE TRAFFIC BARRIER

SHEET NO.	ROADWAY	STATION	STATION	LOC	CONCRETE TRAFFIC BARRIER, TYPE E	LINEAR GRADING CLASS 1	REMARKS
					L.F.	STA.	
5	PERSHALL	268+84	269+64	RT	83.0	0.80	
6	PERSHALL	271+79	274+05	RT	234.0	2.26	
				SUBTOTAL	317.0	3.06	
				PAY TOTAL	317	3.1	

GUARDRAIL

SHEET NO.	ROADWAY	STATION	STATION	LOC	MGS GUARDRAIL	MGS GUARDRAIL 8-FT POSTS	MGS BRIDGE APPROACH TRANSITION SECTION (EXTENDED CURB)	MGS BRIDGE APPROACH TRANSITION SECTION (REGULAR/NO CURB)	MGS HEIGHT AND BLOCK TRANSITION	MGS END ANCHOR	TYPE A CRASHWORTHY END TERMINAL (MASH)	SHAPING SLOPES CLASS III	REMARKS
					L.F.	L.F.	EA.	EA.	EA.	EA.	EA.	100 L.F.	
4	RAMP 1	80+73	81+97	LT	75.0						1	1.0	
4	RAMP 1	81+97	82+70	LT		75.0							
4-5	RAMP 1	82+70	89+12	LT	625.0			1				0.4	
4-5	RAMP 1	85+45	88+73	RT	262.5		1		1			0.4	
5-6	RAMP 1	91+41		RT		475.0	1			1		0.7	BEYOND STATION LIMITS
				SUBTOTAL	962.5	550.0	2	1	1	1	1	2.5	
				PAY TOTAL	963	550	2	1	1	1	1	3	

CHAIN LINK FENCE

SHEET NO.	ROADWAY	STATION	STATION	LOC	60 IN. CHAIN LINK FENCE	REMARKS
					L.F.	
5	PERSHALL	267+87	270+05	LT	210.0	
				SUBTOTAL	210.0	
				PAY TOTAL	210	

PAVED DITCH

SHEET NO.	ROADWAY	STATION	STATION	LOC	PAVED DITCH	REMARKS
					S.Y.	
6	PERSHALL	271+79	273+92	RT	91.11	
				SUBTOTAL	91.11	
				PAY TOTAL	91.1	

PERMANENT PAVEMENT MARKING

SHEET NO.	ROADWAY	STATION	STATION	LOC	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT TYPE L BEADS 6 IN. WHITE	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT TYPE L BEADS 6 IN. YELLOW	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT TYPE L BEADS 12 IN. WHITE	PAVEMENT MARKING REMOVAL	REMARKS
					L.F.	L.F.	L.F.	L.F.	
17	RAMP 1	80+25	95+23	BL/LT	1498				
17	RAMP 1	80+25	92+83	LT		1275			
17	RAMP 1	92+05	92+85	LT	82				RAMP 3 SHOULDER
17	RAMP 1	92+83	95+23	LT			237		RAMP 1 GORE LINE
17	RAMP 1	92+85	95+23	LT			236		RAMP 3 GORE LINE
17	RAMP 1	80+25	85+74	BL/LT				1098	
17	RAMP 1	92+05	93+09	LT				104	
17	RAMP 1	93+09	95+23	LT/RT				1284	12" MARKING PAID 3 TIMES
				SUBTOTAL	1580	1275	473	2486	
				PAY TOTAL	1580	1275	473	2486	

DATE PREPARED 11/26/2024
ROUTE I-170 | STATE MO
DISTRICT SL | SHEET NO. 3
COUNTY ST. LOUIS
JOB NO. J6I3624B
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
DESCRIPTION
DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

SUMMARY OF QUANTITIES
SHEET 3 OF 4

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT)
WO1-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT)
WO1-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
WO3-4	48X48	16.00						BE PREPARED TO STOP
WO3-5	48X48	16.00						SPEED LIMIT AHEAD
WO4-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
WO4-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
WO4-1aL	48X48	16.00	2	32			6a	MERGE (LEFT)
WO4-1aR	48X48	16.00						MERGE (RIGHT)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL / LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17L	48X48	16.00						SHOULDER DROP-OFF (SYMBOL LEFT)
WO8-17R	48X48	16.00						SHOULDER DROP-OFF (SYMBOL RIGHT)
WO8-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
WO12-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
WO12-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
WO12-2x	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00	7	112			2	ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	5	80			18	DETOUR AHEAD
WO20-3	48X48	16.00	7	112			20	ROAD/RAMP CLOSED AHEAD
WO20-4	48X48	16.00	2	32			7	ONE LANE ROAD AHEAD
WO20-5	48X48	16.00	2	32			5	RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00	2	32			6	RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00	2	32			8	FLAGGER (SYMBOL)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK / SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
GO22-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00	1	12			69	EXIT CLOSED
GO20-1	60X24	10.00						ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00						END ROAD WORK
GO20-4	36X18	4.50						PILOT CAR FOLLOW ME
GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
GO20-5aP	36X24	6.00						WORK ZONE (PLAQUE)
MO4-8	24X9	1.5	7	10.5			50A	DETOUR (PLAQUE)
MO4-8a	24X18	3.00	4	12			61	END DETOUR
MO4-9L	48X36	12.00	3	36			50	DETOUR (LEFT)
MO4-9R	48X36	12.00	4	48			51	DETOUR (RIGHT)
MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)
MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00						SPEED LIMIT 50/60
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00						DO NOT PASS
R4-2	36X48	12.00						PASS WITH CARE
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45^ ARROW)
R11-2	48X30	10.00	3	30			29	ROAD CLOSED
R11-3a	60X30	12.50	1	12.5			56	ROAD CLOSED 0.8 MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	1	12.5			55	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
M6-3	24X9	1.5	7	10.5			50A	DIRECTIONAL ARROW (STRAIGHT) (ORANGE / BLACK)
M5-1L	21X15	2.19	1	2.19			60A	ADVANCE TURN LEFT ARROW
M5-1R	21X15	2.19	1	2.19			60B	ADVANCE TURN RIGHT ARROW
SPECIAL	36X78	19.50	5	97.5			70A	EB I-270 TO SB I-170 ⇧***
SPECIAL	36X78	19.50	2	39			70B	EB I-270 TO SB I-170 ⇦***
SPECIAL	36X78	19.50	2	39			70C	EB I-270 TO SB I-170 ↰***
SPECIAL	36X78	19.50	1	19.5			70D	EB I-270 TO SB I-170 ↰***
SPECIAL	36X78	19.50	2	39			70E	EB I-270 TO SB I-170 ↱***
SPECIAL	36X78	19.50	3	58.5			70F	EB I-270 TO SB I-170 ⇖***
SPECIAL	36X78	19.50	2	39			70G	EB I-270 TO SB I-170 ⇗***
SPECIAL	24X84	14.00	6	84			80A	CLOSED***

	TOTAL
616-10.05 CONSTRUCTION SIGNS	1,068
616-10.10 RELOCATED SIGNS	0*

EFFECTIVE: 07-01-2024

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123001	1**	TRUCK MOUNTED ATTENUATOR (TMA)
6161008	4	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	75	CHANNELIZER (TRIM LINE)
6161030	24	TYPE III MOVEABLE BARRICADE
6161033	29	DIRECTION INDICATOR BARRICADE
6161040	2	FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	5**	CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D	30**	TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING
6169903	250**	TEMPORARY CONSTRUCTION FENCING - 48"

TEMPORARY TRAFFIC CONTROL = 1 LUMP SUM

ALL TRAFFIC CONTROL ITEMS ARE INCLUDED IN PAY ITEM 616-99.01, TEMPORARY TRAFFIC CONTROL, LUMP SUM, UNLESS NOTED OTHERWISE IN THE PLANS. THESE QUANTITIES ARE ONLY AN ESTIMATE AND ARE SUBJECT TO CHANGE ON FIELD CONDITIONS. TEMPORARY TRAFFIC CONTROL SHOULD FOLLOW MUTCD STANDARDS. ALL WARNING SIGNS SHALL HAVE FLUORESCENT SHEETING.

DISCLAIMER

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* NO DIRECT PAYMENT WILL BE MADE FOR RELOCATING OR COVERING SIGNS OR DEVICES.

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

*** SEE TRAFFIC CONTROL PLANS FOR SPECIAL SIGN DETAILS.

SUMMARY OF QUANTITIES
SHEET 4 OF 4
J6I3624B

STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

DATE PREPARED 11/21/24

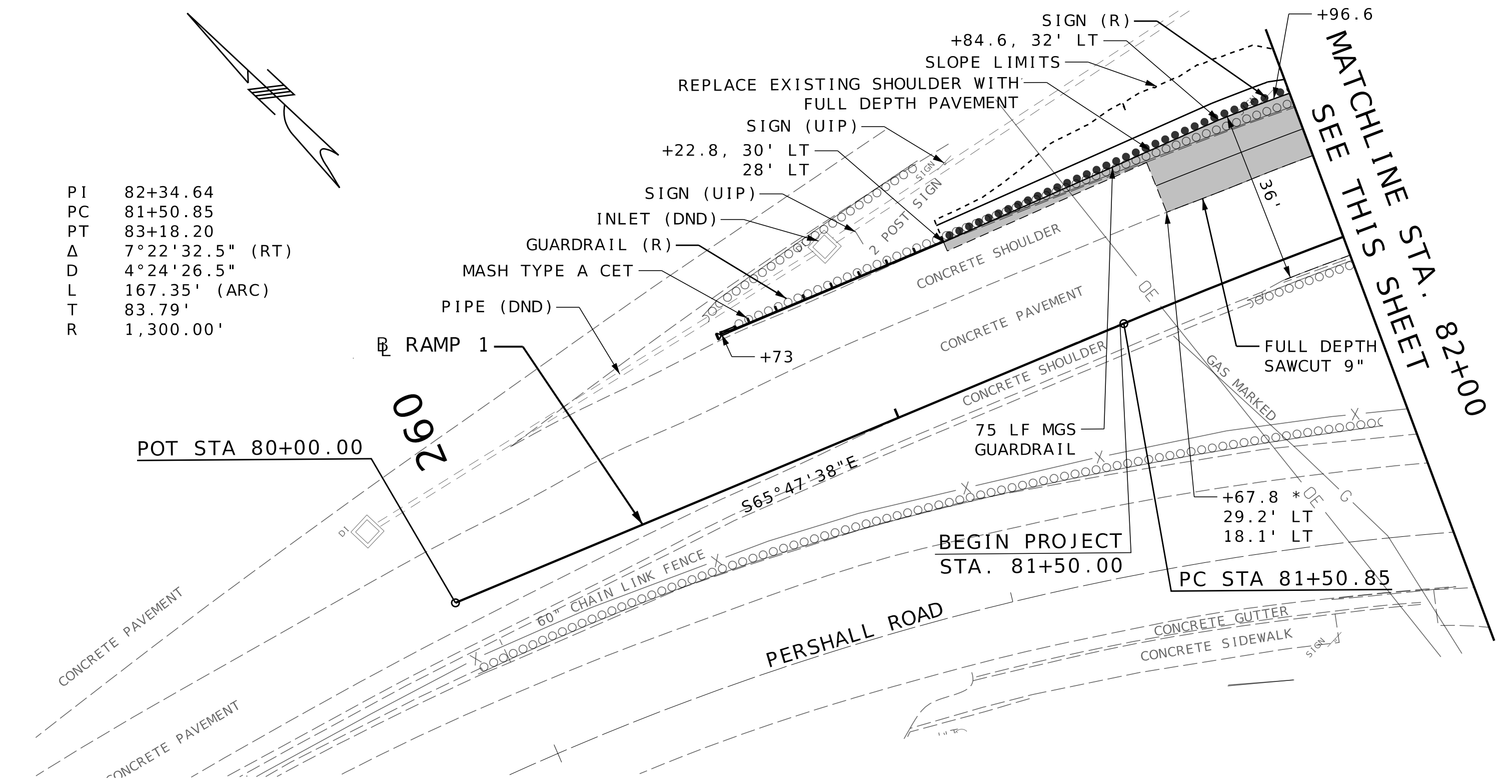
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	3

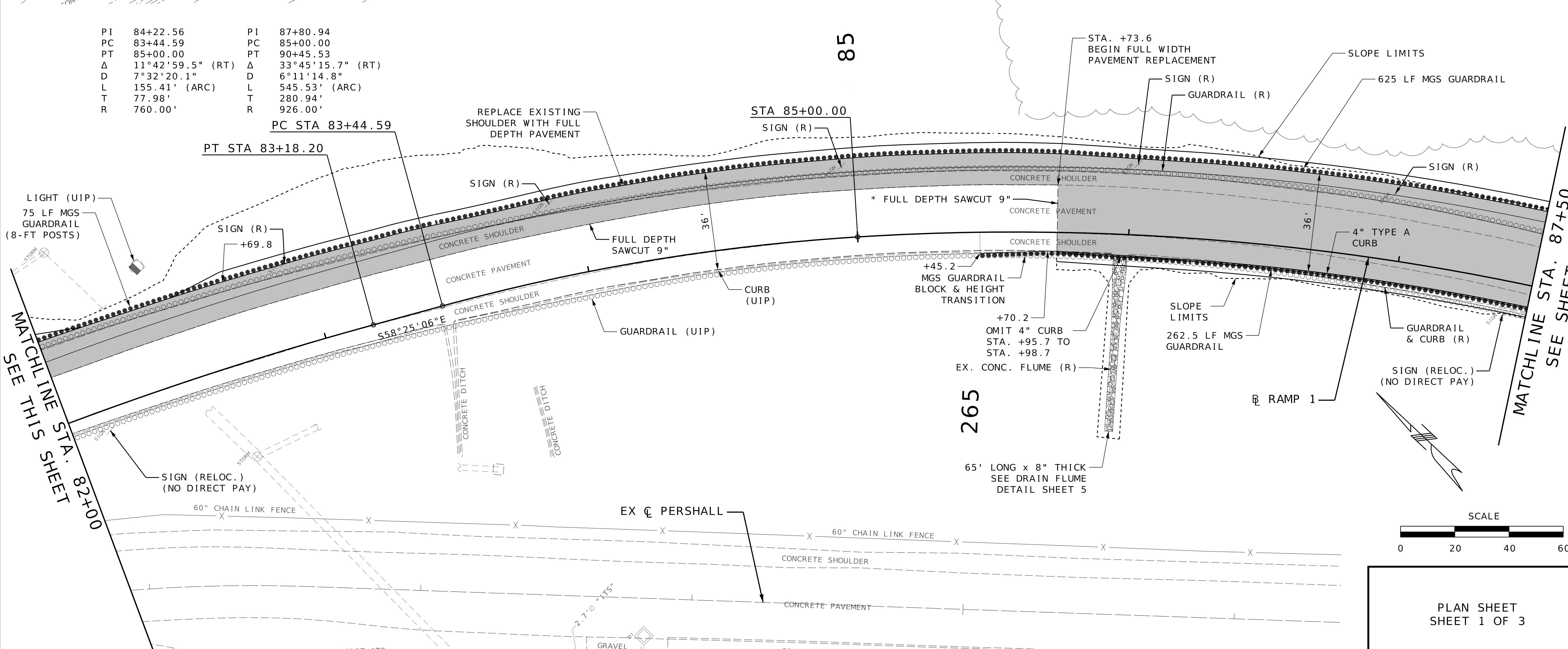
COUNTY ST. LOUIS
JOB NO. J6I3624B
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION
DATE

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

Jacobs
Missouri Certificate of Authority: 000704





NOTES:

1. 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.
2. ALL BEARINGS BASED ON MISSOURI STATE PLANE EAST ZONE.
3. NO DIRECT PAY FOR CLEARING AND GRUBBING.

* SAWCUT SHALL BE MADE AT NEAREST JOINT AS LOCATED IN THE FIELD.

PROPOSED PAVEMENT

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

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/25/2024 9:55:55 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	
10/25/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	4
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

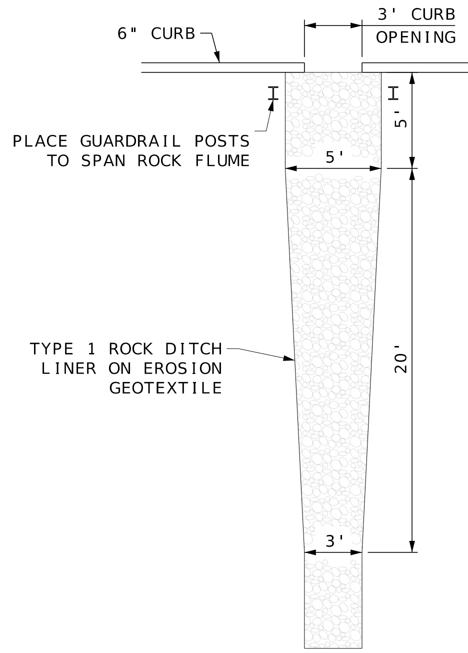
DESCRIPTION	DATE

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

MoDOT

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

PLAN SHEET
SHEET 1 OF 3



DRAIN FLUME DETAIL

NOT TO SCALE

NOTES:

* SAWCUT SHALL BE MADE AT NEAREST JOINT AS LOCATED IN THE FIELD.

DISCLAIMER

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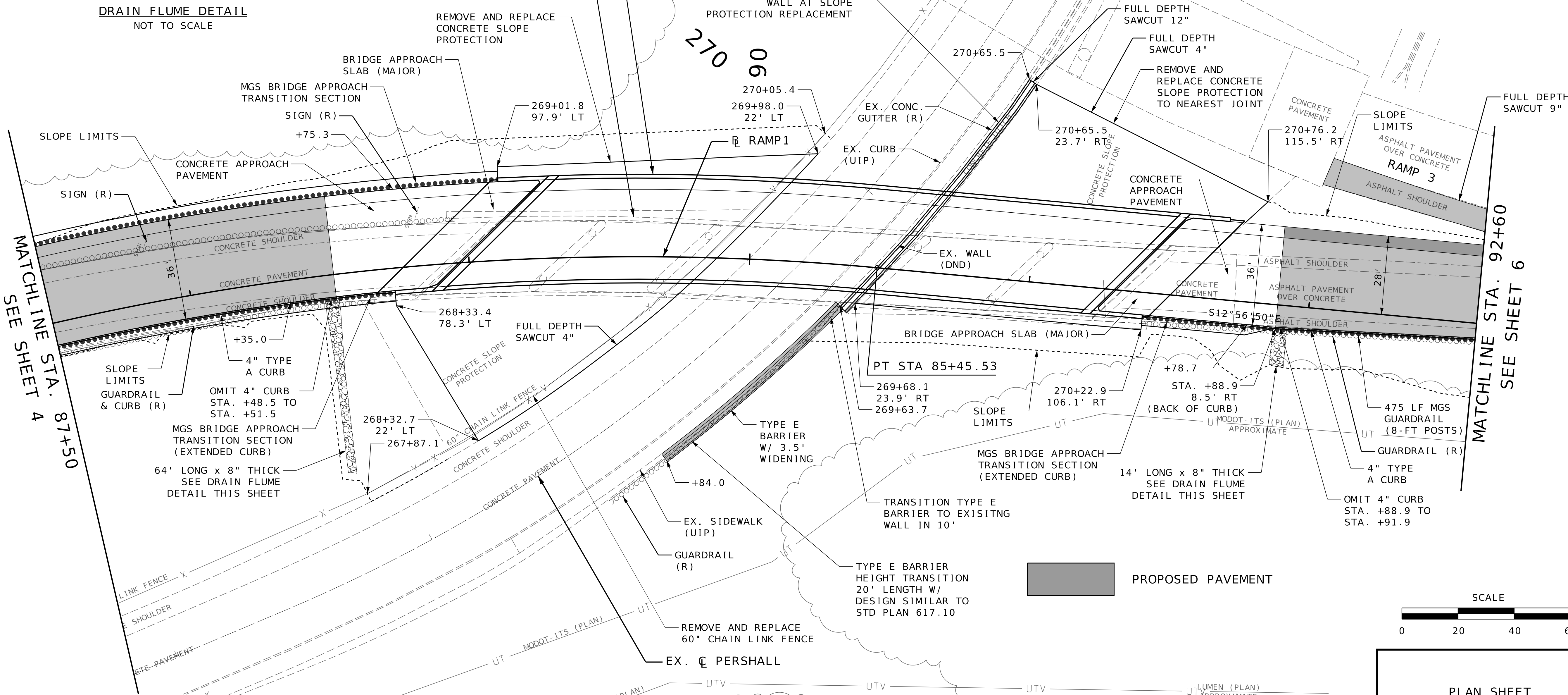

PAUL JOSEPH KRONLAGE NUMBER EN 023328 STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER

10/25/2024 8:53:41 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	5
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION | DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
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PLAN SHEET
SHEET 2 OF 3

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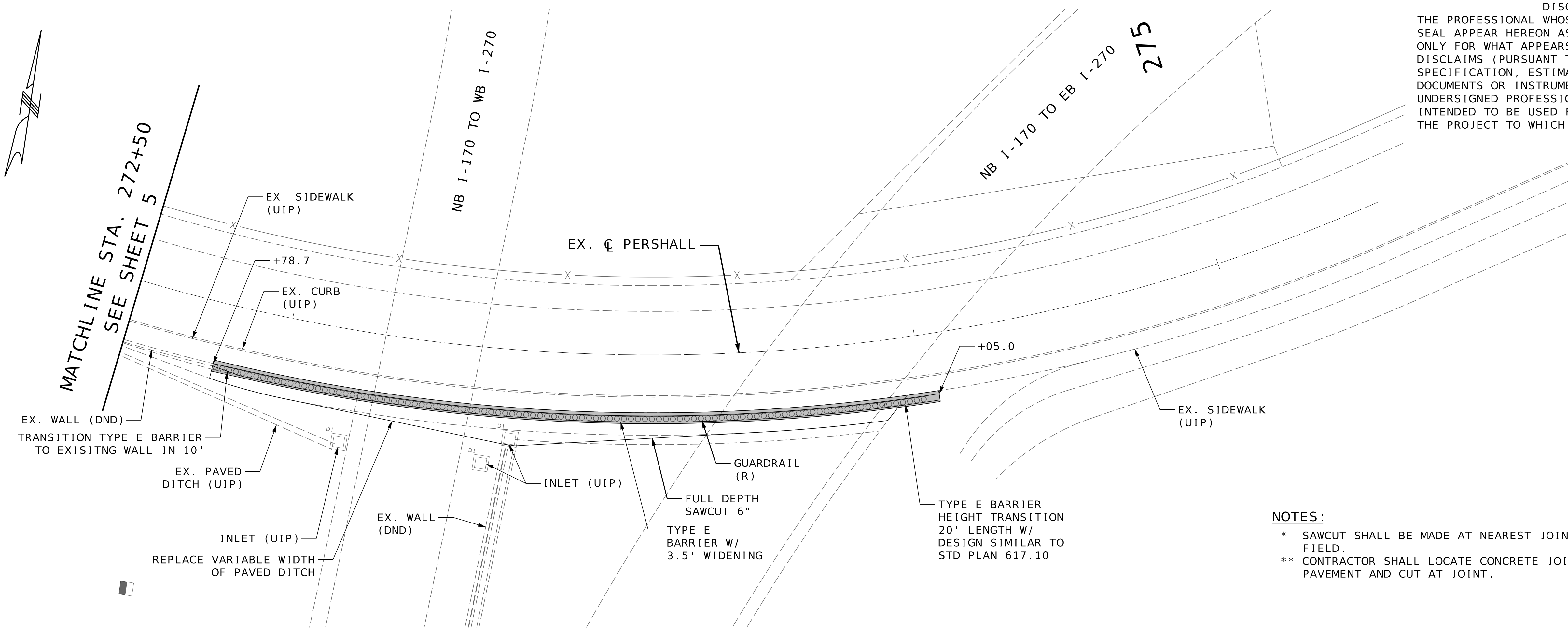
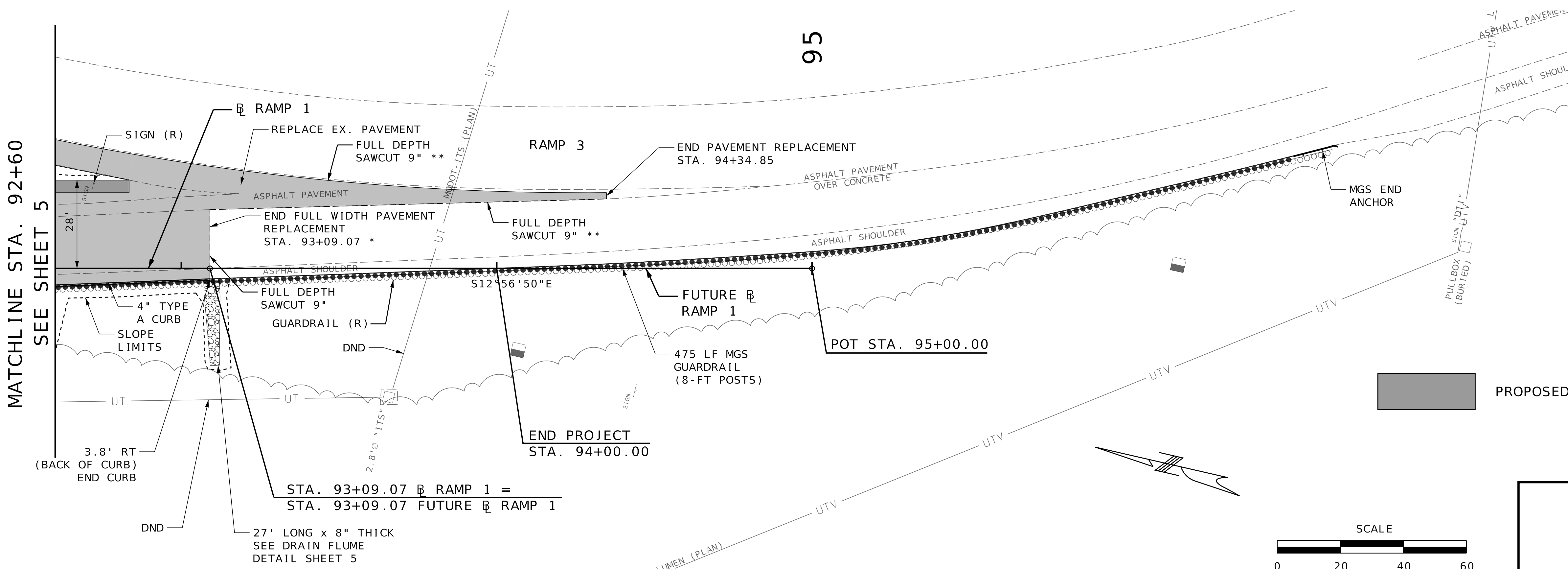


NOTES:

* SAWCUT SHALL BE MADE AT NEAREST JOINT AS LOCATED IN THE FIELD.

** CONTRACTOR SHALL LOCATE CONCRETE JOINT UNDER ASPHALT PAVEMENT AND CUT AT JOINT.



PLAN SHEET
SHEET 3 OF 3

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/25/2024 8:54:55 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	6
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

DISCLAIMER

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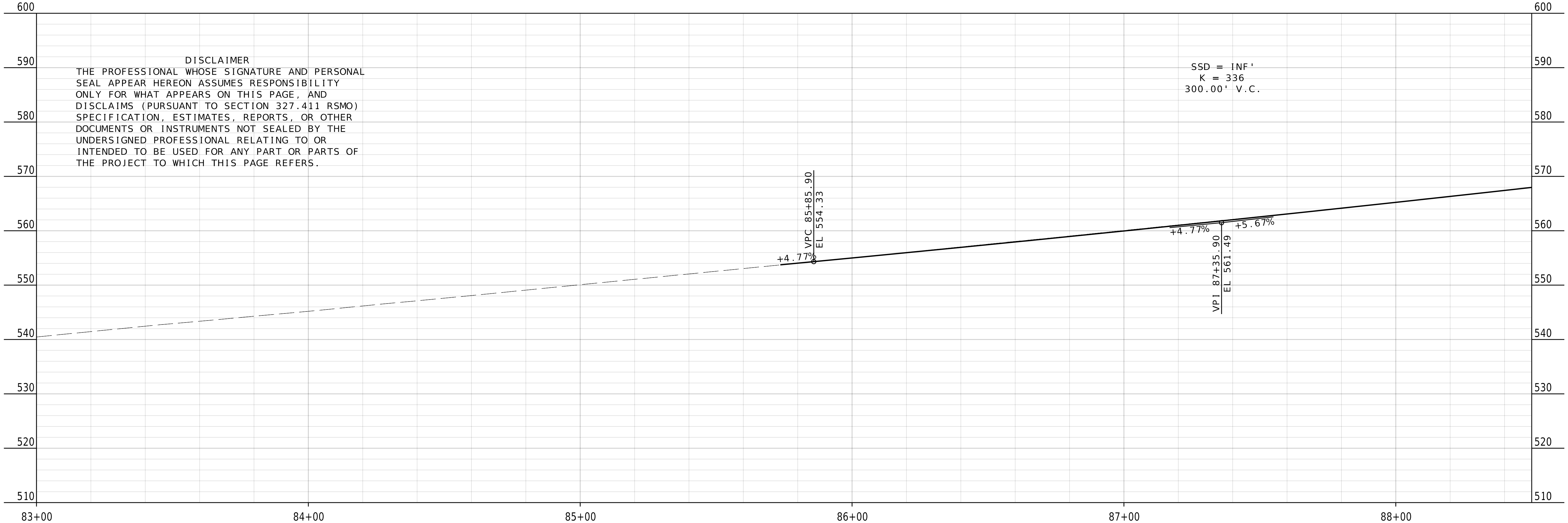

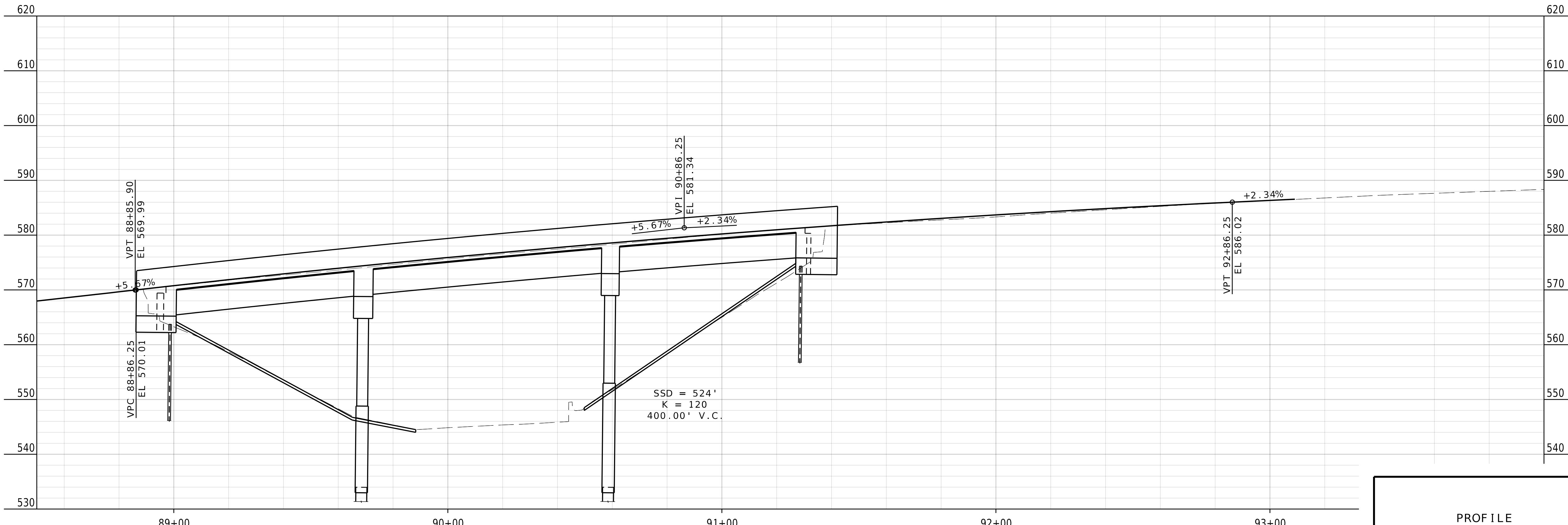

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER
EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/25/2024 8:55:18 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	
10/24/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	7
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
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Phone 314-394-3100
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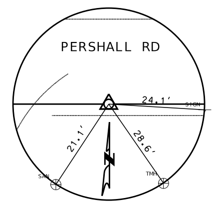
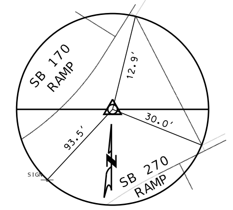
Missouri Certificate of Authority: 001578

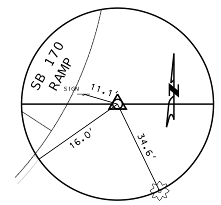
PROFILE
SHEET 1 OF 1



CONTROL POINT NO. 1
CROSS
N:1071489.121
E:864906.410
EL: 531.72



CONTROL POINT NO. 2
IRON ROD W/CAP
N:1070772.046
E:865551.652
EL: 583.21



CONTROL POINT NO. 3
IRON ROD W/CAP
N: 1071061.484
E: 865482.060
EL: 568.53

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STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/25/2024 8:55:34 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	8
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

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 MULTIPY 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 (GROUND)
HORIZONTAL DATUM	NAD 83 (2011) EPOCH 2010.0
VERTICAL DATUM	NAVD 1988: GNSS DERIVED
GEOID MODEL	GEOID 18 (CONUS)
ELEVATIONS DETERMINED BY	GNSS OBSERVATIONS
PROJECT PROJECTION FACTOR	1.00008780

REFERENCE CONTROL INFORMATION

COORDINATE SYSTEM	MISSOURI COORD. SYSTEM OF 1983
CONTROL STATION	MISSOURI CORS
DESIGNATION	MODOT BELLEFONT CORS ARP
CORS_ID	MOBL
PID	DM3511
LATITUDE	38°45'53.88149 N
LONGITUDE	90°14'43.15784 W
NORTHING (M)	325371.5670
EASTING (M)	272133.2140
ZONE	SPC MO E
PROJECT AVERAGE GRID FACTOR	0.99991221

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 #1
N 1071489.121 X 0.99991221 = N 1071395.055
E 864906.410 X 0.99991221 = E 864830.4799

LINEAR UNIT CONVERSION

1 METER = 3.280833333 US SURVEY FEET (USFT)

COORDINATE POINT LISTING

SHEET NO	STATION	LOCATION	OFFSET (USFT)	MODIFIED STATE PLANE (GROUND) NORTHING (US SURVEY FT)	EASTING (US SURVEY FT)	ELEVATION (US SURVEY FT)	DESCRIPTION	GPK POINT ID
PROJECT CONTROL POINTS								
4	81+42.93	PERSHALL	71.04' RT.	1071489.1210	864906.4100	531.72	CROSS	1
5	88+85.54	RAMP 1	29.87' LT.	1071061.4840	865482.0600	568.53	IRON ROD W/CAP - RAMP 3	3
5	91+78.87	RAMP 1	18.61' LT.	1070772.0460	865551.6520	583.21	IRON ROD W/CAP - RAMP 3	2
ALIGNMENTS								
4	80+00.00	RAMP 1	BL	1071612.5153	864805.1786		START	
4	81+50.00	RAMP 1	BL	1071551.0136	864941.9871		BEGIN PROJECT	
4	81+50.85	RAMP 1	BL	1071550.6650	864942.7625		PC	
4	83+18.20	RAMP 1	BL	1071472.4269	865090.5663		PT	
4	83+44.59	RAMP 1	BL	1071458.6079	865113.0447		PC	
4	85+00.00	RAMP 1	BL	1071364.2915	865236.2269		PCC	
5	90+45.53	RAMP 1	BL	1070897.8302	865503.6366		PT	
6	93+09.07	RAMP 1	BL	1070640.9900	865562.6900		PI - BL/FUTURE BL	
6	94+00.00	RAMP 1	BL	1070552.3716	865583.0575		END PROJECT - FUTURE BL	
6	95+00.00	RAMP 1	BL	1070454.9139	865605.4630		END - FUTURE BL	
4	258+00.00	PERSHALL	CL	1071623.8066	864603.6563		START	
4	258+34.05	PERSHALL	CL	1071619.4849	864637.4310		PC	
4	262+58.52	PERSHALL	CL	1071424.0502	865003.7801		PT	
5	267+42.30	PERSHALL	CL	1071059.6873	865322.0268		PC	
6	275+54.86	PERSHALL	CL	1070950.8639	866060.6740		PT/END	

DESCRIPTION	DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REFERENCE AND
COORDINATE POINTS
SHEET 1 OF 1

RAMP 1
SCS PI STA 87+02.31
SCS TOTAL Δ 45°28'15.2"
PC 83+44.59
PT 85+00.00
Δ 11°42'59.5" (RT)
D 7°32'20.1"
L 155.41' (ARC)
T 77.98'
R 760.00'

RAMP 1		RAMP 1		RAMP 1	
PI	82+34.64	PI	84+22.56	PI	87+80.94
PC	81+50.85	PC	83+44.59	PC	85+00.00
PT	83+18.20	PT	85+00.00	PT	90+45.53
Δ	7°22'32.5" (RT)	Δ	11°42'59.5" (RT)	Δ	33°45'15.7" (RT)
D	4°24'26.5"	D	7°32'20.1"	D	6°11'14.8"
L	167.35' (ARC)	L	155.41' (ARC)	L	545.53' (ARC)
T	83.79'	T	77.98'	T	280.94'
R	1,300.00'	R	760.00'	R	926.00'

PERSHALL		PERSHALL	
PI	260+56.11	PI	272+33.12
PC	258+34.05	PC	267+42.30
PT	262+58.52	PT	275+54.86
Δ	41°34'23.2" (RT)	Δ	80°58'4.6" (LT)
D	9°47'38.9"	D	9°57'52.1"
L	424.47' (ARC)	L	812.57' (ARC)
T	222.06'	T	490.82'
R	585.00'	R	575.00'

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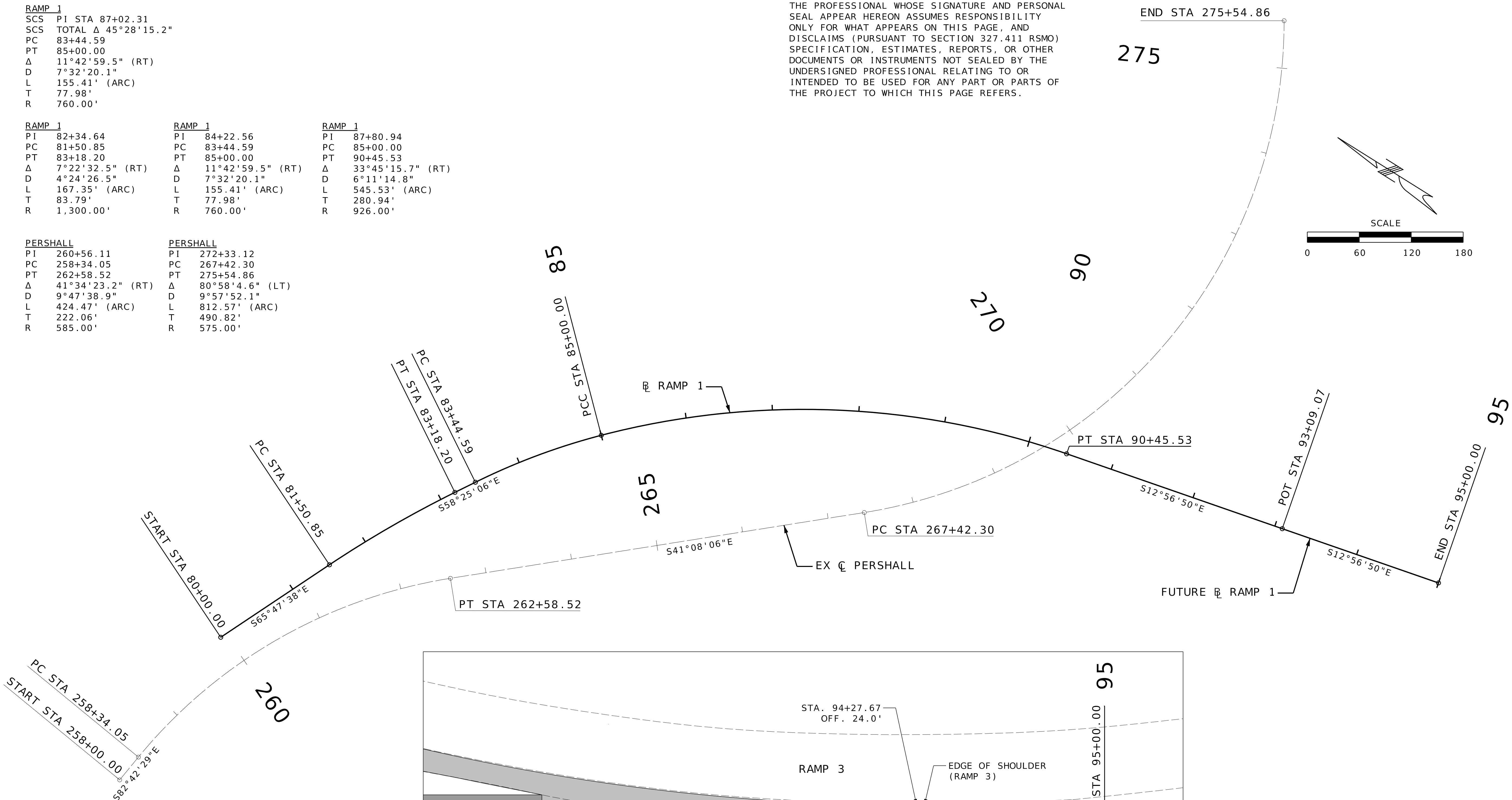

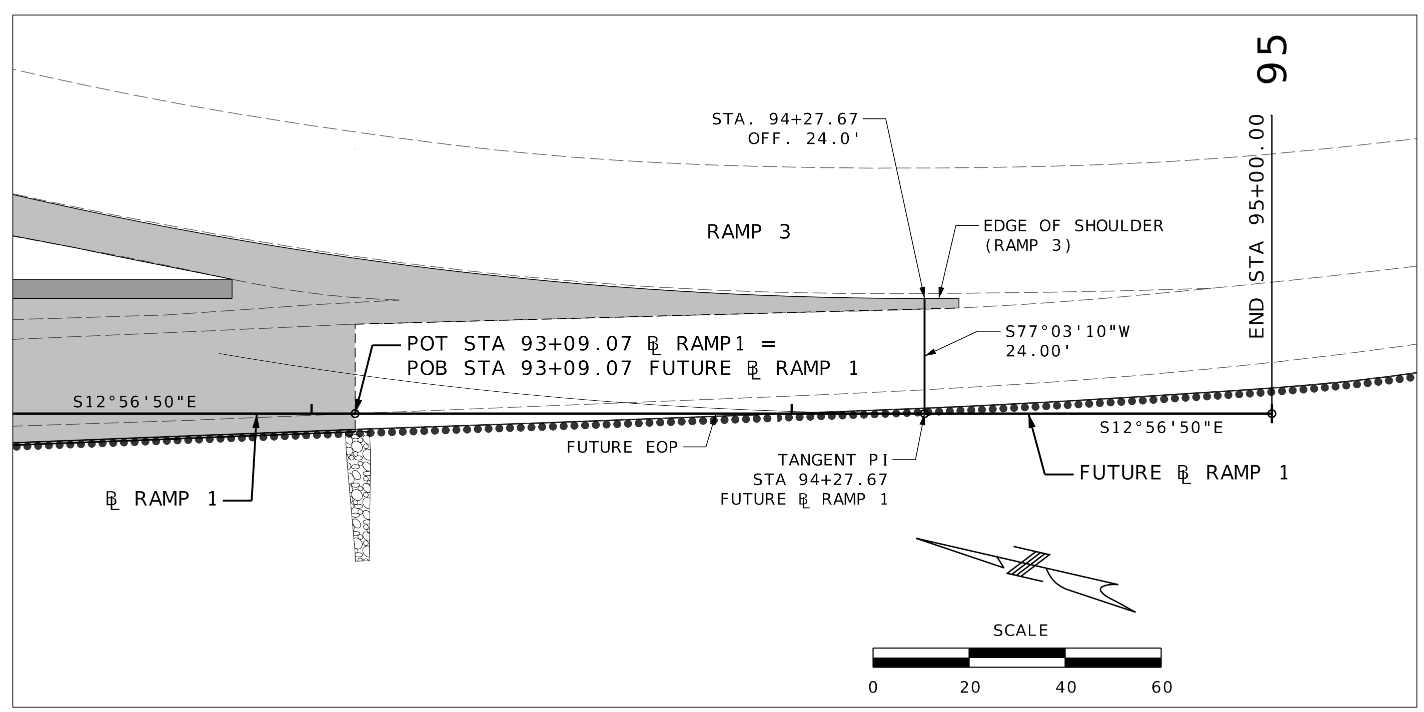

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER
10/25/2024 8:55:55 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	
10/24/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	9
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

SPECIAL SHEET
ALIGNMENT
SHEET 1 OF 1

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STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

DATE PREPARED	
10/25/24	
ROUTE: I-170	STATE: MO
DISTRICT: SL	SHEET NO.: 10
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

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

TRAFFIC CONTROL LEGEND

• SIGN (SINGLE SIDED)

SCALE
0 200 400 600 800 1000

TRAFFIC CONTROL
SOUTHBOUND I-170
RAMP 1 CLOSED
DETOUR PLAN
SHEET 1 OF 6
J6I3624B

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

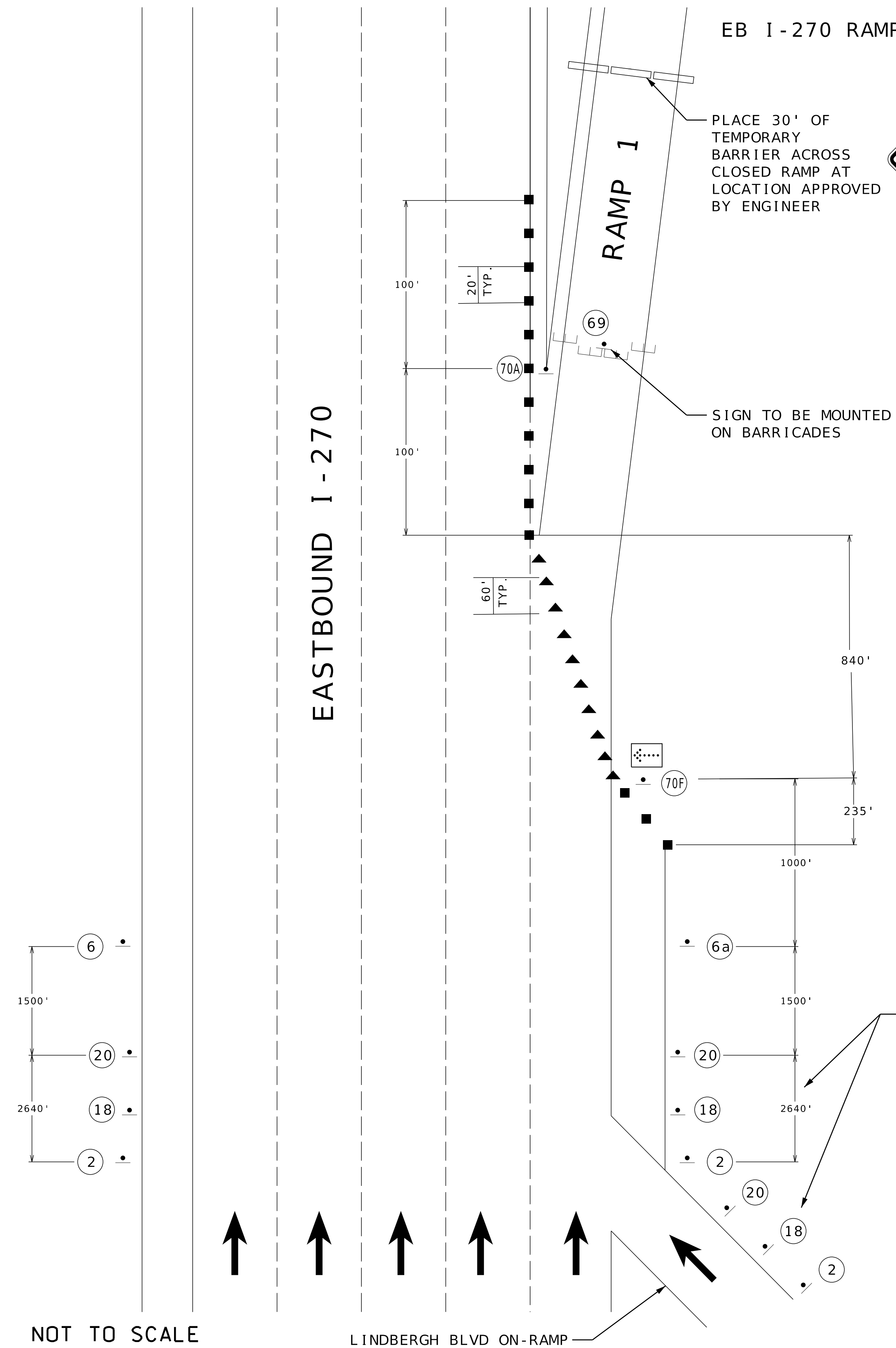
MoDOT

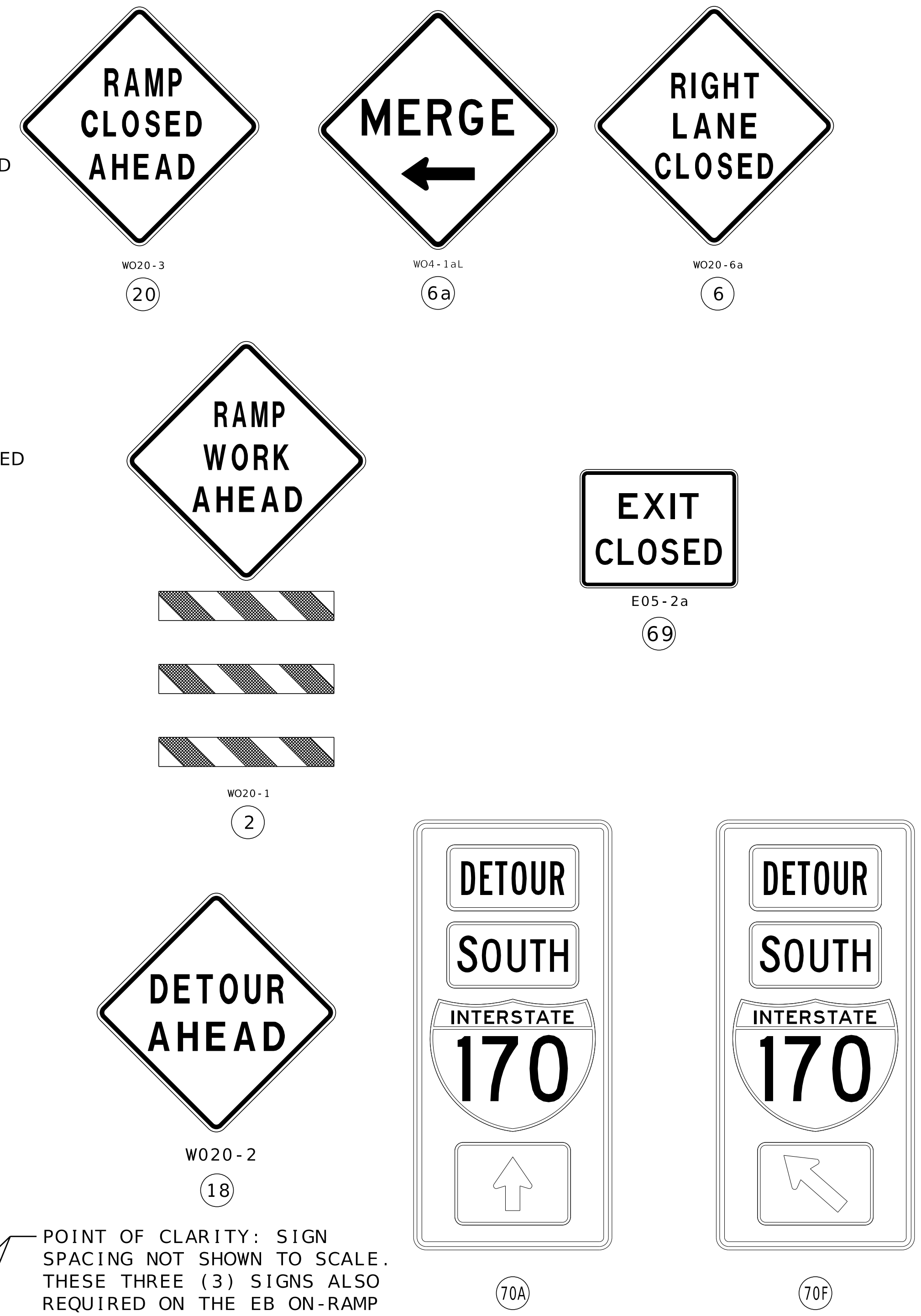
Jacobs

Missouri Certificate of Authority: 000704

pw://efkmoen-pw.bentley.com:efkmoen-pw-01/Documents/Projects/MoDOT-ORD2021R2/22038.20 I-170 PMC J6I3624 Jacobs EB I-270/500-DGN/10-Roadway/2-Final(See 22038.10)/D-Plotsheets/010_TC_01_J6I3624B_i400_Ramp1Closure.dgn 01:53 25-OCT-2024

EB I-270 RAMP 1 CLOSURE TO SB I-170





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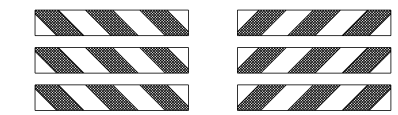
ADVANCE WARNING RAIL SYSTEM (AWRS)



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- ADVANCED WARNING RAIL SYSTEM
- CHANNELIZER (TRIM LINE)
- DIRECTIONAL INDICATOR BARRICADE W/ SEQUENTIAL FLASHING WARNING LIGHTS
- FLASHING ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- WORK ZONE
- IMPACT ATTENUATOR (SAND BARREL ARRAY)
- BARRIER
- MOVABLE BARRICADE
- TEMPORARY LONG-TERM RUMBLE STRIPS

NOTES:

1. SEE TRAFFIC CONTROL SHEET 1 OF 6 FOR EB I-270 TO SB I-170 DETOUR.
2. CONTRACTOR SHALL HAVE ONE HUNDRED TWENTY (120) DAYS TO CLOSE, COMPLETE WORK, AND REOPEN RAMP 1.
3. ANY EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED. SEE TRAFFIC CONTROL SHEET 3 OF 6 FOR MORE INFORMATION ON GUIDANCE SIGNS.
4. PLACEMENT OF TRAFFIC CONTROL SIGNS ARE APPROXIMATE AND MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
5. CMS MESSAGE AND LOCATIONS AS APPROVED BY THE ENGINEER.

TRAFFIC CONTROL
RAMP 1 CLOSURE
START AT I-270
SHEET 2 OF 6
J6I3624B

STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

DATE PREPARED	10/25/24
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	11
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

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

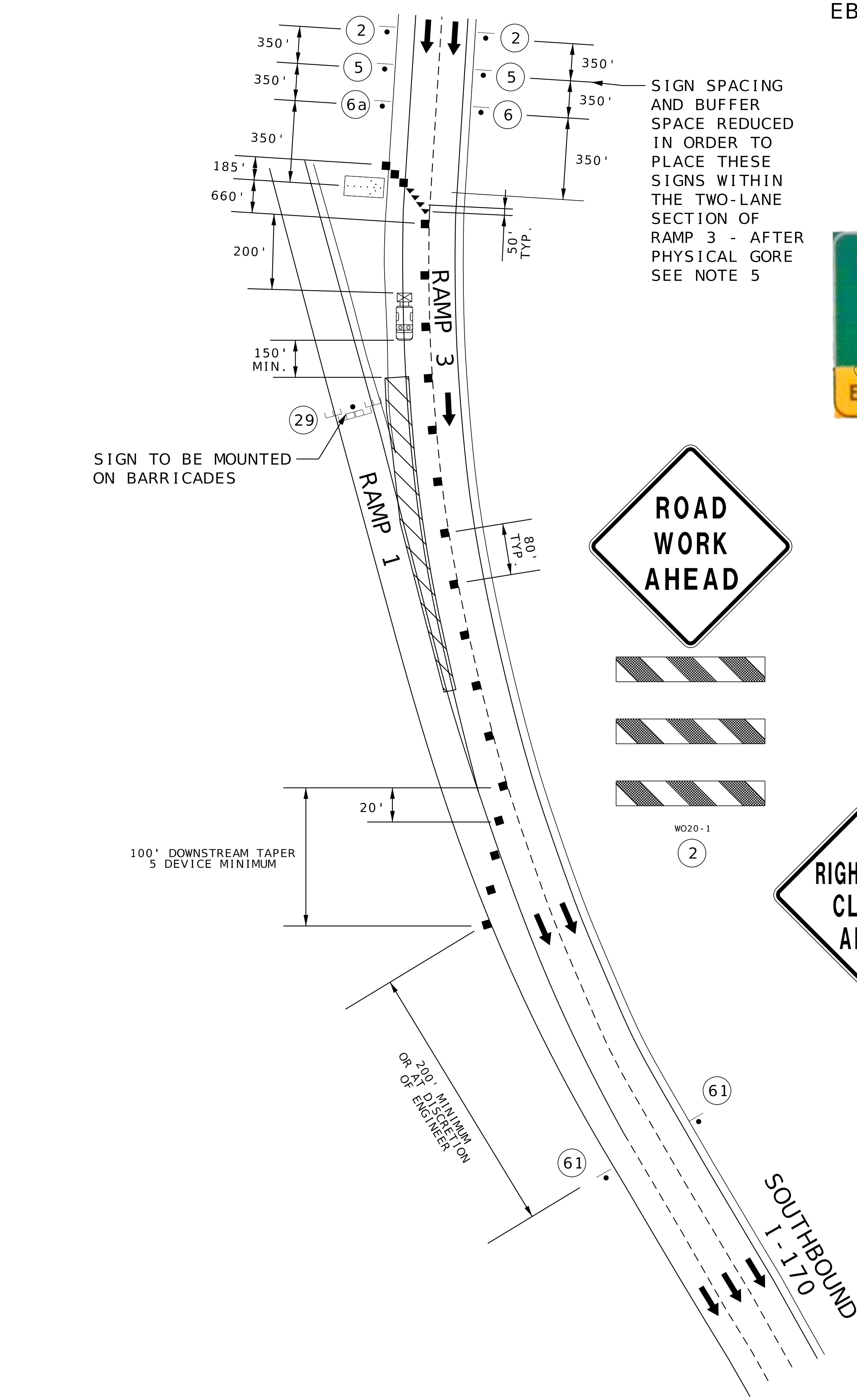
MoDOT

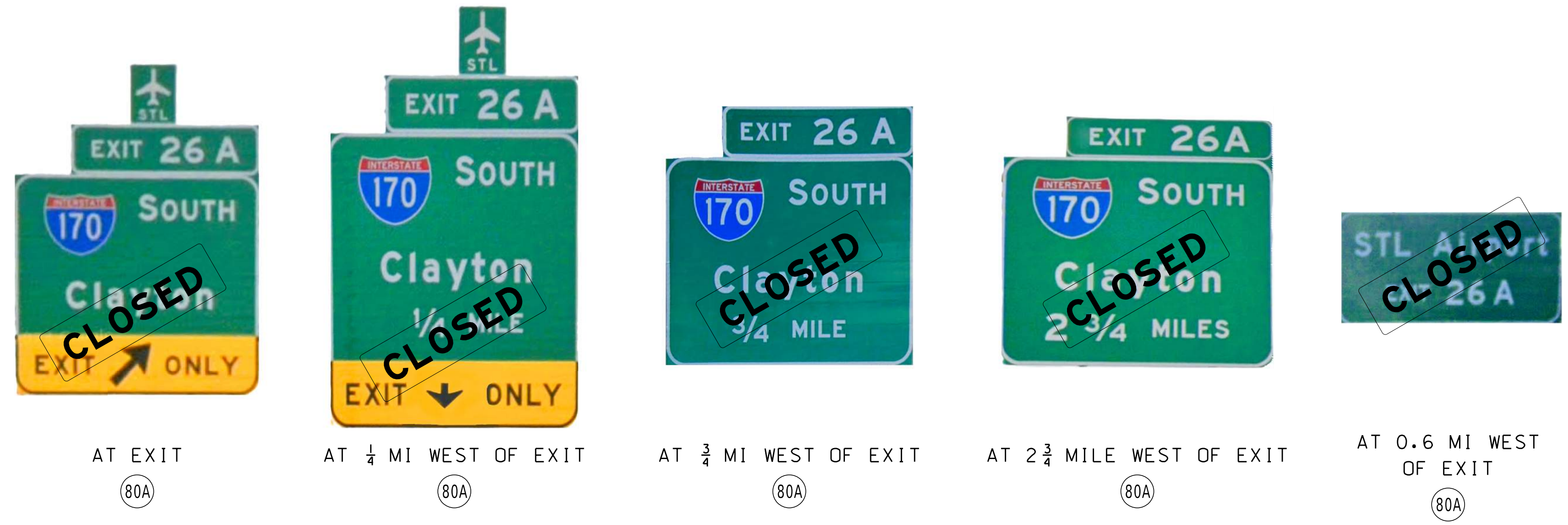
Jacobs

Missouri Certificate of Authority: 000704

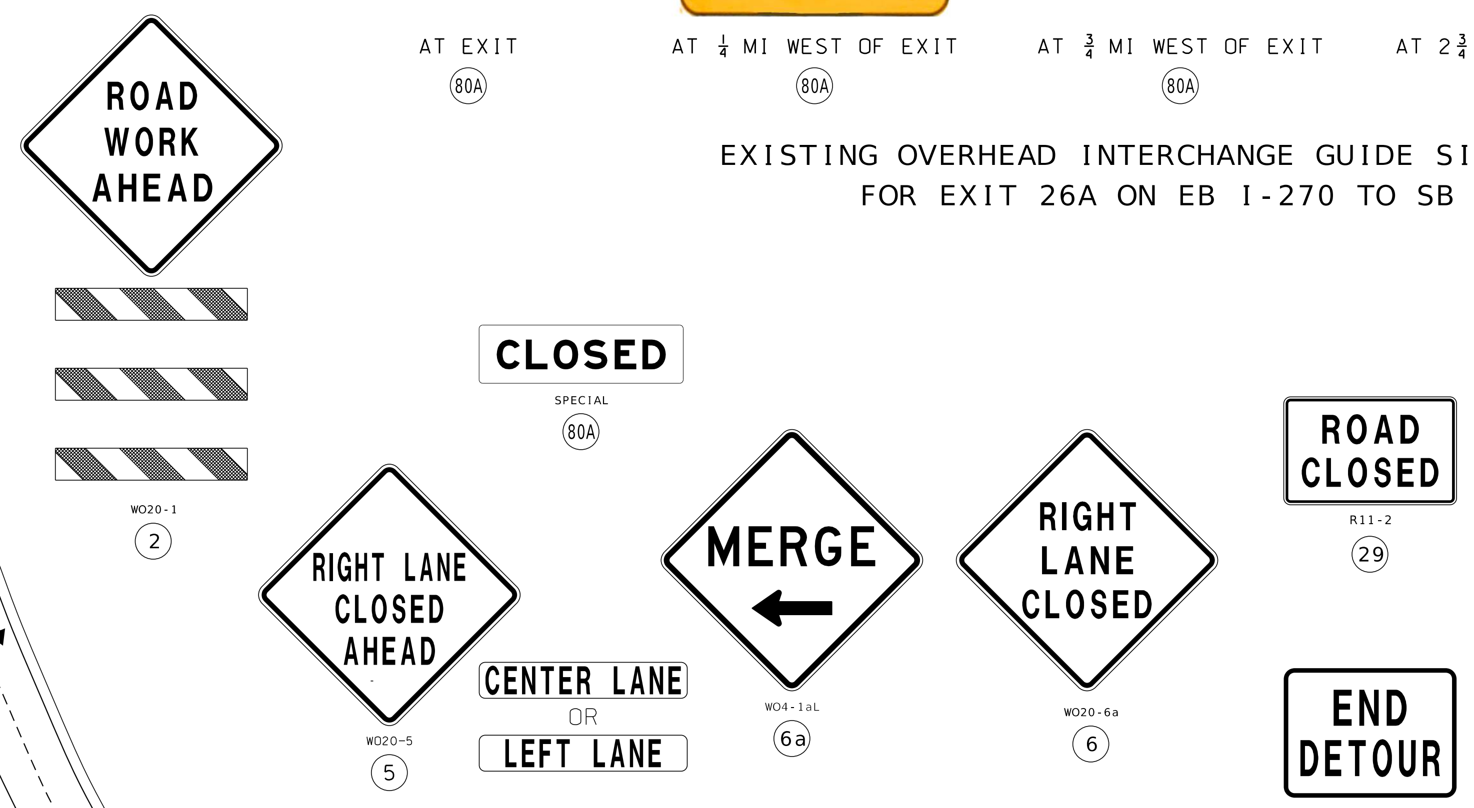
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

EB I-270 RAMP 1 CLOSURE TO SB I-170
EB I-270 RAMP 3 RIGHT LANE CLOSURE TO SB I-170 (WEEKEND CLOSURE)





EXISTING OVERHEAD INTERCHANGE GUIDE SIGN TREATMENT FOR EXIT 26A ON EB I-270 TO SB I-170



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- ADVANCED WARNING RAIL SYSTEM
- CHANNELIZER (TRIM LINE)
- DIRECTIONAL INDICATOR BARRICADE W/ SEQUENTIAL FLASHING WARNING LIGHTS
- FLASHING ARROW PANEL
- TRUCK MOUNTED ATTENUATOR
- WORK ZONE
- IMPACT ATTENUATOR (SAND BARREL ARRAY)
- BARRIER
- MOVABLE BARRICADE
- TEMPORARY LONG-TERM RUMBLE STRIPS

NOTES:

1. THIS TRAFFIC CONTROL CONFIGURATION WILL BE USED WHEN PROPOSED RAMP 1 PAVEMENT IMPROVEMENTS ARE COMPLETED ADJACENT TO THE RIGHT LANE OF RAMP 3.
2. CONTRACTOR SHALL COMPLETE ALL WORK REQUIRING RIGHT LANE OF RAMP 3 CLOSURE OVER A SINGLE WEEKEND BETWEEN 8PM FRIDAY AND 5AM MONDAY. A LANE CLOSURE ON RAMP 3 SHALL NOT BE PERMISSIBLE OUTSIDE OF THIS TIMEFRAME.
3. SEE TRAFFIC CONTROL SHEET 1 OF 6 FOR EB I-270 TO SB I-170 DETOUR.
4. ANY EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.
5. PLACEMENT OF TRAFFIC CONTROL SIGNS ARE APPROXIMATE AND MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
6. CMS MESSAGE AND LOCATIONS AS APPROVED BY THE ENGINEER.
7. "CLOSED" GUIDE SIGN PANEL COVERINGS SHALL BE APPROVED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE LUMP SUM TRAFFIC CONTROL. SEE TRAFFIC CONTROL SHEET 4 OF 6 FOR MORE INFORMATION. "CLOSED" GUIDE SIGN PANELS SHALL BE PLACED ON THE FIVE (5) SIGNS AS SHOWN ON THIS SHEET AND ONE (1) ADDITIONAL "CLOSED" SIGN PANEL INCLUDED IN QUANTITY TO COVER AN OVERHEAD BUTTERFLY TRUSS INTERCHANGE SEQUENCE SIGN AS NEEDED.

NOT TO SCALE

TRAFFIC CONTROL
RAMP 1 CLOSURE
END AT I-170
SHEET 3 OF 6
J6I3624B

STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

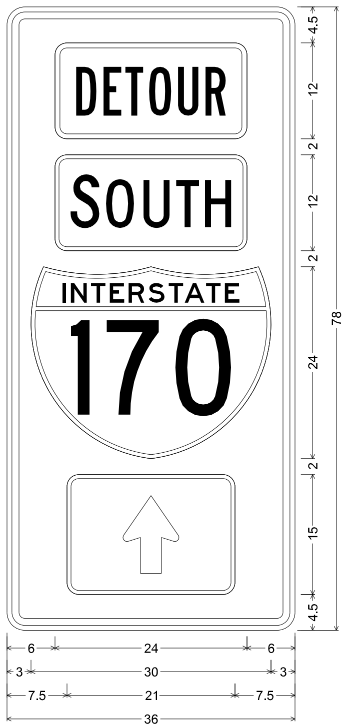
DATE PREPARED	10/25/24
ROUTE: I-170	STATE: MO
DISTRICT: SL	SHEET NO.: 12
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

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

Jacobs
Missouri Certificate of Authority: 000704

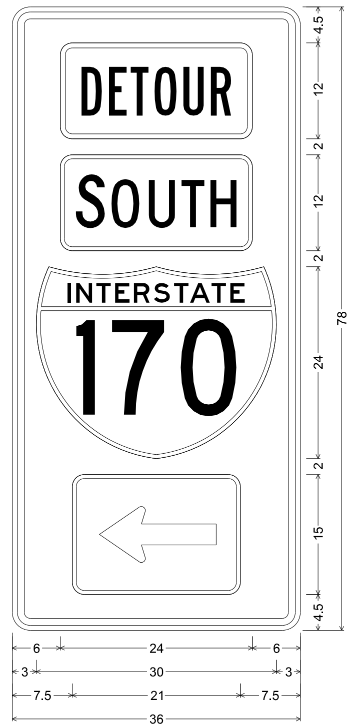
SIGN NO.	70A
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↑	7.500

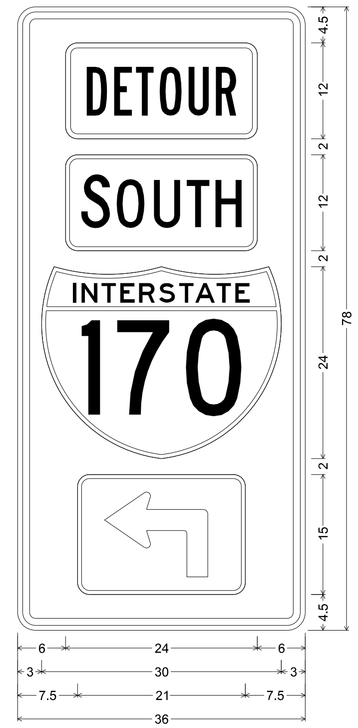
SIGN NO.	70B
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
←	7.500

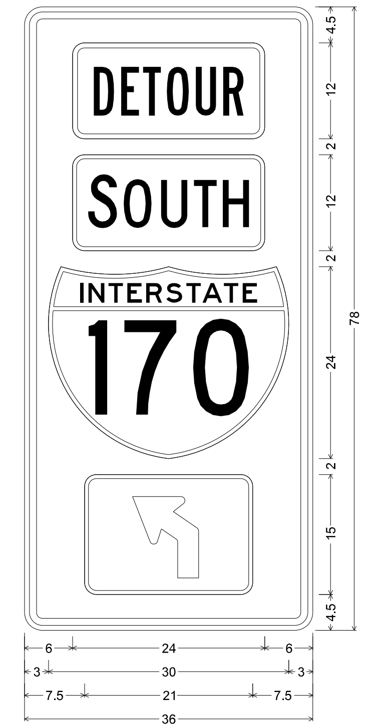
SIGN NO.	70C
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↰	7.500

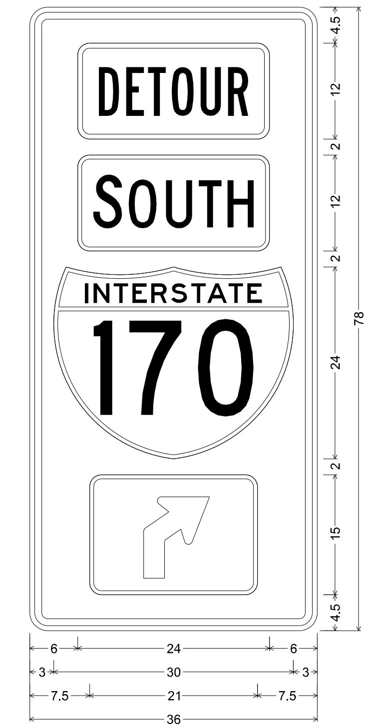
SIGN NO.	70D
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↖	7.500

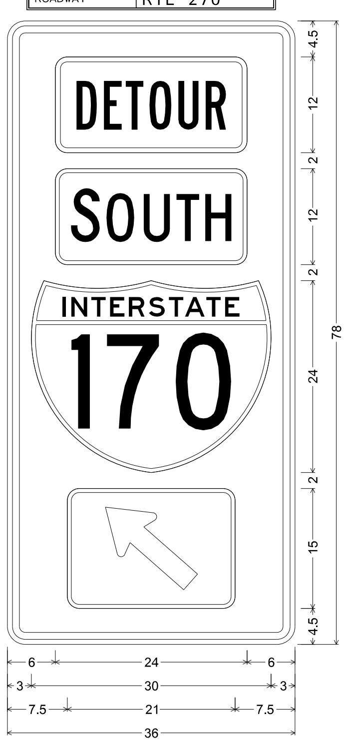
SIGN NO.	70E
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↗	7.500

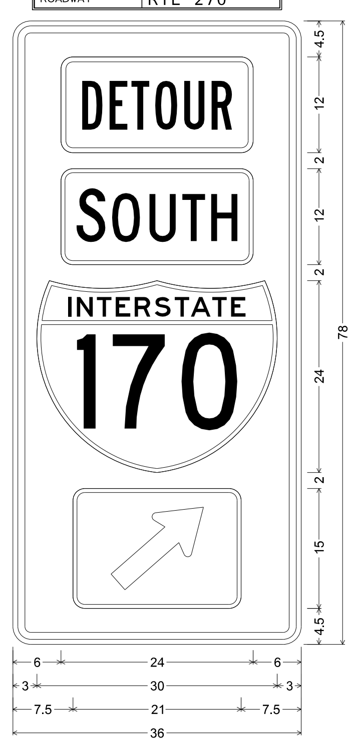
SIGN NO.	70F
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↖	7.500

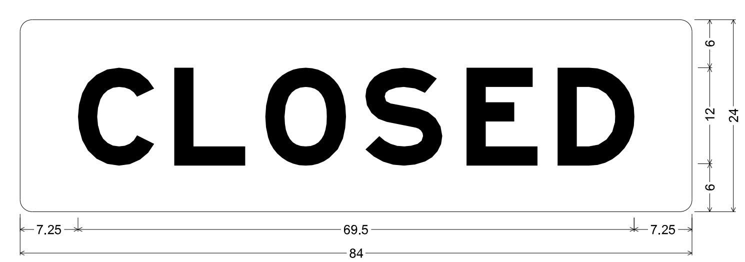
SIGN NO.	70G
STATION	VAR.
ROADWAY	RTE 270



MO4-11 SHF-FLAT SHEET FLUORESCENT;
2.250" Radius, 0.875" Border, 0.625" Indent, Black on, Orange;
Table of letter and object lefts

DETOUR	6.000
SOUTH	6.000
170	3.000
↗	7.500

SIGN NO.	80A
STATION	VAR.
ROADWAY	RTE 270



SPECIAL SHF-FLAT SHEET FLUORESCENT; 1.500" Radius, No border, Orange;
[CLOSED] Black E Mod;
Table of letter and object lefts.

C	L	O	S	E	D
7.250	19.250	30.625	43.125	55.875	67.250

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TRAFFIC CONTROL
DETOUR SIGNING SHEET
SHEET 4 OF 6
J6I3624B

STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER
PE-2024037421
PROFESSIONAL ENGINEER

10/25/2024 6:49:46 AM
Andrew J. Huebner - Civil
MO PE-2024037421

DATE PREPARED	
10/25/24	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
SL	13
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

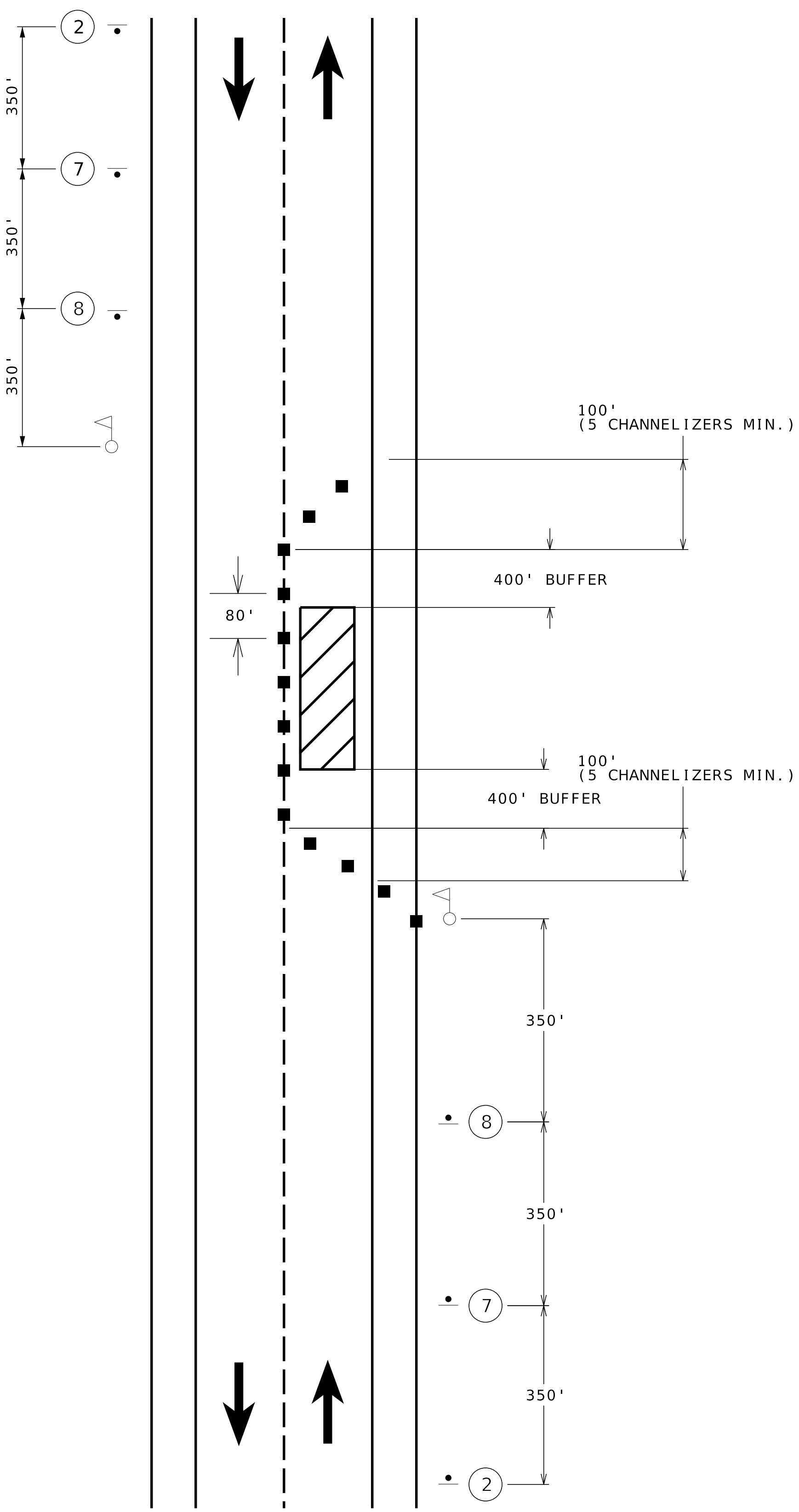
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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

Missouri Certificate of Authority: 000704

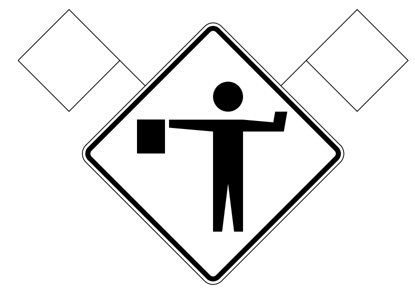
LANE CLOSURE ON TWO-LANE ROAD USING FLAGGERS



NOT TO SCALE

W020-1
2

W020-4
7



W020-7a
8

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STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

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

DATE PREPARED 10/25/24	
ROUTE I-170	STATE MO
DISTRICT SL	SHEET NO. 14
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- FLAGGER
- WORK ZONE

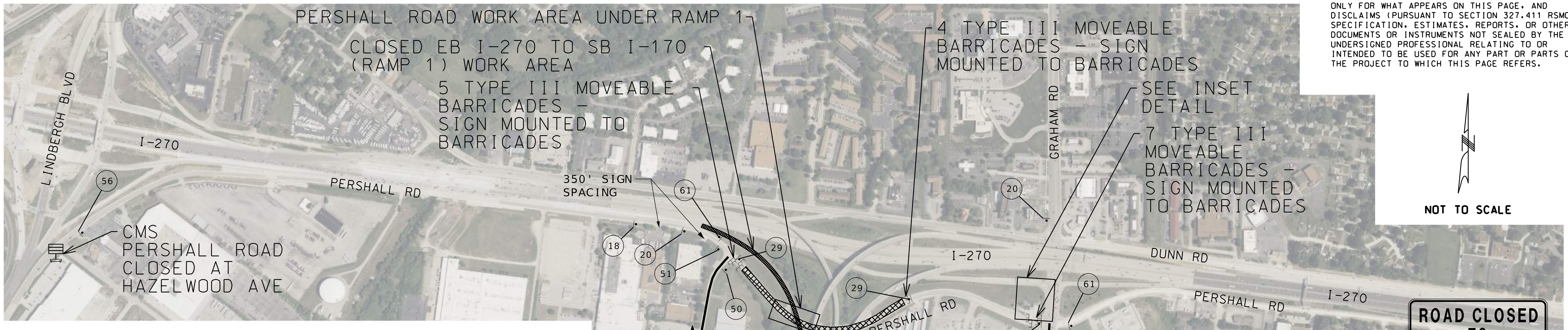
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

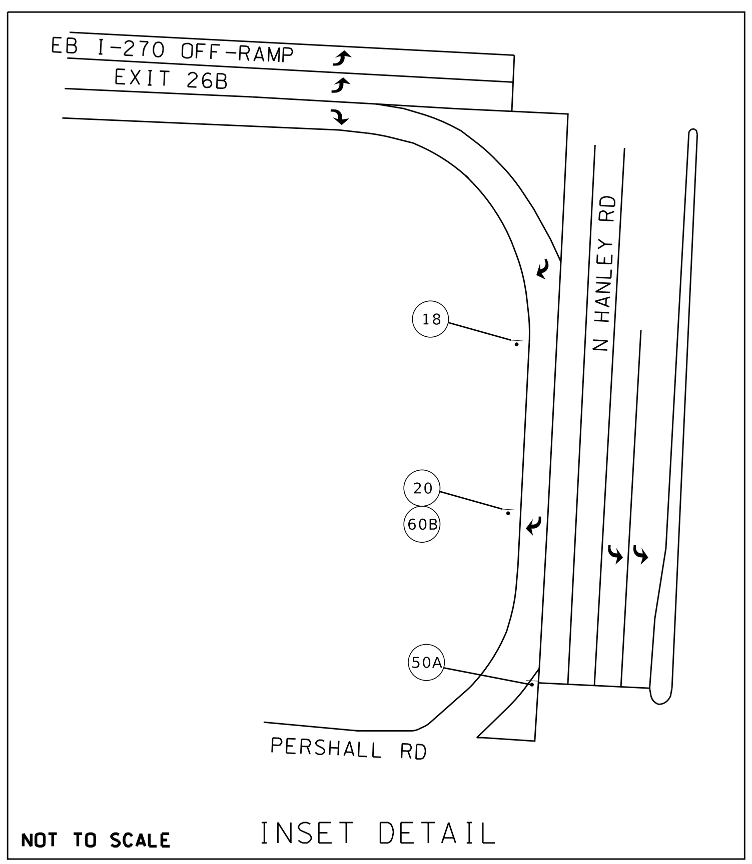
NOTES:

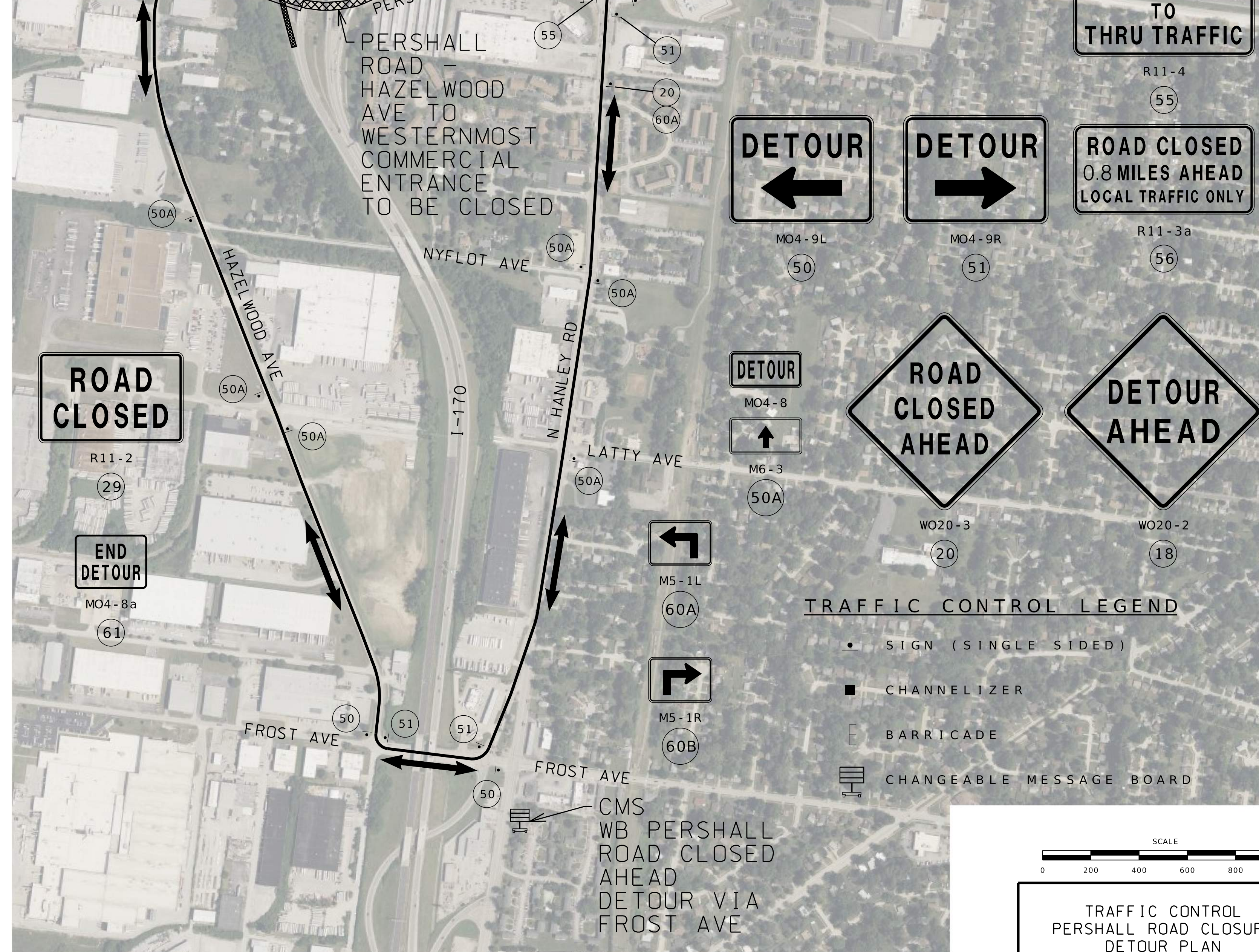
1. IF USED AT NIGHT, THE FLAGGER STATIONS SHALL BE ILLUMINATED WITH AN AVERAGE MAINTAINED INTENSITY OF 0.6 FOOTCANDLES (6.5 LUX).
2. PLACEMENT OF TRAFFIC CONTROL SIGNS ARE APPROXIMATE AND MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
3. CONTRACTOR MAY NOT CLOSE PERSHALL ROAD BETWEEN 2PM AND 5PM ON WEEKDAYS. WEEKEND CLOSURES MAY OCCUR AT ANY TIME FROM 8PM FRIDAY TO 5AM MONDAY.
4. SEE TRAFFIC CONTROL SHEET 6 OF 6 FOR DETOUR PLAN TO BE UTILIZED WHEN CLOSING PERSHALL ROAD.
5. TWO HUNDRED FIFTY (250LF) LINEAR FEET OF 48" TEMPORARY FENCE INCLUDED IN THE LUMP SUM TRAFFIC CONTROL QUANTITIES TO BE PLACED ALONG PERSHALL ROAD DURING CONSTRUCTION AS NEEDED AND AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL
TYPICAL LANE CLOSURE
TWO-LANE ROAD
USING FLAGGERS
SHEET 5 OF 6
J6I3624B

Jacobs
Missouri Certificate of Authority: 000704







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NOT TO SCALE

NOTES:

1. CONTRACTOR MAY USE THIS TRAFFIC CONTROL PLAN TO CLOSE PERSHALL ROAD TO DEMOLISH RAMP 1 BRIDGE, TO RECEIVE GIRDER DELIVERY AND OTHER OPERATIONS AS APPROVED BY THE ENGINEER.
2. CONTRACTOR MAY NOT CLOSE PERSHALL ROAD BETWEEN 2PM AND 5PM ON WEEKDAYS. WEEKEND CLOSURES MAY OCCUR AT ANY TIME FROM 8PM FRIDAY TO 5AM MONDAY.
3. ANY EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.
4. PLACEMENT OF TRAFFIC CONTROL SIGNS ARE APPROXIMATE AND MAY BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
5. CMS MESSAGE AND LOCATIONS AS APPROVED BY THE ENGINEER.

STATE OF MISSOURI
ANDREW J. HUEBNER
NUMBER PE-2024037421
PROFESSIONAL ENGINEER

DATE PREPARED	11/20/24
ROUTE I-170	STATE MO
DISTRICT SL	SHEET NO. 15
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

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

Jacobs

Missouri Certificate of Authority: 000704

TRAFFIC CONTROL
PERSHALL ROAD CLOSURE
DETOUR PLAN
SHEET 6 OF 6
J6I3624B

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

pw://efkmoen-pw.bentley.com:efkmoen-pw-01/Documents/Projects/MoDOT-ORD2021R2/22038.20 I-170 PMC J6I3624 Jacobs EB I-270/500-DGN/10-Roadway/2-Final(See 22038.10)/D-Plotsheets/015_TC_06_J6I3624B_i400_PershallClosure.dgn 14:43 20-NOV-2024

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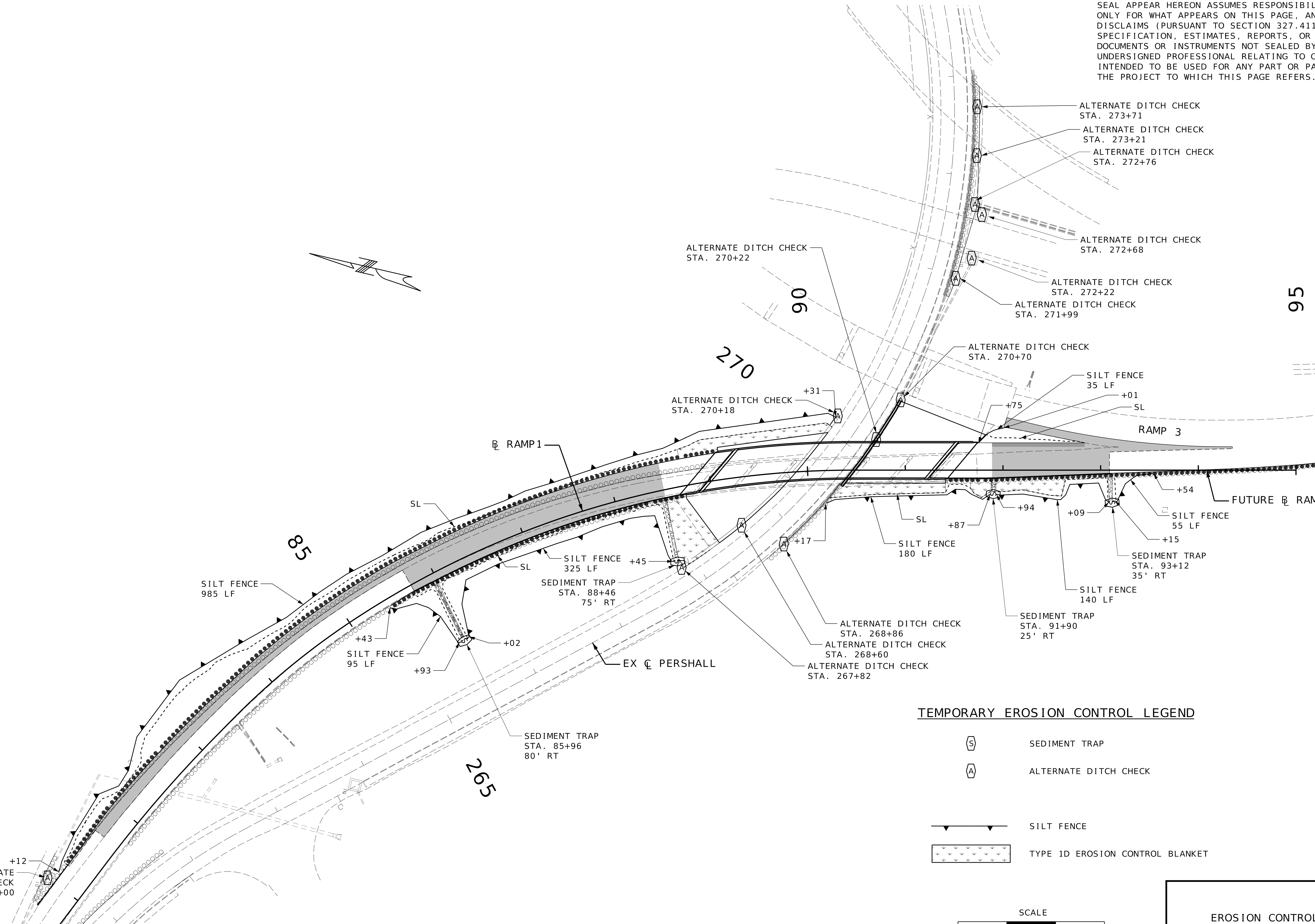

TEMPORARY EROSION CONTROL LEGEND

(S)	SEDIMENT TRAP
(A)	ALTERNATE DITCH CHECK
	SILT FENCE
	TYPE 1D EROSION CONTROL BLANKET

SCALE
0 50 100 150

EROSION CONTROL
SHEET 1 OF 1

STATE OF MISSOURI PAUL JOSEPH KRONLAGE NUMBER EN 023328 REGISTERED PROFESSIONAL ENGINEER
10/25/2024 9:36:15 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	16
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

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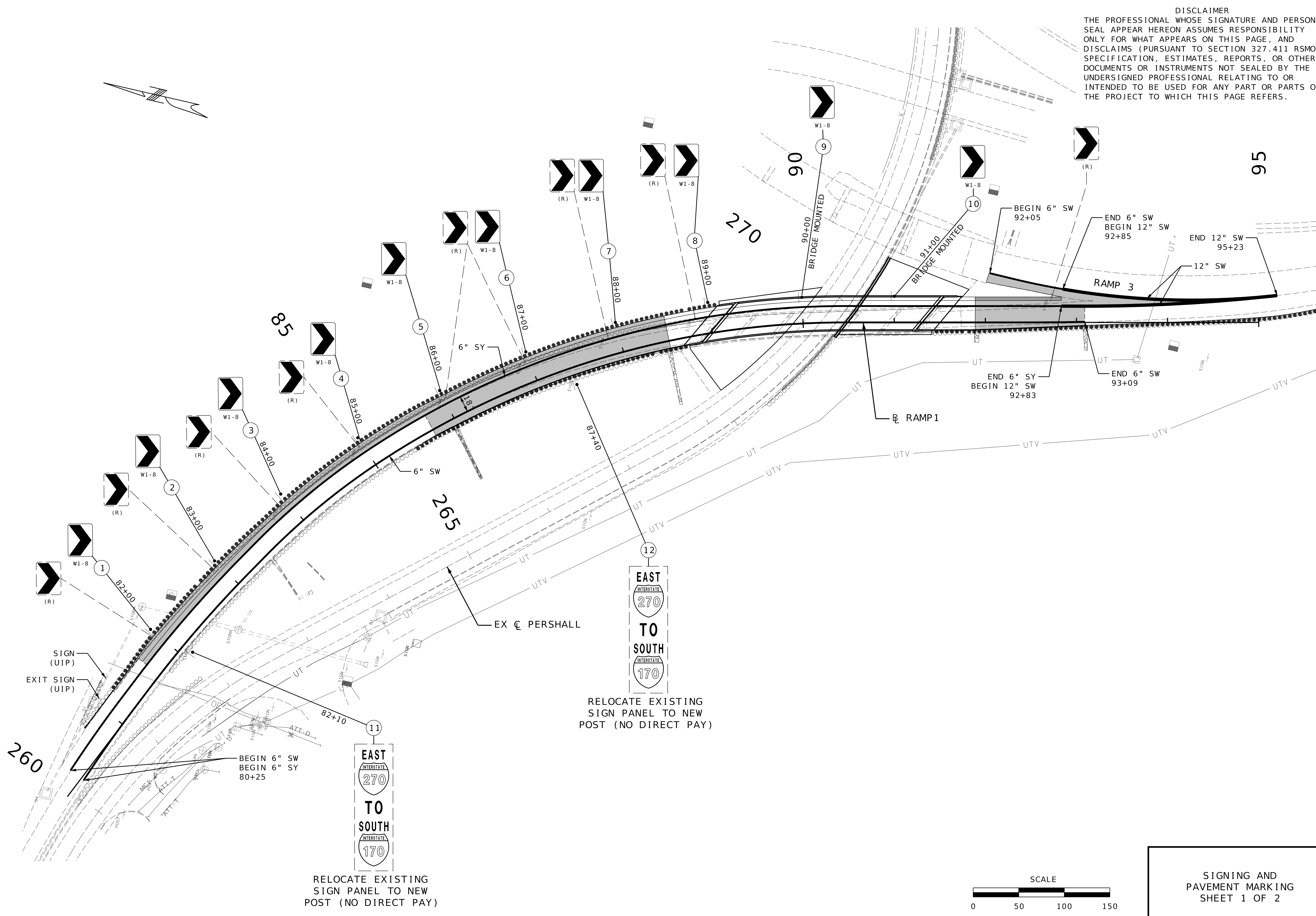

STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER

10/25/2024 8:56:38 AM
Paul J. Kronlage - Civil
MO PE - 023328

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	17
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION

DATE

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

MoDOT

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

SIGNING AND PAVEMENT MARKING SHEET 1 OF 2

MISC. BARRIER WALL MOUNTED SIGN SUPPORTS	2 EA.

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STATE OF MISSOURI
PAUL JOSEPH KRONLAGE
NUMBER EN 023328
REGISTERED PROFESSIONAL ENGINEER
10/25/2024 8:57:03 AM
Paul J. Kronlage - Civil
MO PE - 023328

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)						CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS*						PIPE POSTS*					BACKING BARS** (2" X 3/8" BARS AT 2.55 LBS/FT)				U-CHANNEL POST
SIGN NO.	SIGN SIZE	STATION OR LOG MILE	HORIZ CLEAR IF NOT STD	LOCATION	SIGN DTL SHT NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	NO.	LGTH	TOTAL	TOTAL	ITEM NO. 9031250A
						CY		LF	LF	LF		LBS	IN	LF	LF		LBS	EACH	IN.	LF	LBS	LF
1	30X36	82+00		RAMP1 LT																		
2	30X36	83+00		RAMP1 LT																		
3	30X36	84+00		RAMP1 LT																		
4	30X36	85+00		RAMP1 LT																		
5	30X36	86+00		RAMP1 LT																		
6	30X36	87+00		RAMP1 LT																		
7	30X36	88+00		RAMP1 LT																		
8	30X36	89+00		RAMP1 LT																		
9	30X36	90+00		RAMP1 LT																		
10	30X36	91+00		RAMP1 LT																		
11	18X60	82+10		RAMP1 LT																		
12	18X60	87+40		RAMP1 LT																		
				SUBTOTAL																		
				TOTAL																	**	

SIGN NO.	PERFORATED SQUARE STEEL TUBE – 2-INCH POST: POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	ANCHORS: DRIVEN 12 GA. ITEM NO. 9031271A	DRIVEN 7 GA. ITEM NO. 9031273A	CONCRETE 7 GA. ITEM NO. 9031274	2.5-INCH POST: POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	ANCHORS: DRIVEN 7 GA. ITEM NO. 9031281A	CONCRETE 7 GA. ITEM NO. 9031285	BREAK-AWAY ASSEMBLY ITEM NO. 9031241	REMARKS AND OTHER REQUIRED ITEMS (EFFECTIVE: 07-01-2024)
	LF	LF	LF	EACH	EACH	EACH	LF	LF	LF	EACH	EACH	EACH	EACH	
1	16		16			1								
2	16		16			1								
3	16		16			1								
4	16		16			1								
5	16		16			1								
6	16		16			1								
7	16		16			1								
8	16		16			1								
9	8		8											
10	8		8											
11	16		16			1								
12	16		16			1								
SUBTOTAL			176			10								
TOTAL			176			10								

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

ROUND PIPE POST AND FOOTING DATA TABLE

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

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

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

D-29

STANDARD SIGN ASSEMBLIES

SIGN NO.	STATION OR LOG MILE	LOCATION	SIGN, TYPE, DESIGNATION, SIZE & NUMBER OF EACH: SHF W1-8 30 x 36
1	82+00	RAMP1 LT	1
2	83+00	RAMP1 LT	1
3	84+00	RAMP1 LT	1
4	85+00	RAMP1 LT	1
5	86+00	RAMP1 LT	1
6	87+00	RAMP1 LT	1
7	88+00	RAMP1 LT	1
8	89+00	RAMP1 LT	1
9	90+00	RAMP1 LT	1
10	91+00	RAMP1 LT	1
		TOTALS	10

SIGN SUMMARY

EFFECTIVE: 10-01-2016

STANDARD OR SPECIAL SIGN DESIGNATION	SIGN DTL. SHT. NO.	NO. EACH	SIGN SIZE	FLAT SHEET SH ITEM NO. 9035004A	FLAT SHEET FLUORESCENT SHF* ITEM NO. 9035069A	STRUCTURAL ST ITEM NO. 9035011A	STRUCTURAL FLUORESCENT STF* ITEM NO. 9035071A
W1-8		10	30 x 36		75.00		
			TOTALS		75		

*ORANGE, YELLOW AND YELLOW-GREEN

D-30

SIGNING AND PAVEMENT MARKING
D-29 & D-30
SHEET 2 OF 2

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	SL
SHEET NO.	18
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION
DATE

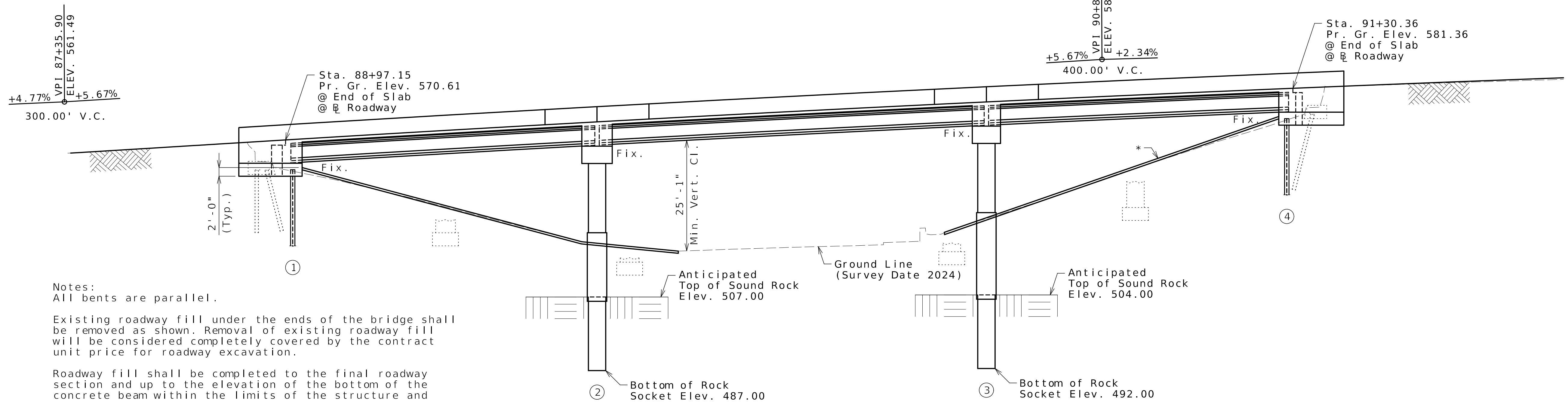
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

c:\bms\efkmoen01\alison macnair\dms03755\018_SN_02_J6I3624B_i1.dgn 12:33:04 PM 10/24/2024

SEC/SUR 939 TWP 47N RGE 6E

(70'-90'-70') PRESTRESSED CONCRETE I-GIRDER SPANS



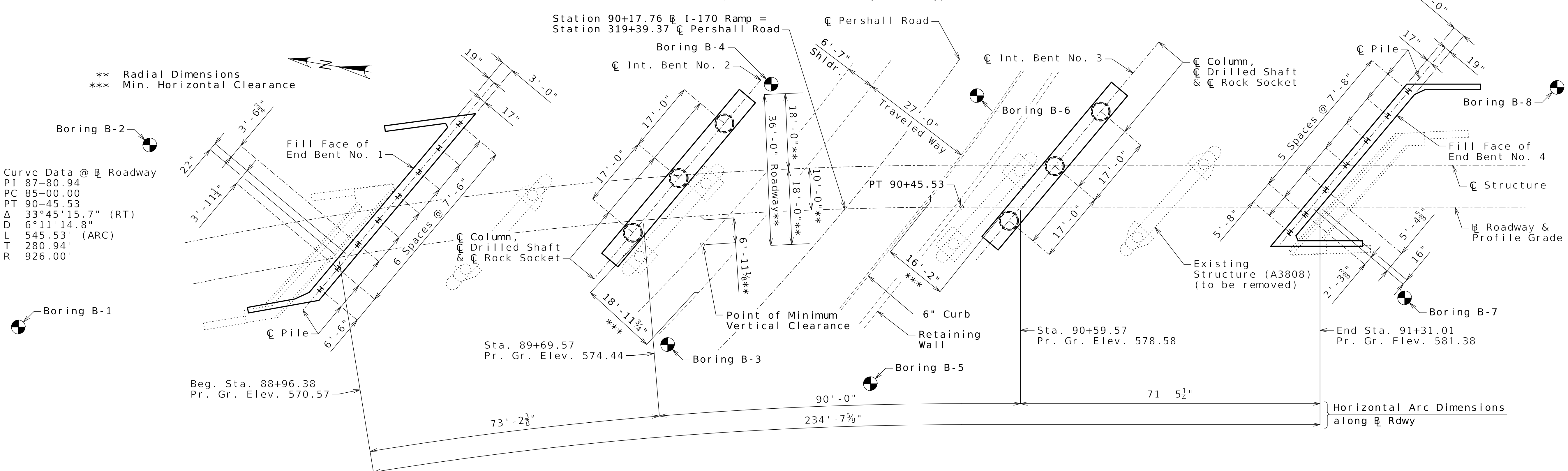
Notes:
All bents are parallel.

Existing roadway fill under the ends of the bridge shall be removed as shown. Removal of existing roadway fill will be considered completely covered by the contract unit price for roadway excavation.

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.

GENERAL ELEVATION

*2:1 Max. slope (Normal) with Concrete Slope Protection (Roadway Item)(Typ.)



Indicates location of borings.

PLAN

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheet(s) for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheets No. 34 & 35 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

B.M. A - "□" on the west end of a concrete retaining wall running along the south side of Pershall Road under Highway 170 overpass, Elev. 548.83'

BRIDGE: I-270 EB RAMP OVER PERSHALL ROAD

ROUTE I-270 RAMP FROM I-270 TO I-170
ABOUT 1.0 MILE EAST OF ROUTE 67
BEGINNING STATION 88+96.38

Designed Sep. 2024
Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
10/28/2024 12:34:48 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/28/2024	
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 1
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

DESCRIPTION

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

Estimated Quantities

Item		Substr.	Superstr.	Total
Removal of Miscellaneous ACM (Non-Friable)	sq. foot		27	27
Class 1 Excavation	cu. yard	75		75
Removal of Bridges (A3808)	lump sum			1
Bridge Approach Slab (Major)	sq. yard		162	162
Drilled Shafts (5 ft. 0 in. Dia.)	linear foot	249.0		249.0
Rock Sockets (4 ft. 6 in. Dia.)	linear foot	60.0		60.0
Video Camera Inspection	each	6		6
Foundation Inspection Holes	linear foot	120.0		120.0
Sonic Logging Testing	each	6		6
Galvanized Structural Steel Piles (12 in.)	linear foot	939		939
Pile Point Reinforcement	each	15		15
Class B Concrete (Substructure)	cu. yard	211.0		211.0
Slab on Concrete I-Girder	sq. yard		996	996
Type D Barrier	linear foot		529	529
Type 6 (54 in.), Prestressed Concrete I-Girder	linear foot		1133	1133
Reinforcing Steel (Bridges)	pound	86,080		86,080
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1		1
Steel Intermediate Diaphragm for P/S Concrete Girders	each		12	12
Vertical Drain at End Bents	each			2
Laminated Neoprene Bearing Pad (Tapered)	each		30	30

All concrete above the construction joint in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.

All reinforcement in the end bents is included in the Estimated Quantities for Slab on Concrete I-Girder.

All reinforcement in the intermediate bent concrete diaphragms except reinforcement embedded in the beam cap is included in the Estimated Quantities for Slab on Concrete I-Girder.

All concrete above the intermediate beam cap is included in the Estimated Quantities for Slab on Concrete I-Girder.

Cost of L4x4 ASTM A709 Grade 36 HP pile anchors and 3/4-inch diameter ASTM F3125 Grade A325 Type 1 bolts, complete in place, will be considered completely covered by the contract unit price for Galvanized Structural Steel Piles (12 in.).

Estimated Quantities for Slab on Concrete I-Girder

Item		Total
Class B-2 Concrete	cu. yard	360
Reinforcing Steel (Epoxy Coated)	pound	89,430

For details of stay-in-place forms, see Sheet No. 23.

The table of Estimated Quantities for Slab on Concrete I-Girder represents the quantities used by the State in preparing the cost estimate for concrete slabs. The area of the concrete slab will be measured to the nearest square yard longitudinally from end of slab to end of slab and transversely from out to out of bridge slab (or with the horizontal dimensions as shown on the plan of slab). Payment for stay-in-place corrugated steel forms, conventional forms, all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

Method of forming the slab shall be as shown on the plans and in accordance with Sec 703. All hardware for forming the slab to be left in place as a permanent part of the structure shall be coated in accordance with ASTM A123 or ASTM B633 with a thickness class SC 4 and a finish type I, II or III.

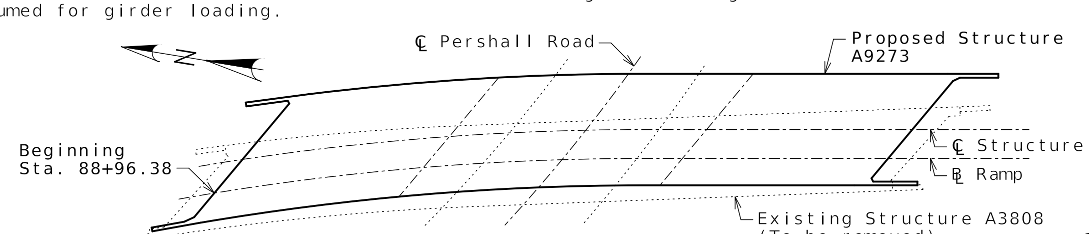
Slab shall be cast-in-place with conventional forms or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

Corrugated steel forms, supports, closure elements and accessories shall be in accordance with grade requirement and coating designation G165 of ASTM A653. Complete shop drawings of the permanent steel deck forms shall be required in accordance with Sec. 1080.

Corrugations of stay-in-place forms shall be filled with an expaned polystyrene material. The polystyrene material shall be placed in the forms with an adhesive in accordance with the manufacturer's recommendations.

Form sheets shall not rest directly on the top of girder flanges. Sheets shall be securely fastened to form supports with a minimum bearing length of one inch on each end. Form supports shall be placed in direct contact with the flange. Drilling holes in the girder flanges will not be permitted. All steel fabrication and construction shall be in accordance with Sec 1080 and 712. Certified field welders will not be required for welding of the form supports.

The design of stay-in-place corrugated steel forms is per manufacturer which shall be inaccordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.



LOCATION SKETCH

General Notes:

Design Specifications:
2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)
2023 AASHTO Guide Specifications for LRFD Seismic Bridge Design 3rd Ed.)
Seismic Design Category = B (Seismic Details plus Abutment Seismic Design)
Design earthquake response spectral accceleration coeffieint at 1.0 second period, S_{D1} = 0.222
Acceleration Coefficient (effective peak ground acceleration coefficient), A_s = 0.195

Design Loading:
Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (Min.)
Superstructure: Simply-Supported, Non-composite for dead load. Continuous Composite for live load.

Design Unit Stresses:

Class B Concrete (Substructure)	f'c = 3,000 psi
Class B-2 Concrete (Drilled Shafts & Rock Sockets)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure, except Prestressed Beams and Barrier)	f'c = 4,000 psi
Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Reinforcing Steel (ASTM A706 Grade 60)	fy = 60,000 psi
Structural Steel HP Pile (ASTM A709 Grade 50)	fy = 50,000 psi

For prestressed girder stresses, see Sheets No. 16 & 17.

Neoprene Pads:
Neoprene bearing pads shall be 60 durometer and shall be in accordance with Sec 716.

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

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.

Traffic Handling:
Vertical clearance for Pershall Road traffic during construction shall be 15'-6" minimum over a 24'-0" wide horizontal opening of the roadway.

Structure to be closed during construction. Traffic to be maintained on other routes. See roadway plans for traffic control.

Concrete Protective Coatings:
Protective coating for concrete bents and piers (Epoxy) shall be applied as shown on the bridge plans and in accordance with Sec. 711.

Miscellaneous:
MoDOT Construction personnel will indicate the type of joint filler option used under the precast panels for this structure:

- ☐ Constant Joint Filler
- ☐ Variable Joint Filler

Foundation Data

Type	Design Data		Bent Number 1	2	3	4
Load Bearing Pile	Pile Type and Size		HP 12x53	---	---	HP 12x53
	Number	ea	8	---	---	7
	Approximate Length Per Each	ft	57	---	---	69
	Pile Point Reinforcement	ea	All	---	---	All
	Min. Galvanized Penetration (Elev.)	ft	Full Length	---	---	Full Length
	Pile Driving Verification Method		DF	---	---	DF
	Resistance Factor		0.4	---	---	0.4
	Minimum Nominal Axial Compressive Resistance	kip	428	---	---	488
Rock Socket	Layer 1: Foundation Material		---	Weak Rock	Weak Rock	---
	Layer 1: Elevation Range	ft	---	507-497	504-494	---
	Layer 1: Minimum Nominal Axial Compressive Resistance (Side Resistance)	ksf	---	10.6	---	---
	Minimum Nominal Axial Compressive Resistance (Tip Resistance)	ksf	---	164.3	196.1	---

DF = FHWA-modified Gates Dynamic Pile Formula

$$\text{Minimum Nominal Axial Compressive Resistance} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$$

$$\text{Minimum Nominal Axial Compressive Resistance (Side Resistance + Tip Resistance)} = \frac{\text{Maximum Factored Loads}}{\text{Resistance Factor}}$$

HP piles are anticipated to be driven to refusal on rock. Review all borings for depth of rock and restrict driving as appropriate to comply with hard rock driving criteria in accordance with Sec 702. When pile refusal on rock occurs, as approved by the engineer, the minimum nominal axial compressive resistance is verified and no additional pile driving verification method is required.

All piles shall be galvanized down to the minimum galvanized penetration (elevation).

Pile point reinforcement need not be galvanized. Shop drawings will not be required for pile point reinforcement.

The contractor shall make every effort to achieve the minimum galvanized penetration (elevation) shown on the plans for all piles. Deviations in penetration less than 5 feet of the minimum will be considered acceptable provided the contractor makes the necessary corrections to ensure the minimum penetrtion is achieved on subsequent piles.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

GENERAL NOTES AND QUANTITIES

Detailed Sep. 2024
Checked Sep. 2024

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

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ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
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DATE PREPARED	
10/28/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 2
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

REV.

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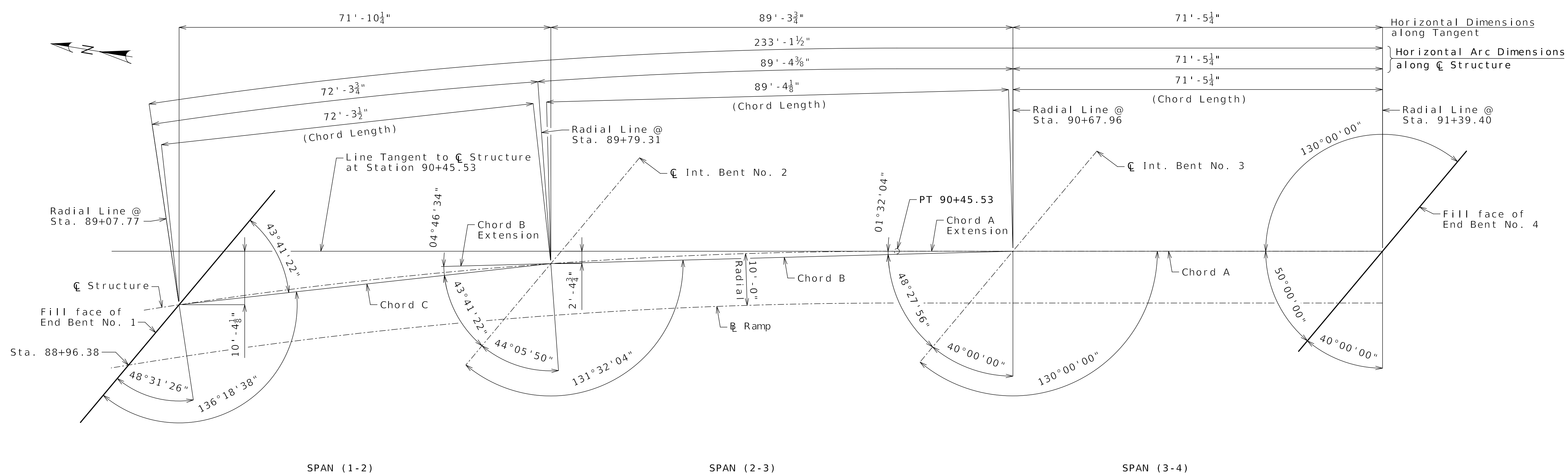

PLAN

Notes:

All dimensions are horizontal.

All bents are parallel.

All stationing is located along ℞ Ramp.

SUBSTRUCTURE LAYOUT

Detailed Sep. 2024
Checked Sep. 2024

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

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NUMBER PE-2018003121
PROFESSIONAL ENGINEER
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Alex Benz - Civil
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DATE PREPARED	
10/22/2024	
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 3
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

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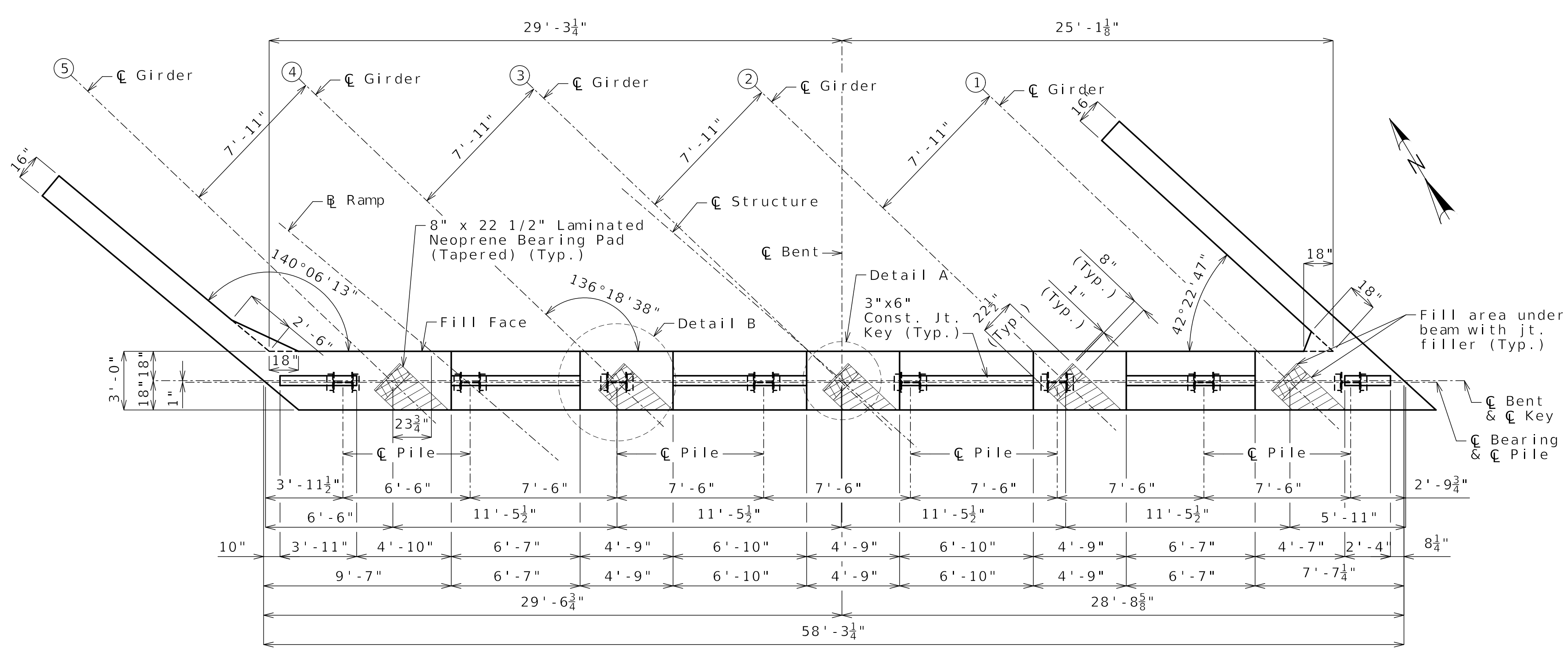
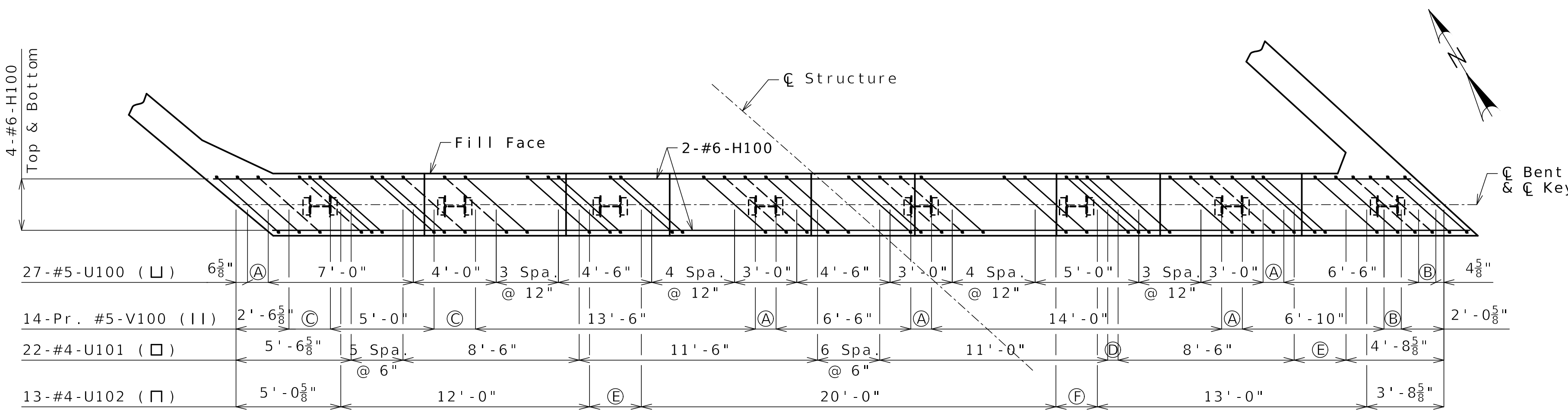


PLAN OF BEAM



PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity.

Ⓐ = 12"

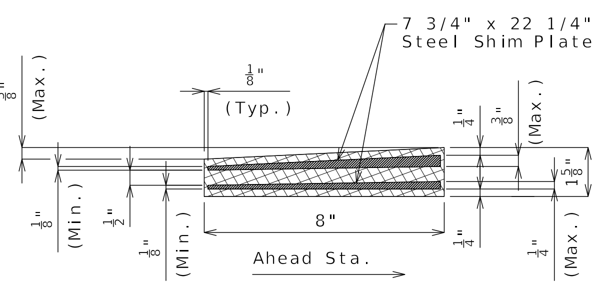
Ⓑ = 10"

Ⓒ = 2 Spa. @ 12"

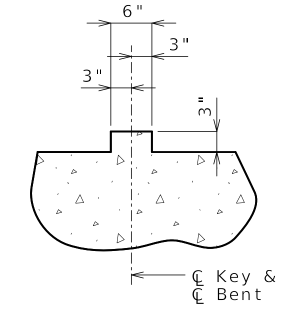
Ⓓ = 6"

Ⓔ = 5 Spa. @ 6"

Ⓕ = 4 Spa. @ 6"



SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)



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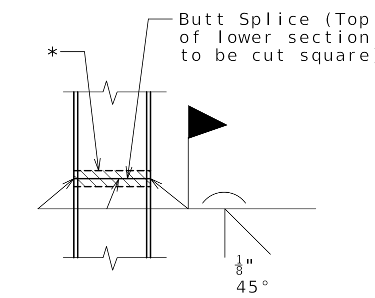
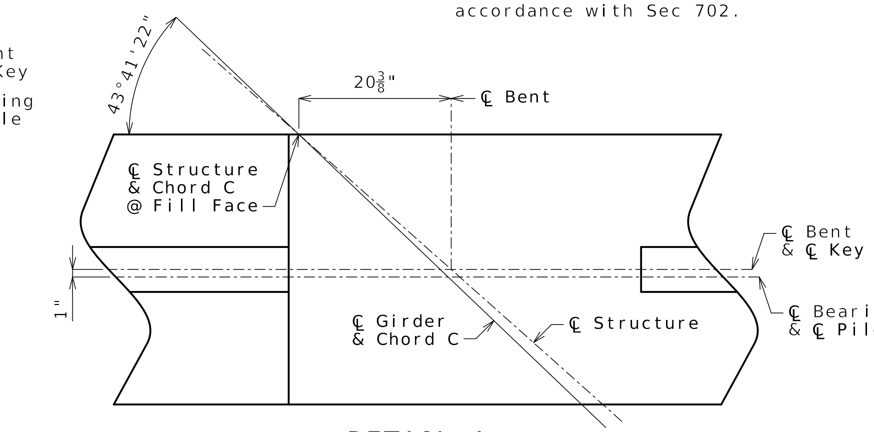


STEEL PILE SPLICE

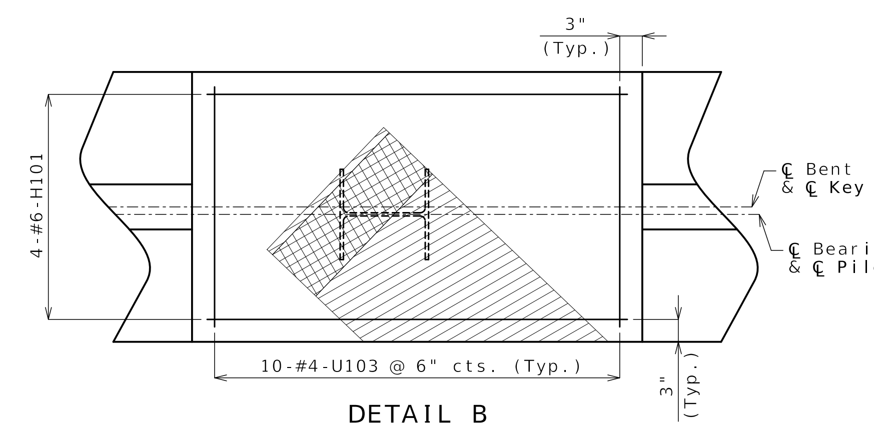
(If required)

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



DETAIL A

For location and dimensions of Chord C, see Sheet No. 3.



DETAIL B

Notes:
Work this sheet with Sheets No. 5 & 6.

All U bars and pairs of V bars shall be placed parallel to centerine of roadway.

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

Substructure Quantity Table for Bent No. 1

Item		Quantity
Class 1 Excavation	cu. yard	40
Galvanized Structural Steel Pile (12 in.)	linear foot	456
Pile Point Reinforcement	each	8
Class B Concrete (Substructure)	cu. yard	26.6

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

DETAILS OF END BENT NO. 1

Detailed Sep. 2024
Checked Sep. 2024

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

ALEX BENZ NUMBER PE-2018003121 STATE OF MISSOURI PROFESSIONAL ENGINEER

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Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 4
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

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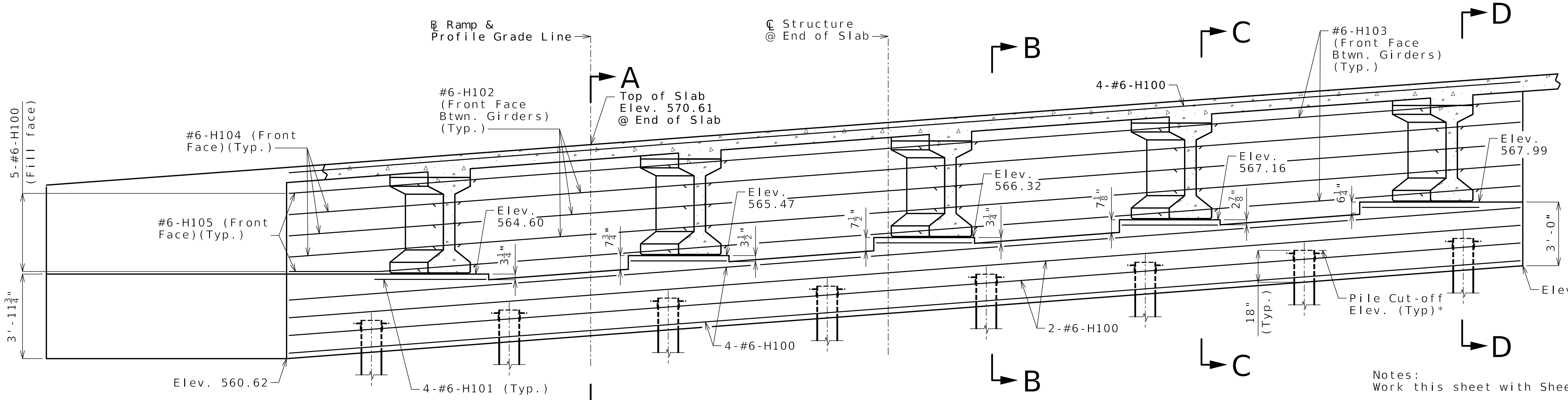
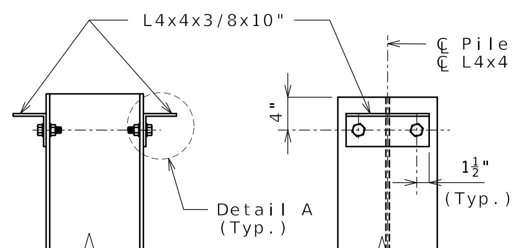
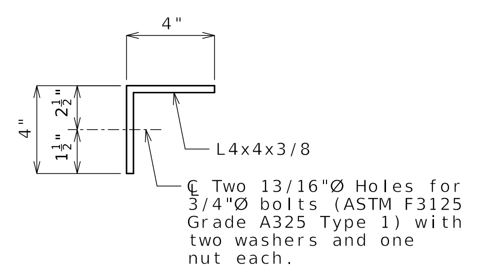


SECTION NEAR END BENT



DETAILS OF HP PILE ANCHORS



DETAIL A

Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

Pile No.	Cut-Off Elev.
1	566.28
2	565.72
3	565.15
4	564.59
5	564.03
6	563.47
7	562.90
8	562.42

Note: For Pile Numbers, see Sheet No. 33.

Notes:
Work this sheet with Sheets No. 4 & 6.

For Section A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No 6.

The #6-F100 and #6-F102 bars shall be bent in the field to clear girders.

The U bars shall be placed parallel to centerline of roadway.

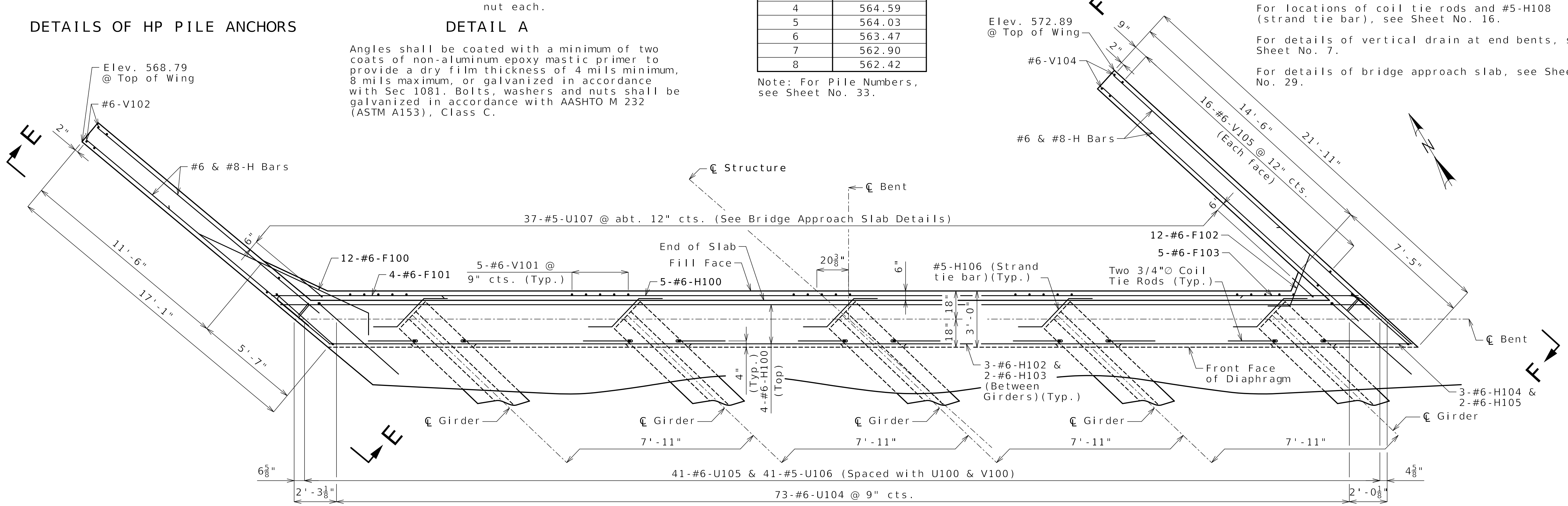
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

Strands at end of beams shall be field bent or if necessary cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.

For locations of coil tie rods and #5-H108 (strand tie bar), see Sheet No. 16.

For details of vertical drain at end bents, see Sheet No. 7.

For details of bridge approach slab, see Sheet No. 29.



PART PLAN

DETAILS OF END BENT NO. 1

Detailed Sep. 2024
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Alex C. Benz
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Alex Benz - Civil
MO PE-2018003121

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ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 5
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

DESCRIPTION

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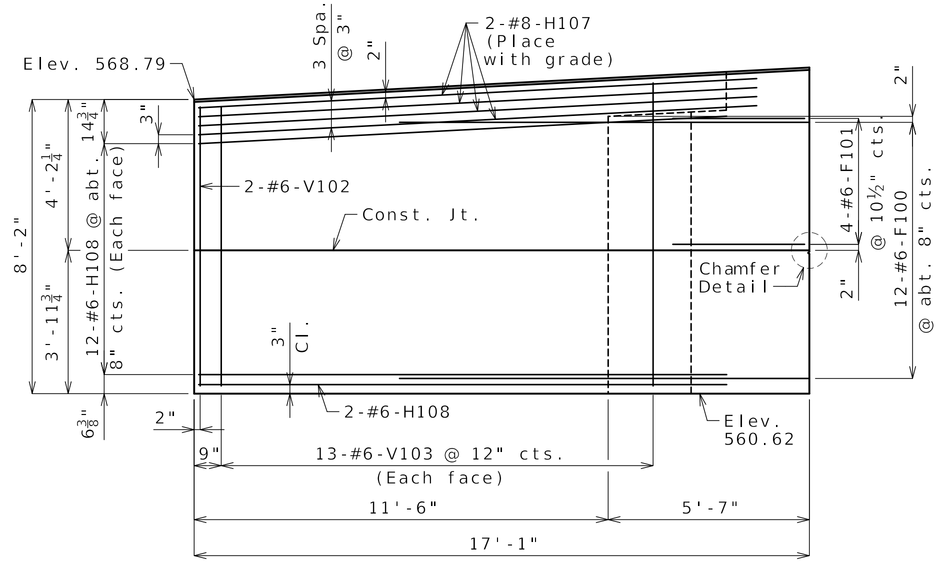
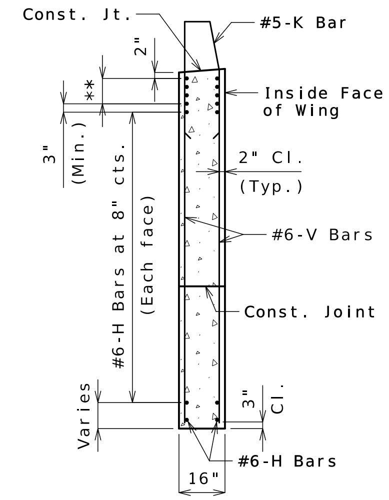


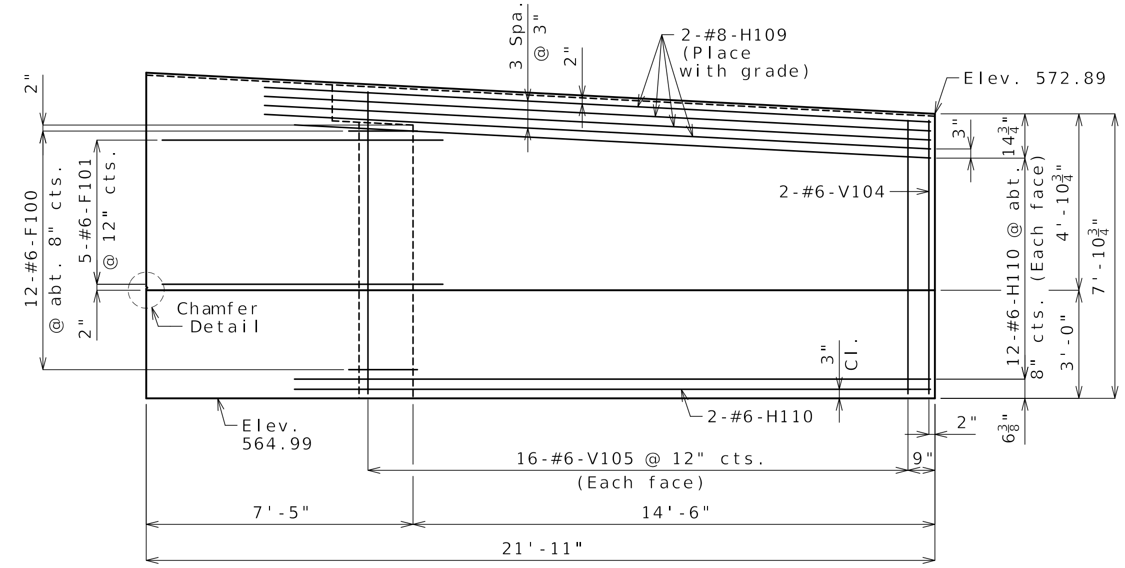
ELEVATION E-E



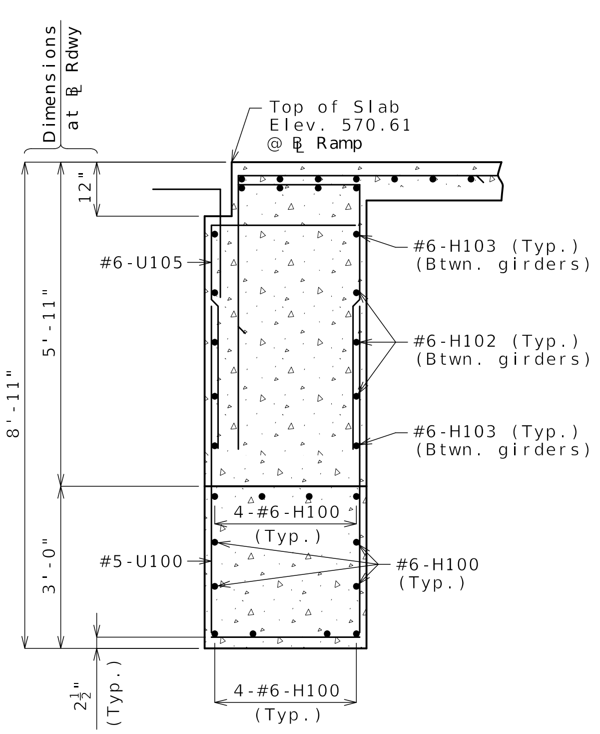
TYPICAL SECTION THRU WING

(Right wing shown, left wing similar)

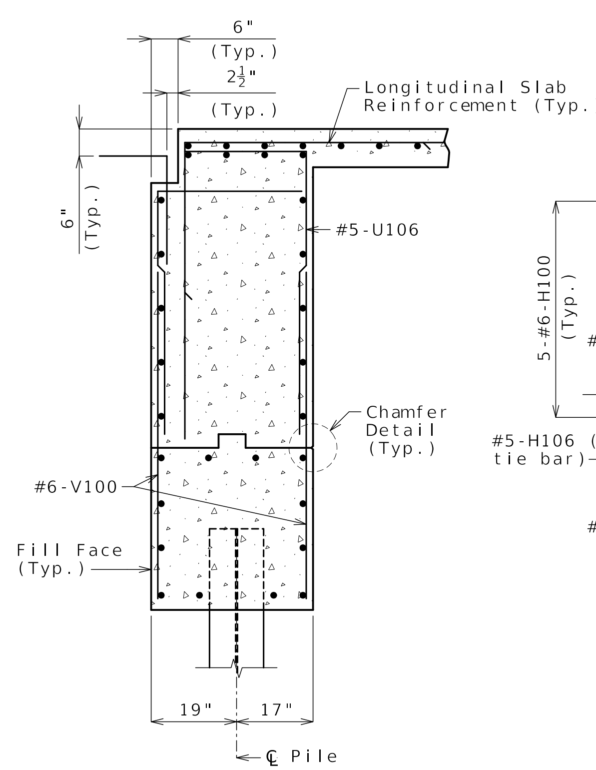
** #8-H Bars at 3" cts. (Each face)(Place with grade)



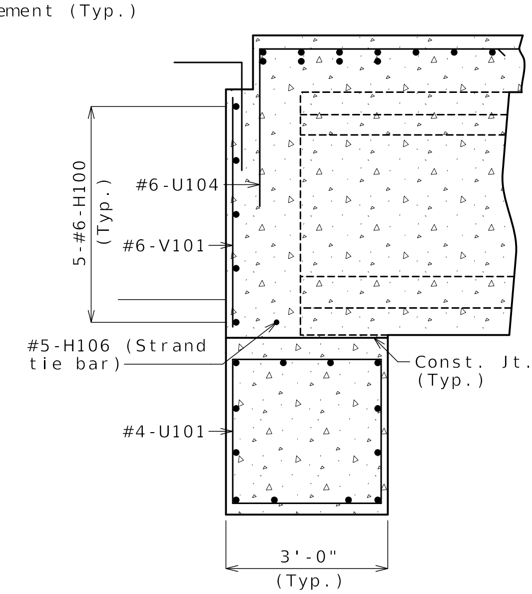
ELEVATION F-F



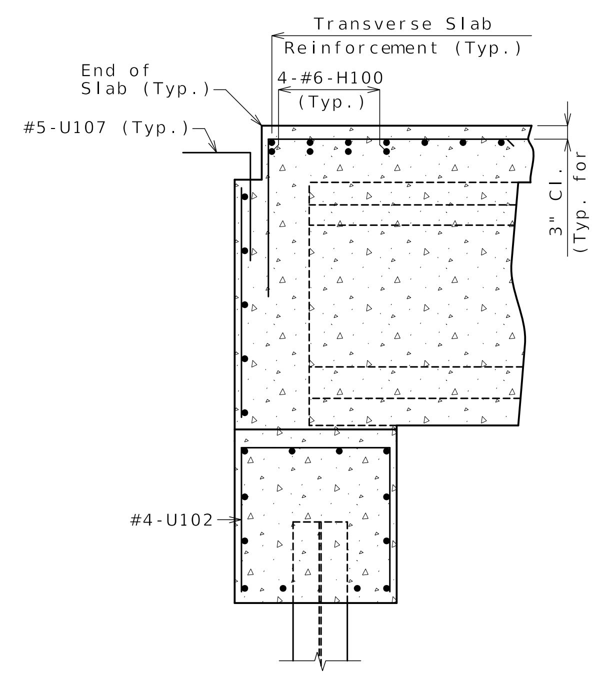
SECTION A-A



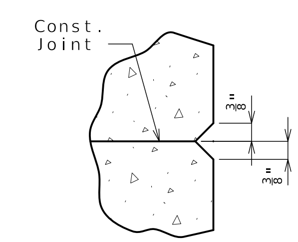
SECTION B-B



SECTION C-C



SECTION D-D



CHAMFER DETAIL

Note:
Work this sheet with Sheets No. 4 & 5.

DETAILS OF END BENT NO. 1

Detailed Sep. 2024
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NUMBER PE-2018003121
PROFESSIONAL ENGINEER

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10/22/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
BR	6
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9273	

DESCRIPTION

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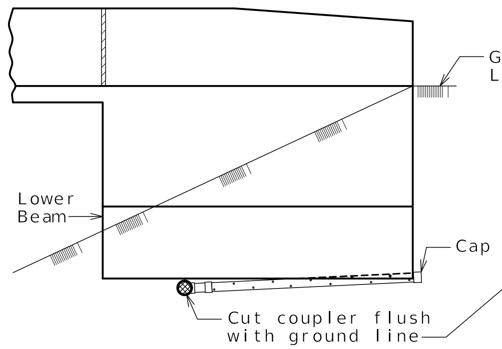
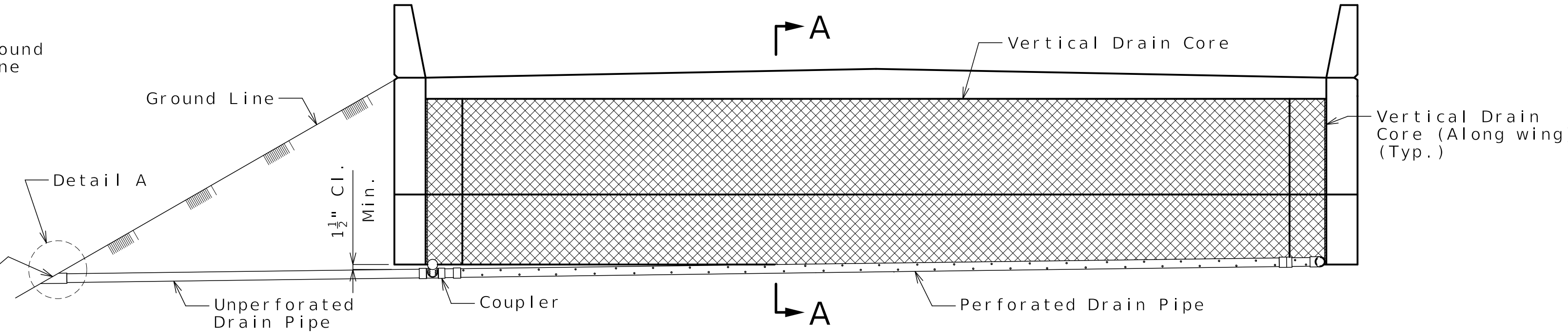
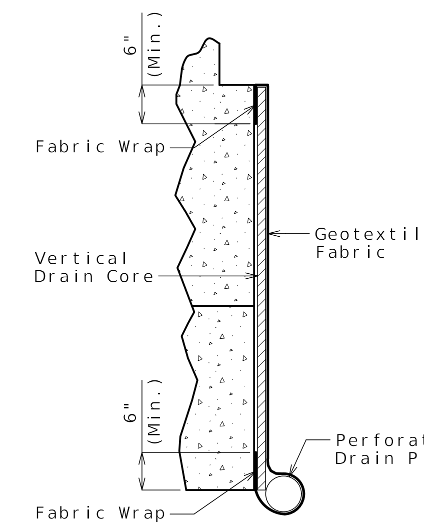


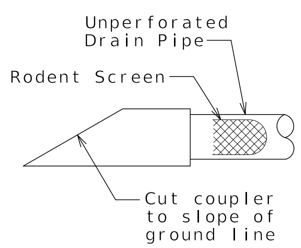
ELEVATION OF WING



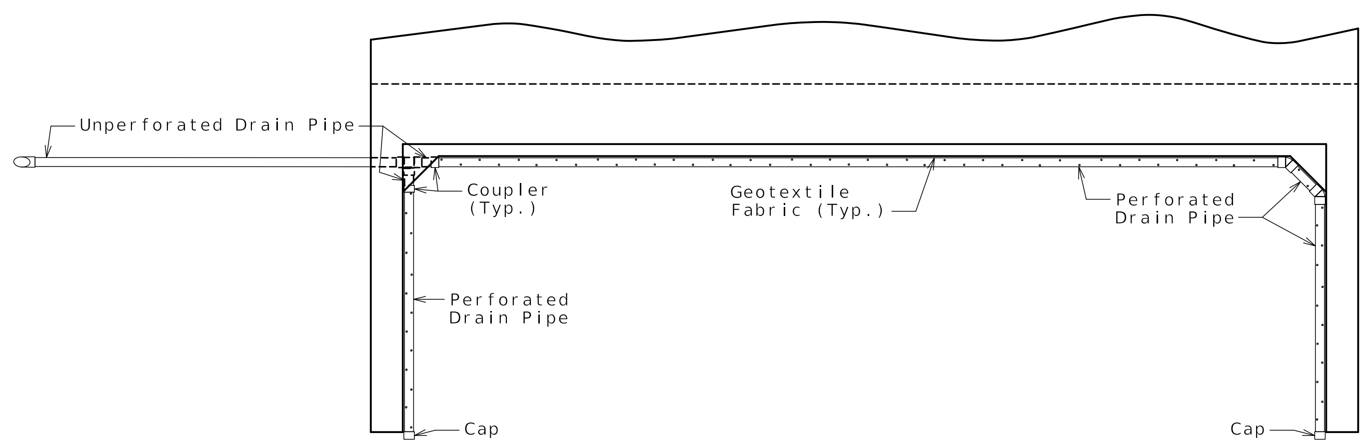
ELEVATION OF END BENT



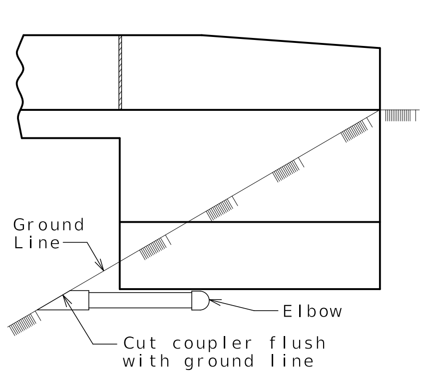
PART SECTION A-A
(Section thru wing similar)



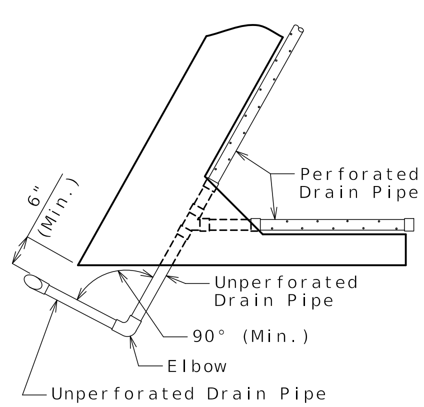
DETAIL A



PLAN OF END BENT



ELEVATION OF WING



PART PLAN

OPTIONAL TURNED DRAIN
(Use only when straight drain is not practical.)

General Notes:

All drain pipe shall be sloped 1 to 2 percent.

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

Drain pipe shall be placed at fill face of end bent and inside face of wings. The pipe shall slope to lowest grade of ground line, also missing the lower beam of end bent by a minimum of 1 1/2 inches.

Perforated pipe shall be placed at fill face side and inside face of wings at the bottom of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

VERTICAL DRAIN AT END BENTS
(Squared end bent shown, skewed end bent similar)

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
10/22/2024 10:11:11 AM
Alex Benz - Civil
MO PE-2018003121

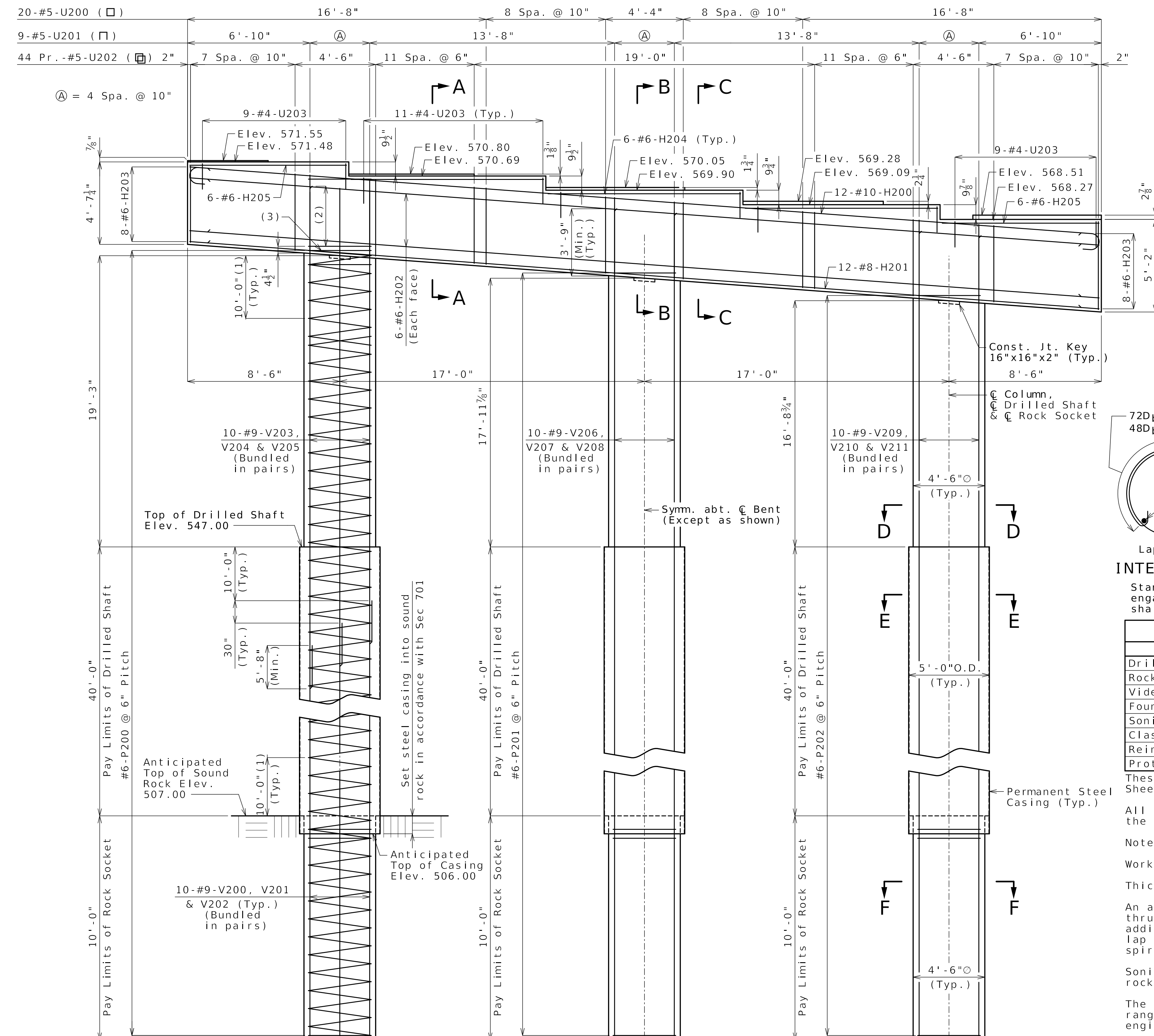
DATE PREPARED	10/22/2024
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 7
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

REV.

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578



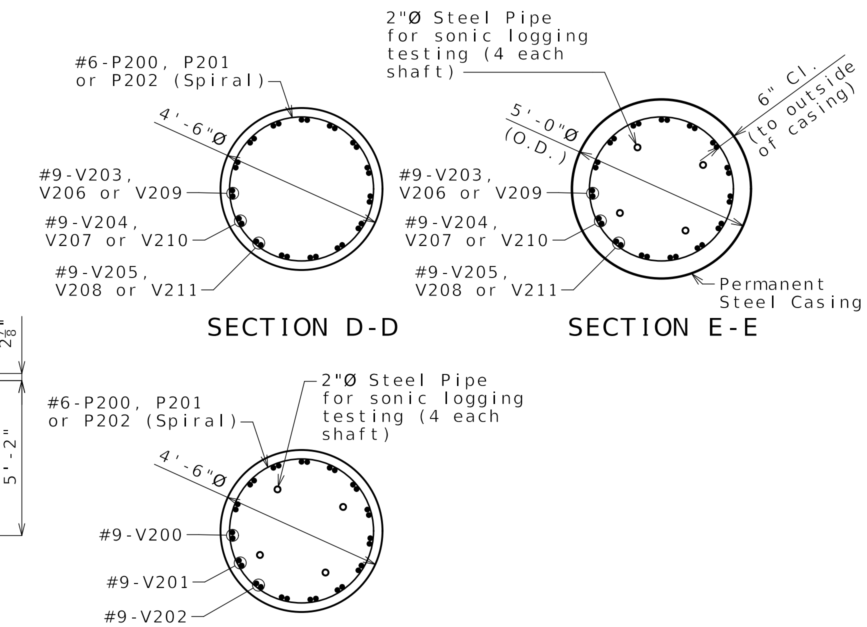
(1) Lapping of spiral reinforcement in this region not permitted.

(2) 16-#5-P203 @ 3" cts. (Typ.)

(3) Anchorage of spiral reinforcement shall be provided by 1 1/2 extra turns of spiral reinforcment at end of the spiral unit. Spirals shall extend 1 1/2" into beam cap.

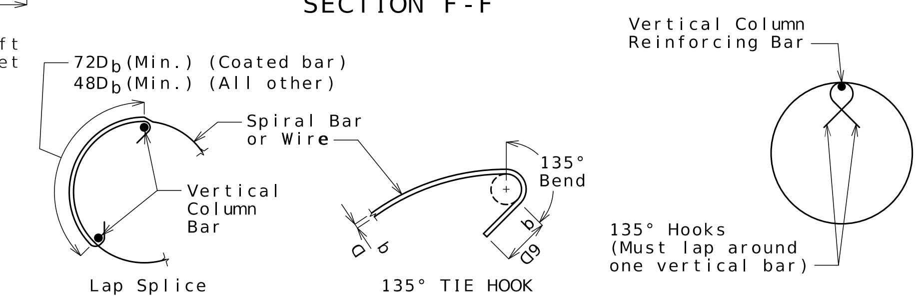
ELEVATION

Beam keys not shown for clarity.



SECTION D-D   SECTION E-E

SECTION F-F



INTERMEDIATE SPLICE OF SPIRALS   SEISMIC STIRRUP BAR

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. 2

Item		Quantity
Drilled Shafts (5 ft. 0. in. Dia.)	linear foot	120.0
Rock Sockets (4 ft. 6 in. Dia.)	linear foot	30.0
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	60.0
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	79.1
Reinforcing Steel (Bridges)	pound	41,980
Protective Coating - Concrete Bents & Piers (Epoxy)	lump sum	1

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

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

Notes:

Work this sheet with Sheet No. 9.

Thickness of permanent steel casing shall be in accordance with Sec. 701.

An additional 8 feet has been added to V-bar lengths and spiral P200 thru P202 for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The additional P200 thru P202 spirals shall be cut off if not required.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

The cost of any required excavation to the top of the drilled shafts will be considered completely covered by the contract unit price for other items.

Coat surface of columns from ground line to bottom of beam with Protective Coating - Concrete Bents & Piers (Epoxy)(Typ.)(See Sec. 711).

DETAILS OF INTERMEDIATE BENT NO. 2

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/28/2024 12:35:27 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/28/2024	
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 8
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

DESCRIPTION

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

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Civil Engineering Design
13523 Barrett Parkway Dr
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St. Louis, MO 63021
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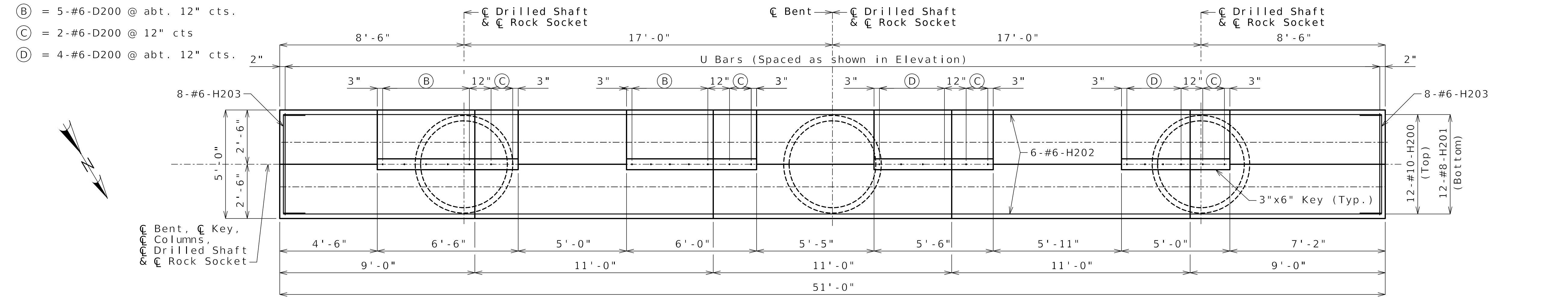
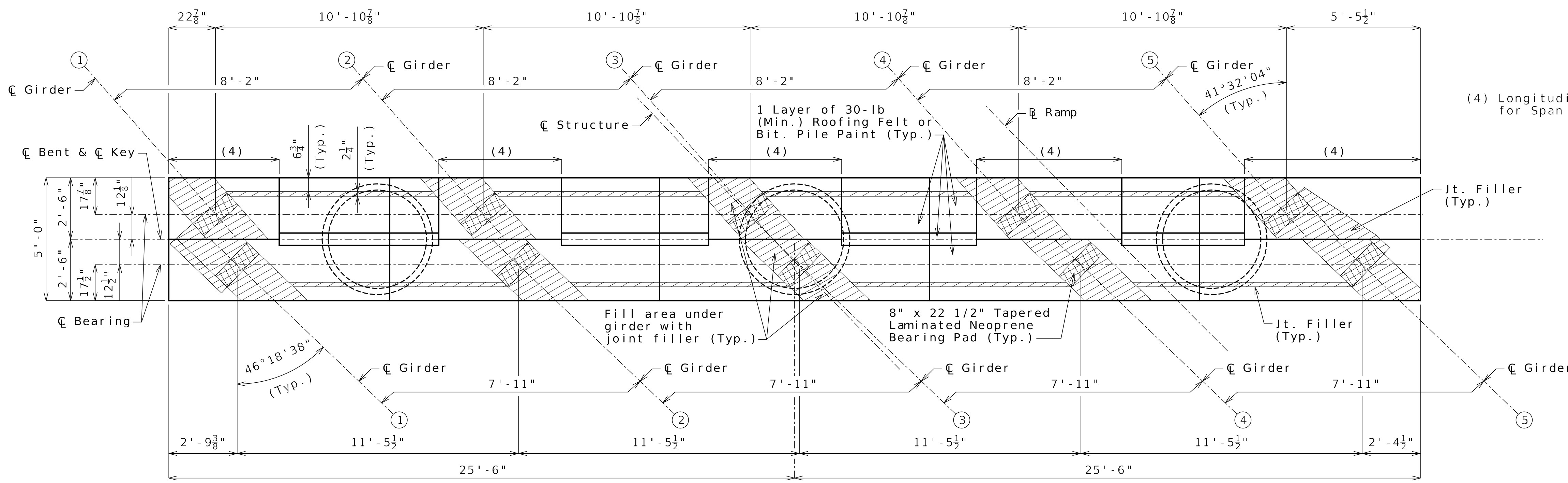
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

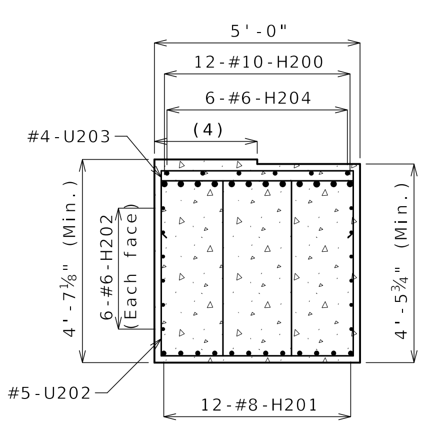
c:\bms\efkmoen01\alex benz\dms03766\B_A9273_008_J6I3624B_Int-Bent-2_1.dgn 12:10:59 PM 10/28/2024



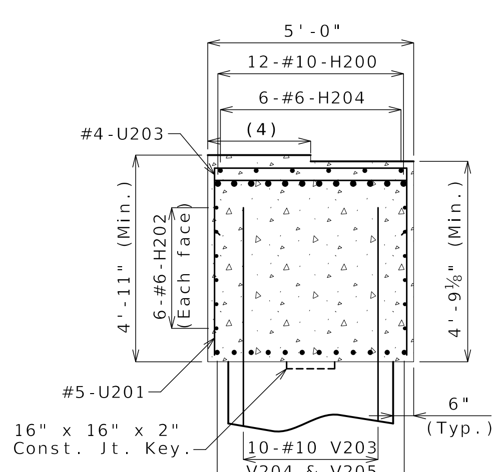
PLAN SHOWING REINFORCEMENT



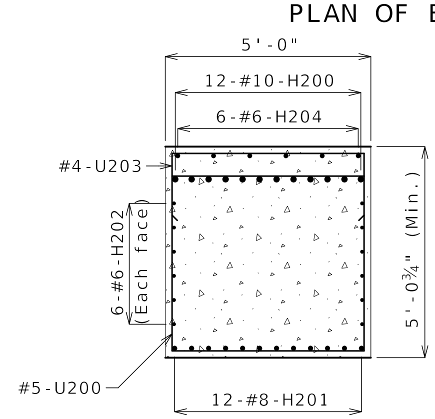
PLAN OF BEAM



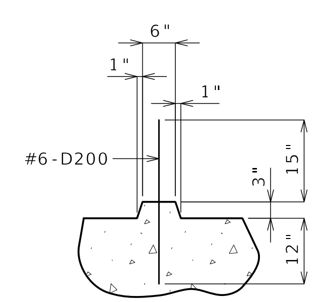
SECTION A-A



SECTION B-B



SECTION C-C



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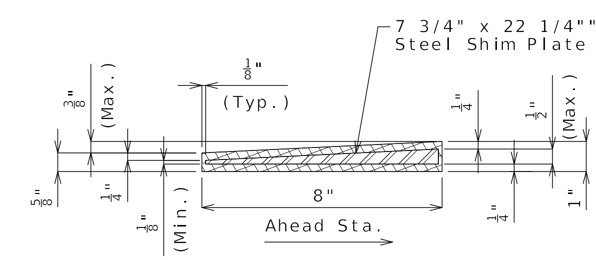

SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)

DETAILS OF INTERMEDIATE BENT NO. 2

Notes:
Work this sheet with Sheet No. 8.

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

Detailed Sep. 2024
Checked Sep. 2024

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

Alex C. Benz
10/24/2024 9:02:51 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/24/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	9
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

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

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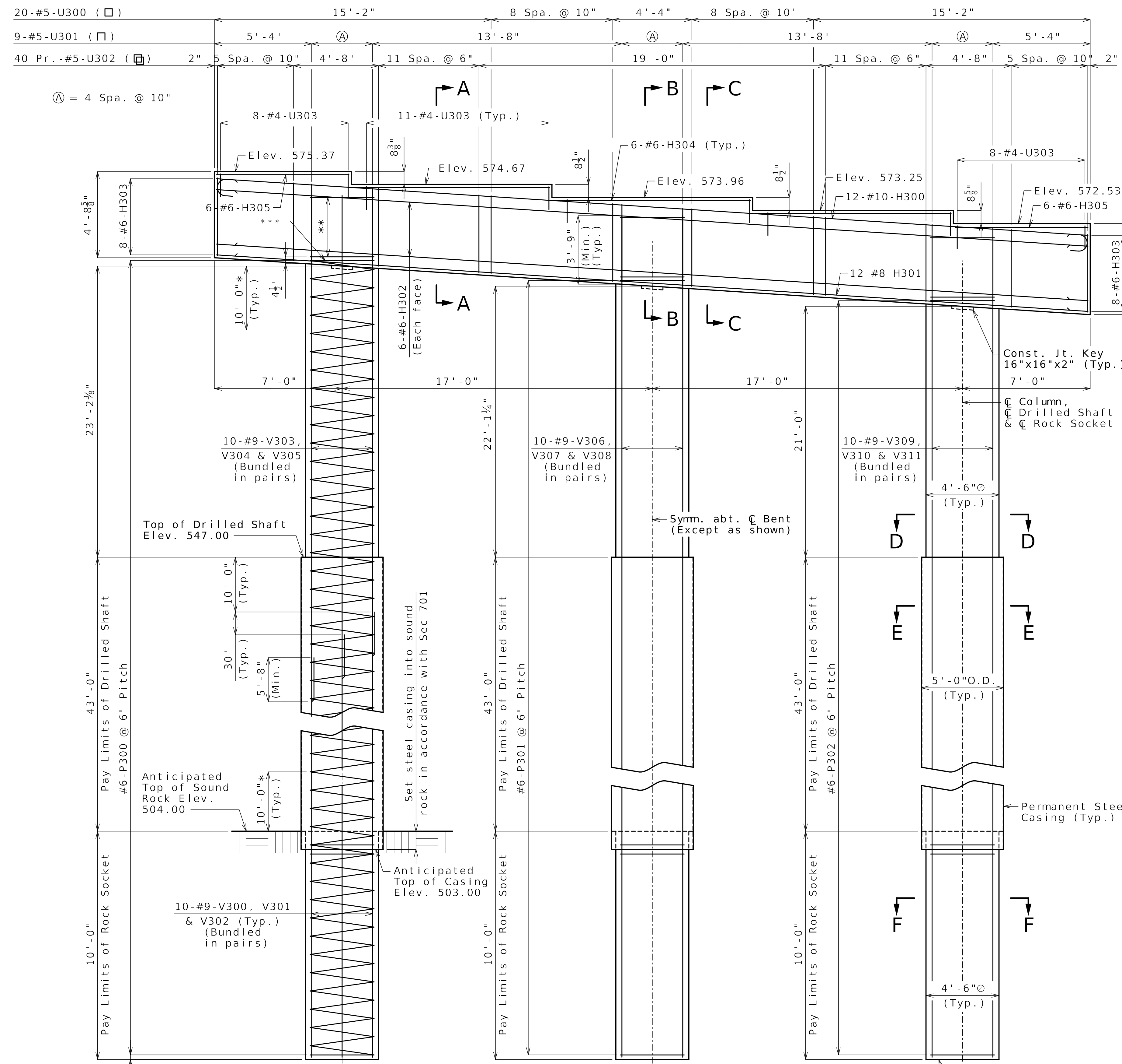
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_009_J6I3624B_Int-Bent-2-2.dgn 8:58:37 AM 10/24/2024



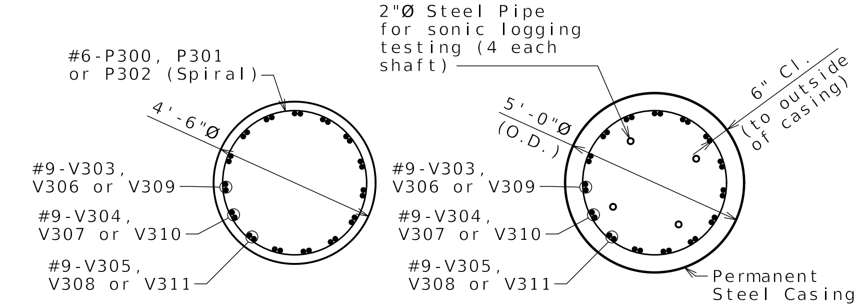
ELEVATION

Beam keys not shown for clarity.

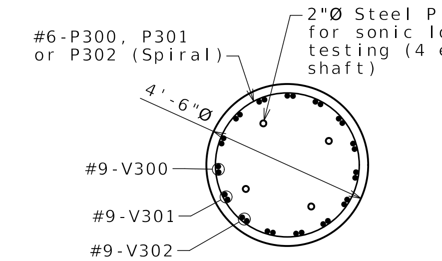
* Lapping of spiral reinforcement in this region not permitted.

** 16-#5-P303 @ 3" cts. (Typ.)

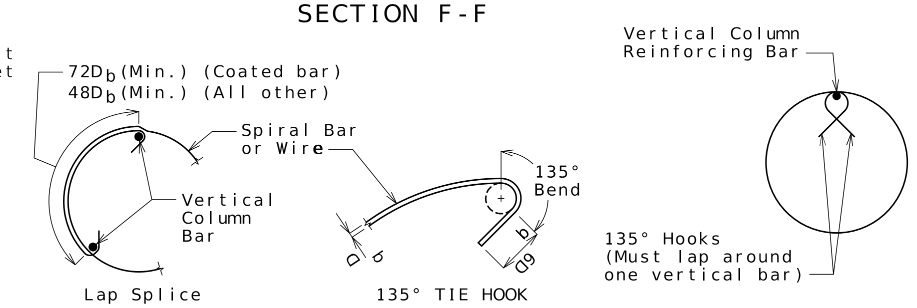
*** Anchorage of spiral reinforcement shall be provided by 1 1/2 extra turns of spiral reinforcment at end of the spiral unit. Spirals shall extend 1 1/2" into beam cap.



SECTION D-D SECTION E-E



SECTION F-F



INTERMEDIATE SPLICE OF SPIRALS SEISMIC STIRRUP BAR

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
Drilled Shafts (4 ft. 6. in. Dia.)	linear foot	129.0
Rock Sockets (4 ft. 0 in. Dia.)	linear foot	36.0
Video Camera Inspection	each	3
Foundation Inspection Holes	linear foot	60.0
Sonic Logging Testing	each	3
Class B Concrete (Substructure)	cu. yard	82.4
Reinforcing Steel (Bridges)	pound	44,100
Protective Coating - Concrete Bents & Piers (Epoxy)	lump sum	1

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

All reinforcement in drilled shafts and rock sockets is included in the substructure quantities.

Notes:

Work this sheet with Sheet No. 11.

Thickness of permanent steel casing shall be in accordance with Sec. 701.

An additional 8 feet has been added to V-bar lengths and spiral P300 thru P302 for possible change in drilled shaft or rock socket length. The additional V-bar length shall be cut off or included in the reinforcement lap if not required. The additional P300 thru P302 spirals shall be cut off if not required.

Sonic logging testing shall be performed on all drilled shafts and rock sockets.

The tip of casing shall not extend into the rock socket elevation range reported in the Foundation Data table without approval by the engineer.

The cost of any required excavation to the top of the drilled shafts will be considered completely covered by the contract unit price for other items.

Coat surface of columns from ground line to bottom of beam with Protective Coating - Concrete Bents & Piers (Epoxy)(Typ.)(See Sec. 711).

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
Alex C. Benz
10/28/2024 12:35:39 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/28/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
BR	10
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9273	

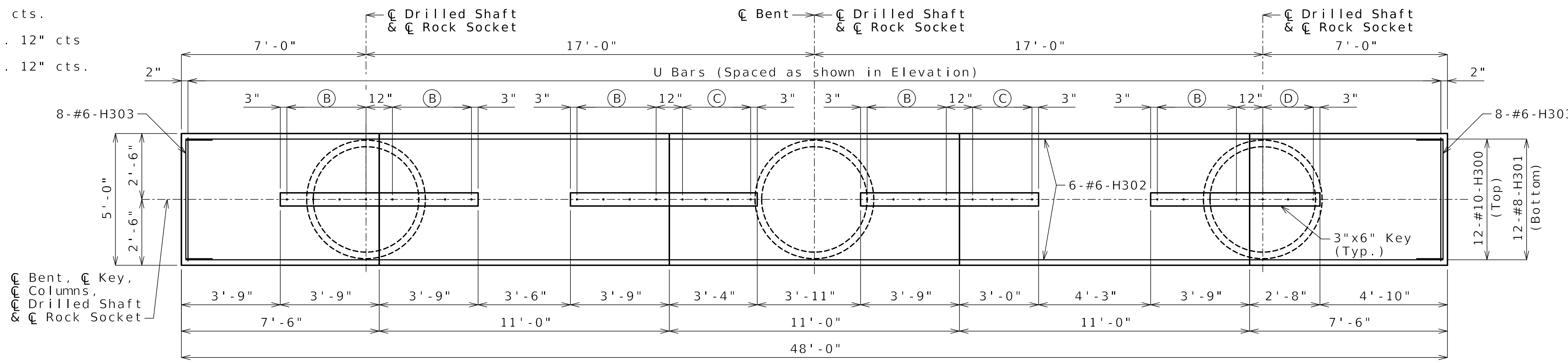
DESCRIPTION

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

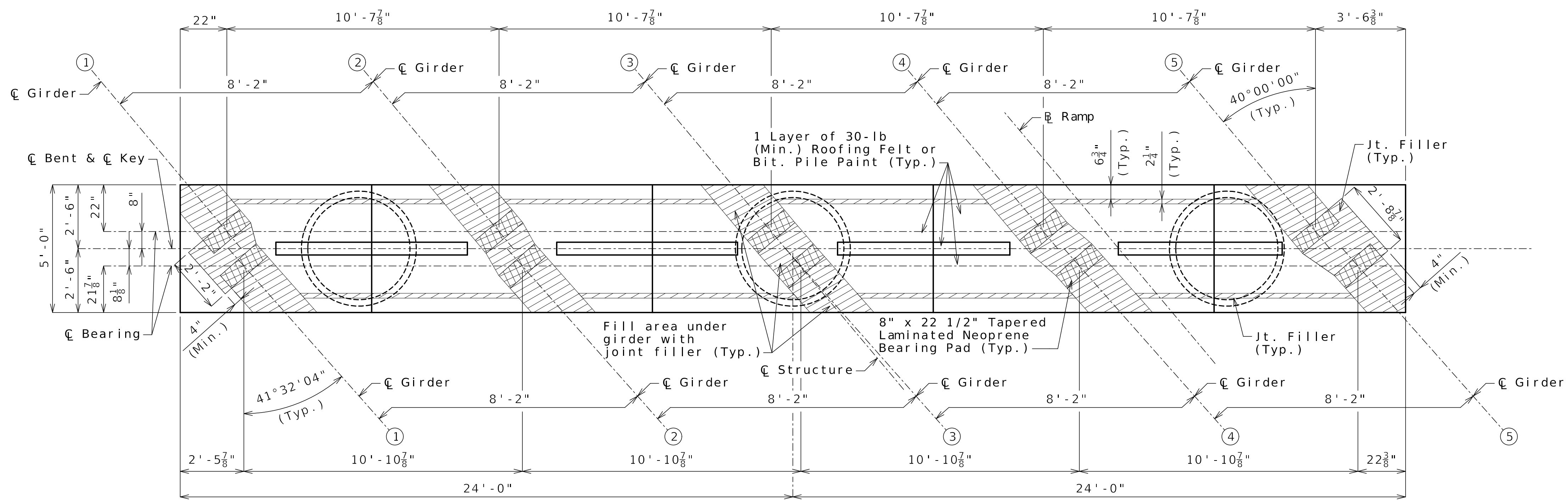
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

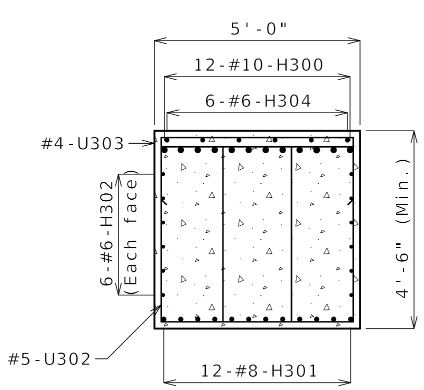
(B) = 4-#6-D300 @ 12" cts.
(C) = 4-#6-D300 @ abt. 12" cts
(D) = 3-#6-D300 @ abt. 12" cts.



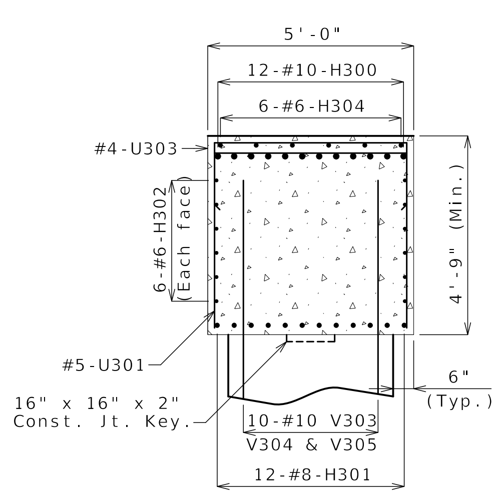
PLAN SHOWING REINFORCEMENT



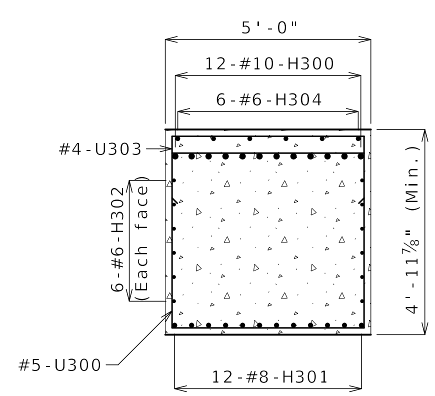
PLAN OF BEAM



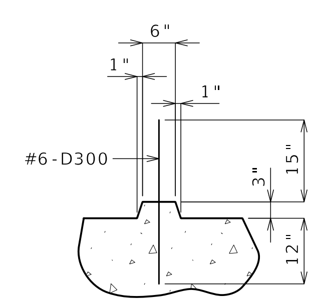
SECTION A-A



SECTION B-B



SECTION C-C



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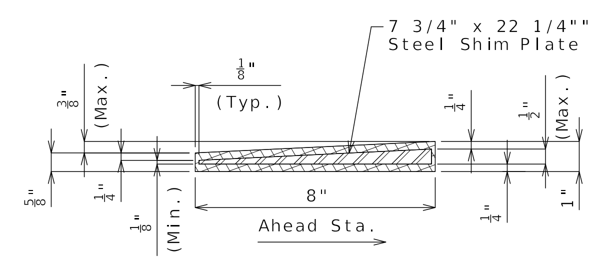


SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)

Notes:
Work this sheet with Sheet No. 10.

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

DETAILS OF INTERMEDIATE BENT NO. 3

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/22/2024 10:12:30 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/22/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	11
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

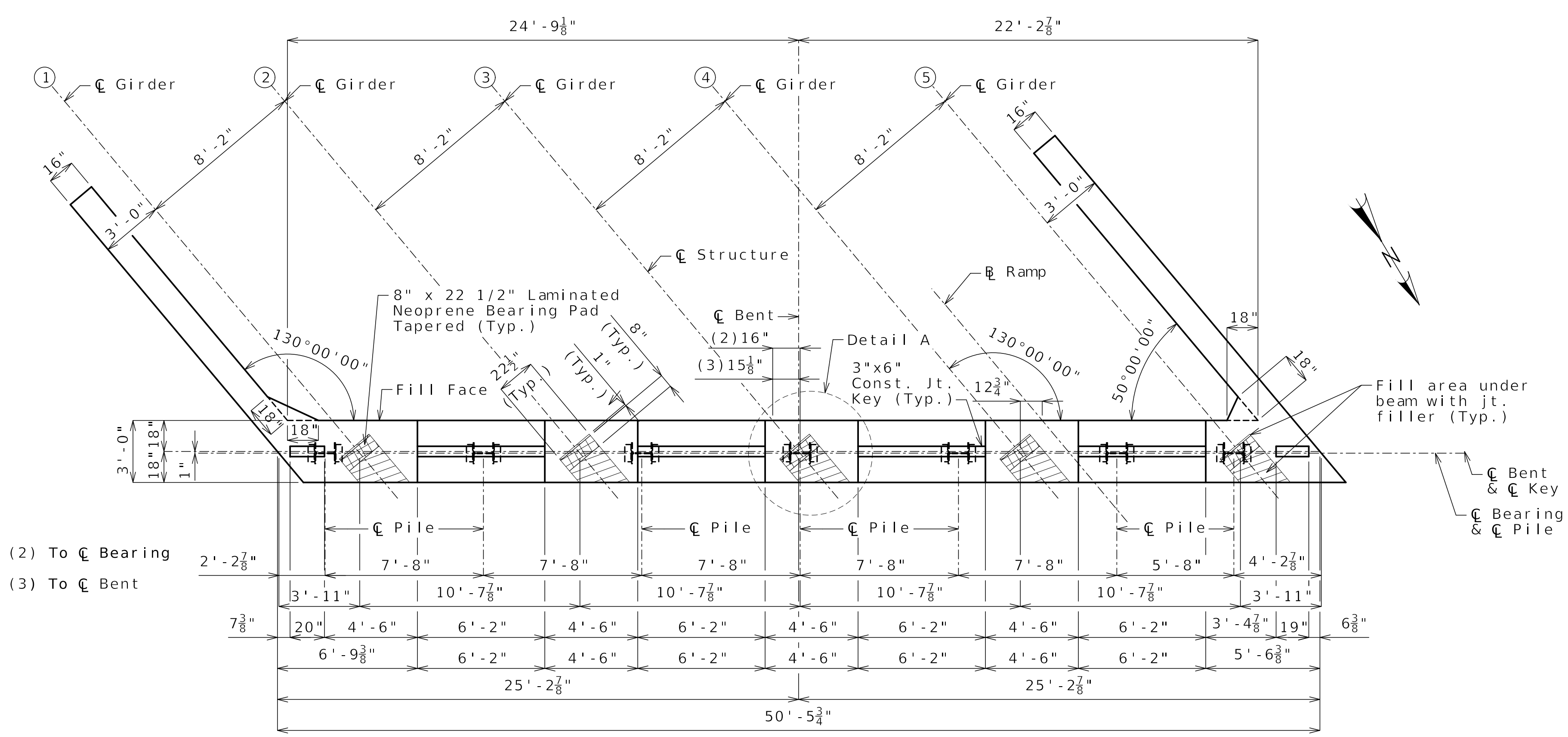
DESCRIPTION

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

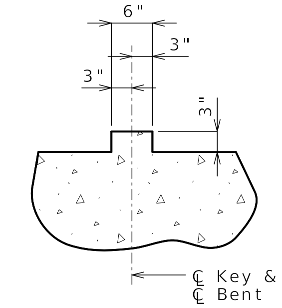
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_011_J6I3624B_Int-Bent-3-2.dgn 9:22:41 AM 10/22/2024



PLAN OF BEAM



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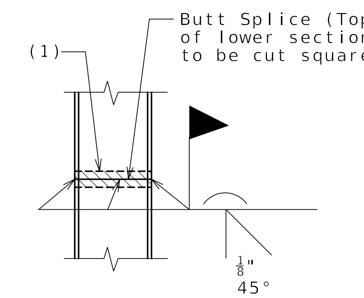
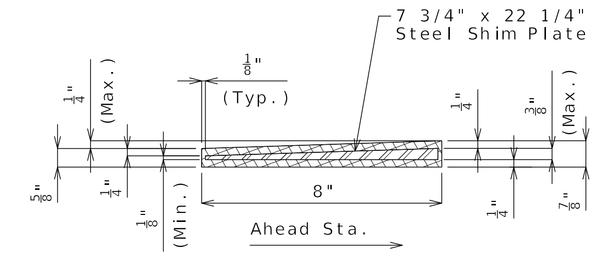


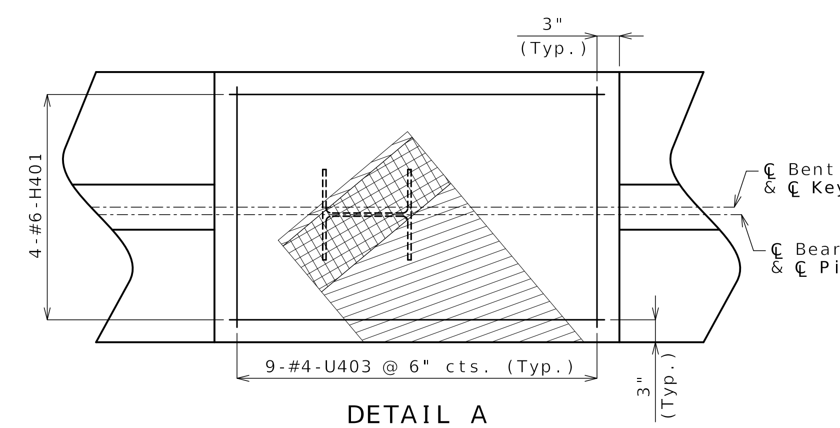
STEEL PILE SPLICE

(If required)

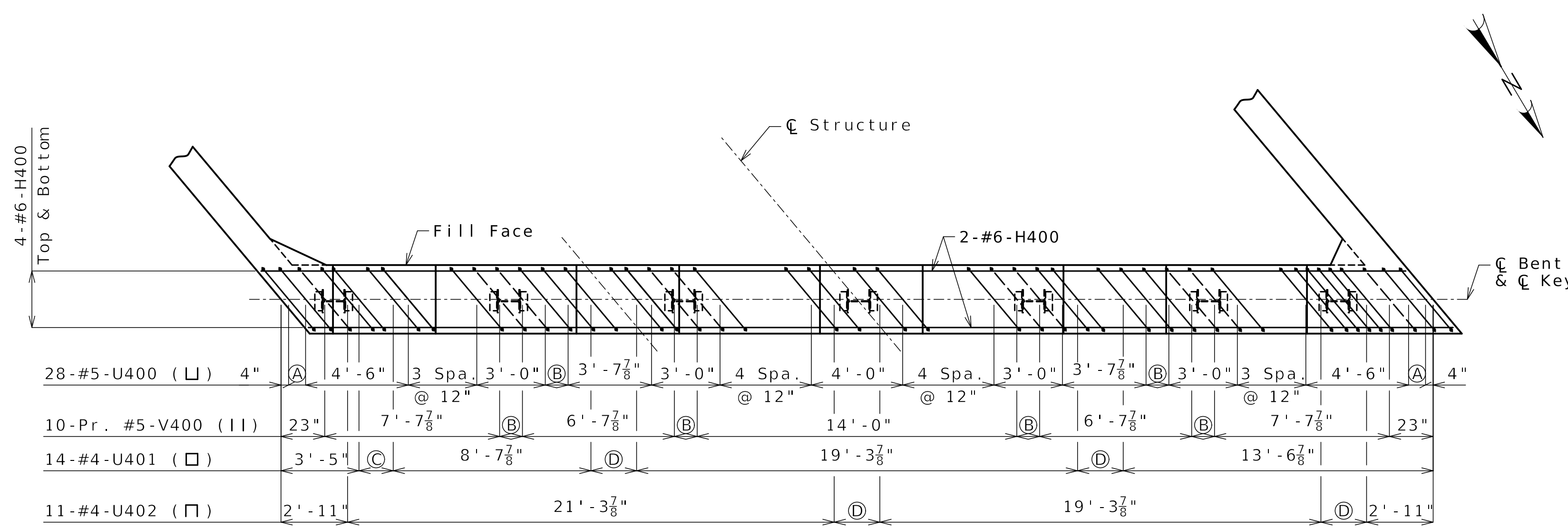
(1) Galvanizing material shall be omitted or removed one inch clear of weld locations in accordance with Sec 702.



SECTION THRU LAMINATED NEOPRENE BEARING PAD (TAPERED)



DETAIL A



Ⓐ = 8⅞"

Ⓑ = 12"

Ⓒ = 3 Spa. @ 6"

Ⓓ = 4 Spa. @ 6"

PLAN OF BEAM SHOWING REINFORCEMENT

Keys not shown for clarity.

Notes:
Work this sheet with Sheets No. 13 & 14.

All U bars and pairs of V bars shall be placed parallel to centerine of roadway.

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

Substructure Quantity Table for Bent No. 4

Item		Quantity
Class 1 Excavation	cu. yard	35
Galvanized Structural Steel Pile (12 in.)	linear foot	483
Pile Point Reinforcement	each	7
Class B Concrete (Substructure)	cu. yard	22.9

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

DETAILS OF END BENT NO. 4

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/24/2024 8:50:22 AM
Alex Benz - Civil
MO PE-2018003121

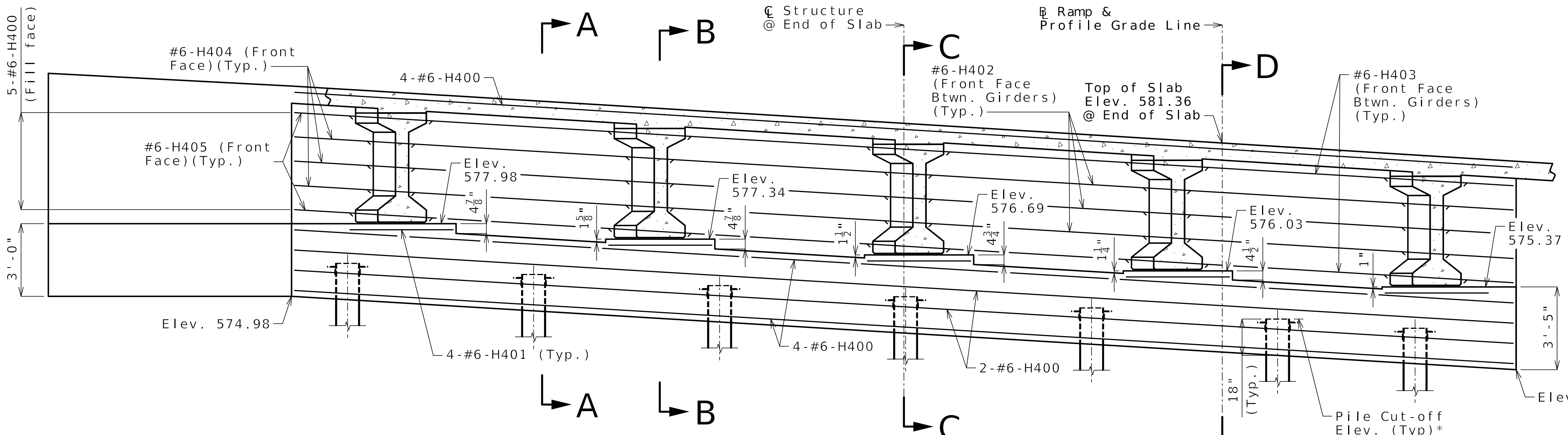
DATE PREPARED	
10/24/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 12
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

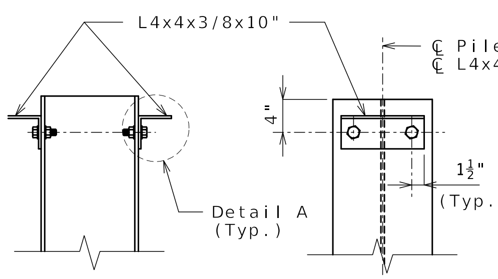
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

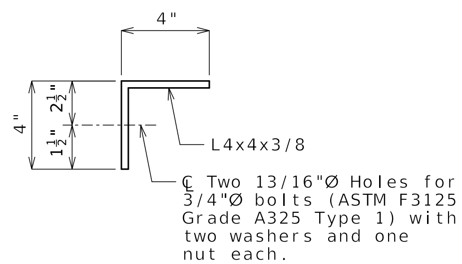
REV.



SECTION NEAR END BENT



DETAILS OF HP PILE ANCHORS



DETAIL A

Angles shall be coated with a minimum of two coats of non-aluminum epoxy mastic primer to provide a dry film thickness of 4 mils minimum, 8 mils maximum, or galvanized in accordance with Sec 1081. Bolts, washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

Pile No.	Cut-Off Elev.
9	776.34
10	565.72
11	775.42
12	774.96
13	774.50
14	774.04
15	773.67

Note: For Pile Numbers, see Sheet No. 33.

Notes:
Work this sheet with Sheets No. 12 & 14.

For Section A-A, B-B, C-C & D-D and Elevations E-E & F-F, see Sheet No 14.

The #6-F400 and #6-F402 bars shall be bent in the field to clear girders.

The U bars shall be placed parallel to centerline of roadway.

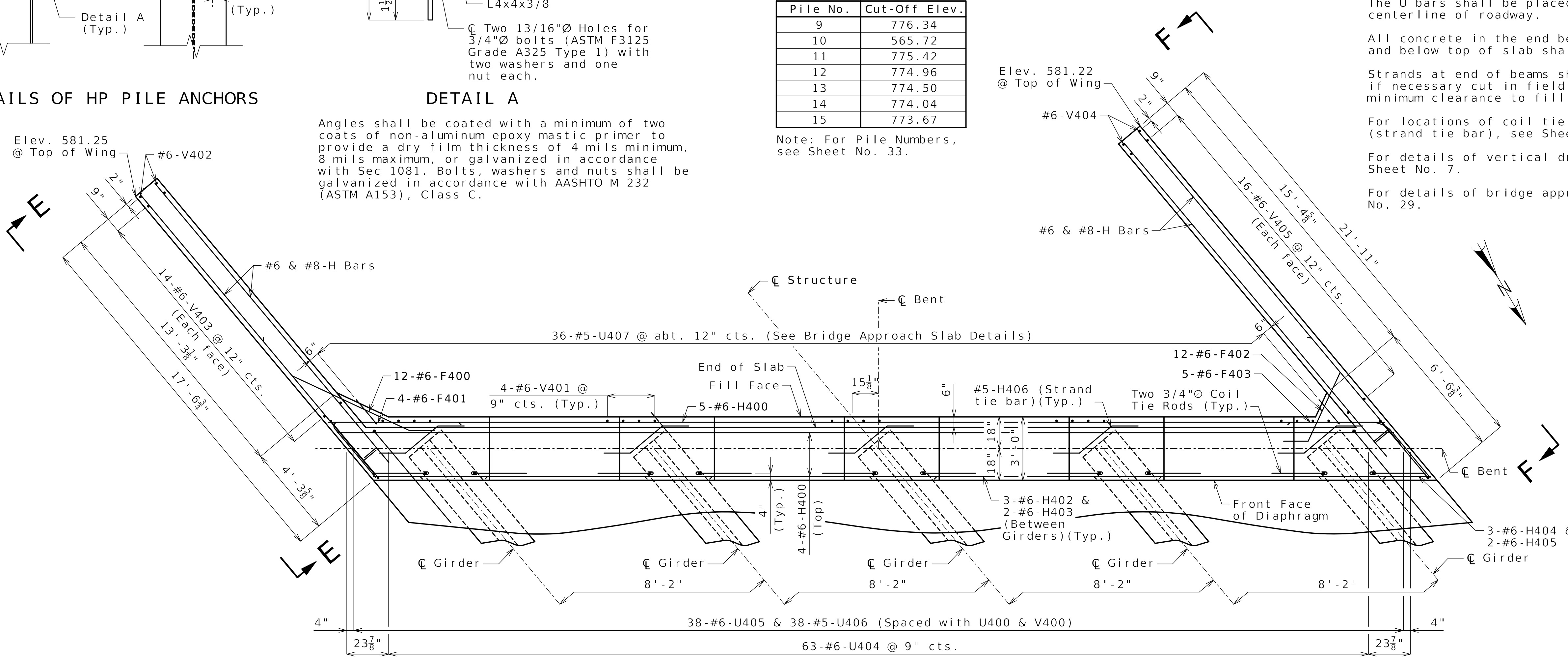
All concrete in the end bent above top of beam and below top of slab shall be Class B-2.

Strands at end of beams shall be field bent or if necessary cut in field to maintain 1 1/2-inch minimum clearance to fill face of end bent.

For locations of coil tie rods and #5-H408 (strand tie bar), see Sheet No. 16.

For details of vertical drain at end bents, see Sheet No. 7.

For details of bridge approach slab, see Sheet No. 29.



PART PLAN

DETAILS OF END BENT NO. 4

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/24/2024 8:50:31 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/24/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
BR	13
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9273	

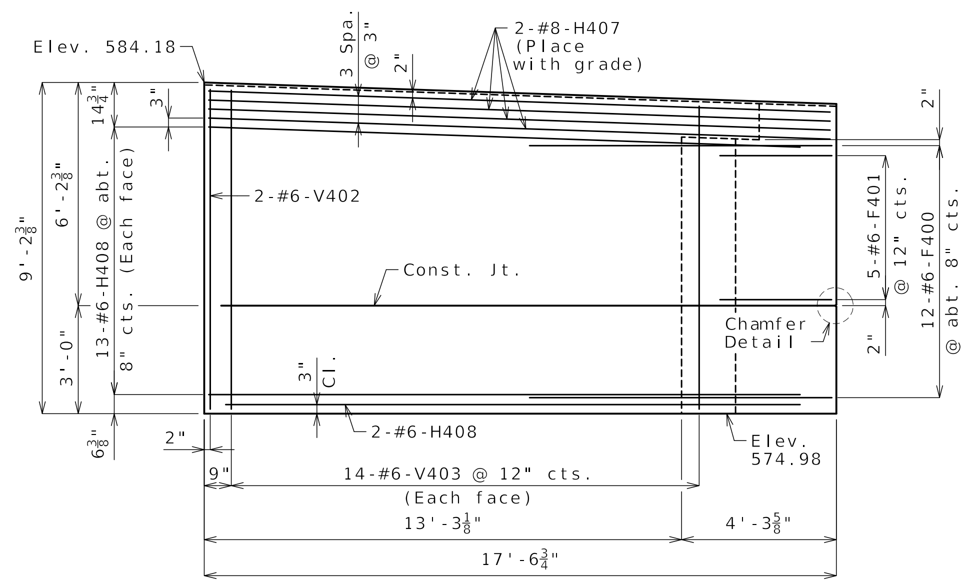
DESCRIPTION

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

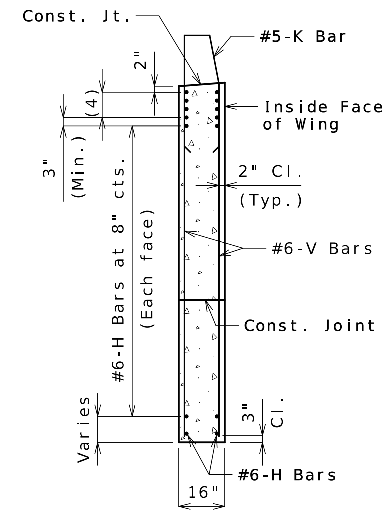
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_013_J6I3624B_End-Bent-4_2.dgn 8:17:05 AM 10/24/2024



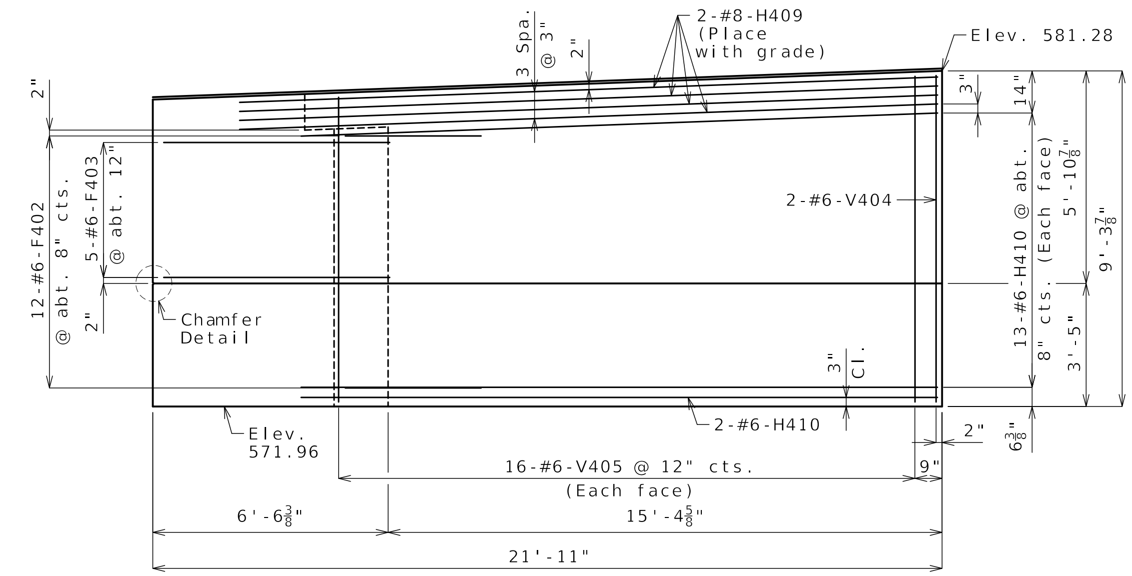
ELEVATION E-E



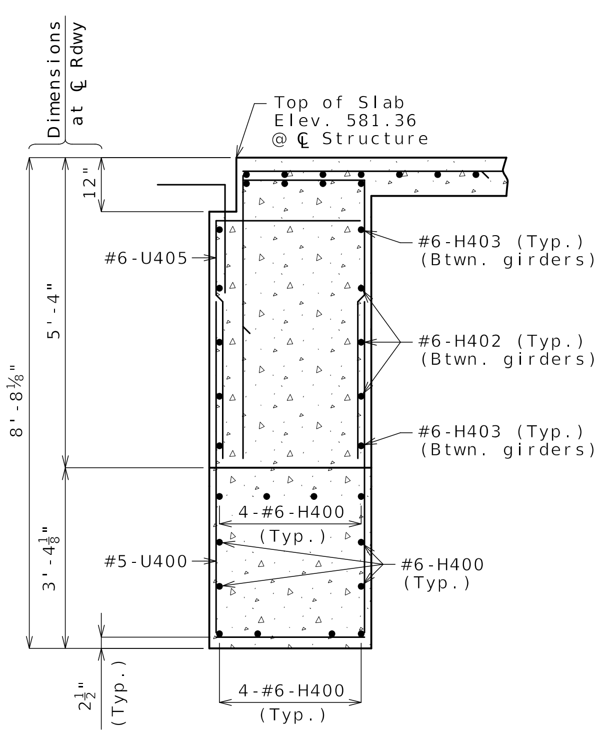
TYPICAL SECTION
THRU WING

(Right wing shown, left wing similar)

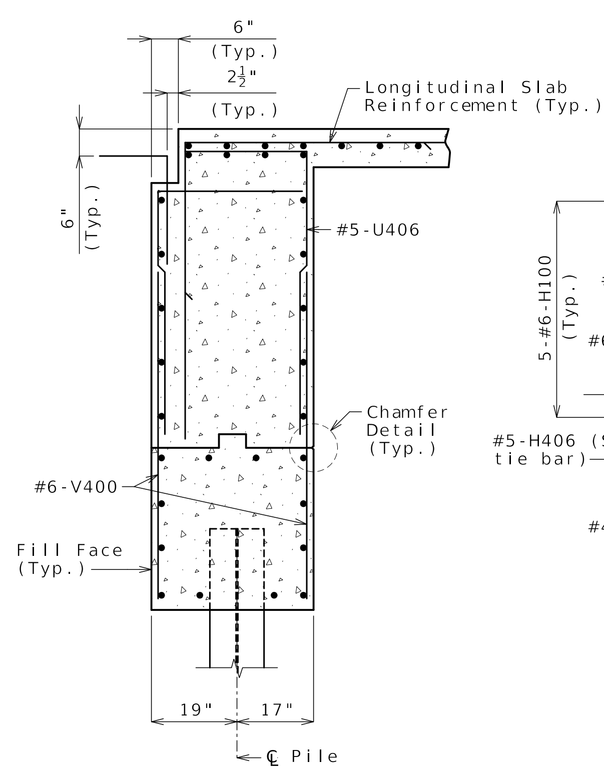
(4) #8-H Bars at 3" cts.
(Each face)(Place with grade)



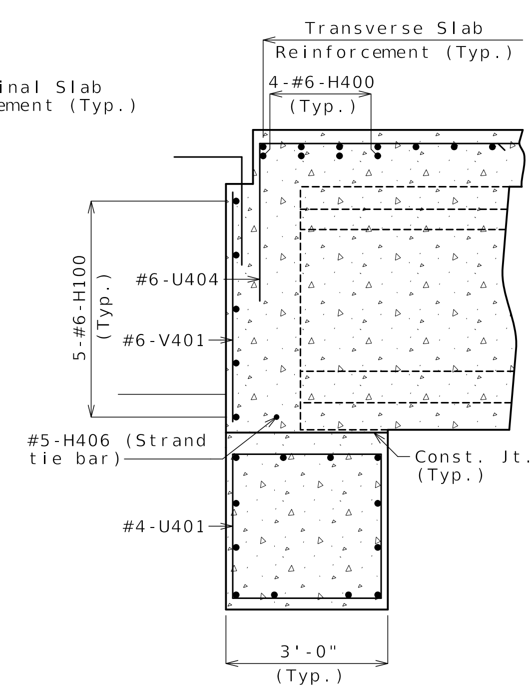
ELEVATION F-F



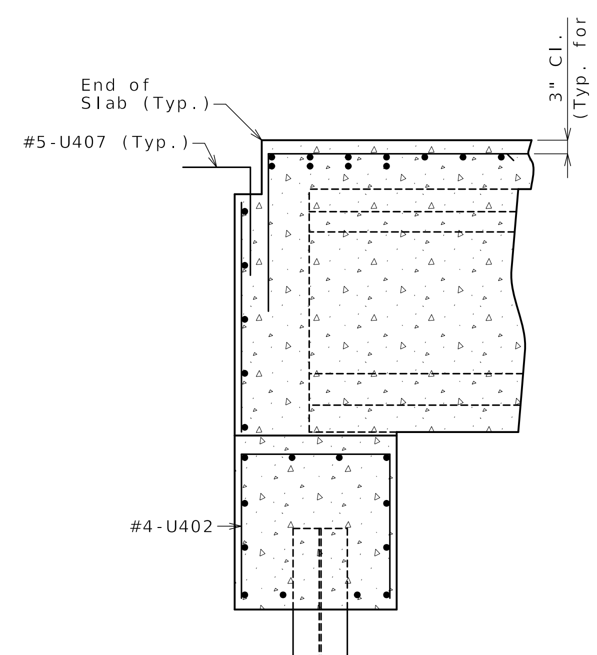
SECTION -DD



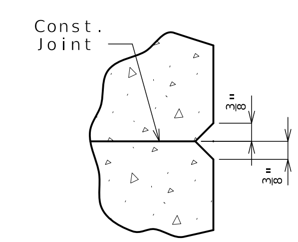
SECTION A-A



SECTION B-B



SECTION C-C



CHAMFER DETAIL

Note:
Work this sheet with Sheets No. 12 & 13.

DETAILS OF END BENT NO. 4

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/24/2024 9:03:09 AM
Alex Benz - Civil
MO PE-2018003121

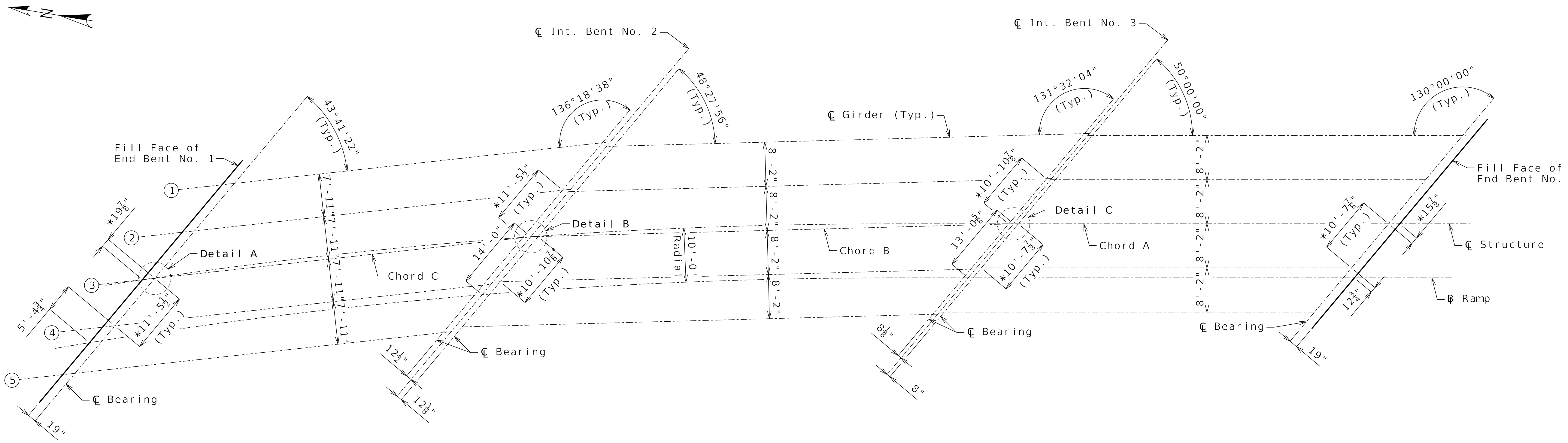
DATE PREPARED	
10/24/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 14
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

REV.

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

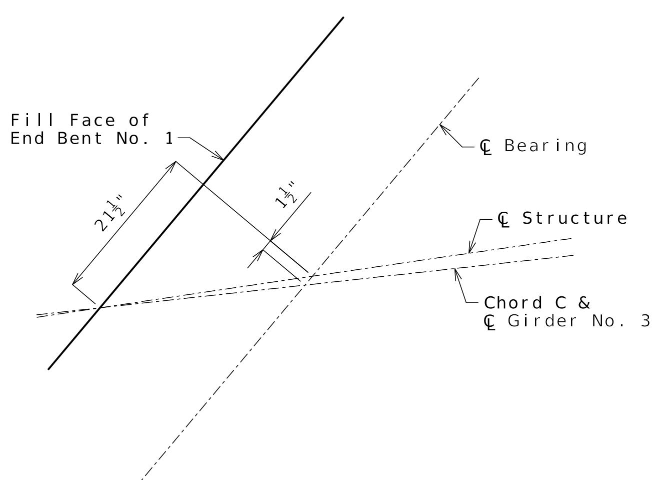
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578



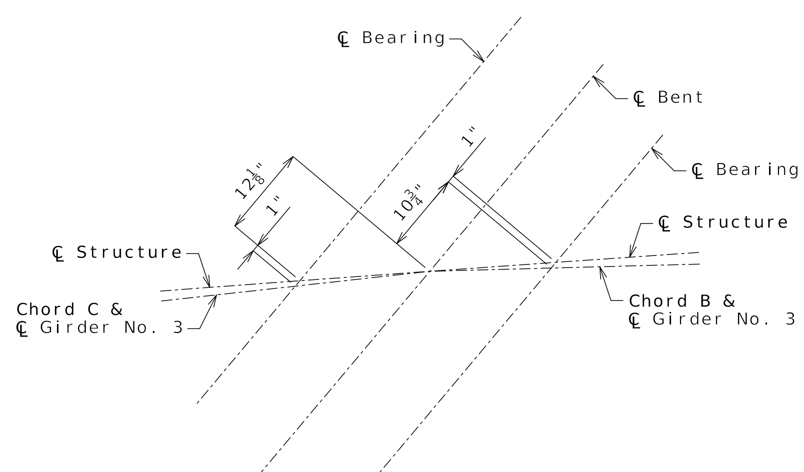
PLAN

* Dimensions along ℄ bearing to Chords A, B and C.

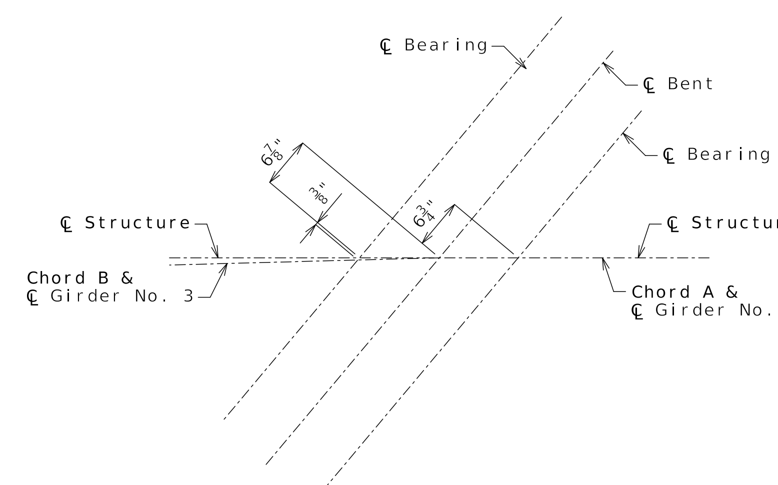
For locations of diaphragms, see Sheet No. 18.



DETAIL A



DETAIL B



DETAIL C

Notes:

All dimensions are horizontal.

All bents are parallel.

Beams within a span are parallel to chords.

GIRDER LAYOUT

Detailed Sep. 2024
Checked Sep. 2024

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

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_015_J6I3624B_Girder-Layout.dgn 9:28:05 AM 10/22/2024

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER

10/22/2024 10:13:48 AM
Alex Benz - Civil
MO PE-2018003121

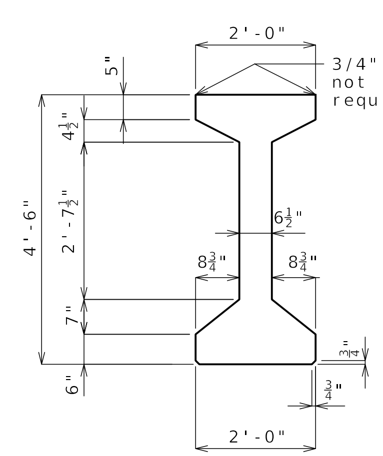
DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 15
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

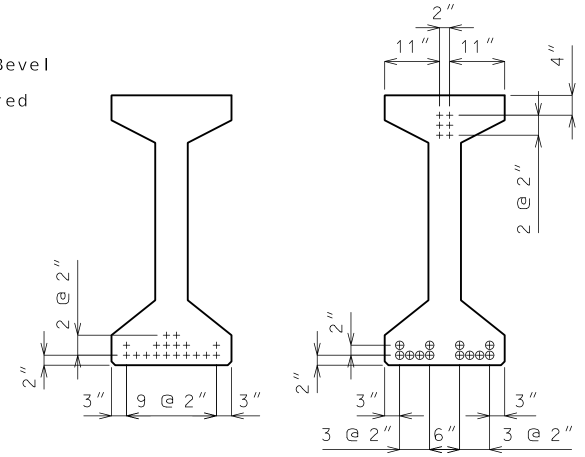
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

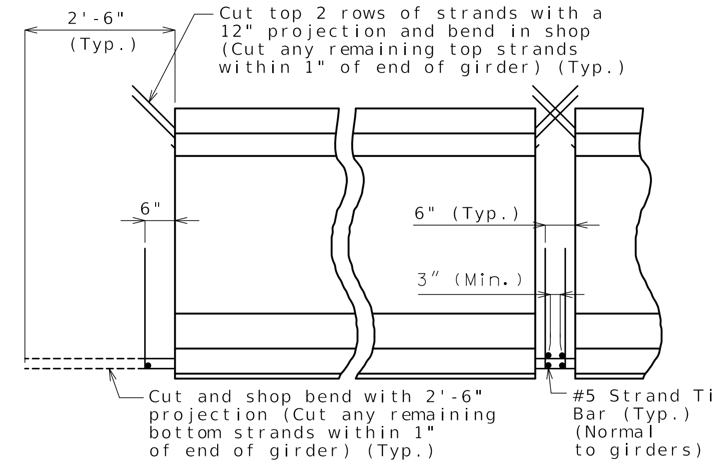


DIMENSIONS

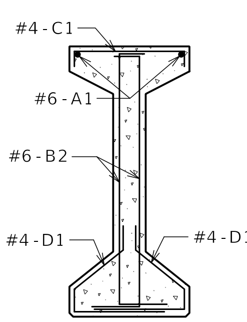


STRAND ARRANGEMENT

+ Indicates prestressing strand.
○ Indicates cut & shop bend with 2'-6" projection.

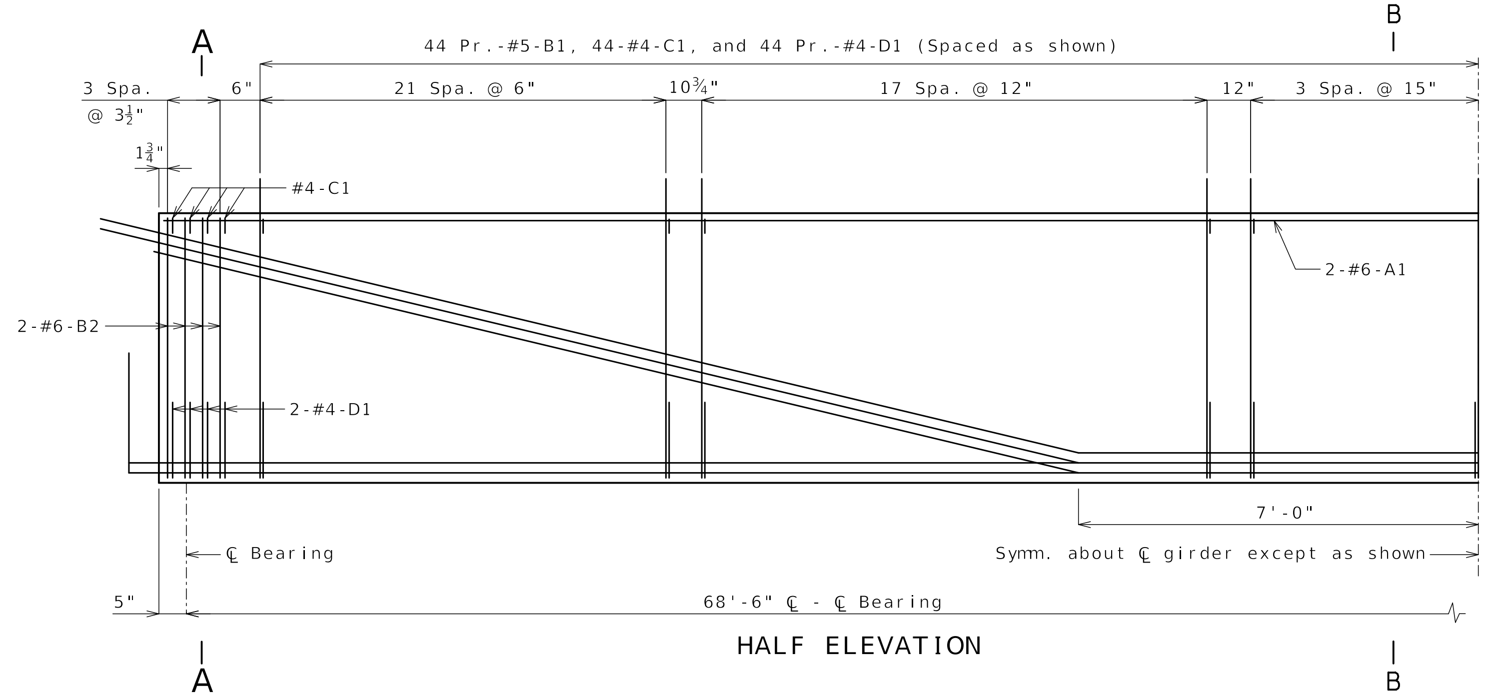


STRANDS AT GIRDER ENDS

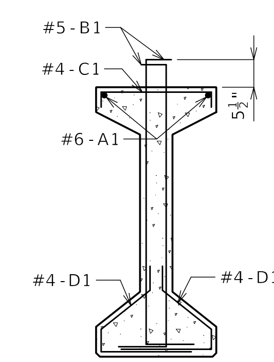


SECTION A-A

Strands not shown for clarity.



HALF ELEVATION



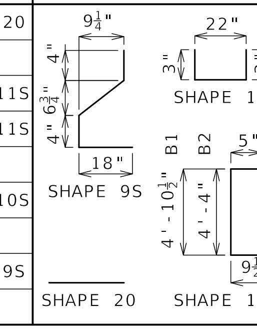
SECTION B-B

Strands not shown for clarity.

BILL OF REINFORCING STEEL - EACH GIRDER

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
4	6 A1	36'-2"	20
174	5 B1	5'-11"	11S
16	6 B2	5'-3"	11S
95	4 C1	2'-2"	10S
190	4 D1	3'-0"	9S

BENDING DIAGRAM



All dimensions are out to out.

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 one inch.

All reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 6,000 psi and f'ci = 4,500 psi.

Use 18 strands, 1/2"Ø Grade 270, with an initial prestress force of 558 kips.

Pretensioned members shall be in accordance with Sec 1029.

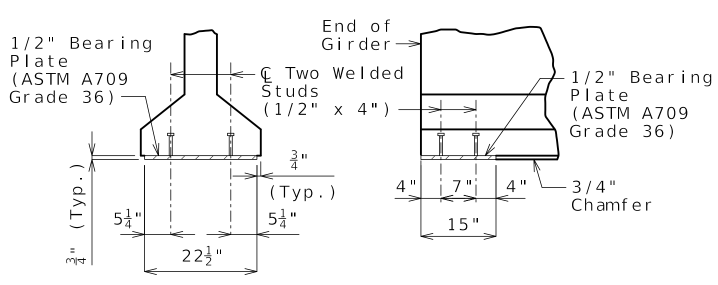
Fabricator shall be responsible for location and design of lifting devices.

Exterior and interior girders are the same except: coil ties & holes for steel intermediate diaphragms.

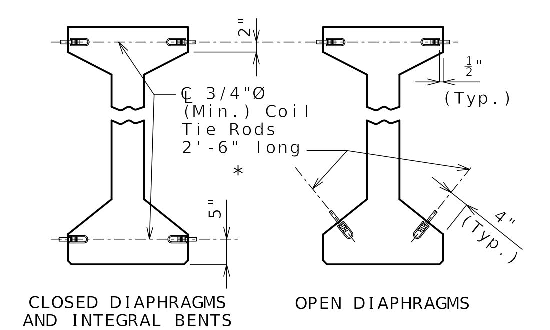
For Girder Camber Diagram, see Sheet No. 20.

The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 18.

For location of coil ties at concrete bent diaphragms, see Sheets No. 5, 13 & 19.



BEARING PLATE



COIL TIES

* Exclude coil tie at exterior face of exterior girders except at integral end bents.

I-GIRDERS - SPANS (1-2) AND (3-4)

Detailed Sep. 2024
Checked Sep. 2024

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

ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER STATE OF MISSOURI
Alex C. Benz
10/22/2024 10:13:58 AM
Alex Benz - Civil
MO PE-2018003121

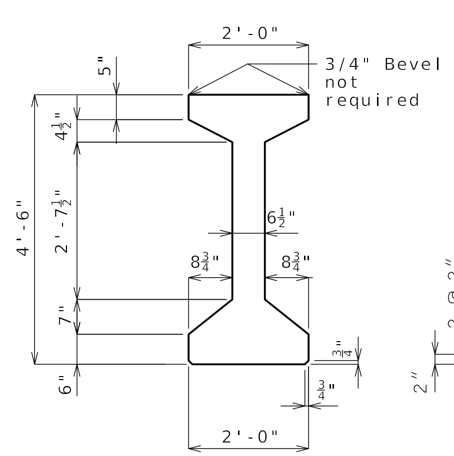
DATE PREPARED	10/22/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	16
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

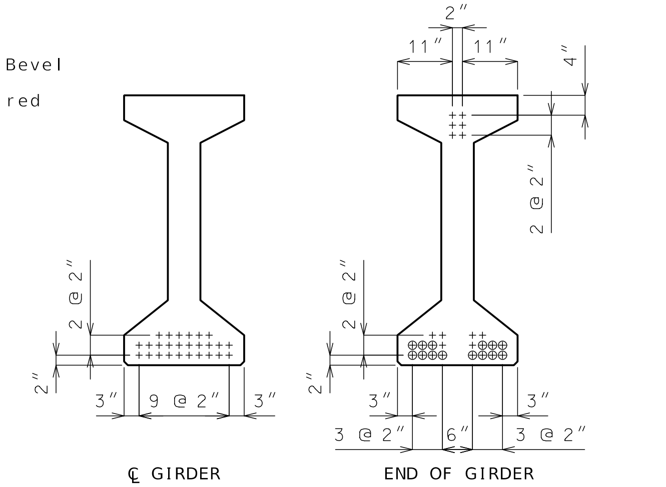
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
MoDOT

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

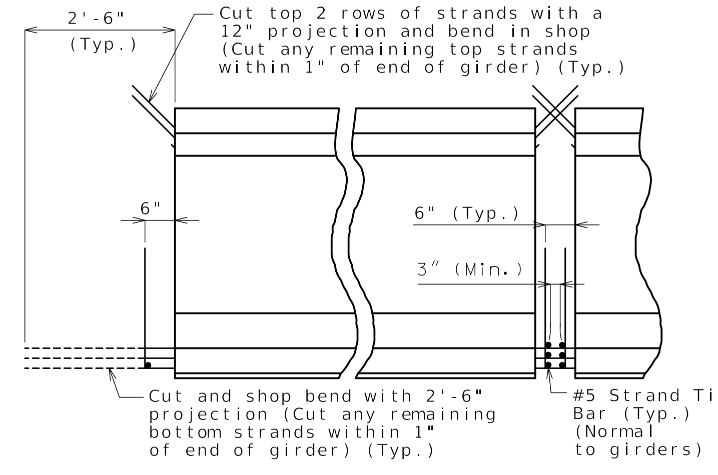


DIMENSIONS

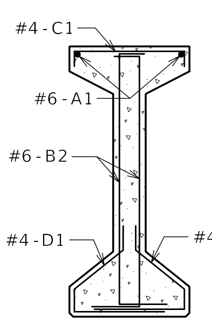


STRAND ARRANGEMENT

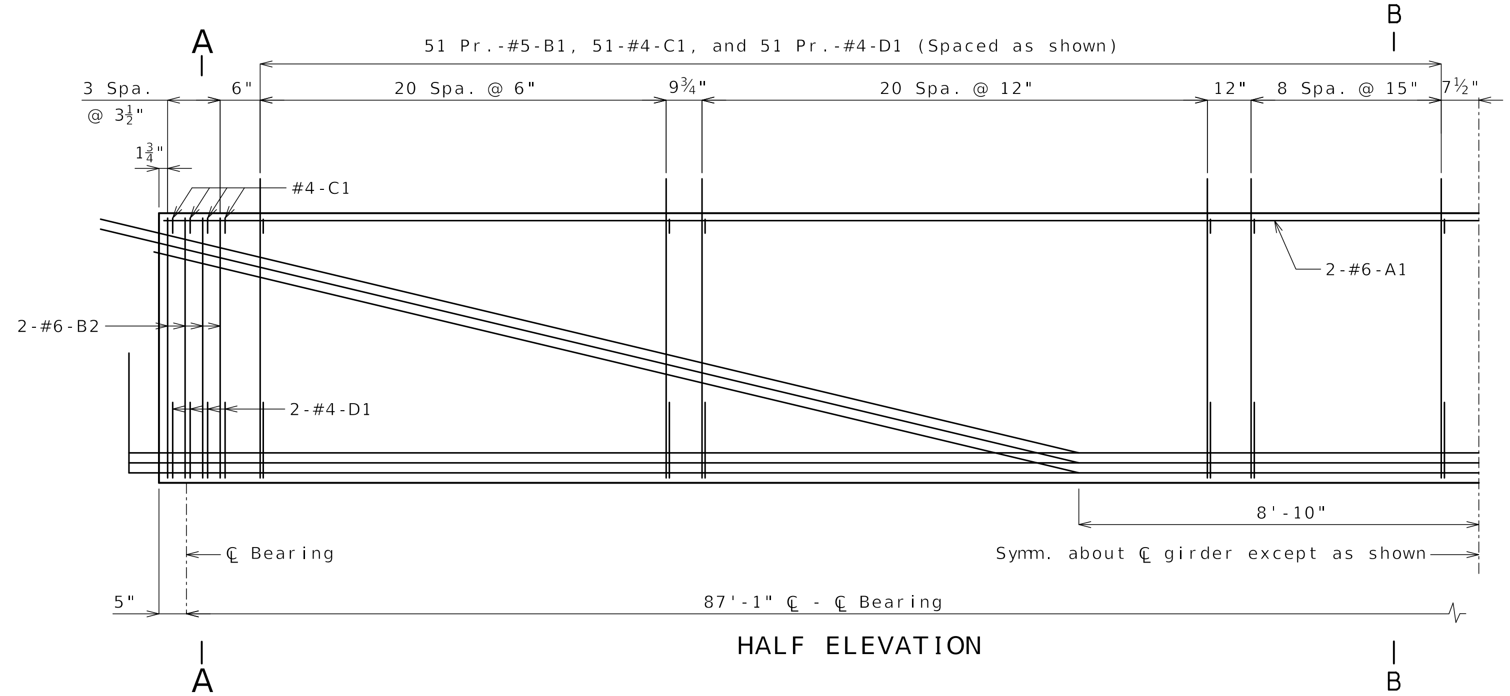
+ Indicates prestressing strand.
○ Indicates cut & shop bend with 2'-6" projection.



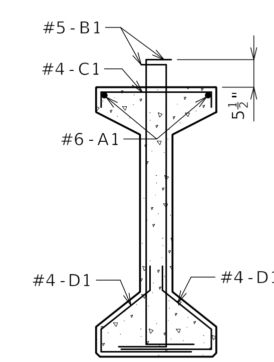
STRANDS AT GIRDER ENDS



SECTION A-A
Strands not shown for clarity.

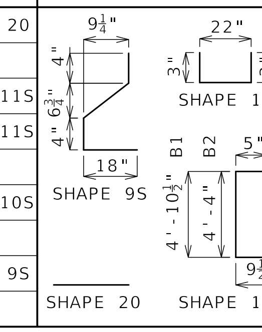


HALF ELEVATION



SECTION B-B
Strands not shown for clarity.

BILL OF REINFORCING STEEL - EACH GIRDER				
NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE	BENDING DIAGRAM
4	6 A1	45'-7"	20	
204	5 B1	5'-11"	11S	
16	6 B2	5'-3"	11S	
110	4 C1	2'-2"	10S	
220	4 D1	3'-0"	9S	



All dimensions are out to out.

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 one inch.

All reinforcement shall be Grade 60.

The two D1 bars may be furnished as one bar at the fabricator's option.

All B1 bars shall be epoxy coated.

General Notes:

Concrete for prestressed girders shall be Class A-1 with f'c = 6,000 psi and f'ci = 4,500 psi.

Use 26 strands, 1/2"Ø Grade 270, with an initial prestress force of 806 kips.

Pretensioned members shall be in accordance with Sec 1029.

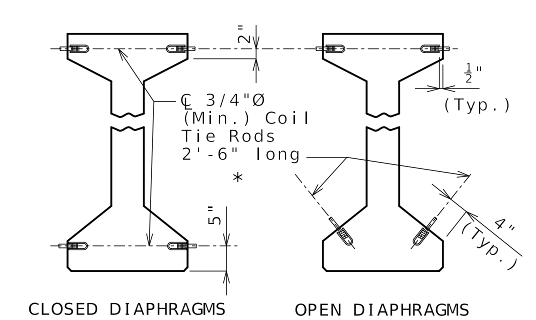
Fabricator shall be responsible for location and design of lifting devices.

Exterior and interior girders are the same except: coil ties & holes for steel intermediate diaphragms.

For Girder Camber Diagram, see Sheet No. 20.

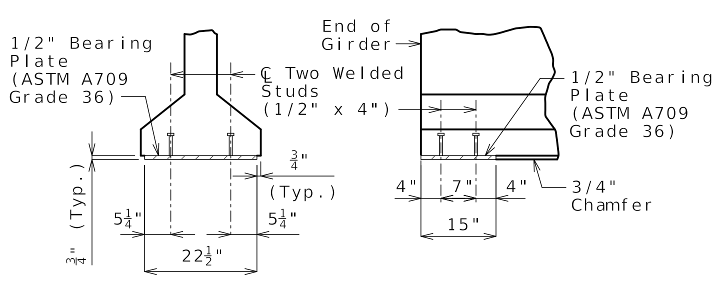
The 1 1/2"Ø holes shall be cast in the web for steel intermediate diaphragms. Drilling is not allowed. For location of holes and details of steel intermediate diaphragms, see Sheet No. 18.

For location of coil ties at concrete bent diaphragms, see Sheet No. 19.



COIL TIES

Exclude coil tie at exterior face of exterior girders except at integral end bents.



BEARING PLATE

I-GIRDERS - SPAN (2-3)

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
Alex C. Benz
10/22/2024 10:14:11 AM
Alex Benz - Civil
MO PE-2018003121

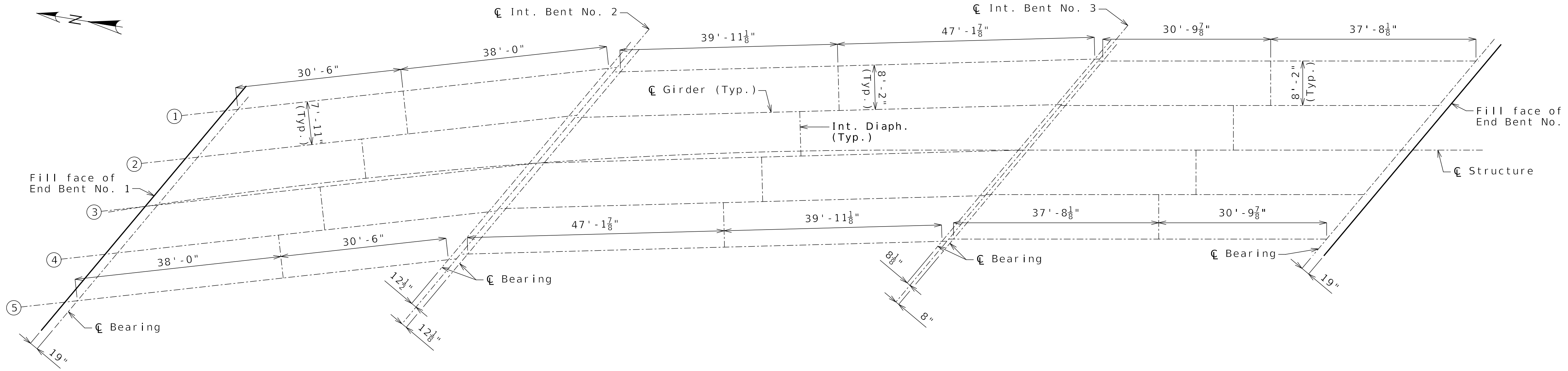
DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 17
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

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

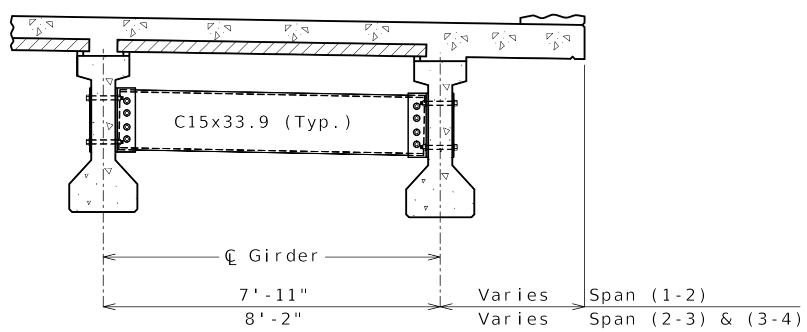
EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

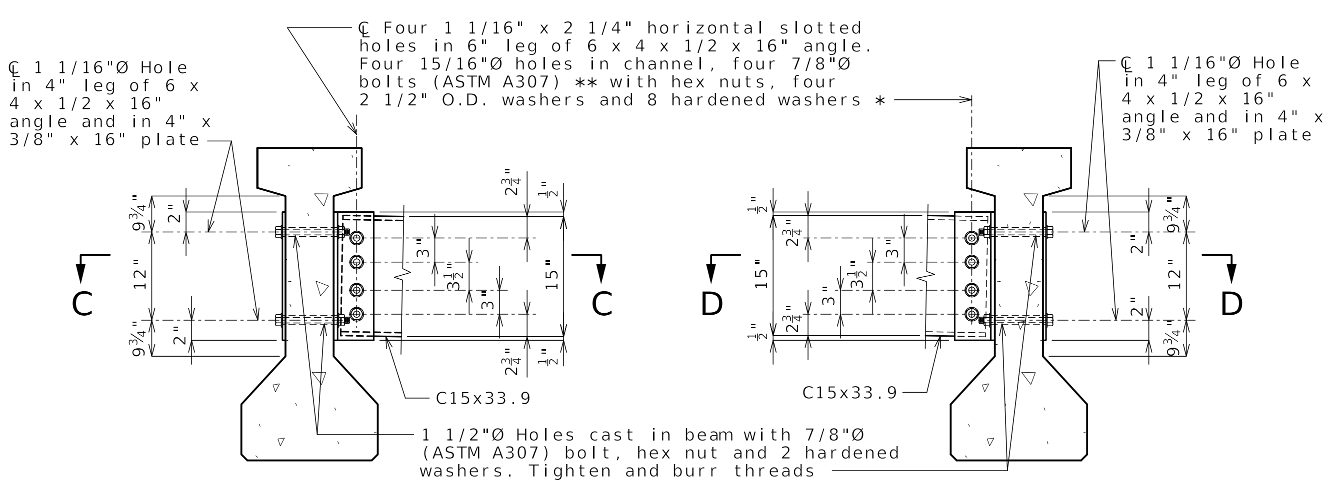


PLAN SHOWING LOCATIONS OF STEEL INTERMEDIATE DIAPHRAGMS

Longitudinal dimensions are horizontal.

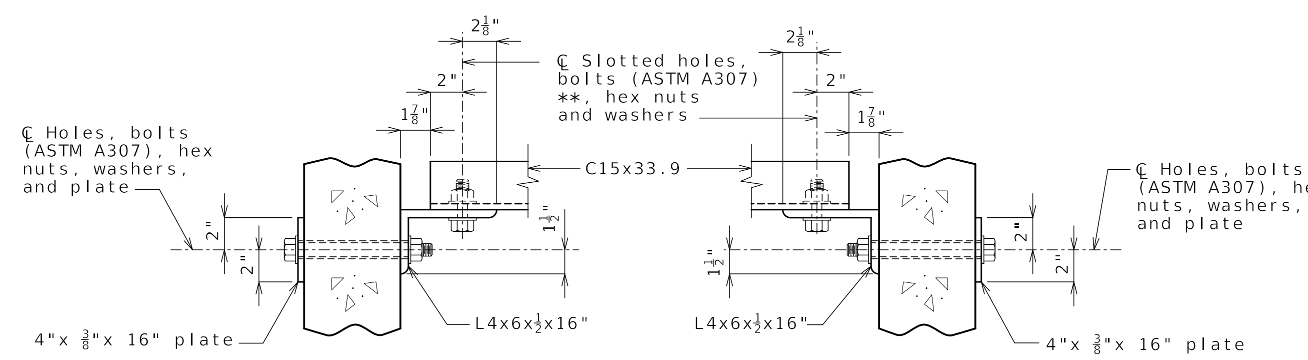


PART SECTION SHOWING INTERMEDIATE DIAPHRAGMS



SECTION THRU INT. GIRDER AT DIAPHRAGM

SECTION THRU EXT. GIRDER AT DIAPHRAGM



SECTION C-C

SECTION D-D

STEEL DIAPHRAGM NOTES:

* In lieu of 2 1/2" outside diameter washers, contractor may substitute a 3/16" (Min. thickness) plate with four 15/16"Ø holes and one hardened washer per bolt.

** Bolts shall be tightened to provide a tension of one-half that specified in Sec 712 for high strength bolt installation. ASTM F3125 Grade A325 Type 1 bolts may be substituted for and installed in accordance with the requirements for the specified ASTM A307 bolts.

All diaphragm materials including bolts, nuts, and washers shall be galvanized.

Fabricated structural steel shall be ASTM A709 Grade 36 except as noted.

Payment for furnishing and installing steel intermediate diaphragms will be considered completely covered by the contract unit price for Steel Intermediate Diaphragm for P/S Concrete Girders.

Shop drawings will not be required for steel intermediate diaphragms and angle connections.

STEEL INTERMEDIATE DIAPHRAGMS

Detailed Sep. 2024
Checked Sep. 2024

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

Alex Benz - Civil
MO PE-2018003121
10/22/2024 10:14:22 AM

DATE PREPARED	10/22/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	18
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

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

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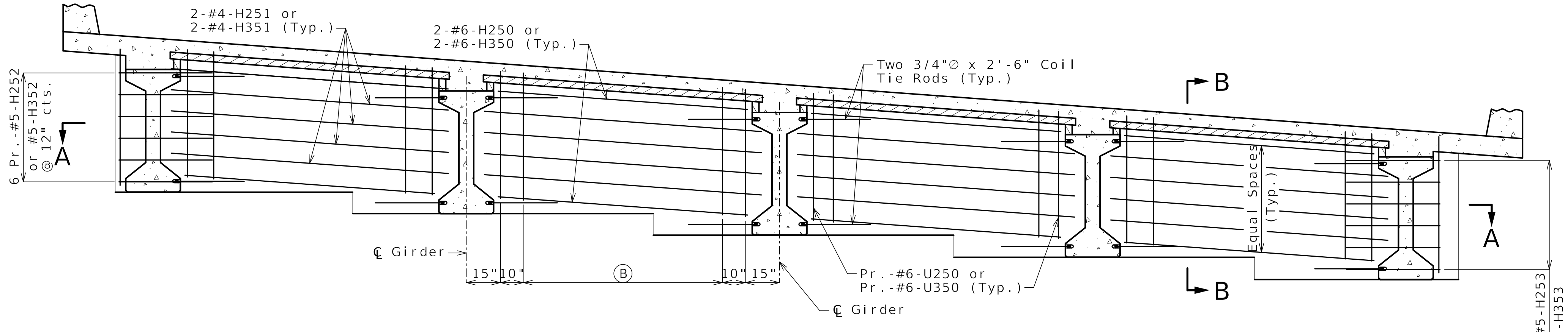
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

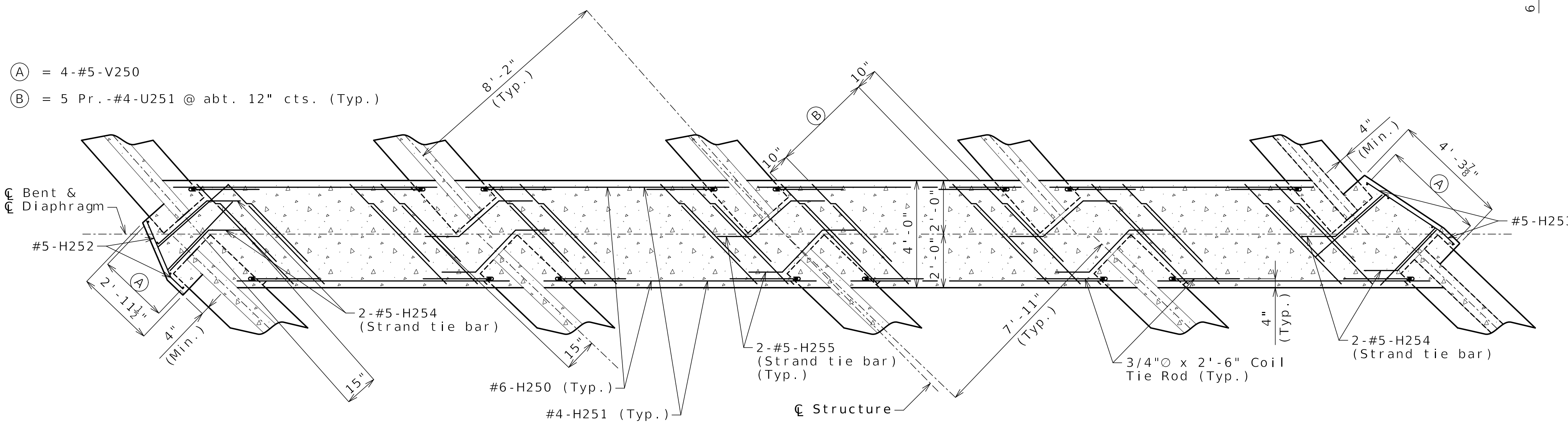
REV.



SECTION NEAR INTERMEDIATE BENT
(Normal to ℄ Structure)

(A) = 4-#5-V250

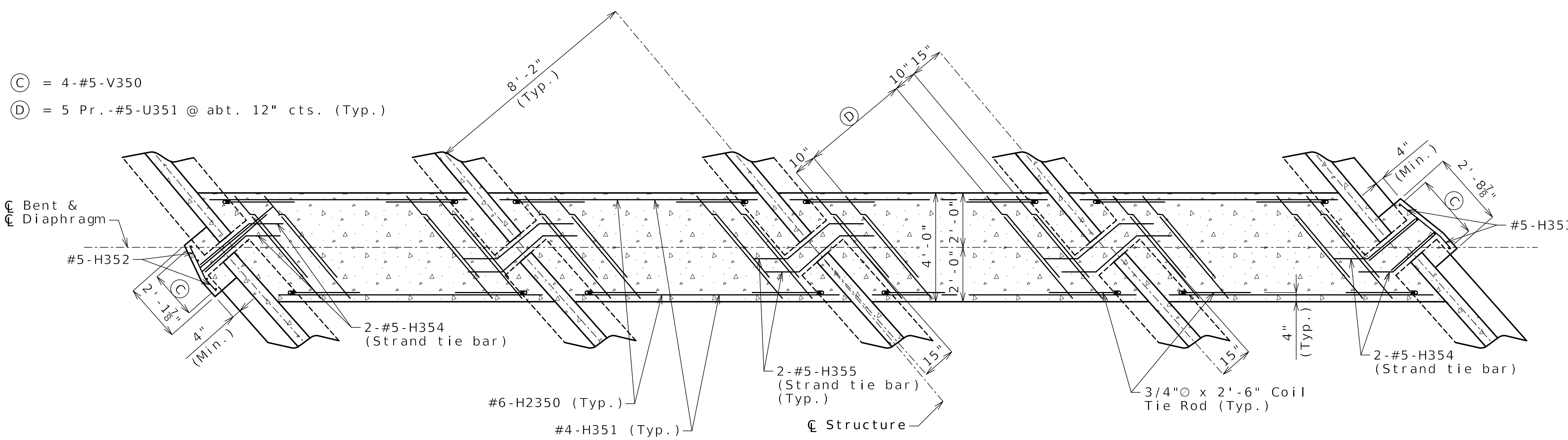
(B) = 5 Pr.-#4-U251 @ abt. 12" cts. (Typ.)



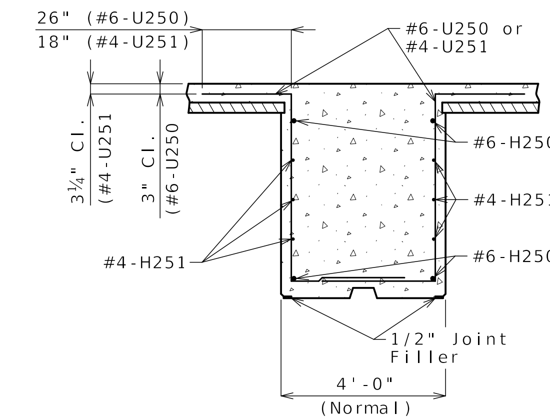
SECTION A-A FOR INTERMEDIATE BENT NO. 2

(C) = 4-#5-V350

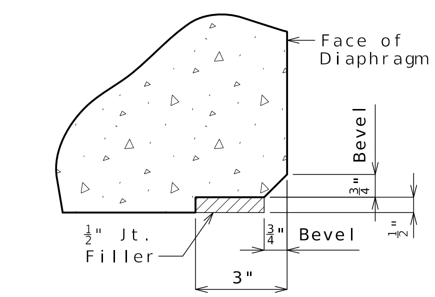
(D) = 5 Pr.-#5-U351 @ abt. 12" cts. (Typ.)



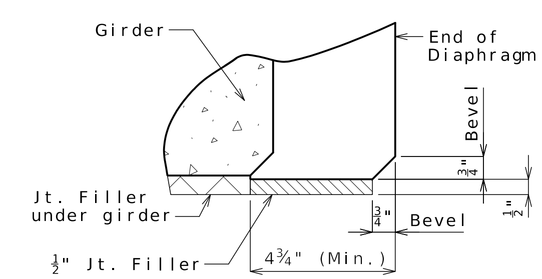
SECTION A-A FOR INTERMEDIATE BENT NO. 3



SECTION A-A
Int. Bent No. 2 shown,
Int. Bent No. 3 similar



EDGE DETAIL



END DETAIL

Notes:
For location of Strand Tie Bars, see Sheets No. 16 & 17.
For location and details of Coil Tie Rods, see Sheets No. 16 & 17.
Diaphragms at Intermediate bents shall be built vertical.
All U-bars in diaphragms are to be placed parallel to ℄ Roadway.

CONCRETE DIAPHRAGMS AT INTERMEDIATE BENTS

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/22/2024 10:14:32 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 19
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

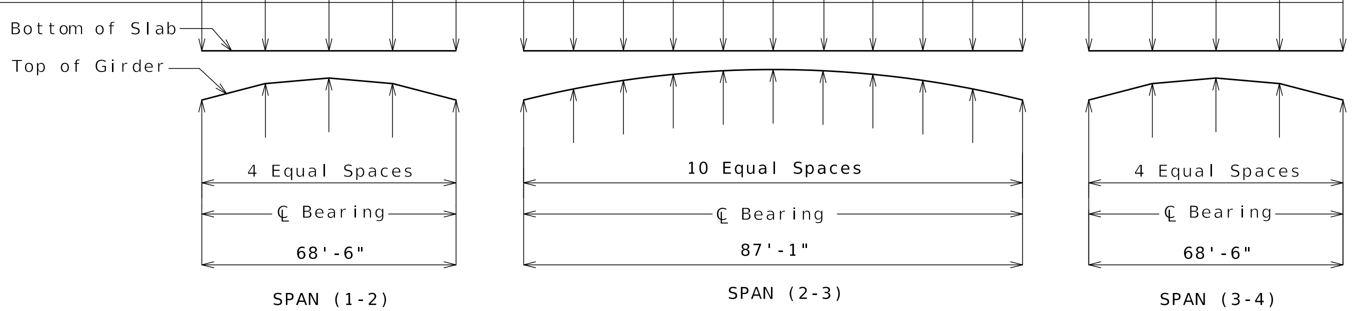
DESCRIPTION

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

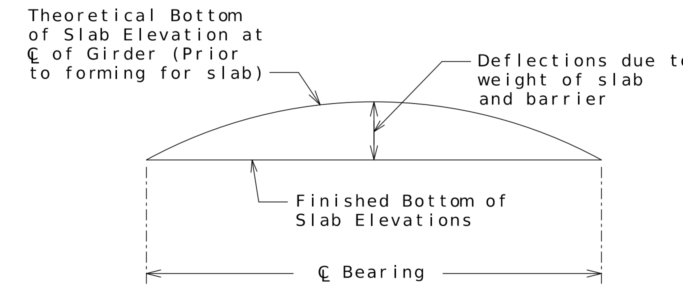
Girder No. 1	2"	1⅞"	1⅞"	1⅞"	2"	1⅞"	1⅞"	1⅞"	1⅞"	2"	2"	2"	2⅛"	2⅛"	2"	1⅞"	2⅜"	2⅜"	2¼"	2⅛"	1⅞"
Girder No. 2	2"	1⅞"	1⅞"	1⅞"	2"	1⅞"	1⅞"	2"	2"	2"	2⅛"	2⅛"	2⅛"	2⅛"	2"	1⅞"	2½"	2⅝"	2½"	2¼"	1⅞"
Girder No. 3	2"	1⅞"	1⅞"	1⅞"	2"	1⅞"	1⅞"	2"	2"	2"	2"	2"	2⅛"	2"	2"	1⅞"	2¾"	2¾"	2⅝"	2⅜"	1⅞"
Girder No. 4	2"	1⅞"	1⅞"	1⅞"	2"	1⅞"	1⅞"	2"	2"	2"	2"	2"	2"	2"	2"	1⅞"	2⅞"	2⅞"	2⅝"	2⅜"	1⅞"
Girder No. 5	2⅛"	2"	1⅞"	2"	2⅛"	2¼"	2⅛"	2"	2"	1⅞"	1⅞"	1⅞"	1⅞"	2"	2⅛"	1⅞"	3⅜"	3⅛"	2¾"	2⅜"	1⅞"



THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

If girder 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. 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 I-Girder.



TYPICAL SLAB ELEVATIONS DIAGRAM

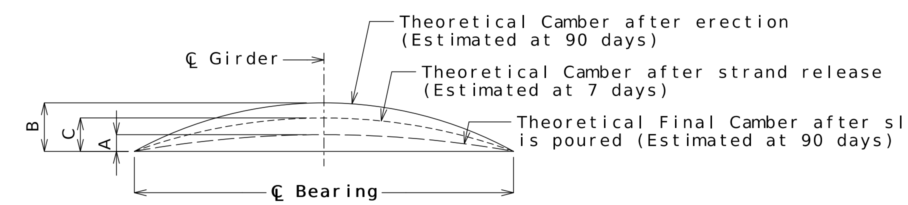
Theoretical Bottom of Slab Elevations at Centerline of Girder (Prior to forming for slab) (Estimated at 90 days)

Girder Number	Span (1-2) (68'-6" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	0.25	0.50	0.75	℄ Brg.
1	572.78	573.71	574.59	575.42	576.21
2	571.95	572.89	573.79	574.63	575.43
3	571.11	572.06	572.97	573.82	574.63
4	570.26	571.23	572.15	573.01	573.83
5	569.40	570.37	571.30	572.17	573.02

Girder Number	Span (2-3) (87-1" ℄ Brg. - ℄ Brg.)										
	℄ Brg.	.10	.20	.30	.40	.50	.60	.70	.80	.90	℄ Brg.
1	576.27	576.73	577.17	577.60	578.02	578.41	578.78	579.14	579.47	579.79	580.09
2	575.52	575.99	576.44	576.88	577.30	577.70	578.07	578.43	578.77	579.08	579.39
3	574.77	575.24	575.70	576.14	576.57	576.97	577.35	577.71	578.05	578.37	578.68
4	574.01	574.48	574.95	575.40	575.83	576.24	576.62	576.98	577.33	577.65	577.97
5	573.24	573.70	574.17	574.61	575.04	575.46	575.85	576.22	576.58	576.92	577.25

Girder Number	Span (3-4) (68'-6" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	0.25	0.50	0.75	℄ Brg.
1	580.13	580.86	581.54	582.15	582.70
2	579.45	580.19	580.89	581.50	582.06
3	578.76	579.51	580.21	580.84	581.40
4	578.06	578.83	579.54	580.17	580.75
5	577.36	578.13	578.85	579.50	580.09

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.



Girder	Span (1-2)			Span (2-3)			Span (3-4)		
	A	B	C	A	B	C	A	B	C
Exterior	⅜"	1¼"	1¼"	⅜"	2¾"	2⅜"	⅜"	1¼"	1¼"
Interior	¼"			¼"			¼"		

GIRDER 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.

0.25 pt. = 0.7125 x 0.5 pt.

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
Alex C. Benz
10/22/2024 10:14:43 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/22/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	20
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

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

EFK•Moen
Civil Engineering Design
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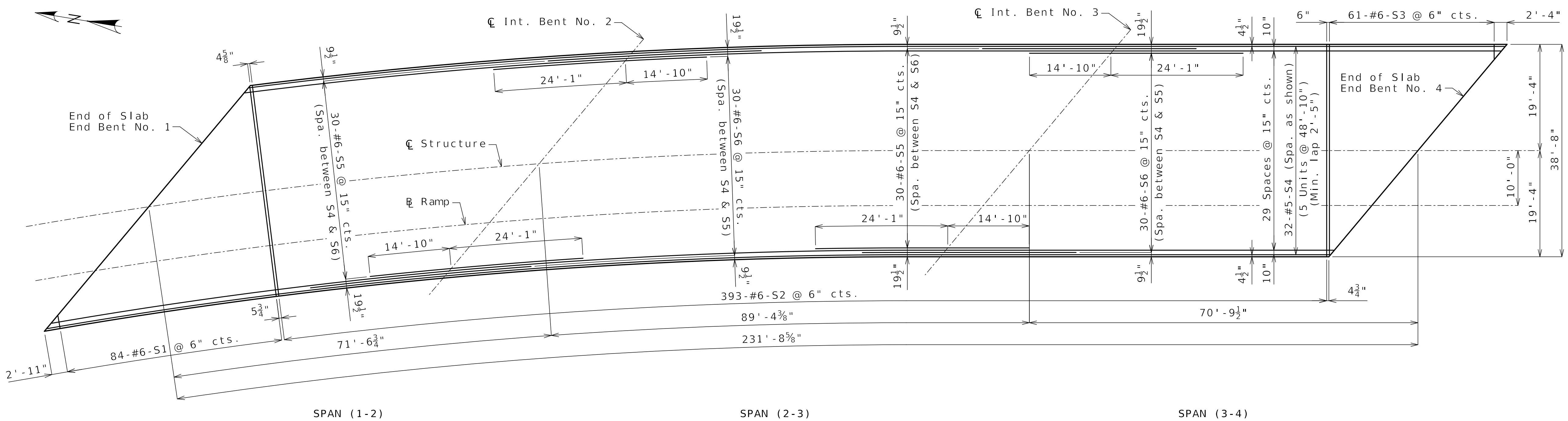
Missouri Certificate of Authority: 001578

REV.

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_020_J6I3624B_Camber-Haunch.dgn 9:34:42 AM 10/22/2024



PLAN OF SLAB SHOWING TOP REINFORCEMENT

Notes:

Longitudinal slab dimensions are measured horizontally.

For Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Plan of Slab Showing Bottom Reinforcement, see Sheet No. 22.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 23.

For Slab Curve Ordinates, see Sheet No. 24.

For Details and Reinforcement of Barrier not shown, see Sheets No. 25 thru 28.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Sep. 2024
Checked Sep. 2024

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

Alex C. Benz
10/22/2024 10:14:57 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 21
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
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BRIDGE NO.: A9273	

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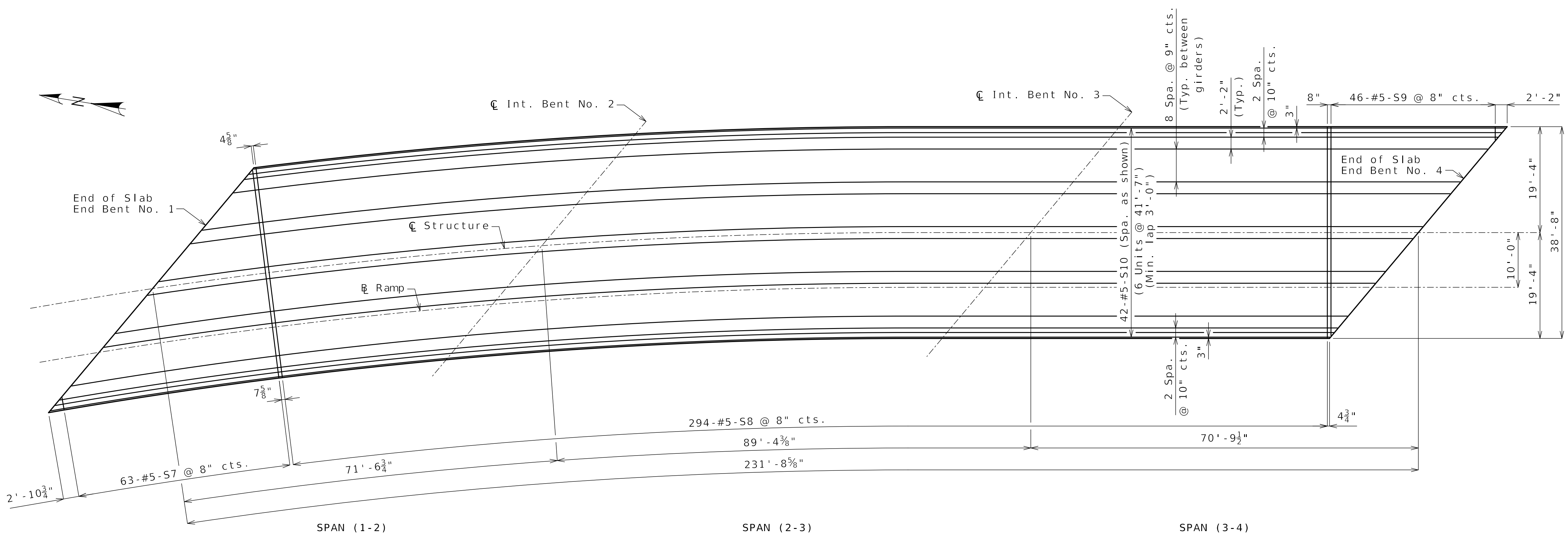

PLAN OF SLAB SHOWING BOTTOM REINFORCEMENT

Notes:

Longitudinal slab dimensions are measured horizontally.

For Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Plan of Slab Showing Top Reinforcement, see Sheet No. 21.

For Section Thru Slab and Slab Pouring Sequence, see Sheet No. 23.

For Slab Curve Ordinates, see Sheet No. 24.

For Details and Reinforcement of Barrier not shown, see Sheets No. 25 thru 28.

PLAN OF SLAB SHOWING REINFORCEMENT

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER

10/22/2024 10:15:46 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 22
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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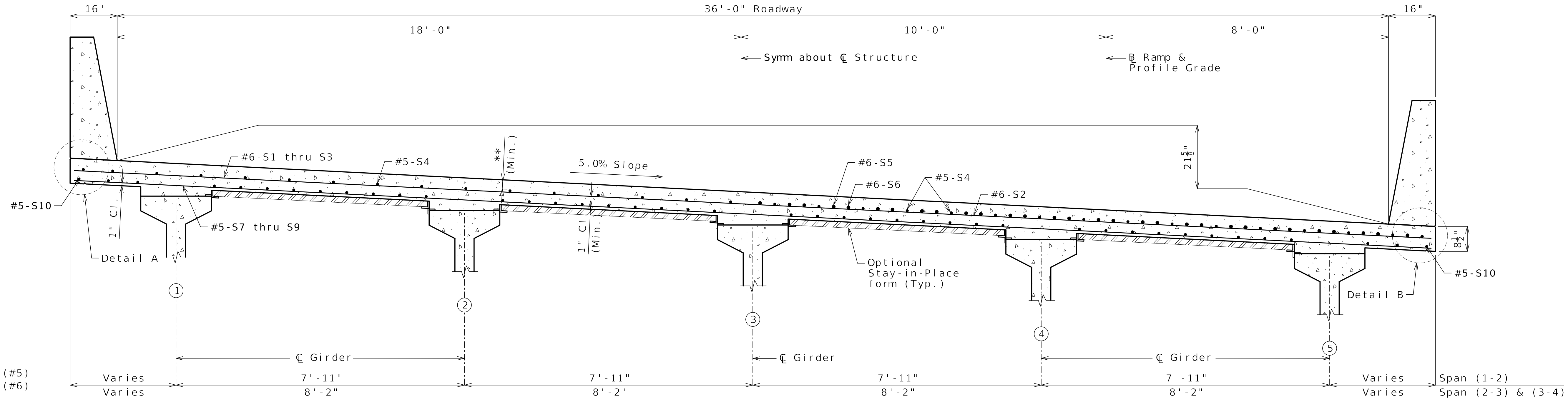
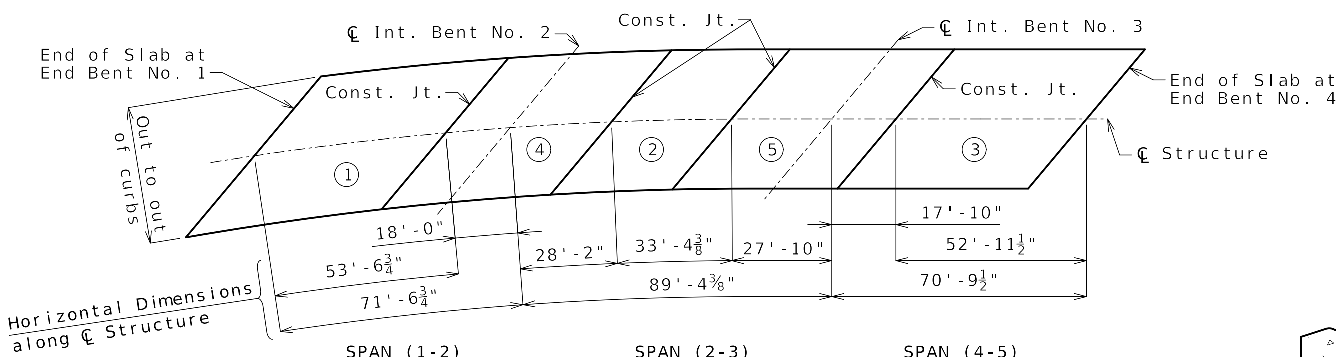


SECTION THRU SLAB

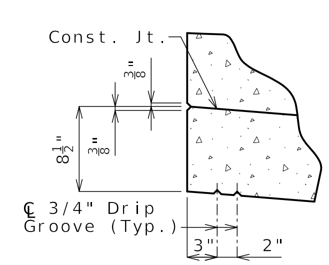


	Sequence of Pours					Min. Rate of Pour Cu. Yds./Hr.
	Direction					With Retarder
Basic Sequence	1	2	3	4	5	25
	Either Direction					
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.						
Alternate A Pours	1	5 + 2	4 + 3			27
	End to 5	1 to 4	2 to End			
Alternate B Pours	1 + 5 + 2	4 + 3				27
	End to 4	2 to End				
Alternate C Pours	1 + 5 + 2 + 4 + 3					27
	End to End					

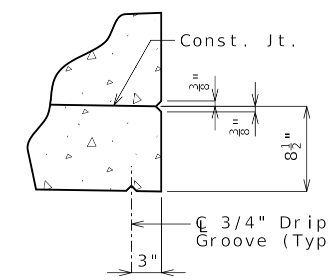
The contractor shall furnish an approved retarder to retard the set of the concrete to 2.5 hours, and shall pour and satisfactorily finish the slab pours at the rate given.

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.

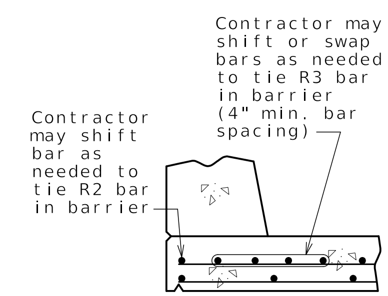
SLAB POURING SEQUENCE



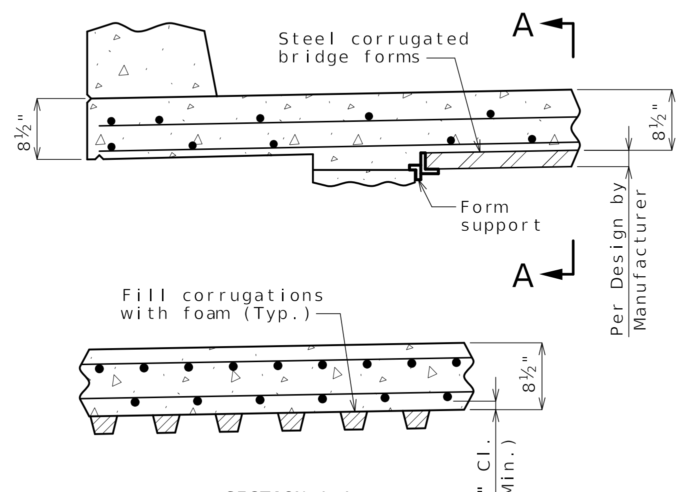
DETAIL A



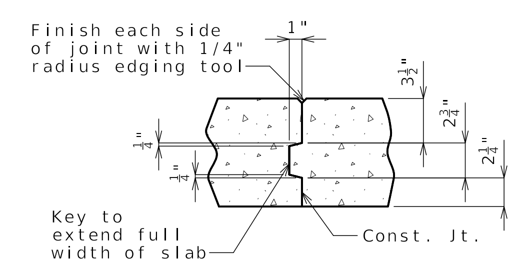
DETAIL B



OPTIONAL SHIFTING TOP BARS AT BARRIER



OPTIONAL STAY-IN-PLACE FORM DETAILS



SLAB CONSTRUCTION JOINT

Notes:

For reinforcement of barrier not shown, see Sheets No. 25 & 26.

For Theoretical Bottom of Slab Elevations, Girder Camber Diagram and Theoretical Slab Haunching Diagram, see Sheet No. 20.

For Plan of Slab Showing Reinforcement, see Sheets No. 21 & 22.

SLAB DETAILS

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI — ALEX BENZ — NUMBER PE-2018003121 — PROFESSIONAL ENGINEER
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Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
BR	23
COUNTY	
ST. LOUIS	
JOB NO.	
J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A9273	

DESCRIPTION

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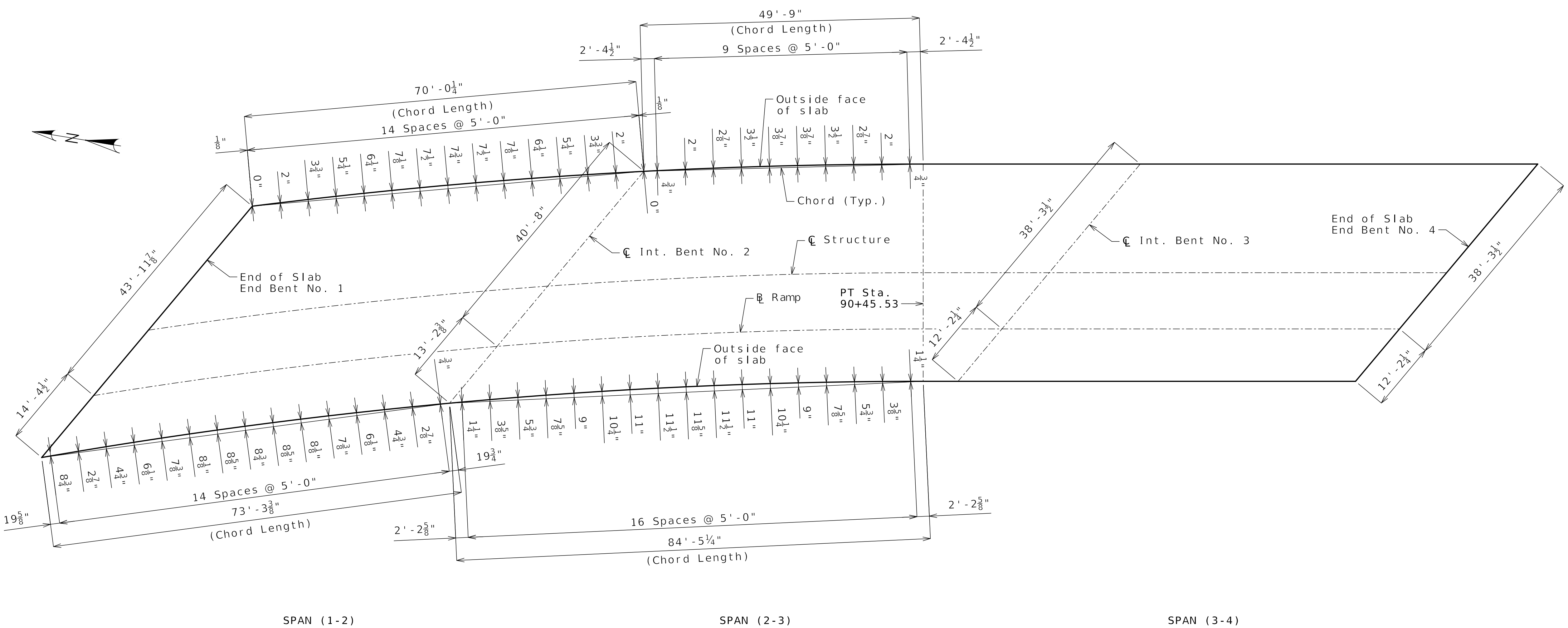

PLAN

Notes:

All dimensions are horizontal.

All bents are parallel.

SLAB CURVE ORDINATES

Detailed Sep. 2024
Checked Sep. 2024

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STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
Alex C. Benz
10/28/2024 12:35:56 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/28/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	24
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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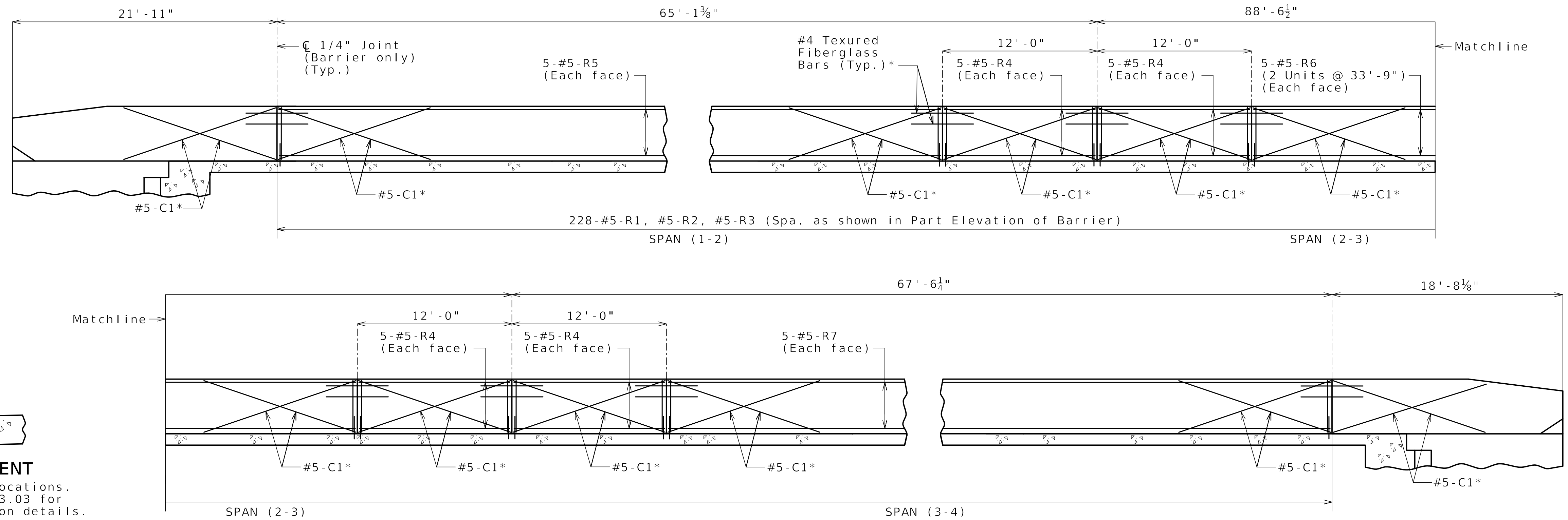
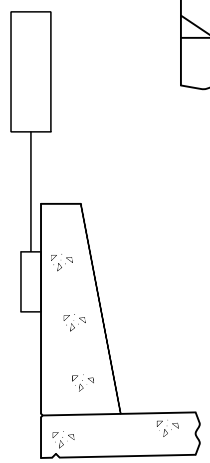


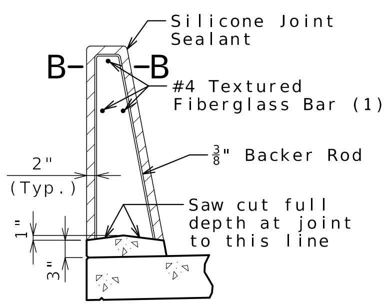


SIGN ATTACHMENT

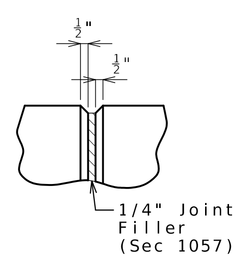
See Roadway Plans for locations.
See Standard Drawing 903.03 for barrier wall installation details. (Roadway Item)

ELEVATION OF BARRIER

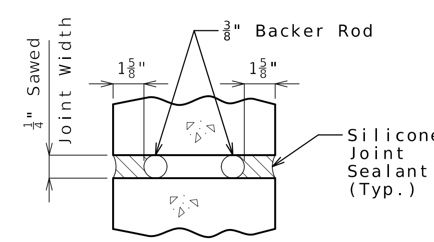
Longitudinal dimensions are horizontal arc dimensions along outside face of barrier.



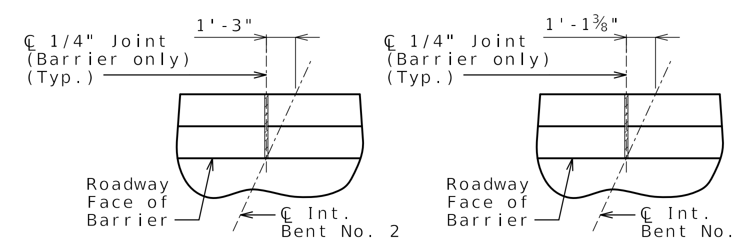
SECTION THRU SAW CUT JOINT



PART ELEVATION AT FORMED JOINT



SECTION B-B



PART PLAN SHOWING JOINT LOCATION

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.

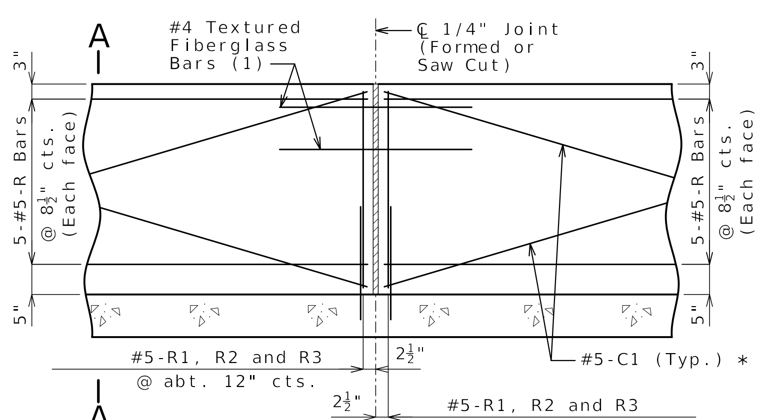
Concrete in barrier shall be Class B-1.

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

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.

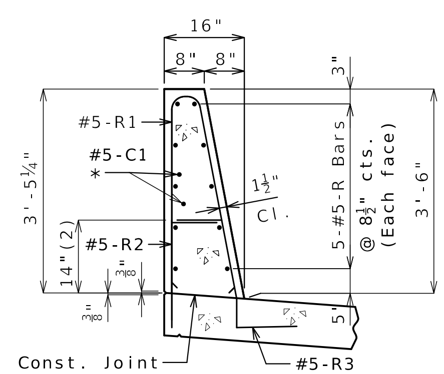
Joint sealant and backer rods shall be in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

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



PART ELEVATION OF BARRIER

(1) Four feet long, centered on joint, slip-formed option only

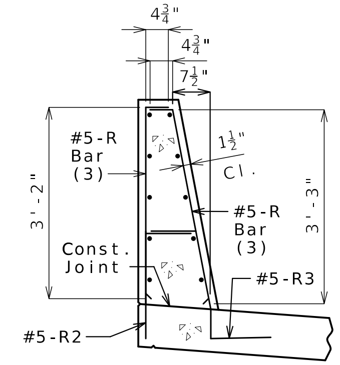


SECTION A-A

Use a minimum lap of 3'-1" for #5 horizontal barrier bars.

The cross-sectional area above the slab is 3.46 square feet.

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

(3) The R1 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

LEFT TYPE D BARRIER

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
Alex C. Benz
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Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/28/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	25
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

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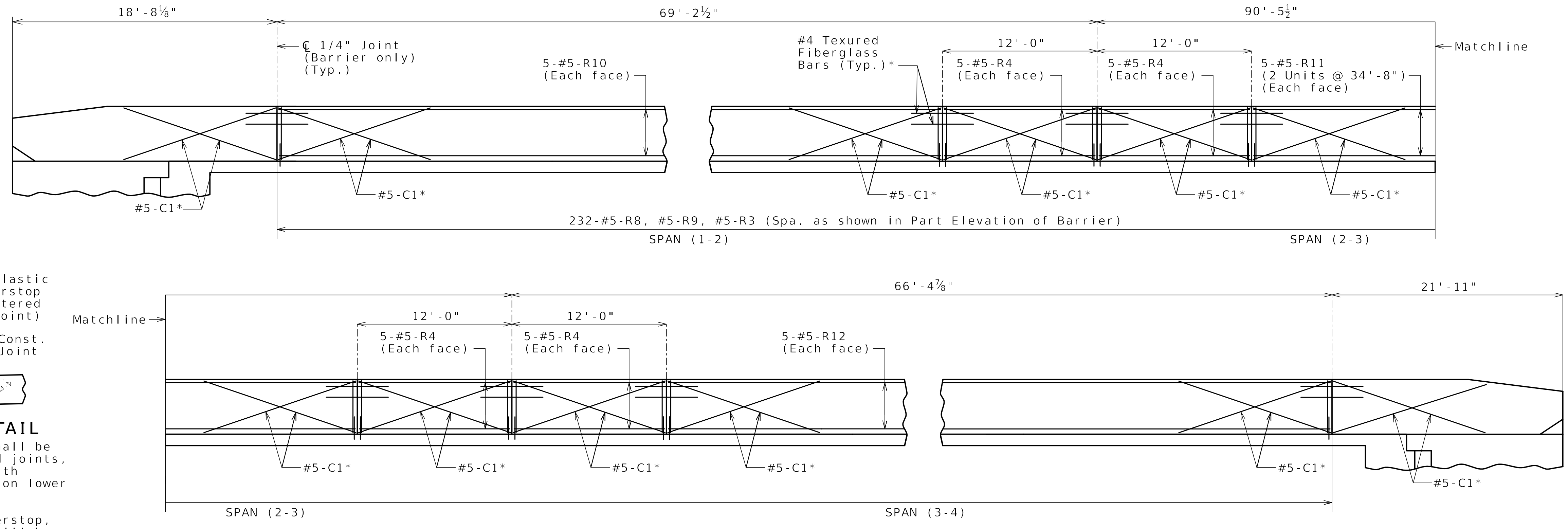
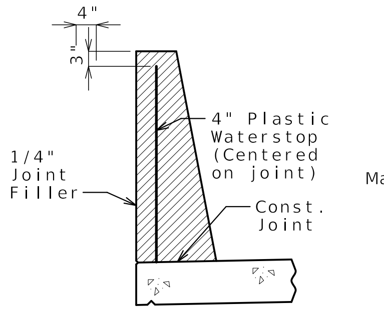


ELEVATION OF BARRIER

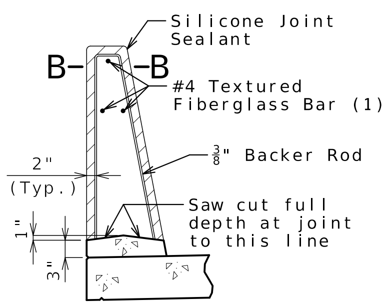
Longitudinal dimensions are horizontal arc dimensions along outside face of barrier (except as noted).



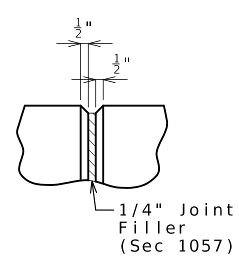
WATERSTOP DETAIL

Plastic waterstop shall be placed in all formed joints, except structures with superelevation, use on lower joints only.

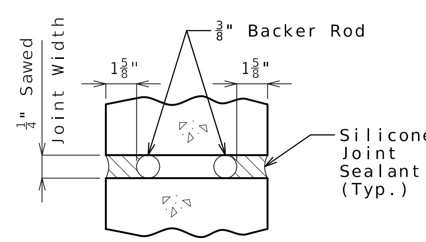
Cost of plastic waterstop, complete in place, will be considered completely covered by the contract unit price for Type D Barrier.



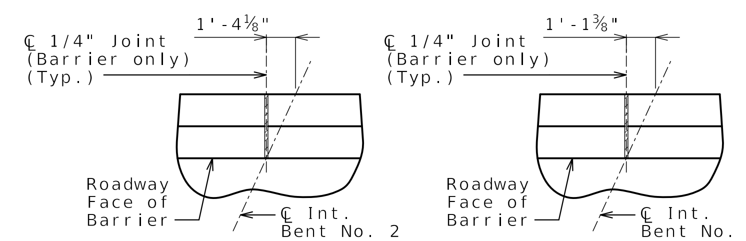
SECTION THRU SAW CUT JOINT



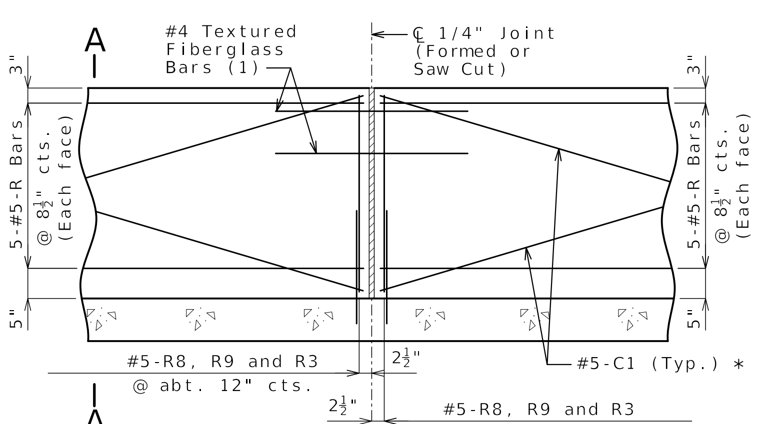
PART ELEVATION AT FORMED JOINT



SECTION B-B

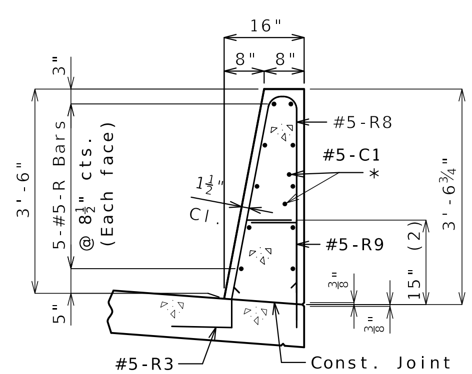


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

(1) Four feet long, centered on joint, slip-formed option only

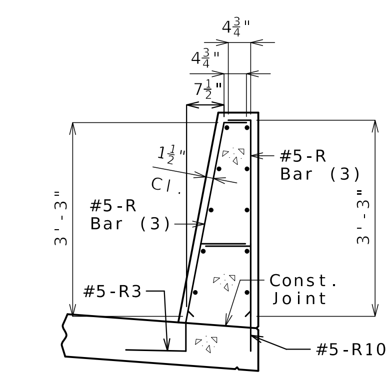


SECTION A-A

Use a minimum lap of 3'-1" for #5 horizontal barrier bars.

The cross-sectional area above the slab is 3.54 square feet.

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

(3) The R8 bar may be separated into two bars as shown, at the contractor's option, only when slip forming is not used. (All dimensions are out to out.)

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 wing to end of wing.

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.

RIGHT TYPE D BARRIER

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI — ALEX BENZ — NUMBER PE-2018003121 — PROFESSIONAL ENGINEER
10/28/2024 12:36:22 PM
Alex Benz - Civil
MO PE-2018003121

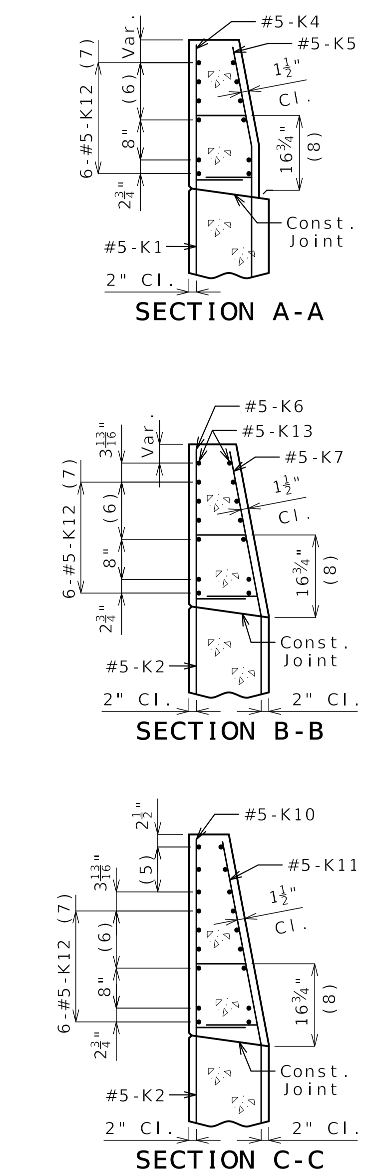
DATE PREPARED	
10/28/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 26
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.:	
PROJECT NO.:	
BRIDGE NO.: A9273	

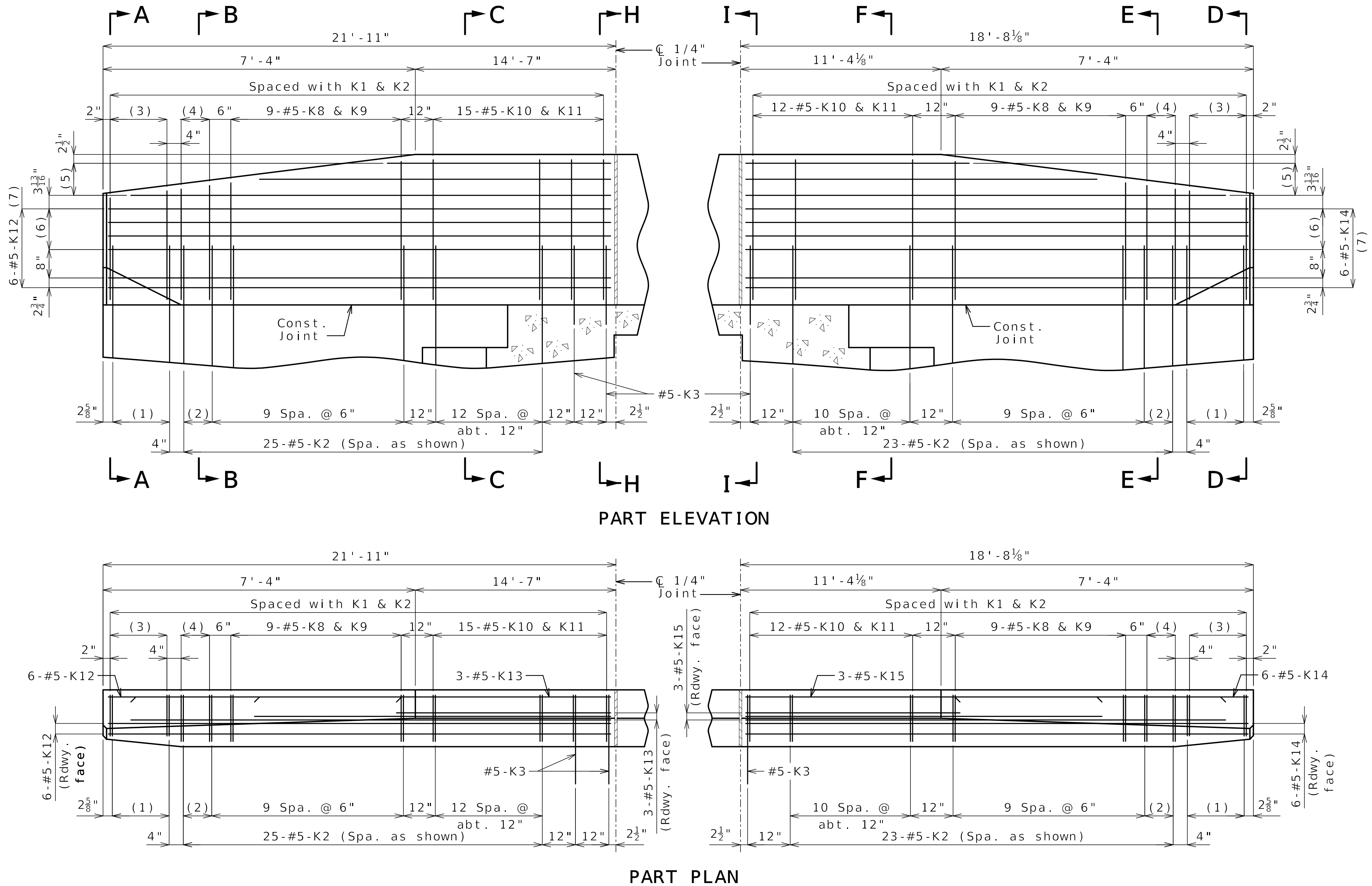
DESCRIPTION

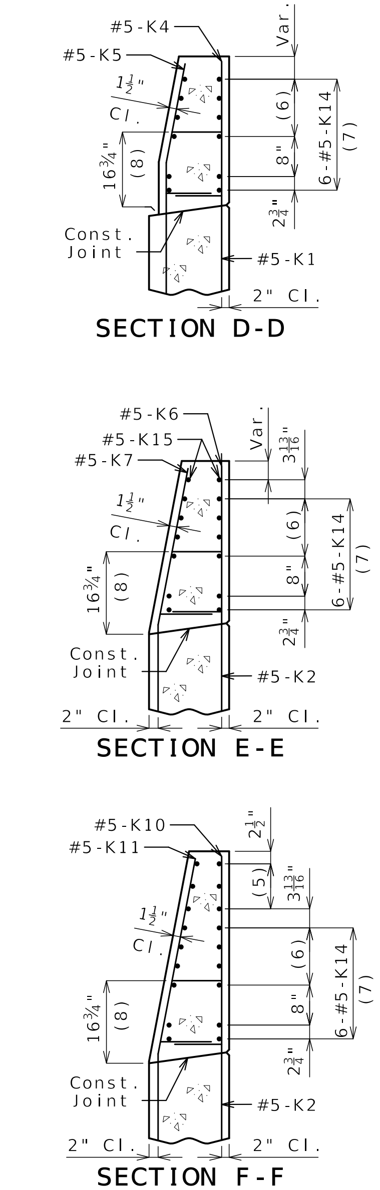
REV.

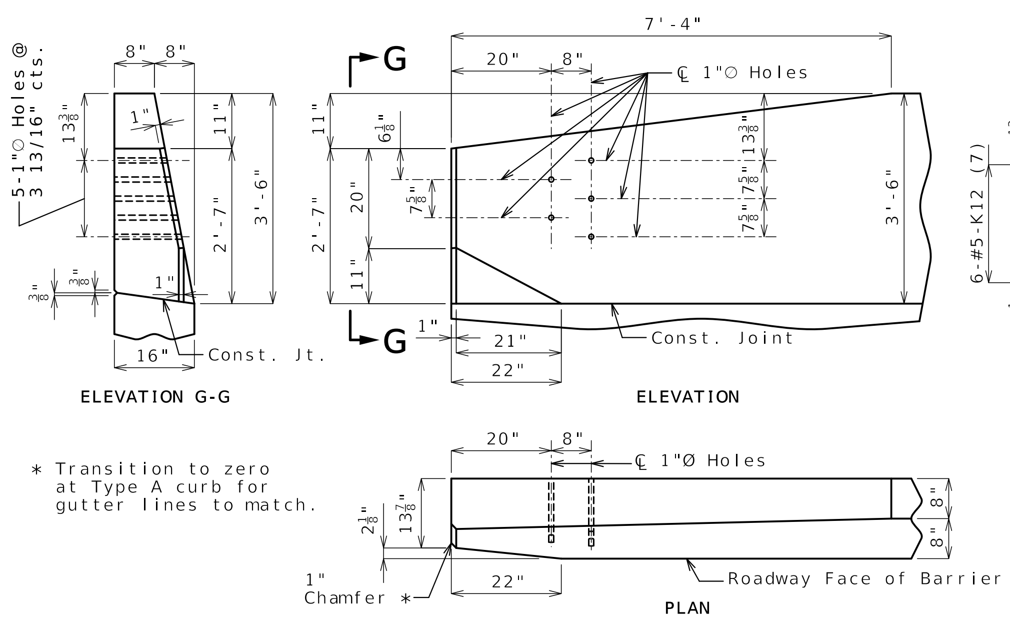
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578



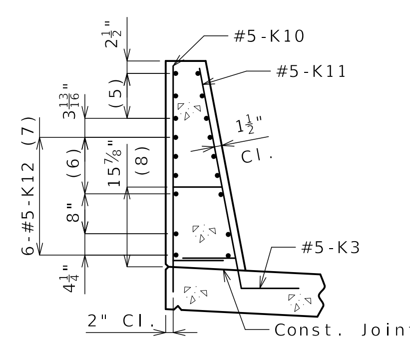






DETAILS OF GUARD RAIL ATTACHMENT

* Transition to zero at Type A curb for gutter lines to match.



SECTION H-H

(1) 5-#5-K1 @ 4" cts.

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

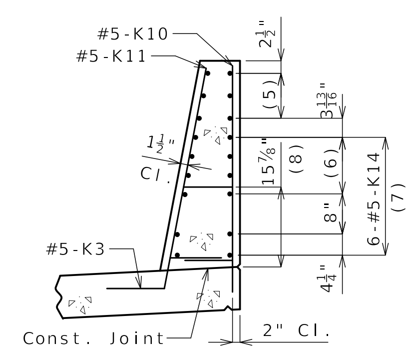
(4) 3-#5-K6 & K7

(5) 3-#5-K13 or K15 @ 4½" cts., each face

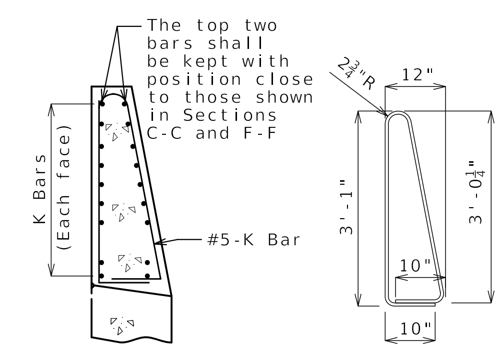
(6) 3 spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar



SECTION I-I



K10-K11 BAR PERMISSIBLE ALTERNATE SHAPE

(Other K bars not shown for clarity)

The K10-K11 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

General Notes:

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.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

LEFT TYPE D BARRIER AT END BENTS

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
10/22/2024 10:16:45 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 27
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
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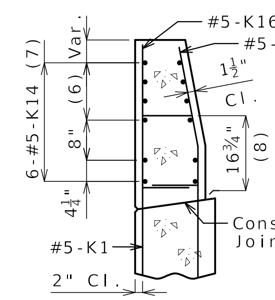
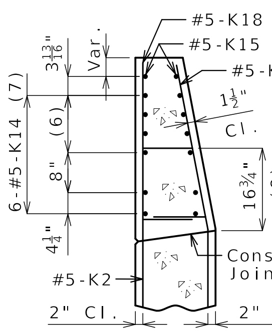
Missouri Certificate of Authority: 001578

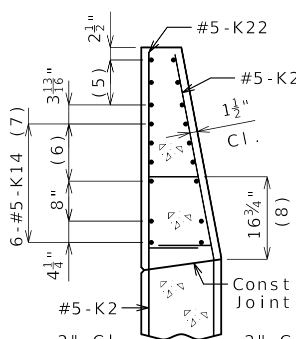
REV.



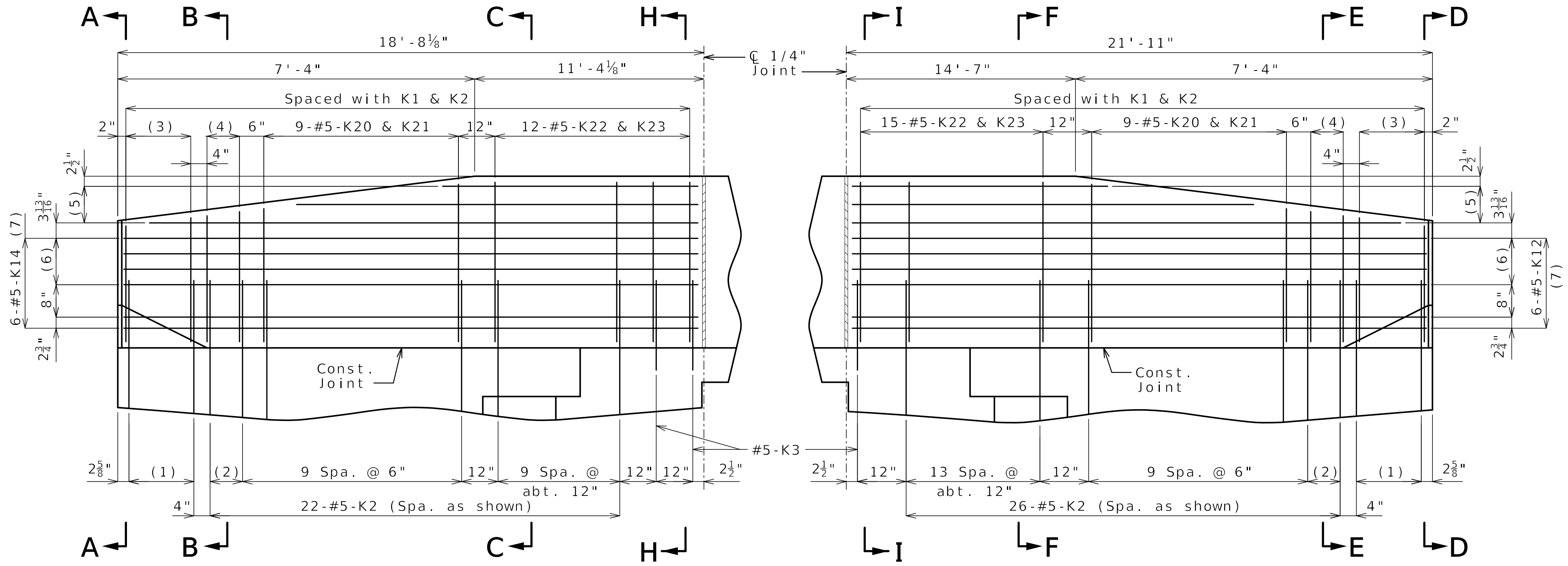
SECTION A-A



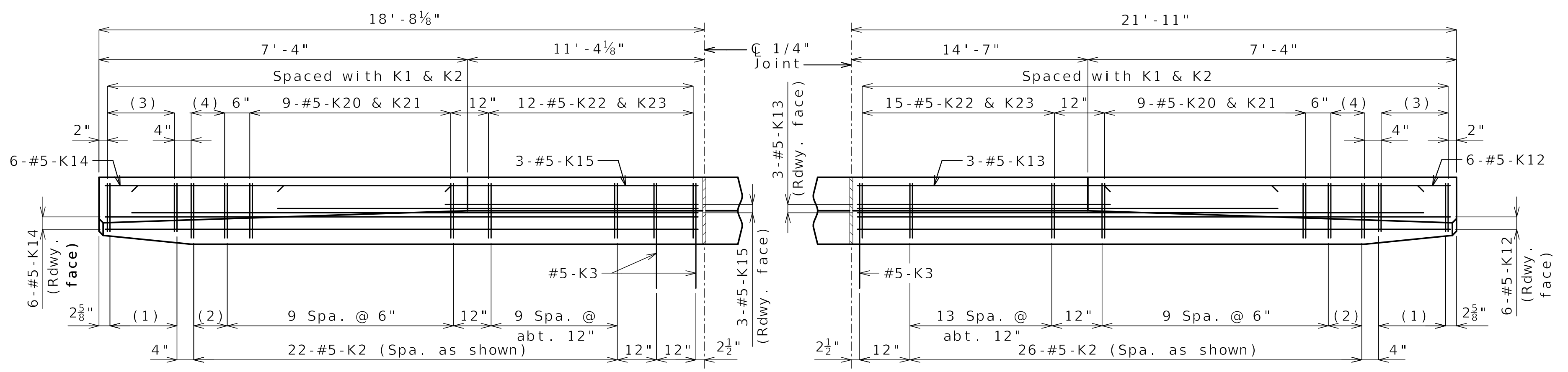
SECTION B-B



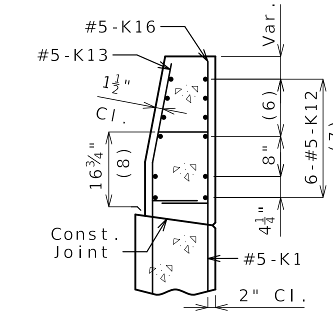
SECTION C-C



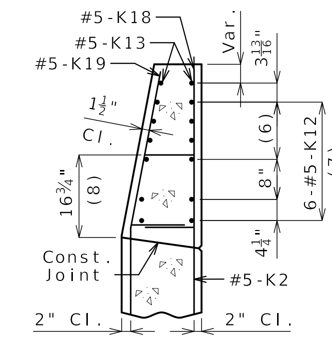
PART ELEVATION



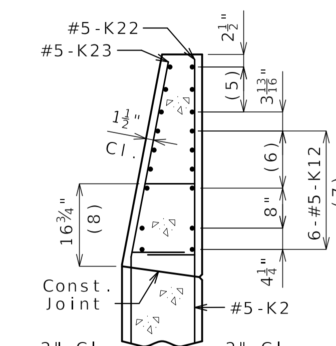
PART PLAN



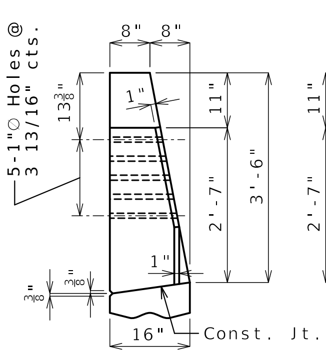
SECTION D-D



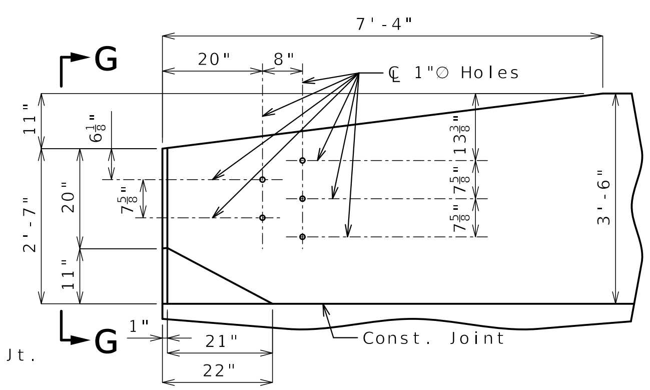
SECTION E-E



SECTION F-F

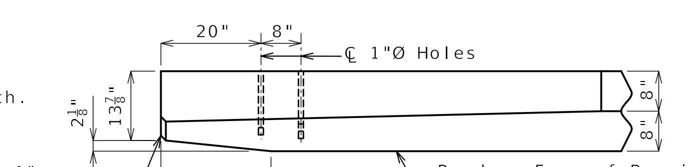


ELEVATION G-G



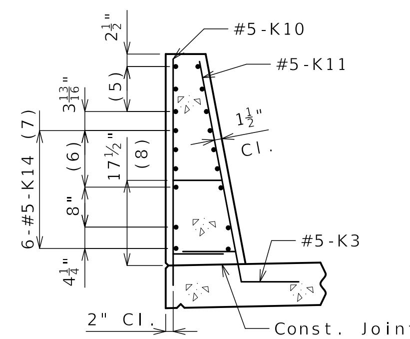
ELEVATION

* Transition to zero at Type A curb for gutter lines to match.



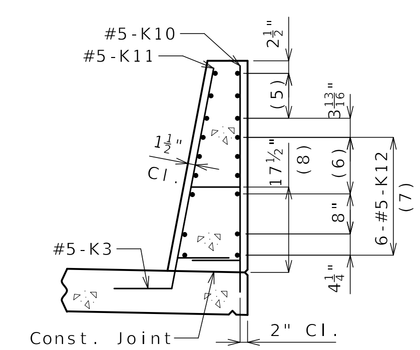
PLAN

DETAILS OF GUARD RAIL ATTACHMENT

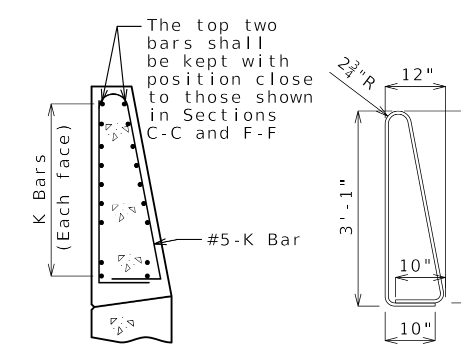


SECTION H-H

(1) 5-#5-K1 @ 4" cts.
(2) 2 spaces @ 4"
(3) 5-#5-K16 & K17
(4) 3-#5-K18 & K19
(5) 3-#5-K13 or K15 @ 4½" cts., each face
(6) 3 spaces @ 3$\frac{13}{16}$"
(7) Spaced as shown, each face
(8) To top of bar



SECTION I-I



K22-K23 BAR PERMISSIBLE ALTERNATE SHAPE
(Other K bars not shown for clarity)

The K10-K11 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

General Notes:

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.

Reinforcing Steel:
Minimum clearance to reinforcing steel shall be 1 1/2" except as shown for bars embedded into end bent.

RIGHT TYPE D BARRIER AT END BENTS

Detailed Sep. 2024
Checked Sep. 2024

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

Alex C. Benz
10/22/2024 10:16:57 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 28
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

DESCRIPTION

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

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Missouri Certificate of Authority: 001578

REV.

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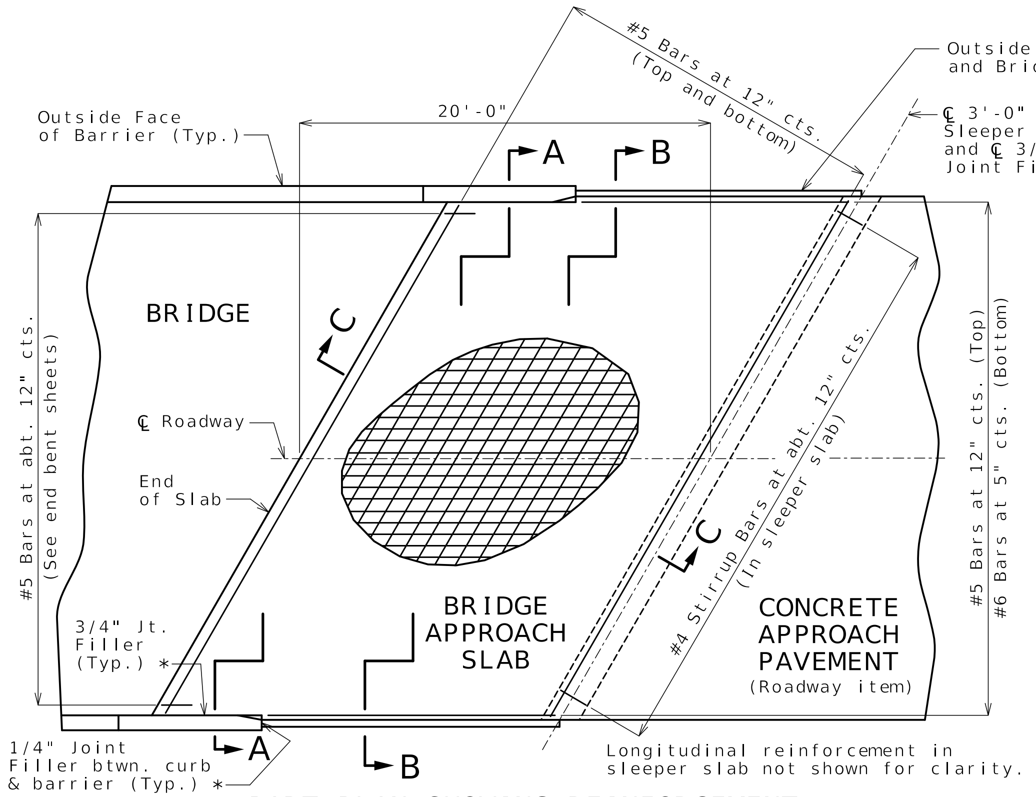
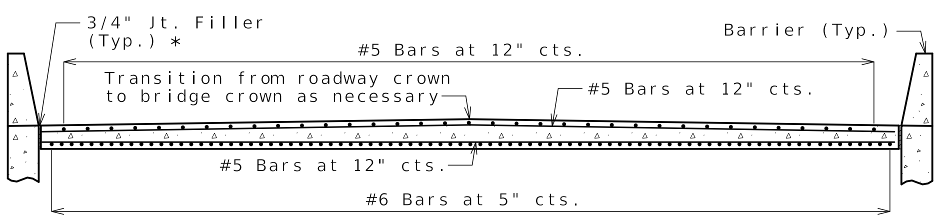
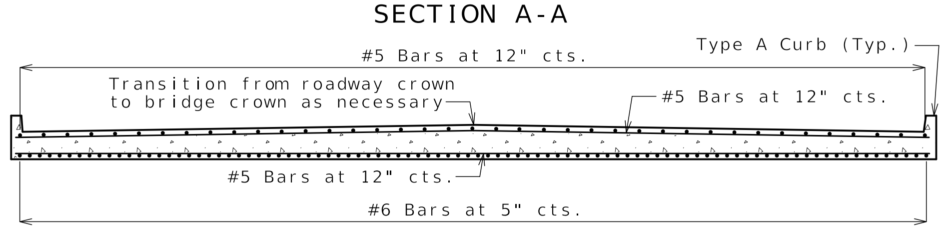


PART PLAN SHOWING REINFORCEMENT

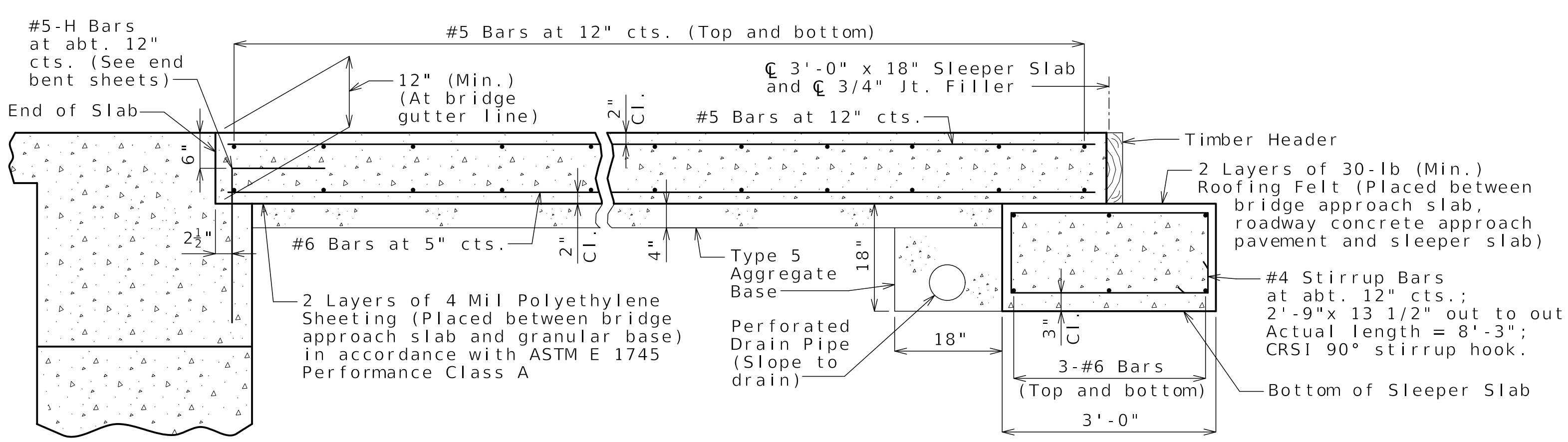


SECTION A-A

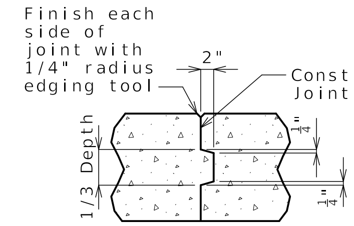


SECTION B-B

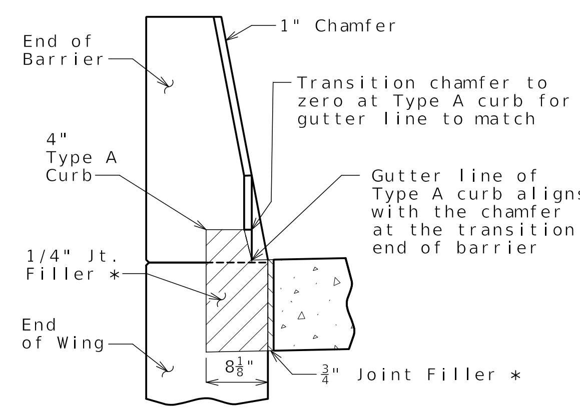
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



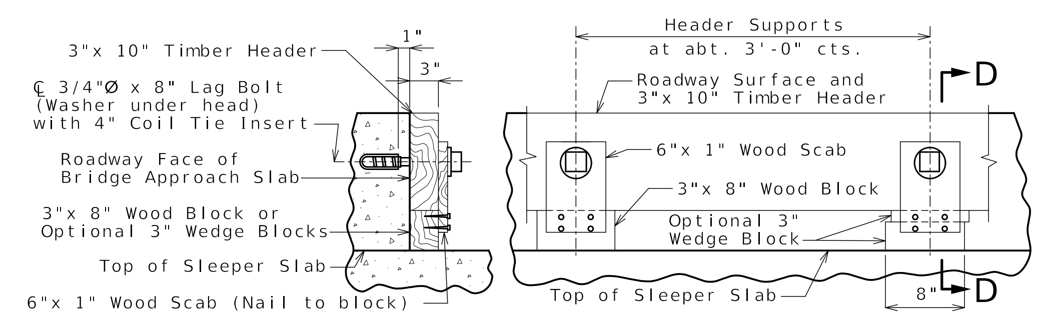
SECTION C-C



CONSTRUCTION JOINT DETAIL



SECTION BETWEEN CURB AND BARRIER



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

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 fy = 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 providing a minimum lap splice of 29 inches for #5 bars and 44 inches for #6 bars, 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, sleeper 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.

BRIDGE APPROACH SLAB (MAJOR)

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
Alex C. Benz
10/22/2024 10:17:34 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/22/2024	
ROUTE: I-170	STATE: MO
DISTRICT: BR	SHEET NO.: 29
COUNTY: ST. LOUIS	
JOB NO.: J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.: A9273	

DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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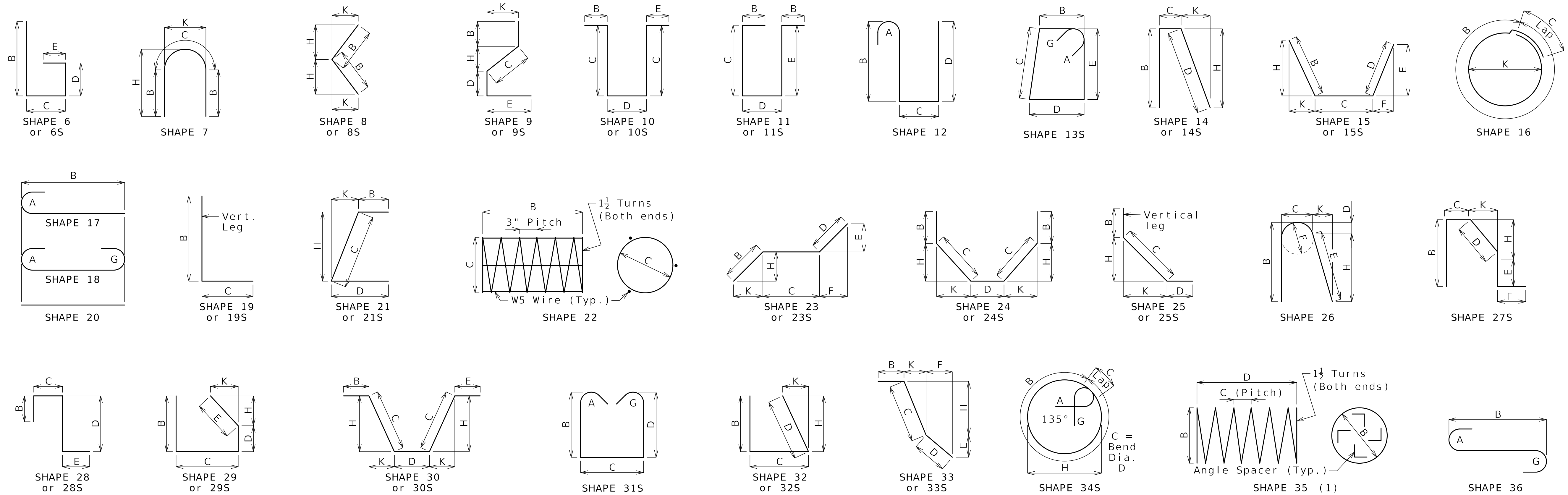
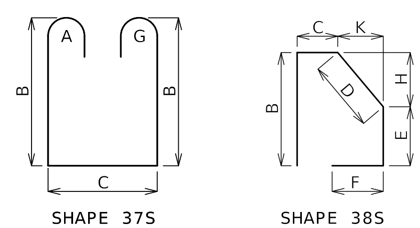
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.





BENDING DIAGRAMS

All dimensions are out to out.

Shapes ending with an S shall be bent in accordance with stirrup pin bend shapes.

Unless otherwise noted, finished bending diameter D is the same for all bends of a shape.

(1) Shall be a deformed or plain spiral bar or wire.

Four angle or channel spacers are required for each column spiral. Spacers are to be placed on inside of spirals. Length and weight of column spirals do not include splices or spacers.

Finished Bend Diameters D and Hook Dimensions

Standard Pin Bend Shapes

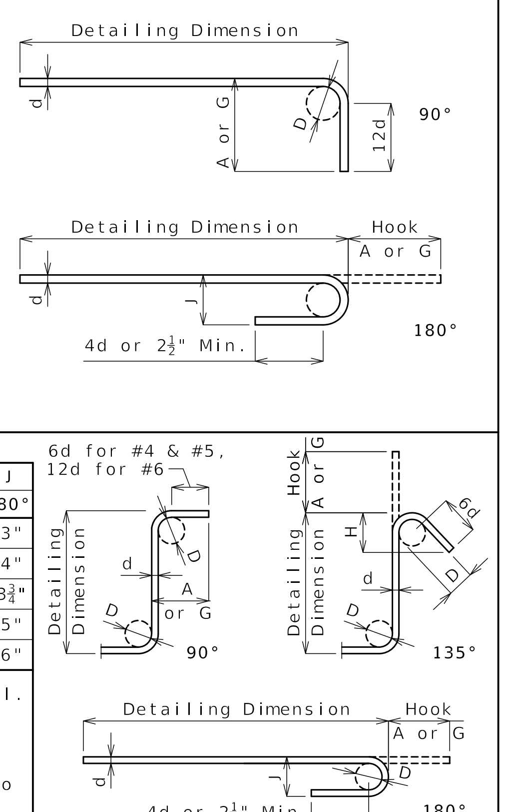
Size	Case	D	A or G 90°	A or G 180°	J 180°
#4	1	3"	8"	6"	4"
#5	1	$3\frac{3}{4}$"	10"	7"	5"
#6	1	$4\frac{1}{2}$"	12"	$8\frac{1}{4}$"	6"
#7	2	$5\frac{1}{4}$"	14"	$9\frac{3}{4}$"	7"
	3	7"	15"	$11\frac{1}{2}$"	$8\frac{3}{4}$"
#8	2	6"	16"	11"	8"
	3	8"	17"	$13\frac{1}{4}$"	10"
#9	1	$9\frac{1}{2}$"	$19\frac{1}{2}$"	$15\frac{1}{2}$"	$11\frac{3}{4}$"
#10	1	$10\frac{3}{4}$"	22"	$17\frac{1}{2}$"	$13\frac{1}{4}$"
#11	1	12"	$24\frac{1}{2}$"	$19\frac{1}{2}$"	$14\frac{7}{8}$"
#14	1	$18\frac{1}{4}$"	$31\frac{1}{4}$"	$27\frac{1}{2}$"	$21\frac{5}{8}$"
#18	1	24"	$41\frac{1}{2}$"	$36\frac{1}{4}$"	$28\frac{1}{2}$"

Stirrup Pin Bend Shapes (S)

Size	Case	D	A or G 90°	A or G 135°	A or G 180°	H 135°	J 180°
#4	2	2"	$4\frac{1}{2}$"	$4\frac{1}{2}$"	5"	$2\frac{7}{8}$"	3"
	3	3"	5"	$5\frac{1}{4}$"	6"	3"	4"
#5	2	$2\frac{1}{2}$"	$5\frac{3}{4}$"	$5\frac{3}{4}$"	$5\frac{3}{4}$"	$3\frac{5}{8}$"	$3\frac{3}{4}$"
	3	$3\frac{3}{4}$"	$6\frac{1}{4}$"	$6\frac{1}{2}$"	7"	$3\frac{7}{8}$"	5"
#6	1	$4\frac{1}{2}$"	12"	$7\frac{3}{4}$"	$8\frac{1}{4}$"	$4\frac{5}{8}$"	6"

Applicable for all grades of steel.

Case 1 applies to all reinforcement. Case 2 applies to all reinforcement except for galvanized bars. Case 3 applies to galvanized bars only.



Reinforcing Steel Totals (Pounds)

	Size	Substructure Plain	Substructure Epoxy	Superstructure Slab Plain	Superstructure Slab Epoxy	Superstructure Barrier	Superstructure Slip Form	Entire Bridge Plain	Entire Bridge Epoxy
By Size	W5	0	0	0	0	0	0	0	0
	4	462	0	0	1,726	0	0	462	1,726
	5	14,018	0	0	36,246	13,661	601	14,018	50,508
	6	8,597	0	0	40,404	0	0	8,597	40,404
	7	0	0	0	9,546	0	0	0	9,546
	8	3,156	0	0	1,511	0	0	3,156	1,511
	9	54,462	0	0	0	0	0	54,054	0
	10	5,387	0	0	0	0	0	5,387	0
	11	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0
By Type		86,082	0	0	89,433	13,661	601	86,082	89,433

All superstructure reinforcing steel shall be epoxy coated unless otherwise specified.

BENDING DIAGRAMS AND REINFORCING STEEL TOTALS

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
Alex C. Benz
10/28/2024 12:36:33 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	
10/28/2024	
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 30
COUNTY ST. LOUIS	
JOB NO. J6I3624B	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A9273	

DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Missouri Certificate of Authority: 001578

REV.

Bill of Reinforcing Steel

No. Req.	Size/Mark	Location	C	SH	V	B (ft in.)	C (ft in.)	D (ft in.)	E (ft in.)	F (ft in.)	H (ft in.)	K (ft in.)	Nom. Length (ft in)	Actual Length (ft in)	Weight lb
		SUBSTRUCTURE													
		INT. BENT 2													
26	6 D200	BEAM		20		2 6.000							2 6	2 6	98
12	10 H200	BEAM		18		50 9.000							53 8	53 8	2771
12	8 H201	BEAM		20		50 9.000							50 9	50 9	1626
12	6 H202	BEAM		20		50 9.000							50 9	50 9	915
16	6 H203	BEAM		10 S			12.000	4 7.000					6 7	6 3	150
18	6 H204	BEAM		20		10 9.000							10 9	10 9	291
12	6 H205	BEAM		20		8 9.000							8 9	8 9	158
1	5 P200	DRILLED SHAFT		35		4 0.000	6.000	77 2.000					1965 4	1965 4	2050
1	5 P201	DRILLED SHAFT		35		4 0.000	6.000	75 11.000					1934 1	1934 1	2017
1	5 P202	DRILLED SHAFT		35		4 0.000	6.000	74 8.000					1902 10	1902 10	1985
48	5 P203	BEAM		34 S		12 6.750	4.500				4 0.000		13 7	13 7	680
20	6 U200	BEAM		13 S		4 9.000	4 3.000	4 9.000	4 3.000				19 3	18 10	566
9	6 U201	BEAM		10 S			4 3.000	4 9.000					13 3	12 11	175
88	6 U202	BEAM		13 S		3 2.000	4 3.000	3 2.000	4 3.000				16 2	15 8	2071
51	4 U203	BEAM		10 S			14.000	4 9.000					7 1	6 11	236
30	9 V200	DRILLED SHAFT		20		48 10.000							48 10	48 10	4981
30	9 V201	DRILLED SHAFT		20		45 4.000							45 4	45 4	4624
30	9 V202	DRILLED SHAFT		20		42 10.000							42 10	42 10	4369
10	9 V203	COLUMN		20		38 8.000							38 8	38 8	1315
10	9 V204	COLUMN		20		41 2.000							41 2	41 2	1400
10	9 V205	COLUMN		20		43 8.000							43 8	43 8	1485
10	9 V206	COLUMN		20		37 5.000							37 5	37 5	1272
10	9 V207	COLUMN		20		39 11.000							39 11	39 11	1357
10	9 V208	COLUMN		20		42 5.000							42 5	42 5	1442
10	9 V209	COLUMN		20		36 2.000							36 2	36 2	1230
10	9 V210	COLUMN		20		38 8.000							38 8	38 8	1315
10	9 V211	COLUMN		20		41 2.000							41 2	41 2	1400
		INT. BENT 3													
31	6 D300	BEAM		20		2 6.000							2 6	2 6	116
12	10 H300	BEAM		18		47 9.000							50 8	50 8	2616
12	8 H301	BEAM		20		47 9.000							47 9	47 9	1530
12	6 H302	BEAM		20		47 9.000							47 9	47 9	861
16	6 H303	BEAM		10 S			12.000	4 7.000					6 7	6 3	150
18	6 H304	BEAM		20		10 9.000							10 9	10 9	291
12	6 H305	BEAM		20		7 3.000							7 3	7 3	131
1	5 P300	DRILLED SHAFT		35		4 0.000	6.000	84 1.000					2138 4	2138 4	2230
1	5 P301	DRILLED SHAFT		35		4 0.000	6.000	83 0.000					2111 2	2111 2	2202
1	5 P302	DRILLED SHAFT		35		4 0.000	6.000	81 11.000					2084 1	2084 1	2174
48	5 P303	BEAM		34 S		12 6.750	4.500				4 0.000		13 7	13 7	680
20	6 U300	BEAM		13 S		4 9.000	4 3.000	4 9.000	4 3.000				19 3	18 10	566
9	6 U301	BEAM		10 S			4 3.000	4 9.000					13 3	12 11	175
80	6 U302	BEAM		13 S		3 2.000	4 3.000	3 2.000	4 3.000				16 2	15 8	1883
49	4 U303	BEAM		10 S			14.000	4 9.000					7 1	6 11	226
30	9 V300	DRILLED SHAFT		20		50 10.000							50 10	50 10	5185
30	9 V301	DRILLED SHAFT		20		48 4.000							48 4	48 4	4930
30	9 V302	DRILLED SHAFT		20		45 10.000							45 10	45 10	4675
10	9 V303	COLUMN		20		42 8.000							42 8	42 8	1451
10	9 V304	COLUMN		20		45 2.000							45 2	45 2	1536
10	9 V305	COLUMN		20		47 8.000							47 8	47 8	1621
10	9 V306	COLUMN		20		41 7.000							41 7	41 7	1414
10	9 V307	COLUMN		20		44 1.000							44 1	44 1	1499
10	9 V308	COLUMN		20		46 7.000							46 7	46 7	1584
10	9 V309	COLUMN		20		40 5.000							40 5	40 5	1374
10	9 V310	COLUMN		20		42 11.000							42 11	42 11	1459
10	9 V311	COLUMN		20		45 5.000							45 5	45 5	1544

Bill of Reinforcing Steel

No. Req.	Size/Mark	Location	C	SH	V	B (ft in.)	C (ft in.)	D (ft in.)	E (ft in.)	F (ft in.)	H (ft in.)	K (ft in.)	Nom. Length (ft in)	Actual Length (ft in)	Weight lb
		SUPERSTRUCTURE													
		END BENT 1													
12	6 F100	WING BRACE	E	23 S		14.000	9 11.000	2 3.000	6.875	2 2.125	12.625	5.875	13 4	13 3	239
4	6 F101	DIAPHRAGM	E	21 S			9 2.000	3 11.000			5 10.000	7 0.000	13 1	12 3	74
12	6 F102	WING BRACE	E	15 S		14.000	2 11.500	2 3.000	2 1.125	9.750	13.000	5.000	6 5	6 3	113
5	6 F103	DIAPHRAGM	E	21 S		3 9.000	6 4.000				4 2.625	4 7.875	10 1	9 4	70
21	6 H100	BM & DIAPH	E	20		58 0.000							58 0	58 0	1829
20	6 H101	BEAM	E	20		4 6.000							4 6	4 6	135
12	6 H102	DIAPGRAGM	E	20		10 3.000							10 3	10 3	185
8	6 H103	DIAPGRAGM	E	20		8 1.000							8 1	8 1	97
6	6 H104	DIAPGRAGM	E	20		5 2.000							5 2	5 2	47
4	6 H105	DIAPGRAGM	E	20		4 2.000							4 2	4 2	25
5	5 H106	STRAND TIE	E	23		15.000	2 1.000	15.000	10.875	10.375	10.875	10.375	4 7	4 6	23
8	8 H107	WING	E	20		15 6.000							15 6	15 6	331
26	6 H108	WING	E	19 S		14 8.000	12.000						15 8	15 6	605
8	8 H109	WING	E	20		18 6.000							18 6	18 6	395
26	6 H110	WING	E	19 S		17 8.000	12.000						18 8	18 6	722
27	5 U100	BEAM	E	10 S			7 1.000	4 2.000					18 4	18 1	509
22	4 U101	BEAM	E	13 S		4 2.000	2 9.000	4 2.000	2 9.000				14 7	14 4	211
13	4 U102	BEAM	E	10 S			2 9.000	4 2.000					9 8	9 6	82
50	4 U103	BEAM	E	10 S			14.000	2 9.000					5 1	4 11	164
73	6 U104	DIAPHRAGM	E	19 S		3 0.000	5 9.000						8 9	8 7	941
41	6 U105	DIAPHRAGM	E	19 S		3 11.000	4 2.000						8 1	7 11	488
41	5 U106	DIAPHRAGM	E	10 S			5 0.000	3 4.000					13 4	13 1	559
37	5 U107	DIAPHRAGM	E	19 S		2 0.000	15.000						3 3	3 2	122
28	5 V100	BEAM	E	20		7 1.000							7 1	7 1	207
25	6 V101	BEAM	E	20		3 9.000							3 9	3 9	141
2	6 V102	WING	E	20		7 9.000							7 9	7 9	23
26	6 V103	WING	E	20	2	7 9.000							7 9	7 9	316
		INCR=0 5/8 IN				8 5.000							8 5	8 5	
2	6 V104	WING	E	20		7 7.000							7 7	7 7	23
32	6 V105	WING	E	20	2	7 7.000							7 7	7 7	383
		INCR=0 5/8 IN				8 4.000							8 4	8 4	
		END BENT 4													
12	6 F400	WING BRACE	E	15 S		3 3.000	6 2.000	14.000	5.875	12.750	11.375	2 0.500	9 7	9 7	173
4	6 F401	DIAPHRAGM	E	21 S			6 3.000	3 5.000			4 9.500	4 0.250	9 8	9 1	55
12	6 F402	WING BRACE	E	15 S		14.000	3 7.000	2 3.000	2 0.500	11.375	12.750	5.875	7 0	6 10	123
5	6 F403	DIAPHRAGM	E	21 S		3 5.000	4 7.000				3 6.625	2 11.750	8 0	7 5	56
21	6 H400	BM & DIAPH	E	20		50 2.000							50 2	50 2	1582
20	6 H401	BEAM	E	20		4 3.000							4 3	4 3	128
12	6 H402	DIAPGRAGM	E	20		8 6.000							8 6	8 6	153
8	6 H403	DIAPGRAGM	E	20		7 7.000							7 7	7 7	91
6	6 H404	DIAPGRAGM	E	20		3 2.000							3 2	3 2	29
4	6 H405	DIAPGRAGM	E	20		2 3.000							2 3	2 3	14
5	5 H406	STRAND TIE	E	23		15.000	2 0.000	15.000	9.625	11.500	9.625	11.500	4 6	4 5	23
8	8 H407	WING	E	20		17 4.000							17 4	17 4	370
28	6 H408	WING	E	19 S		16 6.000	12.000						17 6	17 4	729
8	8 H409	WING	E	20		19 5.000							19 5	19 5	415
28	6 H410	WING	E	19 S		18 7.000	12.000						19 7	19 5	817
28	5 U400	BEAM	E	10 S			6 10.000	3 7.000					17 3	17 0	496
14	4 U401	BEAM	E	13 S		3 7.000	2 9.000	3 7.000	2 9.000				13 5	13 2	123
11	4 U402	BEAM	E	10 S			2 9.000	3 7.000					9 1	8 11	66
45	4 U403	BEAM	E	10 S			14.000	2 9.000					5 1	4 11	148
63	6 U404	DIAPHRAGM	E	19 S		3 0.000	5 4.000						8 4	8 2	773
38	6 U405	DIAPHRAGM	E	19 S		3 9.000	3 7.000						7 4	7 2	409
38	5 U406	DIAPHRAGM	E	10 S			4 8.000	2 10.000					12 2	11 11	472
36	5 U407	DIAPHRAGM	E	19 S		2 0.000	15.000						3 3	3 2	119
20	5 V400	BEAM	E	20		6 10.000							6 10	6 10	143
20	5 V401	BEAM	E	20		3 9.000							3 9	3 9	78
2	6 V402	WING	E	20		8 10.000							8 10	8 10	27
28	6 V403	WING	E	20	2	8 5.000							8 5	8 5	363
		INCR=0 3/8 IN				8 10.000							8 10	8 10	
2	6 V404	WING	E	20		9 0.000							9 0	9 0	27
32	6 V405	WING	E	20	2	8 5.000							8 5	8 5	419
		INCR=0 1/2 IN				9 0.000							9 0	9 0	

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

All bars shall be Grade 60.

For bending diagrams and steel reinforcing totals, see Sheet No. 31.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

BILL OF REINFORCING STEEL

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI ALEX BENZ NUMBER PE-2018003121 PROFESSIONAL ENGINEER
Alex C. Benz
10/28/2024 12:36:42 PM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED 10/28/2024

ROUTE	STATE
I-170	MO
DISTRICT	SHEET NO.
BR	31

COUNTY: ST. LOUIS
JOB NO.: J6I3624B
CONTRACT ID.
PROJECT NO.
BRIDGE NO.: A9273

DESCRIPTION

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

EFK•Moen Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.

c:\bms\efkmoen01\alex benz\dms03766\B_A9273_031_J6I3624B_Barbill.dgn 12:18:55 PM 10/28/2024

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		INT. BENT 2													
		DIAPHRAGM													
16	6 H250	DIAPHRAGM	E	20		7 11.000							7 11	7 11	190
32	4 H251	DIAPHRAGM	E	20		9 10.000							9 10	9 10	210
12	5 H252	DIAPHRAGM	E	21 S			1 11.000	3 6.000			9.000	21.250	5 5	5 5	68
12	5 H253	DIAPHRAGM	E	21 S		3 6.000	3 2.000				8.500	3 1.000	6 8	4 3	53
8	5 H254	STRAND TIE	E	21 S		15.000	2 5.000				19.250	21.750	3 8	3 2	26
12	5 H255	STRAND TIE	E	23 S		15.000	2 0.000	15.000	10.000	11.250	10.000	11.250	4 6	4 5	55
16	6 U250	DIAPHRAGM	E	28 S			2 2.000	4 8.000	4 6.000				11 4	11 0	264
40	4 U251	DIAPHRAGM	E	28 S			18.000	4 8.000	3 10.000				10 0	9 10	263
8	5 V250	DIAPHRAGM	E	20		4 10.000							4 10	4 10	40
		INT. BENT 3													
		DIAPHRAGM													
16	6 H350	DIAPHRAGM	E	20		7 7.000							7 7	7 7	182
32	4 H351	DIAPHRAGM	E	20		9 5.000							9 5	9 5	201
12	5 H352	DIAPHRAGM	E	21 S		16.000	7.000				2.000	6.750	1 11	-1 7	-5
12	5 H353	DIAPHRAGM	E	21 S		7.000	23.000				3.875	22.625	2 6	-1 2	-10
8	5 H354	STRAND TIE	E	21 S		15.000	2 4.000				21.500	18.000	3 7	3 2	26
12	5 H355	STRAND TIE	E	23 S		15.000	2 0.000	15.000	10.000	11.250	10.000	11.250	4 6	4 5	55
16	6 U350	DIAPHRAGM	E	28 S			2 2.000	4 8.000	4 3.000				11 1	10 9	258
40	4 U351	DIAPHRAGM	E	28 S			18.000	4 8.000	3 8.000				9 10	9 8	258
8	5 V350	DIAPHRAGM	E	20		4 10.000							4 10	4 10	40
		SLAB													
84	6 S1	SLAB	E	20	1	2 2.000							2 2	2 2	2550
		INCR=5 1/4 IN				38 3.000							38 3	38 3	
393	6 S2	SLAB	E	20		38 5.000							38 5	38 5	22677
61	6 S3	SLAB	E	20	1	2 5.000							2 5	2 5	1859
		INCR=7 1/8 IN				38 2.000							38 2	38 2	
160	5 S4	SLAB	E	20		48 10.000							48 10	48 10	8149
60	7 S5	SLAB	E	20		38 11.000							38 11	38 11	4773
60	7 S6	SLAB	E	20		38 11.000							38 11	38 11	4773
63	5 S7	SLAB	E	20	1	38 1.000							38 1	38 1	1322
		INCR=7IN				2 2.000							2 2	2 2	
294	5 S8	SLAB	E	20		38 5.000							38 5	38 5	11780
46	5 S9	SLAB	E	20	1	38 0.000							38 0	38 0	966
		INCR=9 1/2 IN				2 3.000							2 3	2 3	
252	5 S10	SLAB	E	20		41 7.000							41 7	41 7	10930

Bill of Reinforcing Steel

No. Req.	Size/ Mark	Location	Codes C	Codes SH	Codes V	B ft in.	C ft in.	D ft in.	E ft in.	F ft in.	H ft in.	K ft in.	Nom. Length ft in.	Actual Length ft in.	Weight lb
		BARRIER													
20	5 K1	BARRIER	E	27 S		3 8.000	9.250	5.375	3 2.750		5.250	1.000	8 1	7 11	165
96	5 K2	BARRIER	E	27 S		3 8.000	9.250	14.500	2 5.750		14.250	2.750	8 2	7 11	793
6	5 K3	BARRIER	E	27 S		22.500	9.250	14.500	7.750	12.000	14.250	2.750	5 6	5 2	32
10	5 K4	BARRIER	E	19 S	2	2 3.000	10.000						3 1	3 0	32
		INCR=0 1/2 IN				2 5.000	10.000						3 3	3 2	
10	5 K5	BARRIER	E	38 S	2			18.500	8.375	8.250	18.000	4.000	2 11	2 9	31
		INCR=0 1/2 IN						20.500	8.375	8.250	20.000	4.500	3 1	2 11	
6	5 K6	BARRIER	E	19 S		2 5.625	10.000						3 4	3 2	20
6	5 K7	BARRIER	E	21 S			2 5.000	10.000			2 4.375	5.875	3 3	3 0	19
18	5 K8	BARRIER	E	19 S	2	2 7.375	10.000						3 5	3 4	65
		INCR=0 3/4 IN				3 1.375	10.000						3 11	3 10	
18	5 K9	BARRIER	E	21 S	2		2 7.250	10.000			2 6.625	6.500	3 5	3 2	69
		INCR=0 3/4 IN					3 1.375	10.000			3 0.625	7.500	3 11	3 8	
27	5 K10	BARRIER	E	19 S		3 1.375	10.000						3 11	3 10	108
27	5 K11	BARRIER	E	21 S			3 1.375	10.000			3 1.125	7.500	3 11	3 9	106
24	5 K12	BARRIER	E	20		21 8.000							21 8	21 8	542
6	5 K13	BARRIER	E	20	2	20 11.000							20 11	20 11	112
		INCR=36IN				14 11.000							14 11	14 11	
24	5 K14	BARRIER	E	20		18 5.000							18 5	18 5	461
6	5 K15	BARRIER	E	20	2	17 8.000							17 8	17 8	92
		INCR=36IN				11 8.000							11 8	11 8	
10	5 K16	BARRIER	E	19 S	2	2 4.250	10.000						3 2	3 1	33
		INCR=0 1/2 IN				2 6.250	10.000						3 4	3 3	
10	5 K17	BARRIER	E	38 S	2			18.500	9.500	8.250	18.000	4.000	3 0	2 10	32
		INCR=0 1/2 IN						20.500	9.500	8.250	20.000	4.500	3 2	3 0	
6	5 K18	BARRIER	E	19 S		2 6.750	10.000						3 5	3 3	20
6	5 K19	BARRIER	E	21 S			2 6.625	10.000			2 6.000	6.250	3 5	3 2	20
18	5 K20	BARRIER	E	19 S	2	2 8.500	10.000						3 6	3 5	66
		INCR=0 3/4 IN				3 2.500	10.000						4 0	3 11	
18	5 K21	BARRIER	E	21 S	2		2 8.500	10.000			2 7.750	6.750	3 6	3 4	71
		INCR=0 3/4 IN					3 2.500	10.000			3 1.750	7.750	4 0	3 9	
27	5 K22	BARRIER	E	19 S		3 3.000	10.000						4 1	4 0	113
27	5 K23	BARRIER	E	21 S			3 3.000	10.000			3 2.250	7.750	4 1	3 10	108
228	5 R1	BARRIER	E	26		3 2.000	5.500	2.250	3 1.375	5.500	3 0.750	6.750	6 11	6 7	1566
228	5 R2	BARRIER	E	19 S		19.500	9.500						2 5	2 4	555
460	5 R3	BARRIER	E	27 S			9.500	15.250	5.000	12.000	15.000	3.000	3 6	3 3	1559
80	5 R4	BARRIER	E	20		11 9.000							11 9	11 9	980
10	5 R5	BARRIER	E	20		52 11.000							52 11	52 11	552
20	5 R6	BARRIER	E	20		33 9.000							33 9	33 9	704
10	5 R7	BARRIER	E	20		55 3.000							55 3	55 3	576
232	5 R8	BARRIER	E	26		3 3.000	5.500	2.250	3 1.375	5.500	3 0.750	6.750	6 11	6 7	1593
232	5 R9	BARRIER	E	19 S		20.500	9.500						2 6	2 5	585
10	5 R10	BARRIER	E	20		56 11.000							56 11	56 11	594
20	5 R11	BARRIER	E	20		34 8.000							34 8	34 8	723
10	5 R12	BARRIER	E	20		54 1.000							54 1	54 1	564
		SLIP FORM													
48	5 C1	SLIP FORM	E	20		12 0.000							12 0	12 0	601

Nominal lengths are based on out to out dimensions shown in bending diagrams and are listed to the nearest inch for fabricator's use. Actual lengths are measured along centerline bar to the nearest inch. Weights are based on actual lengths.

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All bars shall be Grade 60.

Codes: C = Required coatings, where E = Epoxy Coated and G = Galvanized.

SH = Required shape, see bending diagrams.

V = Sets of varied bars and number of bars of each length. Bar dimensions vary in equal increments between dimensions shown on this line and the following line and the actual length dimension shown on this line and the following line vary by the specified increment.

Detailed Sep. 2024
Checked Sep. 2024

BILL OF REINFORCING STEEL

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER

Alex C. Benz
10/22/2024 10:18:51 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED 10/22/2024

ROUTE I-170 STATE MO

DISTRICT BR SHEET NO. 32

COUNTY ST. LOUIS

JOB NO. J6I3624B

CONTRACT ID.

PROJECT NO.

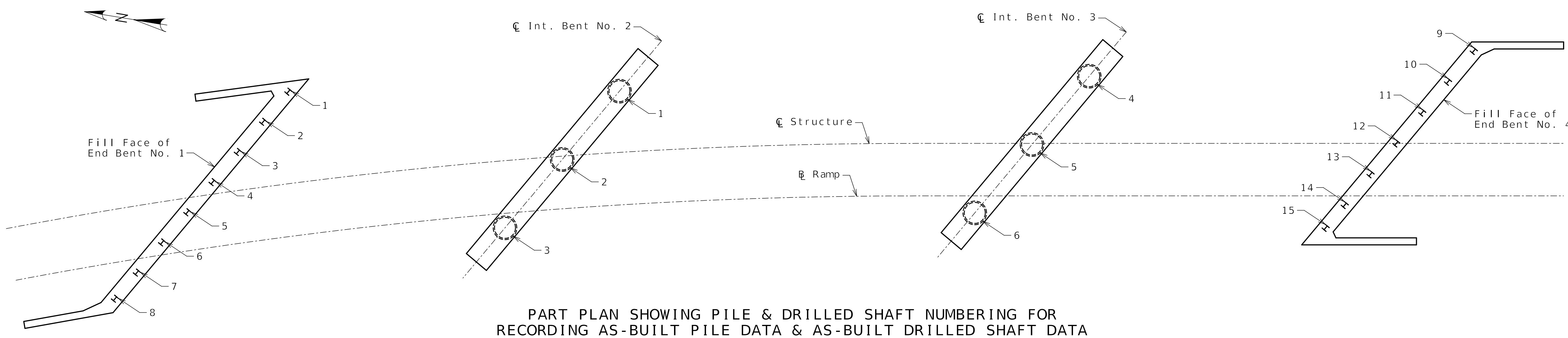
BRIDGE NO. A9273

DESCRIPTION

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

EFK•Moen
Civil Engineering Design
13523 Barrett Parkway Dr
Suite 250
St. Louis, MO 63021
Phone 314-394-3100
Fax 314-394-3199
Missouri Certificate of Authority: 001578

REV.



PART PLAN SHOWING PILE & DRILLED SHAFT NUMBERING FOR
RECORDING AS-BUILT PILE DATA & AS-BUILT DRILLED SHAFT DATA

As-Built Pile Data

Pile No.	Length in Place (ft)	Computed Nominal Axial Compressive Resistance (kips)	Remarks
			End Bent No. 1
1			
2			
3			
4			
5			
6			
7			
8			
			End Bent No. 4
9			
10			
11			
12			
13			
14			
15			

As-Built Drilled Shaft Data

Shaft No.	Top of Sound Rock (Elev.)	Tip of Casing (Elev.)	Bottom of Rock Socket (Elev.)	Remarks
				Int. Bent No. 2
1				
2				
3				
				Int. Bent No. 3
4				
5				
6				

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

This sheet to be completed by MoDOT construction personnel.

AS-BUILT PILE AND DRILLED SHAFT DATA

Detailed Sep. 2024
Checked Sep. 2024

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

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER
Alex C. Benz
10/22/2024 10:19:01 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED 10/22/2024
ROUTE I-170 STATE MO
DISTRICT BR SHEET NO. 33
COUNTY ST. LOUIS
JOB NO. J6I3624B
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A9273

DESCRIPTION

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

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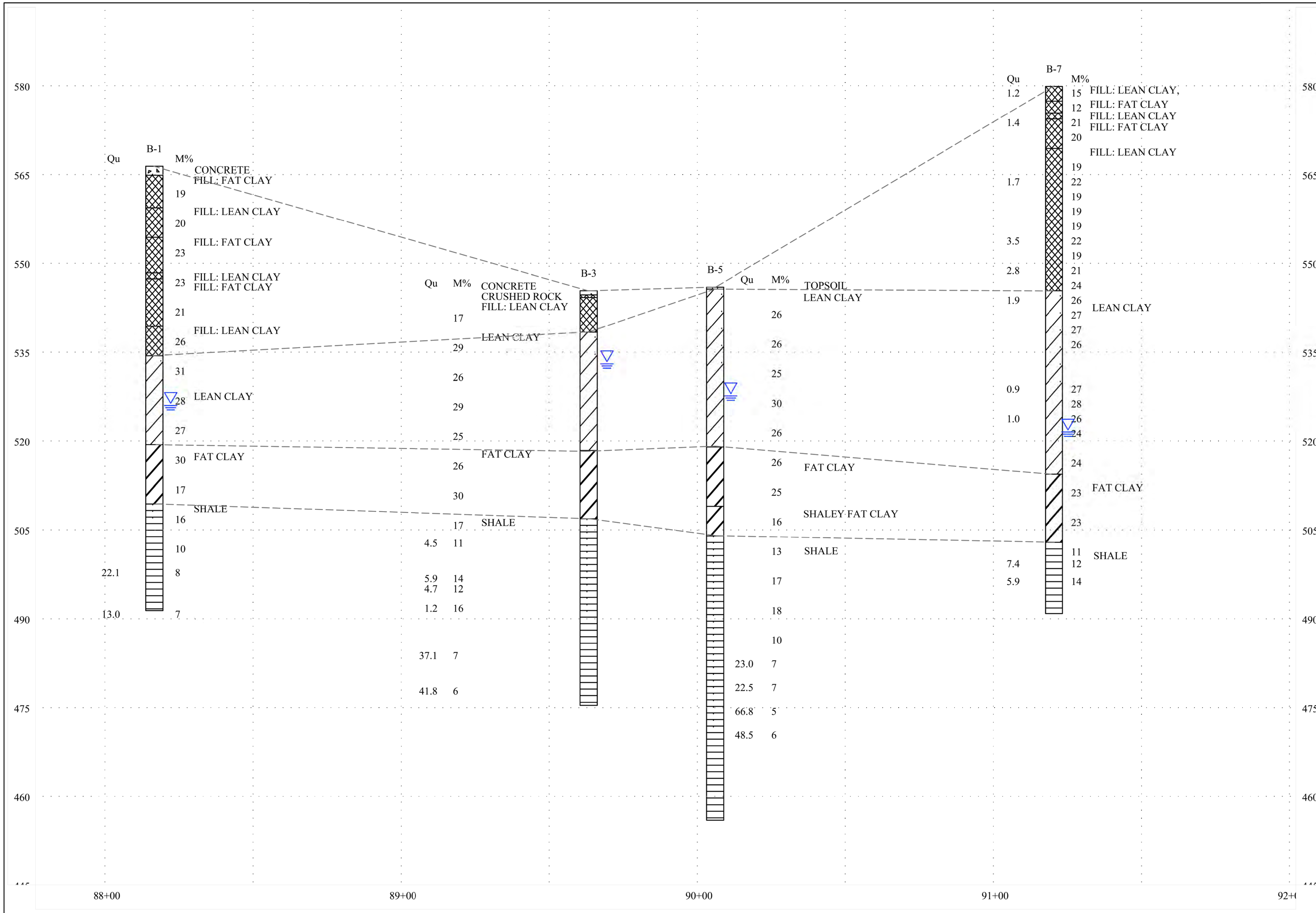
REV.



General Notes/Legend

GROUNDWATER LEVEL AT THE TIME OF DRILLING

VARIATIONS IN SUBSURFACE CONDITIONS MAY AND LIKELY EXIST BETWEEN BORINGS. DASHED HORIZONS ARE INTERPRETED AND ARE SHOWN FOR ILLUSTRATION ONLY.

PROJECT NAME
J613624B - I-270 EB TO I-170 SB
OVER PERSHALL ROAD
ST. LOUIS COUNTY, MISSOURI

SUBSURFACE PROFILE A-A

SCALE	1" = 15' V 1" = 30' H
JOB NUMBER	2021-1396.11
FIGURE DATE	8/22/2024
DRAWN BY	RCV
CHECKED BY	GMK
FIGURE	4A

STATE OF MISSOURI
ALEX BENZ
NUMBER PE-2018003121
PROFESSIONAL ENGINEER

Alex C. Benz
10/22/2024 10:20:15 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/22/2024
ROUTE	I-170
STATE	MO
DISTRICT	BR
SHEET NO.	34
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

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

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Missouri Certificate of Authority: 001578

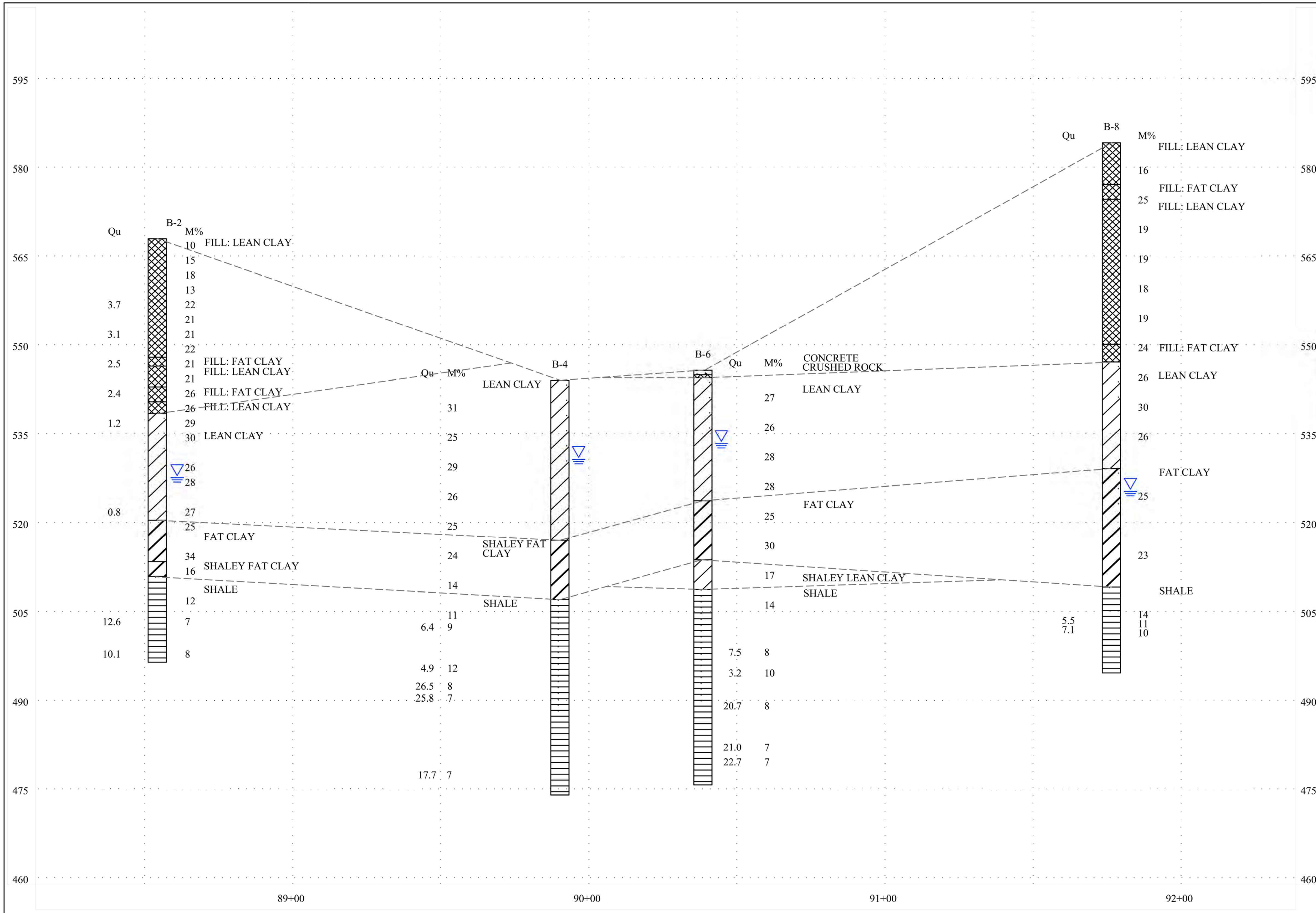
BORING DATA

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

Detailed Sep. 2024
Checked Sep. 2024

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

REV.



General Notes/Legend

GROUNDWATER LEVEL AT THE TIME OF DRILLING

VARIATIONS IN SUBSURFACE CONDITIONS MAY AND LIKELY EXIST BETWEEN BORINGS. DASHED HORIZONS ARE INTERPRETED AND ARE SHOWN FOR ILLUSTRATION ONLY.

PROJECT NAME
J6I3624B - I-270 EB TO I-170 SB OVER PERSHALL ROAD
ST. LOUIS COUNTY, MISSOURI

SUBSURFACE PROFILE B-B

SCALE	1" = 15' V; 1" = 30' H
JOB NUMBER	2021-1396.10
FIGURE DATE	8/22/2024
DRAWN BY	RCV
CHECKED BY	GMK
FIGURE	4B

ALEX BENZ NUMBER PE-2018003121 STATE OF MISSOURI PROFESSIONAL ENGINEER

Alex C. Benz
10/22/2024 10:20:48 AM
Alex Benz - Civil
MO PE-2018003121

DATE PREPARED	10/22/2024
ROUTE I-170	STATE MO
DISTRICT BR	SHEET NO. 35
COUNTY	ST. LOUIS
JOB NO.	J6I3624B
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A9273

DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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BORING DATA

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

Detailed Sep. 2024
Checked Sep. 2024

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

REV.