MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

PLANS FOR PROPOSED STATE HIGHWAY

ATCHISON & HOLT COUNTY

DESIGN DESIGNATION

ROUTE F

A.A.D.T. - 2021 = 82
A.A.D.T. - 2041 = 107
D.H.V. = 10%
T = 13%
V = 55 M.P.H.
D = 50% / 50%

FUNCTIONAL CLASSIFICATION- MINOR COLLECTOR

US-59

A.A.D.T. - 2021 = 918
A.A.D.T. - 2041 = 1,239
D.H.V. = 10%
T = 24%
V = 60 M.P.H.
D = 50% / 50%

FUNCTIONAL CLASSIFICATION- MINOR ARTERIAL

ROUTE T

A.A.D.T. - 2021 = 102
A.A.D.T. - 2041 = 133
D.H.V. = 10%
T = 10%
V = 55 M.P.H.
D = 50% / 50%

FUNCTIONAL CLASSIFICATION- MAJOR COLLECTOR

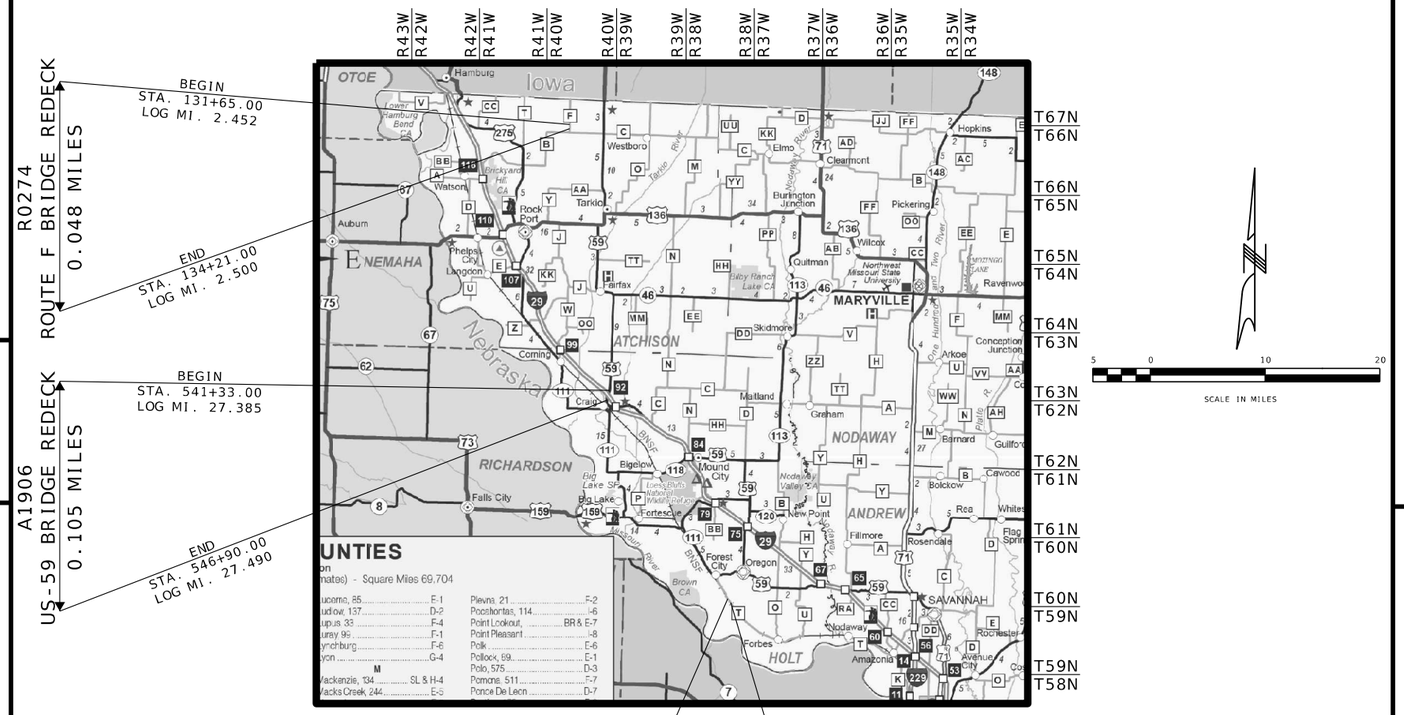
NO RIGHT OF WAY ACQUISITION

CONVENTIONAL SYMBOLS

(USED IN PLANS)

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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES



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

INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
TITLE SHEET	1
TYPICAL SECTIONS (TS) (1 SHEET)	2
QUANTITIES (QU) (3 SHEETS)	3
RTE F	
PLAN-PROFILE (PP)	4
TRAFFIC CONTROL SHEETS (TC)	5
EROSION CONTROL SHEETS (EC)	6
SIGNING (SN)	7-8
PAVEMENT MARKING (PM)	9
US-59	
PLAN-PROFILE (PP)	10
TRAFFIC CONTROL SHEETS (TC)	11-24
SPECIAL SHEET (I-29)	25
EROSION CONTROL SHEETS (EC)	26
PAVEMENT MARKING (PM)	27
RTE T	
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EROSION CONTROL SHEETS (EC)	30
SIGNING (SN)	31-32
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BRIDGE DRAWINGS (B)	
R0274	1-9
A1906	1-14
N0811	1-10

LENGTH OF PROJECT

ROUTE F

BEGINNING	STA. 131+65.00	
END	STA. 134+21.00	
APPARENT LENGTH	256	FEET
EQUATIONS AND EXCEPTIONS:		
NONE		
TOTAL CORRECTIONS	0.00	FEET

US-59

BEGINNING	STA. 541+33.00	
END	STA. 546+90.00	
APPARENT LENGTH	557	FEET
EQUATIONS AND EXCEPTIONS:		
NONE		
TOTAL CORRECTIONS	0.00	FEET

ROUTE T

BEGINNING	STA. 124+15.00	
END	STA. 128+00.00	
APPARENT LENGTH	385	FEET
EQUATIONS AND EXCEPTIONS:		
NONE		
TOTAL CORRECTIONS	0.00	FEET

NET LENGTH OF PROJECT	1,198.00	FEET
STATE LENGTH	0.227	MILES
FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	0.58	ACRES

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
7/12/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	1

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

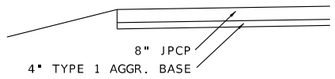
PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

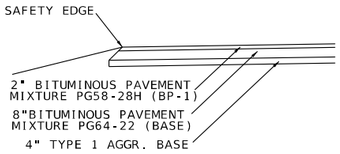
benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



OPTIONAL PAVEMENT DESIGN

8" JPCP @ 15'JOINTS W/ 1.25" DOWELS
ON 4" TYPE 1 AGGR. FOR BASE

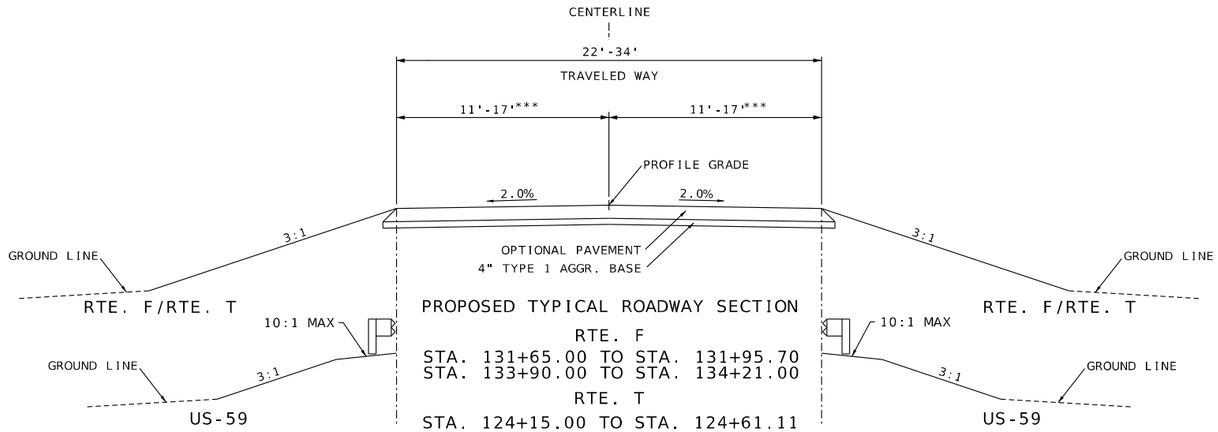
RTE. F, RTE. T & US-59
J.P.C.P.DESIGN



OPTIONAL PAVEMENT DESIGN

10" HMA
ON 4" TYPE 1 AGGR. FOR BASE

RTE. F, RTE. T & US-59
HMA DESIGN



PROPOSED TYPICAL ROADWAY SECTION

RTE. F

STA. 131+65.00 TO STA. 131+95.70
STA. 133+90.00 TO STA. 134+21.00

RTE. T

STA. 124+15.00 TO STA. 124+61.11
STA. 126+74.65 TO STA. 128+00.00

US-59

STA. 541+33.00 TO STA. 542+28.03
STA. 545+75.75 TO STA. 546+90.00

*** - ROADWAY WIDTH:

RTE F
STA. 131+65.00 MATCH EXISTING
10.7' LT
STA. 131+65.00 TO STA. 131+86.48
TRANSITION LT
STA. 131+86.48 TO STA. 133+80.73
11.0' LT
STA. 133+80.73 TO STA. 134+21.00
TRANSITION LT
STA. 134+21.00 MATCH EXISTING
9.6' LT

STA. 131+65.00 MATCH EXISTING
9.3' RT
STA. 131+65.00 TO STA. 132+04.92
TRANSITION RT
STA. 132+04.92 TO STA. 133+99.17
11.0' RT
STA. 133+99.17 TO STA. 134+21.00
TRANSITION RT
STA. 134+21.00 MATCH EXISTING
10.0' RT

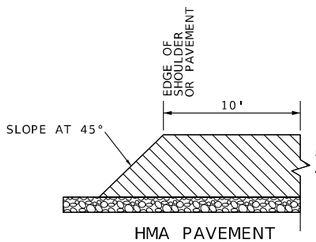
RTE T
STA. 124+15.00 MATCH EXISTING
10.2' LT
STA. 124+15.00 TO STA. 124+57.10
TRANSITION LT
STA. 124+57.10 TO STA. 126+70.65
11.0' LT
STA. 126+70.65 TO STA. 128+00.00
TRANSITION LT
STA. 128+00.00 MATCH EXISTING
10.1' LT

STA. 124+15.00 MATCH EXISTING
9.0' RT
STA. 124+15.00 TO STA. 124+65.11
TRANSITION RT
STA. 124+65.11 TO STA. 126+78.65
11.0' RT
STA. 126+78.65 TO STA. 128+00.00
TRANSITION RT
STA. 128+00.00 MATCH EXISTING
9.2' RT

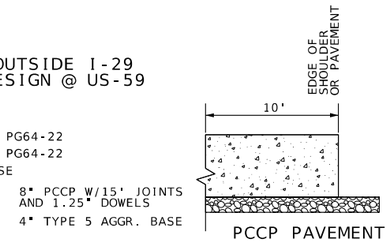
US-59
STA. 541+33.00 MATCH EXISTING
11.9' LT
STA. 541+33.00 TO STA. 542+32.59
TRANSITION LT
STA. 542+32.59 TO STA. 545+80.31
17.0' LT
STA. 545+80.31 TO STA. 546+90.00
TRANSITION LT
STA. 546+90.00 MATCH EXISTING
12.8' LT

STA. 541+33.00 MATCH EXISTING
11.8' RT
STA. 541+33.00 TO STA. 542+23.47
TRANSITION RT
STA. 542+23.47 TO STA. 545+71.79
17.0' RT
STA. 545+71.79 TO STA. 546+90.00
TRANSITION RT
STA. 546+90.00 MATCH EXISTING
10.4' RT

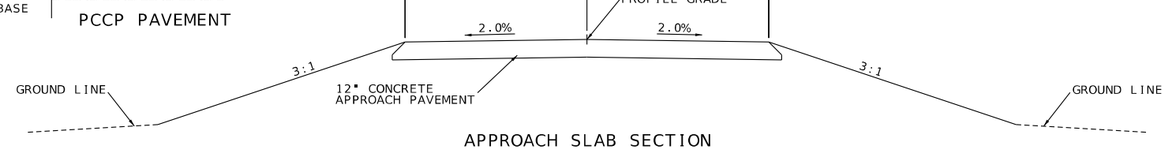
OPTIONAL OUTSIDE I-29
SHOULDER DESIGN @ US-59



HMA PAVEMENT



PCCP PAVEMENT



APPROACH SLAB SECTION

RTE. F

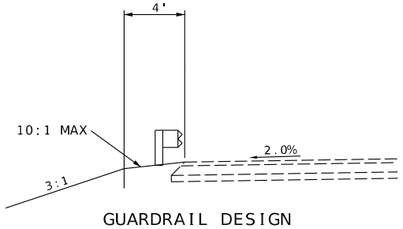
STA. 131+95.70 TO STA. 132+15.70
STA. 133+70.00 TO STA. 133+90.00

RTE. T

STA. 124+61.11 TO STA. 124+81.11
STA. 126+54.65 TO STA. 126+74.65

US-59

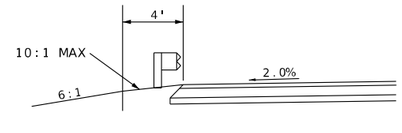
STA. 542+28.03 TO STA. 542+48.03
STA. 545+55.75 TO STA. 545+75.75



GUARDRAIL DESIGN

US-59

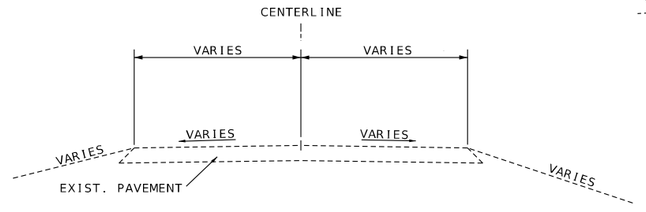
STA. 540+78.35 TO STA. 542+43.47 RT.
STA. 541+27.24 TO STA. 542+52.59 LT.
STA. 545+51.19 TO STA. 546+77.44 RT.
STA. 545+60.31 TO STA. 547+11.81 LT.



GUARDRAIL DESIGN

I-29 OUTSIDE SHOULDER

LOG MI. 30.5431 TO LOG MI. 30.6005 RT.
LOG MI. 30.5880 TO LOG MI. 30.6453 LT.



EXISTING TYPICAL ROADWAY SECTION

SHAPING SLOPES - MODIFIED MATERIAL REQUIRED

RTE.F

STA. 131+86.75 TO STA. 133+60.73
STA. 134.00.00 TO STA. 134+21.00

NOT TO SCALE

TYPICAL SECTIONS
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
7/12/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	2

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

REMOVAL OF IMPROVEMENTS

STATION	STATION	SIDE	DESCRIPTION	QUANTITY	UNITS
RTE F					
131+65.00	132+15.70	CL	PAVEMENT	109.9	SY
131+65.71		LT	SIGN	1	EA
131+85.30		LT	SIGN	1	EA
131+85.42		RT	SIGN	1	EA
132+04.40		RT	SIGN	1	EA
132+04.55		LT	SIGN	1	EA
132+22.85		RT	SIGN	1	EA
133+69.95	134+21.00	CL	PAVEMENT	108.5	SY
133+82.74		RT	SIGN	1	EA
133+99.21		LT	SIGN	1	EA
134+01.10		RT	SIGN	1	EA
134+19.75		LT	SIGN	1	EA
134+21.46		RT	SIGN	1	EA
			SUBTOTAL	1	LS
US-59					
540+78.35	542+43.47	RT	GUARDRAIL	54078.4	LF
541+27.01	542+52.59	LT	GUARDRAIL	54127.0	LF
541+33.00	542+28.03	CL	PAVEMENT	350.8	SY
542+28.03	542+48.03	CL	APPROACH SLAB	75.5	SY
545+51.19	546+77.49	RT	GUARDRAIL	54551.2	LF
545+60.31	547+11.81	LT	GUARDRAIL	54560.3	LF
545+55.75	545+75.75	CL	APPROACH SLAB	75.5	SY
545+75.75	546+90.00	CL	PAVEMENT	418.4	SY
		I-29 SB	OUTSIDE SHOULDER	1400.4	SY
		I-29 NB	OUTSIDE SHOULDER	1399.2	SY
			SUBTOTAL	1	LS
RTE T					
124+15.00	124+81.11	CL	PAVEMENT	138.4	SY
124+40.68		LT	SIGN	1	EA
124+44.12		RT	SIGN	1	EA
124+55.77		LT	SIGN	1	EA
124+63.94		RT	SIGN	1	EA
124+74.72		LT	SIGN	1	EA
124+83.78		RT	SIGN	1	EA
126+51.90		LT	SIGN	1	EA
126+54.65	128+00.00	CL	PAVEMENT	308.5	SY
126+61.06		RT	SIGN	1	EA
126+80.59		RT	SIGN	1	EA
126+80.00		LT	SIGN	1	EA
126+96.28		LT	SIGN	1	EA
126+97.01		RT	SIGN	1	EA
			SUBTOTAL	1	LS
			PAY TOTAL	1	LS

OPTIONAL OUTSIDE I-29 SHOULDER

BEGIN LOG MILE	END LOG MILE	LOCATION	OPTIONAL I-29 OUTSIDE SHOULDER (SY)	TYPE 5 AGGREGATE BASE (4") (SY)
30.4758	30.7145	I-29 SB	1400.4	1400.4
30.4782	30.7167	I-29 NB	1399.2	1399.2
		TOTAL	2799.6	2799.6
		PAY TOTALS	2800	2800

OPTIONAL RUMBLE STRIPS

BEGIN LOG MILE	END LOG MILE	LOCATION	QUANTITY (100 FT.)
30.4758	30.7145	I-29 SB	12.6
30.4782	30.7167	I-29 NB	12.6
		TOTAL	25.2

CLEARING AND GRUBBING

BEGIN STATION	END STATION	(AC)
RTE F		
131+65.00	134+21.00	0.1
	SUBTOTAL	0.1
US-59		
540+45.75	547+39.94	0.1
	SUBTOTAL	0.1
RTE T		
124+15.00	128+00.00	0.1
	SUBTOTAL	0.1
	PAY TOTAL	1.0

EARTHWORK

BEGIN STATION	END STATION	SIDE	SHAPING SLOPES CLASS III (100 FT)	SHAPING SLOPES MODIFIED MATERIAL REQUIREMENT (100 FT)
RTE F				
131+65.00	132+06.48	LT	0.1	0.3
131+65.00	132+26.88	RT	0.0	0.6
133+60.73	134+21.00	LT	0.5	0.1
133+79.17	134+21.00	RT	0.0	0.4
		SUBTOTAL	0.6	1.4
US-59				
540+45.75	542+43.47	RT	2.0	0.0
541+00.00	542+52.59	LT	1.5	0.0
545+51.19	547+22.32	RT	1.7	0.0
545+60.31	547+39.68	LT	1.8	0.0
I-29 SB			3.2	
I-29 NB			3.2	
		SUBTOTAL	13.4	0.0
RTE T				
124+15.00	124+77.10	LT	0.6	0.0
124+15.00	124+85.11	RT	0.7	0.0
126+50.65	128+00.00	LT	1.5	0.0
126+58.65	128+00.00	RT	1.4	0.0
		SUBTOTAL	4.2	0.0
		PAY TOTAL	18	2

OPTIONAL PAVEMENT (F, 59, & T)

BEGIN STATION	END STATION	OPTIONAL PAVEMENT (SY)	TYPE 1 AGGREGATE BASE (4") (SY)
RTE F			
131+65.00	131+95.70	71.5	71.5
133+90.00	134+21.00	71.9	71.9
	SUBTOTALS	143.4	143.4
US-59			
541+33.00	542+28.03	304.7	304.7
545+75.75	546+90.00	363.1	363.1
	SUBTOTALS	667.8	667.8
RTE T			
124+15.00	124+61.11	103.9	103.9
126+74.65	128+00.00	272.8	272.8
	SUBTOTALS	376.7	376.7
	PAY TOTALS	1188	1188

MOBILIZATION

1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING & STAKING

1 LUMP SUM

GUARDRAIL

LOCATION		SIDE	MGS GUARDRAIL (LF)	TYPE A CRASHWORTHY END TERMINAL (MASH) (EA)	MGS BRIDGE APPROACH TRANSITION (EA)	MGS END ANCHOR (EA)
US-59						
BEGIN STATION	END STATION					
540+78.35	542+43.47	RT.	75.0	1	1	
541+27.24	542+52.59	LT.	37.5	1	1	
545+51.19	546+77.44	RT.	37.5	1	1	
545+60.31	547+11.81	LT.	62.5	1	1	
I-29						
BEGIN LOG MILE	END LOG MILE					
30.5431	30.6005	RT.	237.5	1		1
30.5880	30.6453	LT.	237.5	1		1
		SUBTOTALS	687.5	6	4	2
		PAY TOTALS	688	6	4	2

SUMMARY OF QUANTITIES
SHEET 1 OF 3

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/7/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 3
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

TEMPORARY EROSION CONTROL

BEGIN STATION	END STATION	SIDE	SILT FENCE (LF)	TYPE 3B EROSION CONTROL BLANKET (SY)	TYPE C BERM (LF)	SEDIMENT REMOVAL (CY)
RTE F						
131+65.00	132+09.90	RT	69.2			1
131+65.00	132+10.00	RT		39.2		
131+65.00	132+26.88	LT		14.4		
131+65.02	132+31.13	LT	45.2			1
132+09.90	132+46.50	CL			148.1	2
132+96.99	133+78.27	CL			143.3	2
133+60.81	134+20.96	LT	60.5			1
133+78.27	134+21.83	RT	43.6			1
133+79.17	134+21.00	RT		10.8		
		SUBTOTALS	218.5	64.4	291.4	8
US-59						
540+28.96	542+30.56	RT	207.0			2
540+86.82	542+52.24	LT	179.0			2
545+60.82	547+65.00	LT	213.0			2
545+65.24	547+51.52	RT	202.0			2
I-29		RT	434.2			4
I-29		LT	418.9			4
		SUBTOTALS	1654.1			16
RTE T						
124+02.00	124+81.00	LT	83.4			1
124+02.00	124+95.00	RT	97.5			1
124+80.64	125+60.72	CL			194.4	2
126+03.50	126+61.06	CL			148.9	2
126+49.00	128+14.00	LT	170.8			2
126+60.00	128+03.00	RT	148.7			2
		SUBTOTALS	500.4		343.3	10
		PAY TOTALS	2373	64	635	34

PAVEMENT MARKING

BEGIN STATION	END STATION	ROUTE	LENGTH (FT)	STANDARD WATERBORNE PAVEMENT MARKING PAINT TYPE P BEADS: 4" SOLID WHITE (FT)	4" INT. YELLOW (FT)	4" SOLID DOUBLE YELLOW (FT)	REMARKS
131+65.00	134+21.00	F	256.00	512.0	64.0	0.0	
541+33.00	546+90.00	US-59	557.00	1114.0	0.0	1114.0	
124+15.00	128+00.00	T	385.00	0.0	0.0	770.0	
			TOTALS	1626.0	64.0	1884.0	
			PAY TOTALS	1,626	1,948		

NOTE: TEMPORARY AND PERMANENT PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH 620.10.

PAVEMENT MARKING

BEGIN LOG MILE	END LOG MILE	LOCATION	SIDE	HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT, TYPE L BEADS: 6" INTERMITTENT WHITE (LF)	6" SOLID WHITE (LF)	6" SOLID YELLOW (LF)
30.1509	30.7148	I-29 SB	RT	2978.6	2978.6	2978.6
30.4709	31.0421	I-29 NB	LT	3016.1	3016.1	3016.1
			TOTAL	1498.7	5994.7	5994.7
			PAY TOTALS	7,493		5,995

PAVEMENT MARKING REMOVAL

BEGIN LOG MILE	END LOG MILE	LOCATION	PHASE	PAVEMENT MARKING TYPE	EXISTING MARKINGS (LF)	TEMP. TRAFFIC CONTROL MARKINGS (LF)	REMARKS
30.2566	30.7148	I-29 SB	1	6" INTERMITTENT WHITE	2552.0		
30.4780	30.9263	I-29 NB	1	6" INTERMITTENT WHITE	2574.0		
30.2566	30.7148	I-29 SB	3	4" SOLID WHITE		2978.0	
30.4780	30.9263	I-29 NB	3	4" SOLID WHITE		2999.0	
30.1181	30.6876	I-29 SB	3	4" SOLID WHITE	1179.0		
30.5091	30.9618	I-29 NB	3	4" SOLID WHITE	1197.0		
30.1589	30.7153	I-29 SB	4	4" SOLID WHITE		1177.6	
30.4781	31.0344	I-29 NB	4	4" SOLID WHITE		1197.0	
30.1589	30.7153	I-29 SB	4	4" SOLID YELOW		2940.0	
30.4781	31.0344	I-29 NB	4	4" SOLID YELLOW		2939.0	
30.4776	30.9271	I-29 NB	5	4" SOLID WHITE		2371.0	
30.2566	30.7141	I-29 SB	5	4" SOLID WHITE		2939.0	FINAL REMOVALS
			TOTAL		7502.0	19540.6	
			PAY TOTALS		7,502	19,541	

TRAFFIC CONTROL PAVEMENT MARKING

BEGIN LOG MILE	END LOG MILE	LOCATION	SIDE	STANDARD WATERBORNE PAVEMENT MARKING PAINT TYPE P BEADS: 4" SOLID WHITE (LF)	4" INTERMITTENT WHITE (LF)	4" SOLID YELLOW (LF)	REMARKS
30.2566	30.7148	I-29 SB	RT	2978.0			PHASE 1
30.4780	30.9263	I-29 NB	LT	2999.0			PHASE 1
30.1589	30.7153	I-29 SB	RT	1177.6		2940.0	PHASE 3
30.4781	31.0344	I-29 NB	LT	1197.0		2939.0	PHASE 3
30.2566	30.7141	I-29 SB	RT	2413,5			PHASE 4
30.4776	30.9271	I-29 NB	LT	2371.0			PHASE 4
			TOTAL	13136.1	0.0	5879.0	
			PAY TOTALS	13,136	0	5,879	

SEEDING AND MULCHING

BEGIN STATION	END STATION	COOL SEASON MIXTURES (AC)	MULCHING (AC)
RTE F			
131+65.00	134+21.00	0.1	0.1
	SUBTOTALS	0.1	0.1
US-59			
540+44.79	547+40.03	0.2	0.2
I-29		0.4	0.4
	SUBTOTALS	0.6	0.6
RTE T			
124+15.00	128+00.00	0.1	0.1
	SUBTOTALS	0.1	0.1
	PAY TOTALS	0.8	0.8

LINEAR GRADING (CLASS I)

BEGIN LOG MILE	END LOG MILE	LOCATION	LINEAR GRADING STA.
30.4758	30.7145	I-29 SB	12.6
30.4782	30.7167	I-29 NB	12.6
		TOTAL	25.2

SUMMARY OF QUANTITIES
SHEET 2 OF 3

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/15/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 3
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100. FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

EFFECTIVE: 04-01-2023

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
WO1-1L	48X48	16.00						TURN (SYMBOL LEFT ARROW)
WO1-1R	48X48	16.00						TURN (SYMBOL RIGHT ARROW)
WO1-2L	48X48	16.00						CURVE (SYMBOL LEFT ARROW)
WO1-2R	48X48	16.00						CURVE (SYMBOL RIGHT ARROW)
WO1-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT ARROW)
WO1-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT ARROW)
WO1-4L	48X48	16.00	2	32.00			15	REVERSE CURVE (SYMBOL LEFT ARROW)
WO1-4R	48X48	16.00	2	32.00			12	REVERSE CURVE (SYMBOL RIGHT ARROW)
WO1-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
WO1-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
WO1-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
WO1-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
WO1-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
WO1-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
WO1-8	18X24	3.00						CHEVRON (SYMBOL)
WO1-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
WO3-1	48X48	16.00						STOP AHEAD (SYMBOL)
WO3-2	48X48	16.00						YIELD AHEAD (SYMBOL)
WO3-3	48X48	16.00						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	32.00			16	MERGE (ARROW SYMBOL)
WO4-1aR	48X48	16.00	2	32.00			13	MERGE (ARROW SYMBOL)
WO5-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
WO5-3	48X48	16.00						ONE LANE BRIDGE
WO5-5	48X48	16.00						NARROW LANES
WO6-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
WO6-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
WO6-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
WO7-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
WO8-1	48X48	16.00						BUMP
WO8-2	48X48	16.00						DIP
WO8-3	48X48	16.00						PAVEMENT ENDS
WO8-4	48X48	16.00						SOFT SHOULDER
WO8-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
WO8-6	48X48	16.00						TRUCK CROSSING (WITH FLAGS)
WO8-6c	48X48	16.00						TRUCK ENTRANCE
WO8-7	36X36	9.00						LOOSE GRAVEL
WO8-7a	36X36	9.00						FRESH OIL/LOOSE GRAVEL
WO8-9	48X48	16.00						LOW SHOULDER
WO8-11	48X48	16.00						UNEVEN LANES
WO8-12	48X48	16.00						NO CENTER LINE
WO8-15	48X48	16.00						GROOVED PAVEMENT
WO8-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
WO8-17	48X48	16.00						SHOULDER DROP-OFF (SYMBOL)
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)
W012-2X	24X18	3.00						LOW CLEARANCE (PLAQUE)
WO12-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
WO12-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
WO12-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
WO13-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
WO16-2	30X24	5.00						XXX FEET (PLAQUE)
WO16-3	30X24	5.00						X MILE (PLAQUE)
WO20-1	48X48	16.00					6	ROAD/BRIDGE/RAMP WORK AHEAD
WO20-2	48X48	16.00	3	48.00			52	DETOUR AHEAD
WO20-3	48X48	16.00	5	80.00			20	ROAD CLOSED AHEAD
WO20-4	48X48	16.00						ONE LANE ROAD AHEAD
WO20-5	48X48	16.00	4	64.00			9	RIGHT/CENTER/LEFT LANE CLOSED AHEAD
WO20-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
WO20-6a	48X48	16.00	2	32.00			10	RIGHT/CENTER/LEFT LANE CLOSED
WO20-7a	48X48	16.00						FLAGGER (SYMBOL, WITH FLAGS)
WO21-2	36X36	9.00						FRESH OIL
WO21-5	48X48	16.00						SHOULDER WORK AHEAD
WO22-1	48X48	16.00						BLASTING ZONE AHEAD
WO22-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
WO22-3	42X36	10.50						END BLASTING ZONE
WO24-1	48X48	16.00						DOUBLE REVERSE CURVE

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
GO20-1	60X24	10.00	4	40.00			1	ROAD WORK NEXT XX MILES
GO20-2	48X24	8.00	4	32.00			7	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	8	48.00			2	WORK ZONE (PLAQUE)
MO4-8a	24X18	3.00	2	6.00			51	END DETOUR
MO4-9L	48X36	12.00						DETOUR (LEFT ARROW)
MO4-9R	48X36	12.00						DETOUR (RIGHT ARROW)
MO4-9P	48X12	4.00						STREET NAME (PLAQUE)
MO4-10L	48X18	6.00						DETOUR (ARROW LEFT)
MO4-10R	48X18	6.00						DETOUR (ARROW RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00	8	96.00			4,8	SPEED LIMIT XX
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00	4	48.00			46	DO NOT PASS
R4-2	36X48	12.00	4	48.00			46A	PASS WITH CARE
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45^ ARROW)
R11-2	48X30	10.00	6	60.00			63	ROAD CLOSED
R11-3a	60X30	12.50	3	37.50			61	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	2	25.00			62	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00	4	80.00			53	FINE SIGN
CONST-3X	56X12	4.67	4	18.68			53	SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00						POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00	4	48.00			56	WORK ZONE NO PHONE ZONE
SP-1	174x54	65.25	2	130.50				MO. RTE F CLOSED AHEAD
SP-2	54X114	42.75	1	42.75				NB US-59 CLOSED AT I-29
SP-3	54X162	60.75	3	182.25				SB US-59 CLOSED AT I-29
SP-4	54X174	65.25	3	195.75				MO. RTE T CLOSED AHEAD
SPECIAL	36X78	19.50	1	19.50			50a	DETOUR ASSEMBLY NORTH/LEFT
SPECIAL	36X78	19.50	4	78.00			50b	DETOUR ASSEMBLY SOUTH/LEFT
SPECIAL	36X78	19.50	3	58.50			50c	DETOUR ASSEMBLY NORTH/RIGHT
SPECIAL	36X78	19.50	3	58.50			50d	DETOUR ASSEMBLY SOUTH/LEFT
SPECIAL	36X78	19.50	7	136.50			50e	DETOUR ASSEMBLY NORTH/STRAIGHT
SPECIAL	36X78	19.50	8	156.00			50f	DETOUR ASSEMBLY SOUTH/STRAIGHT
GO22-1	21X15	2.19	4	8.76			59	

616-10.05 CONSTRUCTION SIGNS	TOTAL
	2006.19

616-10.10 RELOCATED SIGNS	TOTAL

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		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	2**	IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020	2**	REPLACEMENT SAND BARREL
6122030	2**	IMPACT ATTENUATOR (RELOCATION)
6123000A		TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
6161008	5	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	78	CHANNELIZER (TRIM LINE)
6161030	24	TYPE III MOVEABLE BARRICADE
6161033		DIRECTION INDICATOR BARRICADE
6161040	2	FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161055	28	SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	2**	CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE - CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002	8**	TEMPORARY LONG-TERM RUMBLE STRIPS
6173600D	1360**	TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A	1030**	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

TEMPORARY TRAFFIC CONTROL	
PROJECT PAY TOTAL	1 LUMP SUM

**NOT INCLUDED IN TEMPORARY TRAFFIC CONTROL-1 LUMP SUM QUANTITY

NOTE: ALL TEMPORARY TRAFFIC CONTROL ITEMS ARE INCLUDED IN PAY ITEM 616-99.01 LUMP SUM TEMPORARY TRAFFIC CONTROL. UNLESS OTHERWISE NOTED, QUANTITIES SHOWN ARE ESTIMATE ONLY AND SUBJECT TO CHANGE BASED ON FIELD CONDITIONS.

SUMMARY OF QUANTITIES
SHEET 3 OF 3

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
9/19/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	3

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

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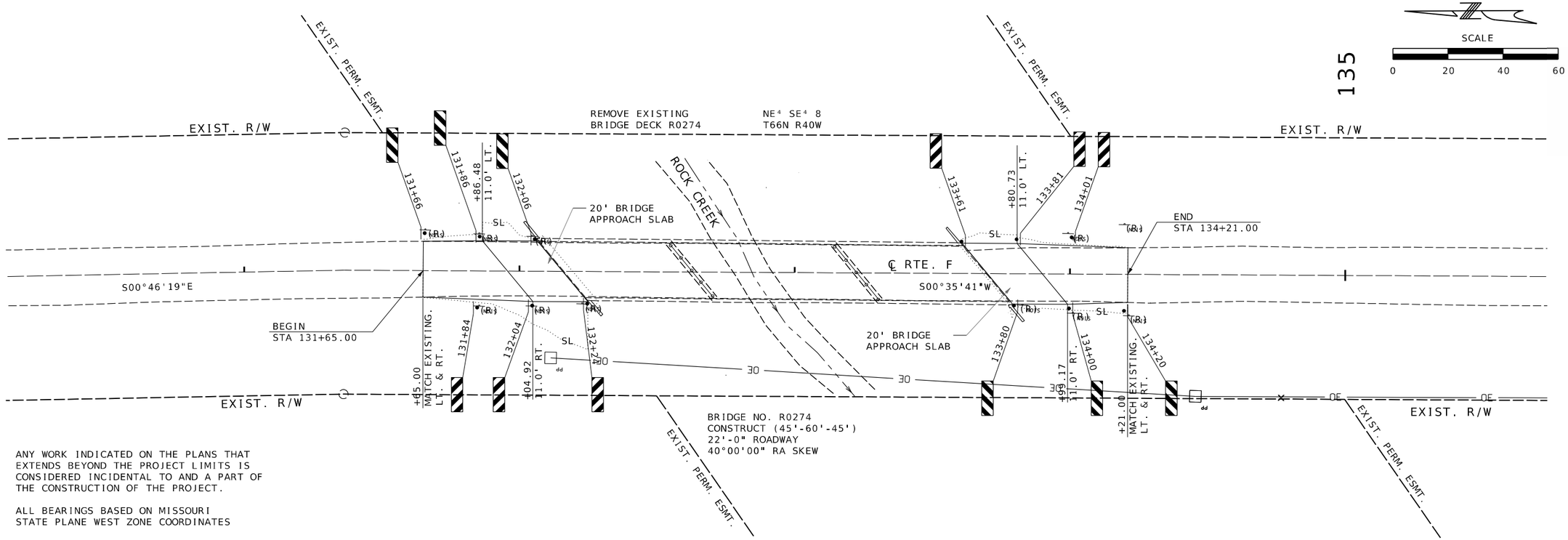
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

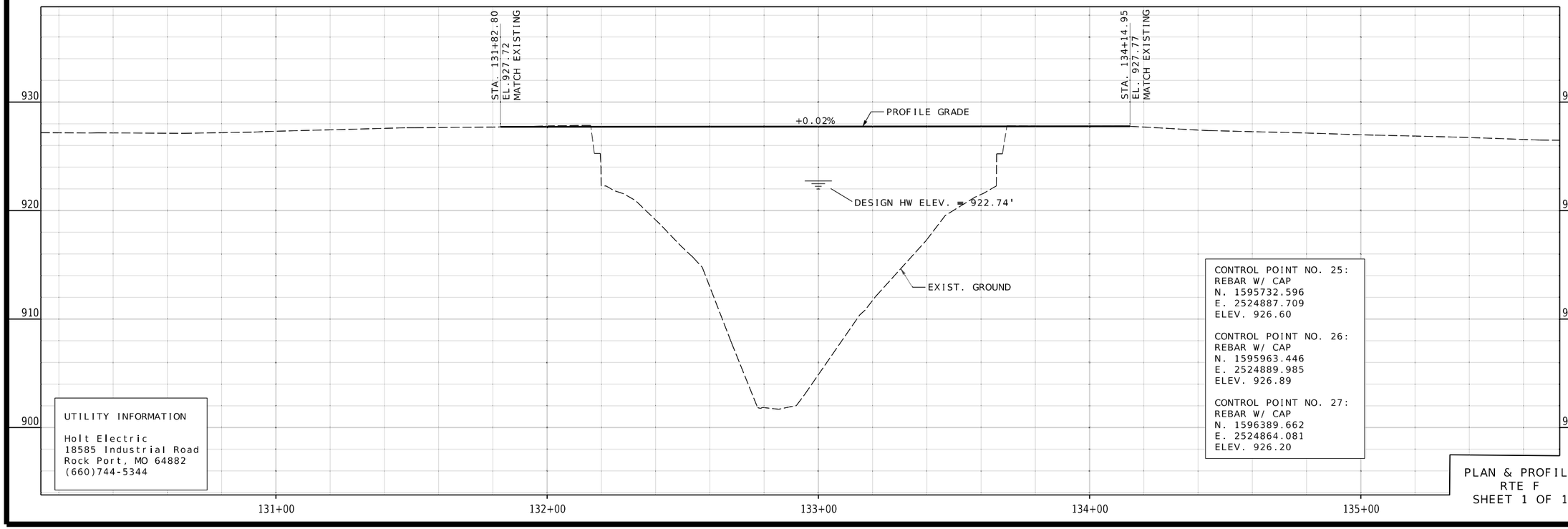
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



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

ALL BEARINGS BASED ON MISSOURI STATE PLANE WEST ZONE COORDINATES



UTILITY INFORMATION

Holt Electric
18585 Industrial Road
Rock Port, MO 64882
(660)744-5344

CONTROL POINT NO. 25:
REBAR W/ CAP
N. 1595732.596
E. 2524887.709
ELEV. 926.60

CONTROL POINT NO. 26:
REBAR W/ CAP
N. 1595963.446
E. 2524889.985
ELEV. 926.89

CONTROL POINT NO. 27:
REBAR W/ CAP
N. 1596389.662
E. 2524864.081
ELEV. 926.20

PLAN & PROFILE
RTE F
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	4

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

WO20-3

20

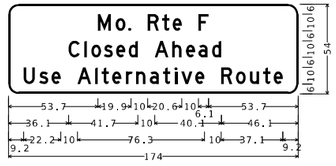
R11-4

62

R11-2

63

SP-1

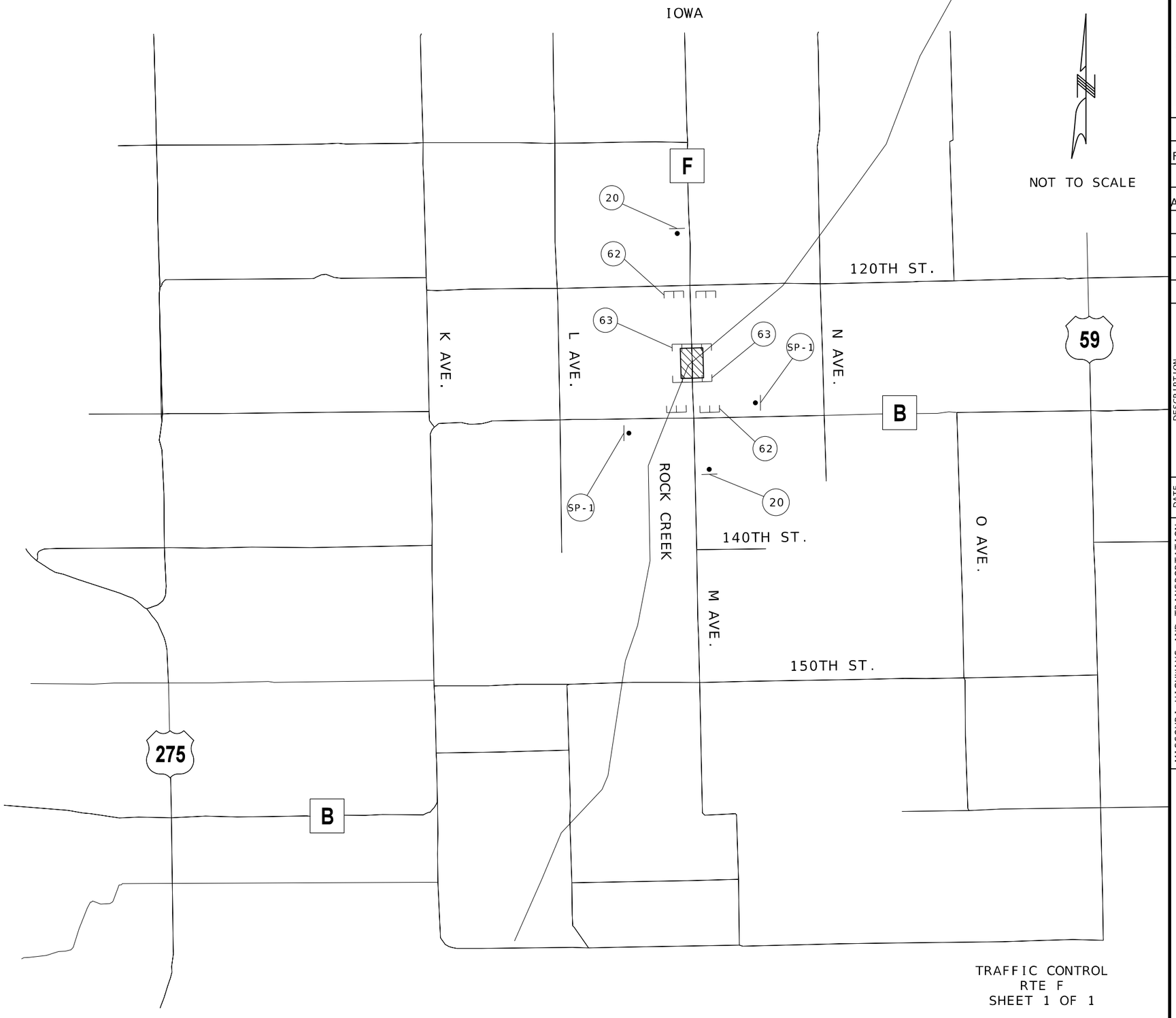


6.0" Radius, 1.3" Border, Black on Orange;
"Mo. Rte F", D; "Closed Ahead ", D;
"Use Alternative Route", D;
Table of letter and object lefts

Mo.		Rte		F									
53.7	64.4	72.1	83.6	92.3	98.6	114.2							
Closed		Ahead											
36.1	45.6	49.8	57.2	64.7	72.2	87.8	98.4	106.6	114.1	122.3			
Use		Alternate											
9.2	18.4	25.8											
	Alternate												
	41.4	52.0	56.0	62.2	70.5	76.7	84.9	92.8	99.8	103.8	112.1		
	Route												
	127.7	136.6	145.0	153.0	159.3								

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- BARRICADE
- WORK ZONE



NOT TO SCALE

TRAFFIC CONTROL
RTE F
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED SEALED AND DATED ELECTRONICALLY

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	5

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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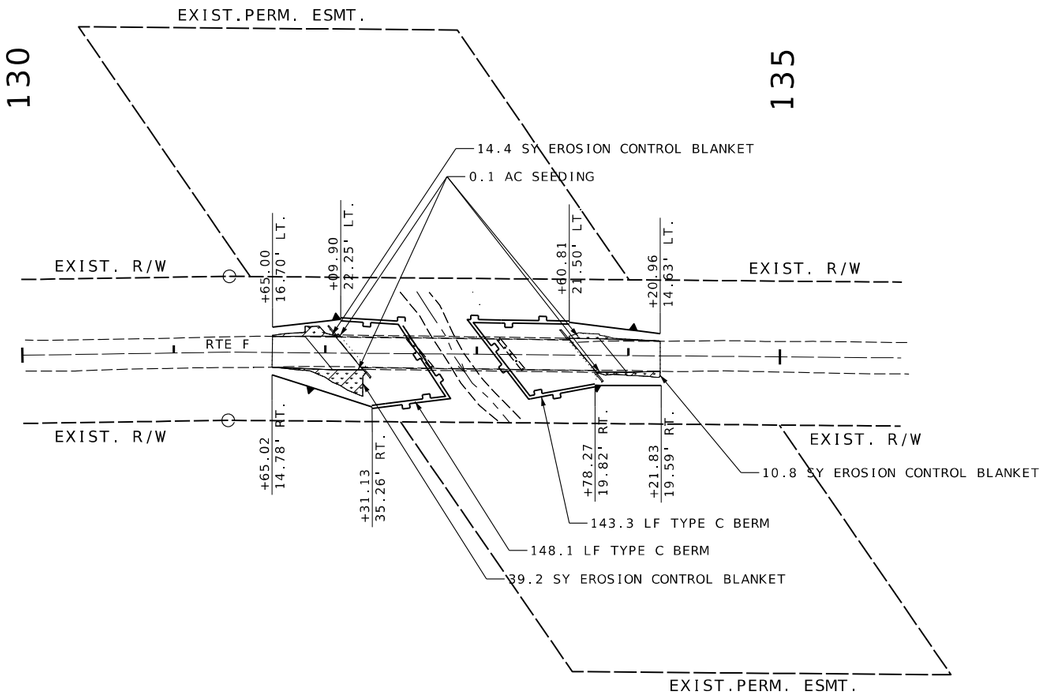

SCALE

0 50 100 150

TEMPORARY EROSION CONTROL LEGEND

- EROSION CONTROL BLANKET
- SILT FENCE
- TEMPORARY TYPE C BERM

PERMANENT EROSION CONTROL LEGEND

- PERMANENT SEEDING AND MULCHING

EROSION CONTROL
RTE F
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/11/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 6
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100. FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:06:54 AM 7/11/2024

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)					CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS *						PIPE POSTS *					BACKING BARS **				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE										BREAK-AWAY ASSEMBLY	REMARKS AND OTHER REQUIRED ITEMS
																						2 IN. POST						2.5 IN. POST						
																									ANCHORS						ANCHORS		
SIGN NO.	SIGN SIZE	STATION	LOCATION	SIGN DTL. SHT. NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X ⌷" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	
					CY		LF	LF	LF		LBS	IN.	LF	LF		LBS		IN.	LF	LBS	LF	LF		LF	EA	EA	EA	LF		LF	EA	EA	EA	EA	
	12"X36"	131+66	RTE F, 13.64' LT																			9.5		9.5	1									
	12"X36"	131+84	RTE F, 13.30' RT																			9.5		9.5	1									
	12"X36"	131+86	RTE F, 12.48' LT																			9.0		9.0	1									
	12"X36"	132+04	RTE F, 12.49' RT																			9.0		9.0	1									
	12"X36"	132+06	RTE F, 11.66' LT																			8.0		8.0	1									
	12"X36"	132+24	RTE F, 11.69' RT																			8.0		8.0	1									
	12"X36"	133+61	RTE F, 11.64' LT																			8.0		8.0	1									
	12"X36"	133+80	RTE F, 11.55' RT																			8.0		8.0	1									
	12"X36"	133+81	RTE F, 12.50' LT																			9.0		9.0	1									
	12"X36"	134+00	RTE F, 12.49' RT																			9.0		9.0	1									
	12"X36"	134+01	RTE F, 13.33' LT																			9.5		9.5	1									
	12"X36"	134+20	RTE F, 13.27' RT																			9.5		9.5	1									
SUBTOTAL																								106.0	1.2									
TOTAL																								106	1.2									

* 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
3	7.58	0.63	4'- 3½"	12"	4~6"	0.13
4	10.79	0.90	5'- 3½"	18"	5~6"	0.36

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 7/11/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 7
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE — SIGN DESCRIPTION, SIZES & NUMBER OF EACH: OM3-L 12"X36"	OM3-R 12"X36"
	131+66	RTE F, 13.64' LT	1	
	131+84	RTE F, 13.30' RT		1
	131+86	RTE F, 12.48' LT	1	
	132+04	RTE F, 12.49' RT		1
	132+06	RTE F, 11.66' LT	1	
	132+24	RTE F, 11.69' RT		1
	133+61	RTE F, 11.64' LT		1
	133+80	RTE F, 11.55' RT	1	
	133+81	RTE F, 12.50' LT		1
	134+00	RTE F, 12.49' RT	1	
	134+01	RTE F, 13.33' LT		1
	134+20	RTE F, 13.27' RT	1	

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: SIZE	FLAT SHEET SH (ITEM NO. 9035004A)	FLAT SHEET FLUORESCENT SHF * (ITEM NO. 9035069A)	STRUCTURAL ST (ITEM NO. 9035011A)	STRUCTURAL FLUORESCENT STF * (ITEM NO. 9035071A)
OM3-L - TYPE 3 OBJECT MARKER, LEFT		6	12"X36"		18.00		
OM3-R - TYPE 3 OBJECT MARKER, RIGHT		6	12"X36"		18.00		
			TOTAL		36.00		

* ORANGE, YELLOW & YELLOW/GREEN

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STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/11/2024
ROUTE: F/59/T | STATE: MO
DISTRICT: NW | SHEET NO.: 8
COUNTY: ATCHISON/HOLT
JOB NO.: JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

135

PAVEMENT MARKING
RTE F
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	9

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

STA. 541+27.24 TO 542+52.59 ℄ US-59 LT.
BUILD (1) MGS BRIDGE APPROACH TRANSITION SECTION,
37.5' MGS GUARDRAIL, AND
(1) TYPE A CRASHWORTHY END TERMINAL (MASH)

540

EXIST. R/W

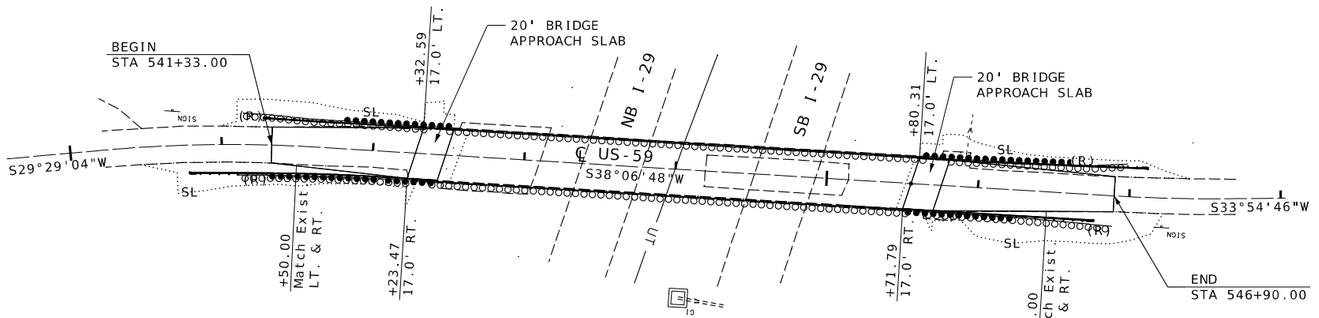
SE⁴ SE⁴ 2
T62N R40W

545

STA. 545+60.31 TO 547+11.81 ℄ US-59 LT.
BUILD (1) MGS BRIDGE APPROACH TRANSITION SECTION,
62.5' MGS GUARDRAIL (FLARE @ 50:1), AND
(1) TYPE A CRASHWORTHY END TERMINAL (MASH)

EXIST. R/W

REMOVE EXISTING
BRIDGE DECK A1906



BRIDGE NO. A19063
CONSTRUCT (67'-99'-99'-39.5')
34'-0" ROADWAY
15°00'00" LA SKEW

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

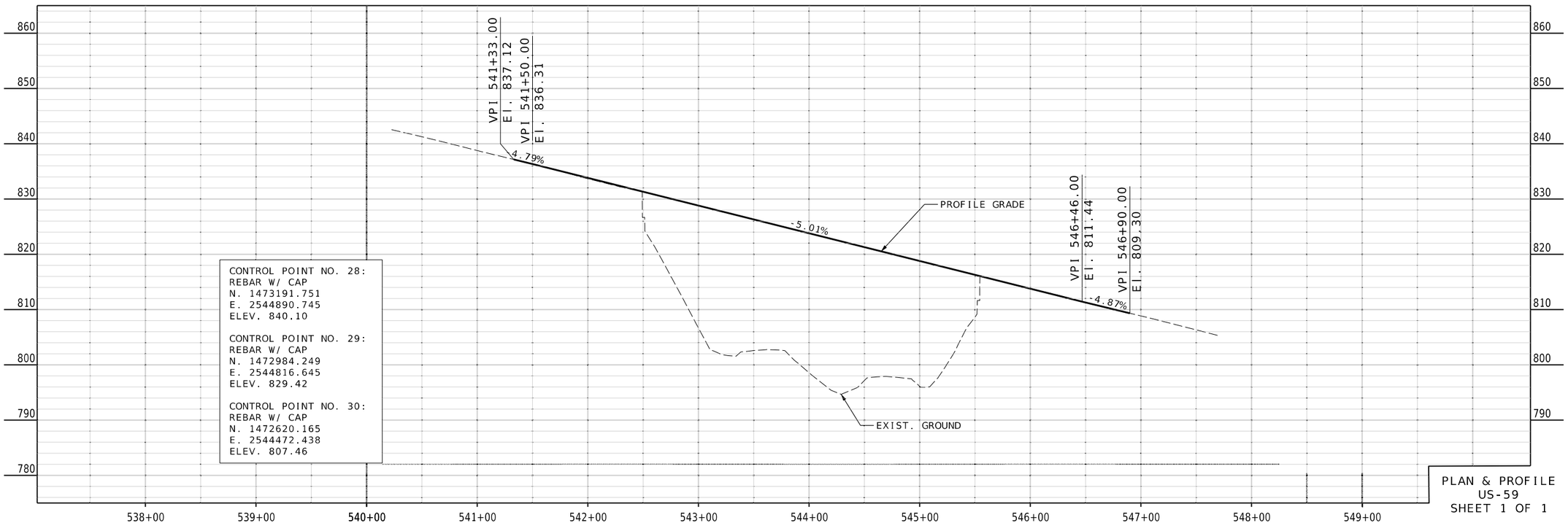
ALL BEARINGS BASED ON MISSOURI STATE PLANE WEST ZONE COORDINATES

STA. 540+78.35 TO 542+43.47 ℄ US-59 RT.
BUILD (1) MGS GUARDRAIL APPROACH TRANSITION,
75' MGS GUARDRAIL (R=1350'), AND
(1) TYPE A CRASHWORTHY END TERMINAL (MASH)

STA. 545+51.19 TO 546+77.44 ℄ US-59 RT.
BUILD (1) MGS GUARDRAIL APPROACH TRANSITION,
37.5' MGS GUARDRAIL, AND
(1) TYPE A CRASHWORTHY END TERMINAL (MASH)

EXIST. R/W

SCALE
0 50 100 150



CONTROL POINT NO. 28:
REBAR W/ CAP
N. 1473191.751
E. 2544890.745
ELEV. 840.10

CONTROL POINT NO. 29:
REBAR W/ CAP
N. 1472984.249
E. 2544816.645
ELEV. 829.42

CONTROL POINT NO. 30:
REBAR W/ CAP
N. 1472620.165
E. 2544472.438
ELEV. 807.46

PLAN & PROFILE
US-59
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
7/12/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	10

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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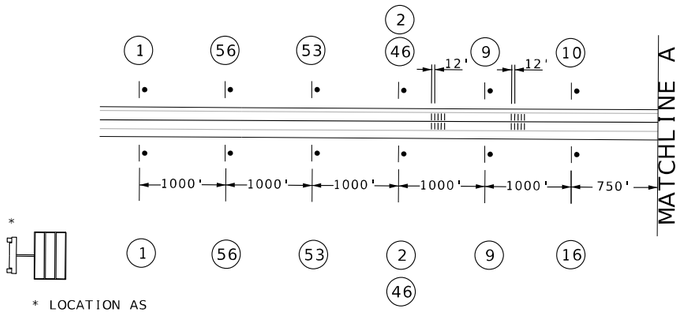
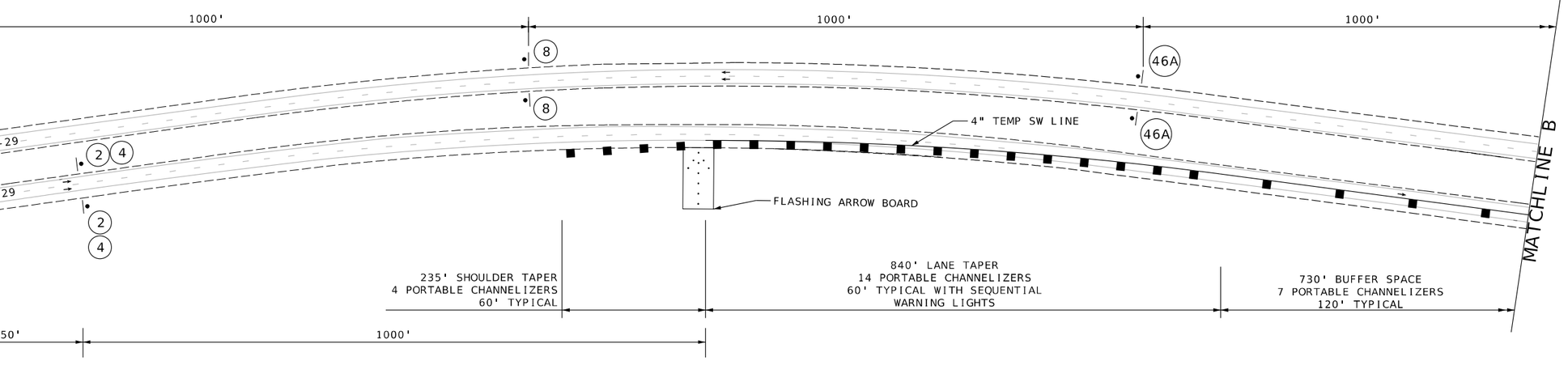


* LOCATION AS DIRECTED BY THE ENGINEER



PASS WITH CARE
R4-2
46A

END ROAD WORK
GO20-2
7

SPEED LIMIT 60
R2-1
4

WORK ZONE
GO20-5aP
2

SPEED LIMIT 70
R2-1
8

DO NOT PASS
R4-1
46

MIN. $250 FINE
SPEEDING/PASSING
WHEN WORKERS PRESENT
CONST-3X
CONST-3A
53

RIGHT LANE CLOSED AHEAD
WO20-5
9

RIGHT LANE CLOSED
WO20-6a
10

MERGE
WO4-1aL
16

ROAD WORK NEXT 2 MILES
GO20-1
1

WORK ZONE
NO PHONE ZONE
CONST-8
56

PHASE 1 TRAFFIC CONTROL NOTES:

CONSTRUCTION:
1. CONSTRUCT FULL DEPTH OUTSIDE I-29 SHOULDER AND OUTSIDE I-29 SHOULDER GUARDRAILS.

TRAFFIC MANAGEMENT:
1. CLOSE THE I-29 OUTSIDE TRAVEL LANE FOR BOTH NORTHBOUND AND SOUTHBOUND DIRECTION. TRAFFIC WILL SHIFT TO THE INSIDE TRAVEL LANE.
2. CONTRACTOR SHALL PLACE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS). CONTRACTOR SHALL CHANGE THE MESSAGE TO NUMBER 2.
3. I-29 SPEEDS SHALL BE REDUCED TO 60 MPH WITH THE WORK ZONE.
4. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER MODOT STANDARDS AND SPECIFICATIONS.

CHANGEABLE MESSAGES:

1. LANE CLOSURE
STARTNG DATE
2. REDUCED SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

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

TRAFFIC CONTROL
US-59
PHASE 1
SHEET 1 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005007711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 9/18/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	1-1

COUNTY: ATCHISON/HOLT
JOB NO.: JNW0111
CONTRACT ID.: .
PROJECT NO.: .
BRIDGE NO.: .

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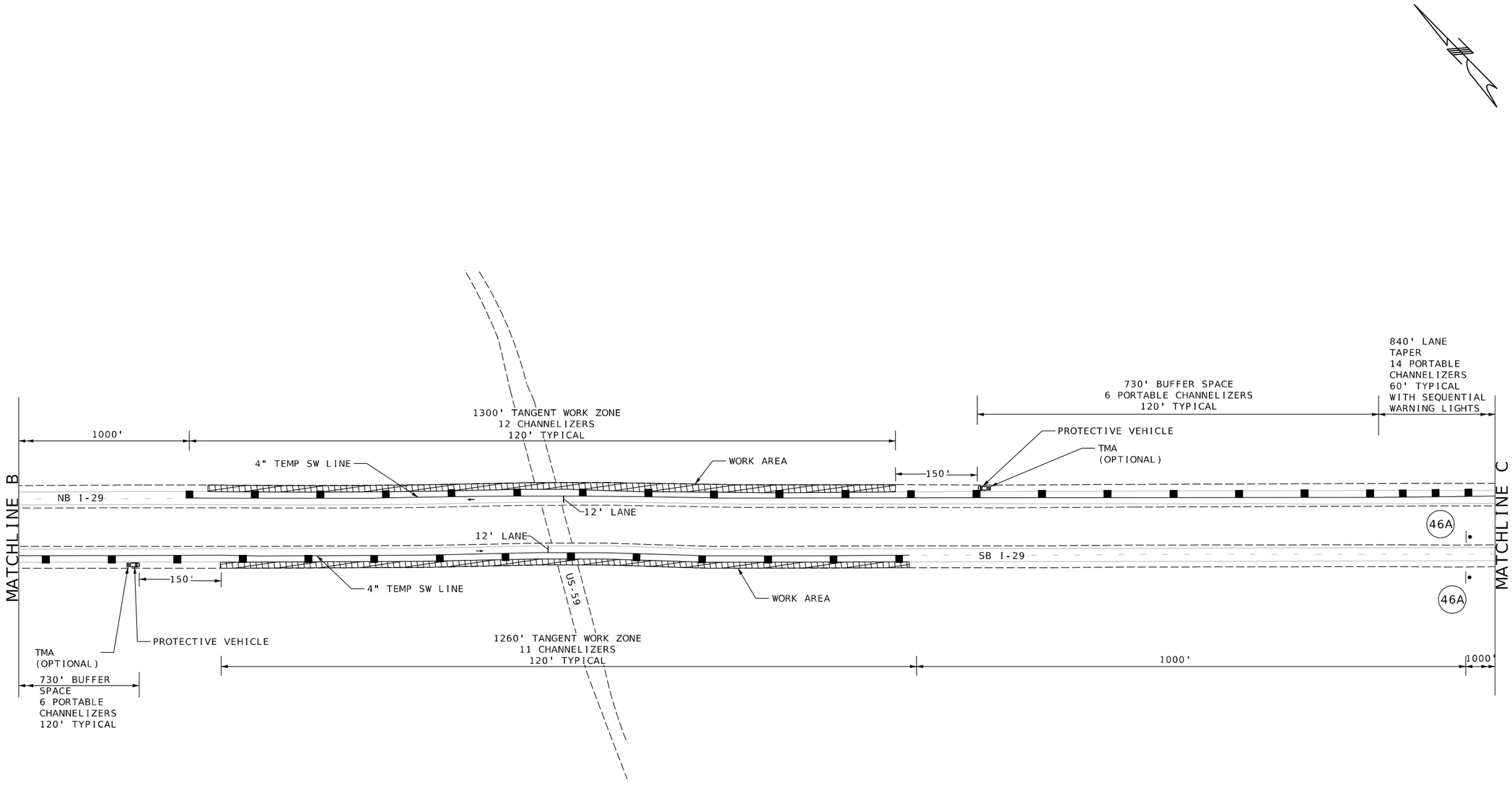
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
816.961.0110 FAX 913.441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



R4-2

46A

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER

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

TRAFFIC CONTROL
US-59
PHASE 1
SHEET 2 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	12

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.
.

PROJECT NO.
.

BRIDGE NO.
.

DESCRIPTION	DATE
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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CERTIFICATE OF AUTHORITY NUMBER F00970024

R2-1

(4)

GO20-5aP

(2)

R2-1

(8)

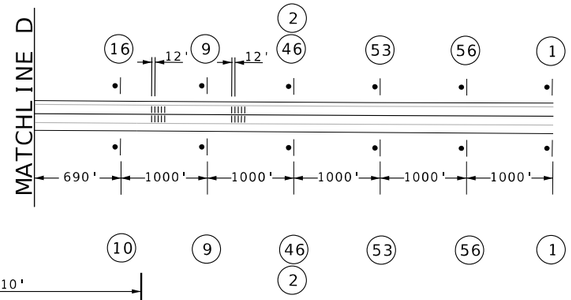
R4-1

(46)

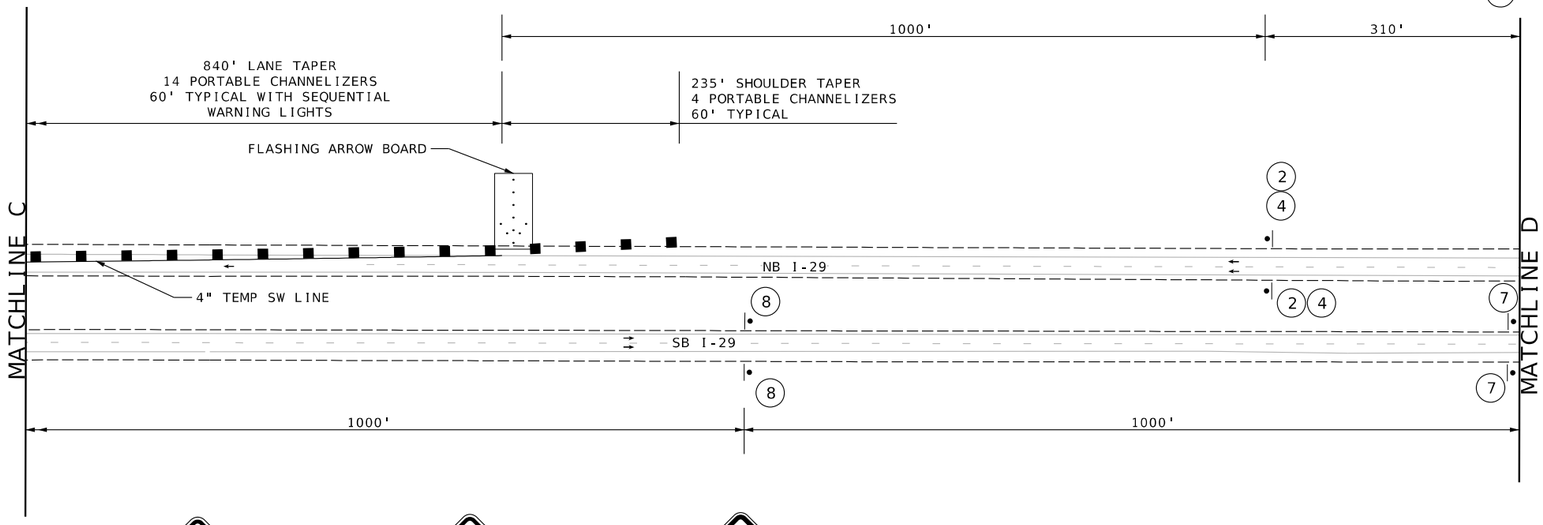
CONST-3X

CONST-3A

(53)



* LOCATION AS DIRECTED BY THE ENGINEER



WO20-5

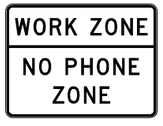
(9)

WO20-6a

(10)

WO4-1aL

(16)



CONST-8

(56)

GO20-2

(7)

GO20-1

(1)

CHANGEABLE MESSAGES:

1. LANE CLOSURE
STARTNG DATE
2. REDUCED SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

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

TRAFFIC CONTROL
US-59
PHASE 1
SHEET 3 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 9/18/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	13

COUNTY ATCHISON/HOLT

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
4435 MAIN STREET, SUITE 1150
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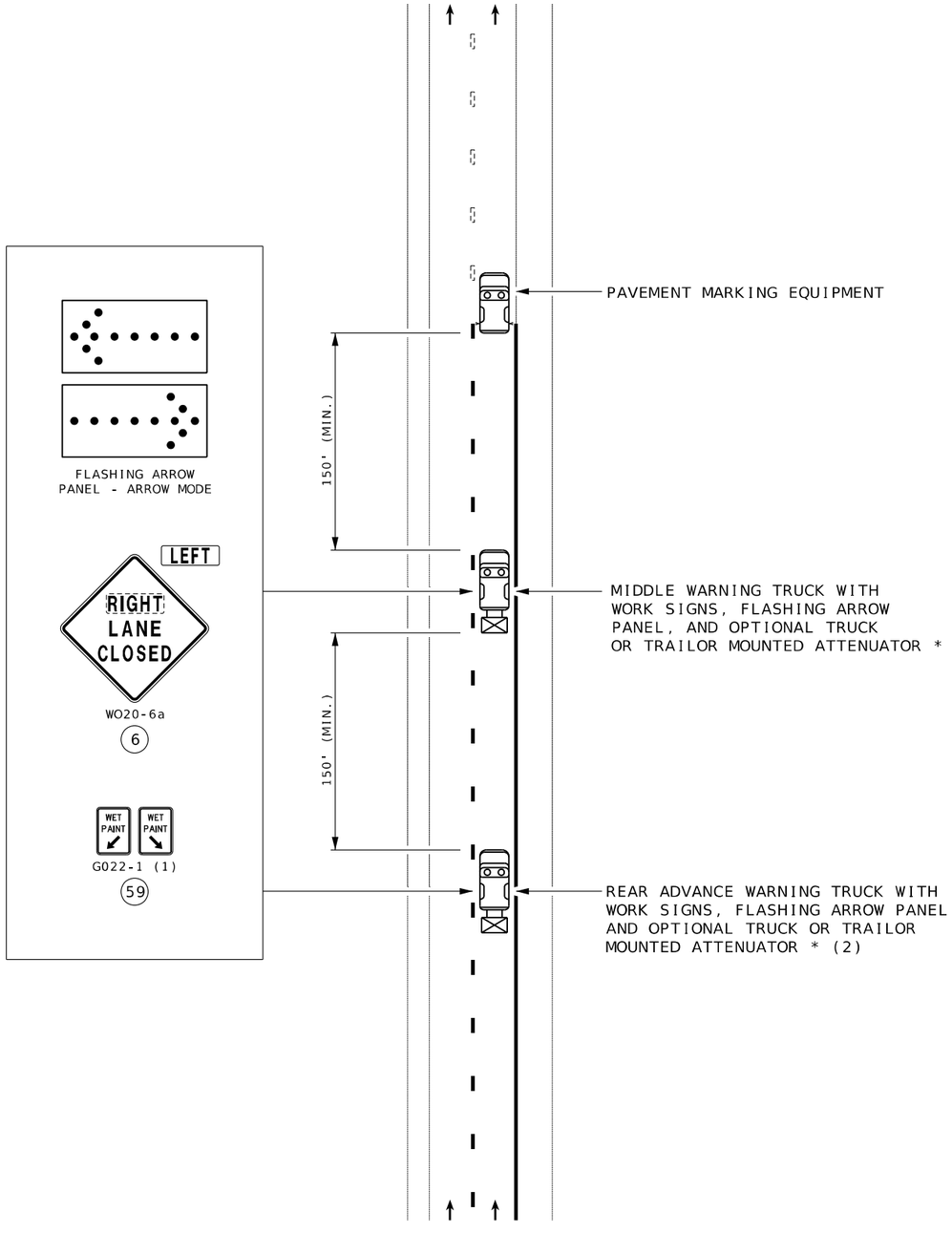
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:55:20 AM 9/18/2024



NOTES:

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

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

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

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

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

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

* TMA COST IS INCIDENTAL - NO DIRECT PAY

NOT TO SCALE

MOVING OPERATION - I-29 PAVEMENT MARKING

TRAFFIC CONTROL
US-59
PHASE 1
SHEET 4 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 7/11/2024
ROUTE F/59/T
STATE MO
DISTRICT NW
SHEET NO. 14
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:08:12 AM 7/11/2024

NOTE: EXISTING SIGN COVER US-59 ROUTE SIGN

SEE CMS NOTE 2

TARKIO

ROCKPORT

FAIRFAX

NOT TO SCALE

SEE NEXT SHEET FOR PHASE 2 TRAFFIC CONTROL NOTES

TRAFFIC CONTROL LEGEND

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

MATCHLINE

DETOUR AHEAD

52

ROAD CLOSED

R11-2

63

END DETOUR

51

SB US-59
Closed at I-29
Use Alternate Route

SP-3

NB US-59
Closed at I-29
Follow Detour

SP-2

ROAD CLOSED AHEAD

WO20-3

20

ROAD CLOSED
8 MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3a

61

TRAFFIC CONTROL
US-59
PHASE 2
SHEET 5 OF 14

DETOUR NORTH 59 50A

DETOUR SOUTH 59 50B

DETOUR NORTH 59 50C

DETOUR SOUTH 59 50D

DETOUR NORTH 59 50E

DETOUR SOUTH 59 50F

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	15

COUNTY: ATCHISON/HOLT

JOB NO.: JNW0111

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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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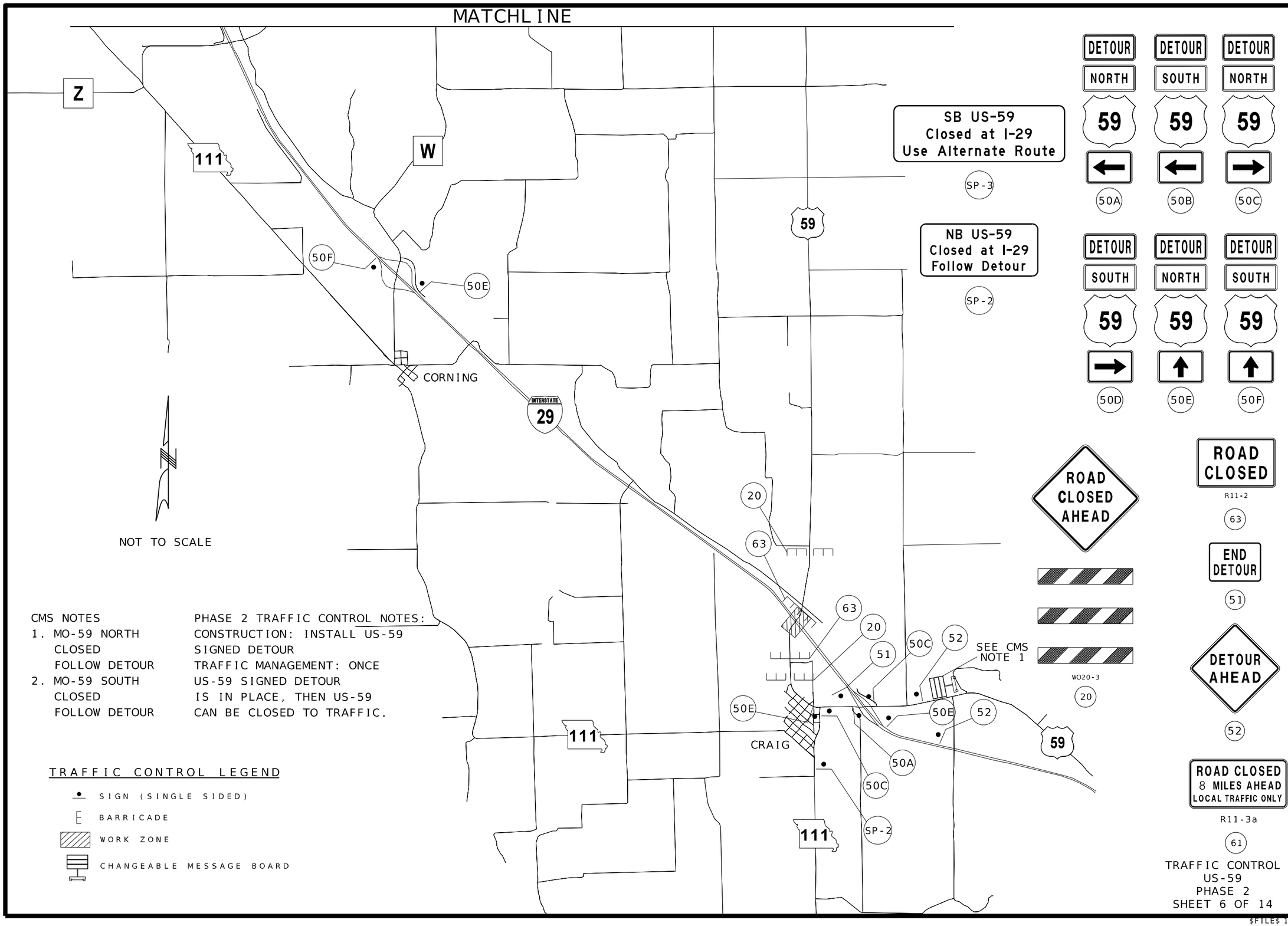

NOT TO SCALE

CMS NOTES

1. MO-59 NORTH CLOSED FOLLOW DETOUR
2. MO-59 SOUTH CLOSED FOLLOW DETOUR

PHASE 2 TRAFFIC CONTROL NOTES:

CONSTRUCTION: INSTALL US-59 SIGNED DETOUR

TRAFFIC MANAGEMENT: ONCE US-59 SIGNED DETOUR IS IN PLACE, THEN US-59 CAN BE CLOSED TO TRAFFIC.

TRAFFIC CONTROL LEGEND

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

TRAFFIC CONTROL
US-59
PHASE 2
SHEET 6 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	16

COUNTY: ATCHISON/HOLT
JOB NO.: JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

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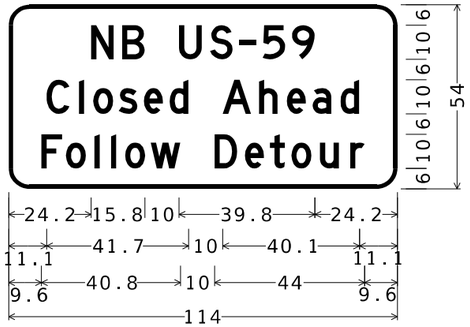
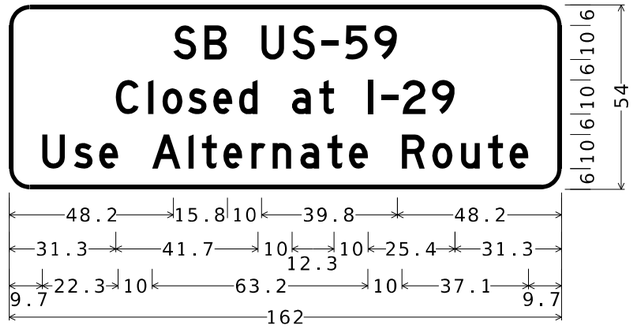


SP-2
6.0" Radius, 1.3" Border, Black on Orange;
"NB US-59", D; "Closed Ahead", D;
"Follow Detour", D;
Table of letter and object lefts

N	B	U	S	-	5	9	
24.2	33.3	50.0	59.0	67.6	74.5	83.1	
C	l	o	s	e	d		
11.1	20.6	24.8	32.2	39.7	47.2		
	A	h	e	a	d		
	62.8	73.4	81.6	89.1	97.3		
F	o	l	l	o	w		
9.6	16.8	25.2	30.0	34.2	41.7		
	D	e	t	o	u	r	
	60.4	69.3	76.7	82.9	91.3	100.2	



SP-3
6.0" Radius, 1.3" Border, Black on Orange;
"SB US-59", D; "Closed at I-29", D;
"Use Alternate Route", D;
Table of letter and object lefts

S	B	U	S	-	5	9		
48.2	57.3	74.0	83.0	91.6	98.5	107.1		
C	l	o	s	e	d	a	t	
31.3	40.8	44.9	52.4	59.8	67.4	83.0	90.9	
	I	-	2	9				
	105.3	109.2	115.4	124.0				
U	s	e						
9.7	19.0	26.4						
	A	l	t	e	r	n	a	t	e
	42.0	52.6	56.5	62.8	71.0	77.2	85.4	93.4	99.6
	R	o	u	t	e				
	115.2	124.1	132.5	140.5	146.7				

TRAFFIC CONTROL
US-59
PHASE 2
SHEET 7 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/11/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 17
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

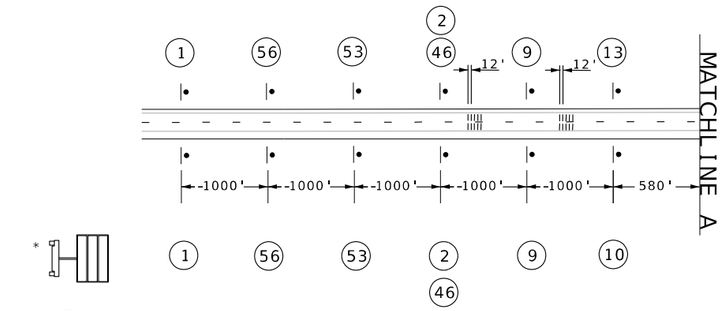
DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:08:41 AM 7/11/2024



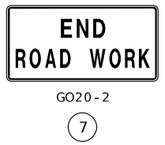
* LOCATION AS DIRECTED BY THE ENGINEER

GO20-1

(1)

R4-2

(46A)



GO20-2

(7)

R2-1

(4)

GO20-5aP

(2)

R2-1

(8)

R4-1

(46)

CONST-3X

CONST-3A

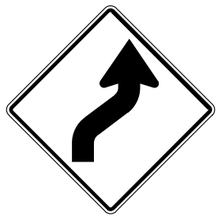
(53)

WO20-5

(9)

WO20-6a

(10)



WO1-4R

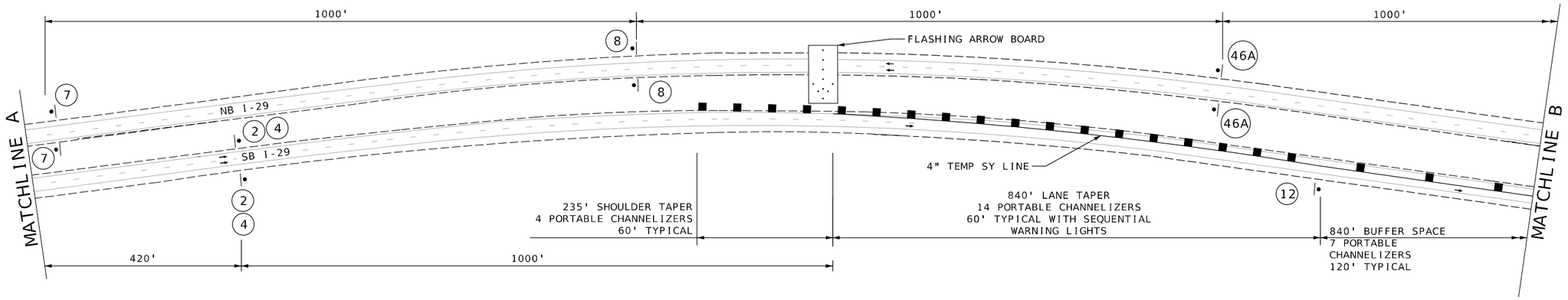
(12)

WO4-1aR

(13)

CONST-8

(56)



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

PHASE 3 TRAFFIC CONTROL NOTES:

CONSTRUCTION:
1. REMOVE BRIDGE DECK. CONTRACTOR SHOULD COMPLETE THE BRIDGE DECK REMOVAL FROM THE CENTER AND WORK TOWARDS APPROACH SLABS.
2. CONTRACTOR SHALL PROVIDE PROTECTON FROM DEBRIS FALLING INTO THE TRAVEL LANE.

TRAFFIC MANAGEMENT:
1. CLOSE THE I-29 INSIDE TRAVEL LANE FOR BOTH NORTHBOUND AND SOUTHBOUND DIRECTION. OUTSIDE THRU LANE WILL SHIFT TO THE OUTSIDE SHOULDER.
2. CONTRACTOR SHALL PLACE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS). CONTRACTOR SHALL RUN CMS MESSAGE NUMBER ONE FOR TWO WEEKS PRIOR TO INSTALLING TRAFFIC CONTROL TO REDUCE TO ONE LANE AND 60 MPH ZONE. ONCE LANE REDUCTION IS IN PLACE, CONTRACTOR SHALL CHANGE THE MESSAGE TO NUMBER 2.
3. I-29 SPEEDS SHALL BE REDUCED TO 60 MPH WITH THE WORK ZONE.
4. US-59 DETOUR SHALL BE INSTALLED PRIOR TO CLOSING US-59 TO TRAFFIC. SEE US-59 DETOUR PLANS FOR THE TEMPORARY SIGNING PLAN.
5. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER MODOT STANDARDS AND SPECIFICATIONS.

CHANGEABLE MESSAGES:

CHANGEABLE MESSAGES:
1. LANE CLOSURE
STARTING DATE

2. REDUCE SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL
US-59
PHASE 3
SHEET 8 OF 14

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
9/18/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	18

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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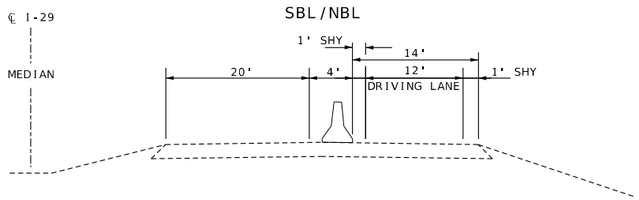
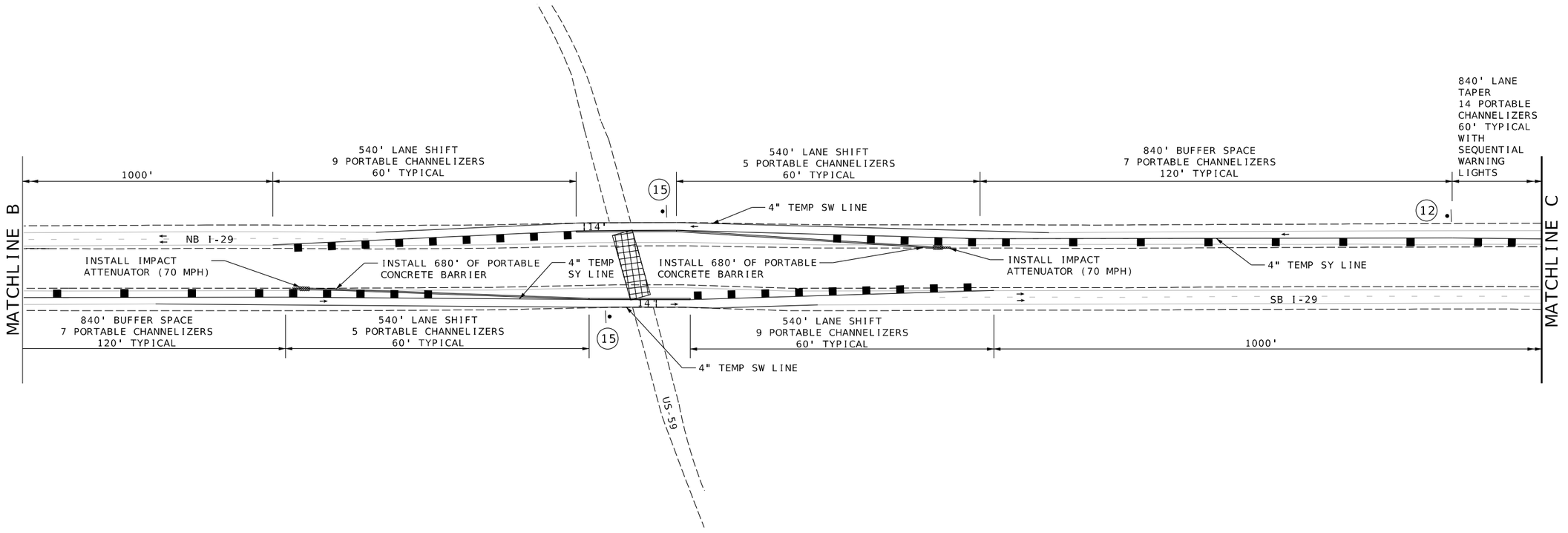
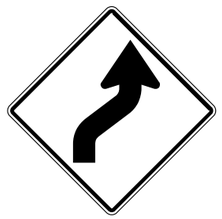


TYPICAL SECTION - EXISTING SOUTHBOUND/NORTHBOUND I-29



WO1-4L

15



WO1-4R

12

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER

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

TRAFFIC CONTROL
US-59
PHASE 3
SHEET 9 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/7/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	19

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 2:41:41 PM 8/7/2024

R2-1

(4)

GO20-5aP

(2)

R2-1

(8)

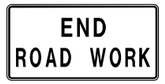
R4-1

(46)

CONST-3X

CONST-3A

(53)

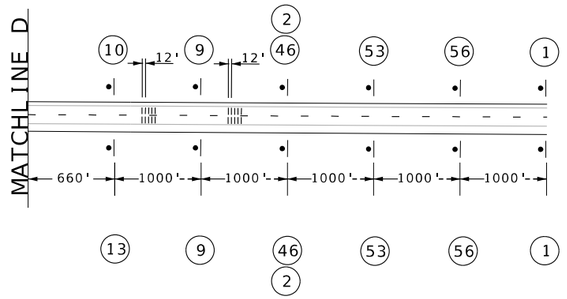


GO20-2

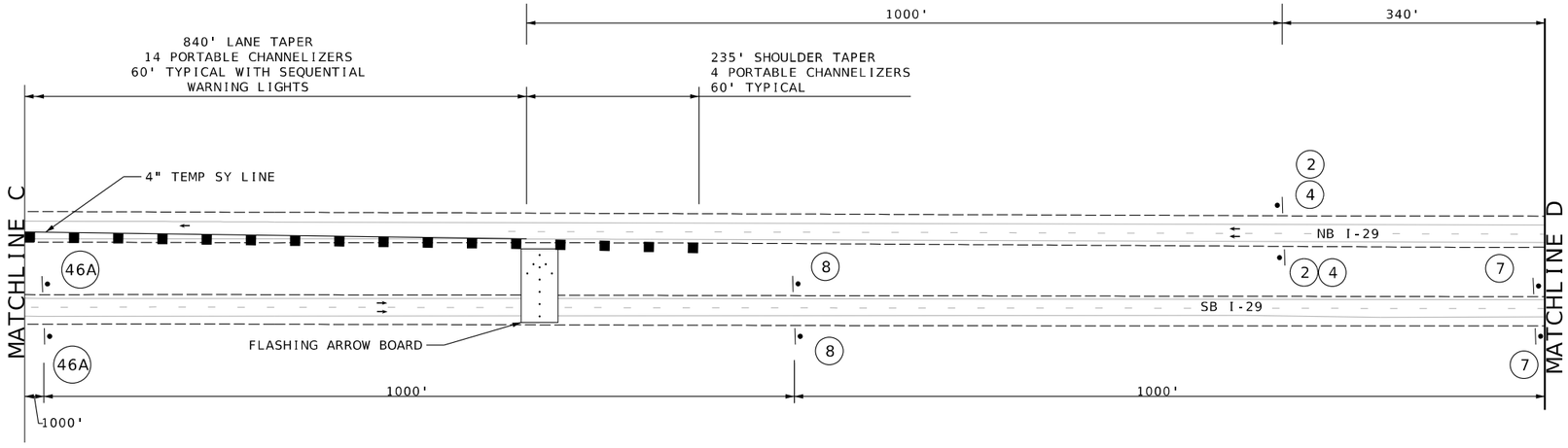
(7)

GO20-1

(1)



* LOCATION AS DIRECTED BY THE ENGINEER



WO20-5

(9)

WO20-6a

(10)

WO4-1aR

(13)

R4-2

46A

CONST-8

(56)

CHANGEABLE MESSAGES:

CHANGEABLE MESSAGES:
1. LANE CLOSURE
STARTING DATE

2. REDUCE SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

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

TRAFFIC CONTROL
US-59
PHASE 3
SHEET 10 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED 9/18/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	20

COUNTY: ATCHISON/HOLT

JOB NO.: JNW0111

CONTRACT ID.:

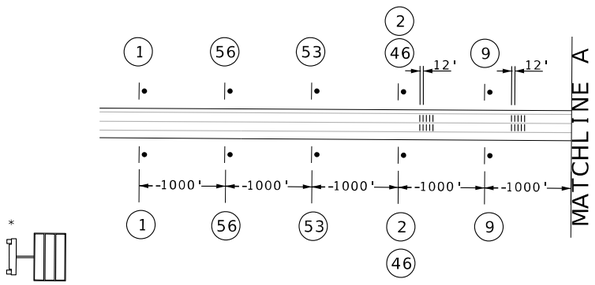
PROJECT NO.:

BRIDGE NO.:

DESCRIPTION	DATE

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100. FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



* LOCATION AS DIRECTED BY THE ENGINEER

R2-1
4

GO20-5aP
2

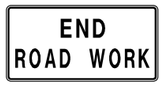
R2-1
8

R4-1
46

CONST-3X

CONST-3A
53

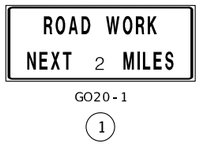
R4-2
46A



GO20-2
7

WO20-5
9

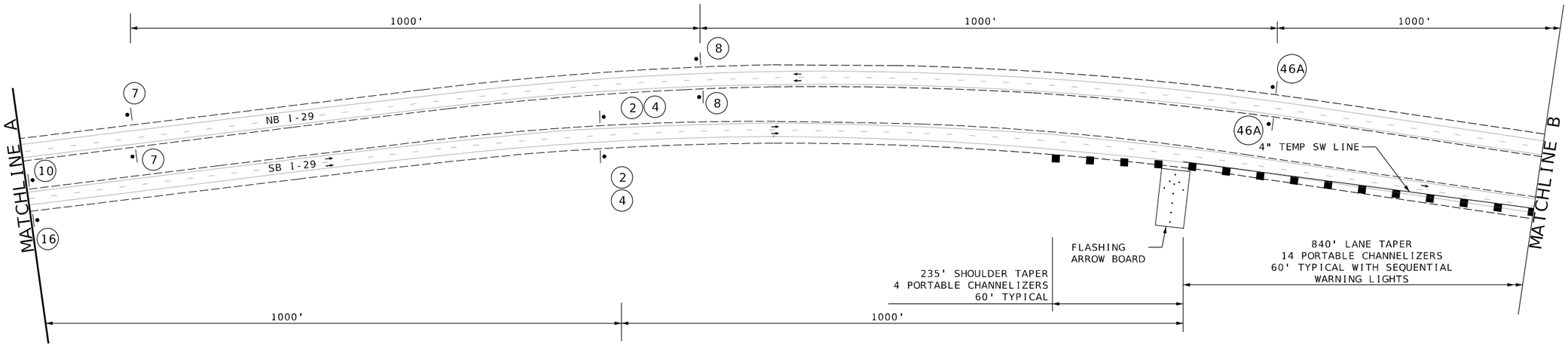
WO20-6a
10



GO20-1
1

WO4-1aL
16

CONST-8
56



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

PHASE 4 TRAFFIC CONTROL NOTES:

CONSTRUCTION:
1. REMOVE BRIDGE DECK. CONTRACTOR SHOULD COMPLETE THE BRIDGE DECK REMOVAL FROM PREVIOUS PHASE TO THE APPROACH SLABS.
2. CONTRACTOR SHALL PROVIDE PROTECTION FROM DEBRIS FALLING INTO TRAVEL LANE.

TRAFFIC MANAGEMENT:
1. CLOSE THE I-29 OUTSIDE TRAVEL LANE FOR BOTH NORTHBOUND AND SOUTHBOUND DIRECTION. TRAFFIC WILL SHIFT TO THE INSIDE TRAVEL LANE.
2. CONTRACTOR SHALL PLACE PORTABLE CHANGEABLE MESSAGE SIGNS (CMS). CONTRACTOR SHALL CHANGE THE MESSAGE TO NUMBER 2.
3. I-29 SPEEDS SHALL BE REDUCED TO 60 MPH WITH THE WORK ZONE.
4. US-59 DETOUR SHALL BE INSTALLED PRIOR TO CLOSING US-59 TO TRAFFIC. SEE US-59 DETOUR PLANS FOR THE TEMPORARY SIGNING PLAN.
5. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER MODOT STANDARDS AND SPECIFICATIONS.

CHANGEABLE MESSAGES:

1. LANE CLOSURE
STARTNG DATE
2. REDUCED SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL
US-59
PHASE 4
SHEET 11 OF 14

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

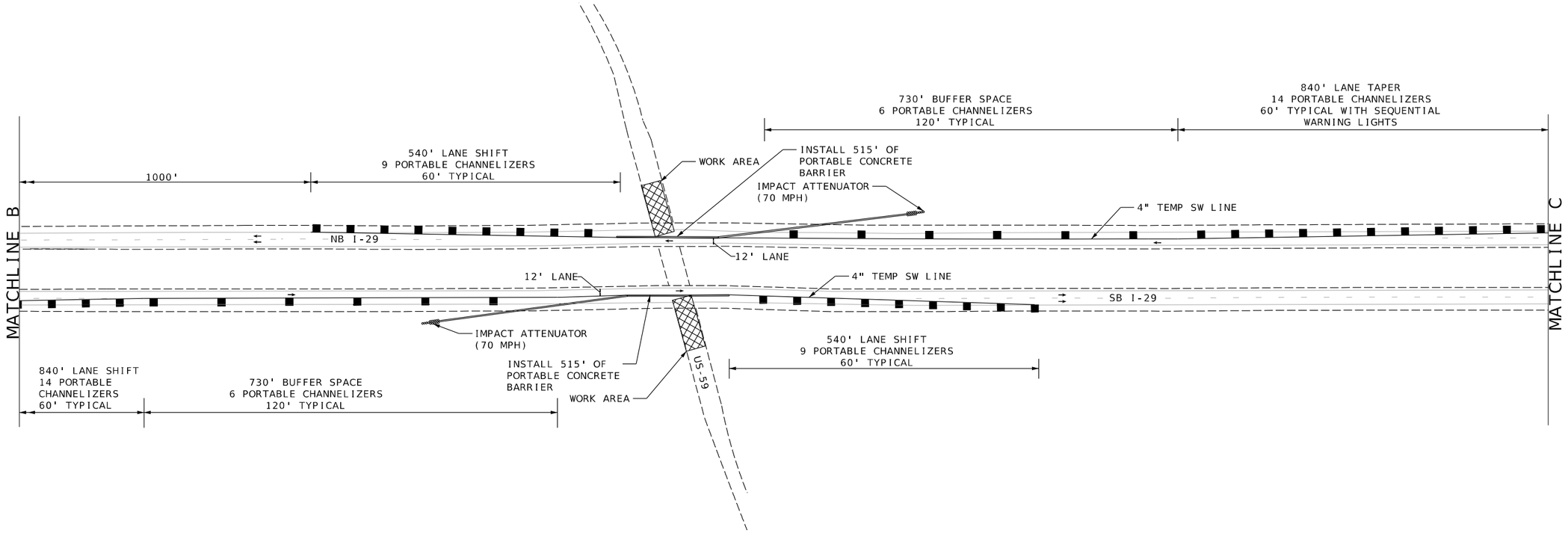
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DATE PREPARED 9/18/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 21
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER

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

TRAFFIC CONTROL
US-59
PHASE 4
SHEET 12 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/7/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	22

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 2:42:00 PM 8/7/2024

R2-1

(4)

GO20-5aP

(2)

R2-1

(8)

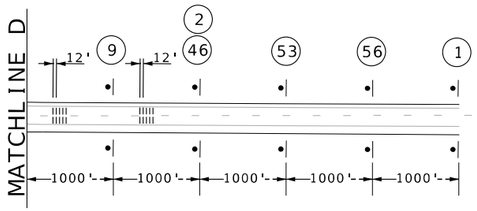
R4-1

(46)

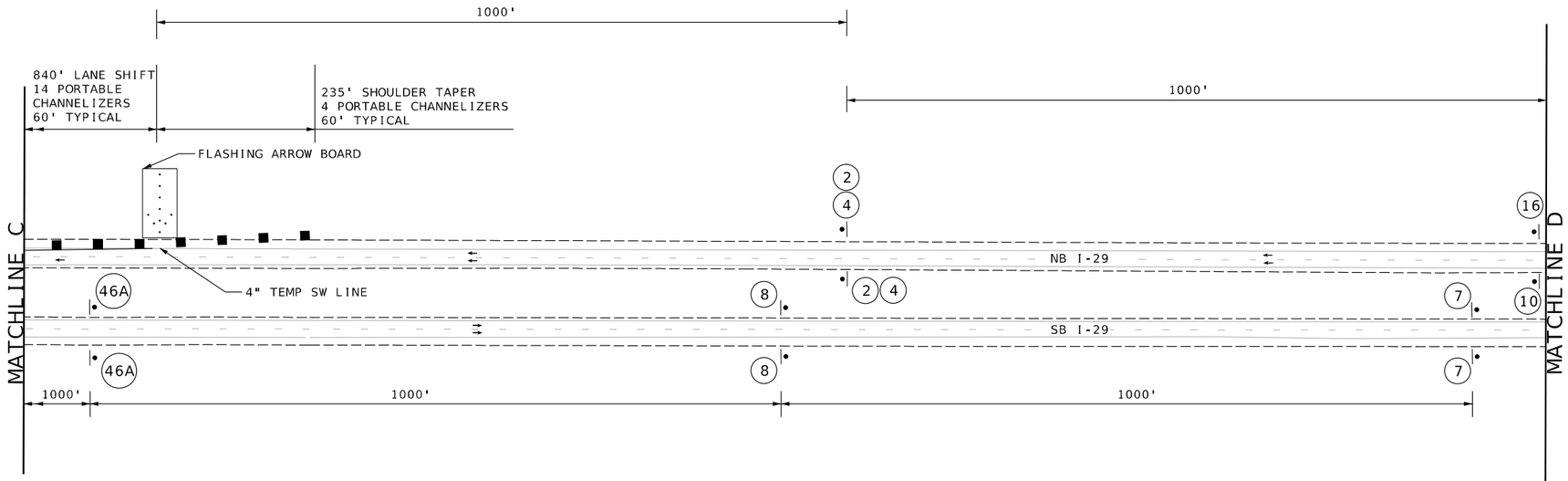
CONST-3X

CONST-3A

(53)



* LOCATION AS DIRECTED BY THE ENGINEER



WO20-5

(9)

WO20-6a

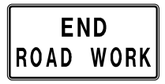
(10)

WO4-1aL

(16)

GO20-1

(1)

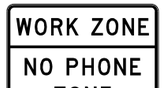


GO20-2

(7)

R4-2

(46A)



CONST-8

(56)

CHANGEABLE MESSAGES:

1. LANE CLOSURE
STARTNG DATE
2. REDUCED SPEED AHEAD
EXPECT DELAYS

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER
- CHANGEABLE MESSAGE SIGN (CMS)
- TEMPORARY LONG-TERM RUMBLE STRIPS

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

TRAFFIC CONTROL
US-59
PHASE 4
SHEET 13 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 9/18/2024
ROUTE F/59/T
STATE MO
DISTRICT NW
SHEET NO. 23
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:55:59 AM 9/18/2024

PHASE 5 TRAFFIC CONTROL NOTES:

CONSTRUCTION:
1. CONSTRUCT TEMPORARY SHORING ALONG I-29 SOUTHBOUND OUTSIDE SHOULDER FOR THE BRIDGE TO SUPPORT DURING REPLACEMENT OF GIRDER PIN.

TRAFFIC MANAGEMENT:
1. CLOSE THE I-29 SOUTHBOUND OUTSIDE TRAVEL LANE.
I-29 SOUTHBOUND: CONTINUE TO USE TRAFFIC CONTROL FROM PHASE 4.
I-29 NORTHBOUND: REMOVE ALL TRAFFIC CONTROL AND OPEN BOTH LANES TO TRAFFIC.
2. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER MODOT STANDARDS AND SPECIFICATIONS

TRAFFIC CONTROL
US-59
PHASE 5
SHEET 14 OF 14

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	24

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

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

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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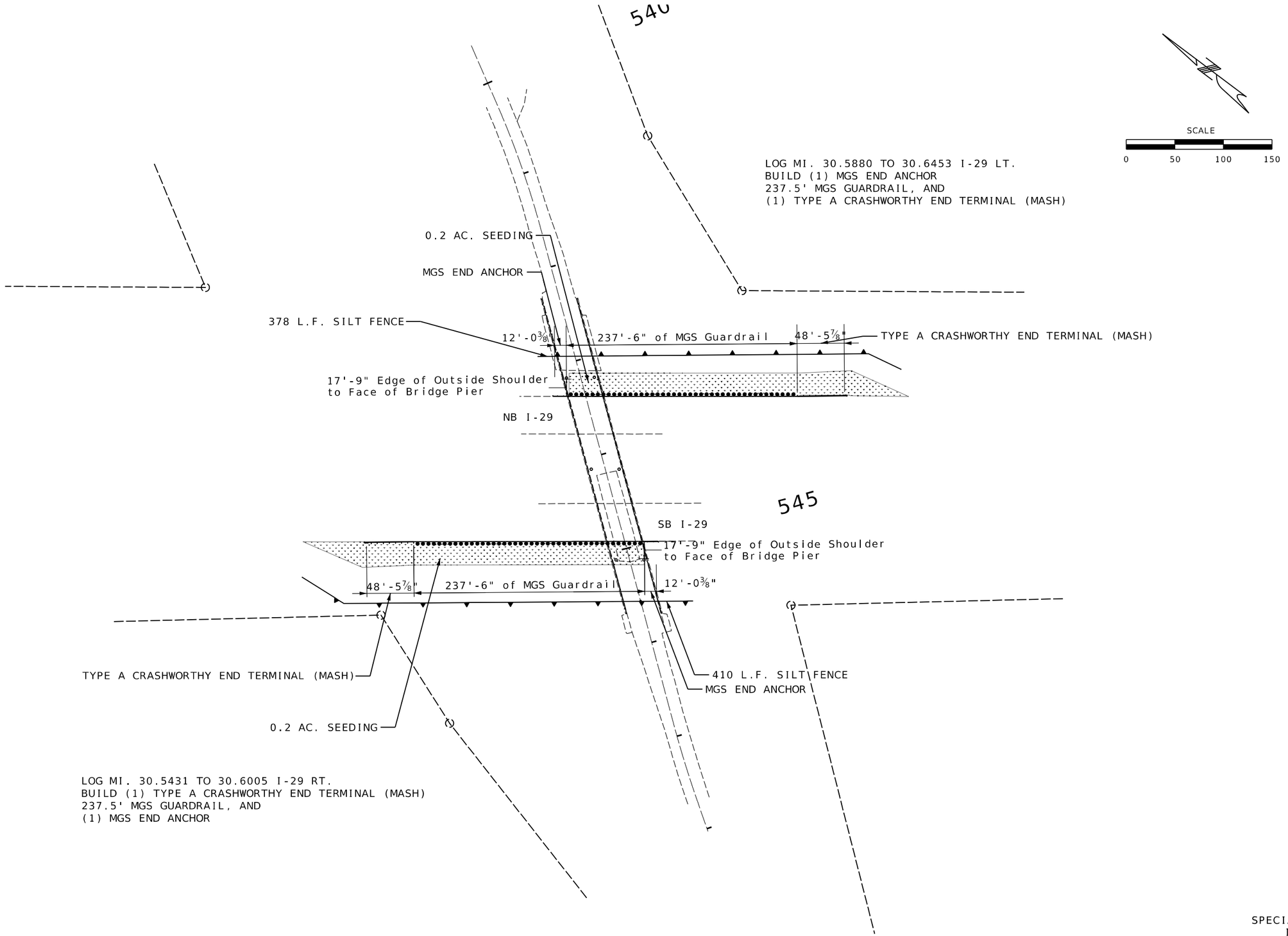

SPECIAL SHEET
I-29
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	25

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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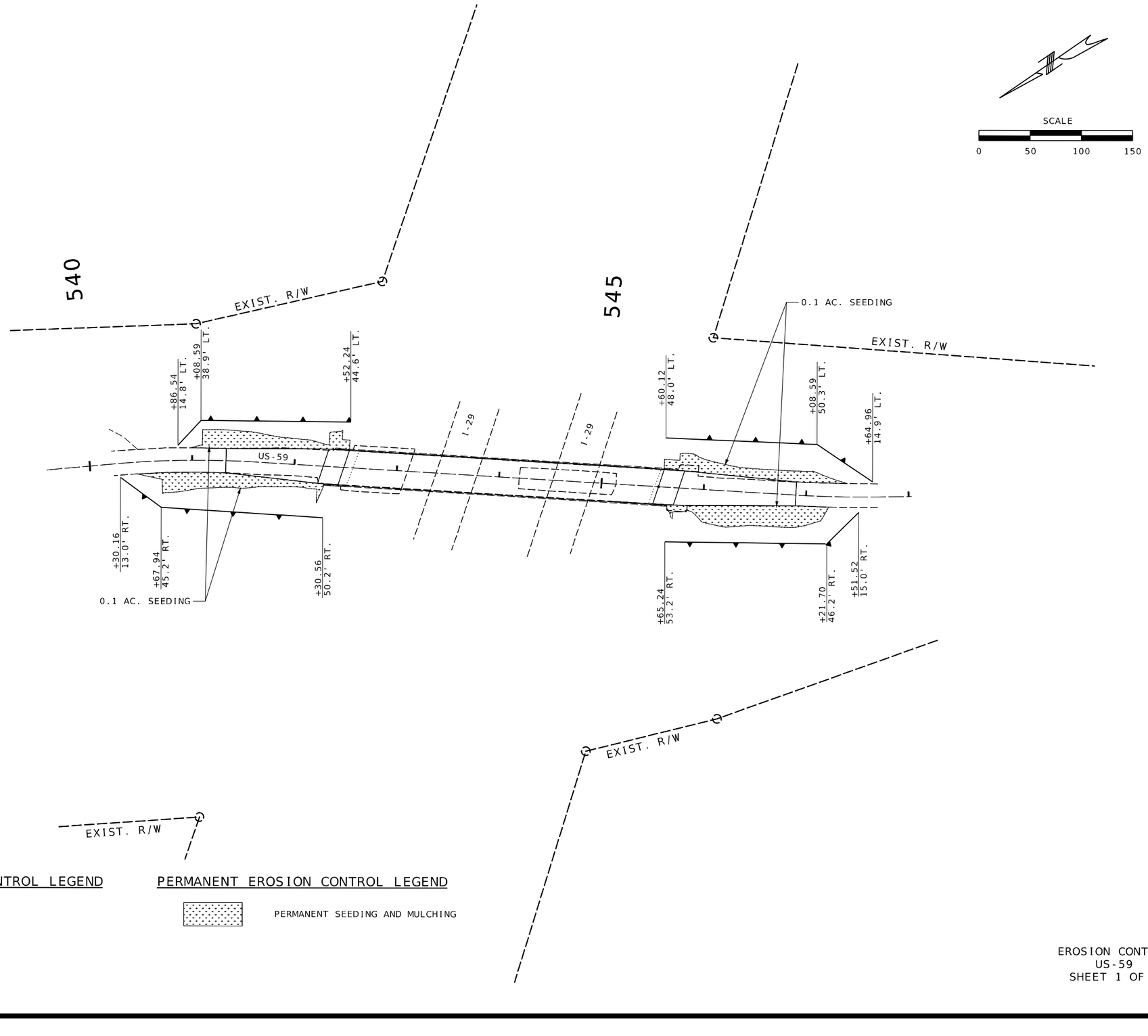

TEMPORARY EROSION CONTROL LEGEND

SILT FENCE

PERMANENT EROSION CONTROL LEGEND

PERMANENT SEEDING AND MULCHING

EROSION CONTROL
US-59
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	26

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 • FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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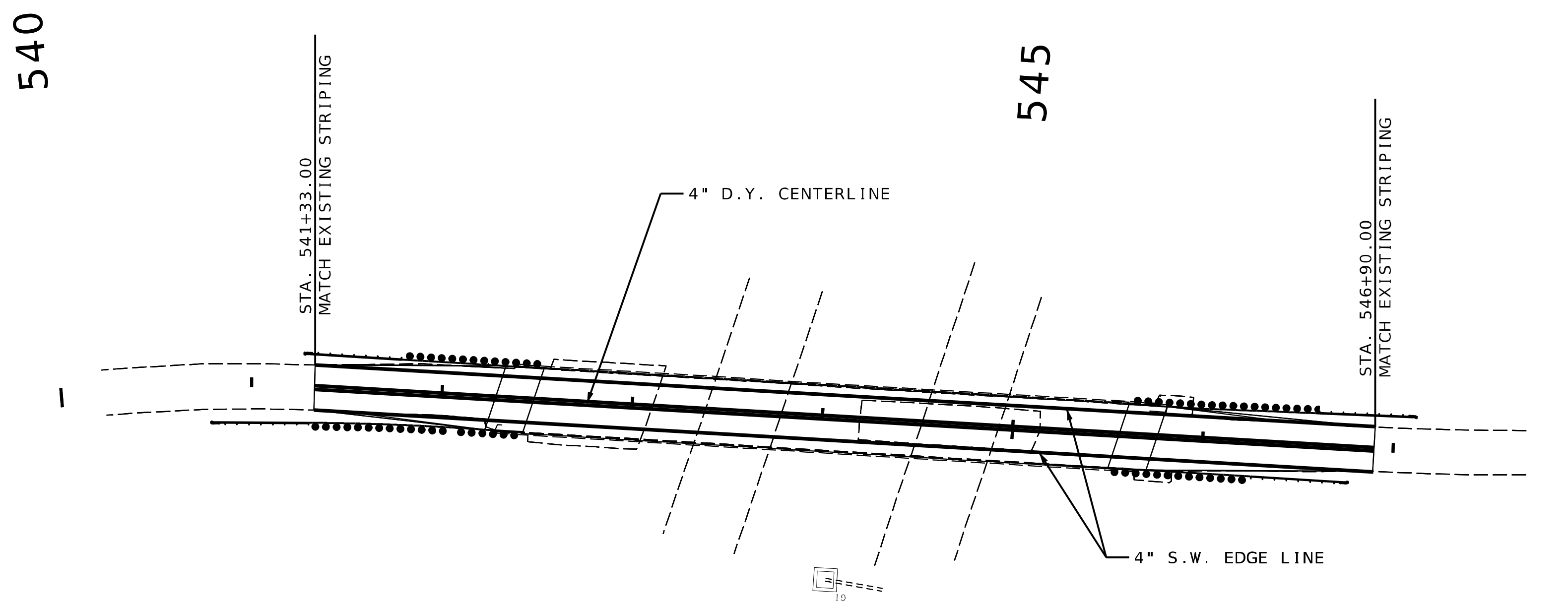


SCALE

0 50 100 150

PAVEMENT MARKING
MO-59
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED	
7/11/2024	
ROUTE: F/59/T	STATE: MO
DISTRICT: NW	SHEET NO.: 27
COUNTY: ATCHISON/HOLT	
JOB NO.: JNW0111	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DATE	DESCRIPTION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

125

NW⁴ NE⁴ 9
T59N R38W

REMOVE EXISTING
BRIDGE DECK N0811

MILL CREEK

EXIST. R/W

124+37

124+57

+57.10
11.0' LT.

124+77

20' BRIDGE
APPROACH SLAB

SL

S(PR)

RTE. T

S37°10'30"E

BEGIN
STA 124+15.00

+15.00
MATCH EXIST.
LT. & RT.

124+45

124+65

+65.11
11.0' RT.

124+85

BRIDGE NO. N0811
CONSTRUCT (50'-70'-50')
22'00" ROADWAY
20°00'00" RA SKEW

EXIST. PERM. ESMT.

T RISER

OE

30

126+51

+70.65
11.0' LT.

126+11

126+91

20' BRIDGE
APPROACH SLAB

126+59

PP

+78.65
11.0' RT.

126+79

126+99

END
STA 128+00.00

+00.00
MATCH EXIST.
LT. & RT.

EXIST. R/W

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.

ALL BEARINGS BASED ON MISSOURI STATE PLANE WEST ZONE COORDINATES

SCALE
0 20 40 60

770
760
750
740

PROFILE GRADE

-0.00%

VPI 124+15.00
EL 762.91
MATCH EXISTING

DESIGN HW ELEV. = 757.11'

EXIST. GROUND

VPC 126+85.00
EL 762.91

0.00%

VPI 127+35.00
EL 762.91

-3.14%

VPT 127+85.00
EL 761.34

-3.14%

VPT 128+00.00
EL 760.87
MATCH EXISTING

SSD = 394'
K = 32
100.00' V.C.

123+00 124+00 125+00 126+00 127+00 128+00

CONTROL POINT NO. 31:
REBAR W/ CAP
N. 1379979.837
E. 2601467.706
ELEV. 757.29

CONTROL POINT NO. 32:
REBAR W/ CAP
N. 1379849.943
E. 2601571.837
ELEV. 761.26

CONTROL POINT NO. 33:
REBAR W/ CAP
N. 1379558.256
E. 2601868.217
ELEV. 759.27

PLAN & PROFILE
RTE T
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	28

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

WO20-3

20

R11-3a

61

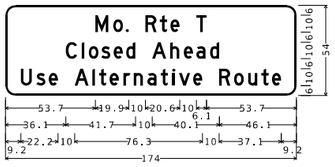
R11-3a

61a

R11-2

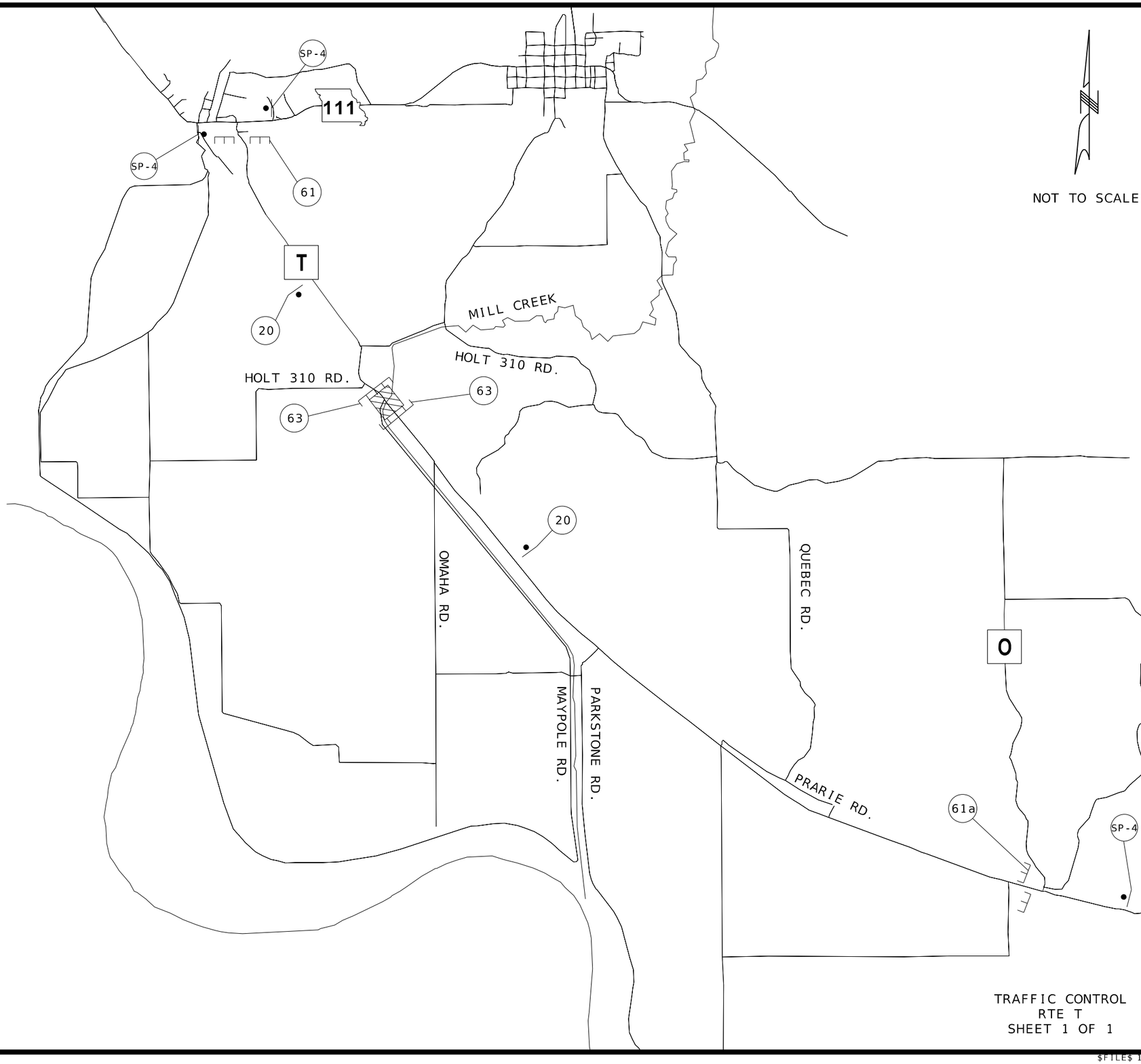
63

SP-4



TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- BARRICADE
- WORK ZONE



NOT TO SCALE

TRAFFIC CONTROL
RTE T
SHEET 1 OF 1

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	29

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

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)

benesch
4435 MAIN STREET, SUITE 1150
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913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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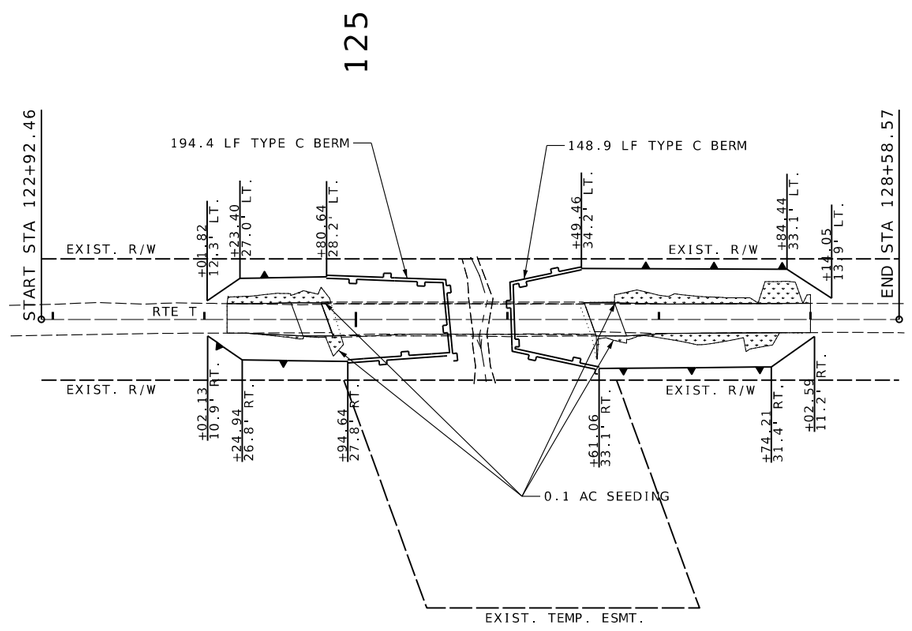

SCALE

0 50 100 150

TEMPORARY EROSION CONTROL LEGEND

SILT FENCE

TEMPORARY TYPE C BERM

PERMANENT EROSION CONTROL LEGEND

PERMANENT SEEDING AND MULCHING

EROSION CONTROL
RTE T
SHEET 1 OF 1

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED
7/11/2024

ROUTE	STATE
F/59/T	MO
DISTRICT	SHEET NO.
NW	30

COUNTY
ATCHISON/HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
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KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

$FILE$ 11:11:00 AM 7/11/2024

EFFECTIVE 07-01-2022

SIGNS (902 SIGNAL SIGNS TABULATED ON D-37A SHEET)					CONCRETE FOOTINGS EMBEDDED	STRUCTURAL STEEL POSTS *						PIPE POSTS *					BACKING BARS **				U-CHANNEL POST	PERFORATED SQUARE STEEL TUBE										BREAK-AWAY ASSEMBLY	REMARKS AND OTHER REQUIRED ITEMS
																						2 IN. POST						2.5 IN. POST						
																									ANCHORS						ANCHORS		
SIGN NO.	SIGN SIZE	STATION	LOCATION	SIGN DTL. SHT. NO.	ITEM NO. 9031010	POST DES NO.	POST NO.1	POST NO.2	POST NO.3	LBS PER FT	TOTAL ITEM NO. 9031210	PIPE SIZE	POST NO.1	POST NO.2	LBS PER FT	TOTAL ITEM NO. 9031220	2" X ▯" BARS @ 2.55 LBS PER FT NO. EACH	LGTH	TOTAL	TOTAL	ITEM NO. 9031250A	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031270A	DRIVEN 12-GA. ITEM NO. 9031271A	DRIVEN 7-GA. ITEM NO. 9031273A	CONCRETE 7-GA. ITEM NO. 9031274	POST NO.1	POST NO.2	TOTAL ITEM NO. 9031280	2.25" INSERT (6 FT) ITEM NO. 9031272A	DRIVEN 7-GA. ITEM NO. 9031281A	CONCRETE 7-GA. ITEM NO. 9031285	ITEM NO. 9031241	
					CY		LF	LF	LF		LBS	IN.	LF	LF		LBS	EACH	IN.	LF	LBS	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	EA	EA	EA	EA	
	12"X36"	124+37	RTE T, 13.59' LT																			9.0		9.0	1									
	12"X36"	124+45	RTE T, 12.94' RT																			9.0		9.0	1									
	12"X36"	124+57	RTE T, 12.48' LT																			8.5		8.5	1									
	12"X36"	124+65	RTE T, 12.47' RT																			8.5		8.5	1									
	12"X36"	124+77	RTE T, 11.73' LT																			8.0		8.0	1									
	12"X36"	124+85	RTE T, 11.61' RT																			8.0		8.0	1									
	12"X36"	126+51	RTE T, 11.59' LT																			8.0		8.0	1									
	12"X36"	126+59	RTE T, 11.62' RT																			8.0		8.0	1									
	12"X36"	126+71	RTE T, 12.49' LT																			8.5		8.5	1									
	12"X36"	126+79	RTE T, 12.46' RT																			8.5		8.5	1									
	12"X36"	126+91	RTE T, 13.46' LT																			9.0		9.0	1									
	12"X36"	126+99	RTE T, 12.68' RT																			9.0		9.0	1									
SUBTOTAL					·					·					·					·			102.0	12									
TOTAL					·					·					·		**			·			102	12									

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

ROUND PIPE POST AND FOOTING DATA TABLE

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

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

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

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/11/2024
ROUTE F/59/T | STATE MO
DISTRICT NW | SHEET NO. 31
COUNTY ATCHISON/HOLT
JOB NO. JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE — SIGN DESCRIPTION, SIZES & NUMBER OF EACH: OM3-L 12"X36"	OM3-R 12"X36"
	124+37	RTE T, 13.59' LT	1	
	124+45	RTE T, 12.94' RT		1
	124+57	RTE T, 12.48' LT	1	
	124+65	RTE T, 12.47' RT		1
	124+77	RTE T, 11.73' LT	1	
	124+85	RTE T, 11.61' RT		1
	126+51	RTE T, 11.59' LT		1
	126+59	RTE T, 11.62' RT	1	
	126+71	RTE T, 12.49' LT		1
	126+79	RTE T, 12.46' RT	1	
	126+91	RTE T, 13.46' LT		1
	126+99	RTE T, 12.68' RT	1	

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: SIZE	FLAT SHEET SH (ITEM NO. 9035004A)	FLAT SHEET FLUORESCENT SHF * (ITEM NO. 9035069A)	STRUCTURAL ST (ITEM NO. 9035011A)	STRUCTURAL FLUORESCENT STF * (ITEM NO. 9035071A)
OM3-L - TYPE 3 OBJECT MARKER, LEFT		6	12"X36"		18.00		
OM3-R - TYPE 3 OBJECT MARKER, RIGHT		6	12"X36"		18.00		
			TOTAL		36.00		

* ORANGE, YELLOW & YELLOW/GREEN

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

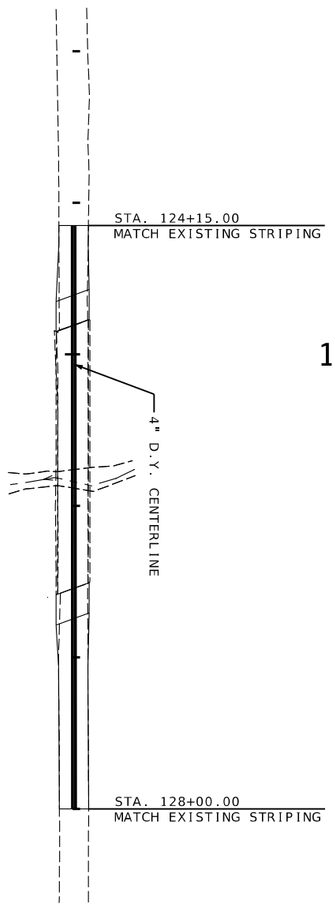
STATE OF MISSOURI
MICHELE R. KEAL
NUMBER PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 7/11/2024
ROUTE: F/59/T | STATE: MO
DISTRICT: NW | SHEET NO.: 32
COUNTY: ATCHISON/HOLT
JOB NO.: JNW0111
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)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



SCALE
0
50
100
150

PAVEMENT MARKING
RTE T
SHEET 1 OF 1

$FILE$ 11:11:31 AM 7/11/2024

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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

DATE	DESCRIPTION

BRIDGE NO.
PROJECT NO.
CONTRACT ID.
JOB NO. JNW0111
COUNTY ATCHISON/HOLT
DISTRICT NW
SHEET NO. 33
ROUTE F/59/T
STATE MO
DATE PREPARED 7/11/2024

STATE OF MISSOURI
MICHELE R ROSELLE
NUMBER PE-2009009711
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY

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

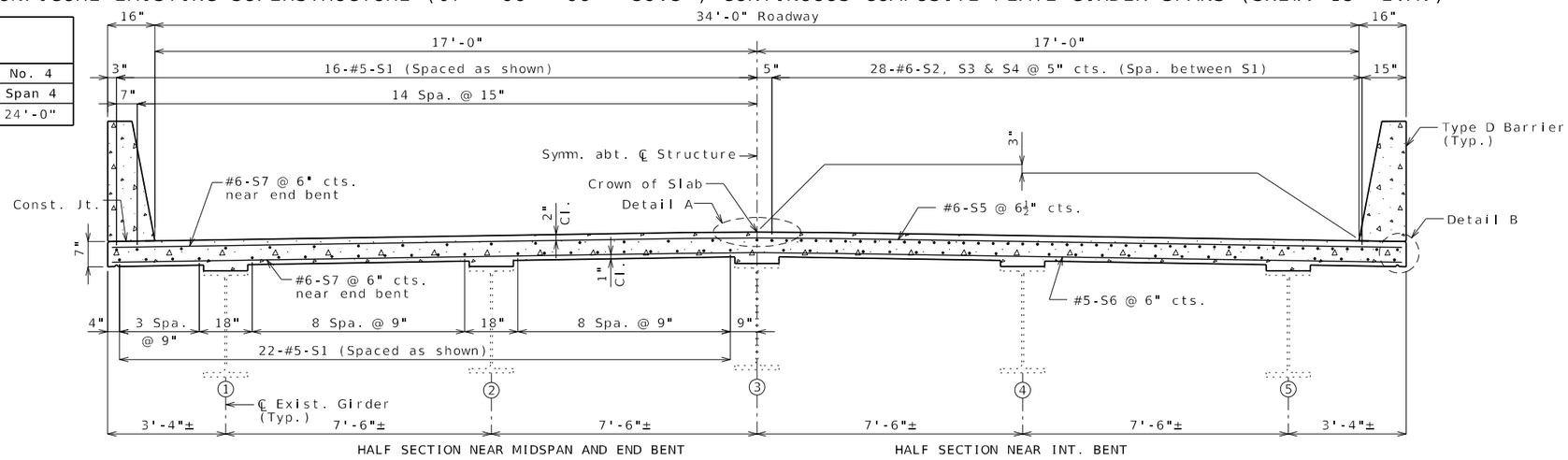
SEC/SUR 2 TWP 62N RGE 40W

U.I.P., REDECK AND RECONFIGURE EXISTING SUPERSTRUCTURE (67'- 99'- 99'- 39.5') CONTINUOUS COMPOSITE PLATE GIRDER SPANS (SKEW: 15° L.A.)

Table Showing S2, S3 & S4 Bar Lengths					
Int. Bent No. 2		Int. Bent No. 3		Int. Bent No. 4	
Span 1	Span 2	Span 2	Span 3	Span 3	Span 4
22'-9"	22'-6"	31'-6"	24'-9"	16'-3"	24'-0"

Required Lap Length For Bar Splices **	
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

** Unless otherwise shown.



TYPICAL SECTION THRU SLAB

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:
H15-44 (1969) (Existing)
HS20-44 (New Construction)
35 lb/sf Future Wearing Surface
Earth - 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:
Class B-1 Concrete (Barrier) f'c = 4,000 psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

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

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

Miscellaneous:
Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

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

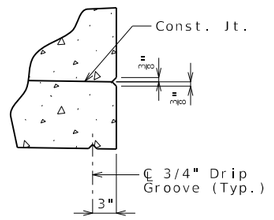
Contractor shall verify all dimensions in field before finalizing the shop drawings.

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

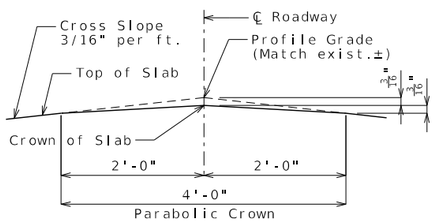
Rubblized concrete from the existing bridge deck that qualifies as clean fill may be placed on spill slopes at end bents (Roadway item).

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

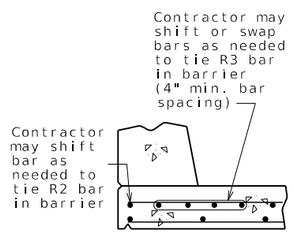
Vertical clearance for Interstate 29 traffic during construction shall be 15'-0" minimum over a 26'-0" wide horizontal opening of the roadway in each direction.



DETAIL B



DETAIL A



OPTIONAL SHIFTING TOP BARS AT BARRIER

Estimated Quantities		
	Item	Total
	Removal of Miscellaneous ACM (Non-Friable) sq. foot	30
	Removal of Existing Bridge Deck sq. foot	11,375
	Bridge Approach Slab (Minor) sq. yard	153
	Slab on Steel sq. yard	1,255
	Type D Barrier linear foot	672
	Substructure Repair (Unformed) sq. foot	40
	Fabricated Structural Low Alloy Steel (Plate Girder) A709, Grade 50 pound	53,490
	Slab Drain each	18
	Intermediate Field Coat (System G) sq. foot	2,900
	Finish Field Coat (System G) sq. foot	2,900
*	Reconfigure Existing Structural Steel lump sum	1
	Vertical Drain ar End Bents each	2
	Laminated Neoprene Bearing Pad (Tapered) each	5
	Laminated Neoprene Bearing Pad Assembly each	5

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.
*See Special Provisions.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	280
Reinforcing Steel (Epoxy Coated)	pound	94,590

The table of Estimated Quantities for Slab on Steel 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 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 forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

For Optional Stay-In-Place Form Details, see Sheet No. 2.

REPAIRS TO BRIDGE: ROUTE 59 OVER ROUTE I-29

ROUTE 59 FROM ROUTE 46 TO ROUTE I-29
ABOUT 8.9 MILES SOUTH OF ROUTE 46
BEGINNING STATION 542+48.00± (MATCH EXISTING)

DESIGNED BY: KLW JAN 2024
DETAILED BY: JTC JAN 2024
CHECKED BY: NSC MAR 2024

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

STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024
ROUTE 59 | STATE MO
DISTRICT BR | SHEET NO. 1
COUNTY HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A19063

DESCRIPTION | DATE | REVISION

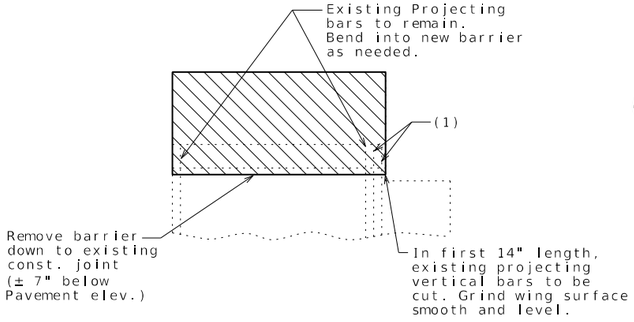
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

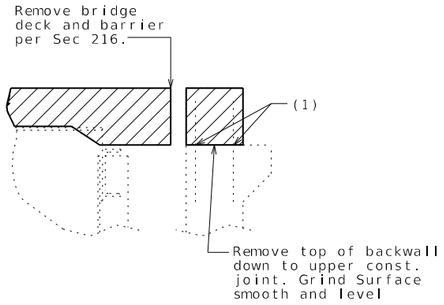
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg
PLOTTED BY: JCASEY
LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

B_A19063_001_JNW0111_FRONT SHEET.dgn 1:48:42 PM 7/3/2024



TYPICAL WING BARRIER REMOVAL



TYPICAL END BENT SECTION

DETAILS OF CONCRETE REMOVAL

Prior to deck removal, profile grade along bridge shall be recorded at tenth points of each span.

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck.

(1) Vertical reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.

A smooth, level surface shall be provided at top of backwall removal lines.

General Notes:

All concrete above the existing bearing seat is included with the Superstructure Quantities.

Stay-In-Place Forms:

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 expanded 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. Welding on or 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 in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for girder loading.

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.

Pouring and Finishing Slab:

The contractor shall provide bracing necessary for lateral and torsional stability of the girders during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the girders. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Slab on Steel.

Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:

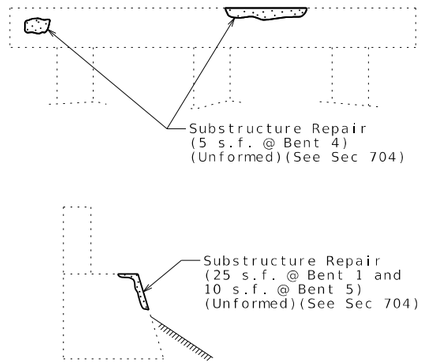
For adjusted girder deflection due to weight of new deck and barriers, see Sheet No. 9.

Structural Steel Protective Coatings:

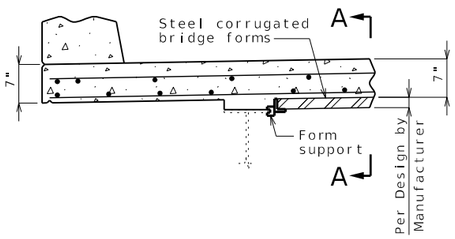
Prime Coat (New Steel): The cost of the inorganic zinc prime coat will be considered completely covered by the contract unit price for the fabricated structural steel.

Field Coat(s): The color of the field coat(s) shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G). The cost of the finish field coat will be considered completely covered by the contract unit price per sq. foot for Finish Field Coat (System G).

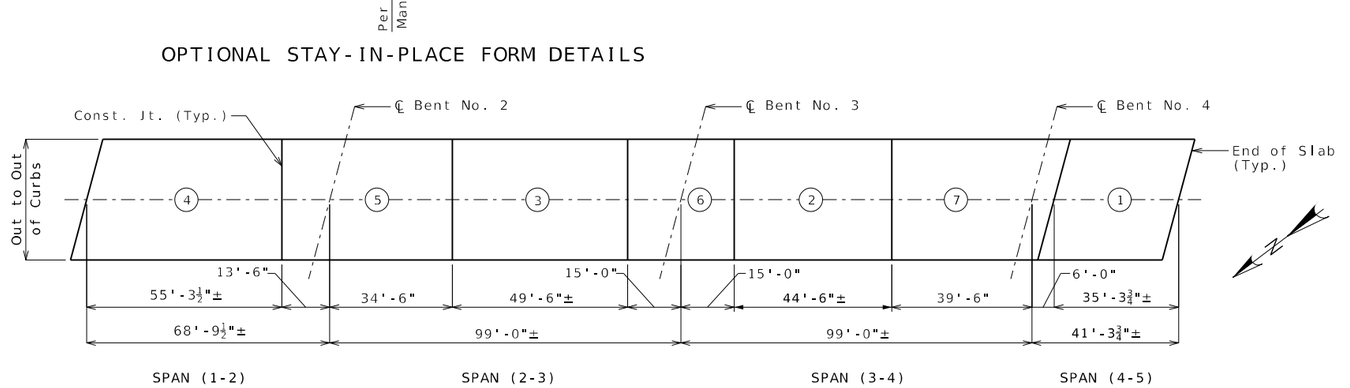
At the option of the contractor, the intermediate field coat and finish field coat may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, handling, erection and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating systems as required by the engineer.



SUBSTRUCTURE REPAIR DETAILS



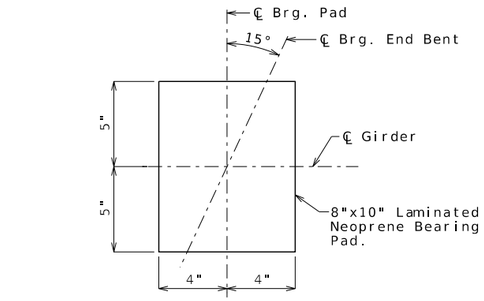
OPTIONAL STAY-IN-PLACE FORM DETAILS



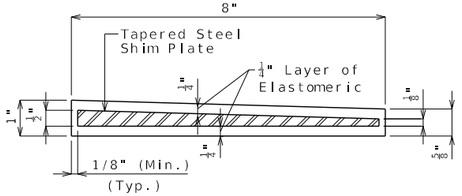
	Sequence of Pours							Min. Rate of Pour Cu. Yds./Hr.	
	Direction							With Retarder	No Retarder
Basic Sequence	1	2	3	4	5	6	7	25	25
	Either Direction								
Alternate pours to the basic skip sequence are subject to the approval of the engineer in accordance with Sec 703.									
Alternate "A" Pours	1	4 + 5 + 3 + 6 + 2 + 7						25	39
	End to 7	End to 1							

The contractor shall pour and satisfactorily finish the slab pours at the rate given. Retarder, if used, shall be an approved type and retard the set of concrete to 2.5 hours.

SLAB POURING SEQUENCE



END BENT NO. 5 BEARING PAD LAYOUT



BEARING PAD DETAIL END BENT NO. 5

General Note:

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

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

Sheet No. 2 of 14

DESIGNED BY: KLW JAN 2024
DETAILED BY: JTC JAN 2024
CHECKED BY: NSC MAR 2024

STATE OF MISSOURI — KEITH LAWRENCE WETTER — NUMBER E-25019 — REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	2

COUNTY: HOLT

JOB NO.: JNW0111

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A19063

DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

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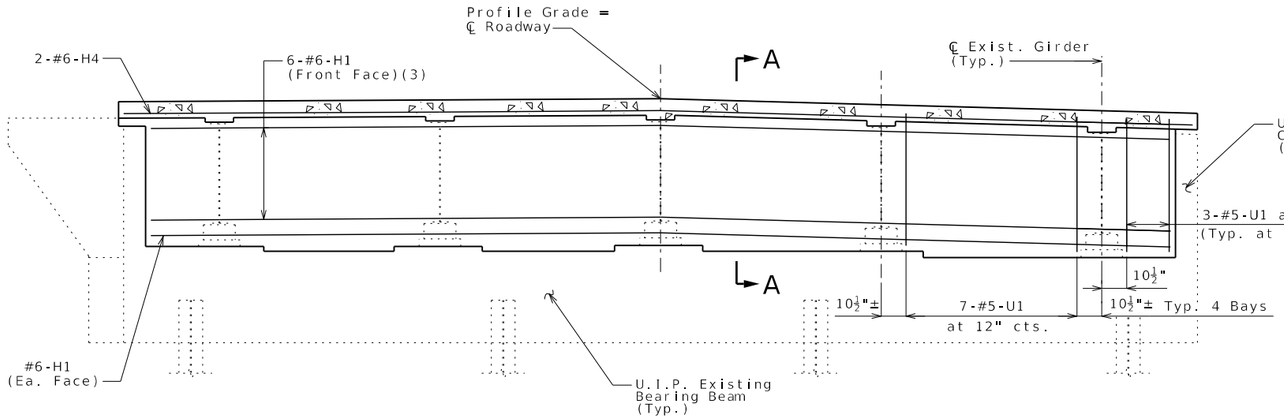
PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg
PLOTTED BY: JCASEY
LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

B_A19063_002_JNW0111_REDECK DETAILS.dgn 1:48:52 PM 7/3/2024

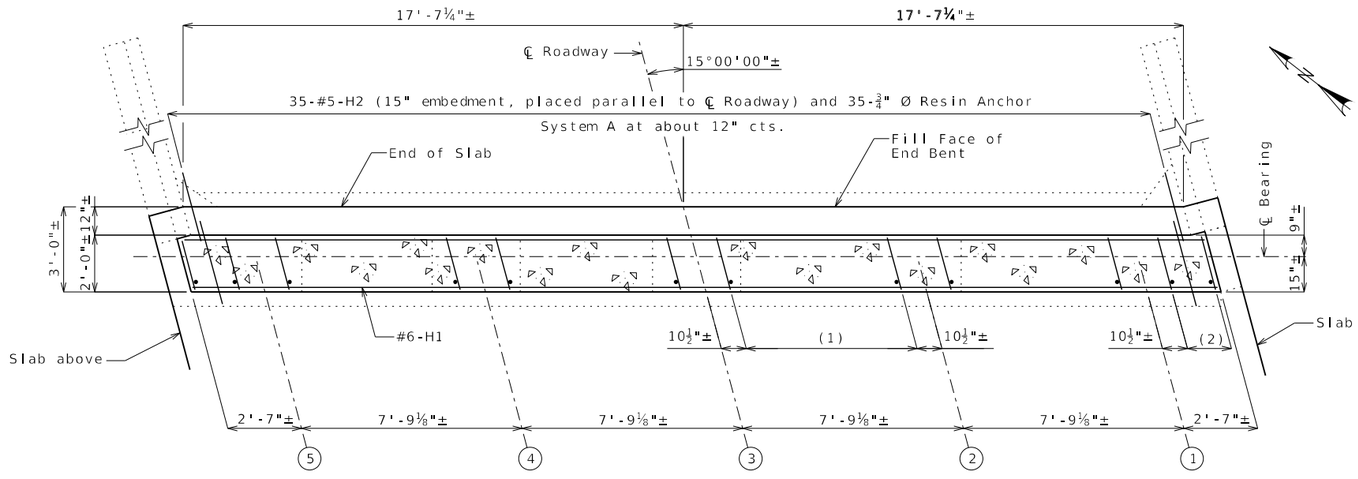
(1) 7-#5-U1 With 7-$\frac{3}{4}$" Ø Resin Anchor System B (Typ. 4 bays)

(2) 3-#5-U1 with 3-$\frac{3}{4}$" Ø Resin Anchor System B (Typ. at Exterior)

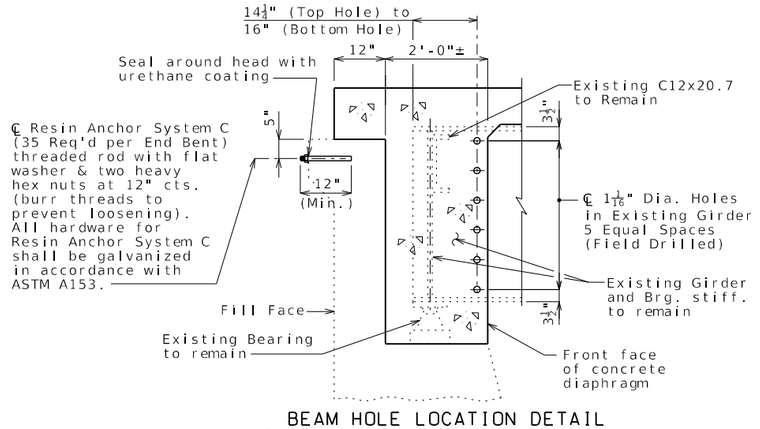
(3) The H1 bars are segmented for ease of placement through girder web holes. The total bar length for H1 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-3". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Reinforcing Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.



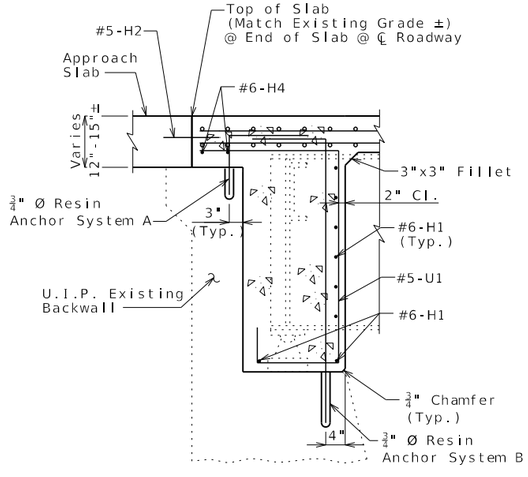
ELEVATION



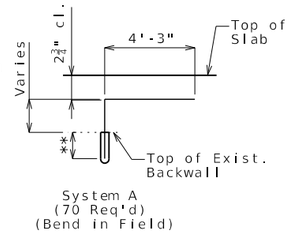
PLAN THRU DIAPHRAGM

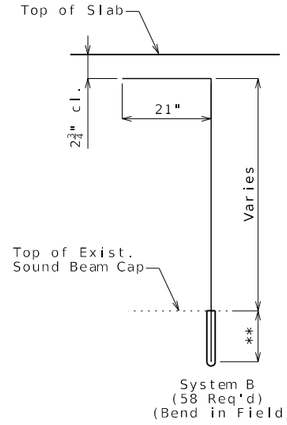


BEAM HOLE LOCATION DETAIL
(Reinforcing steel not shown for clarity)



SECTION A-A





DETAILS OF RESIN ANCHOR SYSTEMS

** Manufacturer's recommended embedment length (5" min.)

Notes:
The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5" unless shown otherwise.

An epoxy coated #6 Grade 60 reinforcing bar shall be substituted for the ¾"Ø threaded rod of Anchor Systems A and B.

Notes for Sheets No. 3 & 4:
The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-3 surface preparation and coated with a minimum of one coat of gray epoxy-mastic primer (non-aluminum) in accordance with Sec 1081 to produce a dry film thickness of not less than 3 mils before concrete is poured. The surface preparation and coating for beams and girders shall extend a minimum of one foot outside the face of the beam and girder encasement. Payment for cleaning and coating steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

The cost of field drilling holes in existing plate girder webs will be considered completely covered by the contract unit price for Slab on Steel.

END BENT NO. 1

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

Sheet No. 3 of 14

KEITH LAWRENCE WETTER
NUMBER E-25019
STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	3

COUNTY HOLT

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A19063

DESCRIPTION	DATE

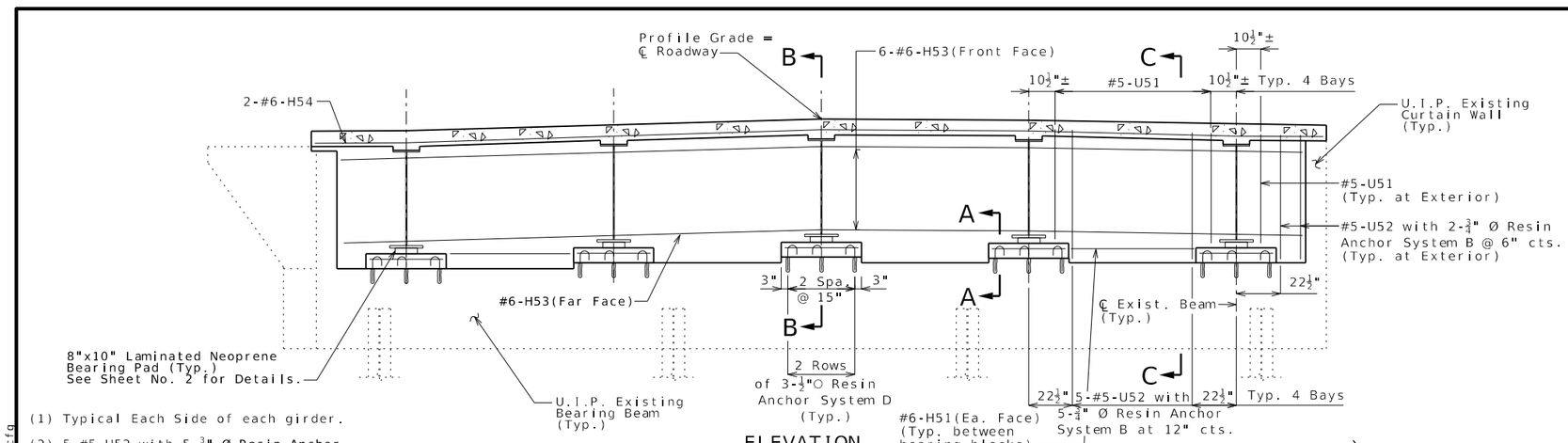
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

REV.

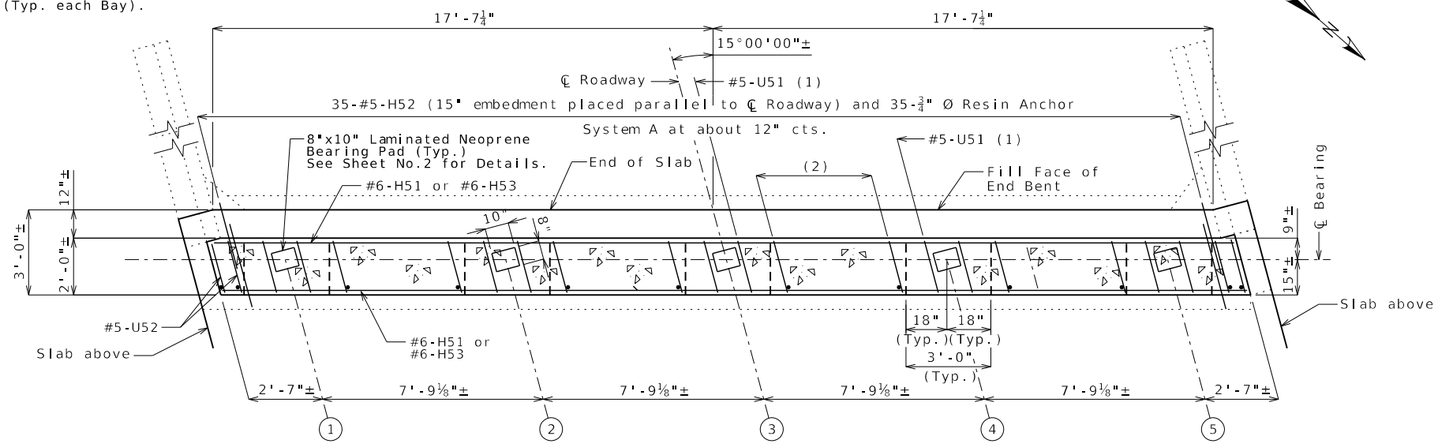
DESIGNED BY: KLW FEB 2024
DETAILED BY: RCL FEB 2024
CHECKED BY: NSC MAR 2024



(1) Typical Each Side of each girder.

(2) 5-#5-U52 with 5-¾" Ø Resin Anchor System B (Typ. each Bay).

ELEVATION



PLAN THRU DIAPHRAGM

Notes:
Bearing block concrete shall be Class B-2 concrete and attain compressive strength of 3,000 psi prior to setting girders.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

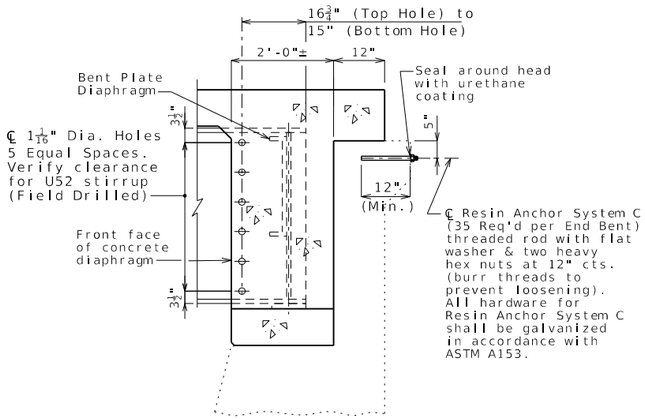
The minimum embedment depth in concrete with f'c = 4,000 psi for the resin anchor systems shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

An epoxy coated #4 or #6 Grade 60 reinforcing bar shall be substituted for the ½" Ø or ¾" Ø threaded rods, respectively for Resin Anchor Systems A, B and D.

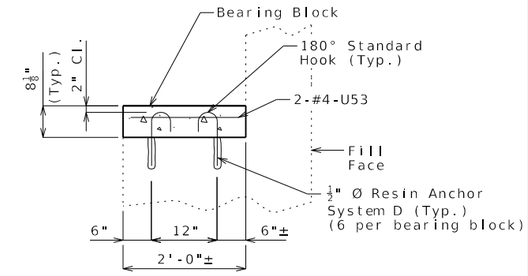
Payment for bearing blocks and all resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

The H53 bars are segmented for ease of placement through girder web holes. The total bar length for H53 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-3". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Reinforcing Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.

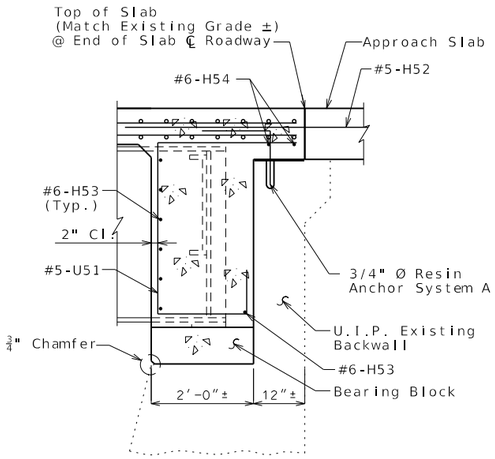
See Sheet No. 3 for details of Resin Anchor Systems A and B and total quantity required.



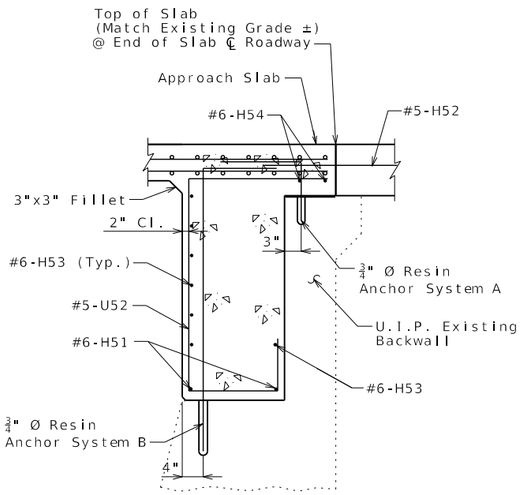
BEAM HOLE LOCATION DETAIL
(Reinforcing steel not shown for clarity)



PART SECTION A-A
(Diaphragm concrete not shown for clarity)



SECTION B-B



SECTION C-C

END BENT NO. 5

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

Sheet No. 4 of 14

DESIGNED BY: KLW FEB 2024	
DETAILED BY: RCL FEB 2024	
CHECKED BY: NSC MAR 2024	

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019
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DATE PREPARED 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	4

COUNTY HOLT

JOB NO. JNW0111

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DESCRIPTION | DATE | REV.

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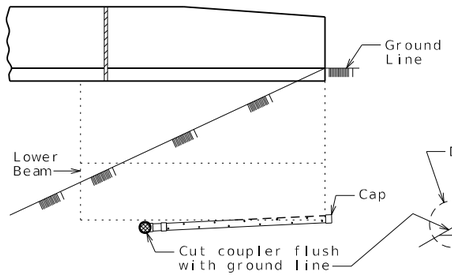
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

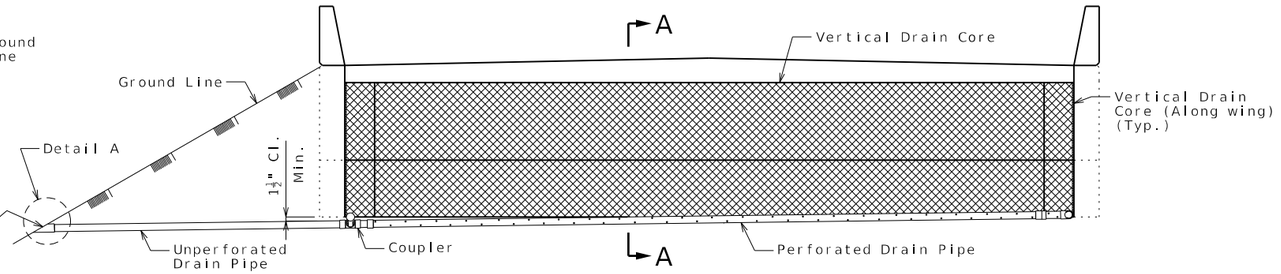
Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg PLOTTED BY: JCASEY
LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

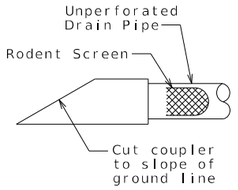
B_A19063_004_JNW0111_END BENT NO 5.dgn 1:49:13 PM 7/3/2024



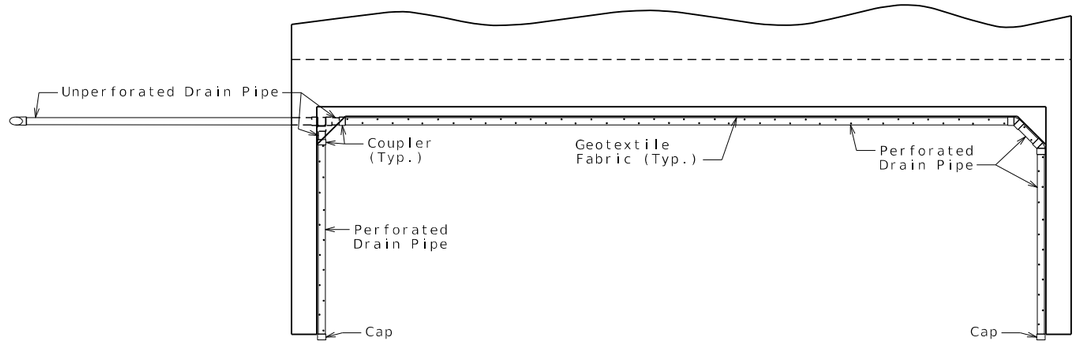
ELEVATION OF WING



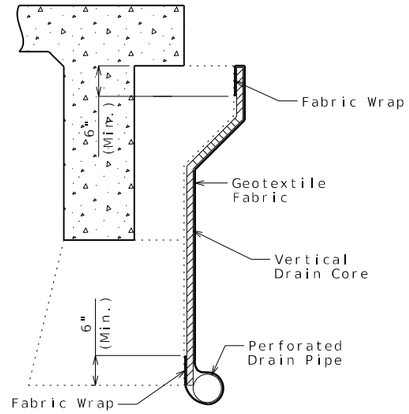
ELEVATION OF END BENT



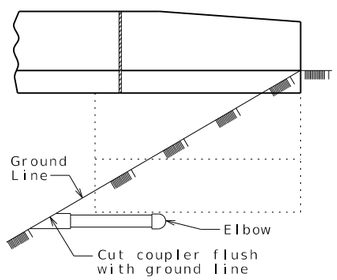
DETAIL A



PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



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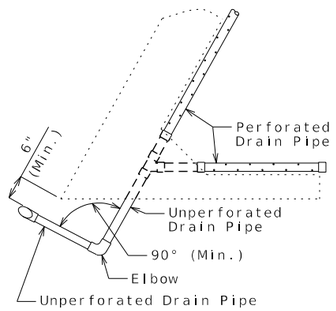

PART PLAN

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)

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

DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	BPW MAR 2024

DATE PREPARED	7/3/2024
ROUTE	59
STATE	MO
DISTRICT	BR
SHEET NO.	5
COUNTY	HOLT
JOB NO.	JNW0111
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A19063

DESCRIPTION | DATE | REV.

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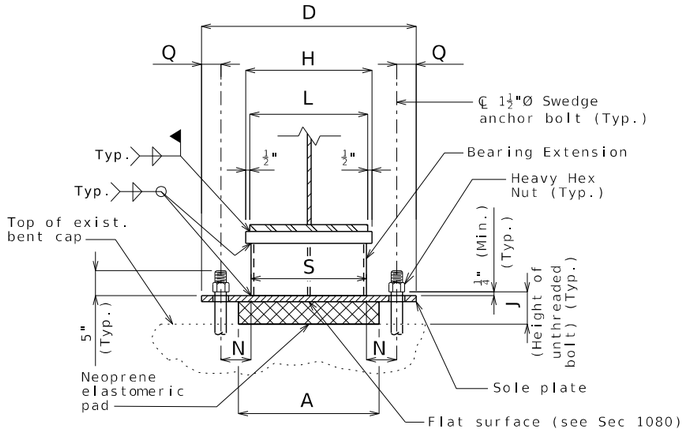
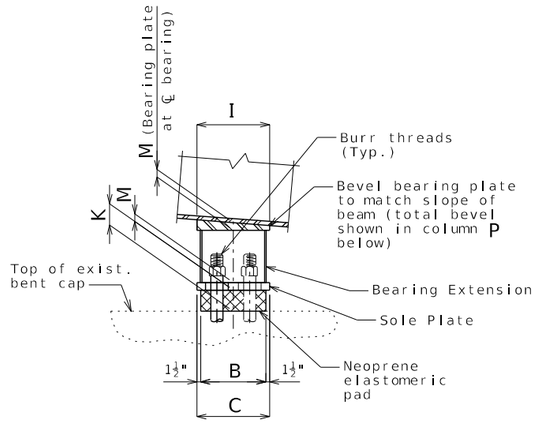
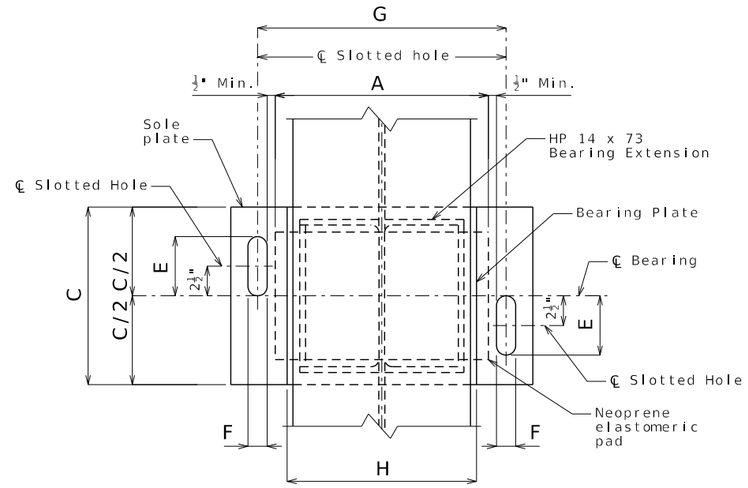


END VIEW



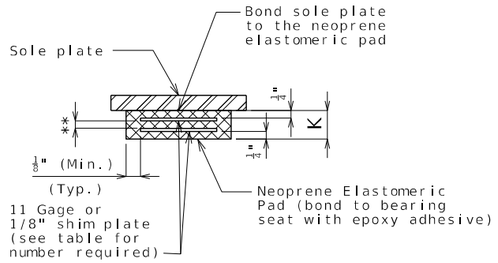
SIDE VIEW



PART PLAN

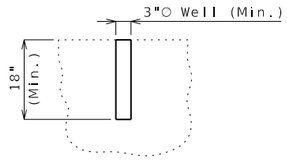
EXPANSION BEARINGS																					
BENT NO.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U	NUMBER OF SHIM PLATES *	NUMBER REQUIRED
4	18"	12"	15"	2'-1½"	5"	1⅝"	21"	16"	15"	4¼"	2½"	15"	1½"	3 3/16"	¾"	2¼"	1/16"	14⅝"	13⅜"	6⅝"	4	5
																					TOTAL BEARINGS	5

* The required shim plate shall be placed between layers of elastomer and molded together to form an integral unit.

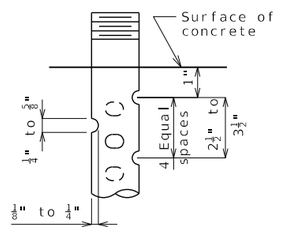


** Layers of 1/2" elastomer alternating with 11 gage or 1/8" shim plate

NEOPRENE ELASTOMERIC PAD

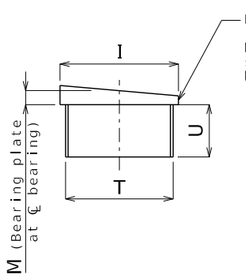


DETAIL OF ANCHOR BOLT WELL

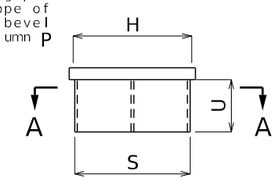


DETAIL OF
1 1/2"Ø ANCHOR BOLTS

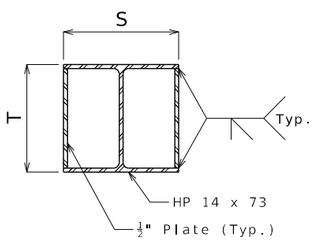
SWEDGE ANCHOR BOLT DETAIL



SIDE ELEVATION OF
BEARING EXTENSION
AND BEARING PLATE



END ELEVATION OF
BEARING EXTENSION
AND BEARING PLATE



SECTION A-A

GENERAL NOTES:

Existing anchor bolts shall be removed one inch below top of existing concrete beam and the resulting holes shall be filled with qualified special mortar.

Anchor bolts shall be 1 1/2"Ø ASTM F1554 Grade 55 swedged bolts and shall extend 18" into the cored anchor bolt wells with ASTM A563 Grade A Heavy Hex nuts. Actual manufacturer's certified mill test reports(chemical and mechanical) shall be provided. Swedging shall be 1" less than extension into the concrete.

Anchor bolt shall be at the centerline of slotted hole at 60°F. Bearing position shall be adjusted R for each 10° fall or rise in temperature at installation.

All structural steel for the anchor bolts and heavy hexagon nuts shall be coated with a minimum of two coats of organic zinc primer (5 mils minimum).

Neoprene Elastomeric Pads shall be 60 Durometer.

Structural steel for sole plate, bearing plate and bearing extension shall be ASTM A709 Grade 50 and shall be coated with a minimum of two coats of organic zinc primer (5 mils minimum).

Laminated Neoprene Bearing Pad Assembly shall be in accordance with Sec 716.

Cost of anchor bolts, drilling, grouting, bearing extension and any incidental labor or materials, complete in place, will be considered completely covered by the contract unit price for Laminated Neoprene Bearing Pad Assembly.

LAMINATED NEOPRENE BEARING PAD ASSEMBLY

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

DESIGNED BY:	KLW MAR 2024
DETAILED BY:	JTC MAR 2024
CHECKED BY:	NSC MAR 2024

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges PLOTTED BY:JCASEY PLOT CONFIGURATION:MoDOT PDF Sheet.pltcfg

STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	6

COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A19063

DESCRIPTION	DATE

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Notes:

Longitudinal dimensions are taken parallel to grade.

Fabricated structural steel shall be ASTM A709, Grade 50.

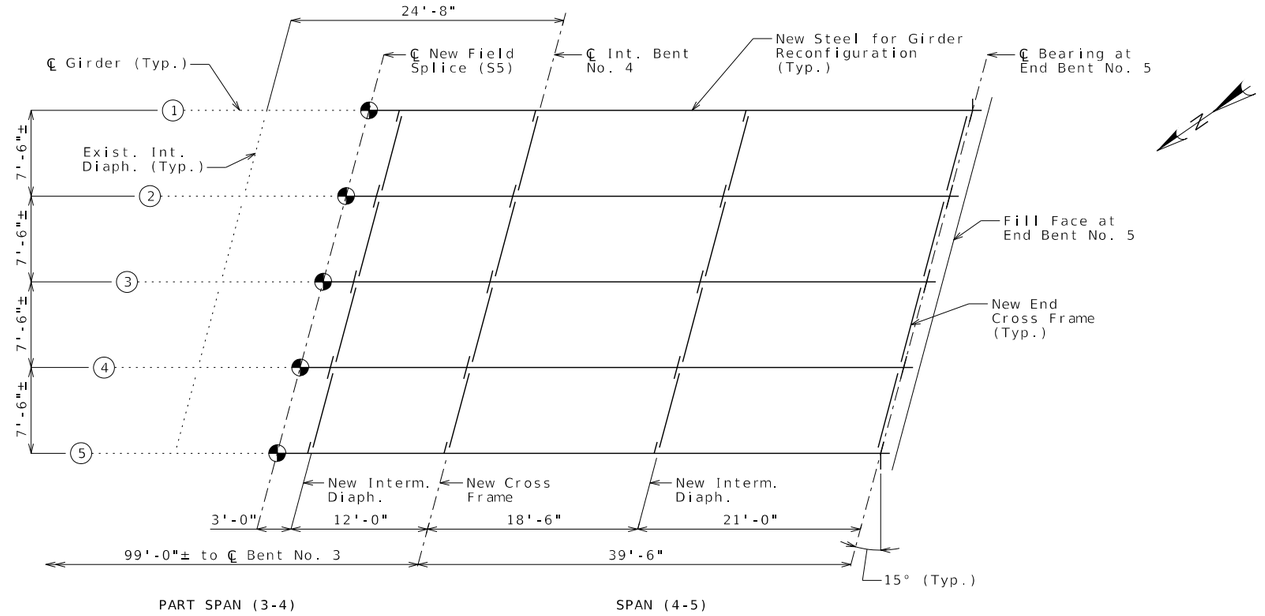
For details of reconfiguration to existing girders, see Sheet No. 8.

For details of stiffeners, see Sheet No. 8.

For details and spacing of shear connectors, see Sheet No. 8.

For details of bolted field splices, see Sheet No. 9.

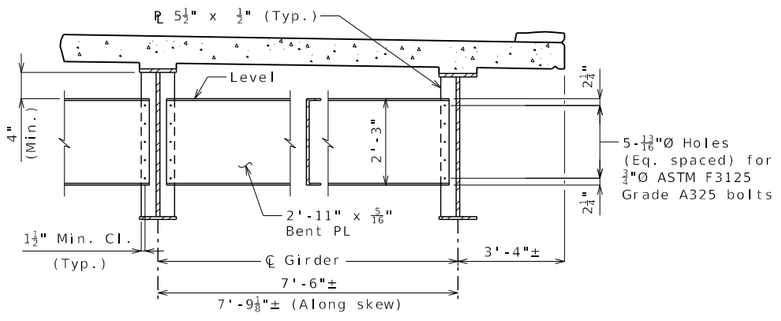
For location of slab drain attachment holes, see Sheet No. 10.



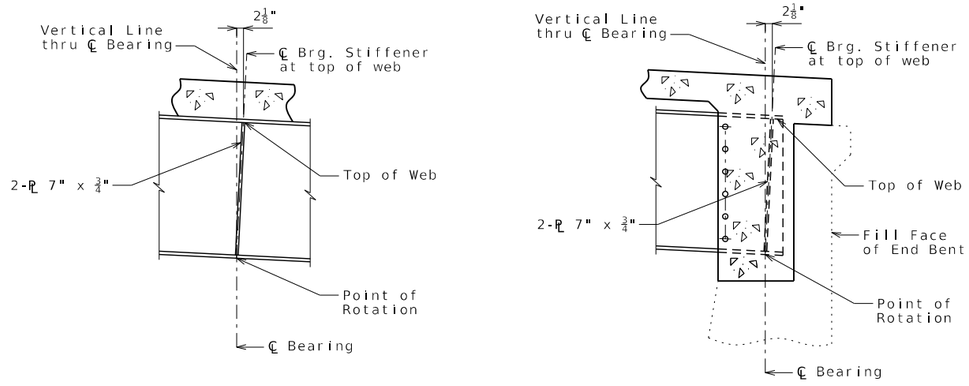
PART PLAN OF STRUCTURAL STEEL

Note:

At the contractor's option, holes in the diaphragm plate of non slab bearing diaphragms may be made 3/16" larger than the nominal diameter of the bolt. A hardened washer shall be used under the bolt head and nut when this option is used. Holes in the girder diaphragm connection plate or transverse web stiffener shall be standard size.



TYPICAL PART SECTION SHOWING
CROSS FRAMES AND
INTERMEDIATE DIAPHRAGMS



PART LONGITUDINAL SECTIONS

RECONFIGURATION OF EXISTING GIRDERS

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

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DETAILED BY:	JTC FEB 2024
CHECKED BY:	NSC MAR 2024

KEITH LAWRENCE WETTER
NUMBER E-25019
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI

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DATE PREPARED 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	7

COUNTY HOLT

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A19063

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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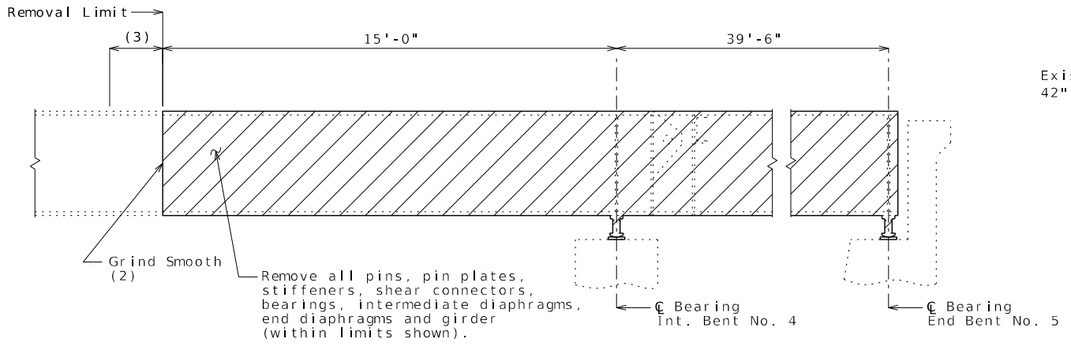
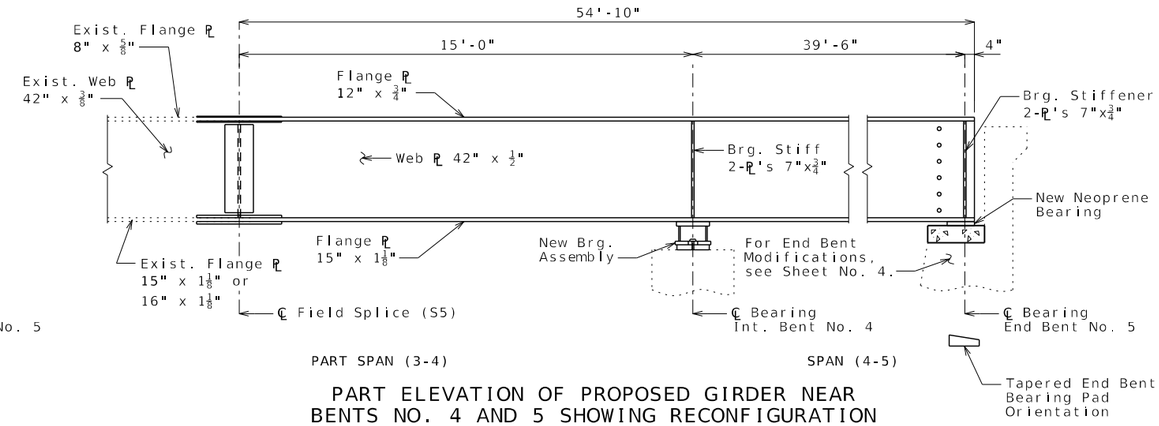


PART ELEVATION OF PROPOSED GIRDER NEAR BENTS NO. 4 AND 5 SHOWING STRUCTURAL STEEL REMOVAL



PART ELEVATION OF PROPOSED GIRDER NEAR BENTS NO. 4 AND 5 SHOWING RECONFIGURATION

Notes:

Payment for removal of pins, pin plates, intermediate diaphragms, end diaphragms, bearings and any other incidental material included in the girder region being removed, and any coating repair will be considered completely covered by the contract lump sum price for Reconfigure Existing Structural Steel.

Any weld material remaining after removal shall be ground flush.

The cost of supplying and installing shear connectors will be considered completely covered by the contract unit price for the fabricated structural steel.

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

Required temporary support load of 28 kips per girder left of Int. Bent No. 4 (Span 3-4) is a service dead load without a factor of safety. It includes existing girder weight (existing or new deck weight not included) and a construction load of 50 psf. See Special Provisions.

(2) The cut end of existing girders and any damaged areas of existing paint shall be coated with Gray Epoxy-Mastic Primer.

(3) Any shear connectors interfering with splice plate installation shall be removed and flange surface ground smooth.

Notes:

Longitudinal dimensions are taken parallel to grade.

All flange and web plates shall be subject to notch toughness requirements.

All fabricated structural steel, shall be ASTM A709, Grade 50.

For details of Laminated Neoprene Bearing Pad Assembly, see Sheet No. 6.

For details of bearing pad at End Bent No. 5, see Sheet No. 2.

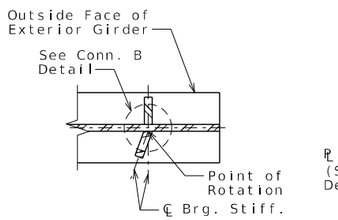
For details of cross frames, see Sheet No. 7.

For Part Plan of Structural Steel, see Sheet No. 7.

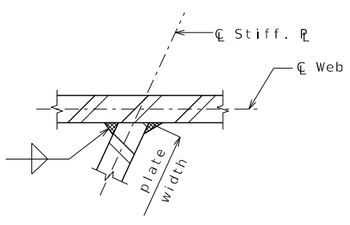
For Part Longitudinal Section at Bents No. 4 & 5, see Sheet No. 7.

For details of bolted field splices, see Sheet No. 9.

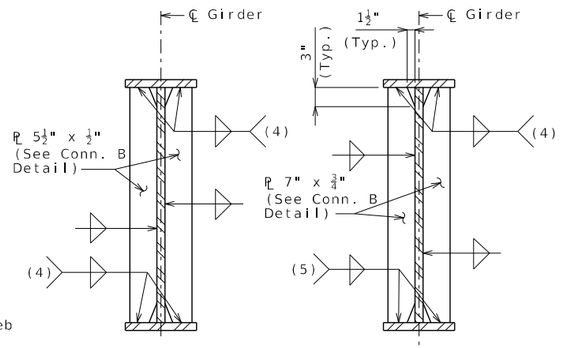
For location for slab drain attachment holes, see Sheet No. 10.



BEARING STIFFENER



CONN. B



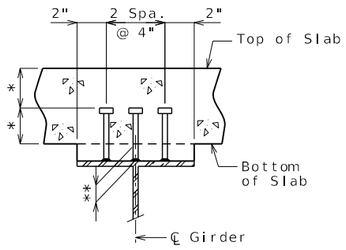
INTERMEDIATE DIAPHRAGM CONNECTION PLATE

BEARING STIFFENER (END DIAPHRAGM OR CROSSFRAME ATTACHED)

(4) Tight fit

(5) Grind or mill to bear.

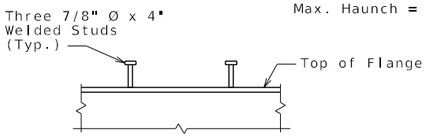
WELDING DETAILS



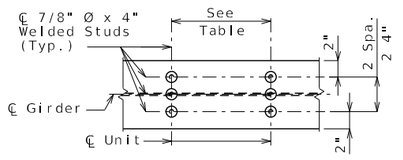
SECTION

* 2" Minimum

** Min. Haunch = 0"
Max. Haunch = 2"

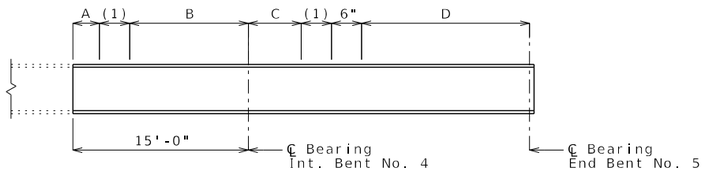


TOP FLANGE ELEVATION



PLAN OF SHEAR CONN. (3 PER UNIT)

DETAILS OF SHEAR CONNECTORS



(1) Anchorage Shear Connectors: 4 Units @ 6" cts.

ELEVATION SHOWING SHEAR CONNECTOR SPACING FOR NEW GIRDER

TABLE SHOWING SHEAR CONNECTOR UNIT SPACING				
S.C. per Unit	A	B	C	D
3	18"	12'-0"	8'-9"	47 Units @ 7 1/2"

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

DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	NSC MAR 2024

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges PLOTTED BY: JCASEY PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg

STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	8

COUNTY: HOLT

JOB NO.: JNW0111

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A19063

DESCRIPTION	DATE

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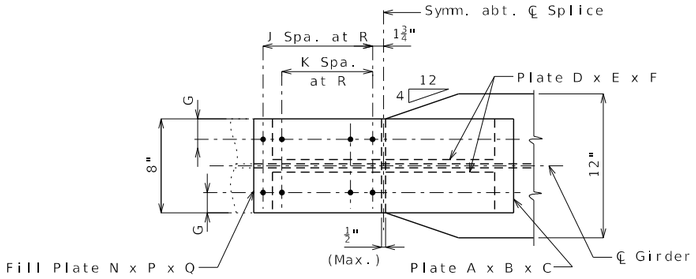
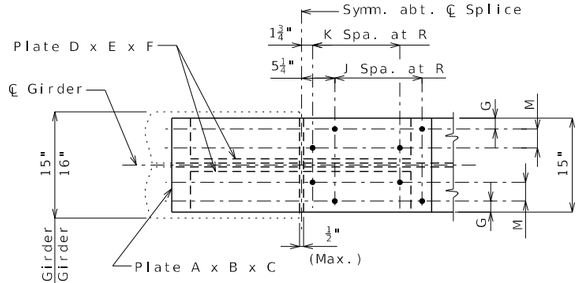
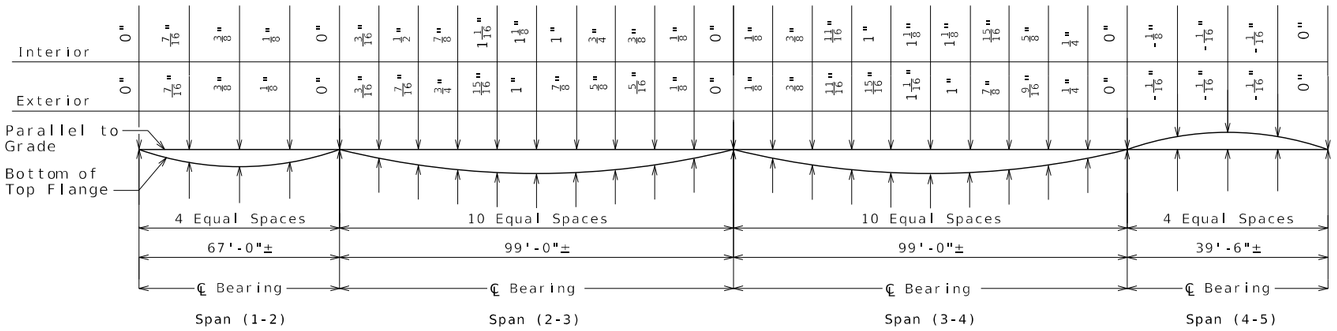
B_A19063_008_JNW0111_GIRDER DETAILS.dgn 1:49:50 PM 7/3/2024



PLAN OF TOP FLANGE
S5



PLAN OF BOTTOM FLANGE
S5



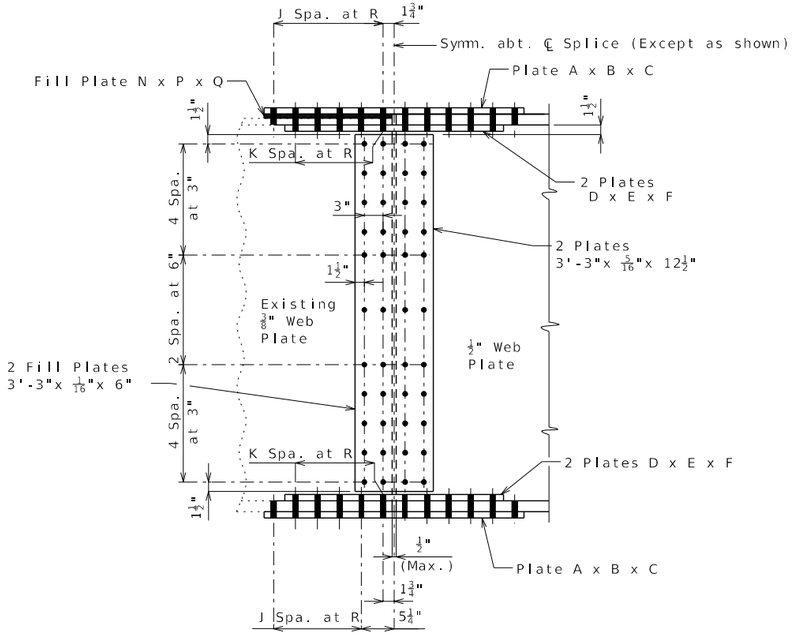
DEAD LOAD DEFLECTION

Dead load deflection includes weight of concrete slab and barrier.

Negative Values indicates upward deflection.

Haunching:

Slab is to be considered a uniform thickness as shown on the plans. Haunching will vary. See front sheet for slab thickness. Adjust haunch over girders to match existing grade. Adjust haunch for concrete dead load deflection per detail this sheet.



DETAIL OF BOLTED FIELD SPLICE

Bolts shall be 7/8-inch diameter ASTM F3125 Grade A325 Type 1 in 15/16-inch diameter holes.

Contact surfaces shall be in accordance with Sec 1081 for surface preparation.

The flange and splice plates shall be subject to notch toughness requirements.

TABLE OF DIMENSIONS - FIELD SPLICE

LOCATION	A	B	C	D	E	F	G	J	K	M	N	P	Q	R
S5 Top Flange	8"	⅜"	2'-0½"	3"	⅜"	18½"	1¼"	3	2	-	8"	⅛"	12"	3"
S5 Bottom Flange	15"	¾"	5'-9½"	6"	¾"	5'-2½"	2"	4	4	2½"	-	-	-	7"

Note:
Drill holes in existing girder flanges and webs using new splice plates as a template. See special provisions.

DESIGNED BY: KLW FEB 2024	
DETAILED BY: JTC FEB 2024	
CHECKED BY: NSC MAR 2024	

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

REGISTERED STATE OF MISSOURI PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019
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DATE PREPARED 7/3/2024
ROUTE 59 | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY HOLT
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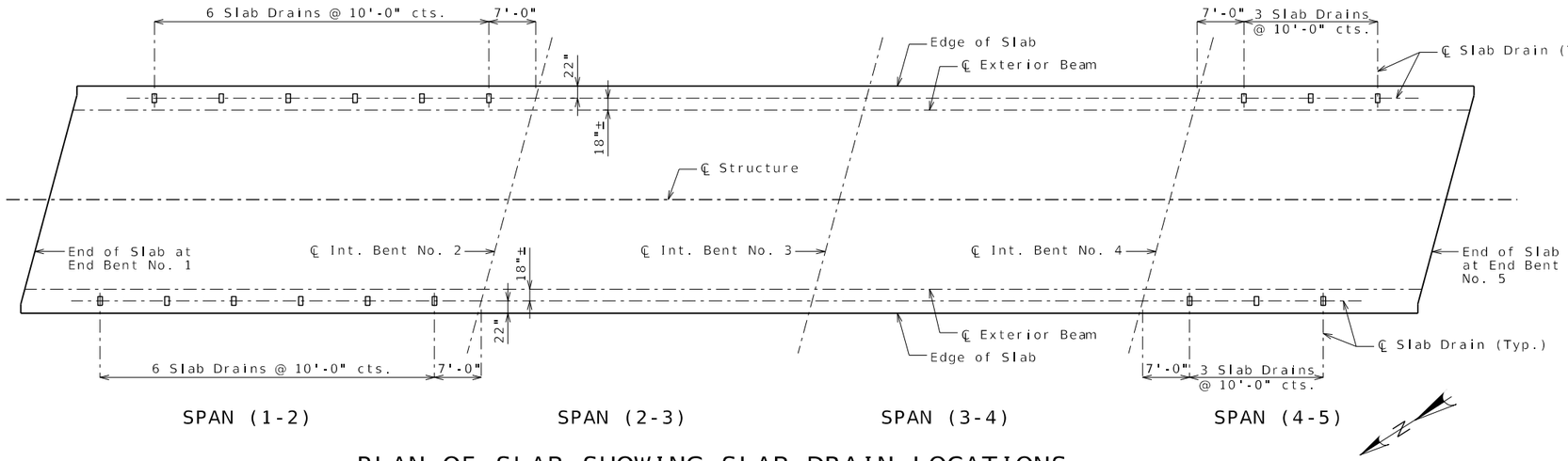
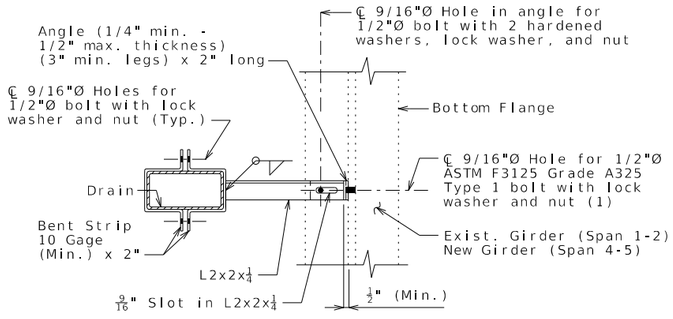
REV.

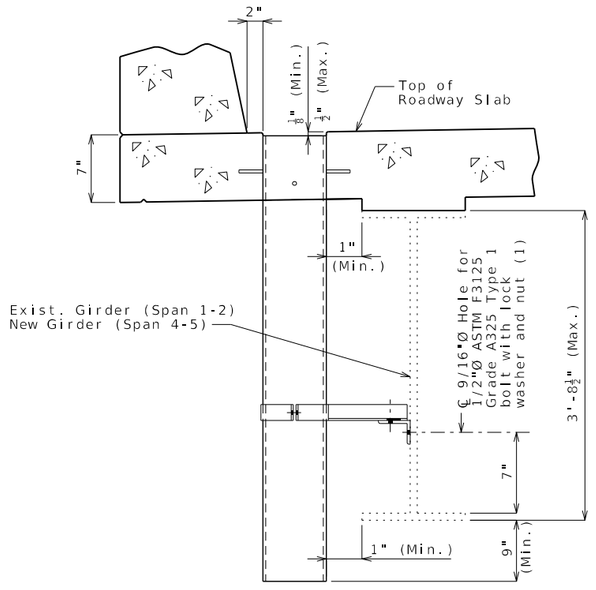


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

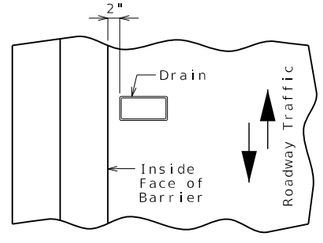


PART SECTION SHOWING BRACKET ASSEMBLY

(1) Field drill in existing web.

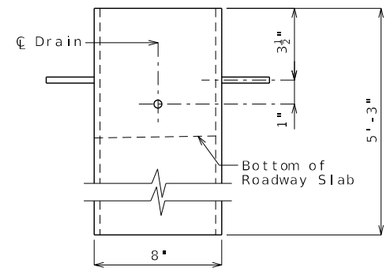


PART SECTION NEAR DRAIN

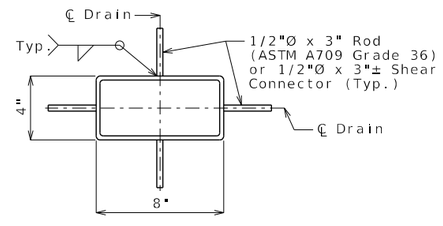


PART PLAN OF SLAB AT DRAIN

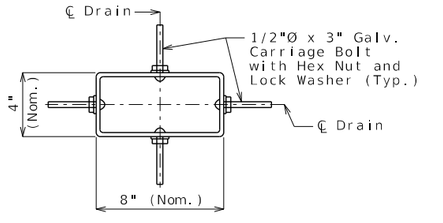
SLAB DRAINS



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All 1/2"Ø bolts shall be ASTM A307, except as shown.

Shop drawings will not be required for the slab drains and the bracket assembly.

The bolt hole for the bracket assembly attachment shall be shifted to the minimum extent necessary to field drill in the existing web.

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be recommended by the manufacturer to ensure a smooth, chip free cut.

DATE PREPARED 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	10

COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A19063

DESCRIPTION	DATE

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

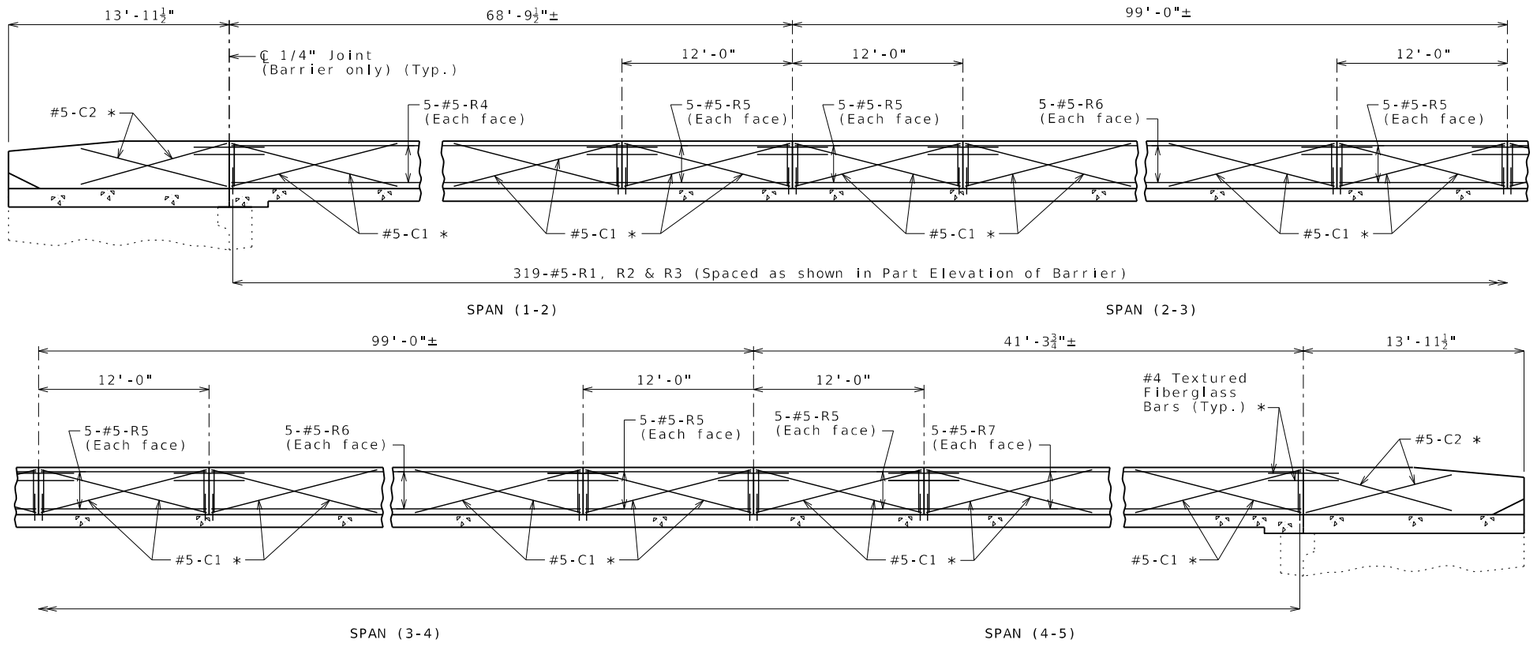
REV.

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

DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	BPW MAR 2024

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

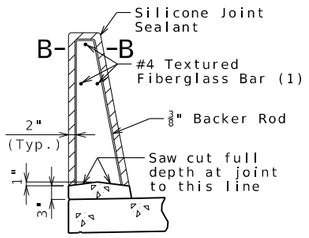
B_A19063_010_JNW0111_SLAB DRAINS.dgn 1:50:10 PM 7/3/2024



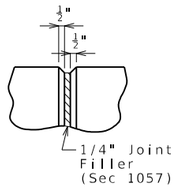
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

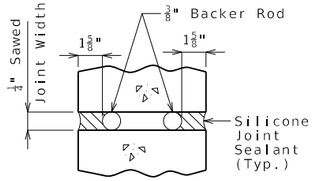
Longitudinal dimensions are taken parallel to grade.



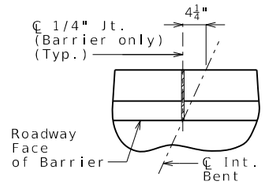
SECTION THRU SAW CUT JOINT



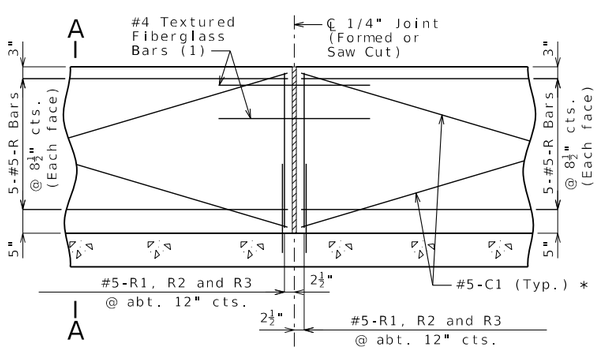
PART ELEVATION AT FORMED JOINT



SECTION B-B

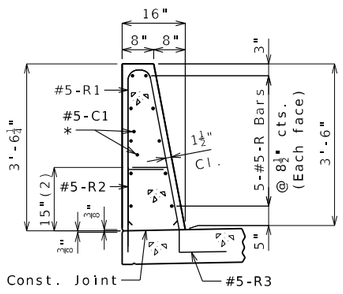


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

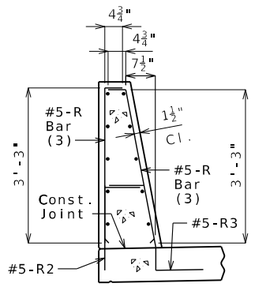


SECTION A-A

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

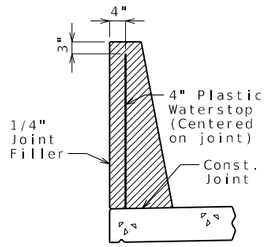
The cross-sectional area above the slab is 3.52 square feet.

(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.)



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.

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.

TYPE D BARRIER

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

DESIGNED BY:	NSC MAR 2024
DETAILED BY:	RCL MAR 2024
CHECKED BY:	DMA MAR 2024

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED	7/3/2024
ROUTE	59
STATE	MO
DISTRICT	BR
SHEET NO.	11
COUNTY	HOLT
JOB NO.	JNW0111
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A19063

DESCRIPTION

DATE

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

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15717 College Boulevard | Lenexa, Kansas 66219
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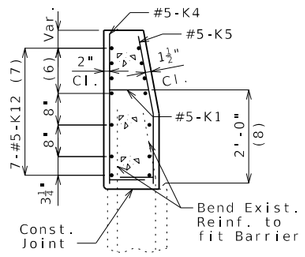
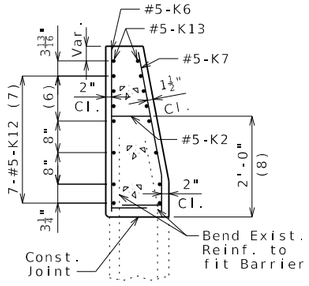
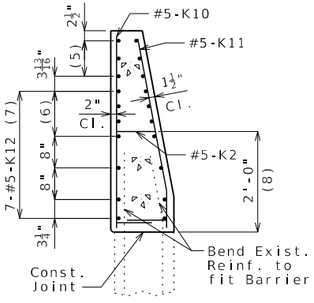


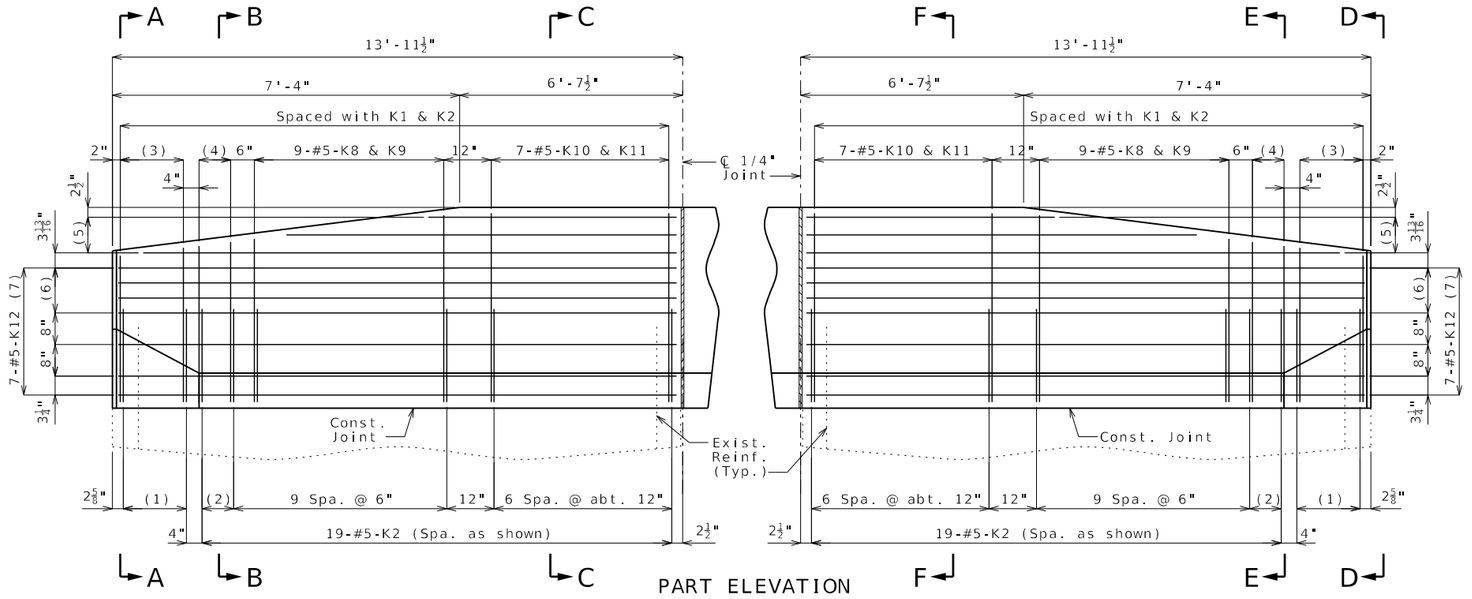
SECTION A-A



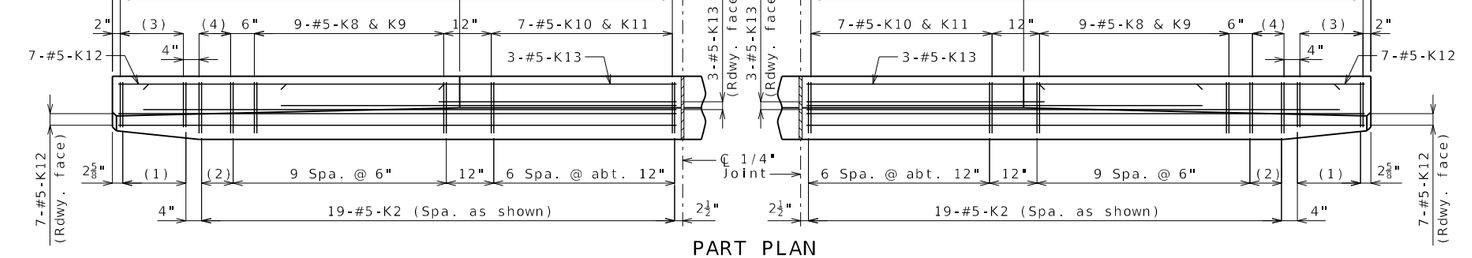
SECTION B-B



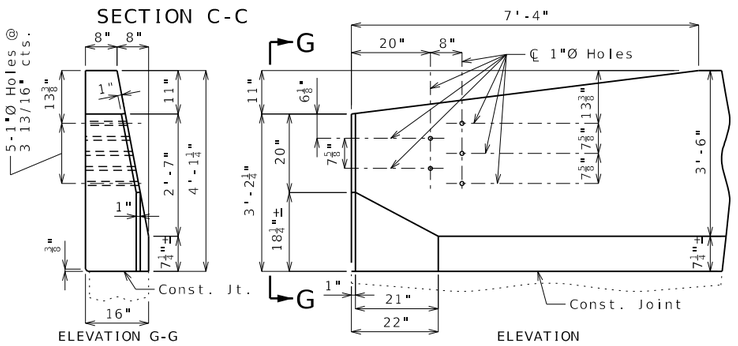
SECTION C-C



PART ELEVATION



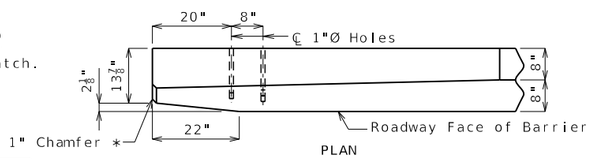
PART PLAN



ELEVATION G-G

ELEVATION

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



PLAN

DETAILS OF GUARD RAIL ATTACHMENT

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

(2) 2 spaces @ 4"

(3) 5-#5-K4 & K5

(4) 3-#5-K6 & K7

(5) 3-#5-K13 @ 4½" cts., each face

(6) 3 Spaces @ 3 13/16"

(7) Spaced as shown, each face

(8) To top of bar

General Notes:

Reinforcing Steel:

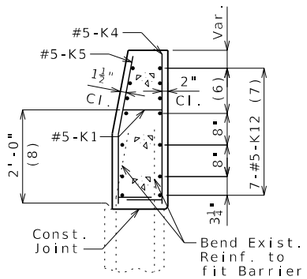
Concrete traffic barrier delineators shall be placed on top of the barrier as shown on Missouri Standard Plan 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, two-way traffic shall have retroreflective sheeting on both sides. Concrete traffic barrier delineators will be considered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

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

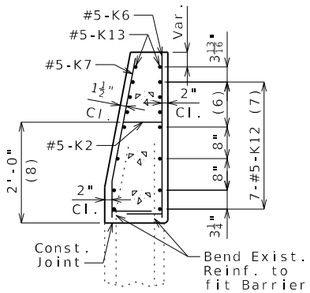
TYPE D BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

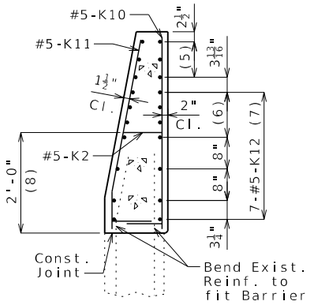
Note: This drawing is not to scale. Follow dimensions.



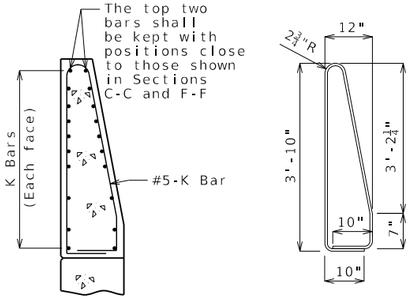
SECTION D-D



SECTION E-E



SECTION F-F



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.

DESIGNED BY: KLW MAR 2024	
DETAILED BY: JTC MAR 2024	
CHECKED BY: DMA MAR 2024	

REGISTERED PROFESSIONAL ENGINEER — STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	12

COUNTY: HOLT

JOB NO.: JNW0111

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A19063

DESCRIPTION | DATE | REV.

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105 WEST CAPITOL
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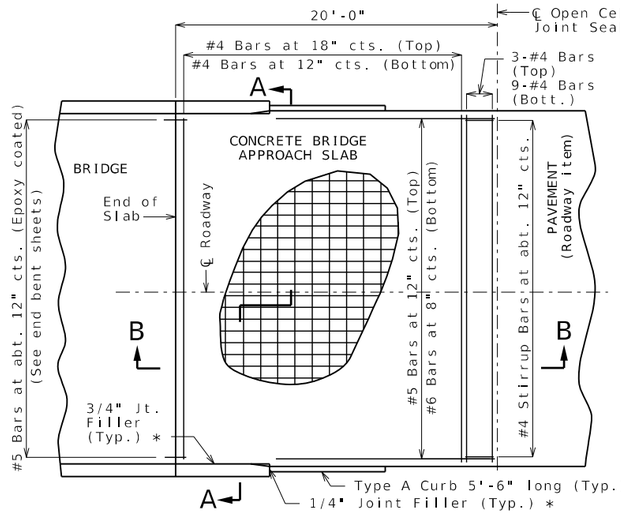
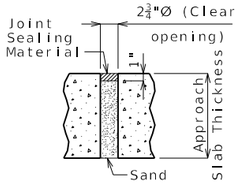
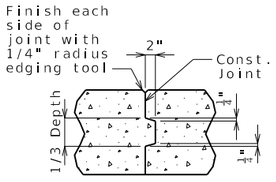


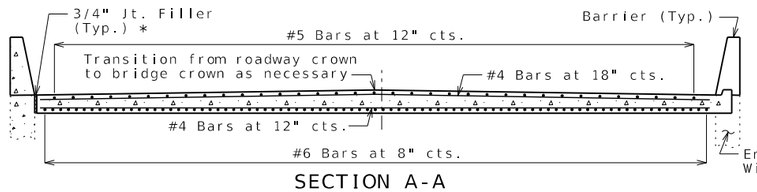
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



UNDERSEAL ACCESS HOLE DETAIL
(If required)

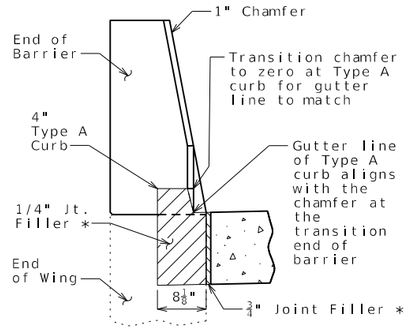


CONSTRUCTION JOINT DETAIL

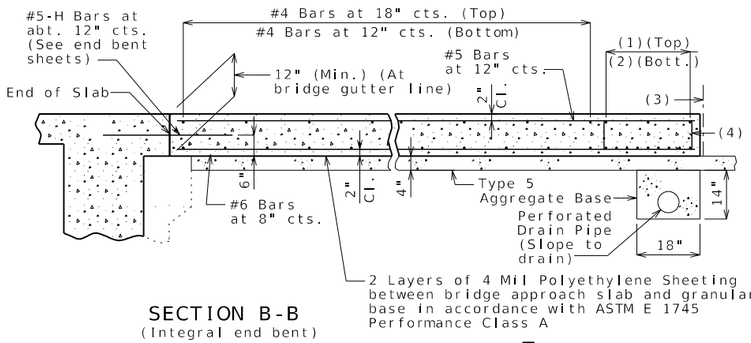


SECTION A-A

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 BETWEEN CURB AND BARRIER



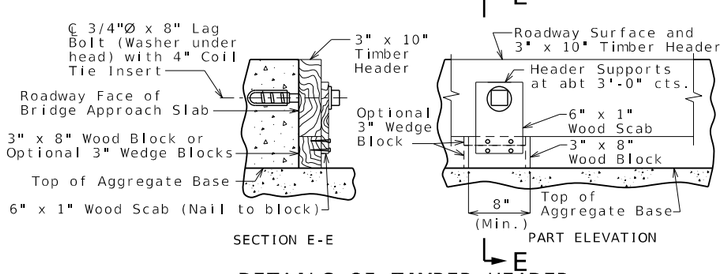
(1) 3-#4 Bars

(2) 9-#4 Bars

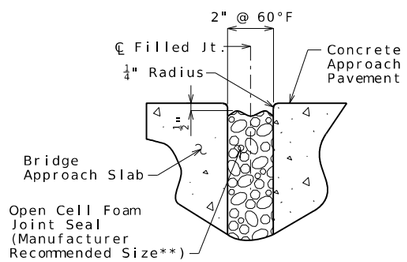
(3) See Detail F.

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

SECTION B-B
(Integral end bent)



DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.



DETAIL F

General Notes:

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

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

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

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

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 23 inches for #4 bars, or by mechanical bar splice.

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

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, 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 (Minor) per square yard.

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

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.

* 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.

** Required Joint Size Range 1 1/16" Minimum to 3 15/16" Maximum

BRIDGE APPROACH SLAB (MINOR)

Integral end bents shown, non-integral end bent similar.

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

DESIGNED BY:	NSC FEB 2024
DETAILED BY:	NSC FEB 2024
CHECKED BY:	BPW MAR 2024

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges PLOTTED BY: JCASEY PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg

REGISTERED PROFESSIONAL ENGINEER — STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
59	MO
DISTRICT	SHEET NO.
BR	13

COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A19063

REV.	DESCRIPTION	DATE

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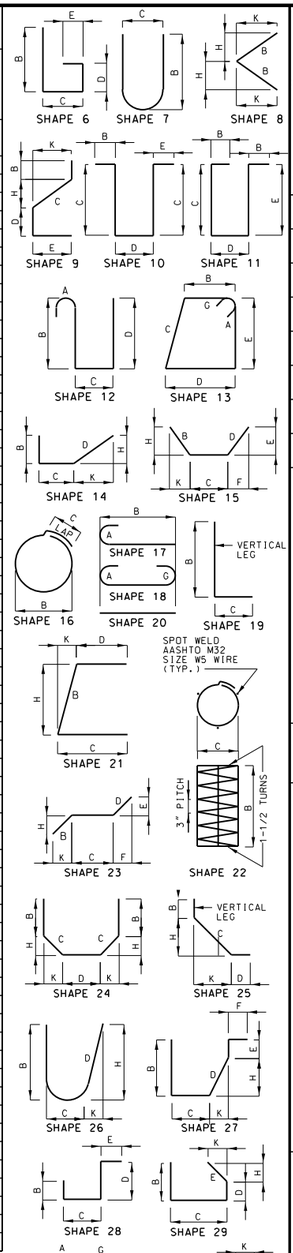
Certificate of Authority #F00727076

BILL OF REINFORCING STEEL

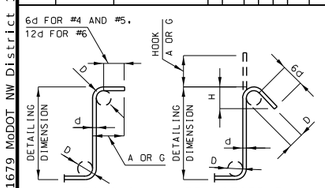
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
SUPERSTRUCTURE																												
END BENT NO. 1																												
8	6	H1	Diaphragm	E	20					39	6.000													39	6	39	6	475
35	5	H2	PVMT SEAT	E	20					2	6.000													2	6	2	6	91
2	6	H4	Diaphragm	E	20					35	10.000													35	10	35	10	108
34	5	U1	Diaphragm	E	6	S				2	9.000	4	4.000	20.000		10.000								9	7	9	3	328
END BENT NO. 5																												
8	6	H51	Diaphragm	E	20					4	6.000													4	6	4	6	54
35	5	H52	PVMT SEAT	E	20					2	6.000													2	6	2	6	91
7	6	H53	Diaphragm	E	20					39	6.000													39	6	39	6	415
2	6	H54	Diaphragm	E	20					35	10.000													35	10	35	10	108
10	5	U51	Diaphragm	E	6	S				2	9.000	3	8.000	20.000		10.000								8	11	8	7	90
24	5	U52	Diaphragm	E	6	S				2	9.000	4	4.000	20.000		18.000								10	3	9	11	248
10	4	U53	Bearing Block	E	10	S						2	9.000	20.000										7	2	7	0	47
SLAB																												
450	5	S1	Long. Top & Bott.	E	20					54	6.000													54	6	54	6	25580
56	6	S2	Longit Top	E	20					45	3.000													45	3	45	3	3806
56	6	S3	Longit Top	E	20					56	3.000													56	3	56	3	4731
56	6	S4	Longit Top	E	20					40	3.000													40	3	40	3	3386
553	6	S5	Trans. Top	E	20					36	5.000													36	5	36	5	30248
599	5	S6	Trans. Bott.	E	20					36	5.000													36	5	36	5	22752
72	6	S7	Trans. Top & Bott	E	20			V	4	2	11.000													2	11	2	11	2032
			Eq. Incr.							34	8.000													34	8	34	8	
TYPE D BARRIER																												
638	5	R1	Barrier	E	26	S				3	3.000		5.500	3	3.625					3	3.000	6.750		6	9	6	9	4492
638	5	R2	Barrier	E	19	S					19.000		9.500											2	5	2	3	1497
638	5	R3	Barrier	E	27	S							9.500	15.250		3.500		12.000		15.000		3.000		3	4	3	2	2107
20	5	R4	Barrier	E	20					56	5.000													56	5	56	5	1177
120	5	R5	Barrier	E	20					11	8.000													11	8	11	8	1460
80	5	R6	Barrier	E	20					39	0.000													39	0	39	0	3254
20	5	R7	Barrier	E	20					28	11.000													28	11	28	11	603
20	5	K1	Barrier	E	27	S					22.500		9.250		5.375		17.250				5.250		1.000	4	6	4	4	90
76	5	K2	Barrier	E	27	S					22.500		9.250		14.500		8.250				14.250		2.750	4	7	4	4	343
20	5	K4	Barrier	E	19	S		V	4	2	11.250		10.000											3	9	3	8	78
			0.5 in. Incr.							3	1.250		10.000											3	11	3	10	
20	5	K5	Barrier	E	14	S		V	4		8.250		16.500		18.500						4.000		18.000	3	7	3	6	75
			Eq. Incr.								8.250		16.500		20.500						4.500		20.000	3	9	3	8	
12	5	K6	Barrier	E	19	S		V	4	3	1.750		10.000											4	0	3	10	48
			0.5 in. Incr.							3	2.750		10.000											4	1	3	11	
12	5	K7	Barrier	E	14	S		V	4		10.000		7.250	2	6.375						6.250	2	5.750	4	0	3	10	48
			Eq. Incr.								10.000		7.250	2	7.375						6.500	2	6.750	4	1	3	11	
36	5	K8	Barrier	E	19	S		V	4	3	3.500		10.000											4	2	4	0	160
			0.75 in. Incr.							3	9.500		10.000											4	8	4	6	
36	5	K9	Barrier	E	14	S		V	4		10.000		7.250	2	8.250						6.750	2	7.500	4	2	4	0	160
			Eq. Incr.								10.000		7.250	3	2.250						7.750	3	1.500	4	8	4	6	
28	5	K10	Barrier	E	19	S				3	10.000		10.000											4	8	4	7	134
28	5	K11	Barrier	E	14	S					10.000		7.250	3	2.750						7.750	3	2.000	4	8	4	7	134
56	5	K12	Barrier	E	20					13	8.000													13	8	13	8	798
24	5	K13	Barrier	E	20			V	8	6	11.000													6	11	6	11	248
			3'-0" Incr.							12	11.000													12	11	12	11	

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
SLIP-FORM OPTION																												
56	5	C1	Barrier	E	20					12	0.000													12	0	12	0	701
8	5	C2	Barrier	E	20					10	6.000													10	6	10	6	88
BAR WEIGHT TOTALS																												
	4			E																								47
	5			E																								66875
	6			E																								45363
			TOTAL																									112285
SLAB ON STEEL																												
	4			E																								47
	5			E																								49180
	6			E																								45363
			TOTAL																									94590
BARRIER																												
	5			E																								16906
			TOTAL																									16906
SLIP-FORM OPTION																												
	5			E																								789
			TOTAL																									789

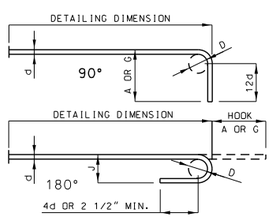


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

DESIGNED BY:	KLW MAR 2024
DETAILED BY:	JTC MAR 2024
CHECKED BY:	DMA APR 2024

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

KEITH LAWRENCE WETTER
NUMBER E-25019
REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024
ROUTE: 59 | STATE: MO
DISTRICT: BR | SHEET NO.: 14
COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A19063

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

REV.	DESCRIPTION	DATE

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

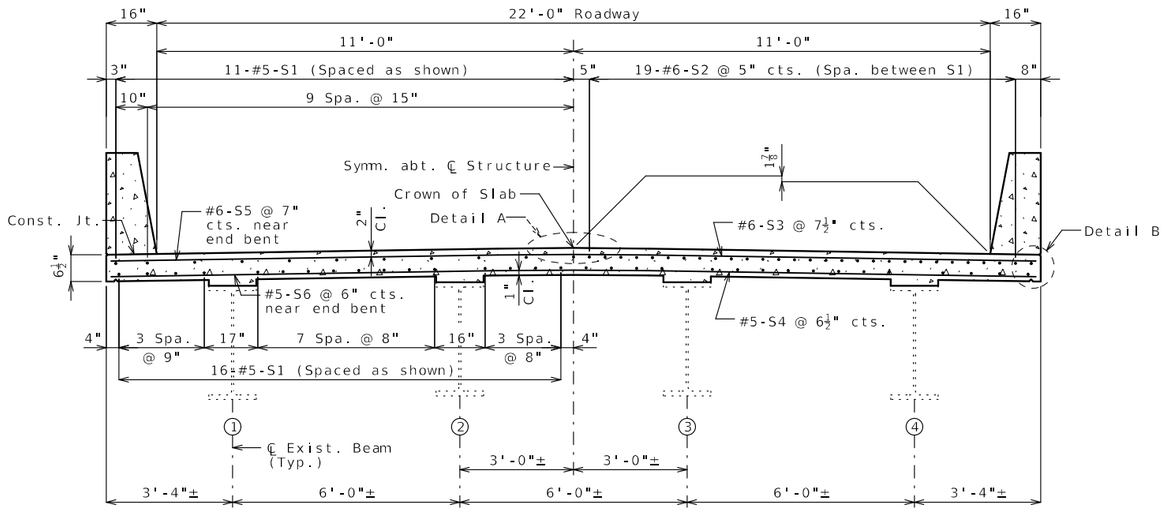
Table Showing S2 Bar Lengths			
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
21'-0"	21'-0"	21'-0"	21'-0"

Required Lap Length For Bar Splices **	
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

** Unless otherwise shown.

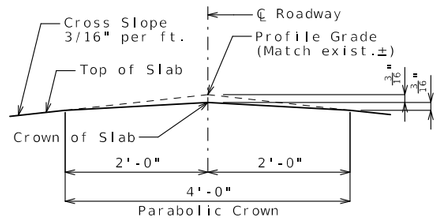
U.I.P., REDECK, AND MAKE COMPOSITE EXISTING (50'- 70'- 50') CONTINUOUS WIDE FLANGE BEAM SPANS (SKEW:20° R.A.)

SEC/SUR 4 TWP 59 RGE 38W

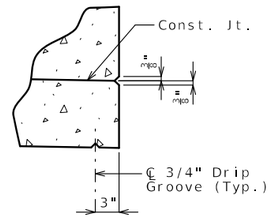


HALF SECTION NEAR MIDSPAN AND END BENT — HALF SECTION NEAR INT. BENT

TYPICAL SECTION THRU SLAB



DETAIL A



DETAIL B

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:
H15-44 (1 Lane) (1962) (Existing)
HS20-44 (New Construction)
35 lb/sf Future Wearing Surface
Earth - 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:
Class B-1 Concrete (Barrier) f'c = 4,000 psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier) f'c = 4,000 psi
Reinforcing Steel (Grade 60) fy = 60,000 psi

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

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

Miscellaneous:
Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface (Roadway item).

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

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

The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

Rubblized concrete from the existing bridge deck that qualifies as clean fill many be placed on spill slopes at end bents above ordinary high water line (Roadway item).

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

Structural Steel Protective Coating (Pile):

The exposed surfaces of the existing structural steel CIP pile shells, to limits shown on the bridge plans, shall be coated with one 6-mil thickness of aluminum gray epoxy-mastic primer applied over an SSPC-SP3 surface preparation in accordance with Sec 1081. The bituminous coating shall be applied one foot above and one foot below the existing ground line and in accordance with Sec 702. The cost of surface preparation will be considered completely covered by the contract lump sum price for Surface Preparation for Applying Epoxy-Mastic Primer. The cost of the aluminum epoxy-mastic primer and bituminous coating will be considered completely covered by the contract lump sum price for Aluminmum Epoxy-Mastic Primer.

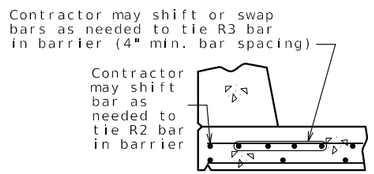
Structural Steel Protective Coating (Top Flange):

In accordance with Sec. 216.50 and 1081, the top, and additionally the sides, and bottom of the top flange shall be coated with not less than 3.0 mils of Gray Epoxy Mastic-Primer (non-alumimum) applied over an SSPC-SP3 surface preparation. Payment for coating steel will be considered completely covered by the contract sq. foot price for Removal of Existing Bridge Deck.

Method of forming the slab shall be 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 forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

For Optional Stay-In-Place Form Details, see Sheet No. 2.



OPTIONAL SHIFTING TOP BARS AT BARRIER

Estimated Quantities		
Item		Total
Removal of Existing Bridge Deck	sq. foot	3,862
Bridge Approach Slab (Minor)	sq. yard	101
Slab on Steel	sq. yard	473
Type H Barrier	linear foot	348
Substructure Repair (Unformed)	sq. foot	10
Shear Connectors	each	1,848
Slab Drain	each	34
Surface Preparation for Applying Epoxy - Mastic Primer	lump sum	1
Aluminum Epoxy - Mastic Primer	lump sum	1
Non-Destructive Testing	linear foot	19
Vertical Drain at End Bents	each	2
* Open Cell Foam Joint Seal	linear foot	44

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

* Concrete Bridge Approach Slab only. See Special Provisions.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	96
Reinforcing Steel (Epoxy Coated)	pound	41,280

The table of Estimated Quantities for Slab on Steel 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.

REPAIRS TO BRIDGE:
ROUTE T OVER MILL CREEK
ROUTE T FROM ROUTE 111 TO ROUTE O
ABOUT 2.3 MILES SOUTHEAST OF ROUTE 111
BEGINNING STATION 124+81.00± (MATCH EXISTING)

Detailed OCT 2023
Checked MAR 2024

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

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY
07/11/2024

DATE PREPARED 7/11/2024

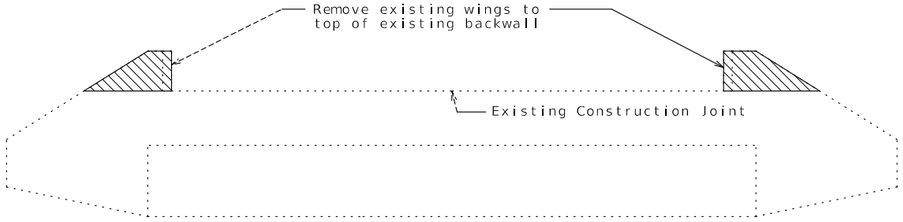
ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	1

COUNTY HOLT
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO. - - -
BRIDGE NO. N08111

DESCRIPTION | DATE | REV.

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

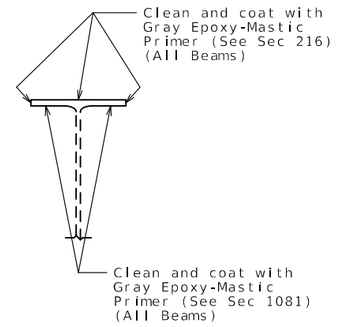
benesch
One Main Plaza, 4435 Main St. Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468



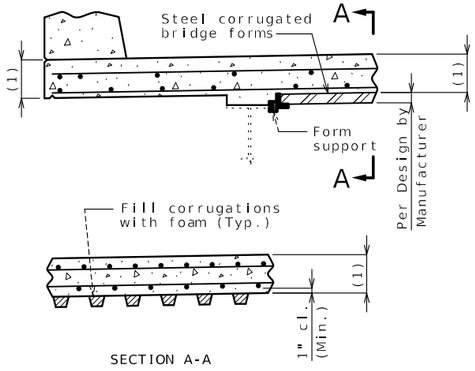
DETAILS OF CONCRETE REMOVAL AT END BENTS

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck. Vertical backwall and wingwall reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.

A smooth, level surface shall be provided at Bents No. 1 & 4 removal lines.



TYPICAL SECTION THRU BEAM SHOWING PROTECTIVE COATING



OPTIONAL STAY-IN-PLACE FORM DETAILS

General Notes:

Stay-In-Place Forms:

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 expanded 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 beam 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. Welding on or drilling holes in the beam 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 in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for beam loading.

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.

Pouring and Finishing Slab:

The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Slab on Steel.

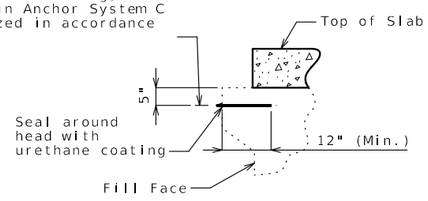
Slab shall be poured upgrade from end to end at a minimum rate of 25 cubic yards per hour.

Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:

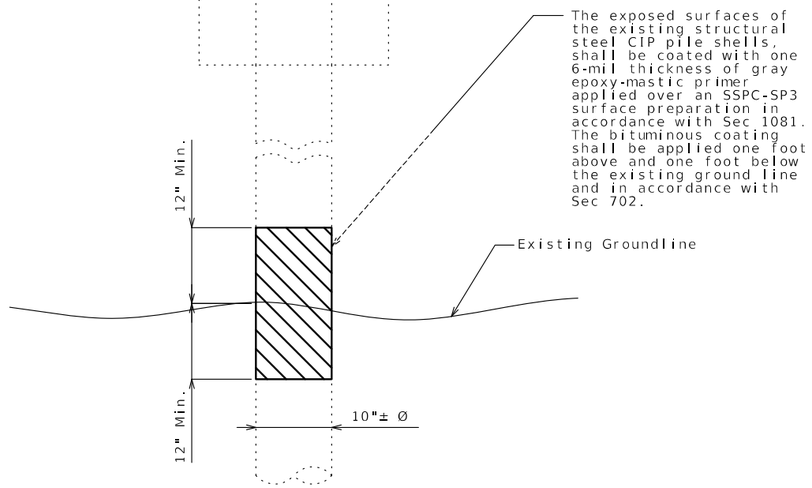
(1) Slab is to be considered a uniform thickness as shown on the plans. Haunching height will vary. See front sheet for slab thickness, for adjusted girder deflection due to weight of new deck and barriers, see Bridge Electronic Deliverables.

℄ Resin Anchor System C with ⅝" Ø threaded rod with flat washer & two heavy hex nuts at 12" cts. (buff threads to prevent loosening). All hardware for Resin Anchor System C shall be galvanized in accordance with ASTM A153.



System C
(23 Req'd per end bent)

DETAILS OF RESIN ANCHOR SYSTEMS



INT. BENT PROTECTIVE COATING DETAILS

REHAB DETAILS

Detailed OCT 2023
Checked MAR 2024

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

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

08/06/2024

DATE PREPARED
8/5/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

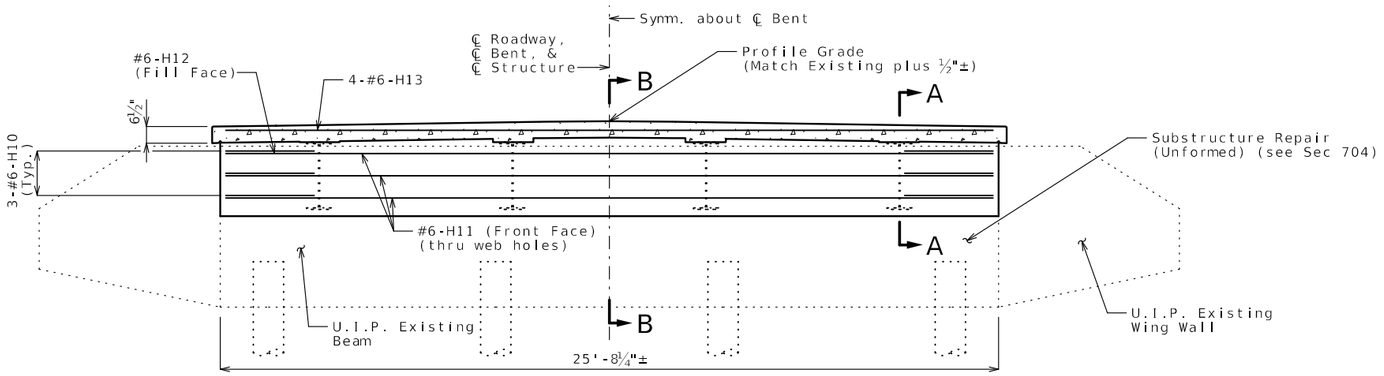
BRIDGE NO.
N08111

DESCRIPTION	DATE

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

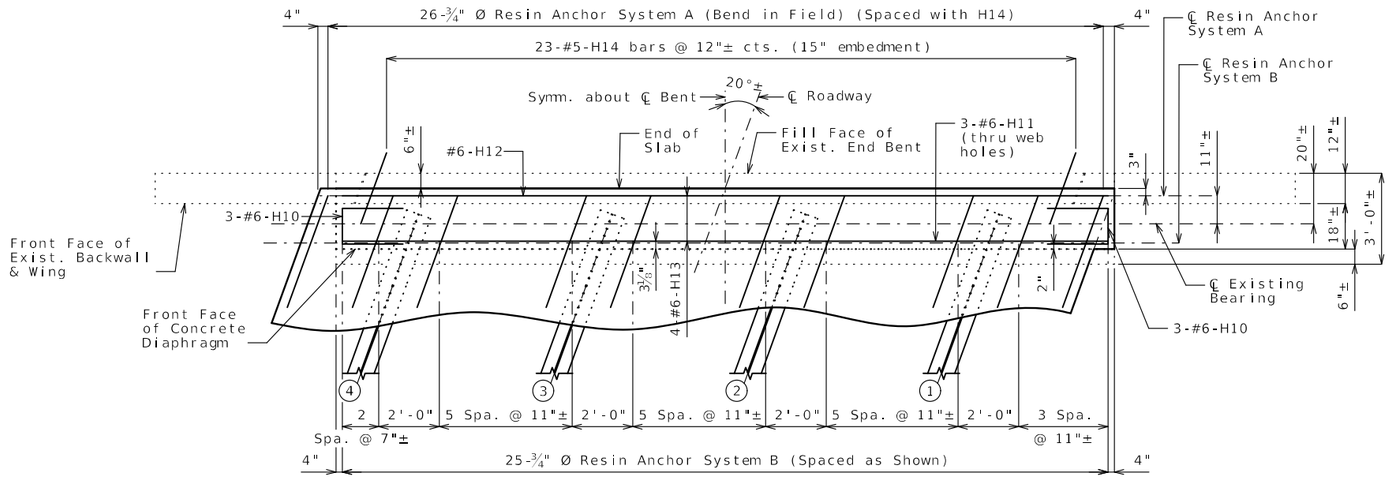
benesch
One Main Plaza, 4435 Main St. Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468

REV.



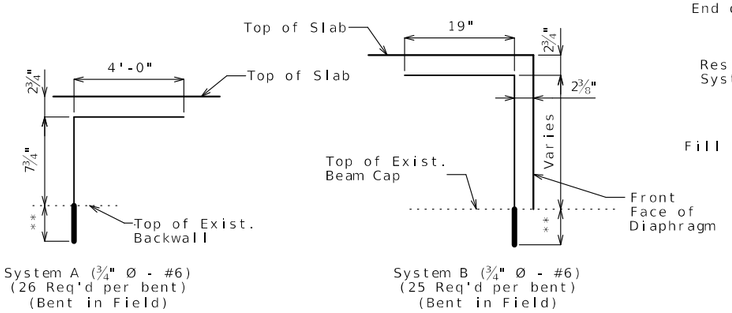
SECTION NEAR END BENT

(Resin Anchors, bearing stiffeners, bearings and steel end diapgrams not shown for clarity.)



PLAN

(End Bent No. 1 shown, End Bent No. 4 Similar)
(Slab Reinforcement not shown for clarity)

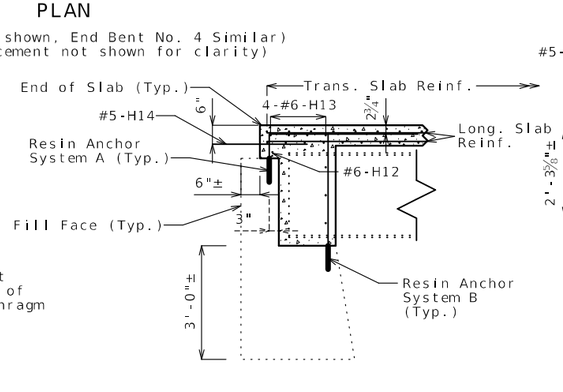


System A (¾" Ø - #6)
(26 Req'd per bent)
(Bent in Field)

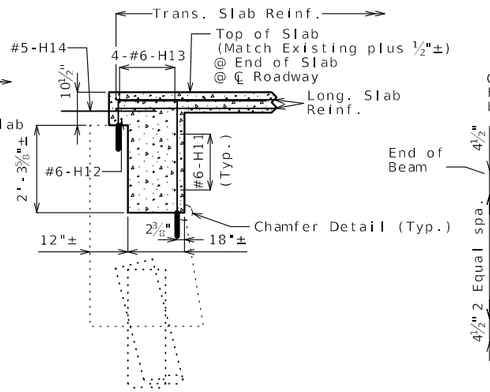
System B (¾" Ø - #6)
(25 Req'd per bent)
(Bent in Field)

DETAIL OF RESIN ANCHOR SYSTEMS

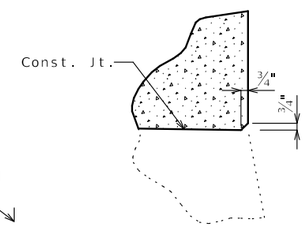
** Manufacturer's recommended embedment length (5" min.)



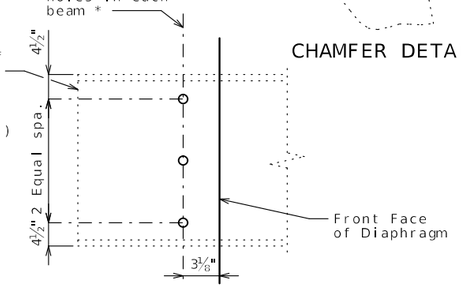
SECTION A-A



SECTION B-B



CHAMFER DETAIL



DETAIL OF WEB HOLES AT END BENT

* Cost of field drilling holes in existing webs will be considered completely covered by the contract unit price for Slab on Steel.

DETAILS OF END BENTS NO. 1 & 4

(End Bent No. 1 Shown, End Bent No. 4 similar)

GENERAL NOTES:

The contractor shall use one of the qualified resin anchor systems in accordance with Sec. 1039.

Cost of furnishing and installing the Resin Anchor System. complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

The minimum embedment depth in concrete with f'c = 4,000 psi for the Resin Anchor System shall be that required to meet the minimum ultimate pullout strength in accordance with Sec 1039 but shall not be less than 5".

The #6-H11 bars are segmented for ease of placement through girder web holes. The total bar length for #6-H11 bars shown in Bill of Reinforcing Steel allows for one lap splice with a length of 3'-10". Actual bar segment lengths to be determined by contractor for ease of installing bars. The contractor may use a mechanical bar splice in lieu of a lap splice. When a mechanical bar splice is used, the actual bar segment length will be determined by the contractor to accommodate manufacturer's recommendations for installation and ease of construction. The cost of furnishing and installing the bar splices will be considered completely covered by the contract unit price for Reinforcing Steel. No adjustment of the quantity of reinforcing steel will be allowed for the use of mechanical bar splices.

The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC-SP-3 surface preparation and coated with a minimum of one coat of gray epoxy-mastic primer in accordance with Sec 1081 to produce a dry film thickness of not less than 3 mils before concrete is poured. The surface preparation and coating for beams shall extend a minimum of one foot outside the face of the beam encasement. Payment for cleaning and coating steel to be encased in concrete will be considered completely covered by the contract unit price for Slab on Steel.

Concrete for diaphragm shall be Class B-2.

An epoxy coated #6 Grade 60 reinforcing bar shall be substituted for the 3/4" diameter treaded rod.

All concrete and reinforcement is included in the Table of Estimated Quantities for Slab on Steel and will be considered completely covered by the contract unit price for Slab on Steel.

For details and reinforcement of barrier not shown, see Sheets No. 7 & 8.

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY
07/11/2024

DATE PREPARED	7/11/2024
ROUTE	T
STATE	MO
DISTRICT	BR
SHEET NO.	3
COUNTY	HOLT
JOB NO.	JNW0111
CONTRACT ID.	
PROJECT NO.	---
BRIDGE NO.	N08111

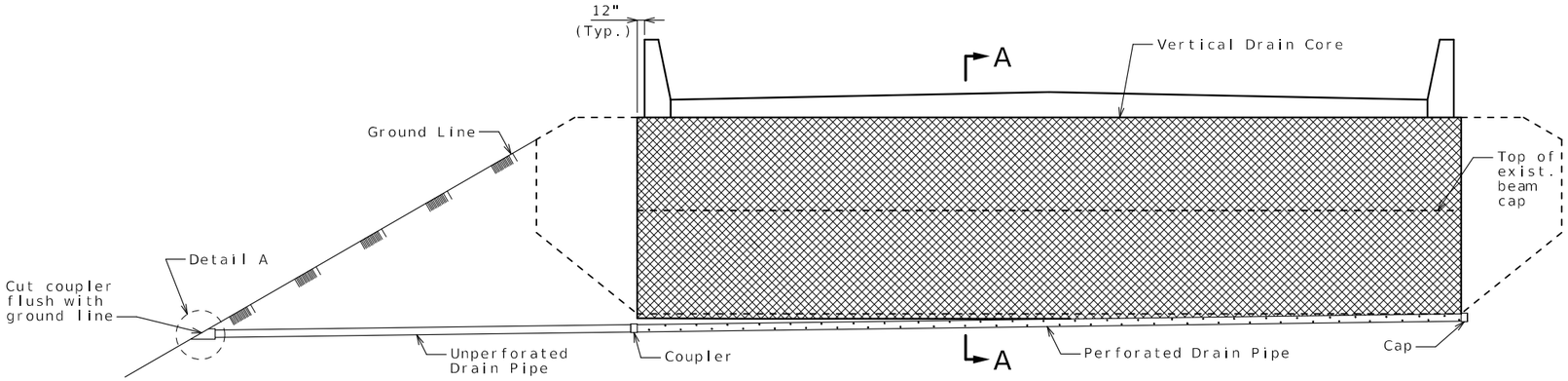
DESCRIPTION | DATE | REV.

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

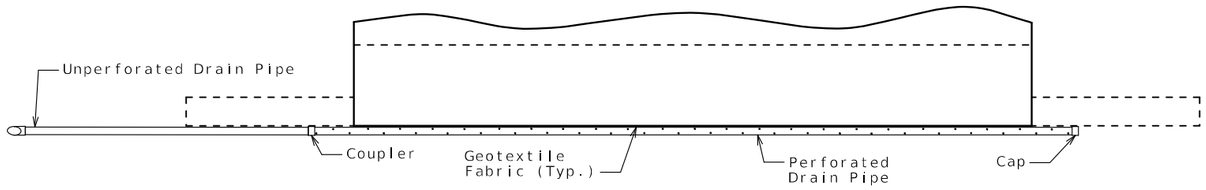
benesch
One Main Plaza, 4435 Main St, Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468

Detailed OCT 2023
Checked MAR 2024

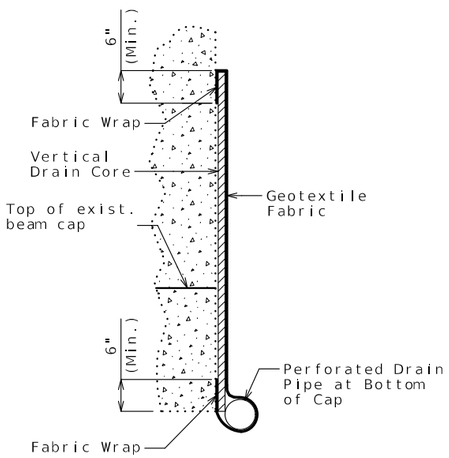
Note: This drawing is not to scale. Follow dimensions.



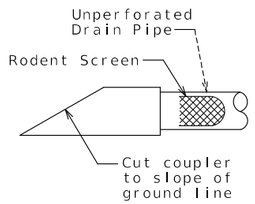
ELEVATION OF END BENT



PLAN OF END BENT



PART SECTION A-A
(Section thru wing similar)



DETAIL A

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.

All excavation necessary for installation of vertical drain will be considered completely covered by the contract unit price for Vertical Drain at End Bents.

VERTICAL DRAIN AT END BENTS

(Squared end bent shown, skewed end bent similar)

Detailed OCT 2023
Checked MAR 2024

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

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
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07/11/2024

DATE PREPARED
7/11/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	4

COUNTY
HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
N08111

DESCRIPTION	DATE

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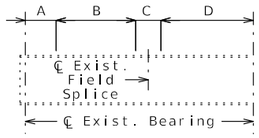
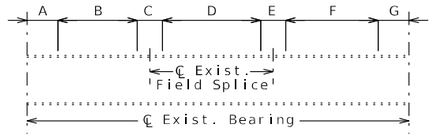
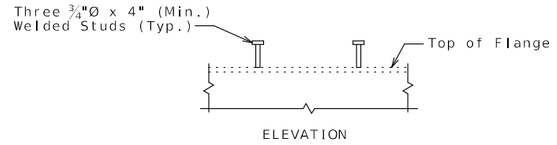


ELEVATION SHOWING SHEAR CONNECTOR SPACING FOR SPAN 1 & 3 BEAMS

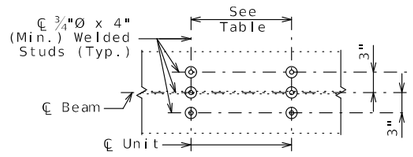


ELEVATION SHOWING SHEAR CONNECTOR SPACING FOR SPAN 2 BEAMS

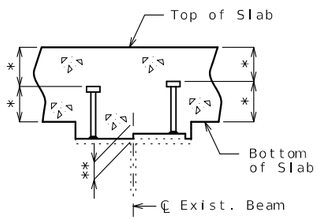
TABLE SHOWING SHEAR CONNECTOR UNIT SPACING								
Beam	S.C. per unit	A	B	C	D	E	F	G
Beam (Span 1-2)	3	0"±	37 Units @ 12" cts.	2'-9"	10 Units @ 15" cts.	--	--	--
Beam (Span 2-3)	3	15"±	13 Units @ 15"± cts.	2'-3"	34 Units @ 12"± cts.	2'-3"	13 Units @ 15"± cts.	15"±
Beam (Span 4-3)	3	0"±	37 Units @ 12" cts.	2'-9"	10 Units @ 15" cts.	--	--	--
					Total shear connectors required per girder			462



ELEVATION



PLAN OF SHEAR CONN. (3 PER UNIT)



HALF SECTION THRU BEAM HALF SECTION THRU COVER ℄

SECTION THRU EXIST. BEAM SHOWING SHEAR CONNECTORS

* 3" Minimum

** Min. Haunch = 0.00"
Max. Haunch = 0.75" (Exterior Beams)
Max. Haunch = 3.00" (Interior Beams)

General Notes:

The cost of supplying and installing shear connectors will be considered completely covered by the contract unit price for Shear Connectors.

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

DETAILS OF SHEAR CONNECTORS

Detailed OCT 2023
Checked MAR 2024

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

Y:\Kansas\130900S\130991.02_NW_Bundle_NW0111\Eng_Docs\Bridge\N0811\B_N08111_005_JNW0111_SHEAR CONNECTORS.dgn (Default) 11:33 7/11/2024

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

07/11/2024

DATE PREPARED 7/11/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	5

COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.: ---
BRIDGE NO.: N08111

REV.	DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
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Kansas City, MO 64111
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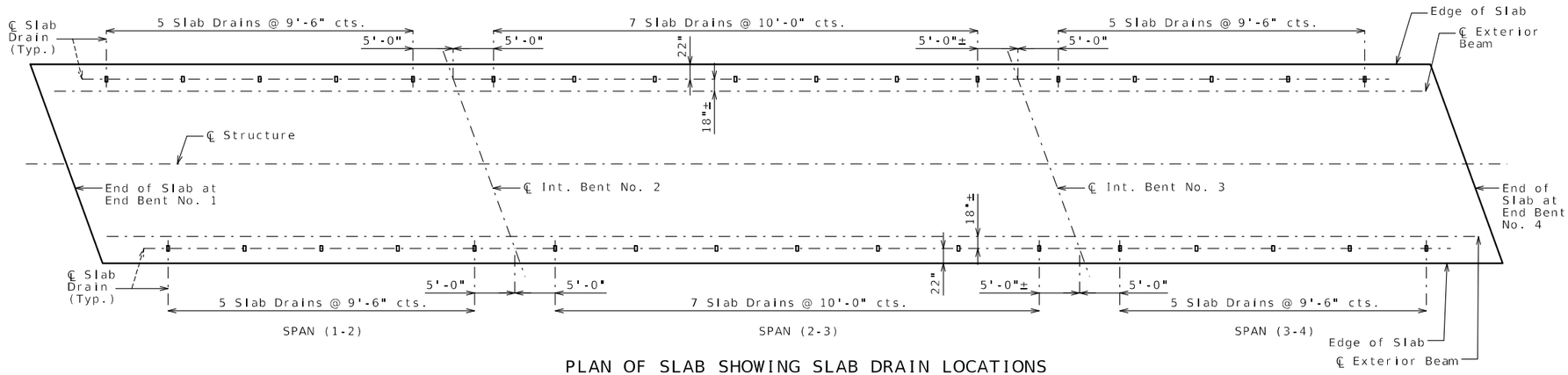
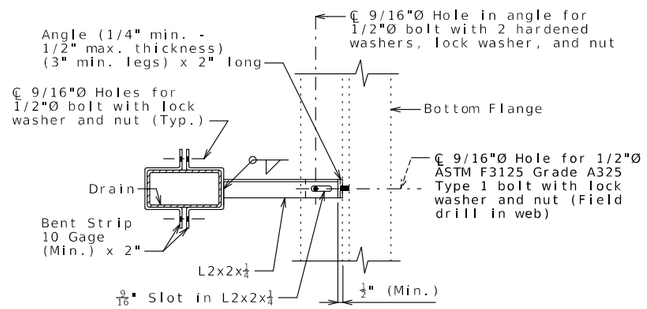
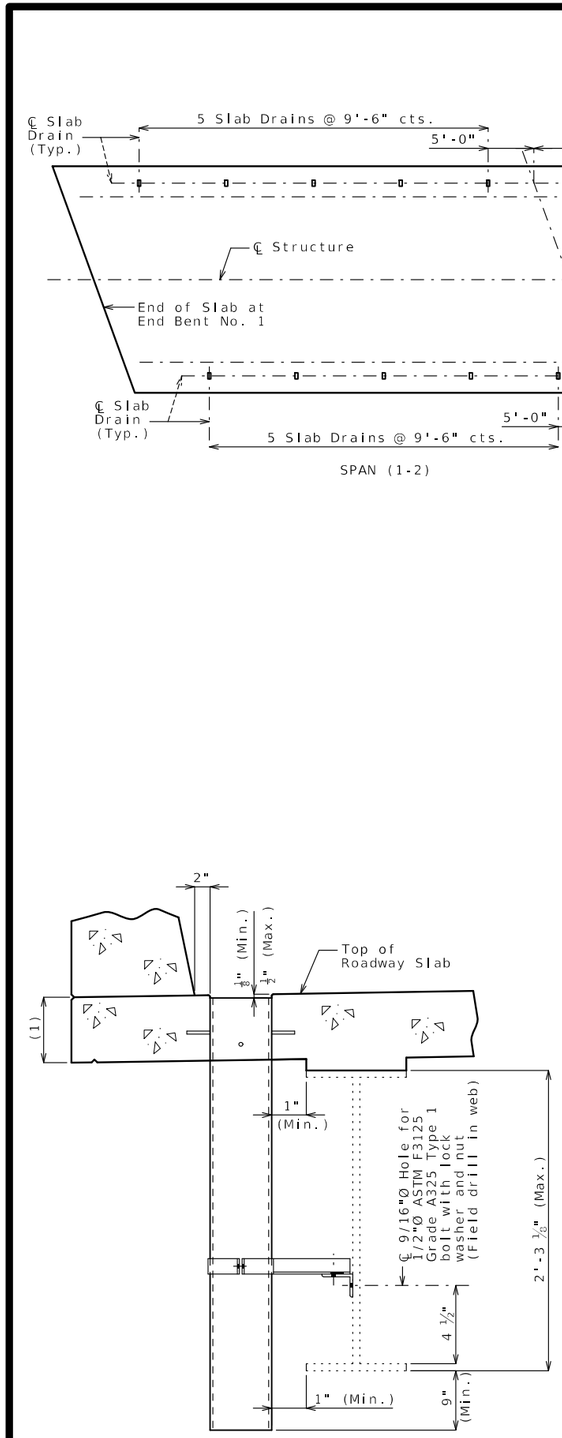


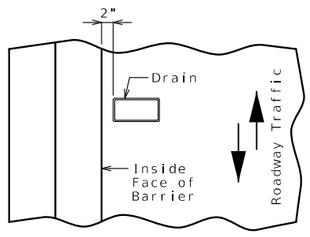
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



PART SECTION SHOWING BRACKET ASSEMBLY

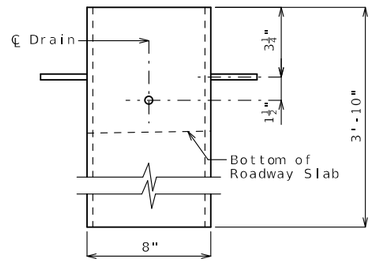


PART SECTION NEAR DRAIN

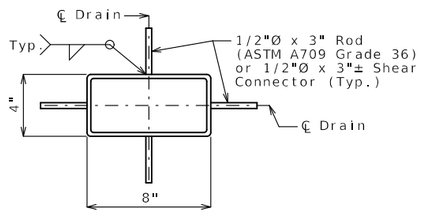


PART PLAN OF SLAB AT DRAIN

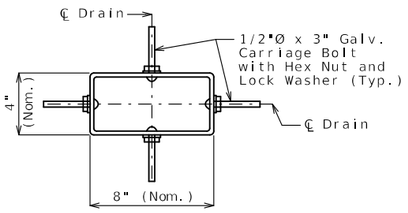
SLAB DRAINS



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All 1/2"Ø bolts shall be ASTM A307, except as shown.

Shop drawings will not be required for the slab drains and the bracket assembly.

The bolt hole for the bracket assembly attachment shall be shifted to the minimum extent necessary to field drill in the existing web.

(1) See front sheet for slab thickness.

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be recommended by the manufacturer to ensure a smooth, chip free cut.

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28062
REGISTERED PROFESSIONAL ENGINEER
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07/11/2024

DATE PREPARED
7/11/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
N08111

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
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1-888-ASK-MODOT (1-888-275-6636)

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Kansas City, MO 64111
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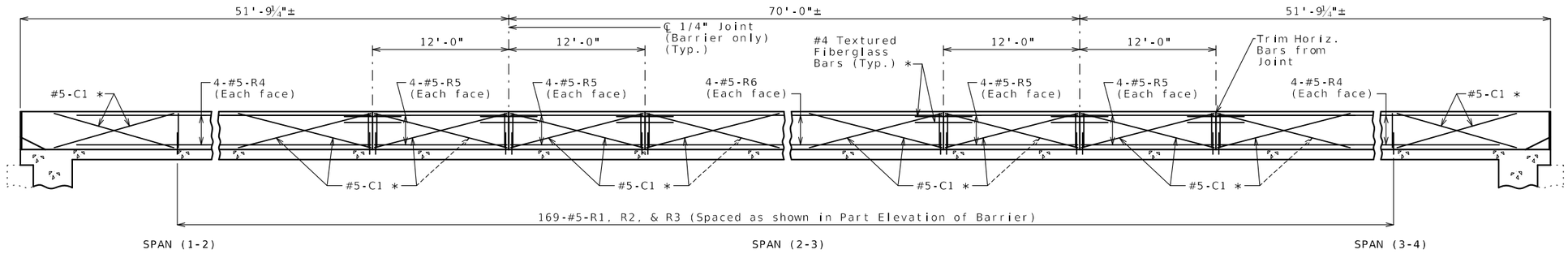
REV.

Detailed OCT 2023
Checked MAR 2024

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

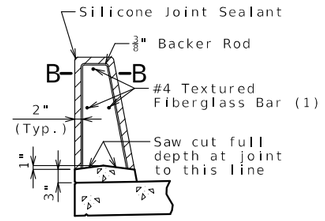
Y:\Kansas\130900S\130991.02_NW_Bundle_NW0111\Eng_Docs\Bridge\N0811\B_N08111_006_JNW0111_SLAB DRAINS.dgn (Default) 11:33 7/11/2024



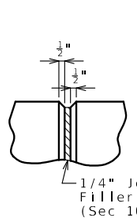
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

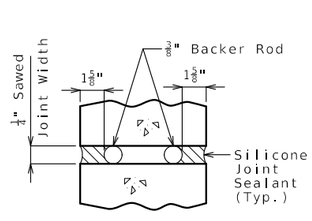
Longitudinal dimensions are horizontal.



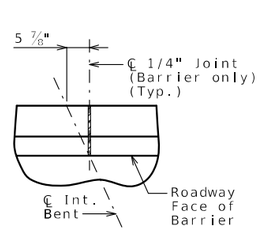
SECTION THRU SAW CUT JOINT



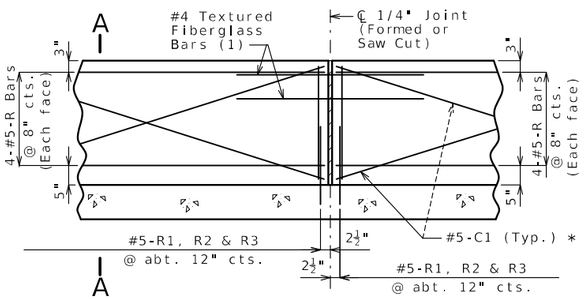
PART ELEVATION AT FORMED JOINT



SECTION B-B

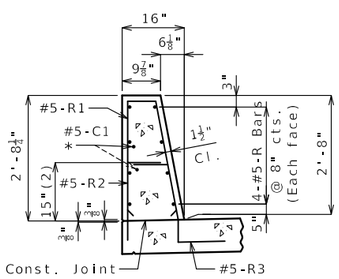


PART PLAN SHOWING JOINT LOCATION



PART ELEVATION OF BARRIER

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

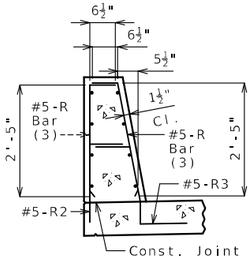


SECTION A-A

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

The cross-sectional area above the slab is 2.89 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.)

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 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 H 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 slab to end of slab.

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

TYPE H BARRIER

Detailed OCT 2023
Checked MAR 2024

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

Y:\Kansas\130900S\130991.02_NW_Bundle_NW0111\Eng_Docs\Bridge\N0811\B_N08111_007_JNW0111_TYPE H BARRIER ELEVATION.dgn (Default) 11:33 7/11/2024

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

07/11/2024

DATE PREPARED 7/11/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	7

COUNTY: HOLT
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.: - - -
BRIDGE NO.: N08111

DATE	DESCRIPTION	REV.

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
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JEFFERSON CITY, MO 65102
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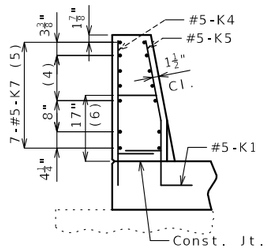
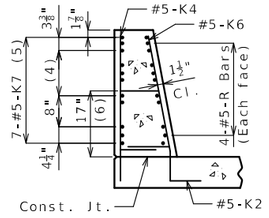
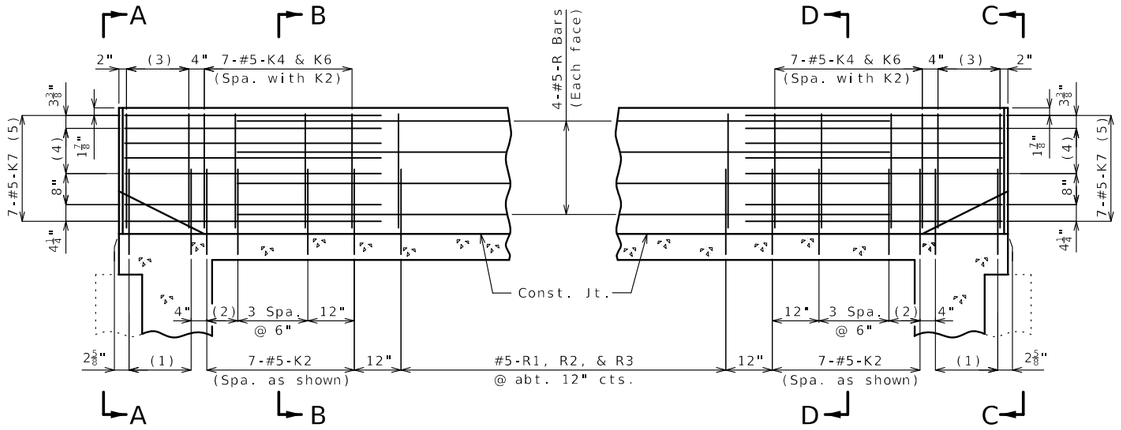
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468



ELEVATION A-A



SECTION B-B



PART ELEVATION

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

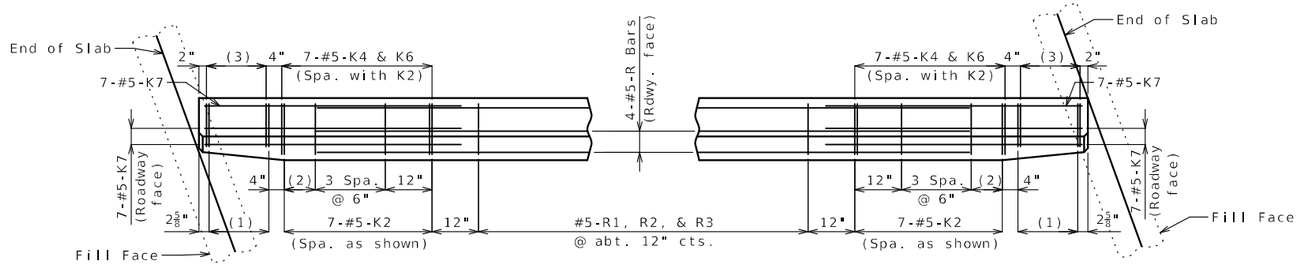
(2) 2 Spaces @ 4"

(3) 5-#5-K4 and 5-#5-K5, spaced with K1

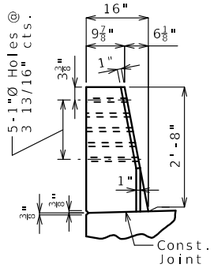
(4) 3 Spaces @ $3\frac{13}{16}$"

(5) Spaced as shown, each face

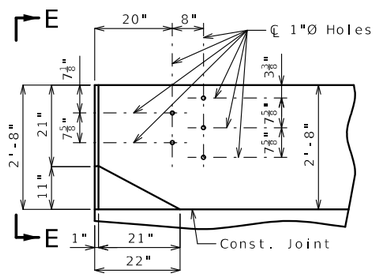
(6) To top of bar



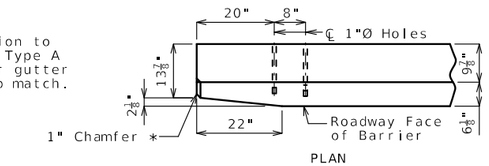
PART PLAN



ELEVATION E-E



ELEVATION



PLAN

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

DETAILS OF GUARD RAIL ATTACHMENT

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 H Barrier.

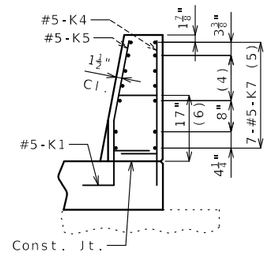
Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2".

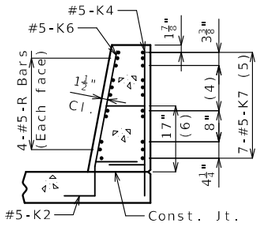
Use a minimum lap of 3'-1" between K7 bars and R bars.

TYPE H BARRIER AT END BENTS

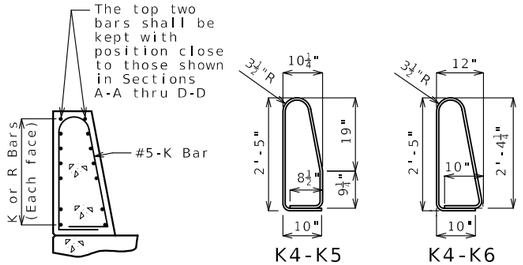
(Left barrier shown, right barrier similar)



ELEVATION C-C



SECTION D-D



PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

The K4-K5 and K4-K6 bar combination may be furnished as one bar as shown, at the contractor's option.

All dimensions are out to out.

Detailed OCT 2023
Checked MAR 2024

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

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
REGISTERED PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY
07/11/2024

DATE PREPARED
7/11/2024

ROUTE	STATE
T	MO
DISTRICT	SHEET NO.
BR	8

COUNTY
HOLT

JOB NO.
JNW0111

CONTRACT ID.

PROJECT NO.
- - -

BRIDGE NO.
N08111

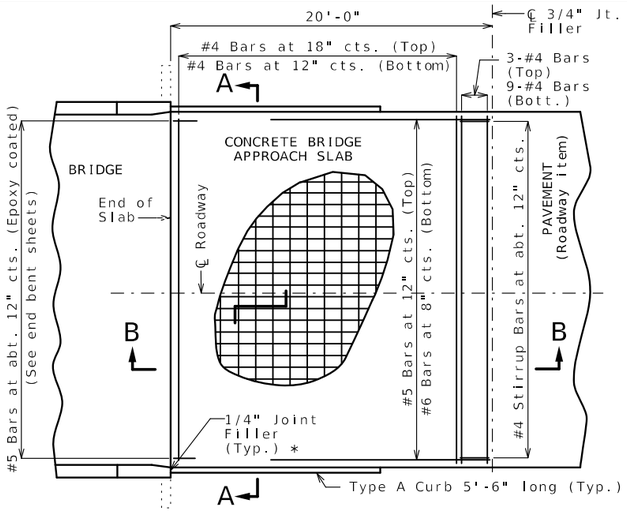
DESCRIPTION

DATE

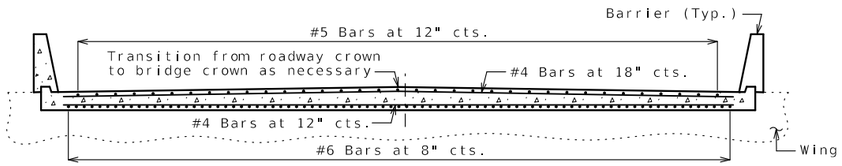
MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch
One Main Plaza 4435 Main St. Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468

REV.

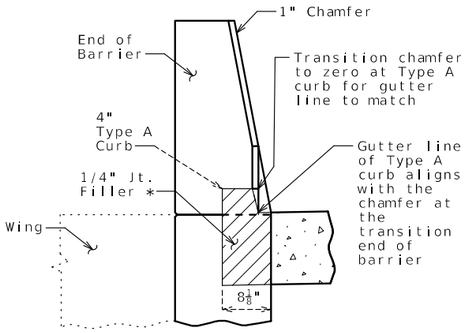


PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)

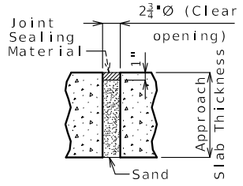


SECTION A-A

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 BETWEEN CURB AND BARRIER



UNDERSEAL ACCESS HOLE DETAIL

(If required)

Notes For Concrete Slab Only:

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

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

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

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 23 inches for #4 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.

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, 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 (Minor) per square yard.

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

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.

* 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.

General Notes:

Contractor shall have the option to construct either slab except as noted.

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

MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

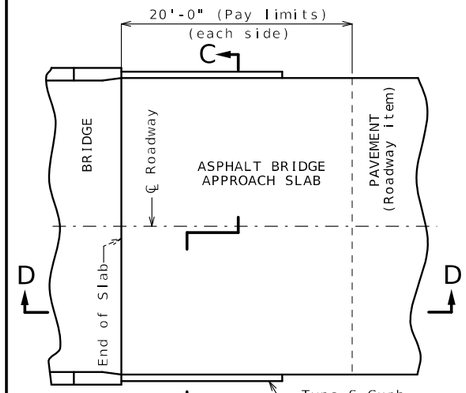
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

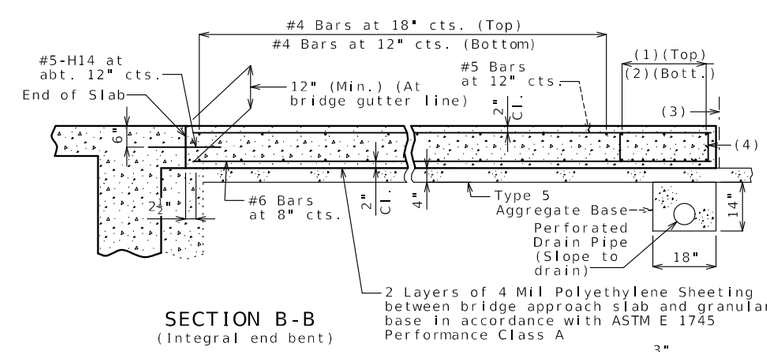
Notes For Asphalt Slab Only:

Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

Application of tack is required between lifts per Sec 403.



PART PLAN
(Squared structure shown, skewed structure similar)



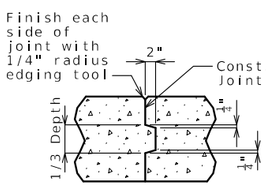
SECTION B-B
(Integral end bent)

(1) 3-#4 Bars

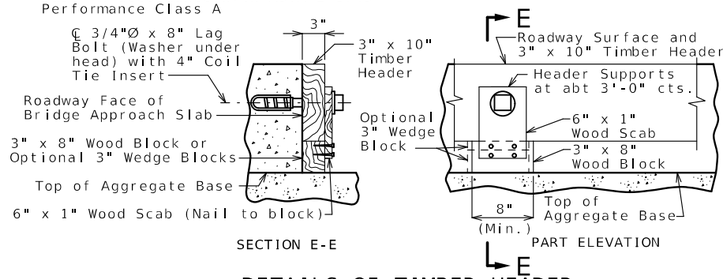
(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.



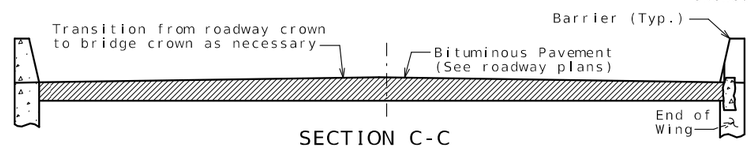
CONSTRUCTION JOINT DETAIL



DETAILS OF TIMBER HEADER

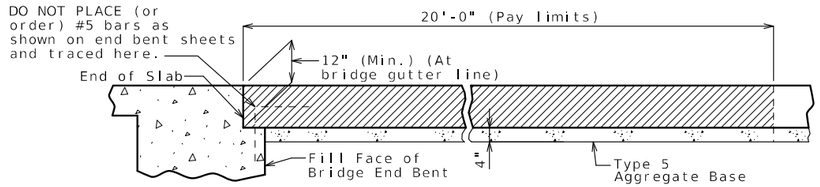
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

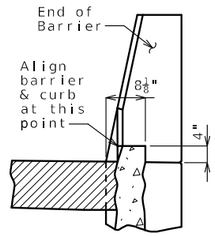


SECTION C-C

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 D-D



4" TYPE S CURB

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

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

Integral end bents shown, non-integral end bent similar.

Detailed OCT 2023
Checked MAR 2024

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

Sheet No. 9 of 10

STATE OF MISSOURI
CHRISTOPHER TEPEN
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BR	9

COUNTY HOLT

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO. ---

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DESCRIPTION	DATE

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

benesch
One Main Plaza, 4435 Main St. Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468

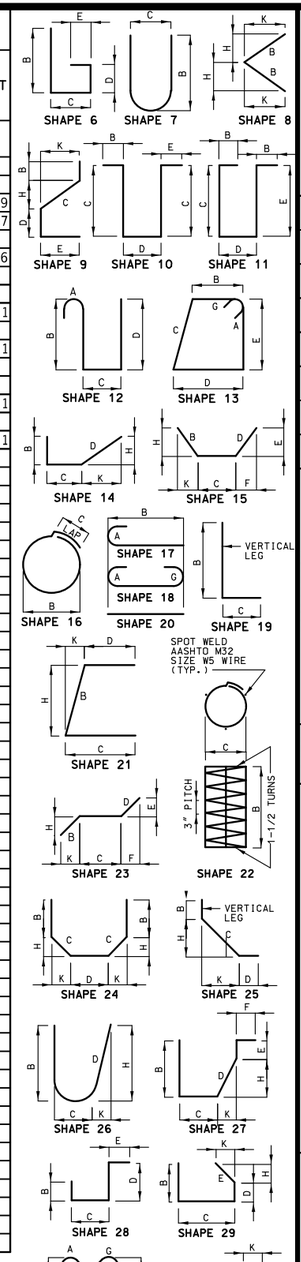
REV.

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTRUCTURE END BENT NO. 1																									
6	6	H10	Diaphragm	E	10							2	0.00	1	2.00									5	2	4	10	44
6	6	H11	Diaphragm	E	20					14	7.00													14	7	14	7	131
2	6	H12	Diaphragm	E	20					14	7.00													14	7	14	7	44
4	6	H13	Slab	E	20					25	3.00													25	3	25	3	152
23	5	H14	Approach	E	20					2	6.00													2	6	2	6	60
			SUPERSTRUCTURE END BENT NO. 4																									
6	6	H10	Diaphragm	E	10							2	0.00	1	2.00									5	2	4	10	44
6	6	H11	Diaphragm	E	20					14	7.00													14	7	14	7	131
2	6	H12	Diaphragm	E	20					14	7.00													14	7	14	7	44
4	6	H13	Slab	E	20					25	3.00													25	3	25	3	152
23	5	H14	Approach	E	20					2	6.00													2	6	2	6	60
			SLAB																									
162	5	S1	Slab	E	20					59	1.00													59	1	59	1	9983
76	6	S2	Slab	E	20					42	0.00													42	0	42	0	4794
262	6	S3	Slab	E	20					24	5.00													24	5	24	5	9609
301	5	S4	Slab	E	20					24	5.00													24	5	24	5	7665
28	6	S5	Slab	E	20			V	2	2	0.00													2	0	2	0	522
	Incr.		= 19.2500"							22	10.00													22	10	22	10	
34	5	S6	Slab	E	20			V	2	2	0.00													2	0	2	0	461
	Incr.		= 16.5000"							24	0.00													24	0	24	0	
			TYPE H BARRIER																									
338	5	R1	Barrier	E	14	S				2	5.00	0	6.50	2	5.50					2	5.00	0	5.50	5	5	5	3	1851
338	5	R2	Barrier	E	19	S				0	18.75	0	9.50											2	4	2	3	793
338	5	R3	Barrier	E	27	S						0	9.50	0	15.25	0	3.25	0	12.00	0	15.00	0	3.00	3	4	3	1	1087
32	5	R4	Barrier	E	20					37	1.00													37	1	37	1	1238
64	5	R5	Barrier	E	20					11	7.00													11	7	11	7	773
16	5	R6	Barrier	E	20					45	7.00													45	7	45	7	761
20	5	K1	End Post	E	27	S				0	20.75	0	9.25	0	5.25	0	15.00	0	12.00	0	5.25	0	1.00	5	2	4	10	101
28	5	K2	End Post	E	27	S				0	20.75	0	9.25	0	17.25	0	3.25	0	12.00	0	17.00	0	3.25	5	3	4	11	144
48	5	K4	End Post	E	19	S				2	5.00	0	10.00											3	3	3	2	159
20	5	K5	End Post	E	14	S				0	8.25	0	9.50	0	19.25					0	4.25	0	18.75	3	1	3	0	63
28	5	K6	End Post	E	21	S				2	4.75			0	10.00					2	4.25	0	6.00	3	3	3	1	90
56	5	K7	End Post	E	20					5	6.00													5	6	5	6	321
			SLIP FORM OPTION																									
40	5	C1	Slip Form	E	20					12	0.00													12	0	12	0	501
			TOTALS																									
	5																											0
	5			E																								25610
	6																											0
	6			E																								15667
			TOTAL																									0
			TOTAL	E																								41277

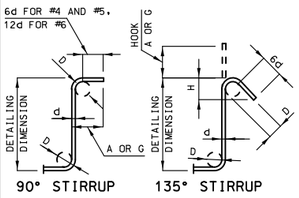
BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SLAB ON STEEL																									
	5			E																								18229
	6			E																								15667
			TOTAL	E																								33896
			TYPE H BARRIER																									
	5			E																								7381
			TOTAL	E																								7381
			SLIP FORM OPTION																									
	5			E																								501
			TOTAL	E																								501



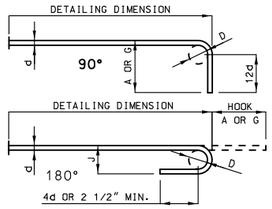
SHAPE 34 (SHAPE 35 SHALL BE A DEFORMED OR PLAIN SPIRAL BAR OR WIRE.)

BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK	135° HOOK	
		HOOK A OR G	HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES		
		180° HOOKS		90° HOOKS
		A OR G	J	A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

Detailed OCT 2023
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Note: This drawing is not to scale. Follow dimensions.

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DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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benesch
One Main Plaza 4435 Main St. Ste 1150
Kansas City, MO 64111
913/441-1100, FAX 913/441-1468

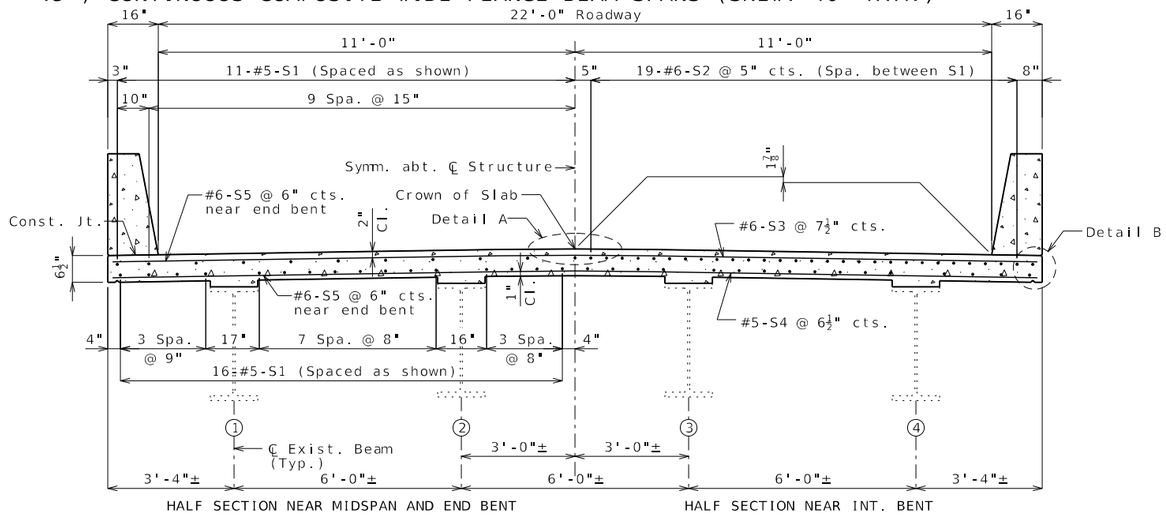
SEC/SUR 9 TWP 66N RGE 40W

U.I.P. AND REDECK EXISTING (45'- 60'- 45') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS (SKEW: 40° R.A.)

Table Showing S2 Bar Lengths			
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
16'-9"	16'-9"	16'-9"	16'-9"

Required Lap Length For Bar Splices **	
Bar Size	Splice Length
4	2'-7"
5	3'-3"
6	3'-10"
7	4'-11"

** Unless otherwise shown.



TYPICAL SECTION THRU SLAB

General Notes:

Design Specifications:
2002 AASHTO LFD (17th Ed.) Standard Specifications
Seismic Performance Category A

Design Loading:
H15-44-(1 Lane) (1961) (Existing)
HS20-44 (New Construction)
No Future Wearing Surface
Earth - 120 lb/cf, Equivalent Fluid Pressure 45 lb/cf
Fatigue Stress - Case III

Design Unit Stresses:

Class B-1 Concrete (Barrier)	f'c = 4,000 psi
Class B-2 Concrete (End Bents & Superstructure, except Barrier)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi

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

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

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

Bars bonded in existing concrete not removed shall be cleanly stripped and embedded into new concrete where possible. If length is available, existing bars shall extend into new concrete at least 40 diameters for plain bars and 30 diameters for deformed bars, unless otherwise noted.

Roadway surfacing adjacent to bridge ends shall match new bridge slab surface. (Roadway item)

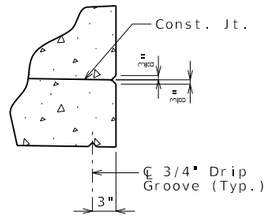
Outline of existing work is indicated by light dashed lines. Heavy lines indicate new work.

Contractor shall verify all dimensions in field before ordering materials.

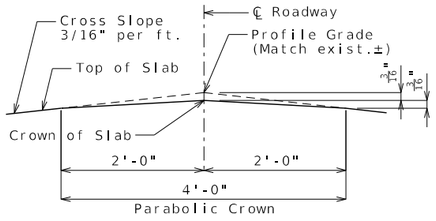
The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

Rubblized concrete from the existing bridge deck that qualifies as clean fill may be placed on spill slopes at end bents above ordinary high water line (Roadway item).

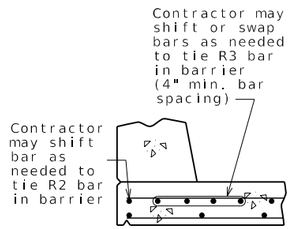
Traffic Handling:
Structure to be closed during construction. Traffic to be maintained on other routes during construction. See roadway plans for traffic control.



DETAIL B



DETAIL A



OPTIONAL SHIFTING TOP BARS AT BARRIER

Estimated Quantities		
Item		Total
Removal of Existing Bridge Deck	sq. foot	3,437
Bridge Approach Slab (Minor)	sq. yard	101
Slab on Steel	sq. yard	423
Type H Barrier	linear foot	311
Substructure Repair (Unformed)	sq. foot	20
Protective Coating - Concrete Bents and Piers (Epoxy)	lump sum	1
Fabricated Structural Carbon Steel (Misc.)	pound	980
Cleaning and Coating Existing Bearings	each	8
Slab Drain	each	28
Non-Destructive Testing	linear foot	42
Vertical Drain at End Bents	each	2

Cost of any required excavation for bridge will be considered completely covered by the contract unit price for other items.

Estimated Quantities for Slab on Steel		
Item		Total
Class B-2 Concrete	cu. yard	81
Reinforcing Steel (Epoxy Coated)	pound	30,020

The table of Estimated Quantities for Slab on Steel 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 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 forming or stay-in-place corrugated steel forms. Precast prestressed panels will not be permitted.

Bridge deck surface may be finished with a vibratory screed.

For Optional Stay-In-Place Form Details, see Sheet No. 2.

REPAIRS TO BRIDGE: ROUTE F OVER ROCK CREEK

ROUTE F FROM IOWA STATE LINE TO ROUTE B
ABOUT 2.5 MILES SOUTH OF IOWA STATE LINE
BEGINNING STATION 132+15.70± (MATCH EXISTING)

DESIGNED BY: KLW JAN 2024
DETAILED BY: JTC JAN 2024
CHECKED BY: NSC FEB 2024

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

STATE OF MISSOURI REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	1

COUNTY ATCHISON
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO. R02741

DESCRIPTION | DATE | REV.

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

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PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg PLOTTED BY: JCASEY
LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

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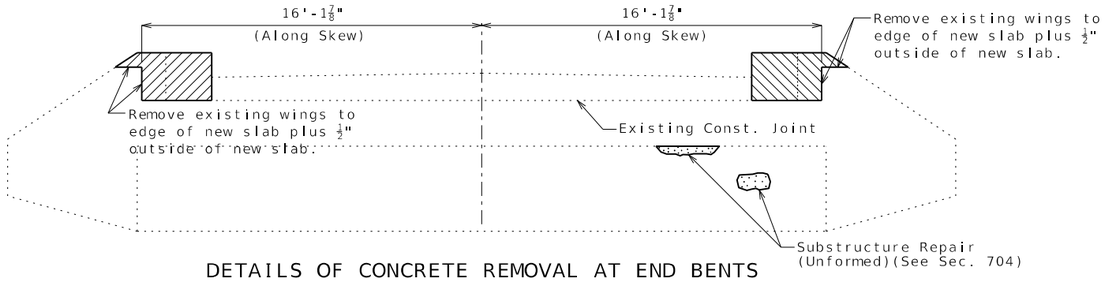


DETAILS OF CONCRETE REMOVAL AT END BENTS

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Removal of Existing Bridge Deck. Vertical backwall and wingwall reinforcement to be cut off one inch below concrete removal surface and the resulting holes shall be filled with a qualified special mortar.

A smooth, level surface shall be provided at Bent Nos. 1 and 4 removal lines.

General Notes:

All concrete for the backwall widening to form pavement seat is included with the Superstructure Quantities.

The contractor shall use one of the qualified resin anchor systems in accordance with Sec 1039.

Cost of furnishing and installing the resin anchor systems, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

Stay-In-Place Forms:
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 expanded 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 beam 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. Welding on or drilling holes in the beam 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 in accordance with Sec 703 for false work and forms. Maximum actual weight of corrugated steel forms allowed shall be 4 psf assumed for beam loading.

The contractor shall provide a method of preventing the direct contact of the stay-in-place forms and connection components with uncoated weathering steel members that is approved by the engineer.

Pouring and Finishing Slab:
The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing, and removing bracing will be considered completely covered by the contract unit price for Slab on Steel.

Slab shall be poured upgrade from end to end at a minimum rate of 25 cubic yards per hour.

Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:
(1) Slab is to be considered a uniform thickness as shown on the plans. Haunching will vary. See front sheet for slab thickness.For adjusted girder deflection due to weight of new deck and barriers, see Bridge Electronic Deliverables.

Structural Steel Protective Coating:

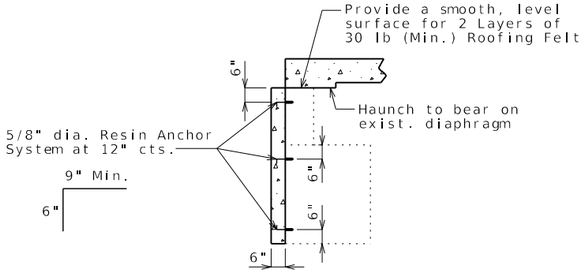
Protective Coating: System G in accordance with Sec 1081. All existing end bent bearings shall be recoated with System G.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for Recoating of Structural Steel (System G) with organic zinc primer. The cost of surface preparation will be considered completely covered by the contract unit price for Cleaning and Coating Existing Bearings.

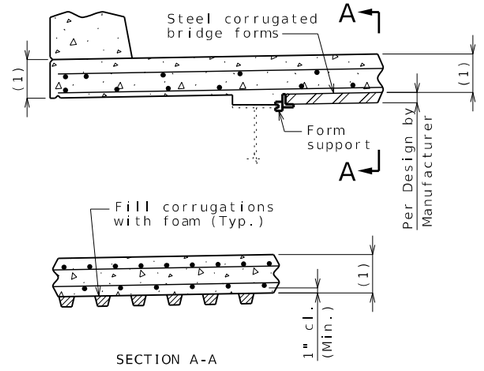
Prime Coat: The cost of the prime coat will be considered completely covered by the contract unit price for Cleaning and Coating Existing Bearings. Tint of the prime coat for System G shall be similar to the color of the field coat to be used.

Field Coat: The color of the finish field coat shall be Gray (Federal Standard #26373). The cost of the intermediate field coat will be considered completely covered by the contract unit price for Cleaning and Coating Existing Bearings. The cost of the finish field coat will be considered completely covered by the contract unit price for Cleaning and Coating Existing Bearings.

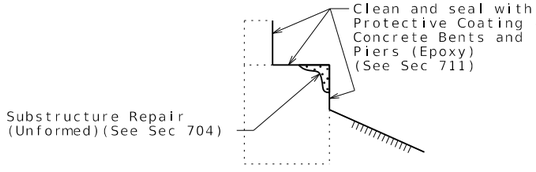
Sec 1081.10.4.6 shall be ignored for the cleaning and recoating work to the bearings.



PART SECTION THRU SLAB AT END BENTS



OPTIONAL STAY-IN-PLACE FORM DETAILS



TYPICAL SECTION THRU END BENTS NO. 1 & 4 SHOWING PROTECTIVE COATING

PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg PLOTTED BY: JCASEY

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

DESIGNED BY: KLW JAN 2024
DETAILED BY: JTC JAN 2024
CHECKED BY: NSC FEB 2024

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

STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019
REGISTERED PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	2

COUNTY: ATCHISON
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: R02741

DATE	DESCRIPTION	REV.

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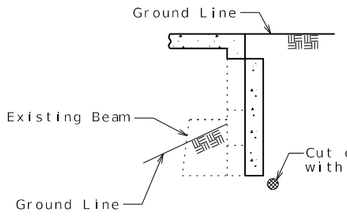
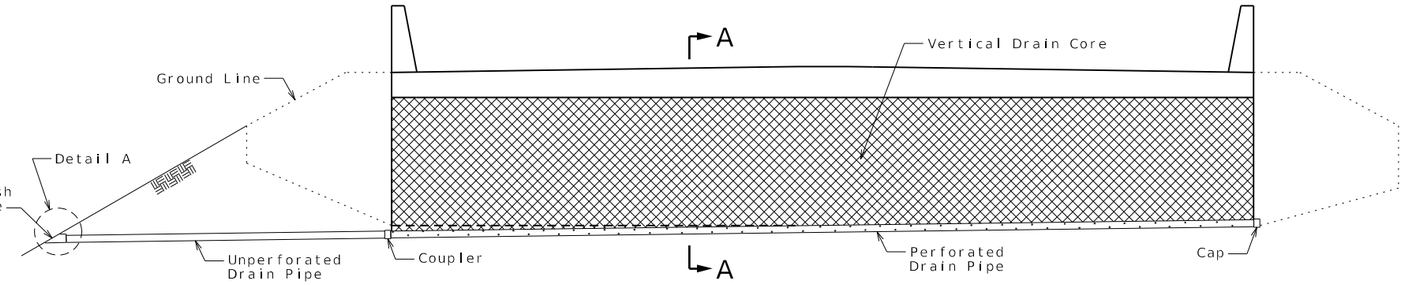
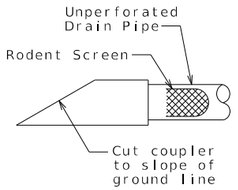


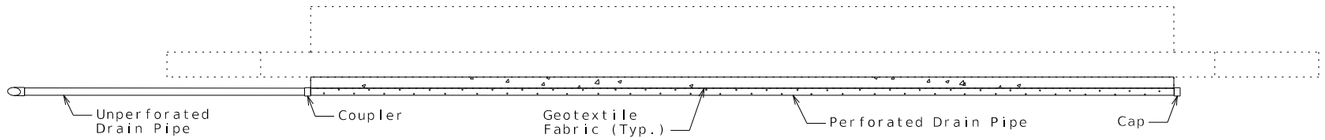
SIDE ELEVATION



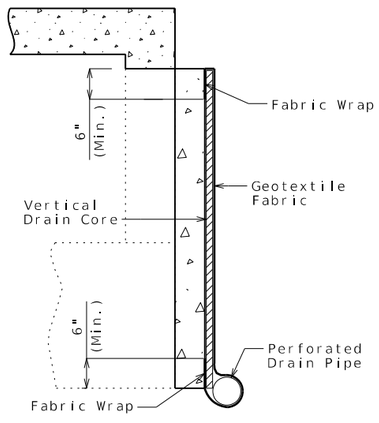
ELEVATION OF END BENT



DETAIL A



PLAN OF END BENT BELOW APPROACH SEAT



PART SECTION A-A
(Section thru wing similar)

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. The pipe shall slope to lowest grade of ground line.

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)

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

DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	BPW MAR 2024

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges PLOTTED BY: JCASEY PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg

REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019
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F	MO
DISTRICT	SHEET NO.
BR	3

COUNTY ATCHISON

JOB NO. JNW0111

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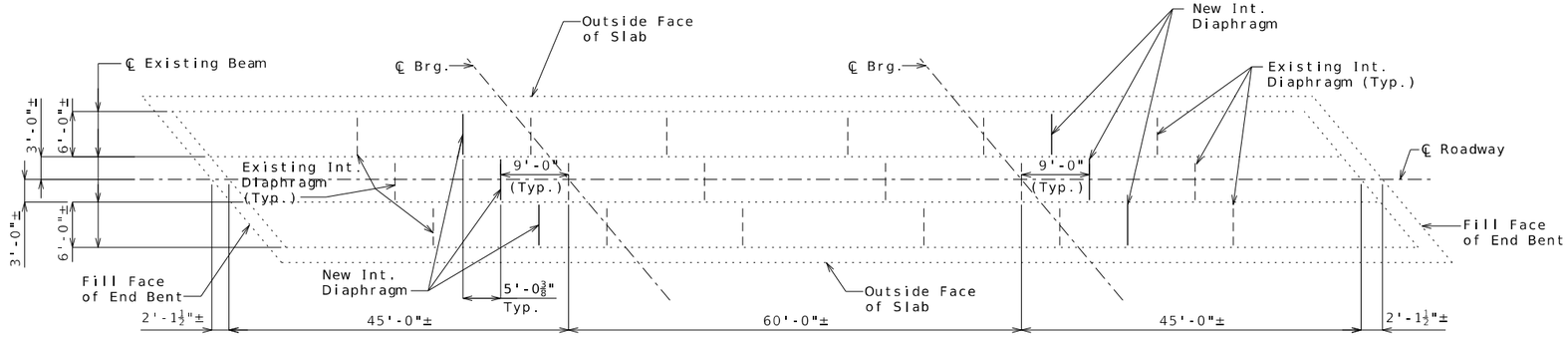
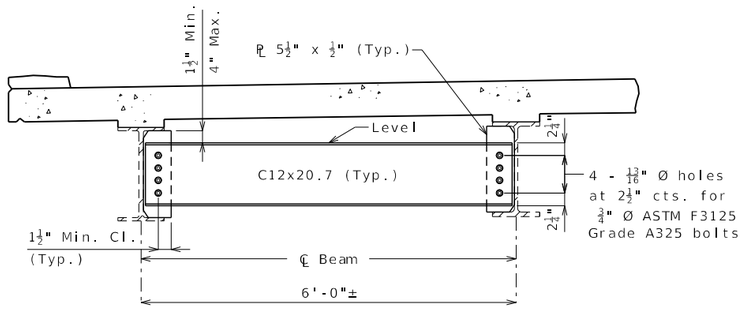
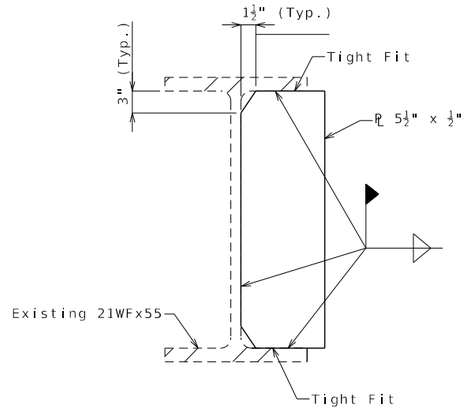


SPAN (1-2) SPAN (2-3) SPAN (3-4)

PLAN OF STRUCTURAL STEEL



TYPICAL PART SECTION SHOWING
INTERMEDIATE DIAPHRAGMS
(6 Locations)



INTERMEDIATE DIAPHRAGM CONNECTION PLATE

STEEL DIAPHRAGM NOTES:

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 Fabricated Structural Carbon Steel (Misc.).

Structural Steel Protective Coating:
Protective Coating: System G in accordance with Sec 1081.

Prime Coat (New Steel): The cost of the inorganic zinc prime coat will be considered completely covered by the contact unit price for the fabricated structural steel.

Field Coats: The color of the field coats shall be Gray (Federal Standard #26373). The cost of the intermediate system field coat will be considered completely covered by the contract unit price for the fabricated structural steel.

At the option of the contactor, the intermediate field coat may be applied in the shop. The contractor shall exercise extreme care during all phases of loading, hauling, erection, and pouring of the slab to minimize damage and shall be fully responsible for all repairs and cleaning of the coating system as required by the engineer.

STEEL DIAPHRAGMS

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

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DETAILED BY:	RCL FEB 2024
CHECKED BY:	DMA MAR 2024

DATE PREPARED: 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	4

COUNTY: ATCHISON
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: R02741

DESCRIPTION	DATE

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
Lochner
15717 College Boulevard | Lenexa, Kansas 66219
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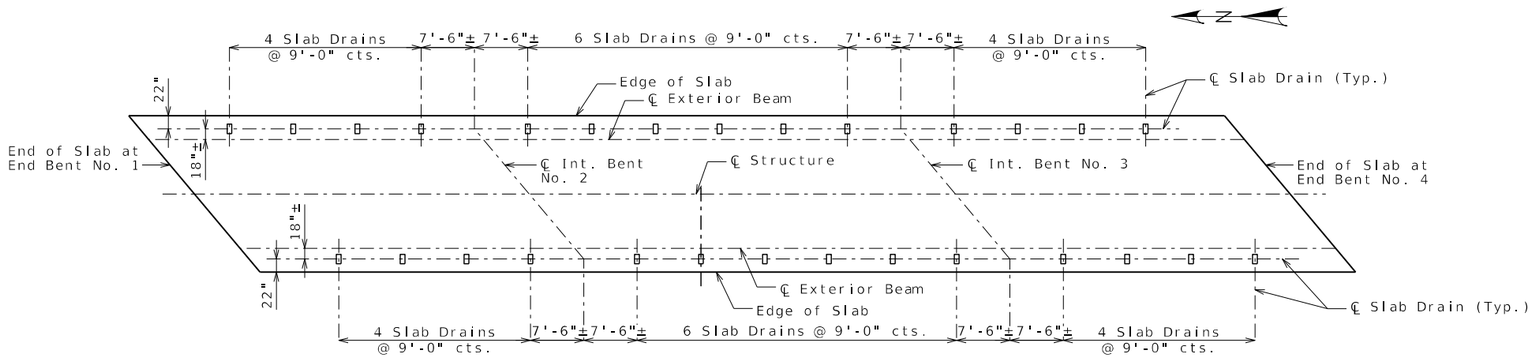
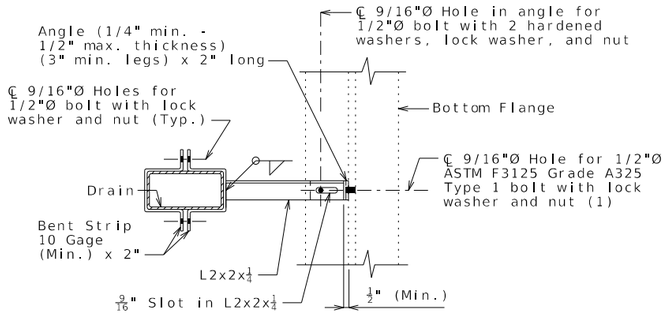


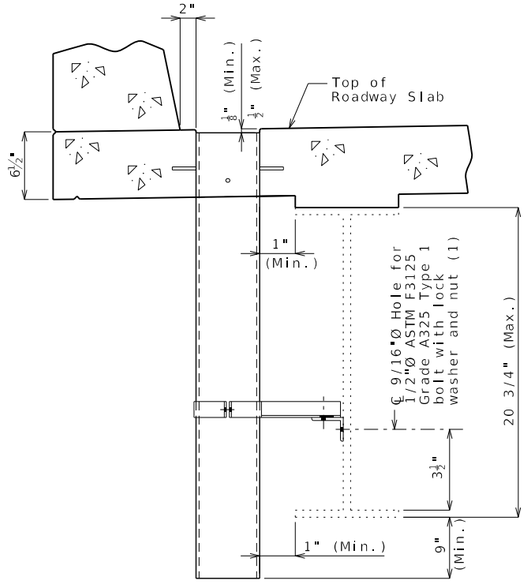
SPAN (1-2) SPAN (2-3) SPAN (3-4)

PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

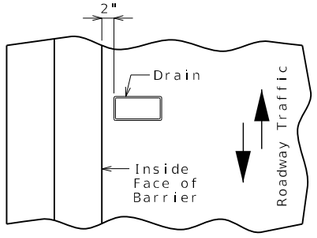


PART SECTION SHOWING BRACKET ASSEMBLY

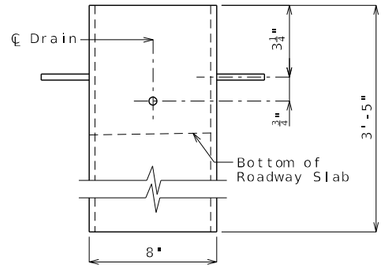
(1) Field drill in existing web.



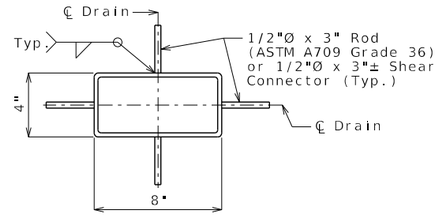
PART SECTION NEAR DRAIN



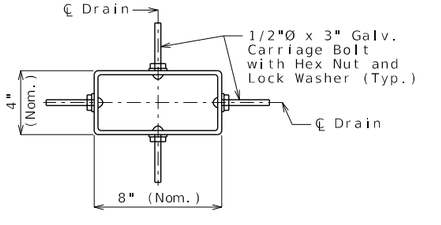
PART PLAN OF SLAB AT DRAIN



ELEVATION OF DRAIN



PLAN OF STEEL DRAIN OPTION



PLAN OF FRP DRAIN OPTION

General Notes:

Contractor shall have the option to construct either steel or FRP slab drains. All drains shall be of same type.

Slab drain bracket assembly shall be ASTM A709 Grade 36 steel.

Locate drains in slab by dimensions shown in Part Section Near Drain.

Reinforcing steel shall be shifted to clear drains.

The bracket assembly shall be galvanized in accordance with ASTM A123.

All bolts, hardened washers, lock washers and nuts shall be galvanized in accordance with AASHTO M 232 (ASTM A153), Class C.

All 1/2"Ø bolts shall be ASTM A307, except as shown.

Shop drawings will not be required for the slab drains and the bracket assembly.

The bolt hole for the bracket assembly attachment shall be shifted to the minimum extent necessary to field drill in the existing web.

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4" welded sheets of ASTM A709 Grade 36 steel or from 1/4" structural steel tubing ASTM A500 or A501.

Outside dimensions of drains are 8" x 4".

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

Drains shall be machine filament-wound thermosetting resin tubing meeting the requirements of ASTM D2996 with the following exceptions:

Shape of drains shall be rectangular with outside nominal dimensions of 8" x 4".

Minimum reinforced wall thickness shall be 1/4 inch.

The resin used shall be ultraviolet (UV) resistant and/or have UV inhibitors mixed throughout. Drains may have an exterior coating for additional UV resistance.

The color of the slab drain shall be gray (Federal Standard 26373). The color shall be uniform throughout the resin and any coating used.

The combination of materials used in the manufacture of the drains shall be tested for UV resistance in accordance with ASTM D4329 Cycle A. The representative material shall withstand at least 500 hours of testing with only minor discoloration and without any physical deterioration. The contractor shall furnish the results of the required ultraviolet testing prior to acceptance of the slab drains.

At the contractor's option, drains may be field cut. The method of cutting FRP slab drain shall be recommended by the manufacturer to ensure a smooth, chip free cut.

SLAB DRAINS

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

REGISTERED PROFESSIONAL ENGINEER
STATE OF MISSOURI
KEITH LAWRENCE WETTER
NUMBER E-25019

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	5

COUNTY ATCHISON

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO. R02741

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Lochner
15717 College Boulevard | Lenexa, Kansas 66219
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DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	BPW MAR 2024

LOCHNER JOB: 21679 MoDOT NW District 11 Bridges PLOTTED BY: JCASEY

PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg

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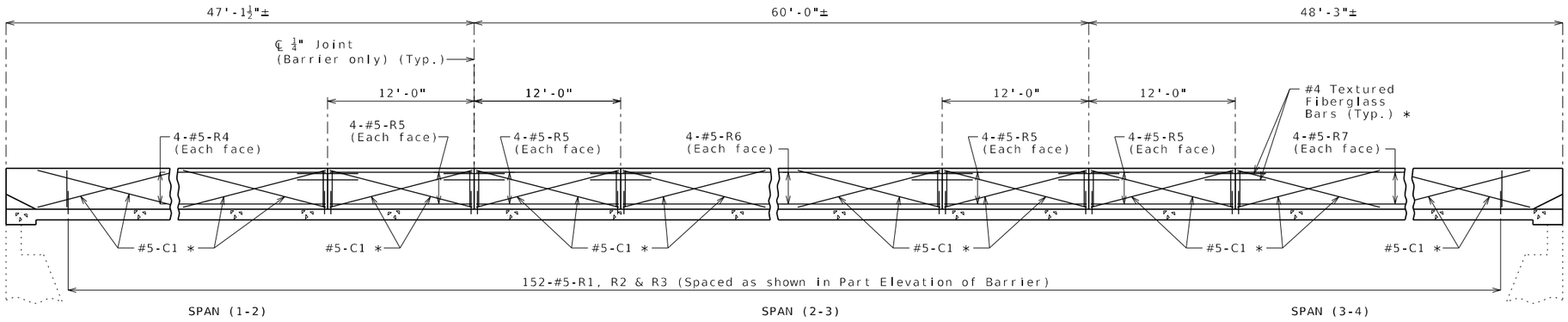
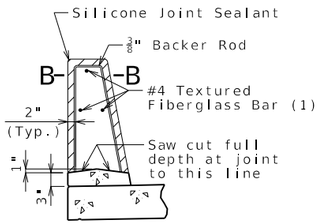


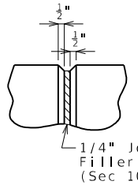
ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

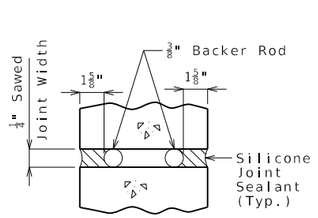
Longitudinal dimensions are horizontal.



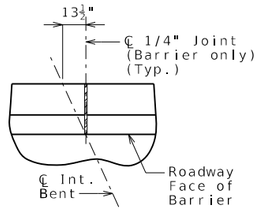
SECTION THRU
SAW CUT JOINT



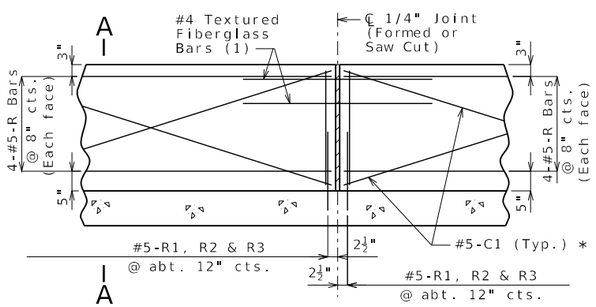
PART ELEVATION
AT FORMED JOINT



SECTION B-B

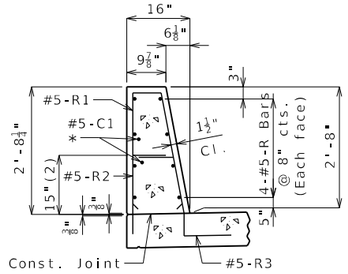


PART PLAN SHOWING
JOINT LOCATION



PART ELEVATION OF BARRIER

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

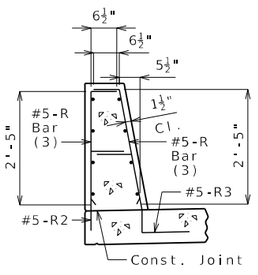


SECTION A-A

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

The cross-sectional area above the slab is 2.89 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.)

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 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 H 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 slab to end of slab.

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

TYPE H BARRIER

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

DESIGNED BY:	NSC FEB 2024
DETAILED BY:	RCL FEB 2024
CHECKED BY:	KLW MAR 2024

STATE OF MISSOURI
REGISTERED PROFESSIONAL ENGINEER
KEITH LAWRENCE WETTER
NUMBER E-25019
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	6

COUNTY ATCHISON

JOB NO. JNW0111

CONTRACT ID.

PROJECT NO.

BRIDGE NO. R02741

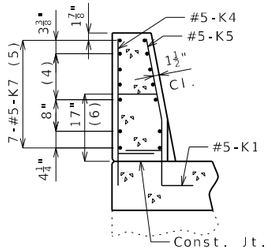
DESCRIPTION

DATE

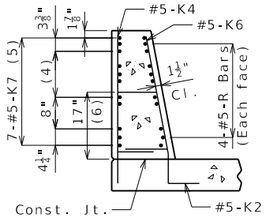
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

REV.

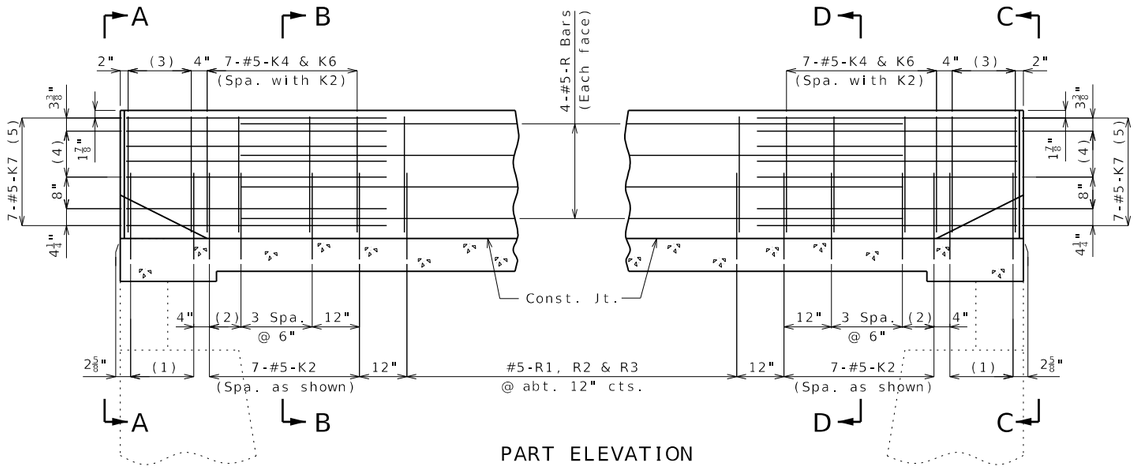
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ELEVATION A-A



SECTION B-B



PART ELEVATION

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

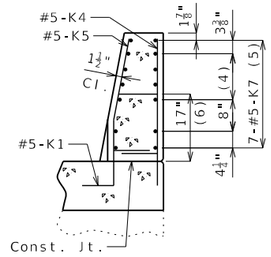
(2) 2 Spaces @ 4"

(3) 5-#5-K4 and 5-#5-K5, spaced with K1

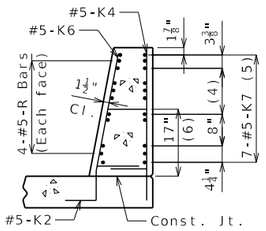
(4) 3 Spaces @ $3\frac{13}{16}$"

(5) Spaced as shown, each face

(6) To top of bar

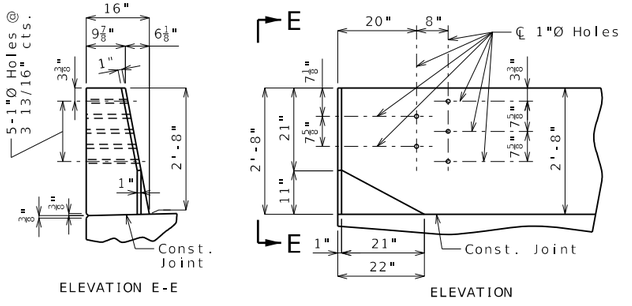


ELEVATION C-C



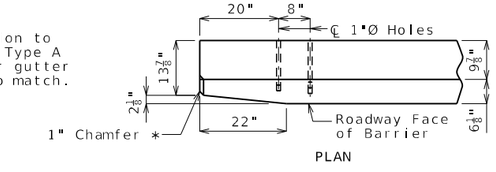
SECTION D-D

PART PLAN



ELEVATION E-E

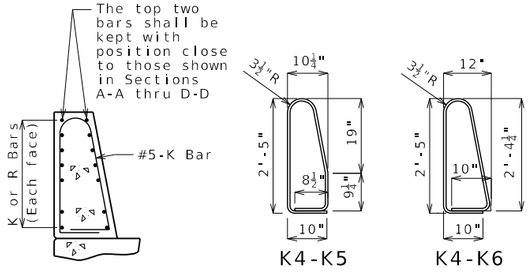
ELEVATION



PLAN

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

DETAILS OF GUARD RAIL ATTACHMENT



PERMISSIBLE ALTERNATE SHAPES

(Other K bars not shown for clarity)

The K4-K5 and K4-K6 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 H Barrier.

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1 1/2".

Use a minimum lap of 3'-1" between K7 bars and R bars.

TYPE H BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

DESIGNED BY: NSC FEB 2024	
DETAILED BY: JTC FEB 2024	
CHECKED BY: KLW MAR 2024	

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

KEITH LAWRENCE WETTER NUMBER E-25019 — REGISTERED PROFESSIONAL ENGINEER — STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	7

COUNTY: ATCHISON

JOB NO.: JNW0111

CONTRACT ID.:

PROJECT NO.:

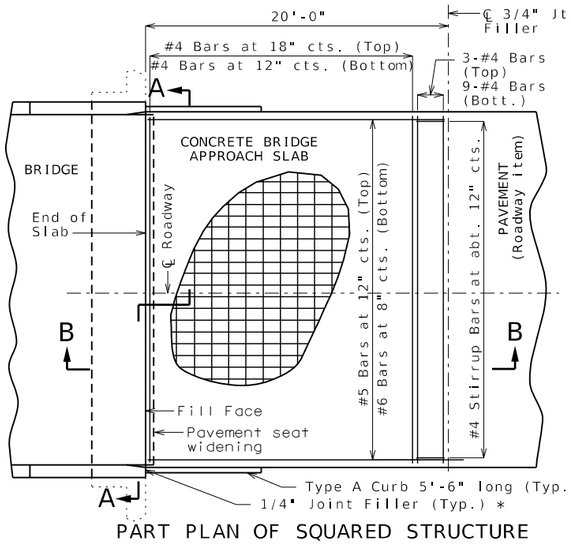
BRIDGE NO.: R02741

DESCRIPTION	DATE

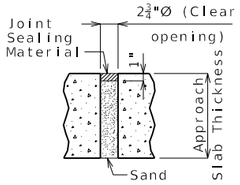
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

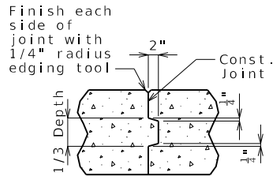
Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076



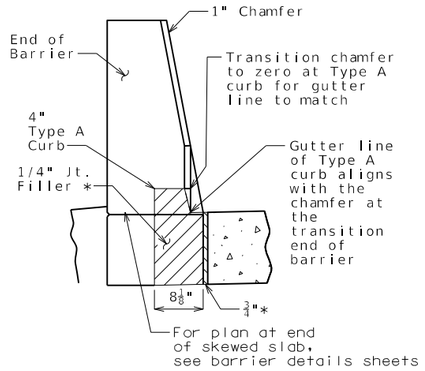
PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)



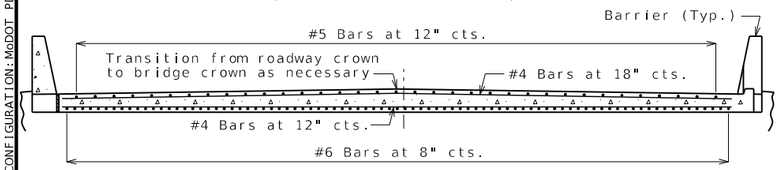
UNDERSEAL ACCESS HOLE DETAIL
(If required)



CONSTRUCTION JOINT DETAIL

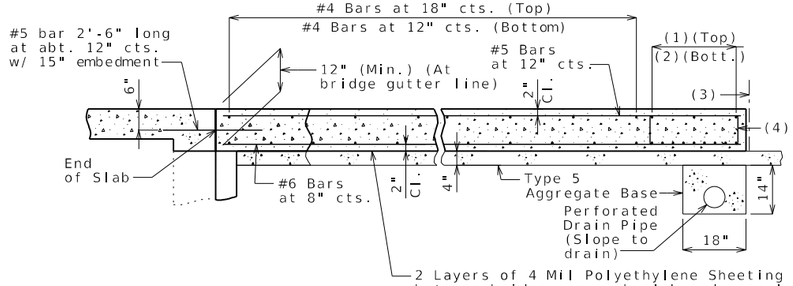


SECTION BETWEEN CURB AND BARRIER



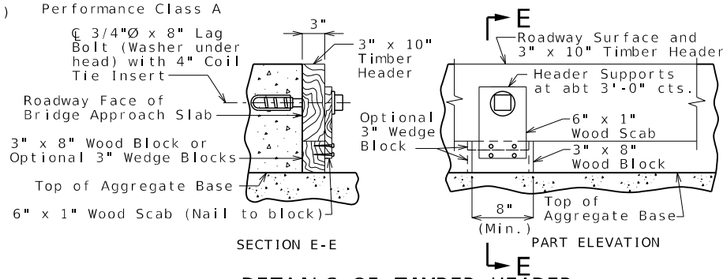
SECTION A-A

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



(1) 3-#4 Bars
(2) 9-#4 Bars
(3) ℄ 3/4" Jt. Filler
(4) #4 Stirrup Bars at abt. 12" cts.; 2'-0"x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.

SECTION B-B
(Non-integral end bent)



SECTION E-E

PART ELEVATION

DETAILS OF TIMBER HEADER
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

Notes For Concrete Slab Only:

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

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

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

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by providing a minimum lap splice of 23 inches for #4 bars, or by mechanical bar splice.

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

Payment for furnishing all materials, labor and excavation necessary to construct the concrete bridge approach slab, including the timber header, 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 (Minor) per square yard.

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

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.

* 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.

General Notes:

Contractor shall have the option to construct either slab except as noted.

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

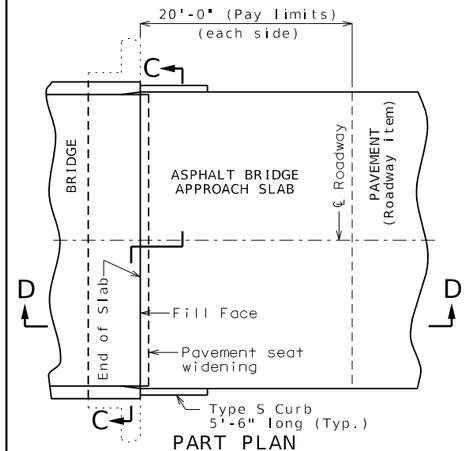
MoDOT Construction personnel will indicate the bridge approach slab used for this structure:

☐ Concrete Bridge Approach Slab
☐ Asphalt Bridge Approach Slab

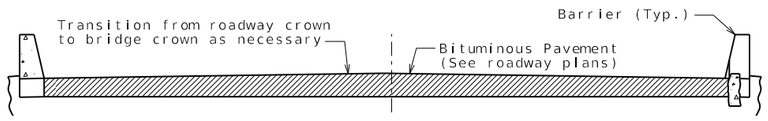
Notes For Asphalt Slab Only:

Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, and Type 5 aggregate base within the pay limits shown, complete in place, will be considered completely covered by the contract unit price for Bridge Approach Slab (Minor) per square yard.

Application of tack is required between lifts per Sec 403.

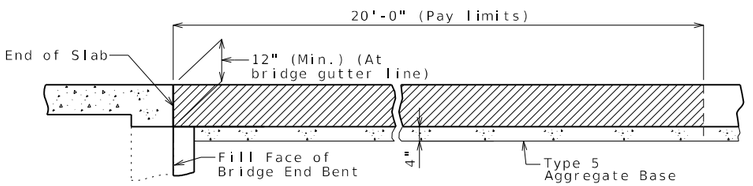


PART PLAN
(Squared structure shown, skewed structure similar)

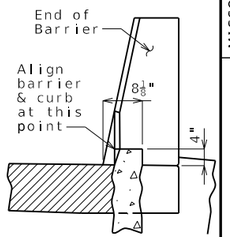


SECTION C-C

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 D-D



4" TYPE S CURB
See Missouri Standard Plan 609.00 for details of Type S curb.

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR)

Non-integral end bent shown.

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

DESIGNED BY:	NSC FEB 2024
DETAILED BY:	RCL FEB 2024
CHECKED BY:	BPW FEB 2024

KEITH LAWRENCE WETTER NUMBER E-25019 REGISTERED PROFESSIONAL ENGINEER — STATE OF MISSOURI

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED: 7/3/2024

ROUTE	STATE
F	MO
DISTRICT	SHEET NO.
BR	8

COUNTY: ATCHISON
JOB NO.: JNW0111
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: R02741

REV.	DESCRIPTION	DATE

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

Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

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

PLOT CONFIGURATION: MoDOT PDF Sheet.pltcfg
PLOTTED BY: JCASEY
LOCHNER JOB: 21679 MoDOT NW District 11 Bridges

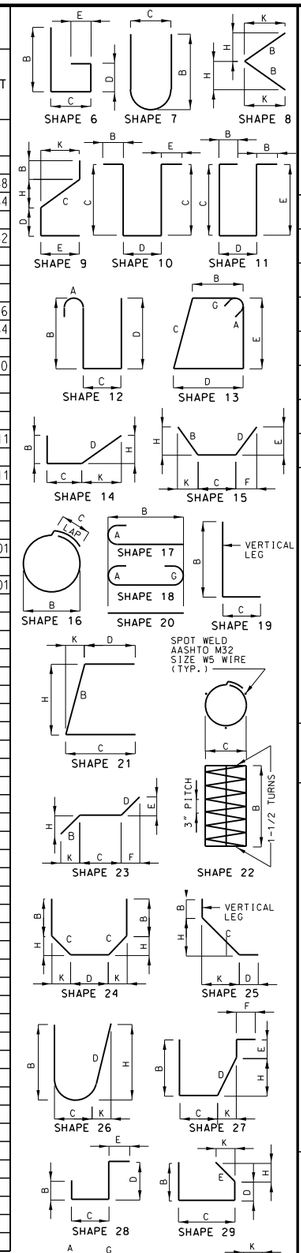
B_R02741_008_JNW0111_APPROACH SLAB.dgn 1:52:05 PM 7/3/2024

BILL OF REINFORCING STEEL

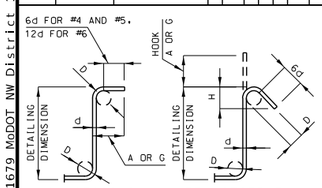
NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
SUPERSTRUCTURE																												
SLAB																												
212	5	S1	Top & Bott. Long.	E	20					41	0.000													41	0	41	0	9066
76	6	S2	Top Longit.	E	20					33	6.000													33	6	33	6	3824
214	6	S3	Top Trans.	E	20					24	5.000													24	5	24	5	7848
247	5	S4	Bott. Trans.	E	20					24	5.000													24	5	24	5	6290
148	6	S5	Top & Bott Transv.	E	20			V	4	2	7.000													2	7	2	7	2992
			7.25 in. incr.							24	4.000													24	4	24	4	
TYPE H BARRIER																												
304	5	R1	Barrier	E	14	S				2	5.000	6.500		2	5.500					2	5.000	5.500		5	5	5	3	1665
304	5	R2	Barrier	E	19	S					18.500	9.500												2	4	2	3	713
304	5	R3	Barrier	E	27	S						9.500		15.250		3.000		12.000		15.000		3.000		3	4	3	1	978
16	5	R4	Barrier	E	20					32	7.000													32	7	32	7	544
64	5	R5	Barrier	E	20					11	8.000													11	8	11	8	779
16	5	R6	Barrier	E	20					35	8.000													35	8	35	8	595
16	5	R7	Barrier	E	20					33	8.000													33	8	33	8	562
20	5	K1	Barrier	E	27	S					20.500	9.250		5.375		14.750		12.000		5.250		1.000		5	2	4	10	101
28	5	K2	Barrier	E	27	S					20.500	9.250		17.250		3.000		12.000		17.000		3.250		5	2	4	10	141
48	5	K4	Barrier	E	19	S				2	5.000	10.000												3	3	3	2	159
20	5	K5	Barrier	E	14	S					8.250	9.500		19.250						4.250		18.750		3	1	3	0	63
28	5	K6	Barrier	E	21	S				2	4.875	10.000								2	4.250	6.000		3	3	3	1	90
56	5	K7	Barrier	E	20					5	6.000													5	6	5	6	321
SLIP-FORM OPTION																												
40	5	C1	Barrier	E	20					12	0.000													12	0	12	0	501

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK NO. MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
BAR WEIGHT TOTALS																												
	5			E																								22568
	6			E																								14664
			TOTAL																									37232
SLAB ON STEEL																												
	5			E																								15356
	6			E																								14664
			TOTAL																									30020
BARRIER																												
	5			E																								6711
			TOTAL																									6711
SLIP-FORM OPTION																												
	5			E																								501
			TOTAL																									501

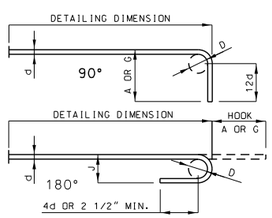


BENDING DIAGRAMS



STIRRUP HOOK DIMENSIONS			
GRADES 40 - 50 - 60 KSI			
BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	ALL GRADES 180° HOOKS A OR G	180° HOOKS J	90° HOOKS A OR G
#3	2 1/4"	5"	3"	6"
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	2'-0"
#14	18 1/4"	2'-3"	21 3/4"	2'-7"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.

HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.

E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
X = BAR IS INCLUDED IN SUBSTRUCTURE QUANTITIES.
V = BAR DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE AND THE FOLLOWING LINE.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.

NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED FOR FABRICATORS USE. (NEAREST INCH)

ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

DESIGNED BY:	KLW FEB 2024
DETAILED BY:	JTC FEB 2024
CHECKED BY:	DMA MAR 2024

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

DATE PREPARED 7/3/2024
ROUTE F | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY ATCHISON
JOB NO. JNW0111
CONTRACT ID.
PROJECT NO.
BRIDGE NO. R02741

DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)
Lochner
15717 College Boulevard | Lenexa, Kansas 66219
Certificate of Authority #F00727076

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