

DESIGN DESIGNATION

US -169

A.A.D.T. - 2022 = 871
A.A.D.T. - 2042 = 1,176
D.H.V. = 10%
T = 17%
V = 60 M.P.H.
D = 50%/50%

FUNCTIONAL CLASSIFICATION- MINOR ARTERIAL

RTE M

A.A.D.T. - 2022 = 272
A.A.D.T. - 2042 = 354
D.H.V. = 10%
T = 11%
V = 55 M.P.H.
D = 50%/50%

FUNCTIONAL CLASSIFICATION- MAJOR COLLECTOR

RTE B

A.A.D.T. - 2022 = 446
A.A.D.T. - 2042 = 580
D.H.V. = 10%
T = 11%
V = 55 M.P.H.
D = 50%/50%

FUNCTIONAL CLASSIFICATION- MAJOR COLLECTOR

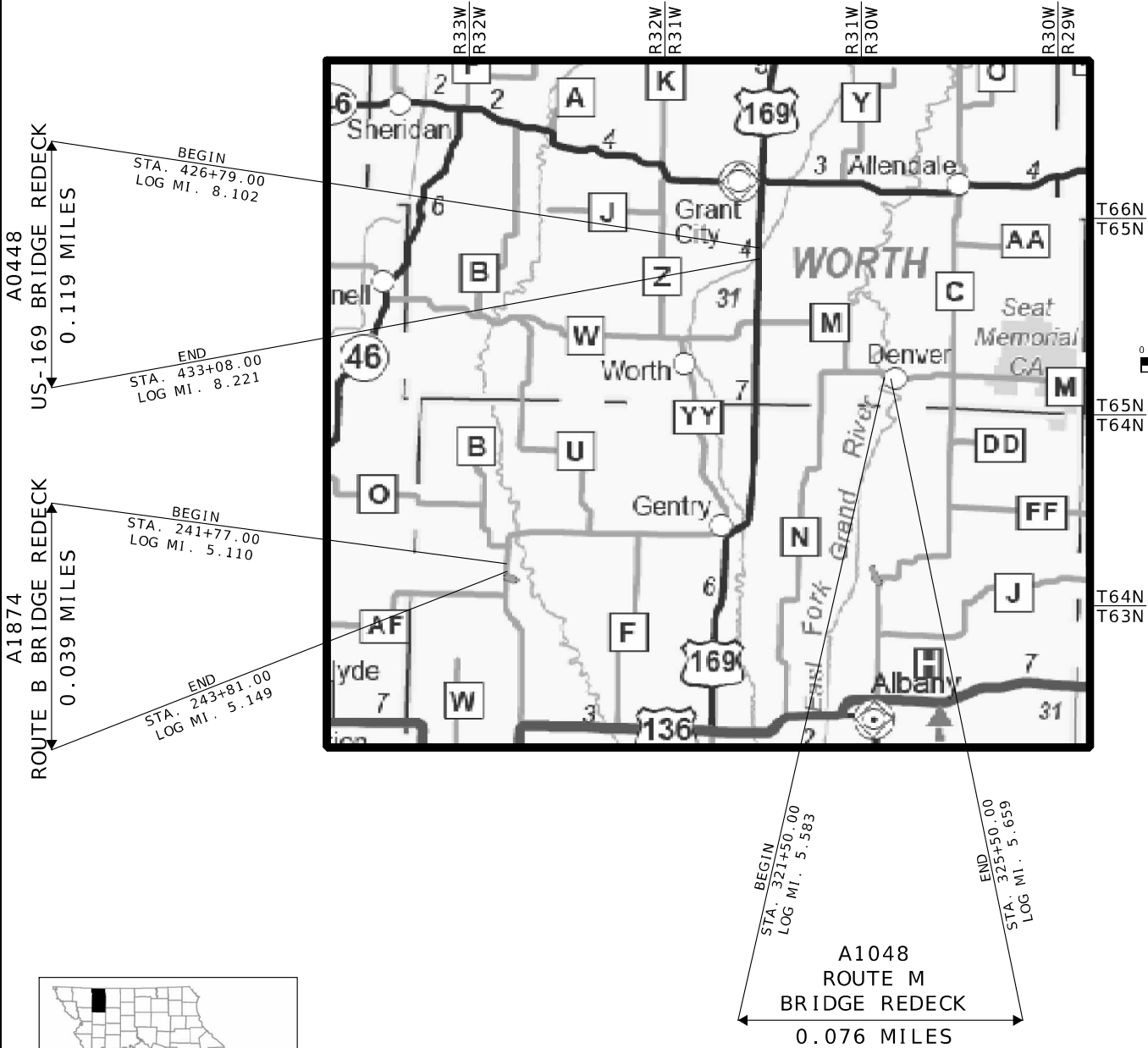
NO RIGHT OF WAY
ACQUISITION

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		
FIRE HYDRANT		
WATER VALVE		
WATER METER		
DROP INLET		
DITCH BLOCK		
GROUND MOUNTED SIGN		
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL		
FENCE		
CHAIN LINK		
WOVEN WIRE		
GATE POST		
BENCHMARK		

NOTE: DASHED OR OPEN SYMBOLS INDICATE
EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED
STATE HIGHWAY
WORTH & GENTRY COUNTY



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
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QUANTITIES (QU) (3 SHEETS)-----	3
RTE 169	
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TRAFFIC CONTROL SHEETS (TC)-----	5-6
EROSION CONTROL SHEETS (EC)-----	7
PAVEMENT MARKING (PM)-----	8
CROSS SECTIONS (XS)-----	1-8
RTE M	
PLAN-PROFILE (PP)-----	9
TRAFFIC CONTROL SHEETS (TC)-----	10-11
EROSION CONTROL SHEETS (EC)-----	12
SIGNING (SN)-----	13-14
PAVEMENT MARKING (PM)-----	15
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RTE B	
PLAN-PROFILE (PP)-----	16
TRAFFIC CONTROL SHEETS (TC)-----	17-18
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SIGNING (SN)-----	20-21
PAVEMENT MARKING (PM)-----	22
CROSS SECTIONS (XS)-----	1-6
BRIDGE DRAWINGS (B)	
A0448-----	1-14
A1048-----	1-12
A1874-----	1-12

LENGTH OF PROJECT
US -169

BEGINNING	STA. 426+79.00
END	STA. 433+08.00
APPARENT LENGTH	629 FEET
EQUATIONS AND EXCEPTIONS:	
NONE	
TOTAL CORRECTIONS	0.00 FEET

RTE M

BEGINNING	STA. 321+50.00
END	STA. 325+50.00
APPARENT LENGTH	400 FEET
EQUATIONS AND EXCEPTIONS:	
NONE	
TOTAL CORRECTIONS	0.00 FEET

RTE B

BEGINNING	STA. 241+77.00
END	STA. 243+81.00
APPARENT LENGTH	204 FEET
EQUATIONS AND EXCEPTIONS:	
NONE	
TOTAL CORRECTIONS	0.00 FEET

NET LENGTH OF PROJECT	1.233 FEET
STATE LENGTH	0.234 MILES

FOR INFORMATION ONLY ESTIMATED DISTURBED ACRES	0.98 ACRES
---	------------

STATE OF MISSOURI
MICHELE R. KRAL
NUMBER PE-200500071
PROFESSIONAL ENGINEER

DATE PREPARED
10/9/2024

ROUTE
US 169/
M/B

STATE
MO

DISTRICT
NW

SHEET NO.
1

COUNTY
GENTRY & WORTH

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

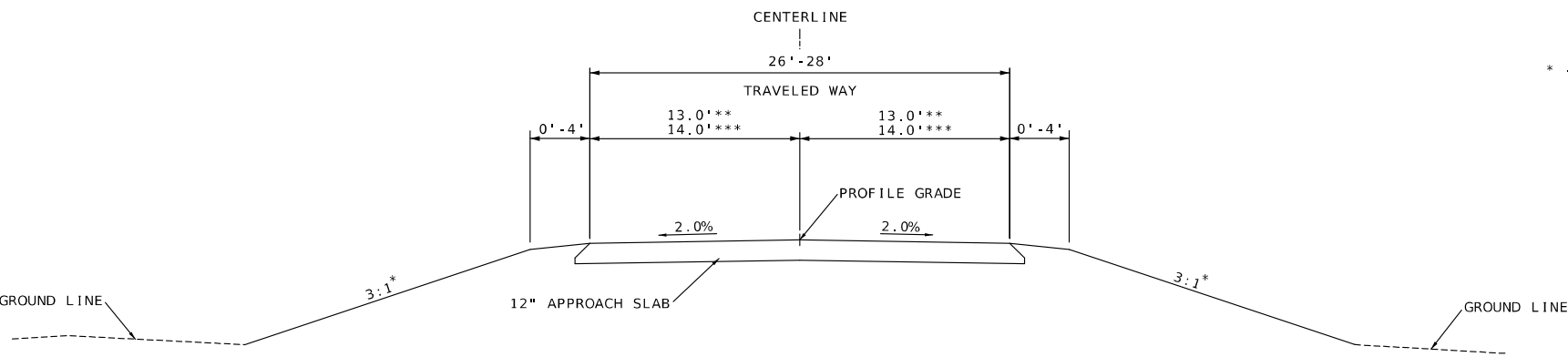
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

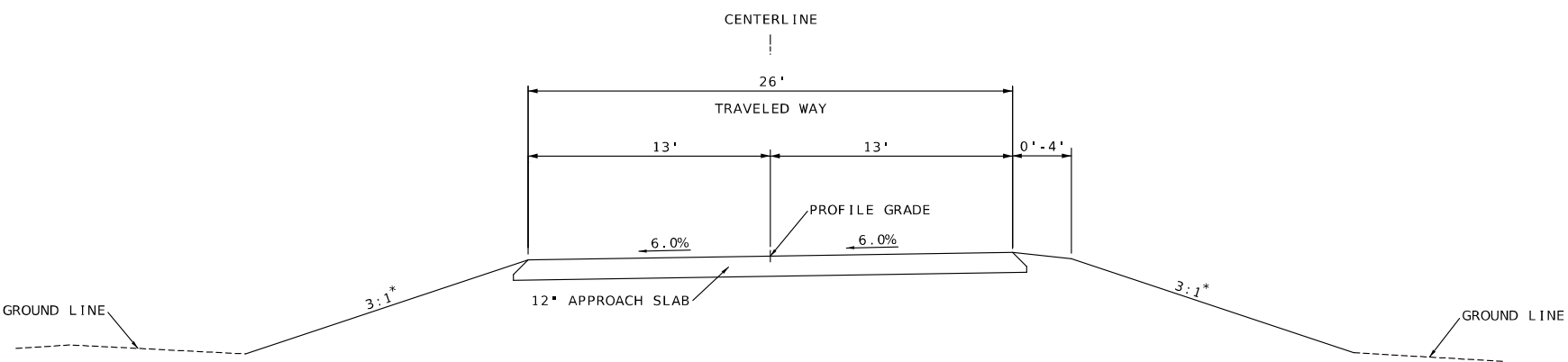
benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024



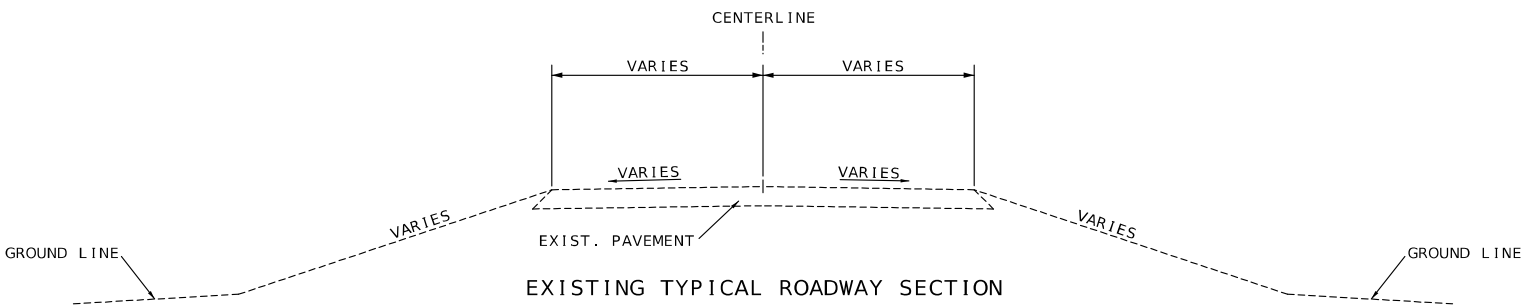
TYPICAL APPROACH SLAB SECTION

RTE. B **
STA. 242+12.30 TO STA. 242+32.30
STA. 243+37.99 TO STA. 243+57.99
US 169 ***
STA. 427+97.96 TO STA. 428+17.96
STA. 431+82.04 TO STA. 432+02.04



TYPICAL APPROACH SLAB SECTION

RTE. M
STA. 321+96.20 TO STA. 322+16.20
STA. 324+49.69 TO STA. 324+69.69



EXISTING TYPICAL ROADWAY SECTION

* - SEE INDIVIDUAL CROSS SECTIONS
FOR VARIATIONS

NOT TO SCALE

TYPICAL SECTIONS
SHEET 2 OF 2

STATE OF MISSOURI

MICHELE R. KAL

NUMBER PE-2005000711

PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED

8/7/2024

ROUTE

US 169 / M/B

STATE

MO

DISTRICT

NW

SHEET NO.

2

COUNTY

GENTRY & WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

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

REMOVAL OF IMPROVEMENTS					
STATION	STATION	SIDE	DESCRIPTION	QUANTITY	UNITS
RTE 169					
426+49.99	428+25.50	LT	GUARDRAIL	175.5	LF
426+84.23	428+60.11	RT	GUARDRAIL	175.9	LF
426+79.00	431+97.96	CL	PAVEMENT	494.0	SY
427+99.05		LT	SIGN	1	EA
428+35.58		RT	SIGN	1	EA
431+40.83	433+16.74	LT	GUARDRAIL	175.9	LF
431+74.20	433+50.04	RT	GUARDRAIL	175.8	LF
431+68.49		LT	SIGN	1	EA
431+68.24		LT	SIGN	1	EA
432+02.12		RT	SIGN	1	EA
432+02.04	433+08.00	CL	PAVEMENT	428.6	SY
SUBTOTAL				1	LS
RTE M					
321+50.00	321+96.20	CL	PAVEMENT	156.7	SY
321+96.82		LT	SIGN	1	EA
322+10.58		RT	SIGN	1	EA
322+13.25		RT	SIGN	1	EA
322+17.65		LT	SIGN	1	EA
324+44.22		RT	SIGN	1	EA
324+45.26	324+93.51	RT	GUARDRAIL	48.3	LF
324+59.45		LT	SIGN	1	EA
324+58.68		LT	SIGN	1	EA
324+64.25		RT	SIGN	1	EA
324+69.69	325+50.00	CL	PAVEMENT	232.3	SY
324+73.27		LT	SIGN	1	EA
324+83.62		RT	SIGN	1	EA
324+88.49		LT	SIGN	1	EA
SUBTOTAL				1	LS
RTE B					
241+77.00	242+12.30	CL	PAVEMENT	140.7	SY
242+23.31		LT	SIGN	1	EA
242+40.35		RT	SIGN	1	EA
243+31.02		LT	SIGN	1	EA
243+47.45		RT	SIGN	1	EA
243+57.99	243+81.00	CL	PAVEMENT	118.4	SY
SUBTOTAL				1	LS
PAY TOTAL				1	LS

CLEARING AND GRUBBING		
BEGIN STATION	END STATION	(AC)
RTE 169		
426+74.10	433+38.96	0.3
SUBTOTAL		0.3
RTE M		
321+50.0	325+72.96	0.1
SUBTOTAL		0.1
RTE B		
240+34.11	244+24.39	0.1
SUBTOTAL		0.1
PAY TOTAL		1

MOBILIZATION
1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING & STAKING
1 LUMP SUM

EARTHWORK				
BEGIN STATION	END STATION	CLASS A EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	EMBANKMENT IN PLACE (CY)
RTE 169				
426+74.10	433+38.96	85	68	216
SUBTOTALS		85	68	216
RTE M				
321+50.00	325+72.77	41	33	73
SUBTOTALS		41	33	73
RTE B				
240+34.11	244+00.00	19	15	5
SUBTOTALS		19	15	5
PAY TOTALS		145	116	295

OPTIONAL PAVEMENT			
BEGIN STATION	END STATION	OPTIONAL PAVEMENT (SY)	TYPE 1 AGGREGATE BASE (4") (SY)
RTE 169			
426+79.00	427+97.96	423.8	423.8
432+02.04	433+08.00	373.9	373.9
SUBTOTALS		797.7	797.7
RTE M			
321+50.00	321+98.99	120.8	120.8
324+63.54	325+50.00	207.0	207.0
SUBTOTALS		327.8	327.8
RTE B			
241+77.00	242+19.81	95.4	95.4
243+50.77	243+81.00	63.7	63.7
SUBTOTALS		159.1	159.1
PAY TOTALS		1285	1285

STATE OF MISSOURI

MICHELE R. KEAL

PROFESSIONAL ENGINEER

PE-2005000711

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED

8/21/2024

ROUTE

US 169/

M/B

STATE

MO

DISTRICT

NW

SHEET NO.

3

COUNTY

GENTRY & WORTH

JOB NO.

JNW0009

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 F009T0024

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

GUARDRAIL								
BEGIN STATION	END STATION	SIDE	MGS GUARDRAIL (LF)	TYPE A GUARDRAIL (LF)	TYPE A CRASHWORTHY END TERMINAL (MASH) (EA)	END ANCHOR (EA)	MGS BRIDGE APPROACH TRANSITION (EA)	BRIDGE ANCHOR SECTION (SAFETY BARRIER CURB) (EA)
RTE 169								
427+07.51	428+33.51	RT	37.5		1		1	
427+13.86	428+02.41	LT			1		1	
431+66.49	433+05.05	LT	37.5		1		1	
431+97.59	432+86.14	RT			1		1	
SUBTOTALS			75.0		4		4	
ROUTE M								
324+43.87	325+43.01	RT	12.5		1		1	
SUBTOTALS			12.5		1		1	
ROUTE B								
240+64.11	241+39.81	RT	87.5		1		1	
243+30.48	244+20.82	LT		62.5		1		1
SUBTOTALS			87.5	62.5	1	1	1	1
PAY TOTALS			175	63	6	1	6	1

PERMANENT PAVEMENT MARKING					
BEGIN STATION	END STATION	SIDE	WATERBORNE PAVEMENT MARKING PAINT TYPE P BEADS		REMARKS
			4" WHITE (LF)	4" YELLOW (LF)	
RTE 169					
426+79.00	433+08.00	RT	629.0		EDGE LINE
426+79.00	433+08.00	LT	629.0		EDGE LINE
426+79.00	433+08.00	CL		157.3	INTERMITTENT CENTERLINE
SUBTOTALS			1,258	157	
RTE M					
321+50.00	325+50.00	CL		800.0	DOUBLE YELLOW CENTERLINE
SUBTOTALS			0	800	
RTE B					
241+77.00	243+81.00	RT	204.0		EDGE LINE
241+77.00	243+81.00	LT	204.0		EDGE LINE
241+77.00	243+81.00	CL		51.0	INTERMITTENT CENTERLINE
SUBTOTALS			408	51	
PAY TOTALS			1,666	1,008	

SEEDING AND MULCHING			
BEGIN STATION	END STATION	COOL SEASON MIXTURES (AC)	MULCHING (AC)
RTE 169			
426+74.10	433+38.96	0.3	0.3
SUBTOTALS		0.3	0.3
RTE M			
321+50.0	325+72.96	0.10	0.10
SUBTOTALS		0.10	0.10
RTE B			
240+34.11	244+24.39	0.10	0.10
SUBTOTALS		0.10	0.10
PAY TOTALS		0.5	0.5

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 169						
426+68.85	428+42.71	RT	173.86			2
426+71.15	427+97.45	LT	126.3			2
427+97.45	428+79.27	CL			226.2	2
431+07.15	432+04.30	CL			267.1	3
431+65.31	433+47.94	LT	182.63			2
432+04.30	433+20.55	RT	116.25			2
SUBTOTALS			599.0		493.3	13
RTE M						
321+49.06	322+21.46	LT	72.4			1
321+49.59	322+13.87	RT	64.28			1
321+90.00	322+13.94	RT		9.5		
321+96.91	322+18.26	LT		13.9		
322+13.87	322+19.00	CL			106.1	1
323+98.79	324+54.01	CL			194.2	2
324+43.87	325+72.77	RT		392.6		
324+57.45	324+64.83	LT		10.1		
324+37.93	325+76.20	RT	138.27			2
324+54.01	325+50.00	LT	95.99			1
325+90.00	325+13.00	LT	11.5			1
SUBTOTALS			382.44	426.1	300.3	9
RTE B						
240+33.50	242+39.81	RT	206.31			2
240+46.00	241+05.00	RT		76.5		
241+30.00	241+60.00	RT		49.9		
241+76.12	242+23.87	LT	47.75			1
242+13.84	242+39.81	RT		29.1		
242+23.87	242+58.54	CL			115.8	1
243+16.00	243+49.07	CL			114.5	1
243+29.20	244+21.17	LT	91.97			1
243+38.00	243+45.00	LT		11.7		
243+49.07	243+81.44	RT	32.37			1
244+08.06	244+24.39	LT		36		
SUBTOTALS			378.4	203.2	230.3	7
PAY TOTALS			1360	629	1024	29

STATE OF MISSOURI

MICHELLE R. KOL

NUMBER

PE-2005000711

PROFESSIONAL ENGINEER

THE SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY

DATE PREPARED

8 / 21 / 2024

ROUTE

US 169 / M/B

STATE

MO

DISTRICT

NW

SHEET NO.

3

COUNTY

GENTRY & WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

benesch

4435 MAIN STREET, SUITE 1150

KANSAS CITY, MO 64111

913/441-1100, FAX 913/441-1468

CERTIFICATE OF AUTHORITY NUMBER F009T0024

DATE PREPARED	
8/21/2024	
ROUTE US 169/ M/B	STATE MO
DISTRICT NW	SHEET NO. 3

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO. .

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DEPARTMENT OF HEALTH AND HUMAN SERVICES

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ROAD CLOSED
2 MILES AHEAD
LOCAL TRAFFIC ONLY

END
DETOUR

US-169
Closed Ahead
Follow Detour



WO20-3

R11-2

20

63

DETOUR

NORTH

169

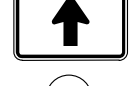


50

DETOUR

SOUTH

169



50c

DETOUR

NORTH

169



50a

DETOUR

SOUTH

169



50d

DETOUR

NORTH

169



50b

DETOUR

SOUTH

169



50e

TRAFFIC CONTROL LEGEND

• SIGN (SINGLE SIDED)

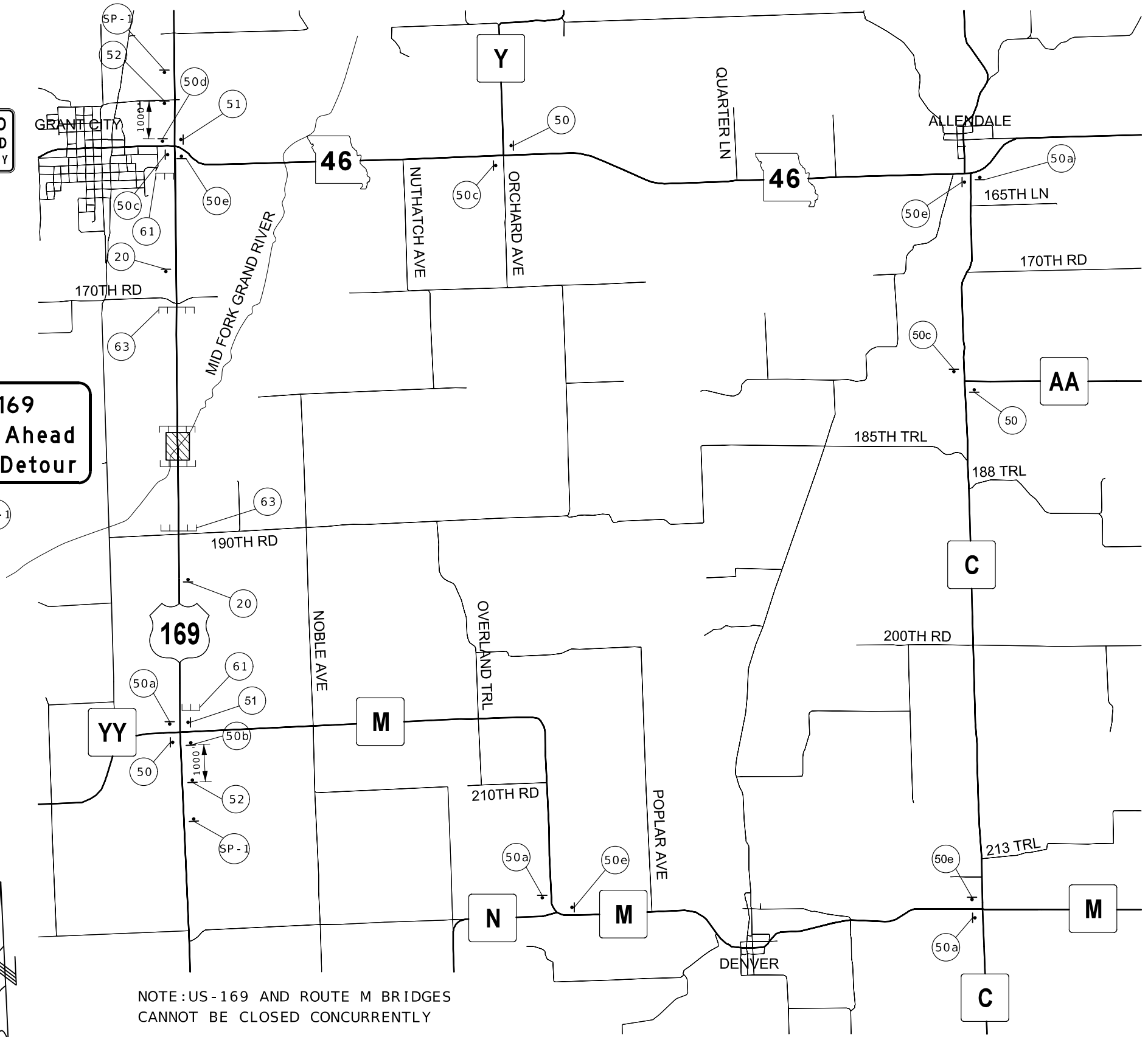
E BARRICADE

WORK ZONE

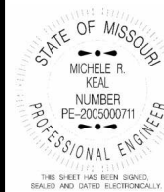
NOT TO SCALE

NOTE:US-169 AND ROUTE M BRIDGES
CANNOT BE CLOSED CONCURRENTLY

NOTE:ALL EXISTING SIGNING CONFLICTING
WITH TEMPORARY TRAFFIC CONTROL MESSAGING
SHALL BE COVERED OR MASKED WHILE TEMPORARY
TRAFFIC CONTROL MESSAGING IS IN EFFECT.



TRAFFIC CONTROL SHEET
RTE 169
SHEET 1 OF 2



DATE PREPARED
8/7/2024

ROUTE
US-169

STATE
MO

DISTRICT
NW

SHEET NO.
5

COUNTY
WORTH

JOB NO.
JNW0009

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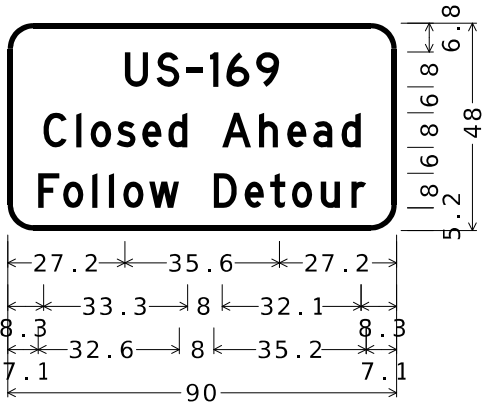
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

MODOT

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024



6.0" Radius, 1.3" Border, Black on Orange;
"US-169", D;
"Closed Ahead", D;
"Follow Detour", D;
Table of distances between letter and object lefts

	U	S	-	1	6	9	
27.2	27.2	26.9	5.5	3.8	6.9	5.3	27.2
	C	I	O	S	E	D	
8.3	7.6	3.3	6.0	5.9	6.1		
	A	H	E	A	D		
12.4	8.5	6.6	6.0	6.6	4.4	8.3	
	F	O	I	I	O	W	
7.1	5.7	6.7	3.9	3.3	6.0		
	D	E	T	O	U	R	
15.0	7.1	5.9	5.0	6.8	7.0	3.4	7.1

TRAFFIC CONTROL SHEET
RTE 169
SHEET 2 OF 2

DATE PREPARED
8/7/2024

ROUTE
US-169

DISTRICT
NW

STATE
MO

SHEET NO.
6

COUNTY
WORTH

JOB NO.

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

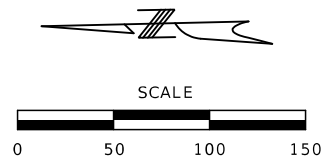
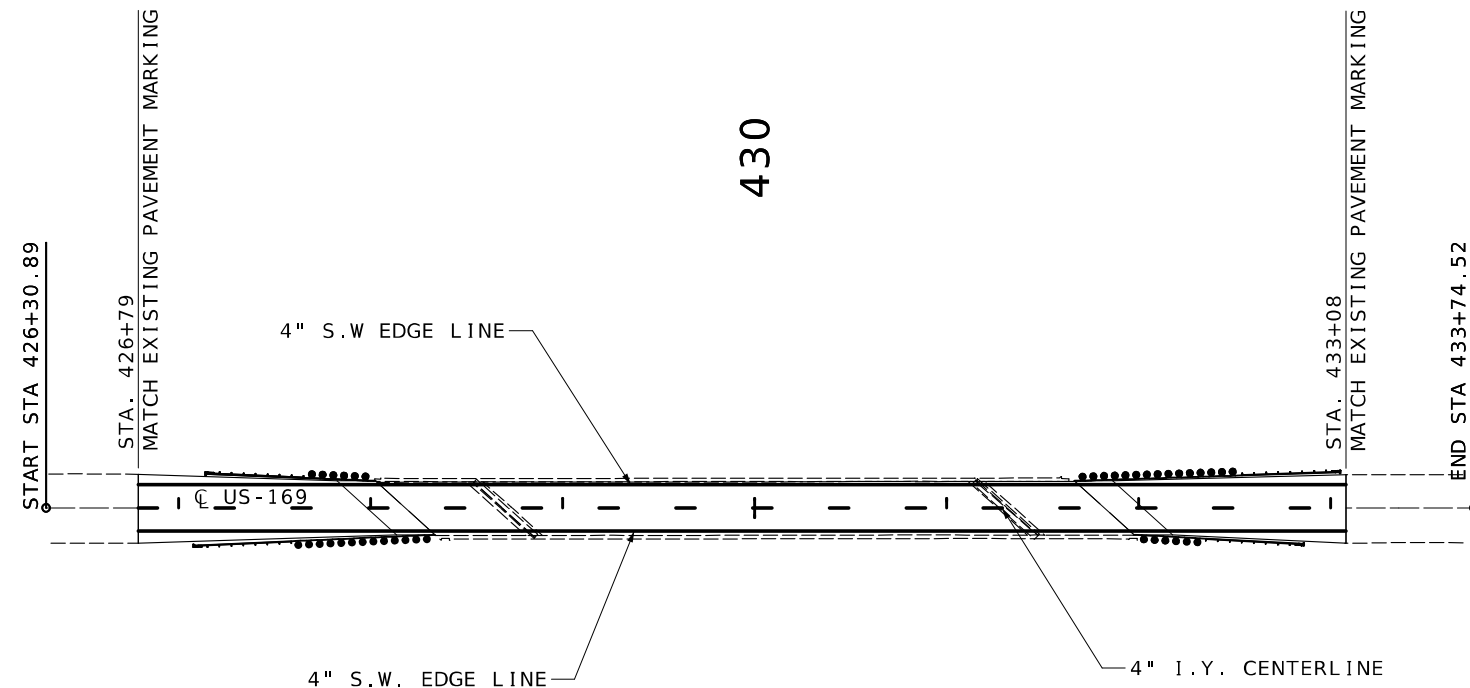
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
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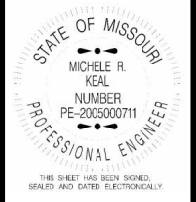
PAVEMENT MARKING
RTE 169
SHEET 1 OF 1

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

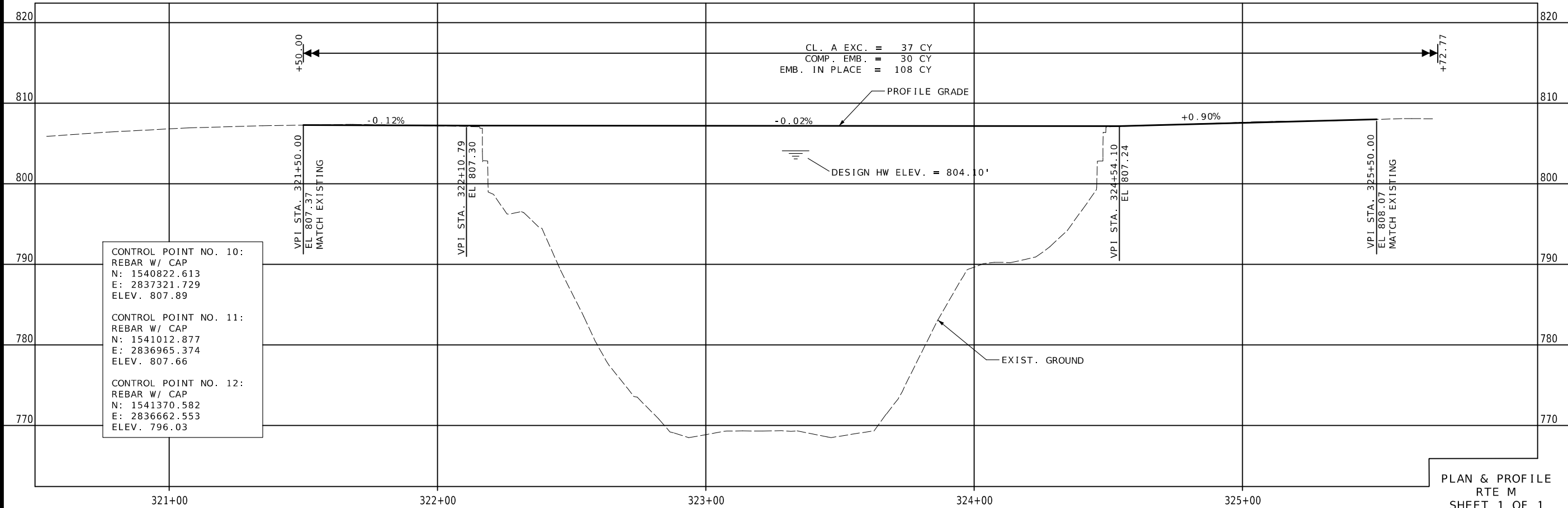
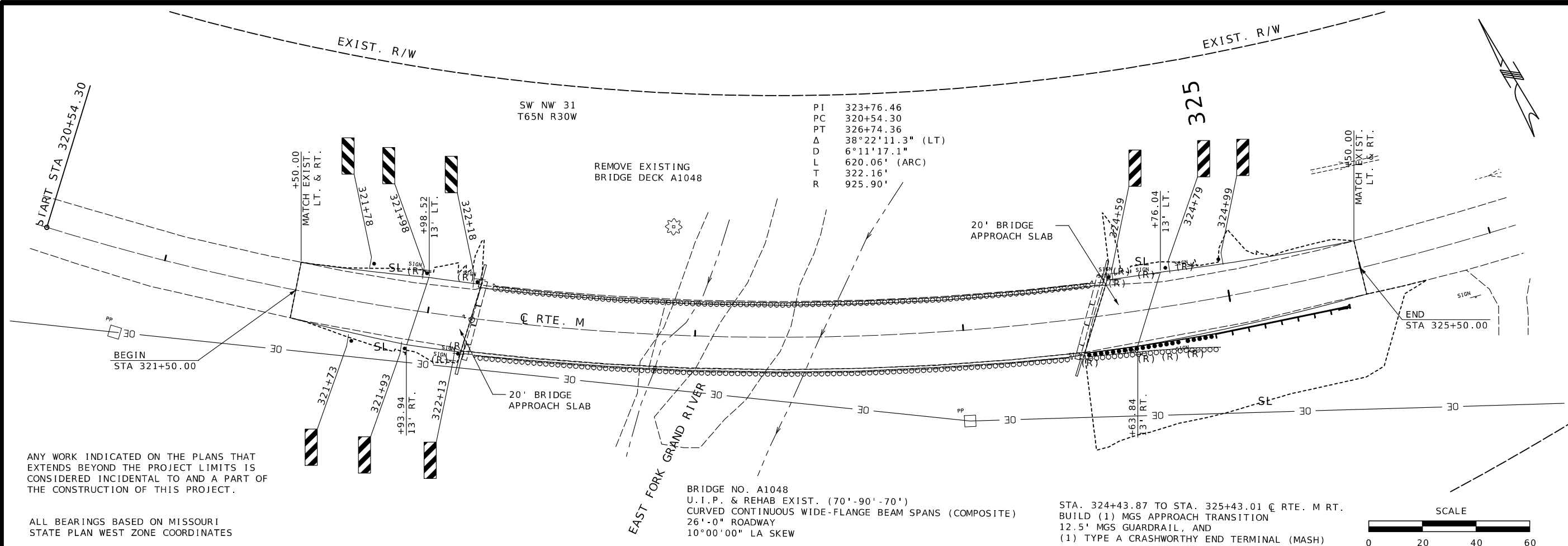
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

DATE	DESCRIPTION

DATE PREPARED 8/7/2024	
ROUTE US-169	STATE MO
DISTRICT NW	SHEET NO. 8
COUNTY WORTH	
JOB NO. JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	



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



STATE OF MISSOURI
MICHAEL R. KEAL
NUMBER
PE-2005000711
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN E-SEAL
SEALING AND DATED ELECTRONICALLY

DATE PREPARED
8/7/2024

ROUTE
M

DISTRICT
NW

COUNTY
WORTH

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

MoDOT

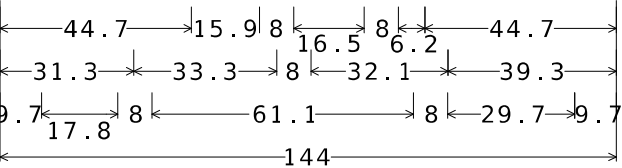
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024



Mo. Rte M
Closed Ahead
Use Alternative Route



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

44.7	15.9	8	16.5	8	6.2	44.7
31.3	33.3	8	32.1	39.3		
9.7	17.8	8	61.1	8	29.7	9.7
144						

M	o	.	R	t	e	M
44.7	8.6	6.1	9.2	7.0	5.0	12.5
6.2	44.7					

C	l	o	s	e	d	A	h	e	a	d	
31.3	7.8	6.3	3.6	0.5	9.6	11.2	4.8	5.6	6.6	0.6	6.4
3.9											3.8

U	s	e
9.7	7.7	4.6
0		

A	l	t	e	r	n	a	t	i	v	e
12.4	8.5	3.2	5.0	6.6	5.0	6.5	6.5	4.5	6.3	1.6
7										

R	o	u	t	e
12.5	7.1	6.7	6.4	5.0
4.5				9.7

TRAFFIC CONTROL SHEET
RTE M
SHEET 2 OF 2

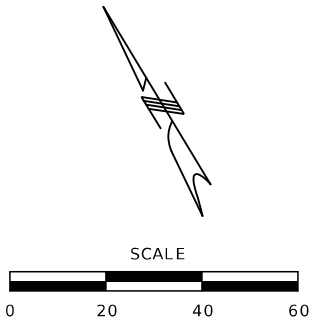
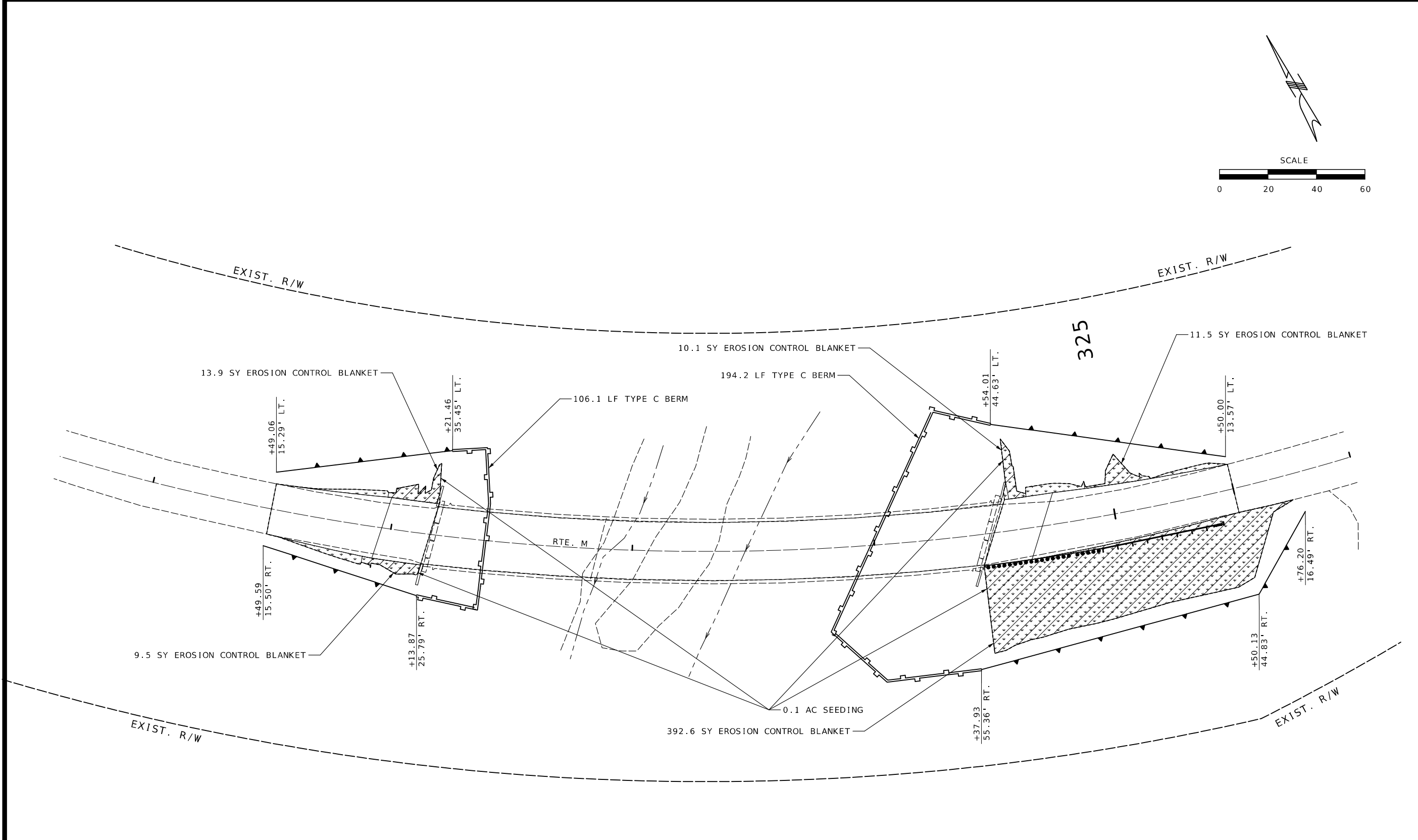
DATE PREPARED 8/7/2024	
ROUTE M	STATE MO
DISTRICT NW	SHEET NO. 11
COUNTY WORTH	
JOB NO. JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	

DESCRIPTION	DATE

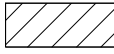
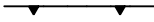
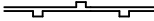
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-273-6636)

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024



TEMPORARY EROSION CONTROL LEGEND

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

PERMANENT EROSION CONTROL LEGEND

-  SEEDING AND MULCHING

EROSION CONTROL
RTE M
SHEET 1 OF 1



DATE PREPARED 8/7/2024	
ROUTE M	STATE MO
DISTRICT NW	SHEET NO. 12
COUNTY WORTH	
JOB NO. JNW0009	
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)



4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

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

DATE PREPARED	
8/7/2024	
ROUTE	STATE
M	MO
DISTRICT	SHEET #
NW	13
COUNTY	
WORTH	
JOB NO.	
JNW0009	
CONTRACT ID.	

PROJECT NO.
BRIDGE NO.

[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO. 65102

 **benesch**
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468


[illegible]

STRUCTURAL STEEL POST AND FOOTING DATA TABLE															
POST DES. NO.		NOM. SIZE		POST		FOOTING									
				WEIGHT		STUB LENGTH	DIA.	LEVEL GROUND		6:1 GRADE		4:1 GRADE		3:1 OR 2:1 GRADE	
				LBS/FT	LBS/IN			DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.
1	W6	9.0	0.75	3'-0"	15"	3'-0"	0.14	3'-2"	0.15	3'-3"	0.16	3'-6"	0.17		
2	W6	15.0	1.25	4'-0"	24"	4'-0"	0.47	4'-2"	0.50	4'-3"	0.51	4'-6"	0.54		
3	W8	19.50	1.60	4'-0"	28"	4'-0"	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		

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' - 3¾"	12"	4-6"	0.13
3	7.58	0.63	4' - 3¾"	12"	4-6"	0.13
4	10.79	0.90	5' - 3¾"	18"	5-6"	0.36

DATE PREPARED	
8/7/2024	
ROUTE	STATE
M	MO
DISTRICT	SHEET NO.
NW	14
COUNTY	
WORTH	
JOB NO.	
JNW0009	
CONTRACT ID.	

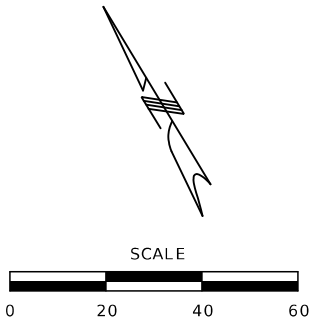
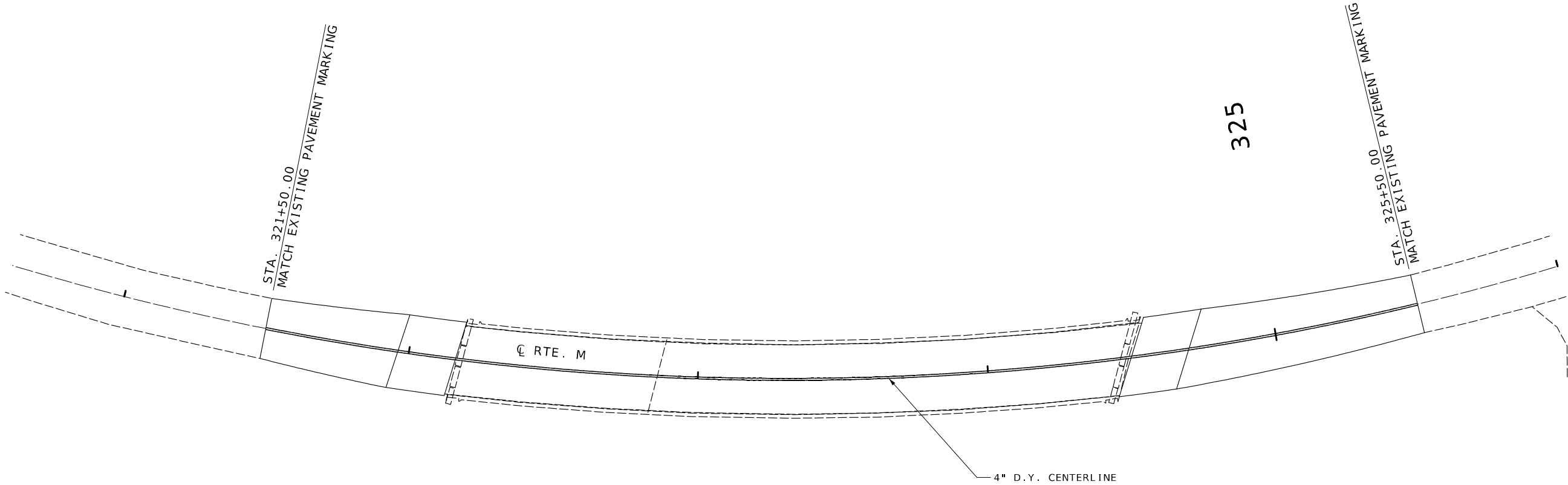
PROJECT NO.
BRIDGE NO.

[illegible]

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITAL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-235-6626)

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913.441.1100 • FAX 913.441.1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



PAVEMENT MARKING
RTE M
SHEET 1 OF 1

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

DATE	DESCRIPTION

PROJECT NO.
BRIDGE NO.

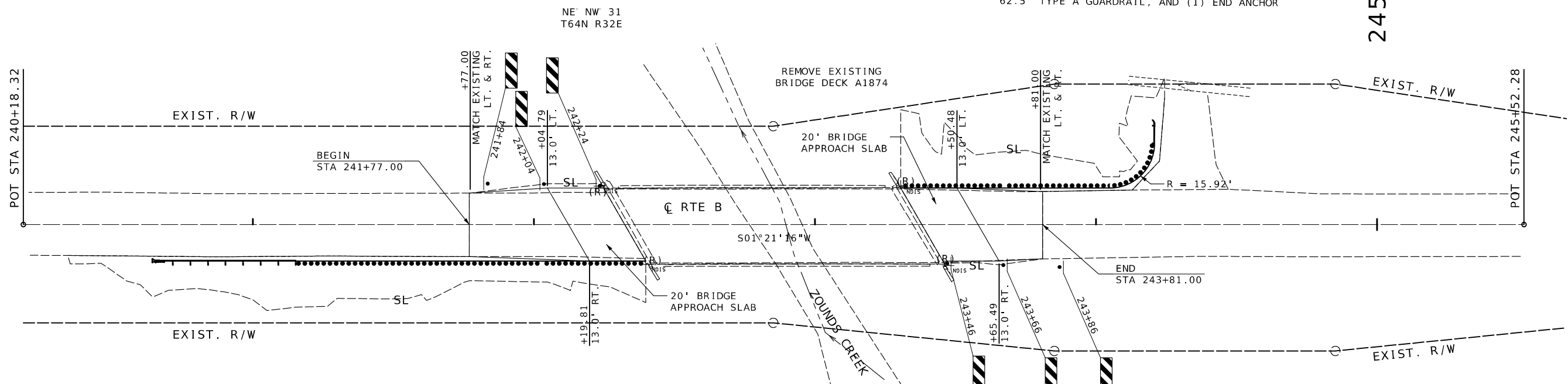
COUNTY
WORTH
JOB NO.
JNW0009
CONTRACT ID.

STATE OF MISSOURI
MICHELE R. KEAL
NUMBER
PE-200500071
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED,
SEALED AND DATED ELECTRONICALLY

DATE PREPARED
8/7/2024

ROUTE
M
STATE
MO
DISTRICT
NW
SHEET NO.
15

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

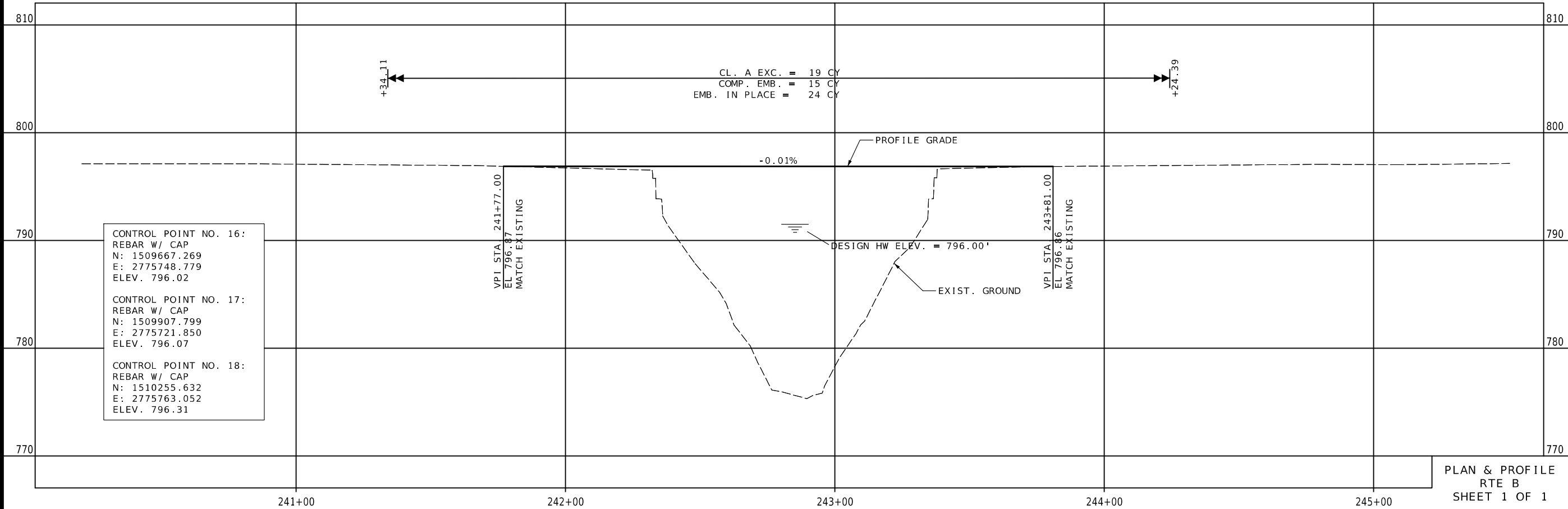
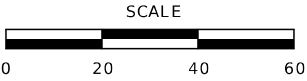


ANY WORK INDICATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

ALL BEARINGS BASED ON MISSOURI STATE PLANE WEST ZONE COORDINATES

STA. 240+64.11 TO STA. 241+39.81 \angle RTE. B RT.
BUILD (1) MGS BRIDGE APPROACH TRANSITION
87.5' MGS GUARDRAIL, AND
(1) TYPE A CRASHWORTHY END TERMINAL (MASH)

BRIDGE NO. A1874
U.I.P & REHAB EXIST. (29'-45'-29')
SIMPLE WIDE FLANGE BEAMS SPANS (COMPOSITE)
26'-0" ROADWAY
30°00'00" RA SKEW



PLAN & PROFILE
RTE B
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
8/7/2024

ROUTE
B

DISTRICT
NW

COUNTY
GENTRY

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MoDOT

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

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



END
DETOUR

MO4-8a

51

ROAD
CLOSED

R11-2

63

ROAD CLOSED
TO
THRU TRAFFIC

R11-4

62



WO20-3

20

DETOUR

NORTH



50f

DETOUR

SOUTH



50i

DETOUR

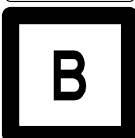
NORTH



50g

DETOUR

SOUTH



50j

DETOUR

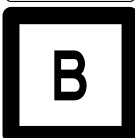
NORTH



50h

DETOUR

SOUTH



50k

TRAFFIC CONTROL LEGEND

• SIGN (SINGLE SIDED)

E BARRICADE

WORK ZONE

CHANGEABLE MESSAGE BOARD

NOTE:ALL EXISTING SIGNING CONFLICTING
WITH TEMPORARY TRAFFIC CONTROL MESSAGING
SHALL BE COVERED OR MASKED WHILE TEMPORARY
TRAFFIC CONTROL MESSAGING IS IN EFFECT.

CMS NOTES

- MO. RTE B
CLOSED
FOLLOW DETOUR

ROAD CLOSED
1 MILES AHEAD
LOCAL TRAFFIC ONLY

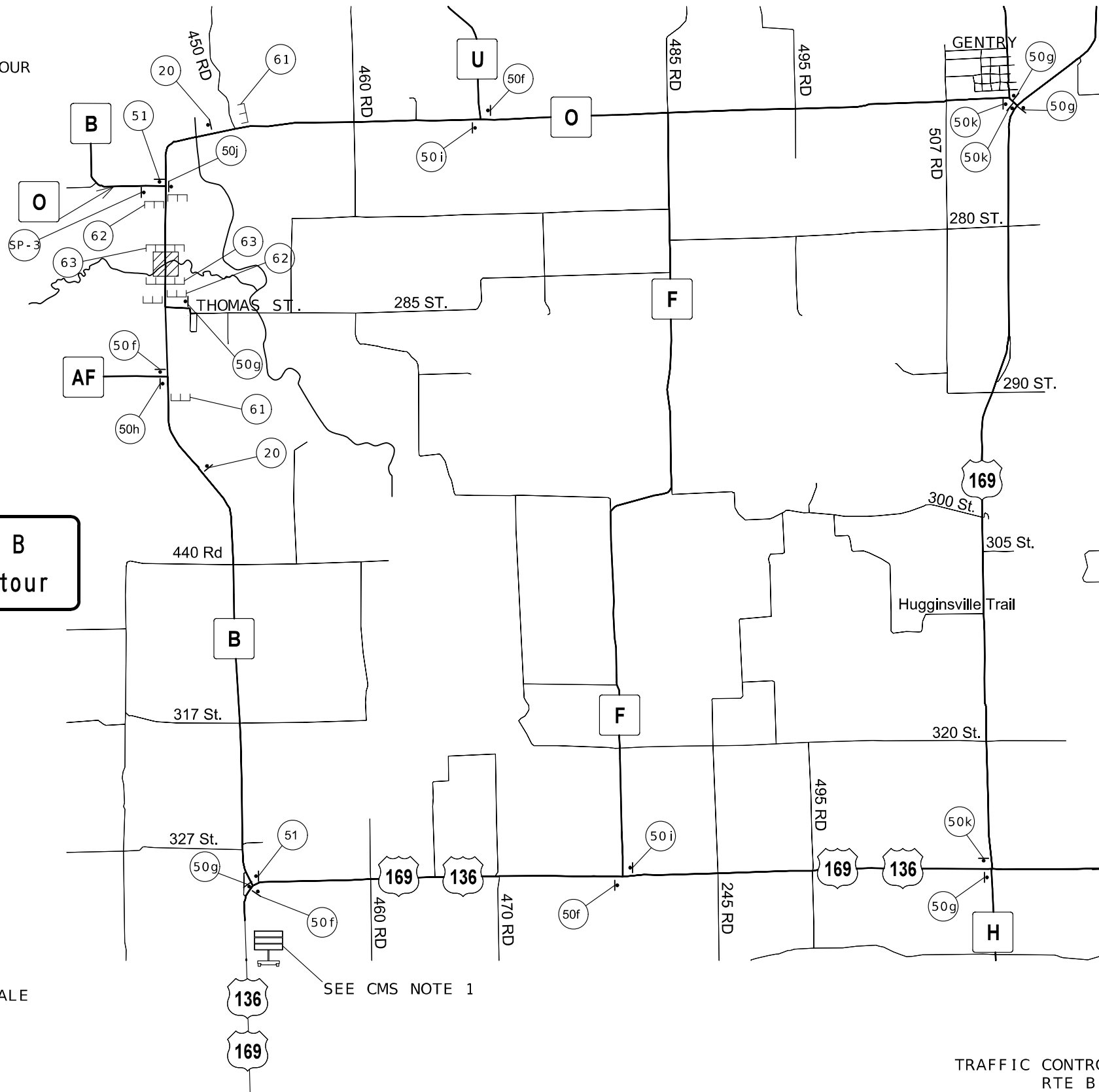
R11-3a

61

Mo. Rte B
Follow Detour

SP-3

NOT TO SCALE



SEE CMS NOTE 1

TRAFFIC CONTROL SHEET
RTE B
SHEET 1 OF 2



DATE PREPARED
8/7/2024

ROUTE B MO
DISTRICT NW SHEET NO. 17

COUNTY GENTRY
JOB NO. JNW0009
CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

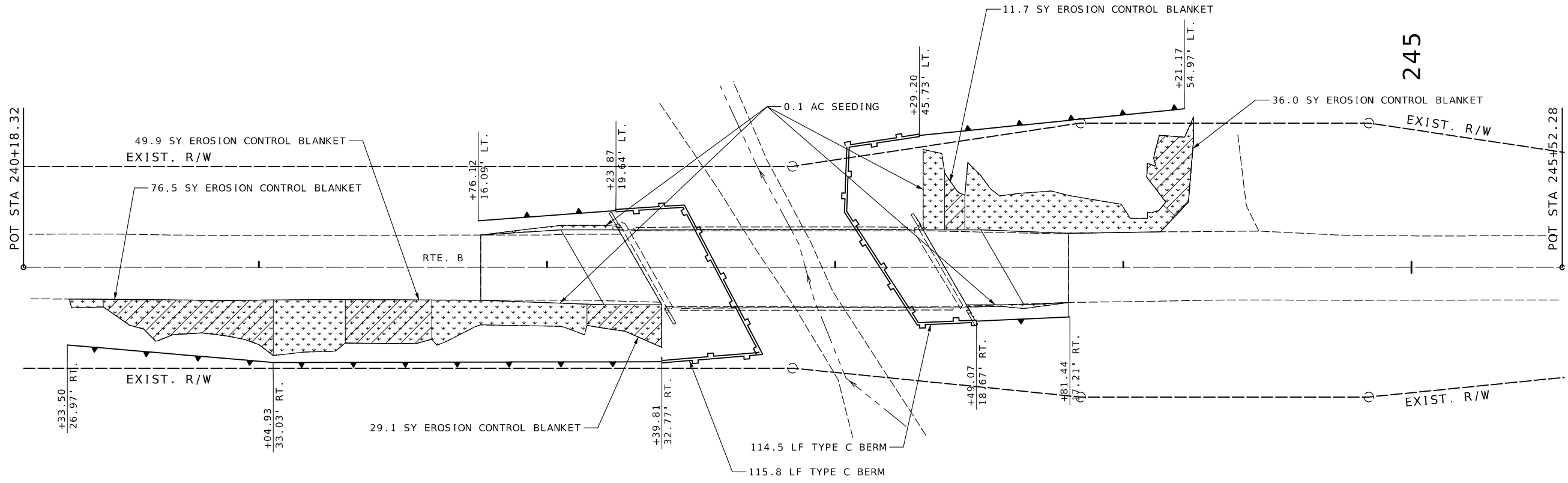
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION





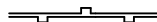
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER FO09T0024



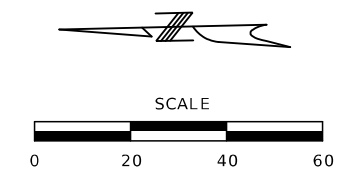
TEMPORARY EROSION CONTROL LEGEND

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

PERMANENT EROSION CONTROL LEGEND

-  SEEDING AND MULCHING

EROSION CONTROL
RTE B
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
8/7/2024

ROUTE
B

DISTRICT
NW

COUNTY
GENTRY

JOB NO.
JNW0009


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)



4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

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

\$FILE\$ 11:47:53 AM 8/7/2024

EFFECTIVE 07-01-2022

SIGNS

902 SIGNAL SIGNS TABULATED ON D-37A SHEET

CONCRETE FOOTINGS EMBEDDED

ITEM NO. 9031010
CY

STRUCTURAL STEEL POSTS *

POST DES NO.

POST NO. 1
LF

POST NO. 2
LF

POST NO. 3
LF

LBS PER FT

TOTAL ITEM NO. 9031210
LBS

PIPE POSTS *

PIPE SIZE
IN.

POST NO. 1
LF

POST NO. 2
LF

LBS PER FT

TOTAL ITEM NO. 9031220
LBS

BACKING BARS **

2" X 1/4" BARS @ 2.55 LBS PER FT

NO. EACH

LGTH IN.

TOTAL LF

TOTAL LBS

U-CHANNEL POST

ITEM NO. 9031250A
LF

PERFORATED SQUARE STEEL TUBE

2 IN. POST

POST NO. 1
LF

POST NO. 2
LF

TOTAL ITEM NO. 9031270A
LF

ANCHORS

DRIVEN 12-GA. ITEM NO. 9031271A
EA

DRIVEN 7-GA. ITEM NO. 9031273A
EA

CONCRETE 7-GA. ITEM NO. 9031274
EA

2.5 IN. POST

POST NO. 1
LF

POST NO. 2
LF

TOTAL ITEM NO. 9031280
LF

ANCHORS

2.25" INSERT (6 FT) ITEM NO. 9031272A
EA

DRIVEN 7-GA. ITEM NO. 9031281A
EA

CONCRETE 7-GA. ITEM NO. 9031285
EA

BREAK-AWAY ASSEMBLY

ITEM NO. 9031241
EA

REMARKS AND OTHER REQUIRED ITEMS

DATE PREPARED
8/7/2024

ROUTE
B

STATE
MO

DISTRICT
NW

SHEET NO.
20

COUNTY
GENTRY

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

MODOT

benesch

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER FO09T0024

SUBTOTAL

TOTAL

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

STRUCTURAL STEEL POST AND FOOTING DATA TABLE

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

D-29

DATE PREPARED	
8/7/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
NW	21
COUNTY	
GENTRY	
JOB NO.	
JNW0009	
CONTRACT ID.	

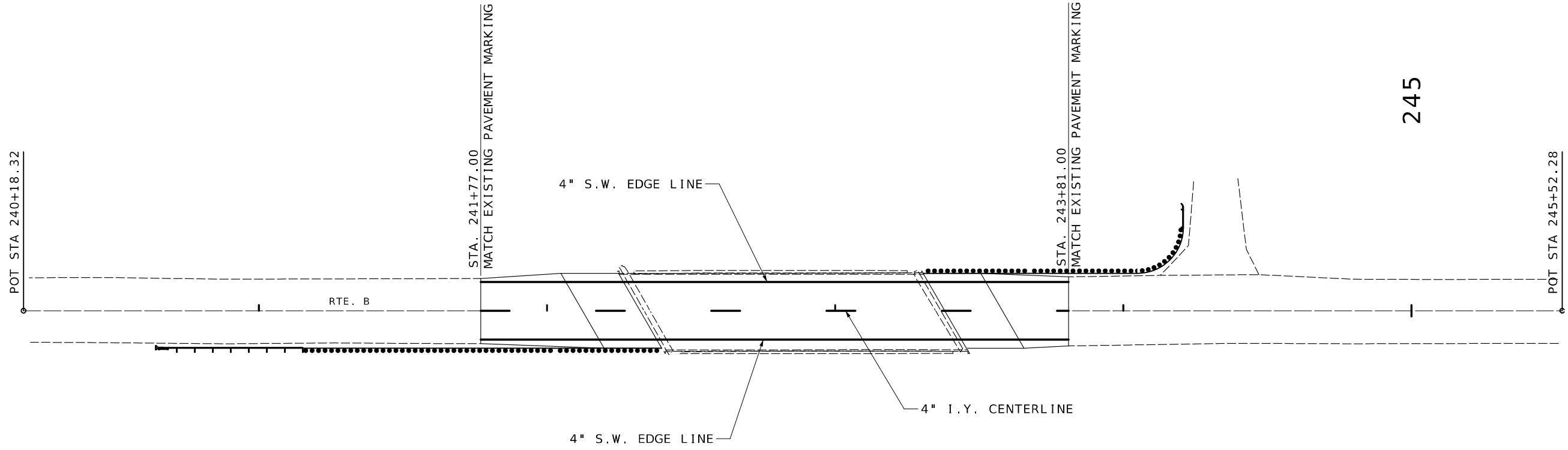
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

105 WEST CAPITAL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6626)

 **benesch**

4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER FO0970024



PAVEMENT MARKING
RTE B
SHEET 1 OF 1

benesch
4435 MAIN STREET, SUITE 1150
KANSAS CITY, MO 64111
913/441-1100 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F009T0024

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

DATE	DESCRIPTION

PROJECT NO.

CONTRACT ID.
JNW0009

JOB NO.
JNW0009

COUNTY
GENTRY

DISTRICT
NW

ROUTE
B

STATE
MO

DATE PREPARED
8/7/2024

STATE OF MISSOURI
MICHELE R. KAL
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.

Table Showing S3 Bar Lengths			
Int. Bent No. 3		Int. Bent No. 4	
Span 2	Span 3	Span 3	Span 4
26'-5"	33'-0"	33'-0"	26'-5"

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.

«» S1 bars located in Span 1-2 & Span 5-6 and S2 bars located in Span 2-3, Span 3-4, & Span 4-5

** S5 and S6 bars located in Span 1-2 & Span 5-6 near End Bents No. 1 & 6 & Int. Bents No. 2 & 5

** S7 and S8 bars located in Span 2-3 & Span 4-5 near Int. Bents No. 2 & 5

General Notes:

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

Design Loading:
H20-44 (1957) (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
Class B Concrete (Intermediate Bent) 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.

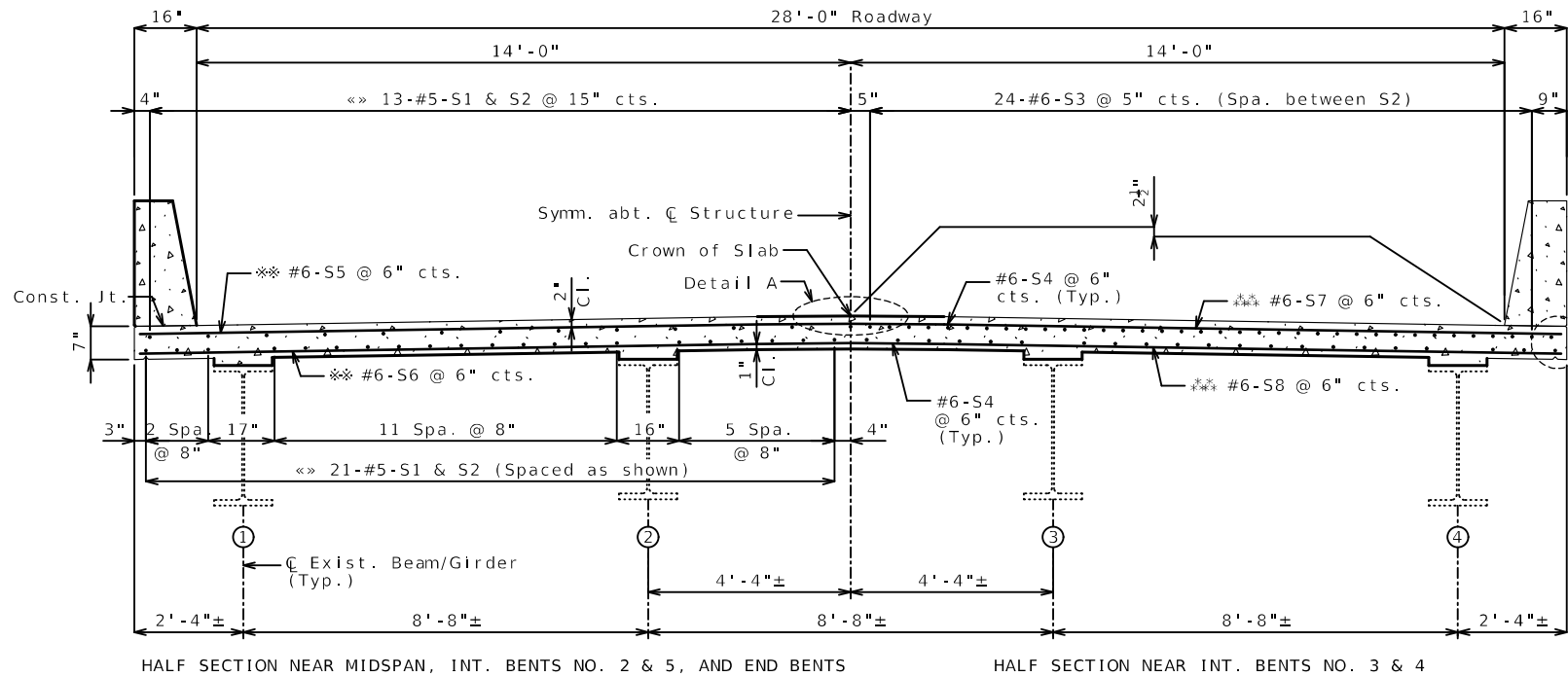
The area exposed by the removal of concrete and not covered with new concrete shall be coated with an approved qualified special mortar in accordance with Sec 704.

Rubblized concrete from the existing bridge deck that qualifies as clean fill 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.

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

U.I.P., REDECK, AND MAKE COMPOSITE EXISTING (49') SIMPLE WIDE FLANGE BEAM SPAN, (80'- 100'- 80') CONTINUOUS PLATE GIRDER SPANS, (49') SIMPLE WIDE FLANGE BEAM SPAN (SKEW: 48° R.A.)



TYPICAL SECTION THRU SLAB

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 mills of Gray Epoxy Mastic-Primer (non-aluminum) 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.

Structural Steel Protective Coating:
Protective Coating: System G in accordance with Sec 1081, 10 feet on each side of the centerline of Int. Bents No. 2 and 5 shall be coated.

Surface Preparation: Surface preparation of the existing steel shall be in accordance with Sec 1081 for Overcoating of Structural Steel. The cost of surface preparation will be considered completely covered by the contract unit price per sq. foot for Surface Preparation for Overcoating Structural Steel (System G).

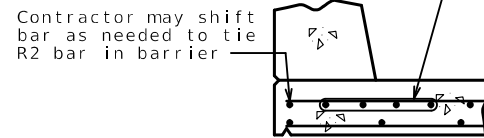
Field Coat(s): The color of the field overcoat shall be Brown (Federal Standard #30045) and shall be applied in accordance with Sec 1081.10.3.4. The cost of the intermediate field coat will be considered completely covered by the contract unit price per sq. foot for Intermediate Field Coat (System G). 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).

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.

Contractor may shift or swap bars as needed to tie R3 bar in barrier (4" min. bar spacing)

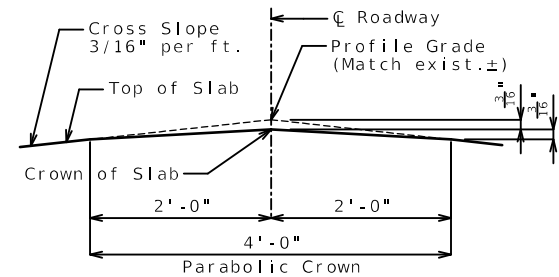


OPTIONAL SHIFTING
TOP BARS AT BARRIER

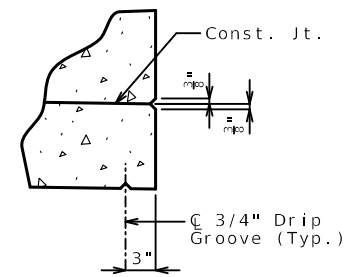
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 14

SEC/SUR 9 TWP 65 RGE 31W



DETAIL A



DETAIL B

Estimated Quantities

Item	Total
Temporary Shoring	1
Removal of Existing Bridge Deck	11,499
Partial Removal of Substructure Concrete	1
Bridge Approach Slab (Minor)	127
Slab on Steel	1,241
Type H Barrier	728
Substructure Repair (Formed)	28
Substructure Repair (Unformed)	59
Reinforcing Steel (Bridges)	110
Shear Connectors	3,444
Anchor Bolt Replacement	2
Cleaning and Coating Existing Bearings	1
Slab Drain	66
Surface Preparation for Overcoating Structural Steel (System G)	1,700
Intermediate Field Coat (System G)	1,700
Finish Field Coat (System G)	500
Vertical Drain at End Bents	2
Strip Seal Expansion Joint System	89
* Open Cell Foam Joint Seal	56

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.

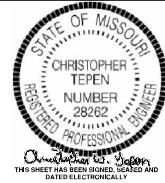
Estimated Quantities for Slab on Steel

Item	Total
Class B-2 Concrete	279
Reinforcing Steel (Epoxy Coated)	101,970

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: US 169 OVER MIDDLE FORK OF GRAND RIVER

ROUTE 169 FROM ROUTE 46 TO ROUTE M
ABOUT 2.3 MILES SOUTH OF ROUTE 46
BEGINNING STATION 428+17.96± (MATCH EXISTING)



DATE 10/01/2024
DATE PREPARED 10/1/2024
ROUTE US 169 STATE MO
DISTRICT BR SHEET NO. 1
COUNTY WORTH
JOB NO. JNW0009
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A04483

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

benesch
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/721-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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:

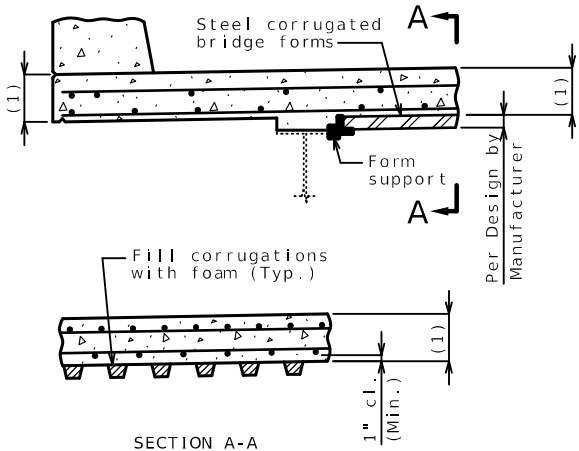
The contractor shall provide bracing necessary for lateral and torsional stability of the beams during construction of the concrete slab and remove the bracing after the slab has attained 75% design strength. Contractor shall not weld on or drill holes in the beams. The cost for furnishing, installing, 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.

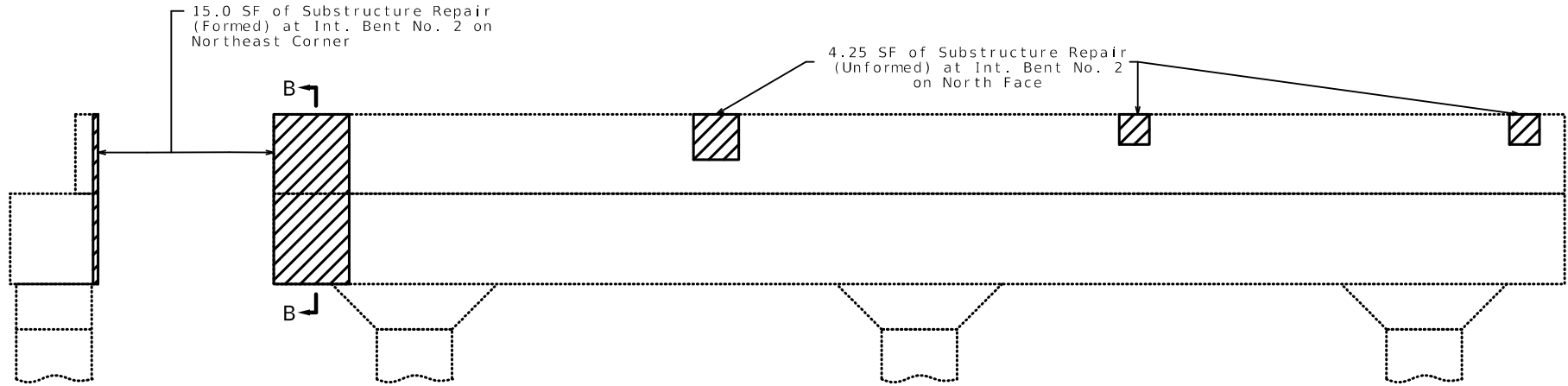
Alternate pour sequences may be submitted to the engineer for approval. Keyed construction joints shall be provided between pours.

Haunching:

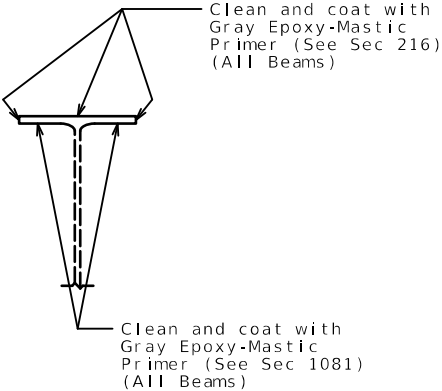
(1) Slab is to be considered a uniform thickness as shown on the plans. Haunching will vary. See front sheet for slab thickness. For adjusted girder deflection due to weight of new deck and barriers, see Bridge Electronic Deliverables.



OPTIONAL STAY-IN-PLACE FORM DETAILS



SUBSTRUCTURE REPAIR FOR INT. BENT NO. 2



TYPICAL SECTION THRU BEAM SHOWING PROTECTIVE COATING

SUBSTRUCTURE QUANTITY TABLE FOR INT. BENT NO. 2		
ITEM		QUANTITY
Substructure Repair (Formed)	sq. foot	15.0
Substructure Repair (Unformed)	sq. foot	4.25

Notes: These quantities are included in the Estimated Quantities Table on Sheet No. 1.

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

Sheet No. 2 of 14

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DATE 10/01/2024	
DATE PREPARED 10/1/2024	
ROUTE US 169	STATE MO
DISTRICT BR	SHEET NO. 2
COUNTY WORTH	
JOB NO. JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A04483	

DESCRIPTION	DATE

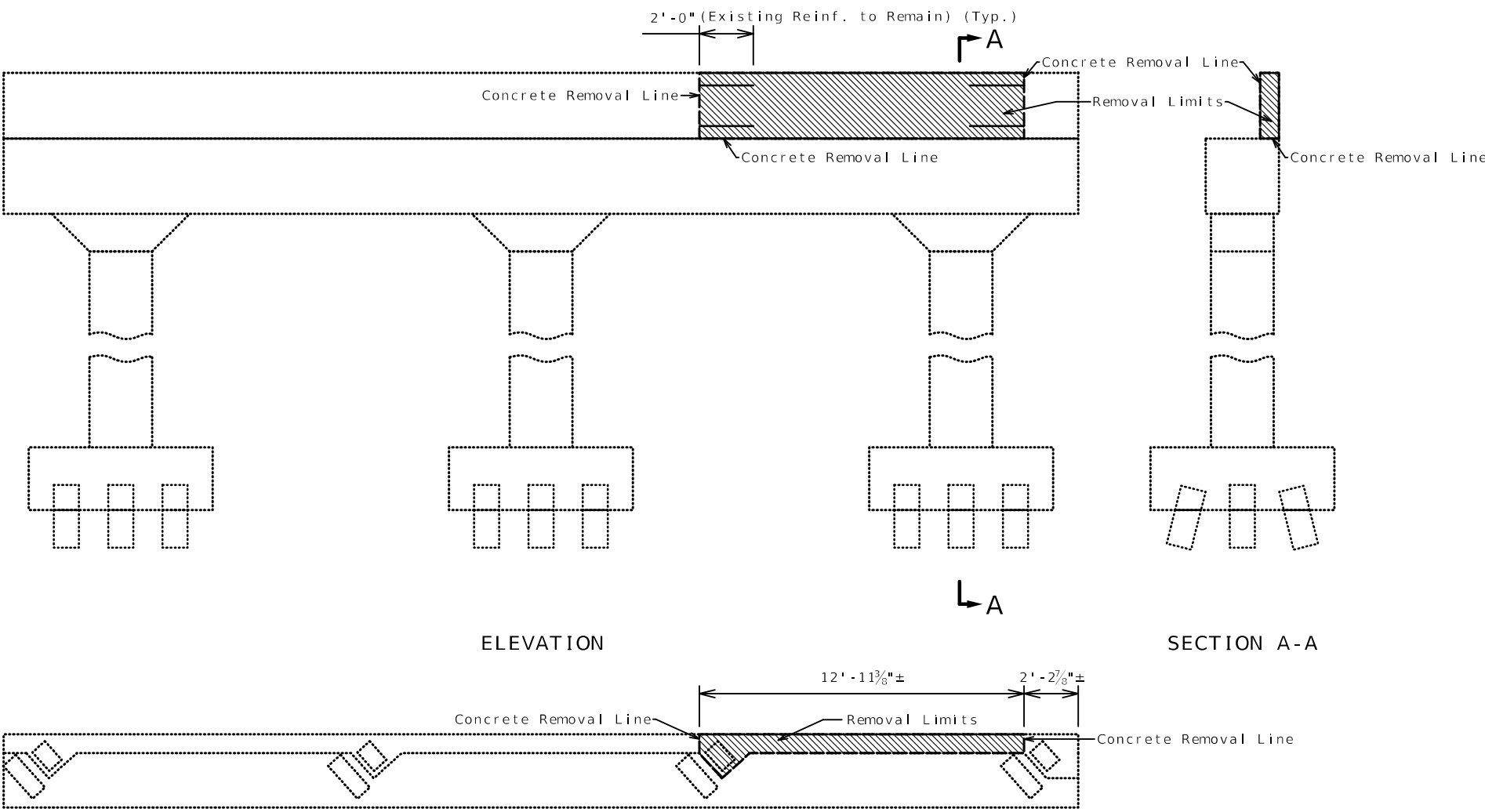
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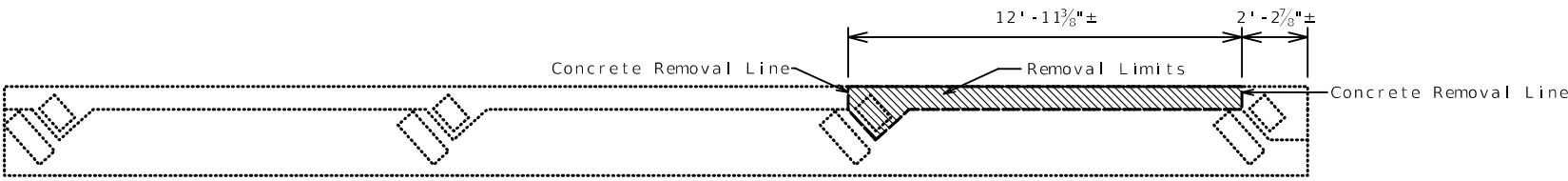
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ELEVATION

SECTION A-A



PLAN

Notes:

The cost of concrete removal as shown will be considered completely covered by the contract unit price for Partial Removal of Substructure Concrete.

A smooth, level surface shall be provided at Bent No. 5 removal lines.

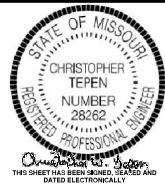
REPAIRS TO INTERMEDIATE BENT NO. 5

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

Sheet No. 3 of 14

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DATE	
10/01/2024	
DATE PREPARED	
10/1/2024	
ROUTE	STATE
US 169	MO
DISTRICT	SHEET NO.
BR	3
COUNTY	
WORTH	
JOB NO.	
JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A04483	

DESCRIPTION	DATE

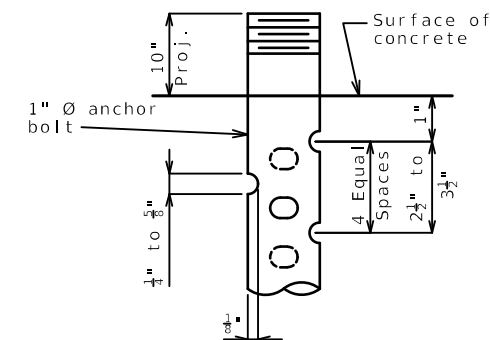
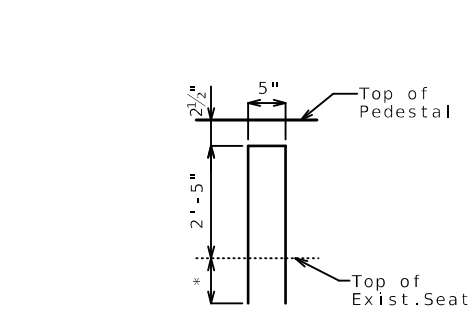
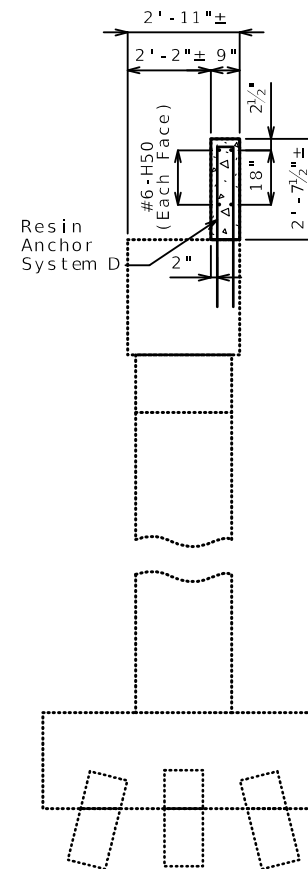
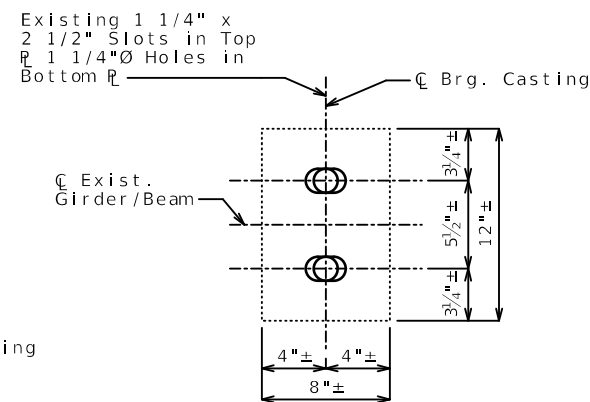
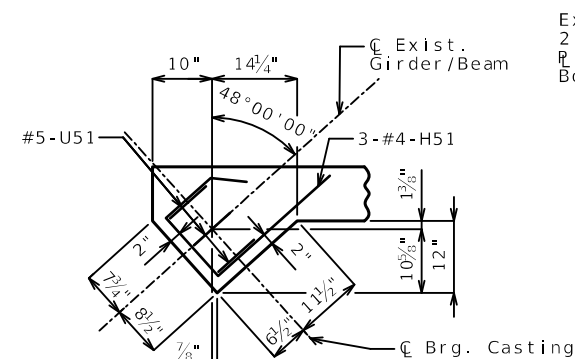
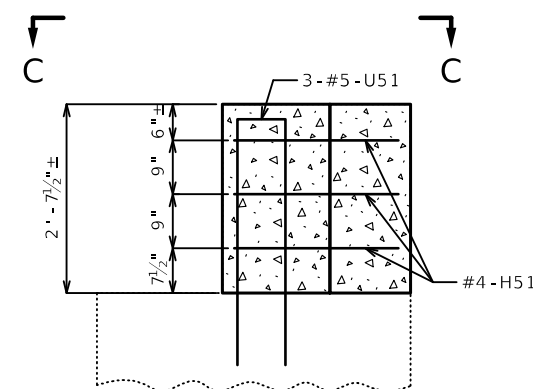
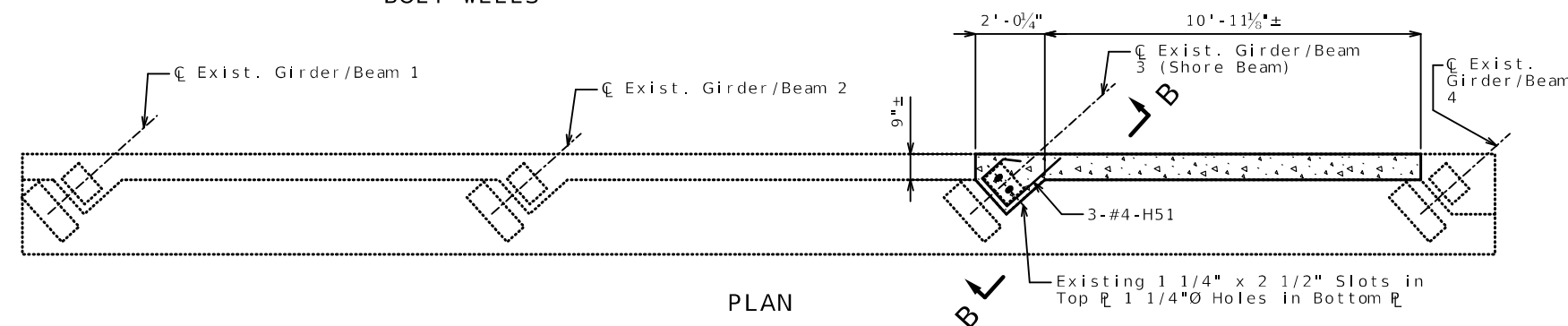
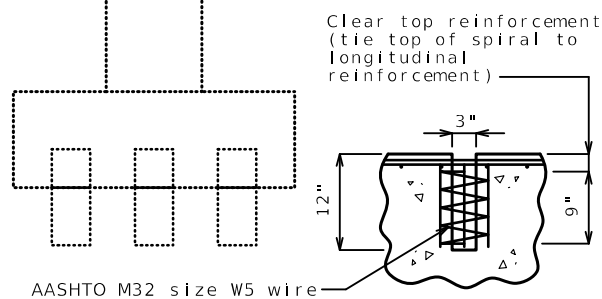
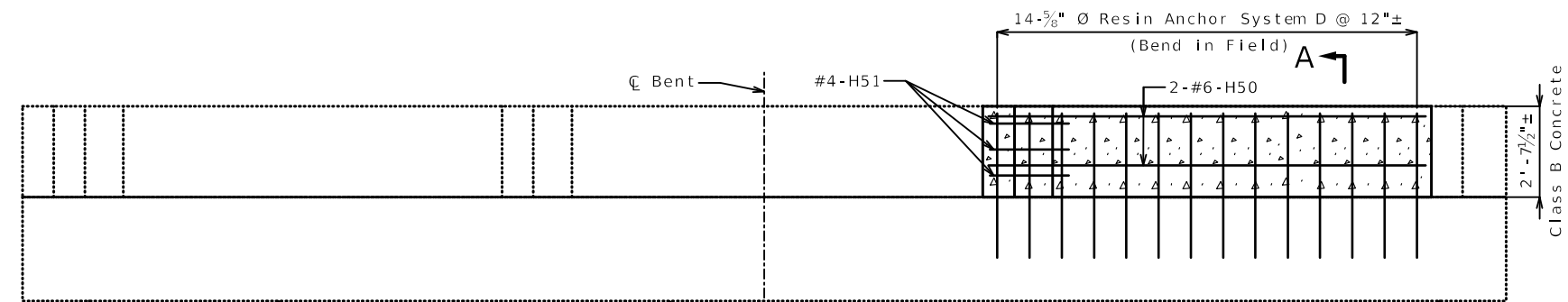
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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JEFFERSON CITY, MO 65102
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CERTIFICATE OF AUTHORITY NUMBER F00970024

SUBSTRUCTURE QUANTITY TABLE FOR INT. BENT NO.

ITEM	QUANTITY
Reinforcing Steel (Bridges) pound	110
Temporary Shoring lump sum	1
Anchor Bolt Replacement each	2

Note: These quantities are included in the Estimated Quantities Table on Sheet No. 1.

General Notes:

New concrete for concrete pedestal shall be Class B Concrete (Substructure Concrete Quantity = 1.0 cubic yard), f'c = 3,000 psi and the cost of installing shall be considered completely covered under the pay item Slab on Steel.

Any loose or broken concrete on the existing concrete pedestals shall be removed before concrete for new pedestal is placed.

Cost of removing & resetting the existing bearing will be considered completely covered by the contract unit price for Anchor Bolt Replacement. Anchor bolts shall be 1" Ø ASTM F1554 Grade 55 swedged bolts, with no heads or nuts and shall extend 10" into the concrete. Swedging shall be 1" less than the extension into concrete. Anchor bolts shall be set in the drilled holes or in the anchor bolts wells and grouted prior to the erection of steel. The top of anchor bolts shall be set approximately 1/4" below the top of bearing.

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 $f'_c = 3,000$ 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".

An epoxy coated #5 Grade 60 reinforcing bar shall be substituted for the 5/8" diameter treaded rod.



DATE
10/01/2024

DATE PREPARED _____

ROUTE	STATE
US 169	MO

DISTRICT	SHEET NO.
BR	4

COUNTY
WORTH

JOB NO.
INW000

CONTRACT ID

PROJECT NO.

BRIDGE NO.
A04483

DATE	DESCRIPTION
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MISSOURI HIGHWAYS AND TRANSPORTATION



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



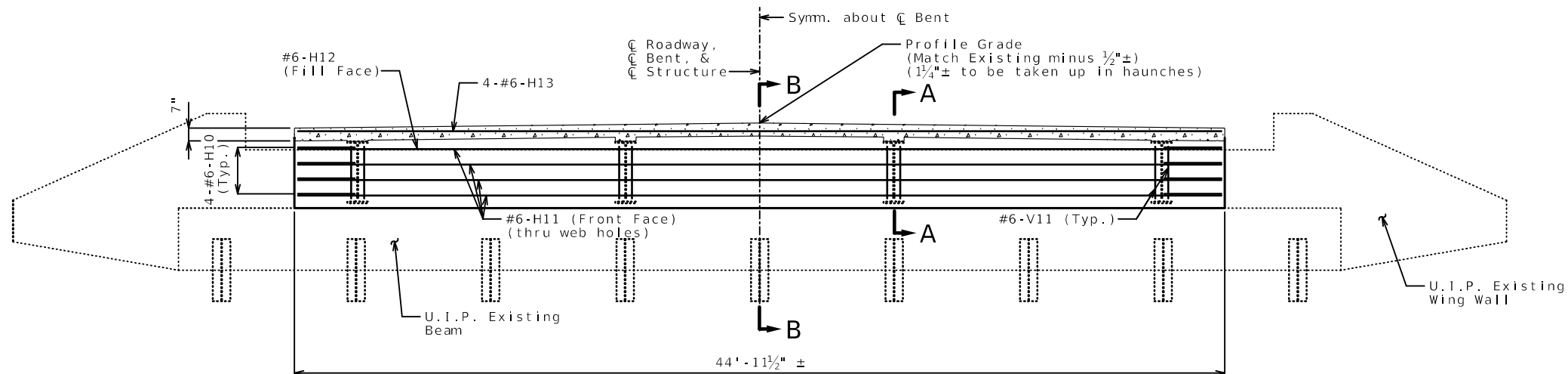
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
TEL 913/441-1468 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER E00070024

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

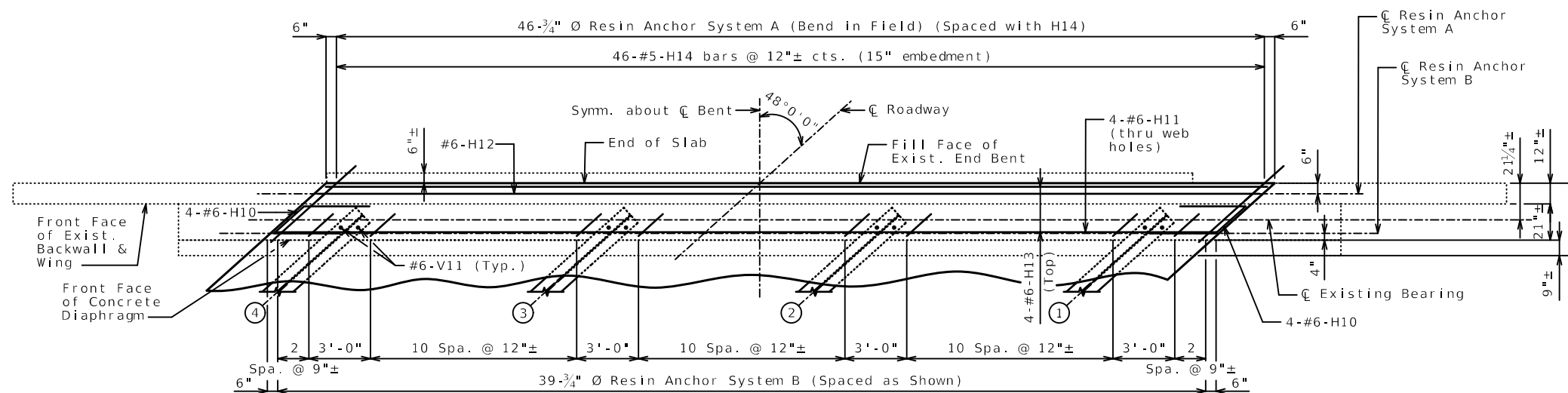
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 14

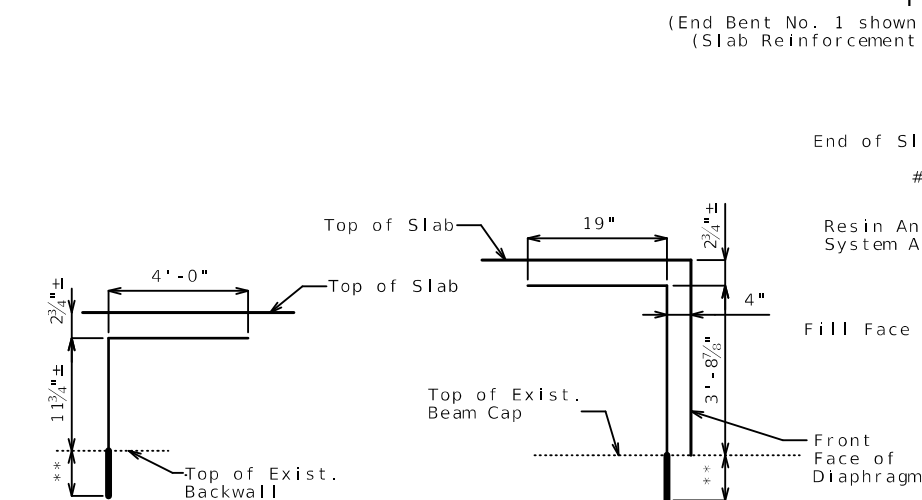
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SECTION NEAR END BENT
(Resin Anchors, bearing stiffeners, bearings and steel end diaphragms not shown for clarity.)

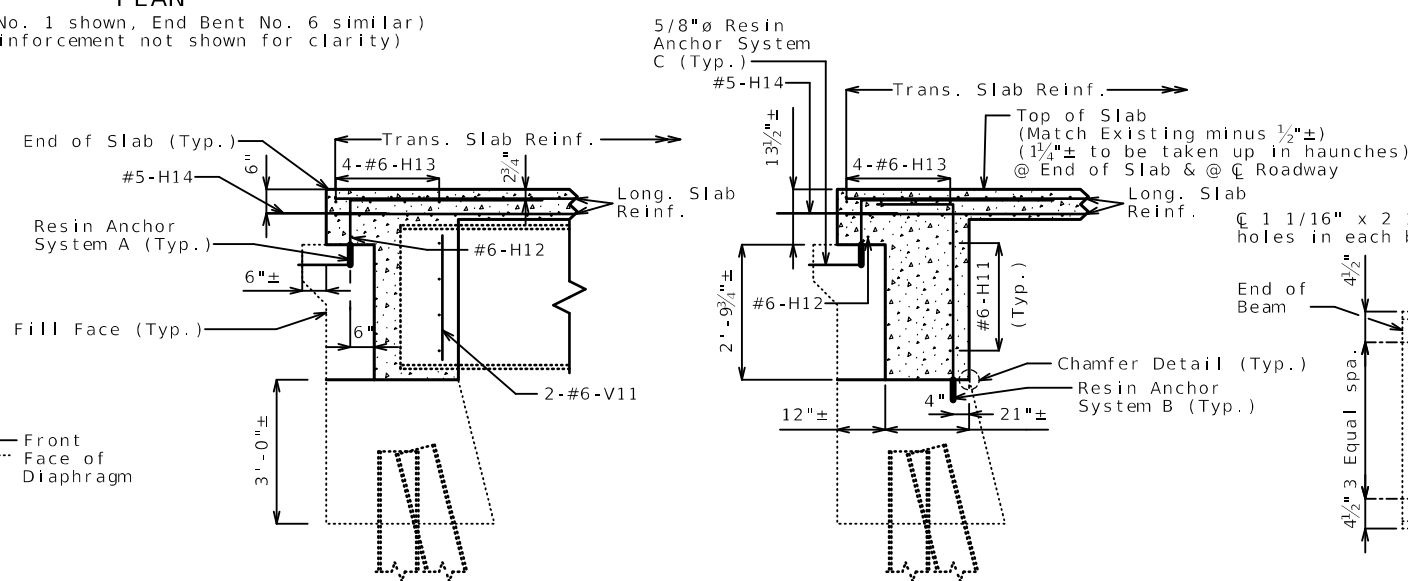


PLAN
(End Bent No. 1 shown, End Bent No. 6 similar)
(Slab Reinforcement not shown for clarity)



DETAIL OF RESIN ANCHOR SYSTEMS

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



SECTION A-A

SECTION B-B

DETAILS OF END BENTS NO. 1 & 6
(End Bent No. 1 Shown, End Bent No. 6 similar)

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

Sheet No. 5 of 14

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.

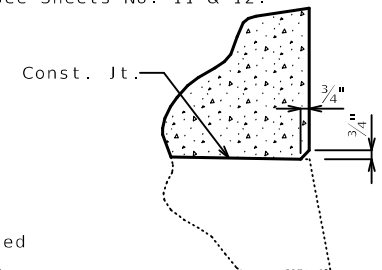
The exposed and accessible surfaces of the existing structural steel and bearings that will be encased in concrete shall be cleaned with a minimum of SSPC=SP-3 surface preparation and coated with a minimum of one coat of gray epoxy-mastic primer in accordance with Sec 1081 to produce a dry film thickness 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.

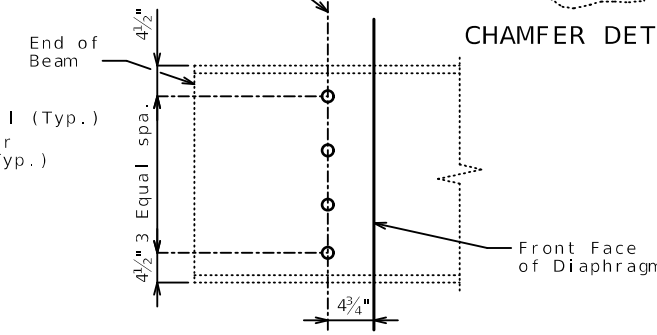
For Resin Anchor System A & B, an epoxy coated #6 Grade 60 reinforcing bar shall be substituted for the 3/4" diameter treaded rod.

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 Type H Barrier not shown, see Sheets No. 11 & 12.



CHAMFER DETAIL



DETAIL OF WEB HOLES AT END BENT

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



DATE
10/01/2024

DATE PREPARED
10/1/2024

ROUTE
US 169

STATE
MO

DISTRICT
BR

SHEET NO.
5

COUNTY
WORTH

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A04483

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

MODOT

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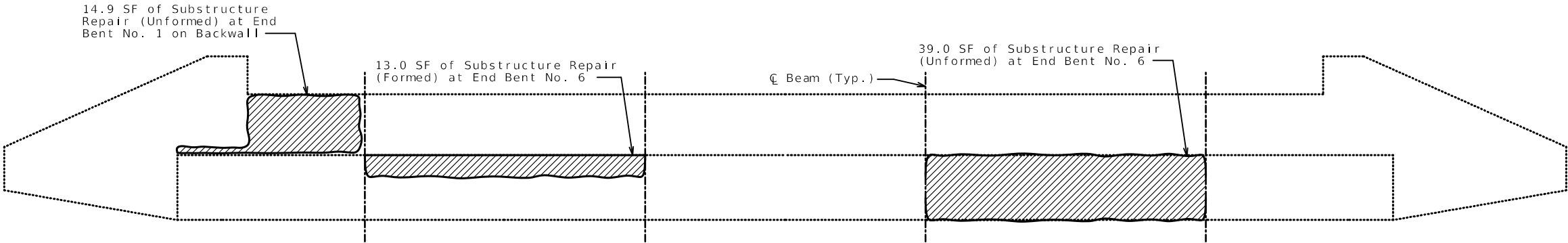
One Main Plaza, 4435 Main St., Suite 1150,

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816/721-4222 FAX 913/441-1468

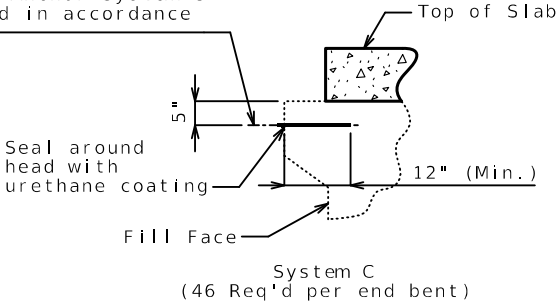
CERTIFICATE OF AUTHORITY NUMBER F00970024

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024



SUBSTRUCTURE REPAIR

C Resin Anchor System C with 5/8" 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.



DETAILS OF RESIN ANCHOR SYSTEMS

SUBSTRUCTURE QUANTITY TABLE FOR END BENTS NO. 1 & 6			
ITEM		Bent No. 1 Total	Bent No. 6 Total
Substructure Repair (Formed)	sq. foot	---	13.0
Substructure Repair (Unformed)	sq. foot	14.9	39.0

Notes: These quantities are included in the Estimated Quantities Table on Sheet No. 1.

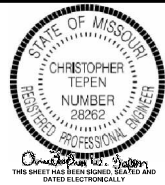
DETAILS OF END BENTS NO. 1 & 6

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

Sheet No. 6 of 14

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DATE 10/01/2024	
DATE PREPARED 10/1/2024	
ROUTE US 169	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY WORTH	
JOB NO. JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A04483	

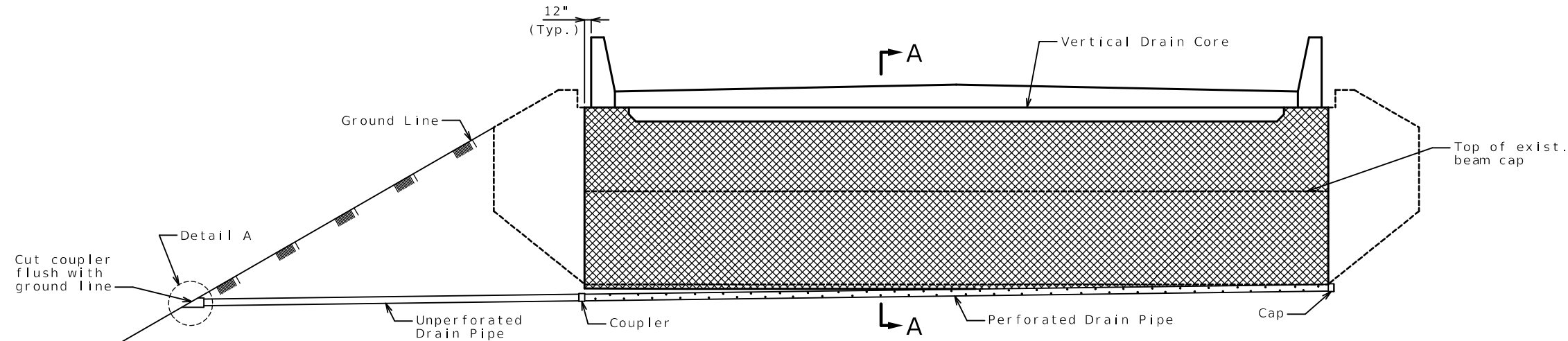
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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

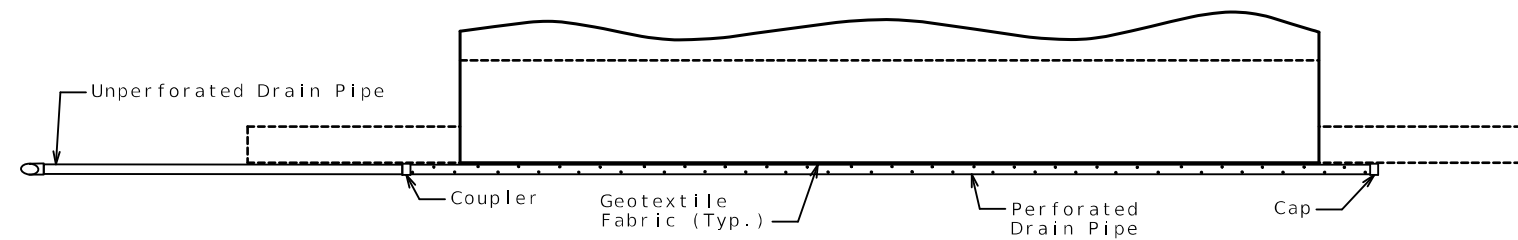
105 WEST CAPITOL
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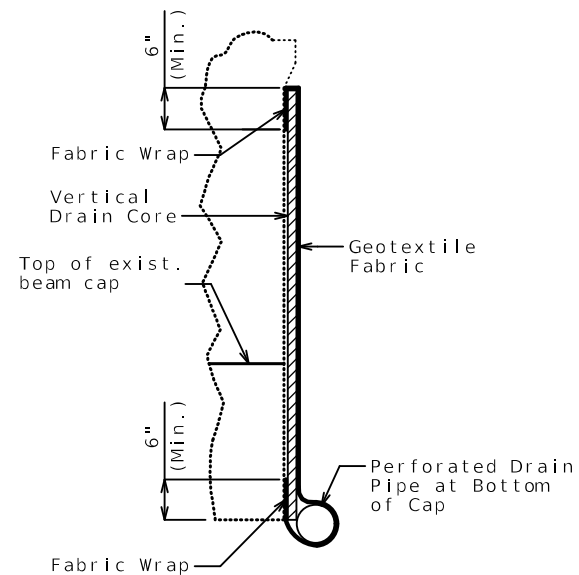
One Main Plaza, 4435 Main St., Suite 1150,
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816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



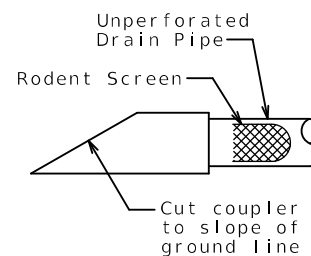
ELEVATION OF END BENT



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

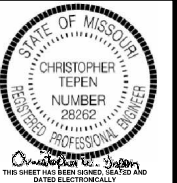
(Squared end bent shown, skewed end bent similar)

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

Sheet No. 7 of 14

Y:\Kansas\1309005\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A0448\B_A04483_007_JNW0009_VERTICAL DRAINS.dgn (Default) 8:08:36 AM 10/1/2024



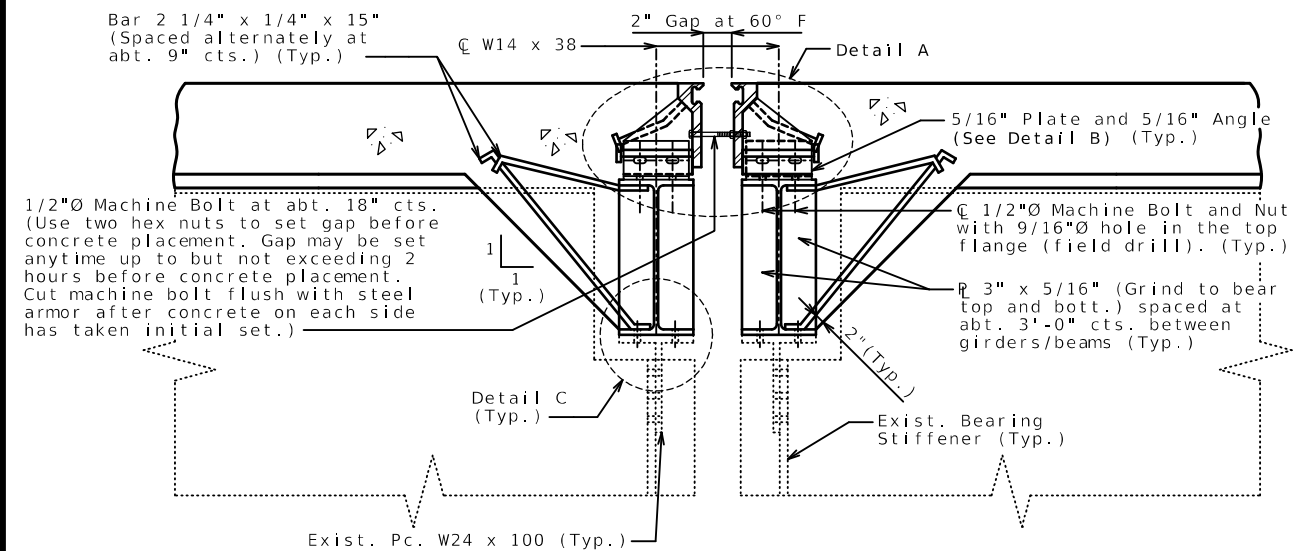
DATE
10/01/2024
DATE PREPARED
10/1/2024
ROUTE
US 169
STATE
MO
DISTRICT
BR
SHEET NO.
7
COUNTY
WORTH
JOB NO.
JNW0009
CONTRACT ID.
PROJECT NO.
BRIDGE NO.
A04483

DESCRIPTION	DATE

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

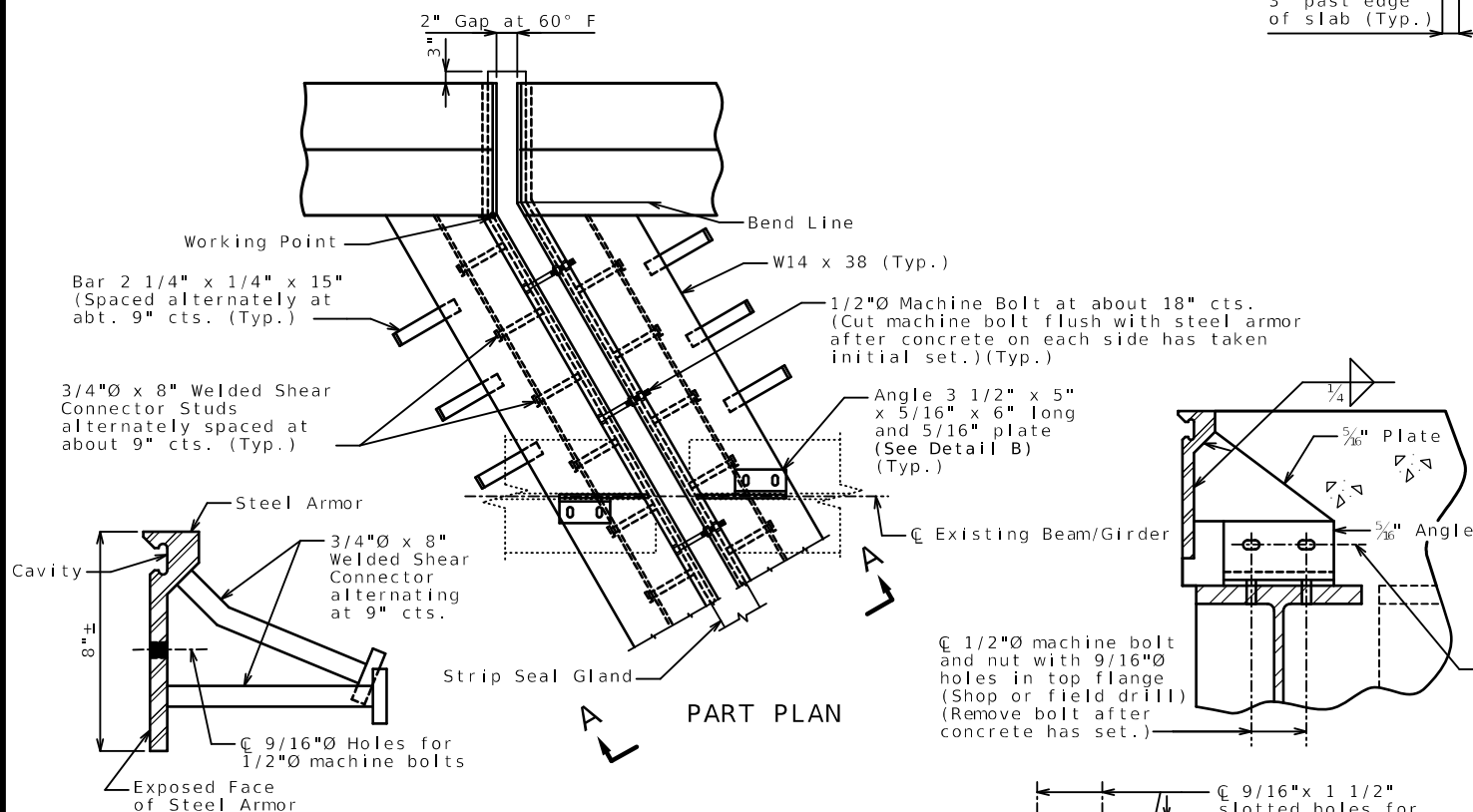
benesch
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/721-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

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



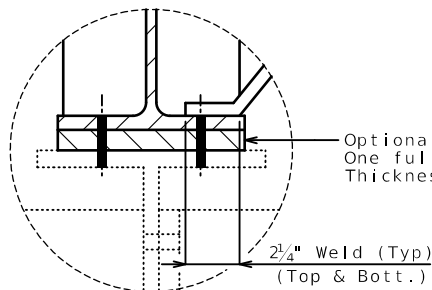
SECTION A-A

Strip seal gland not shown for clarity.

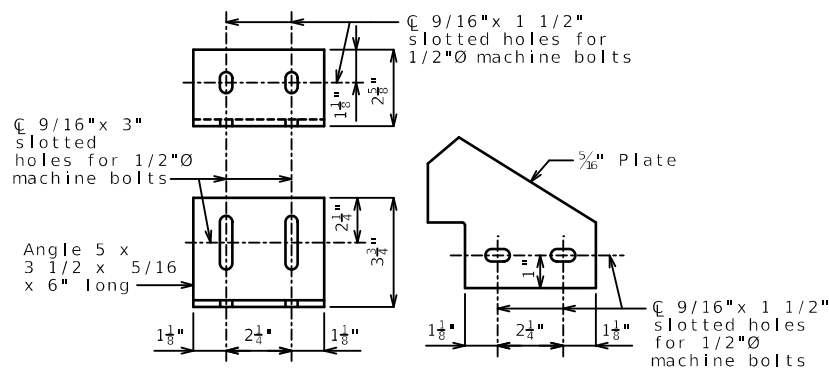


PART PLAN

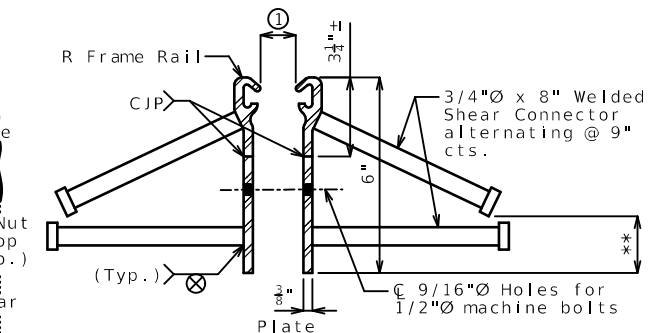
DETAIL OF JOINT ARMOR



DETAIL C

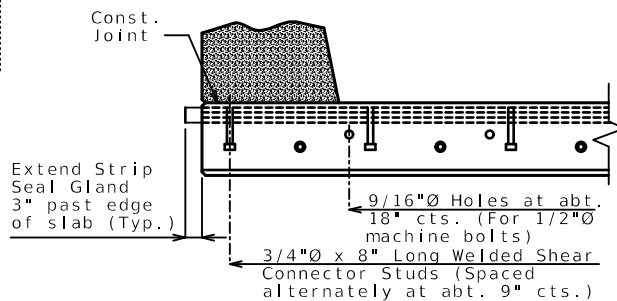


DETAIL B

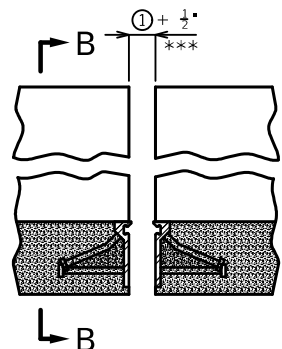


** Bend stud in shop if necessary to maintain 1" min. from bottom of vertical plate.

OPTIONAL R RAIL DETAIL

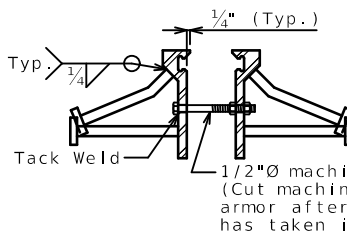


PART SECTION B-B



PART ELEVATION OF BARRIER

Strip seal gland not shown for clarity.



DETAIL A

DETAIL OF GLAND

GENERAL NOTES:

Expansion joint system shall be fabricated in one section, except for staged construction and when the length is over 50 feet. A complete joint penetration groove welded splice shall be required. Welds shall be ground flush to provide a smooth surface. The expansion joint system shall be fabricated and installed to the crown and grade of the roadway.

The strip seal gland shall be installed in joints in one continuous piece without field splices. Factory splicing will be permitted for joints in excess of 53 feet.

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with Sec 1037. Strip seal expansion joint system shall be in accordance with Sec 717.

Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased 1/16" for each 10° fall or rise in temperature at installation.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

Payment for furnishing, coating or galvanizing and installing wide flange beams shall be considered completely covered by the contract unit price for Fabricated Structural Low Alloy Steel (Misc.) per pound. All other material and labor for furnishing and installing strip seal, completely in place, will be considered completely covered by the contract unit price for Strip Seal Expansion Joint System per linear foot.

Longitudinal reinforcing steel shall be placed so that ends shall be 1" from the vertical leg of the steel armor at the expansion joint system.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

② The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation.

③ MoDOT Construction personnel will indicate the strip seal expansion joint system installed.

Steel armor may also be referred to as extrusion or rail.

The terms P and R rail are used for identification only, and are not endorsements for any particular manufacturer.

*** Because of variation in armor dimensions, the concrete opening will vary if the optional R rail is used. Dimensions shown are based on the P rail option.

Table of Allowed Transverse Strip Seal Expansion Joint System

Manufacturer	Strip Seal System (Designated Name)	Movement Parallel to RDWY	① Allowed Installation Gap Normal to Joint at RDWY Surface @ Air/Surface Temperature ②						③
			@ 40°F	@ 50°F	@ 60°F	@ 70°F	@ 80°F	@ 90°F	
D S Brown	Strip seal L2-400	XXX	XXX	XXX	XXX	XXX	XXX	XXX	□
D S Brown	Strip seal L2-500	XXX	XXX	XXX	XXX	XXX	XXX	XXX	□
Watson Bowman Acme (Wabo)	Strip seal SE-300	XXX	XXX	XXX	XXX	XXX	XXX	XXX	□
Watson Bowman Acme (Wabo)	Strip seal SE-400	XXX	XXX	XXX	XXX	XXX	XXX	XXX	□
Watson Bowman Acme (Wabo)	Strip seal SE-500	XXX	XXX	XXX	XXX	XXX	XXX	XXX	□

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

STRIP SEAL EXPANSION JOINT SYSTEM AT INTERMEDIATE BENTS NO. 2 & 5

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

Sheet No. 9 of 14

Y:\Kansas\1309005\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A0448\B_A04483_009_JNW0009_STRIP SEAL EXPANSION JOINT.dgn (Default) 8:08:57 AM 10/1/2024



DATE
10/01/2024

DATE PREPARED
10/1/2024

ROUTE
US 169

STATE
MO

DISTRICT
BR

SHEET NO.
9

COUNTY
WORTH

JOB NO.
JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A04483

DESCRIPTION

DATE

DATE

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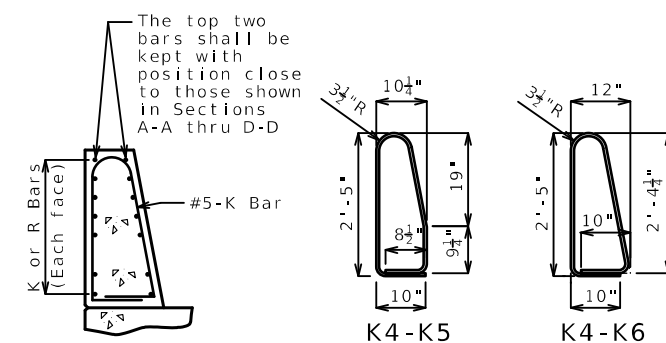
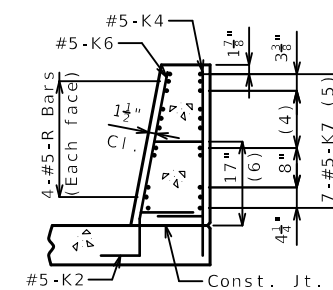
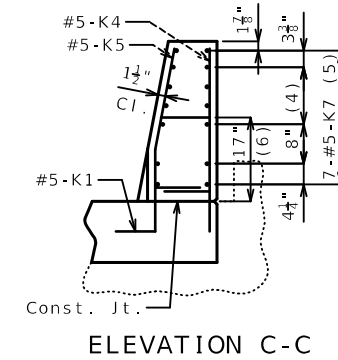
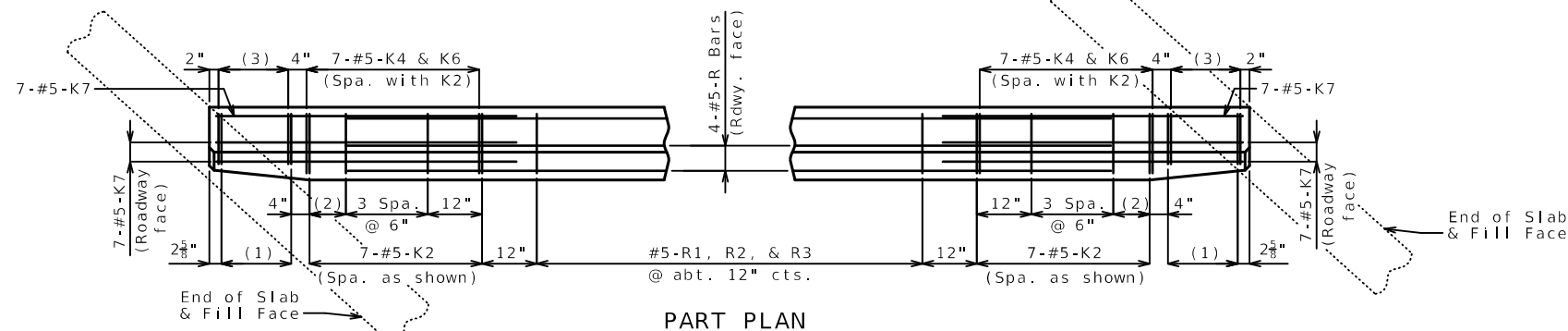
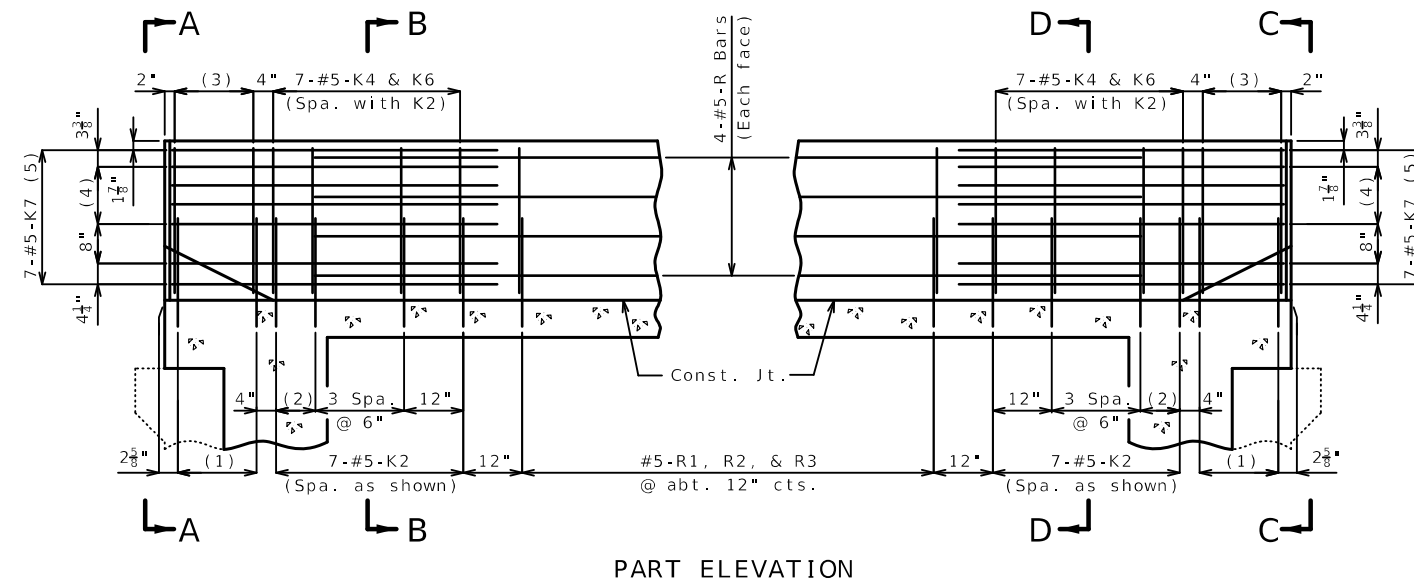
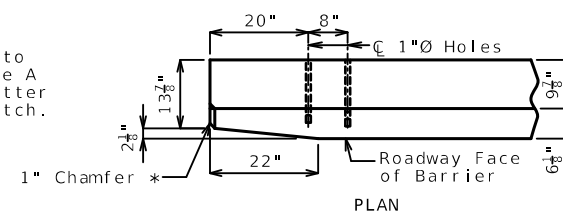
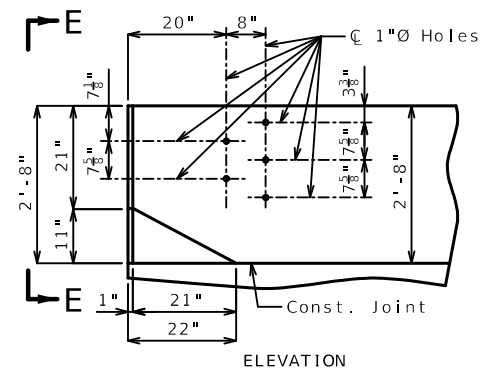
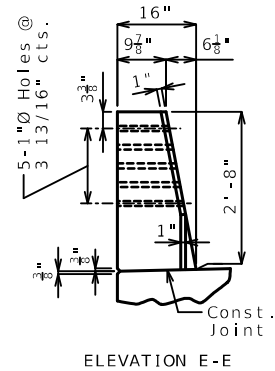
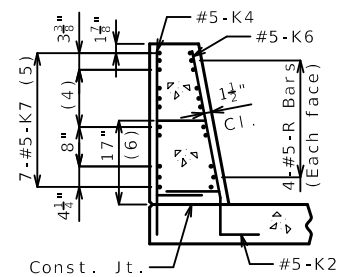
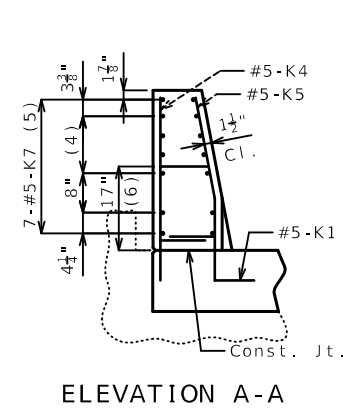
DATE

DATE

DATE

DATE

DATE



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

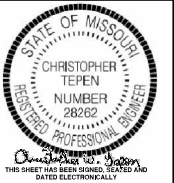
(Left barrier shown, right barrier similar)

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.



DATE
10/01/2024

DATE PREPARED

ROUTE	STATE
-------	-------

DISTRICT	SHEET NO.
----------	-----------

COUNTY

JOB NO.

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
316/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

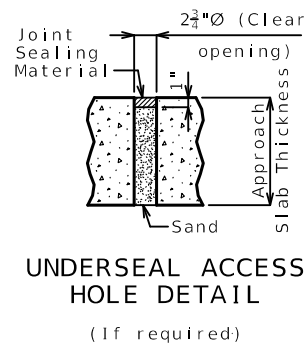
Sheet No. 12 of 14

Y:\Kansas\130900S\130991.01_NW Bundle_NW0009\Eng Docs\Bridge\A0448\B_A04483_012_JNW0009_TYPE H BARRIER END BENTS.dgn (Default) 8:09:28 AM 10/1/2024



#4 Bars at 18" cts. (Top)
 #4 Bars at 12" cts. (Bottom)
 (1) (Top)
 (2) (Bott.)
 #5 Bars at 12" cts.
 2" C.C.
 12" (Min.) (At bridge gutter line)
 (3)
 (4)
 End of Slab
 6"
 2 1/2"
 #6 Bars at 8" cts.
 2" C.C.
 4"
 Type 5 Aggregate Base
 Perforated Drain Pipe (Slope to drain)
 14"
 18"

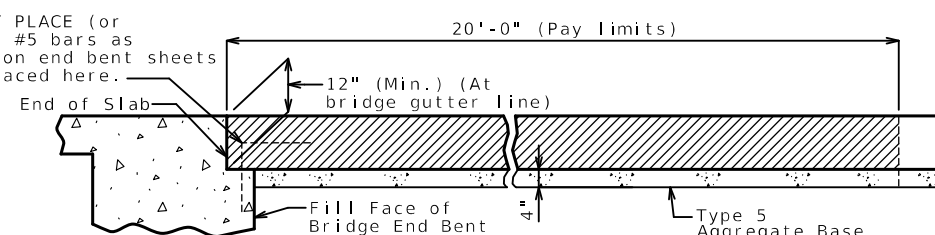
SECTION B-B
(Integral end bent)



* 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.

Diagram illustrating the plan view of a bridge approach slab. The diagram shows a rectangular slab with a central section labeled "ASPHALT BRIDGE APPROACH SLAB". To the left of the slab is a section labeled "BRIDGE", and to the right is a section labeled "PAVEMENT (Roadway Item)". The slab is bounded by "End of Slab" on the left and right sides. The width of the slab is indicated as "20'-0" (Pay Limits) (each side)". The slab is divided into two sections by a vertical dashed line. The left section is labeled "Roadway" and the right section is labeled "Roadway". The slab is supported by "Type S Curb 5'-6" long (Typ.)" on the left and right sides. The diagram also shows "C" and "D" markers at the corners of the slab.

PART PLAN
(Squared structure shown,
skewed structure similar)



SECTION D-D

End of Barrier

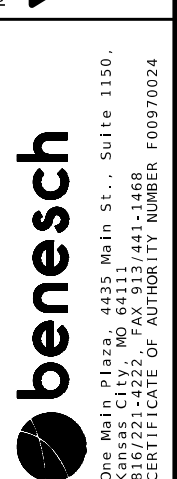
Align barrier & curb at this point

8 1/2"

4"

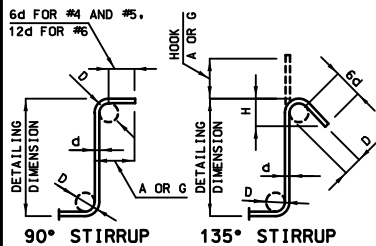
4" TYPE S CURB

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



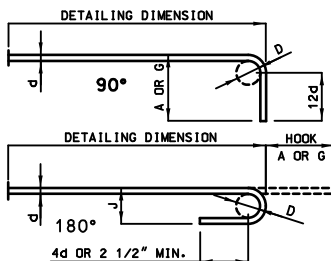
BILL OF REINFORCING STEEL

NO.	REQ'D.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT					
											B		C		D		E		F		H					K				
											FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.
SUPERSTRUCTURE																														
END BENT NO. 1																														
8	6	H10	Diaphragm	E	21						0	22.25	3	2.00	3	2.00			0	14.88	0	16.50	8	2	7	11			95	
4	6	H11	Diaphragm	E	20						49	4.00											49	4	49	4			296	
1	6	H12	Diaphragm	E	20						45	6.00											45	6	45	6			68	
4	6	H13	Slab	E	20						45	6.00											45	6	45	6			273	
46	5	H14	Approach	E	20						2	6.00											2	6	2	6			120	
8	6	V11	Diaphragm	E	20						2	6.00											2	6	2	6			30	
SUPERSTRUCTURE																														
END BENT NO. 6																														
8	6	H60	Diaphragm	E	21						0	22.25	3	2.00	3	2.00			0	14.88	0	16.50	8	2	7	11			95	
4	6	H61	Diaphragm	E	20						49	4.00											49	4	49	4			296	
1	6	H62	Diaphragm	E	20						45	6.00											45	6	45	6			68	
4	6	H63	Slab	E	20						45	6.00											45	6	45	6			273	
46	5	H64	Approach	E	20						2	6.00											2	6	2	6			120	
8	6	V61	Diaphragm	E	20						2	6.00											2	6	2	6			30	
SUBSTRUCTURE																														
BEAM CAP BENT NO. 5																														
3	5	U51	Beam	E	10	X							3	5.00	0	8.00							7	6	7	3			23	
4	6	H50	Beam	E	20	X					12	7.00											12	7	12	7			76	
3	4	H51	Beam	E	29	X					2	1.00	0	13.00	0	10.00	0	6.00		0	4.00	0	4.50	4	6	4	2			8
SLAB																														
134	5	S1	Slab	E	20						49	9.00											49	9	49	9			6953	
335	5	S2	Slab	E	20						54	10.00											54	10	54	10			19159	
96	6	S3	Slab	E	20						59	5.00											59	5	59	5			8567	
1034	6	S4	Slab	E	20						30	5.00											30	5	30	5			47239	
256	6	S5	Slab	E	20				V	2	2	0.00											2	0	2	0			6232	
		Incr.	= 5.4063"								30	5.00											30	5	30	5				
256	6	S6	Slab	E	20				V	2	2	0.00											2	0	2	0			6232	
		Incr.	= 5.4063"								30	5.00											30	5	30	5				
124	6	S7	Slab	E	20				V	2	2	4.00											2	4	2	4			2910	
		Incr.	= 5.4063"								28	11.00											28	11	28	11				
124	6	S8	Slab	E	20				V	2	2	4.00											2	4	2	4			2910	
		Incr.	= 5.4063"								28	11.00											28	11	28	11				
TYPE H BARRIER																														
726	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			3975	
726	5	R2	Barrier	E	19	S					0	18.75	0	9.50									2	4	2	3			1704	
726	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			2335	
32	5	R4	Barrier	E	20						36	8.00											36	8	36	8			1224	
128	5	R5	Barrier	E	20						11	7.00											11	7	11	7			1546	
32	5	R6	Barrier	E	20						56	2.00											56	2	56	2			1875	
32	5	R7	Barrier	E	20						40	11.00											40	11	40	11			1366	
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	



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

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



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS	90° HOOKS	
#5	2 1/4"	5"	3"	6"
#6	3"	6"	4"	8"
#8	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.

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Table Showing S2 Bar Lengths			
Int. Bent No. 2		Int. Bent No. 3	
Span 1	Span 2	Span 2	Span 3
21'-0"	27'-0"	27'-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.

General Notes:

Design Specifications:

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

Design Loading:

H15-44 (1961) (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) $f_y = 60,000$ 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 may be placed on spill slopes at end bents above ordinary high water line (Roadway item).

For adjusted beam deflection due to the weight of the new deck and barriers, see Bridge Electronic Deliverables.

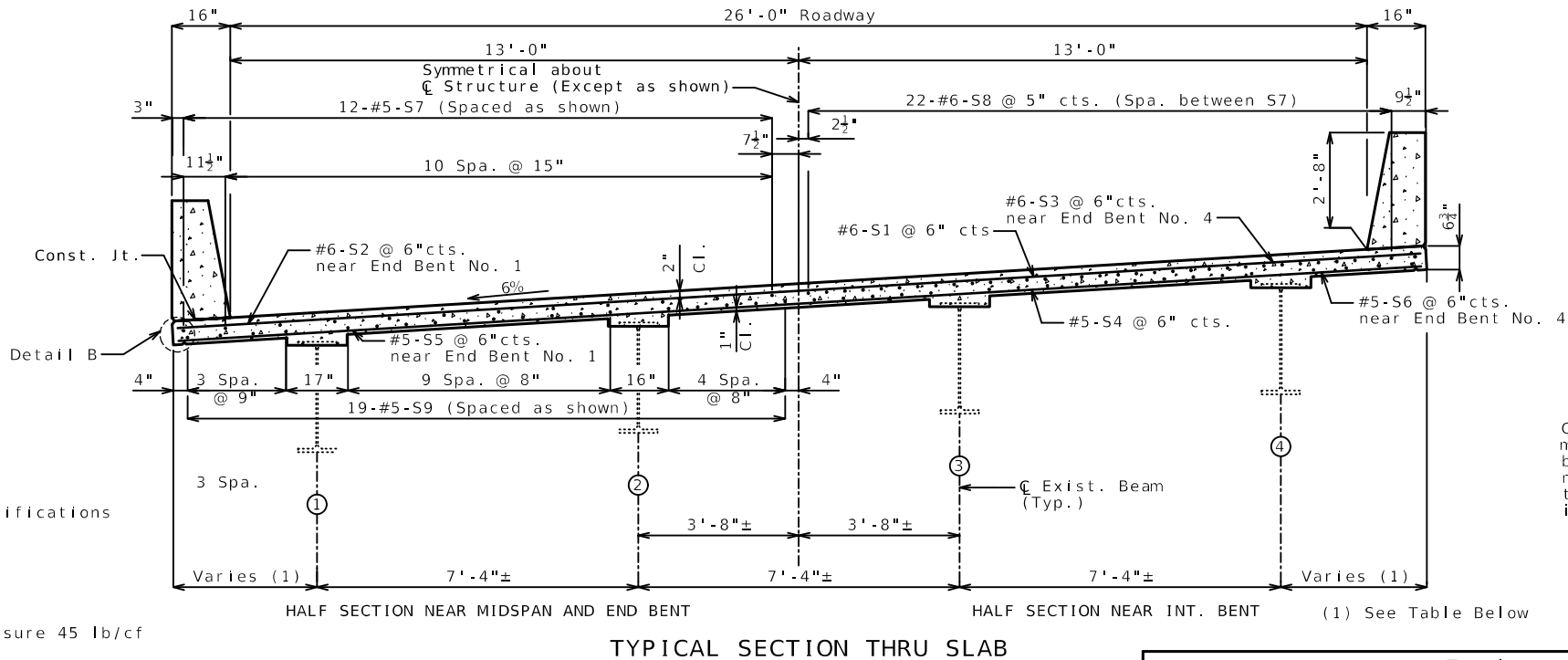
Structural Steel Protective Coating (Top Flange):

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-aluminum) 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.

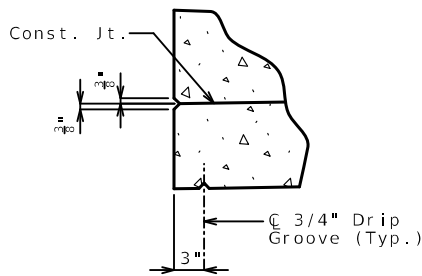
Traffic Handling:

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

U.I.P. & REDECK EXISTING (70'- 90'- 70') CONTINUOUS COMPOSITE WIDE FLANGE BEAM SPANS (SKEW: 7°59'31" L.A. TO PERPENDICULAR LINE FROM TANGENT TO C ROADWAY AT STA. 322+16.20)

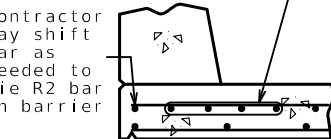


SEC/SUR 31 TWP 65 N RGE 30 W



DETAIL B

Contractor may shift or swap bars as needed to tie R3 bar in barrier (4" min. bar spacing)



OPTIONAL SHIFTING TOP BARS AT BARRIER

Estimated Quantities

Item	Total
Removal of Existing Bridge Deck	sq. foot 6,173
Bridge Approach Slab (Minor)	sq. yard 118
Flowable Backfill	cu. yard 3
Slab on Steel	sq. yard 740
Type H Barrier	linear foot 493
Substructure Repair (Formed)	sq. foot 12
Substructure Repair (Unformed)	sq. foot 14
Slab Drain	each 20
Non-Destructive Testing	linear foot 58
Vertical Drain at End Bents	each 2
*Open Cell Foam Joint Seal	linear foot 53

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 18
Reinforcing Steel (Epoxy Coated)	pound 59,180

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 M OVER EAST FORK OF GRAND RIVER

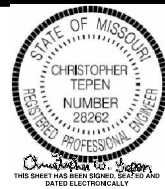
ROUTE M FROM ROUTE N TO ROUTE C
ABOUT 1.4 MILES EAST OF ROUTE N
BEGINNING STATION 322+16.20± (MATCH EXISTING)

Detailed OCT. 2023
Checked APR. 2024

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

Sheet No. 1 of 12

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10/01/2024

DATE PREPARED

10/1/2024

ROUTE M STATE MO

DISTRICT BR SHEET NO. 1

COUNTY WORTH

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A10481

DESCRIPTION

DATE

DATE

DATE

DATE

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)

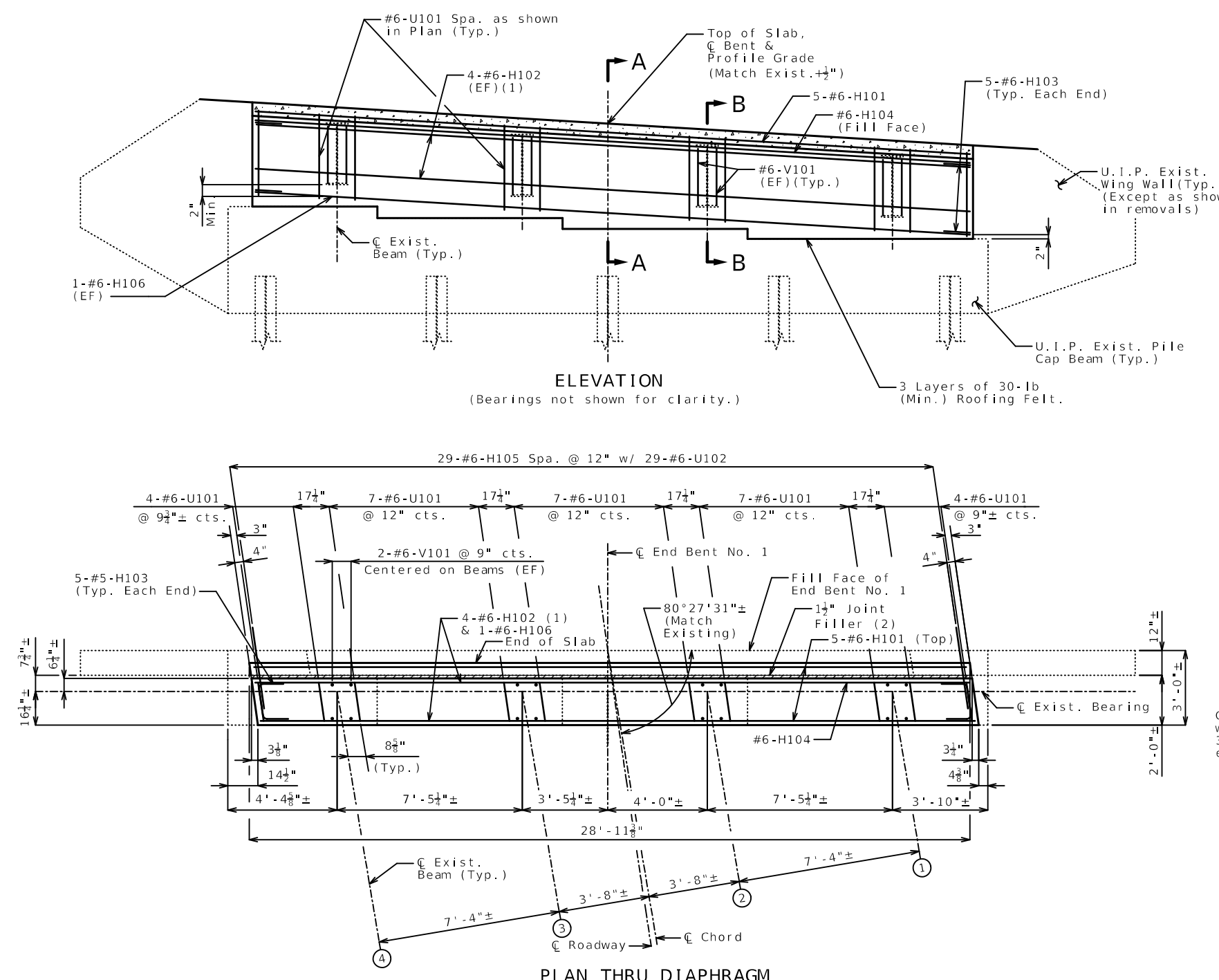
benesch

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CERTIFICATE OF AUTHORITY NUMBER F00970024



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

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CERTIFICATE OF AUTHORITY NUMBER F00970024



Notes:

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.

All concrete in diaphragm shall be Class B-2.

For details and reinforcement of Type H Barrier not shown, see Sheet No. 11.

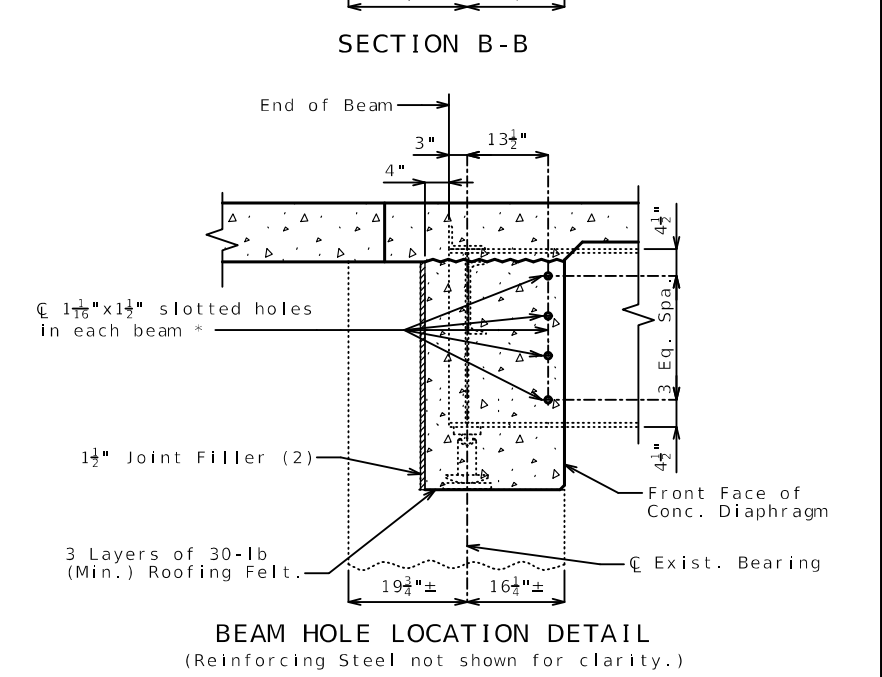
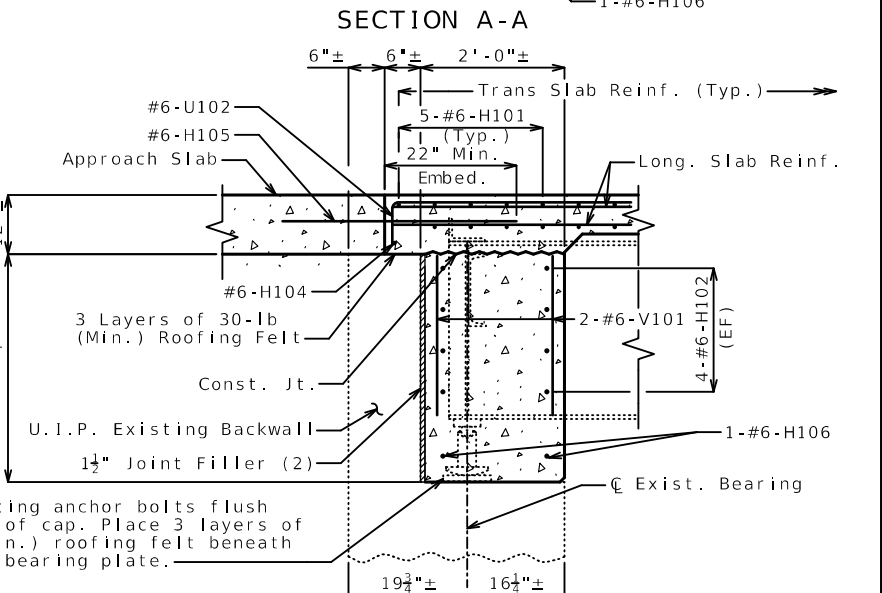
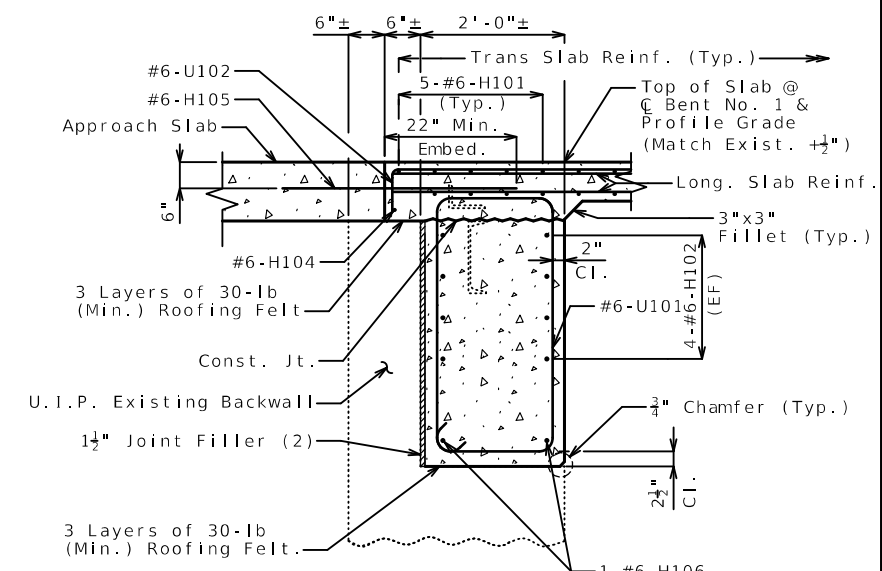
EF = Each Face

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

(1) The H bars are segmented for ease of placement through beam web holes. The total bar length for #6 bars shown in Bill of Reinforcing Steel allows for one lap splice with lengths 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.

(2) Preformed Flexible Foam Expansion Joint Filler, See Special Provisions.

END BENT NO. 1 DETAILS



STATE OF MISSOURI

CHRISTOPHER TEPEL

NUMBER 28262

REGISTERED PROFESSIONAL ENGINEER

THESE SIGNS HAVE BEEN ISSUED, REVIEWED AND DATED ELECTRONICALLY

10/01/2024

DATE PREPARED

10/1/2024

ROUTE M STATE MO

DISTRICT BR SHEET NO. 3

COUNTY WORTH

JOB NO. JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A10481

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

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

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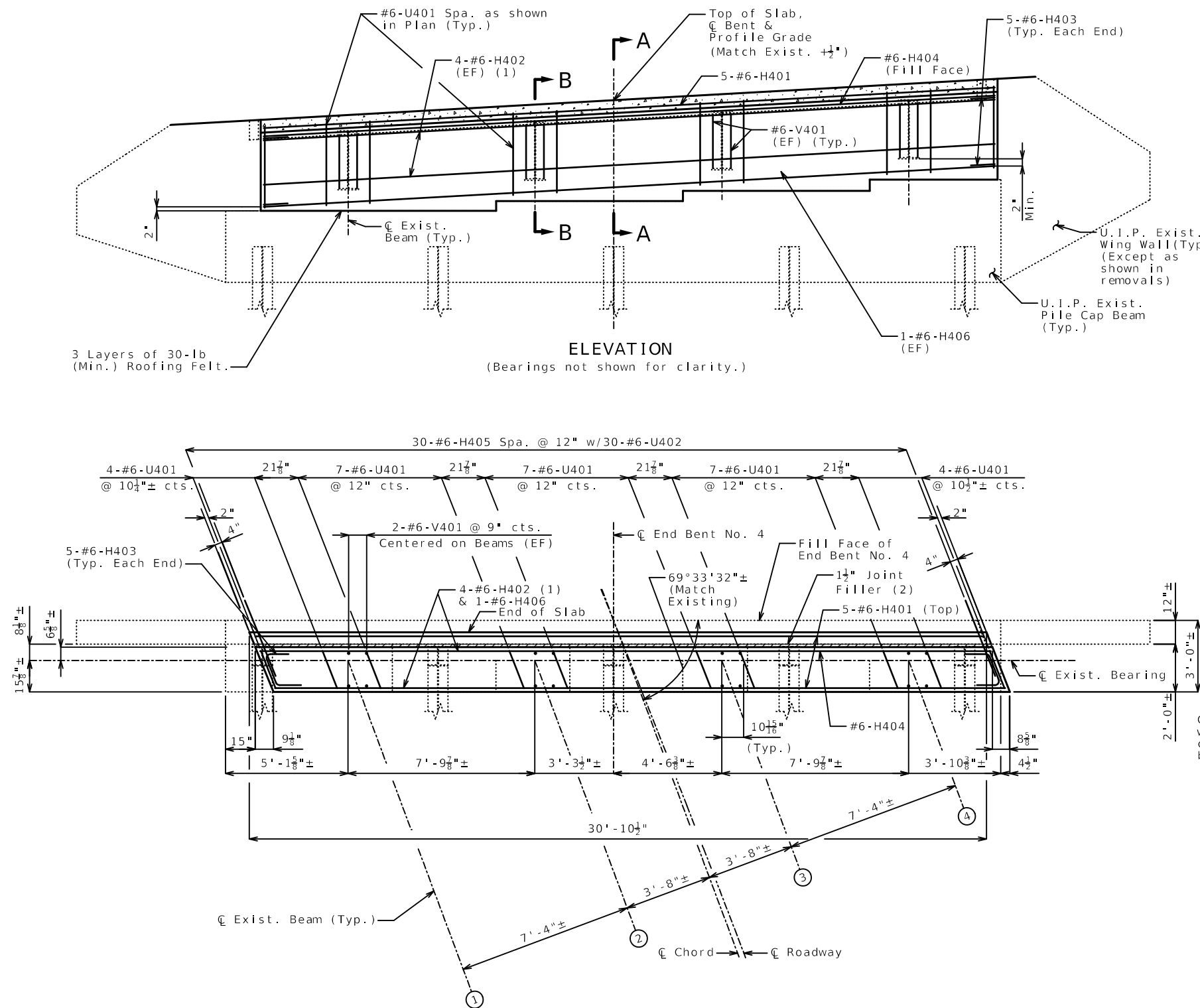
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Detailed OCT. 2023
Checked APR. 2024

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

Sheet No. 3 of 12

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Notes:

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.

All concrete in diaphragm shall be Class B-2.

For details and reinforcement of Type H Barrier not shown, see Sheet No. 11.

EF = Each Face

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

- (1) The H bars are segmented for ease of placement through beam web holes. The total bar length for #6 bars shown in Bill of Reinforcing Steel allows for one lap splice with lengths 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.

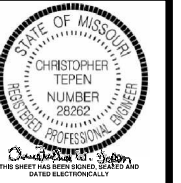
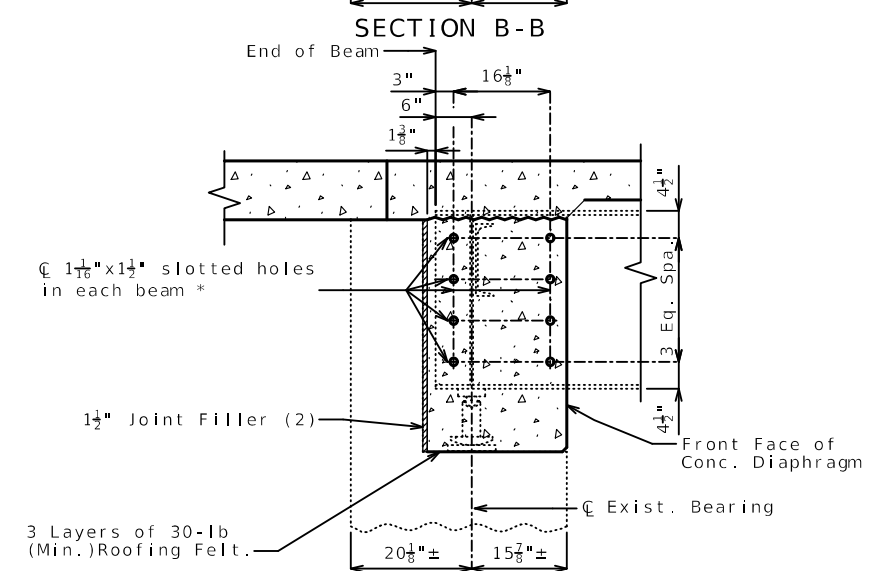
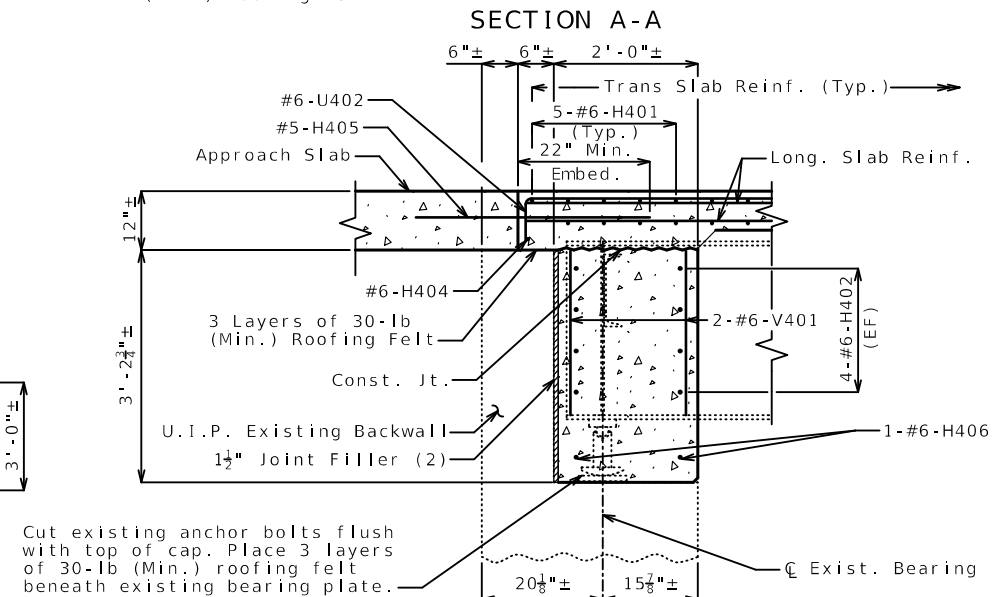
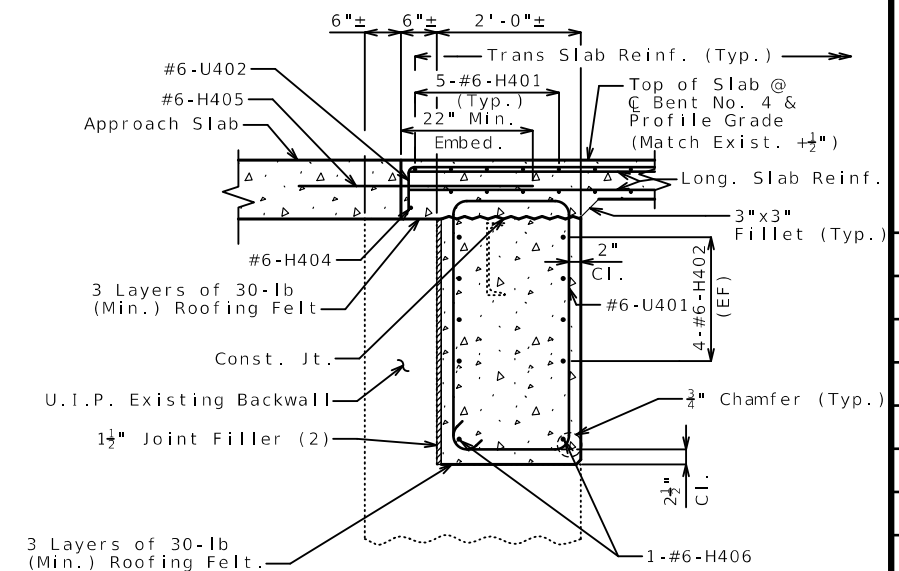
- (2) Prefomed Flexible Foam Expansion Joint Filler, See Special Provisions.

END BENT NO. 4 DETAILS

Sheet No. 4 of 12

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

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Checked APR. 2024



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DATE PREPARED

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ROUTE STATE

M MO

DISTRICT SHEET NO.

BR 4

COUNTY

WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

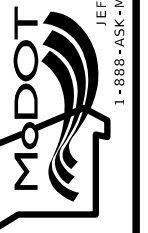
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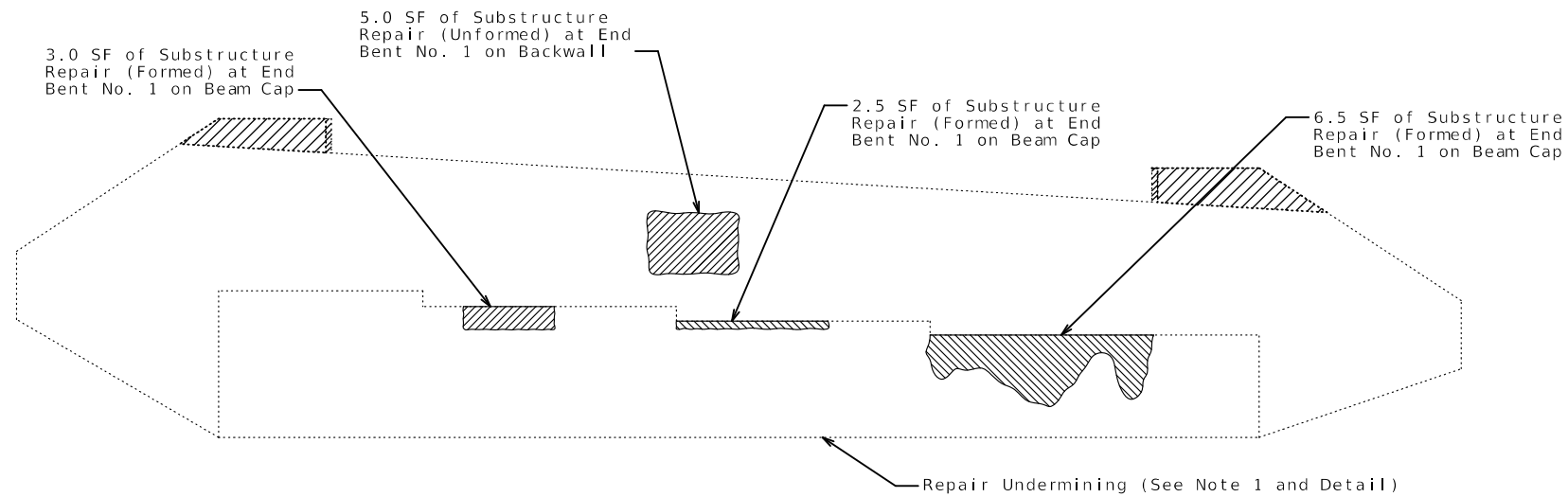
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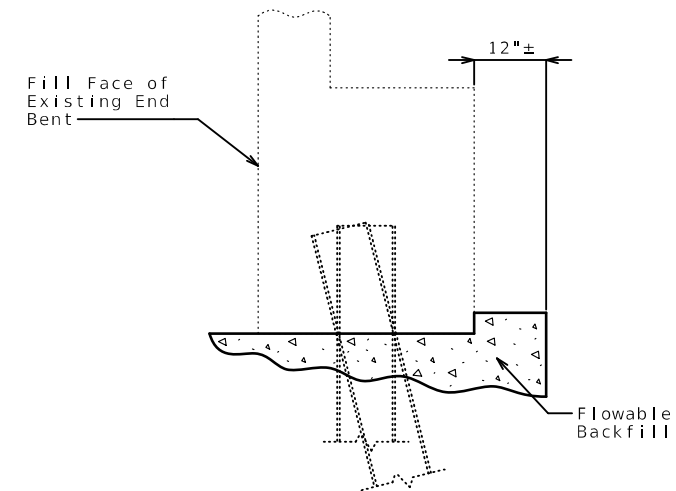
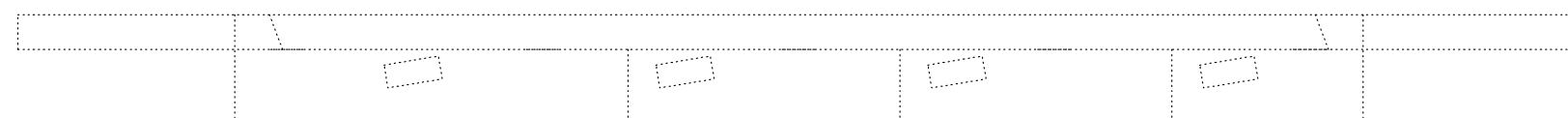
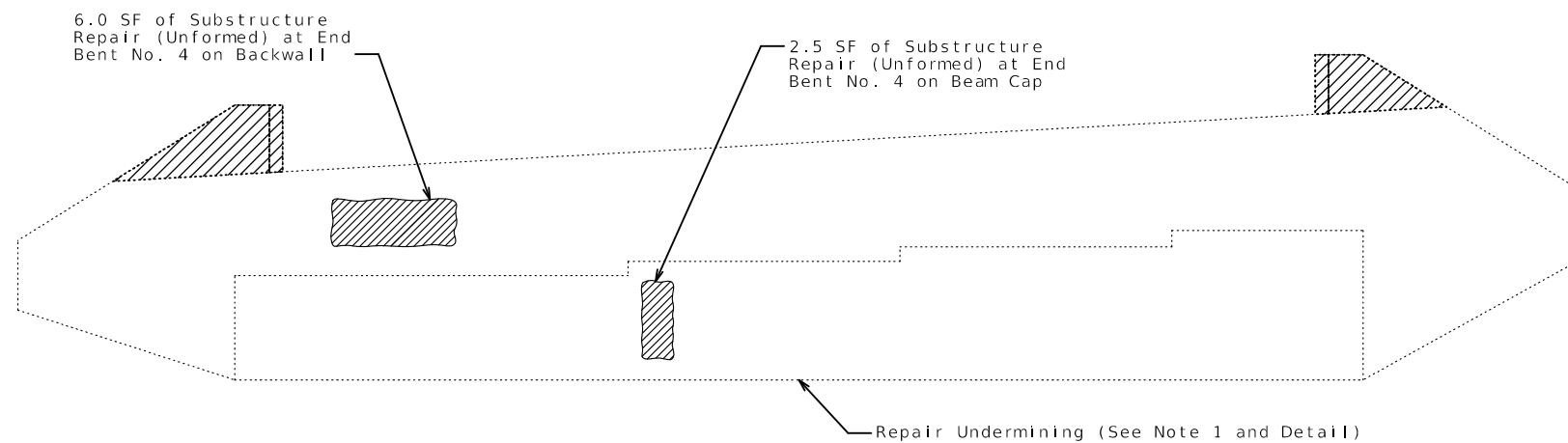
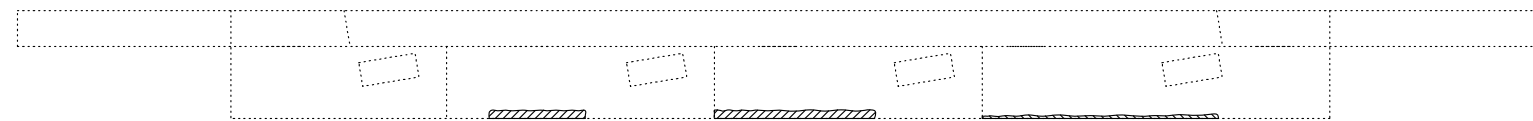


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816/721-4222 FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

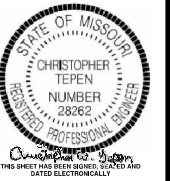


SUBSTRUCTURE QUANTITY TABLE FOR END BENTS NO. 1 & 4			
Item		End Bent No.1 Total	End Bent No.4 Total
Substructure Repair (Formed)	sq. foot	12.0	- - -
Substructure Repair (Unformed)	sq. foot	5.0	8.5
Flowable Backfill	cu. yard	1.5	1.5

- Notes:
1. Repair undermining below pile cap using grout or flowable fill. Cost for all labor and materials to be paid for as Flowable Backfill.
 2. These quantities are included in the Estimated Quantities Table on Sheet No. 1.
 3. All repairs to beam cap and backwall shall be completed prior to diaphragms being installed at end bents.



UNDERMINING REPAIR DETAIL



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DATE PREPARED

07/1/2024

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SHEET NO. 5

COUNTY

WORTH

NW0009

CONTRACT ID.

PROJECT NO. _____

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DATE PREPARED

10/1/2024

ROUTE STATE

M MO

DISTRICT SHEET NO.

BR 6

COUNTY

WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A10481

DESCRIPTION	DATE

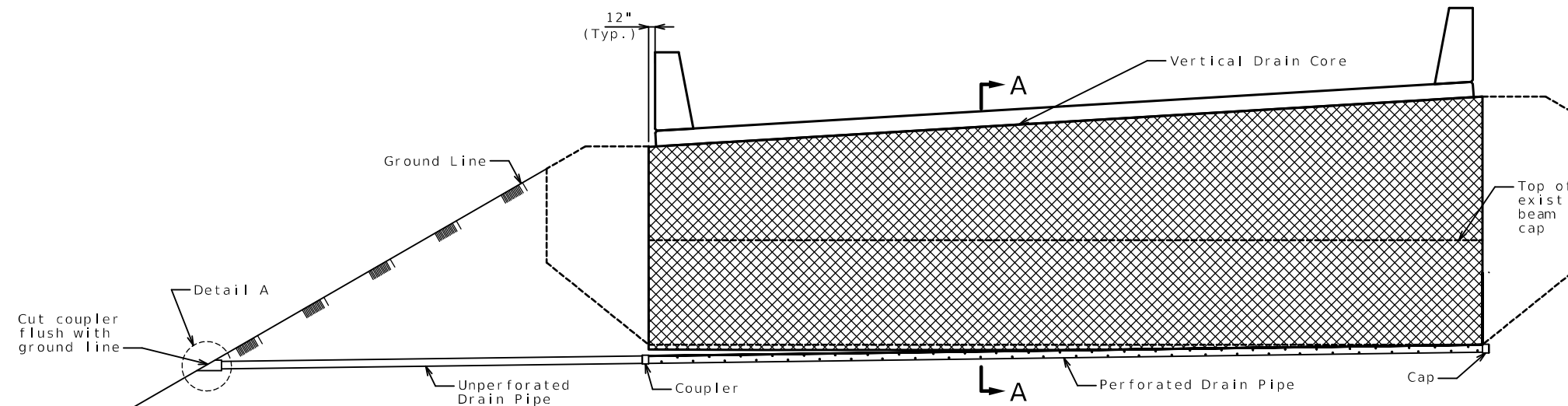
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COMMISSION

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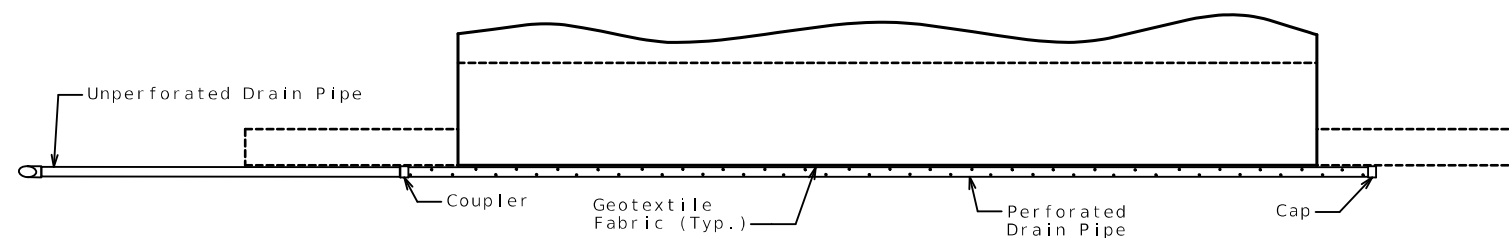
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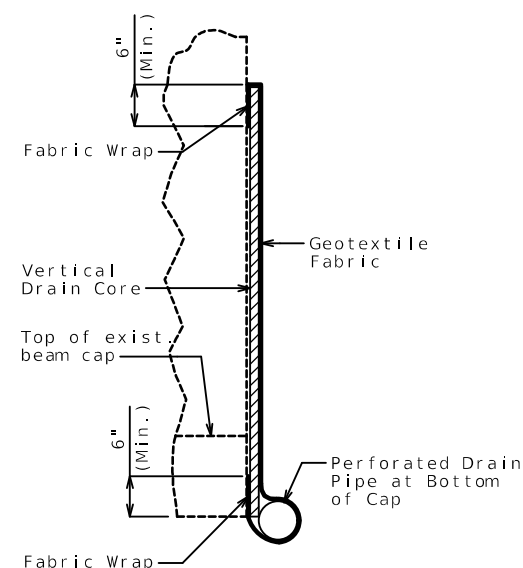
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816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



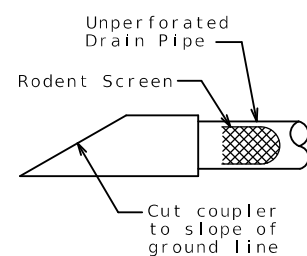
ELEVATION OF END BENT



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

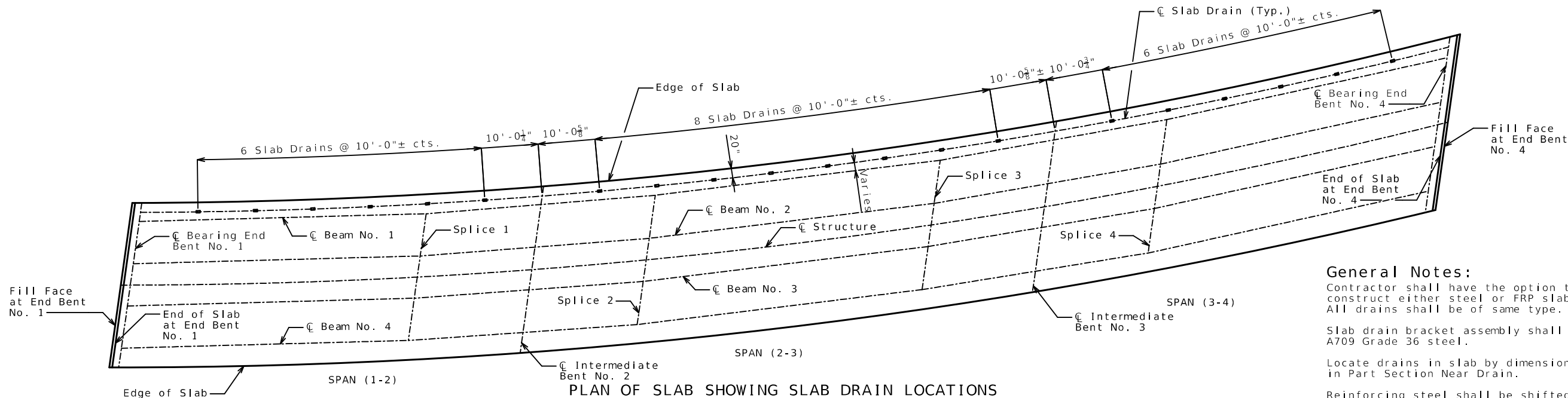
(Squared end bent shown, skewed end bent similar)

Detailed OCT. 2023
Checked APR. 2024

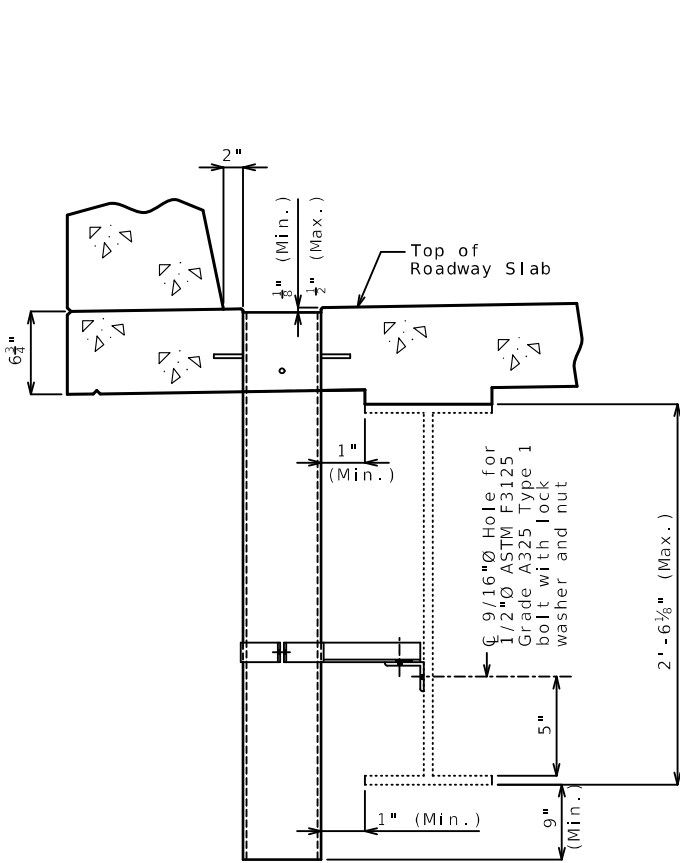
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 12

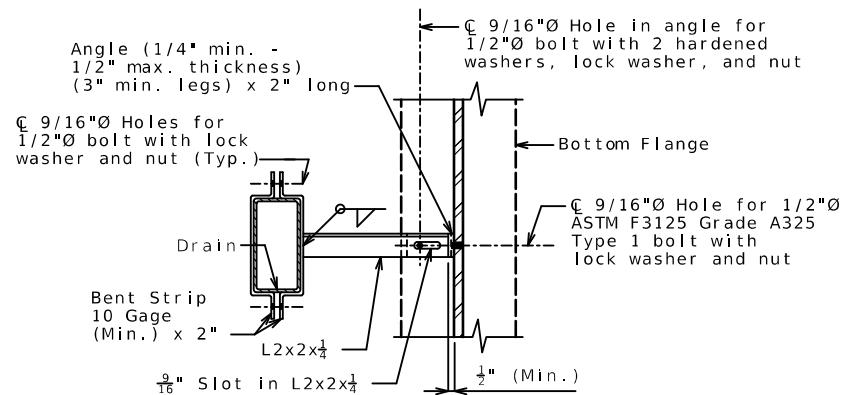
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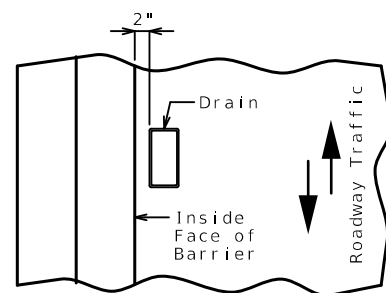
PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS



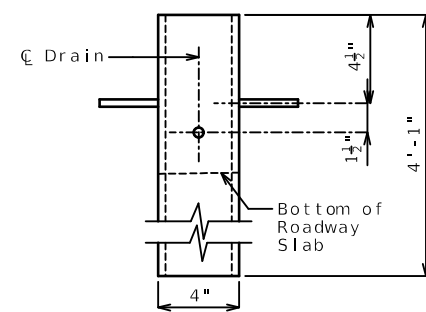
PART SECTION NEAR DRAIN



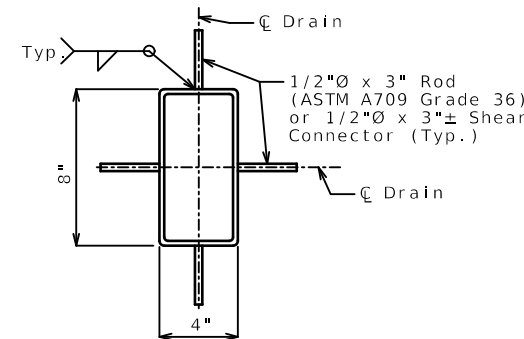
PART SECTION SHOWING BRACKET ASSEMBLY



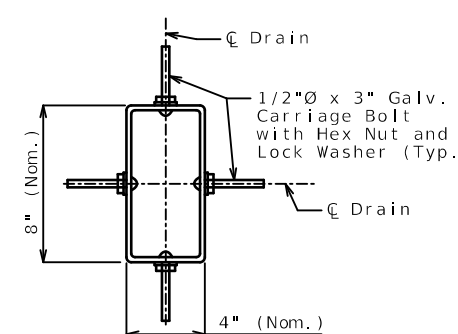
PART PLAN OF SLAB AT DRAIN



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-inch diameter bolts shall be ASTM A307, except as shown.

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

Notes for Steel Drain:

Slab drains may be fabricated of either 1/4-inch welded sheets of ASTM A709 Grade 36 steel or from 1/4-inch 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".

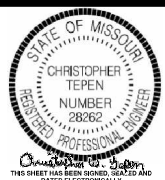
Minimum reinforced wall thickness shall be 1/4 inch.

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 as recommended by the manufacturer to ensure a smooth, chip free cut.



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10/1/2024

ROUTE STATE

M MO

DISTRICT SHEET NO.

BR 7

COUNTY

WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A10481

DESCRIPTION

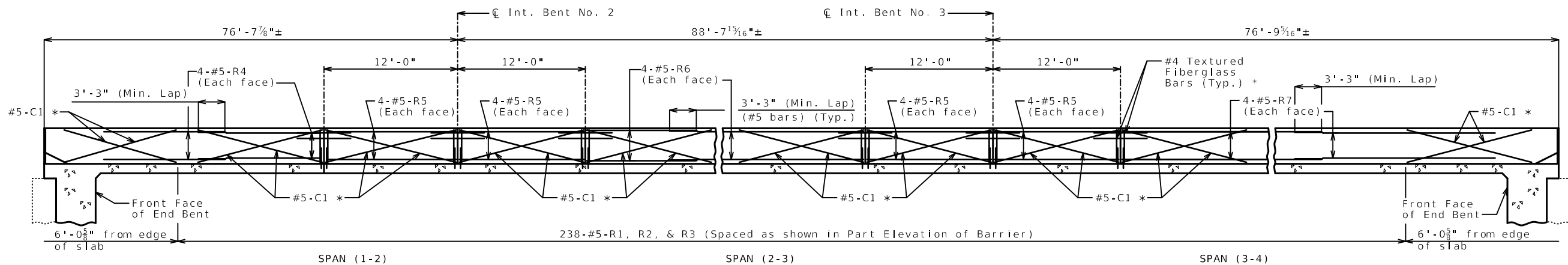
DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

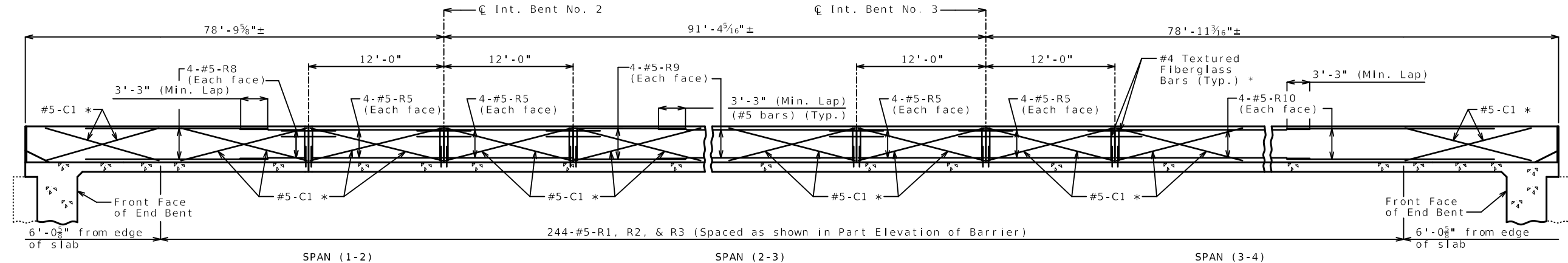
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



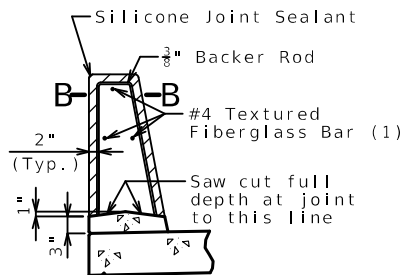
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111-1468
816/722-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



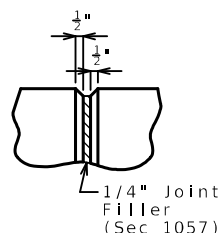
ELEVATION OF THE LEFT BARRIER
Longitudinal dimensions are horizontal.



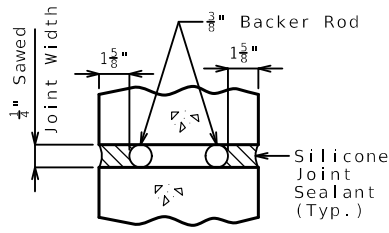
ELEVATION OF THE RIGHT BARRIER
Longitudinal dimensions are horizontal.



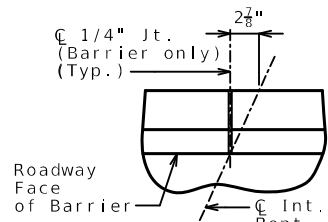
SECTION THRU
SAW CUT JOINT



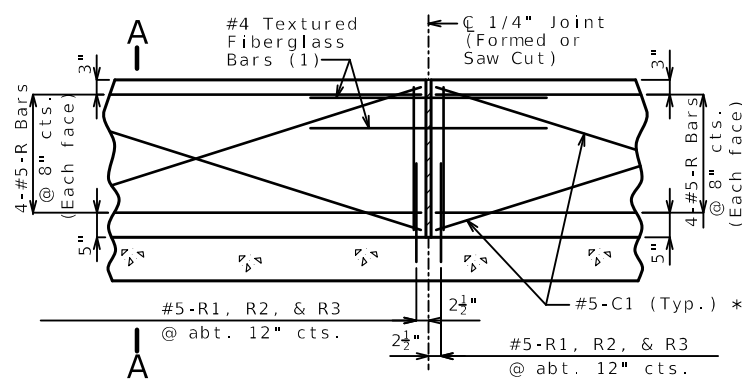
PART ELEVATION
AT FORMED JOINT



SECTION B-B

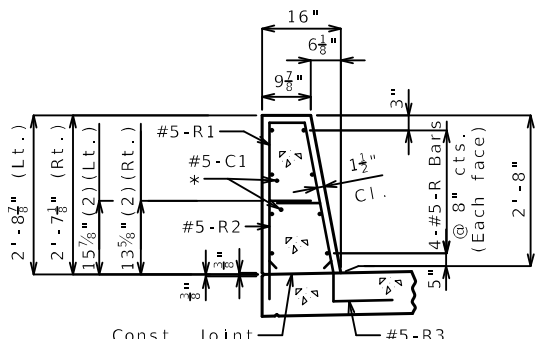


PART PLAN SHOWING
JOINT LOCATION



PART ELEVATION OF BARRIER

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

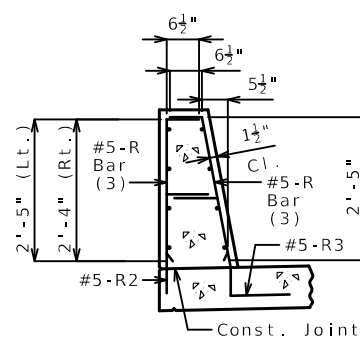


SECTION A-A

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

The cross-sectional area above the slab
is 2.82 square feet for the Rt. Barrier
and 2.93 square feet for the Lt. Barrier

(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.)

TYPE H BARRIER

Sheet No. 9 of 12

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.

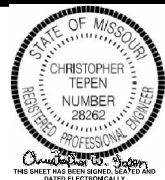
Joint sealant and backer rods shall be in
accordance with Sec 717 for silicone joint
sealant for saw cut and formed joints.

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

Detailed OCT. 2023
Checked APR. 2024

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

Y:\Kansas\130900S\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A1048\B-A10481-009_JNW0009_TYPE H BARRIER ELEVATION.dgn (Default) 3:56:33 PM 10/1/2024



10/01/2024

DATE PREPARED

10/1/2024

ROUTE

M

DISTRICT

BR

STATE

MO

SHEET NO.

9

COUNTY

WORTH

JOB NO.

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A10481

DESCRIPTION

DATE

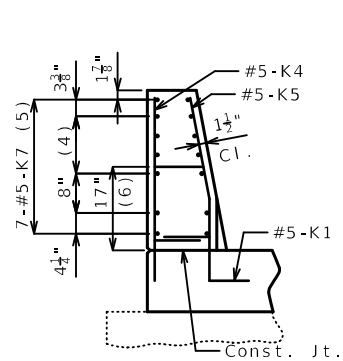
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

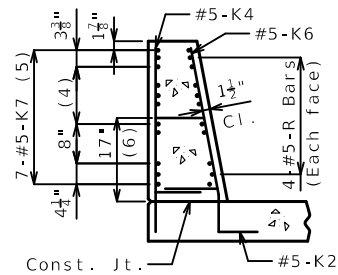


benesch

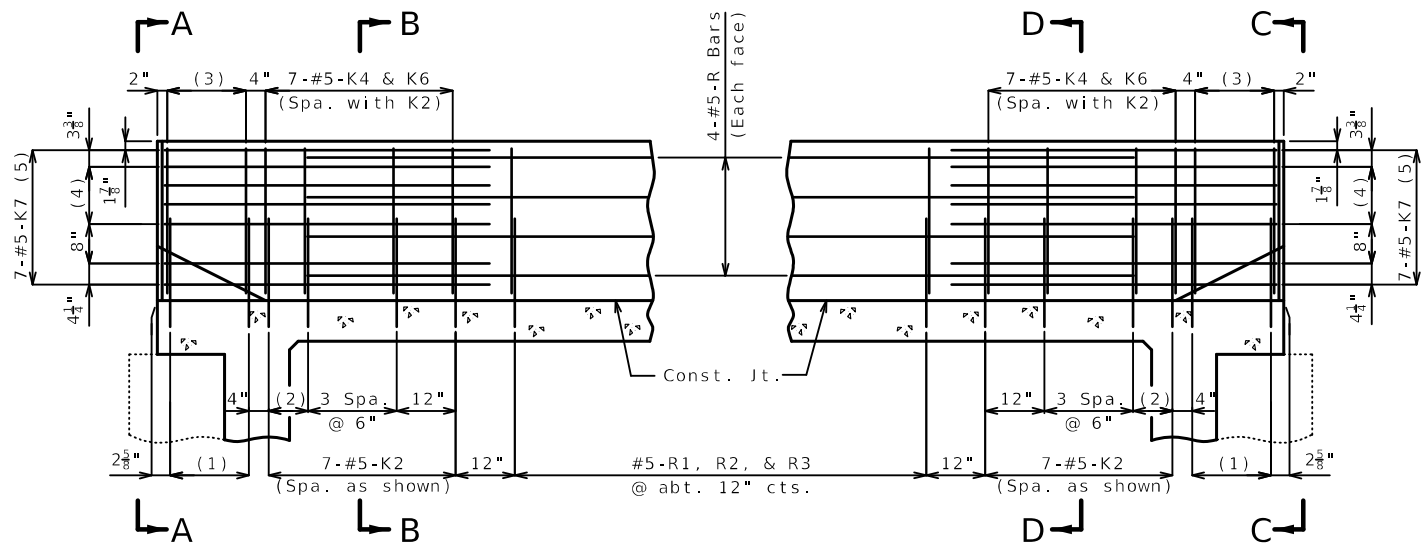
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/721-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



ELEVATION A-A

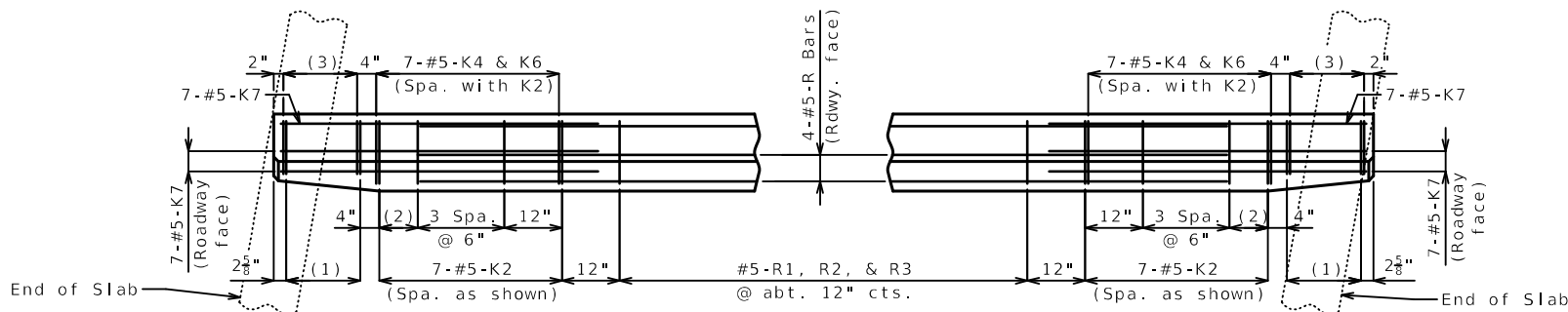


SECTION B-B

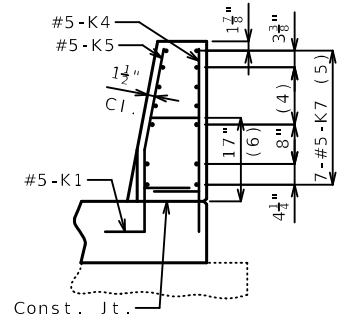


PART ELEVATION

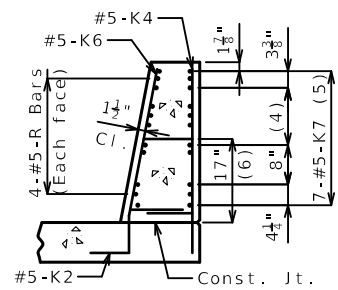
- (1) 5-#5-K1 @ 4" cts.
(2) 2 Spaces @ 4"
(3) 5-#5-K4 and 5-#5-K5, spaced with K1
(4) 3 Spaces @ 3 1/8"
(5) Spaced as shown, each face
(6) To top of bar



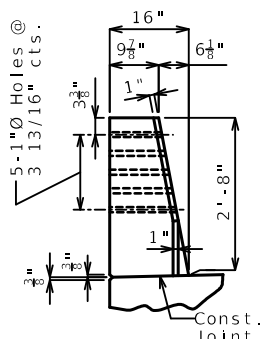
PART PLAN



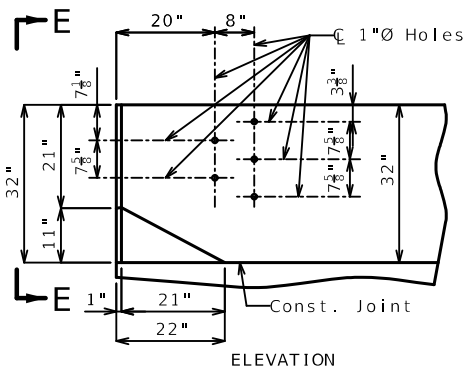
ELEVATION C-C



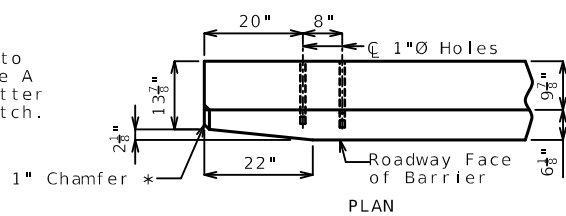
SECTION D-D



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.

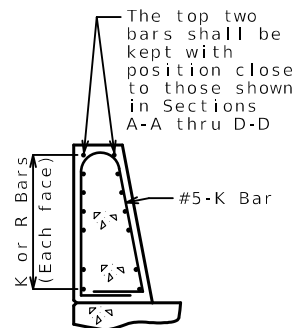
Reinforcing Steel:

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)



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.



10/01/2024

DATE PREPARED

10/1/2024

ROUTE

M MO

DISTRICT

BR 10

COUNTY

WORTH

JNW0009

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A10481

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

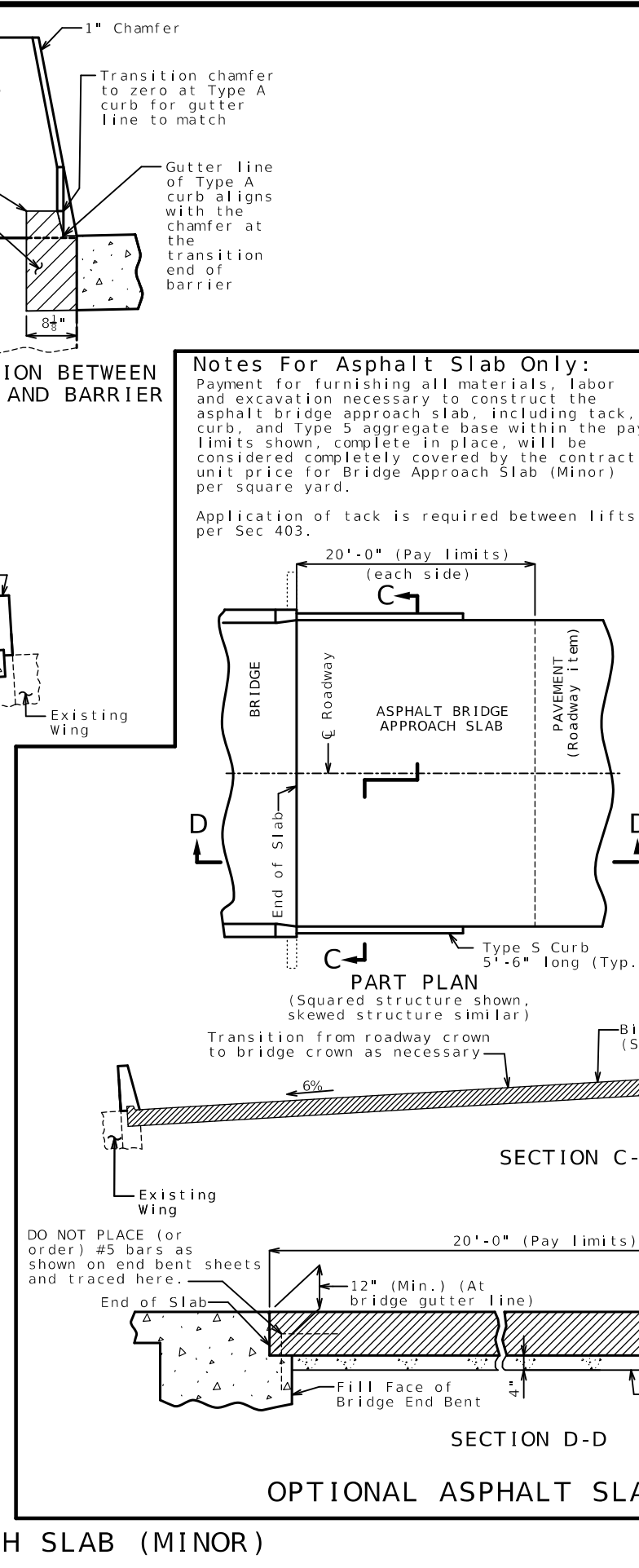
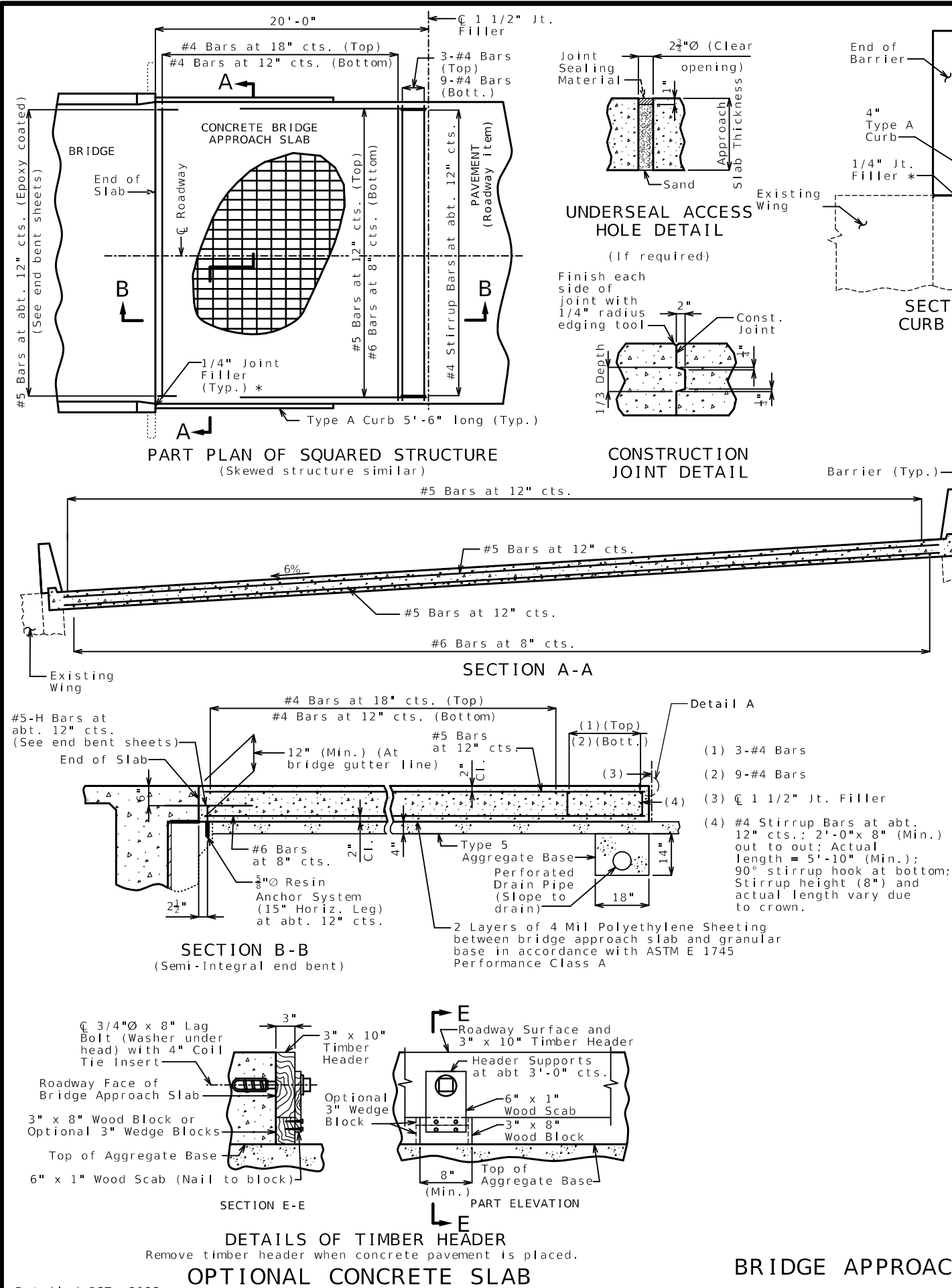
COMMISSION



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



One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111-4468
816/221-4222, FAX 816/221-4222
CERTIFICATE OF AUTHORITY NUMBER F00970024



General Notes:
Contractor Shall have the option to construct either slab 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 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 Type A curb with sealant in accordance with Sec 717 for silicone joint sealant for saw cut and formed joints.

STATE OF MISSOURI
CHRISTOPHER TEPEN
NUMBER 28262
PROFESSIONAL ENGINEER
THESE SEALS HAVE BEEN ISSUED IN ACCORDANCE WITH MISSOURI STATUTES
DATED ELECTRONICALLY

10/01/2024
DATE PREPARED
10/1/2024
ROUTE M STATE MO
DISTRICT BR SHEET NO. 11
COUNTY WORTH
JOB NO. JNW0009
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A10481

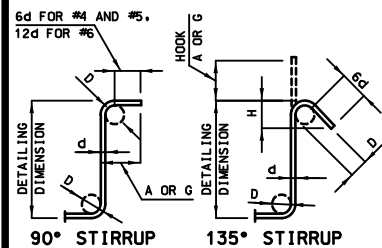
DESCRIPTION
DATE
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

benesch

One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

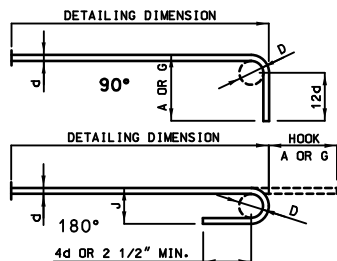
BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT		
										B		C		D		E		F		H					K	
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.
SUPERSTRUCTURE																										
END BENT NO. 1																										
5	6	H101	Diaphragm	E	20					28	8.00										28	8	28	4	213	
8	6	H102	Diaphragm	E	20					32	6.00										32	6	32	6	391	
10	6	H103	Diaphragm	E	10							1	0.00	1	5.00						3	5	3	5	51	
1	6	H104	Diaphragm	E	20					28	8.00										28	8	28	8	43	
29	5	H105	Approach	E	20					3	3.00										3	3	3	3	98	
2	6	H106	Diaphragm	E	20					32	6.00										32	6	32	6	98	
29	6	U101	Diaphragm	E	13	S				1	6.75	3	6.13	1	6.75	3	6.13				11	6	10	10	472	
29	6	U102	Diaphragm	E	19	S				0	8.00	3	3.50								4	0	3	10	167	
16	6	V101	Diaphragm	E	20					2	3.00										2	3	2	3	54	
SUPERSTRUCTURE																										
END BENT NO. 4																										
5	6	H401	Diaphragm	E	20					30	7.00										30	7	30	3	227	
8	6	H402	Diaphragm	E	20					34	5.00										34	5	34	5	414	
10	6	H403	Diaphragm	E	10							1	0.00	1	5.00						3	5	3	5	51	
1	6	H404	Diaphragm	E	20					30	7.00										30	7	30	7	46	
30	5	H405	Approach	E	20					3	3.00										3	3	3	3	102	
2	6	H406	Diaphragm	E	20					34	5.00										34	5	34	5	103	
29	6	U401	Diaphragm	E	13	S				1	8.25	3	6.13	1	8.25	3	6.13				11	9	11	1	483	
30	6	U402	Diaphragm	E	19	S				0	7.00	3	3.50								3	11	3	9	169	
16	6	V401	Diaphragm	E	20					2	3.00										2	3	2	3	54	
SLAB																										
450	6	S1	Slab	E	20					28	5.00										28	5	28	5	19207	
8	6	S2	Slab	E	20			V	1	2	9.00										2	9	2	9	178	
			Incr. = 40.5"							26	10.00										26	10	26	10		
22	6	S3	Slab	E	20			V	1	1	7.00										1	7	1	7	486	
			Incr. = 14.75"							27	10.00										27	10	27	10		
450	5	S4	Slab	E	20					28	5.00										28	5	28	5	13337	
8	5	S5	Slab	E	20			V	1	2	9.00										2	9	2	9	123	
			Incr. = 40.5"							26	10.00										26	10	26	10		
22	5	S6	Slab	E	20			V	1	1	7.00										1	7	1	7	337	
			Incr. = 14.75"							27	10.00										27	10	27	10		
120	5	S7	Slab	E	20					49	3.00										49	3	49	3	6164	
88	6	S8	Slab	E	20					48	0.00										48	0	48	0	6344	
190	5	S9	Slab	E	20					49	3.00										49	3	49	3	9760	
SLIP FORM																										
OPTION																										
40	5	C1	Slip Form	E	20					12	0.00										12	0	12	0	501	



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

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



END HOOK DIMENSIONS				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS	90° HOOKS	
#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.
X = STIRRUP.
V = 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.

BILL OF REINFORCING STEEL

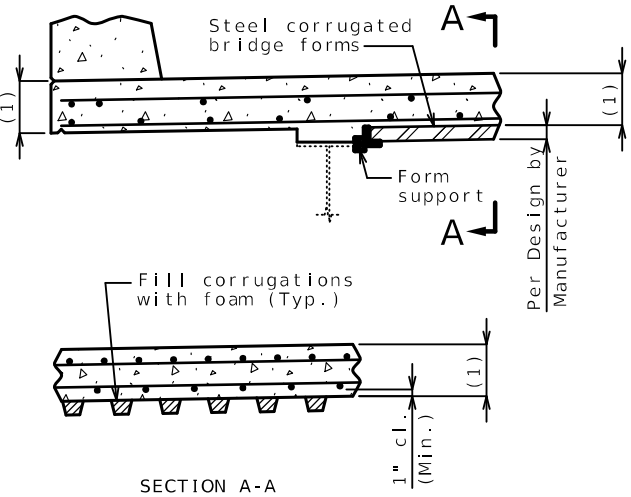
NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
										B		C		D		E		F		H					K			
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
TYPE H BARRIER LEFT																												
238	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	1303
238	5	R2	Barrier	E	19	S				0	18.50	0	9.50										2	4	2	3	559	
238	5	R3	Barrier	E	27	S						0	9.50	0	15.25	0	3.00	0	12.00	0	15.00	0	3.00	3	4	3	1	765
16	5	R4	Barrier	E	20					32	7.00												32	7	32	7	544	
32	5	R5	Barrier	E	20					11	7.00												11	7	11	7	387	
16	5	R6	Barrier	E	20					33	11.00												33	11	33	11	566	
16	5	R7	Barrier	E	20					32	8.00												32	8	32	8	545	
10	5	K1	End Post	E	27	S				0	20.50	0	9.25	0	5.25	0	14.75	0	12.00	0	5.25	0	1.00	5	2	4	10	50
14	5	K2	End Post	E	27	S				0	20.50	0	9.25	0	17.25	0	3.00	0	12.00	0	17.00	0	3.25	5	2	4	10	71
24	5	K4	End Post	E	19	S				2	5.00	0	10.00										3	3	3	2	79	
10	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	31	
14	5	K6	End Post	E	21	S				2	4.75			0	10.00				2	4.25	0	6.00	3	3	3	1	45	
28	5	K7	End Post	E	20					5	6.00												5	6	5	6	161	
TYPE H BARRIER RIGHT																												
244	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	1336	
244	5	R2	Barrier	E	19	S				0	18.50	0	9.50										2	4	2	3	573	
244	5	R3	Barrier	E	27	S						0	9.50	0	15.25	0	3.00	0	12.00	0	15.00	0	3.00	3	4	3	1	785
16	5	R8	Barrier	E	20					33	8.00												33	8	33	8	562	
32	5	R5	Barrier	E	20					11	7.00												11	7	11	7	387	
16	5	R9	Barrier	E	20					35	1.00												35	1	35	1	585	
16	5	R10	Barrier	E	20					33	9.00												33	9	33	9	563	
10	5	K1	End Post	E	27	S				0	20.50	0	9.25	0	5.25	0	14.75	0	12.00	0	5.25	0	1.00	5	2	4	10	50
14	5	K2	End Post	E	27	S				0	20.50	0	9.25	0	17.25	0	3.00	0	12.00	0	17.00	0	3.25	5	2	4	10	71
24	5	K4	End Post	E	19	S				2	5.00	0	10.00										3	3	3	2	79	
10	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	31	
14	5	K6	End Post	E	21	S				2	4.75			0	10.00				2	4.25	0	6.00	3	3	3	1	45	
28	5	K7	End Post	E	20					5	6.00												5	6	5	6	161	
TOTALS																												
	4			E																							0	
	4			E																							0	
	5																										0	
	5			E																							40756	
	6																										0	
	6			E																							29251	
			TOTAL																								0	
			TOTAL	E																							70007	
SLAB ON STEEL																												
	4			E																							0	
	5			E																							29921	
	6			E																							29251	
			TOTAL	E																							59172	
TYPE H BARRIER																												
	4			E																							0	
	5			E																							10334	
			TOTAL	E																							10334	
SLIP FORM OPTION																												
	5			E																							501	
			TOTAL	E																							501	

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

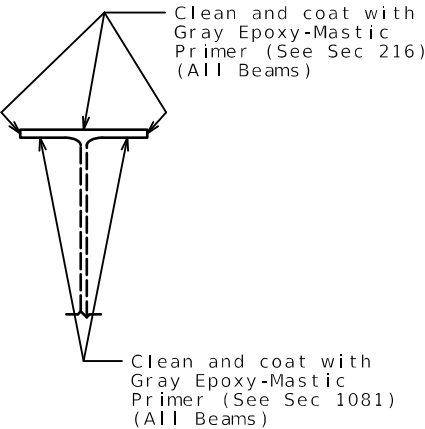
SUBSTRUCTURE REPAIR FOR INT. BENT NO. 2 & 3

SUBSTRUCTURE QUANTITY TABLE FOR INT. BENT NO. 2 & 3			
ITEM		Bent No. 2 Total	Bent No. 3 Total
Substructure Repair (Formed)	sq. foot	12.0	
Substructure Repair (Unformed)	sq. foot		2.0

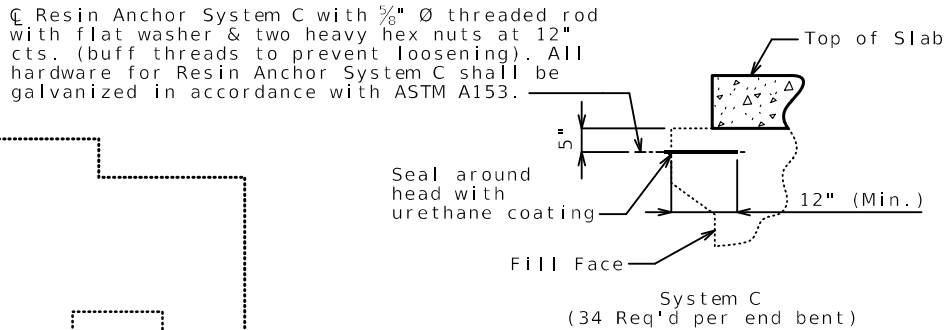
Notes: These quantities are included in the Estimated Quantities Table on Sheet No. 1.



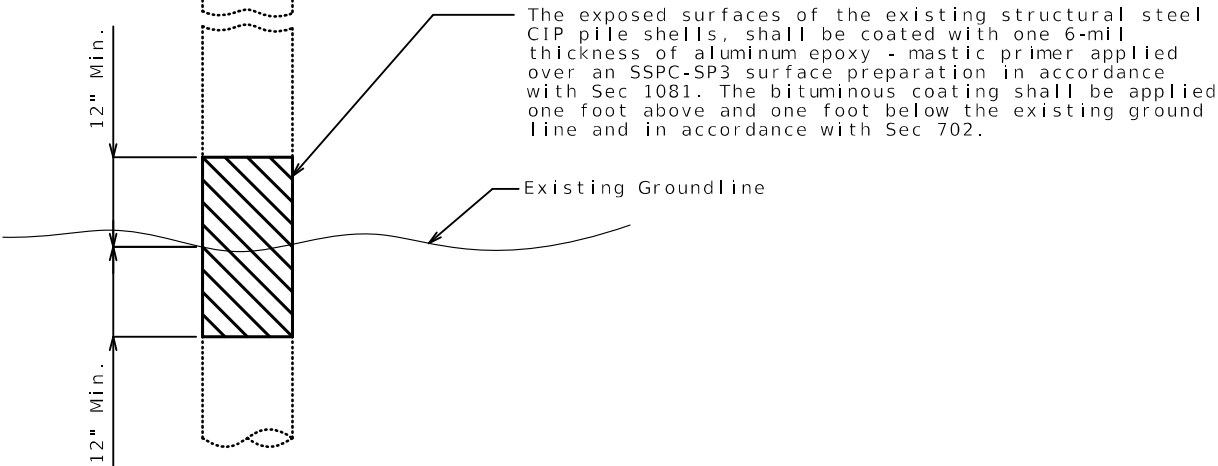
OPTIONAL STAY-IN-PLACE FORM DETAILS



TYPICAL SECTION THRU BEAM
SHOWING PROTECTIVE COATING



DETAILS OF RESIN ANCHOR SYSTEMS



INT. BENT PROTECTIVE COATING 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.

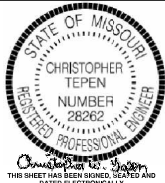
Haunching:

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

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

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

Sheet No. 2 of 12



DATE	
10/01/2024	
DATE PREPARED	
10/1/2024	
ROUTE	STATE
B	MO
DISTRICT	SHEET NO.
BR	2
COUNTY	
GENTRY	
JOB NO.	
JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	
A18741	

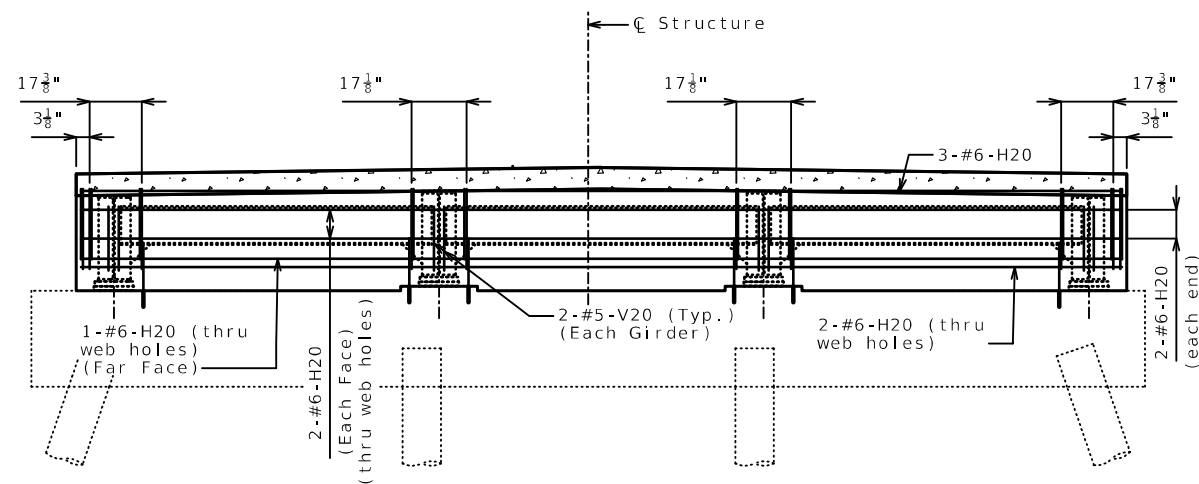
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MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

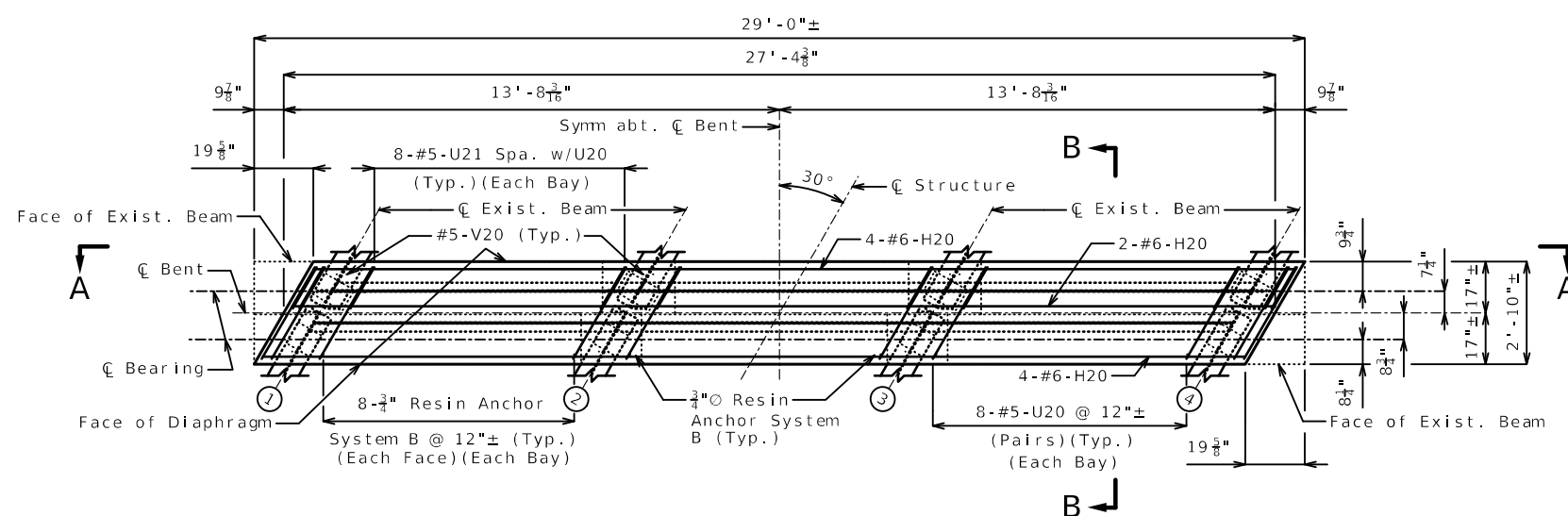
105 WEST CAPITAL
JEFFERSON CITY, MO 65102

benesch

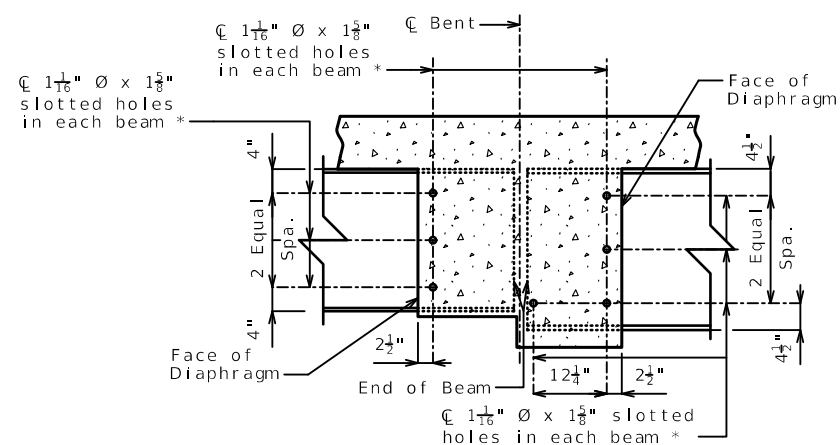
One Main Plaza, 4435 Main St., Suite 1150
Kansas City, MO 64111
816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



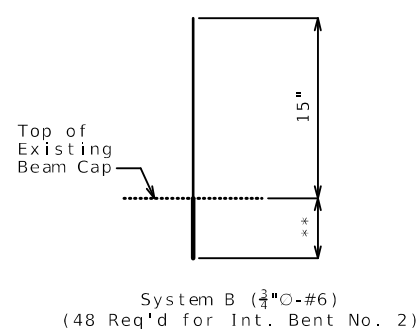
SECTION A-A



PLAN
(Slab Reinforcing not shown for clarity.)

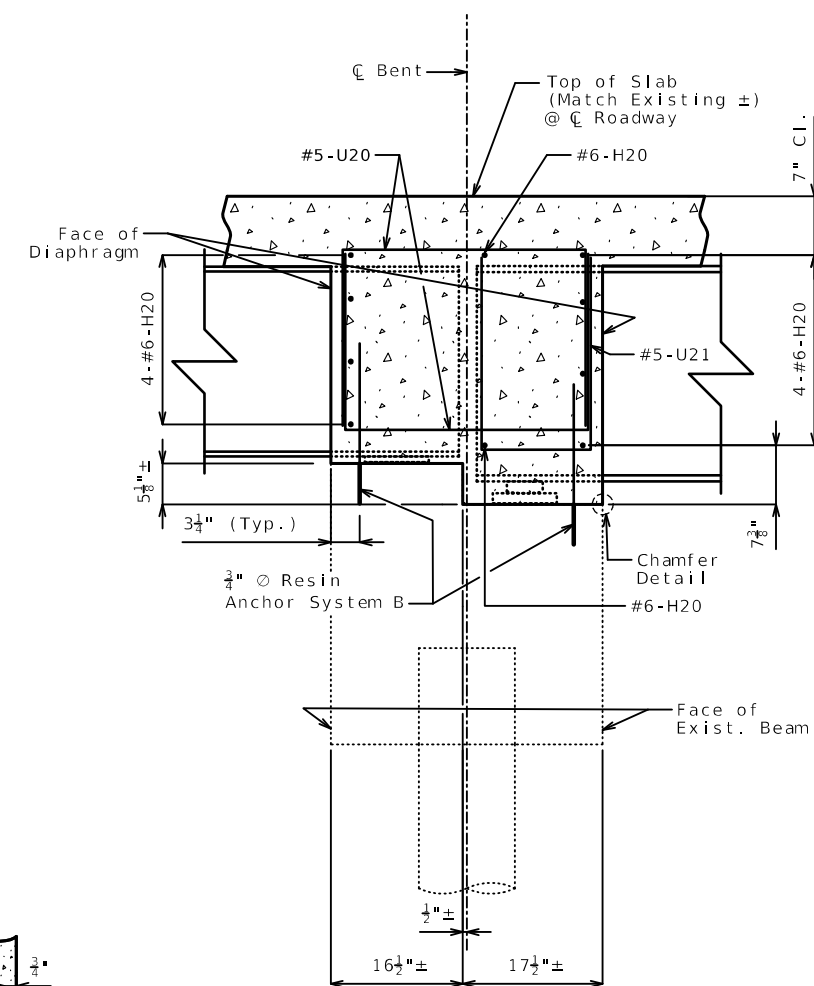
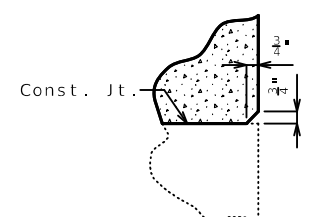


* Cost of field drilling holes in existing wide flange beam webs will be considered completely covered by the contract unit price for Slab on Steel.



DETAIL OF RESIN ANCHOR SYSTEM B

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



SECTION B-B
(Slab Reinforcing not shown for clarity.)

Notes:

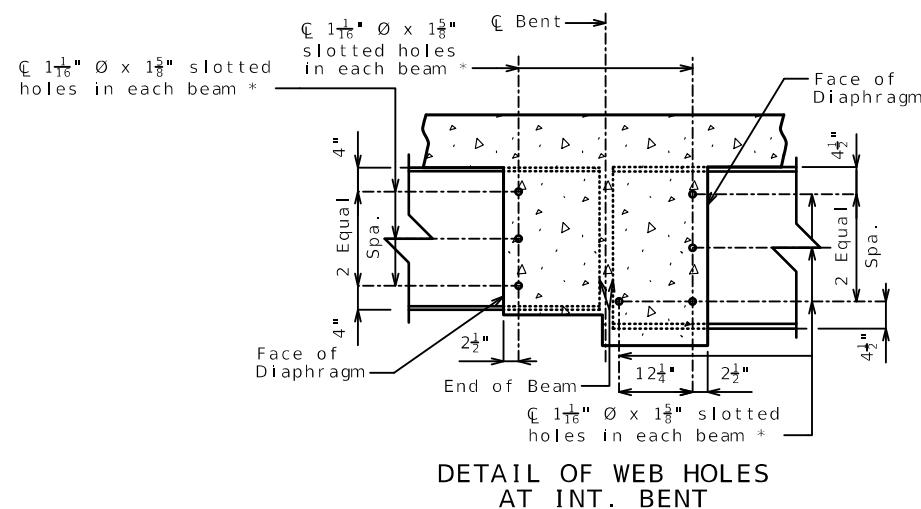
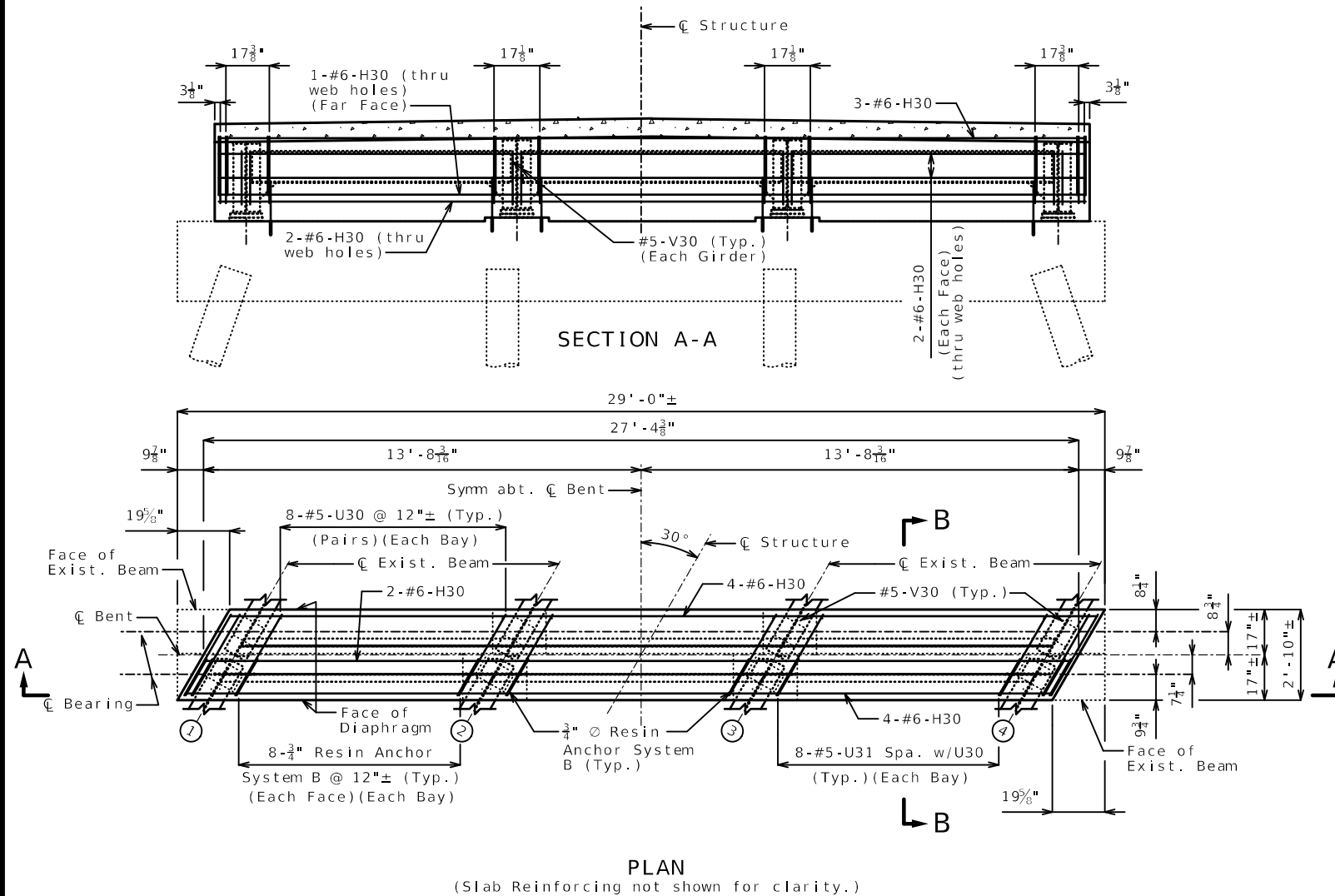
All concrete shall be Class B-2.

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 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.

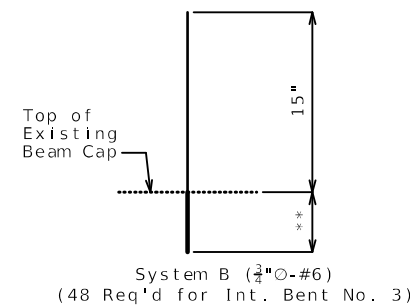
All concrete and reinforcement in the intermediate bent diaphragm, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

Substructure repairs to intermediate bent shall be completed before constructing the concrete diaphragm at Int. Bent No. 2.

[illegible]



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



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

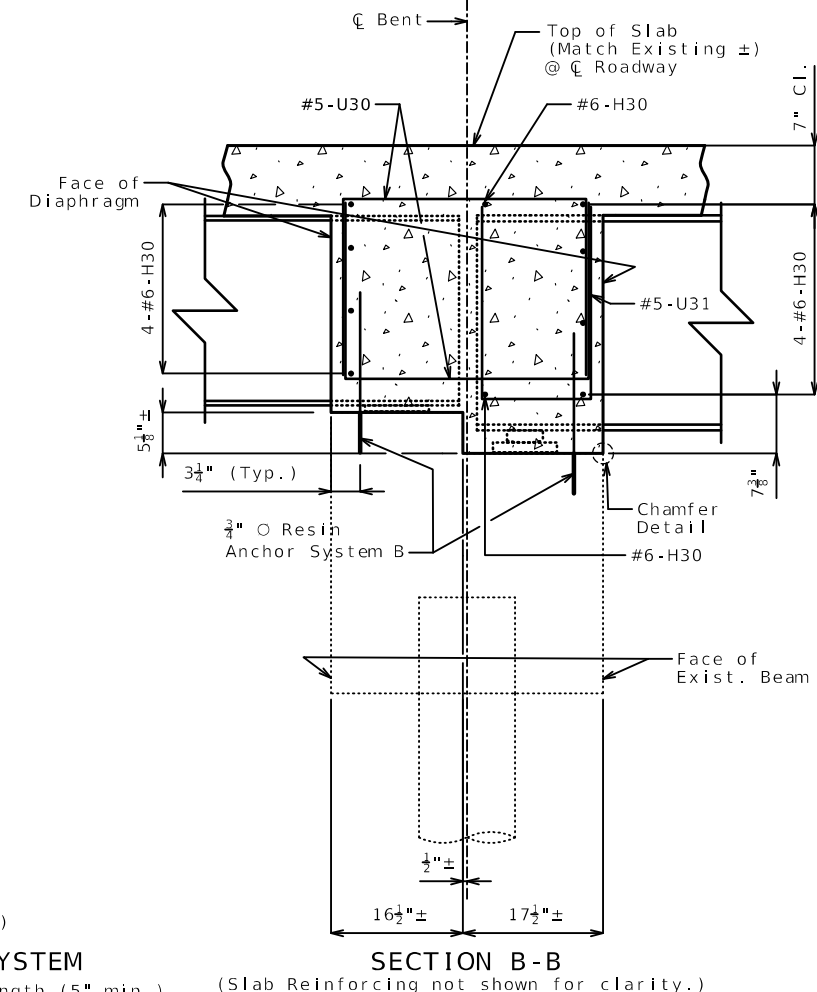
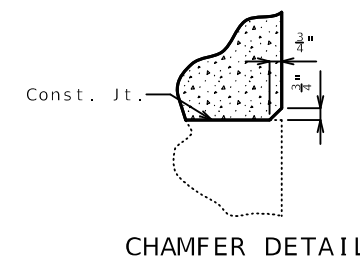
Notes:

All concrete shall be Class B-2.

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 mills 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.

All concrete and reinforcement in the intermediate bent diaphragm, complete in place, will be considered completely covered by the contract unit price for Slab on Steel.

Substructure repairs to intermediate bent shall be completed before constructing the concrete diaphragm at Int. Bent No. 3.



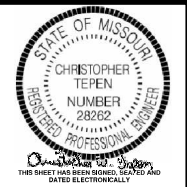
DETAILS OF CONCRETE DIAPHRAGM AT INTERMEDIATE BENT NO. 3

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

Sheet No. 4 of 12

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

Y:\Kansas\130900S\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A1874\B_A18741_004_JNW0009_INT. BENT 3 DETAILS.dgn (Default) 8:16:27 AM 10/1/2024

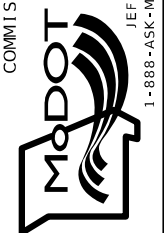


DATE	10/01/2024
DATE PREPARED	10/1/2024
ROUTE	B
STATE	MO
DISTRICT	BR
SHEET NO.	4
COUNTY	GENTRY
JOB NO.	JNW0009
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO.	A18741

DESCRIPTION

DATE

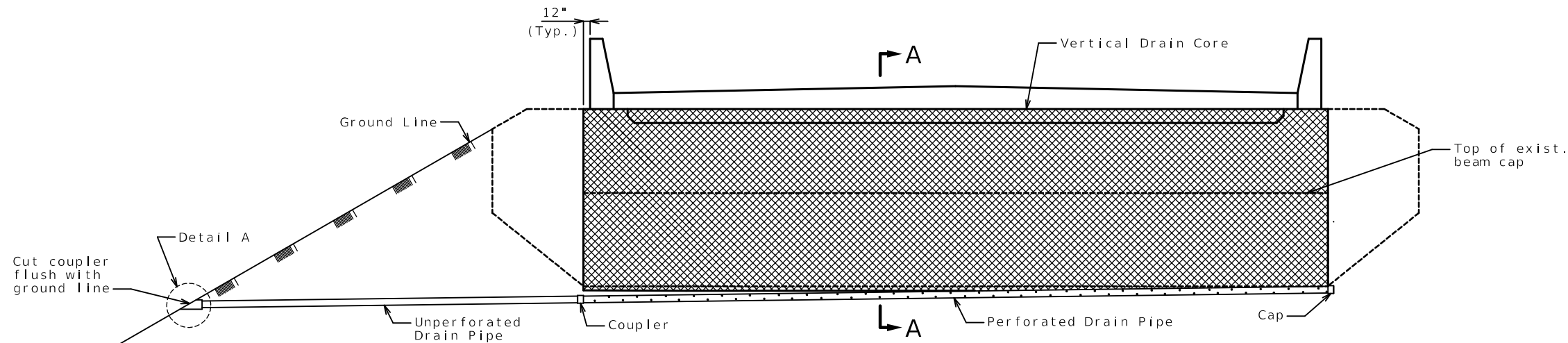
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION



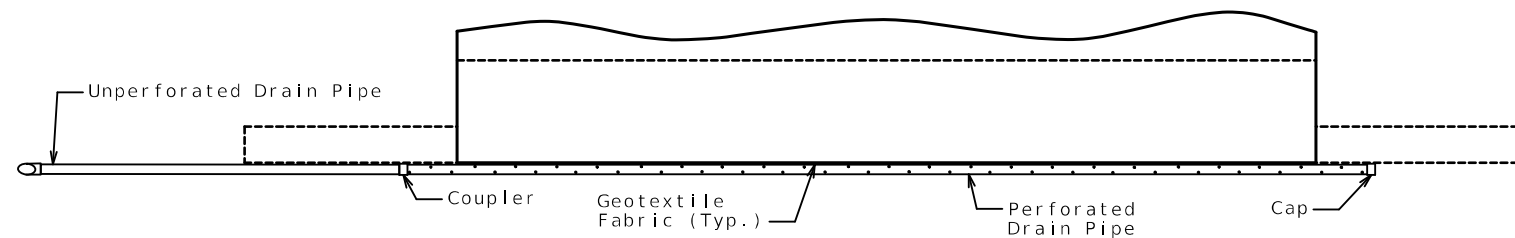
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024



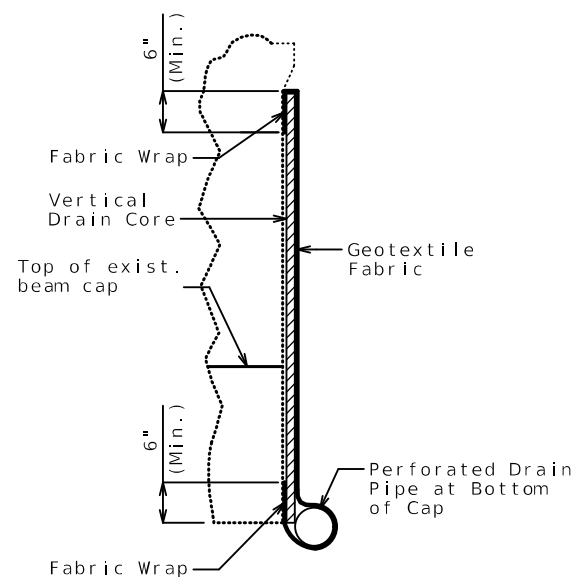
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



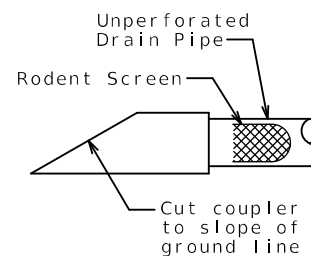
ELEVATION OF END BENT



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 1½ 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.



DATE 10/01/2024	
DATE PREPARED 10/1/2024	
ROUTE B	STATE MO
DISTRICT BR	SHEET NO. 6
COUNTY GENTRY	
JOB NO. JNW0009	
CONTRACT ID.	
PROJECT NO.	
BRIDGE NO. A18741	

DATE	DESCRIPTION

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
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CERTIFICATE OF AUTHORITY NUMBER F00970024

Designed MAR. 2024
Detailed APR. 2024
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Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 12

Y:\Kansas\1309005\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A1874\B_A18741_006_JNW0009_VERTICAL DRAINS.dgn (Default) 8:16:44 AM 10/1/2024

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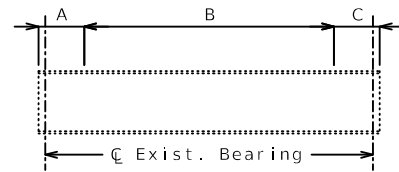
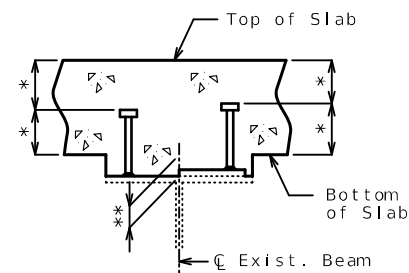


TABLE SHOWING SHEAR CONNECTOR UNIT SPACING				
Beam	S.C. per unit	A	B	C
Beam (Spans 1-2 & 4-3)	3	6½"±	31 Units @ 11"± cts.	10¼"±
	Total shear connectors required per beam			186



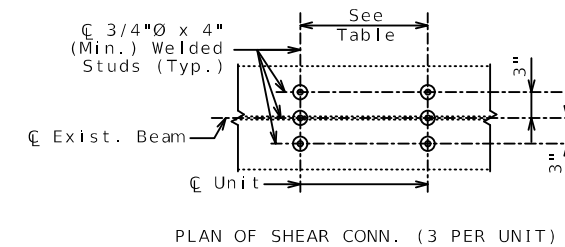
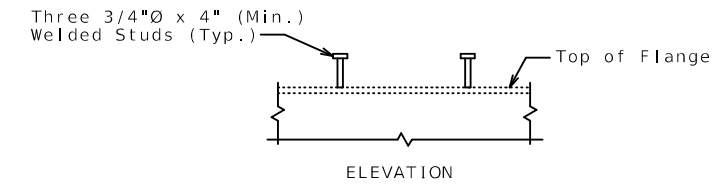
* 3" Minimum

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** Min. Haunch = 0.000"
   Max. Haunch = 0.375"

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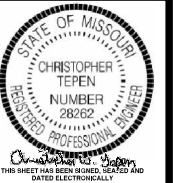
Max. Haunch = 0.375"



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.



DATE
10/01/2024

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COUNTY

JOB NO.

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

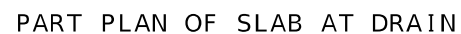
[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

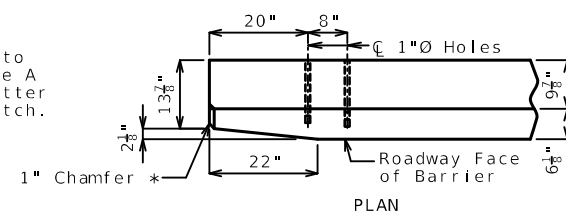
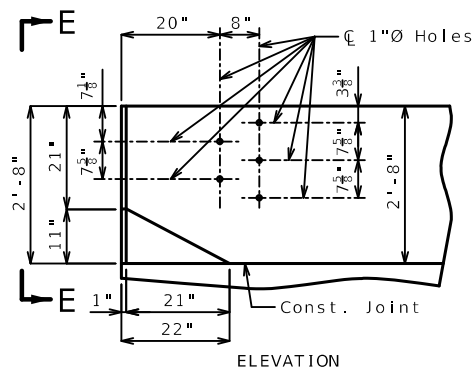
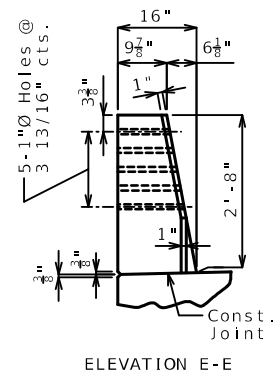
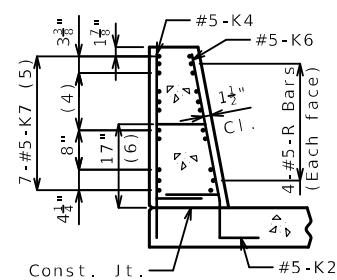
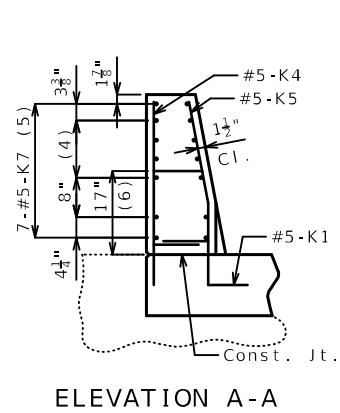
1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.



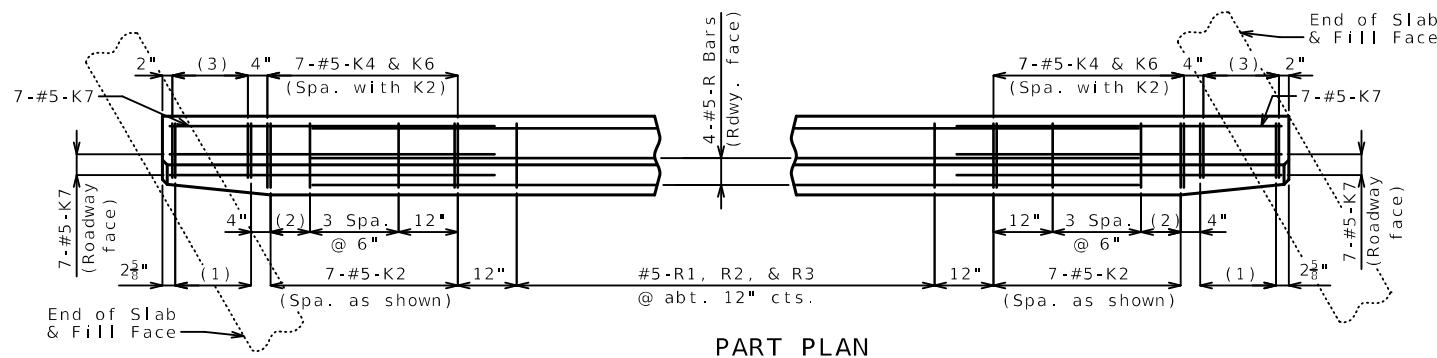
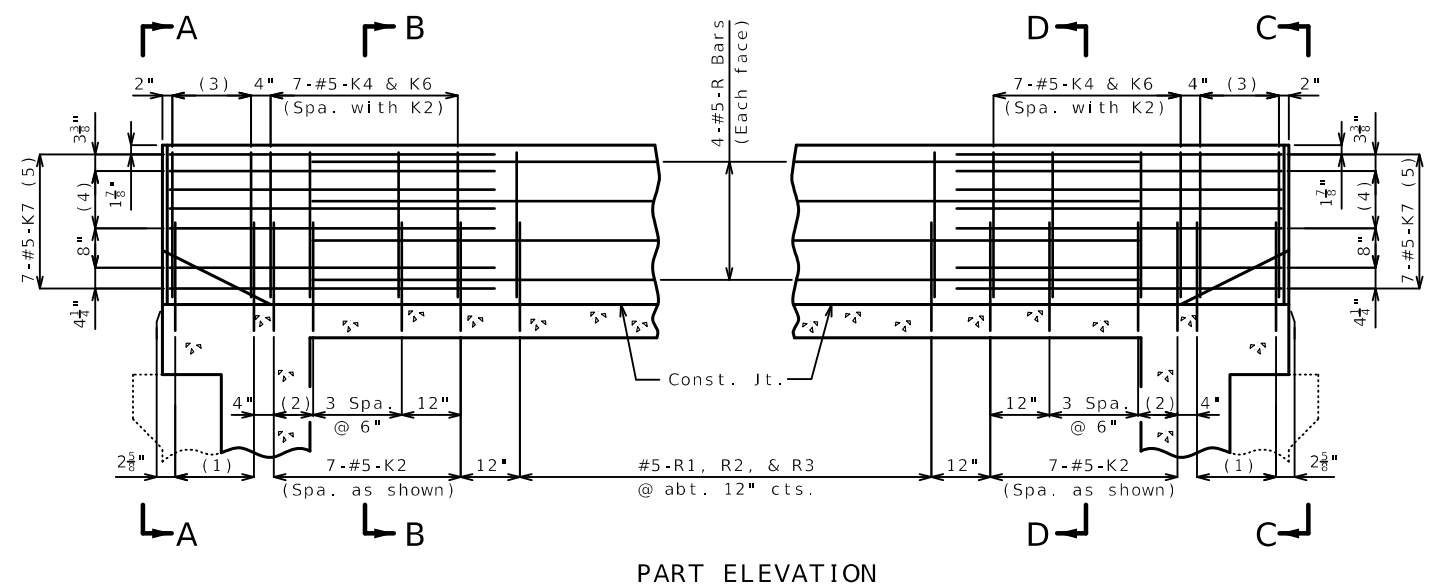
SLAB DRAINS

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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.

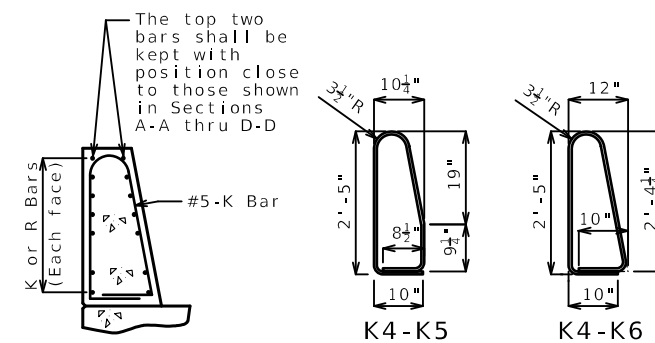
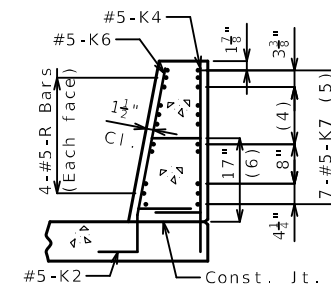
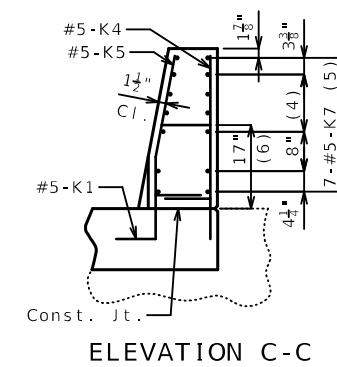
Reinforcing Steel:

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

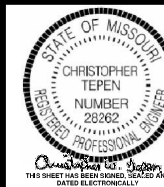
(Left barrier shown, right barrier similar)



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.



DATE _____

10/01/2024

DATE PREPARED _____

10/1/202

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DISTRICT	SHEET
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COUNTY

GENTRY

JOB NO.


JNW000

CONTRACT ID

PROJECT NO. _____

BRIDGE NO.

A18741

[illegible]MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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



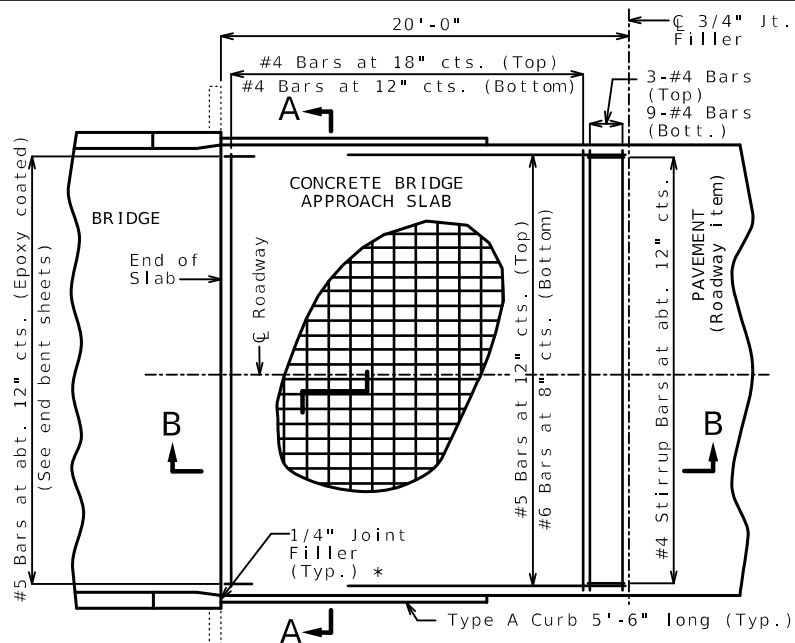
One Main Plaza, 4435 Main St., Suite 1150,
Kansas City, MO 64111
816/221-4222, FAX 913/441-1468
CERTIFICATE OF AUTHORITY NUMBER F00970024

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

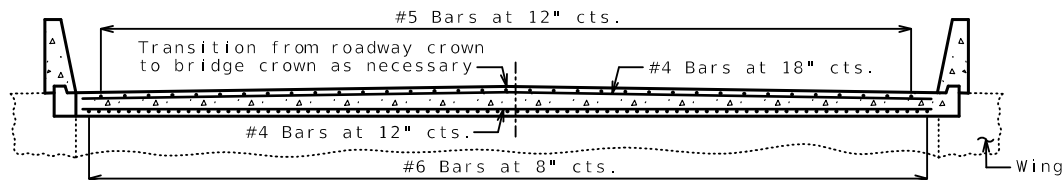
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 10 of 12

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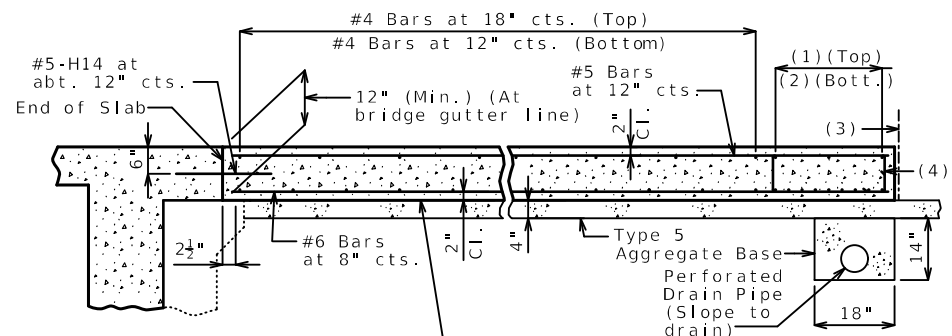


PART PLAN OF SQUARED STRUCTURE
(Skewed structure similar)

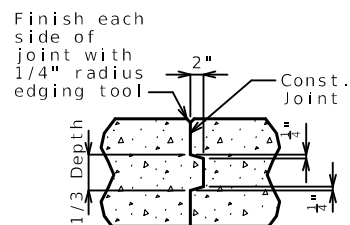


SECTION A-A

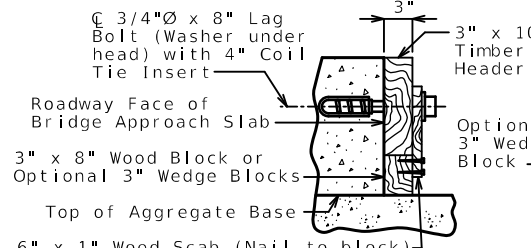
With the approval of the engineer, the contractor may crown the bottom of the approach slab to match the crown of the roadway surface.



SECTION B-B
(Integral end bent)

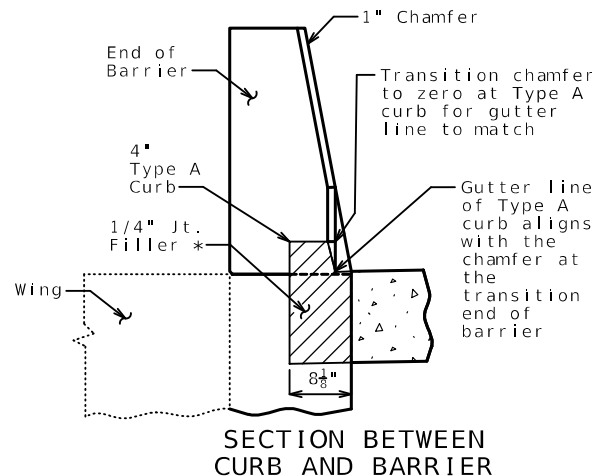


CONSTRUCTION JOINT DETAIL

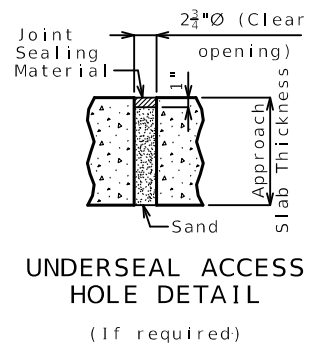


SECTION E-E

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

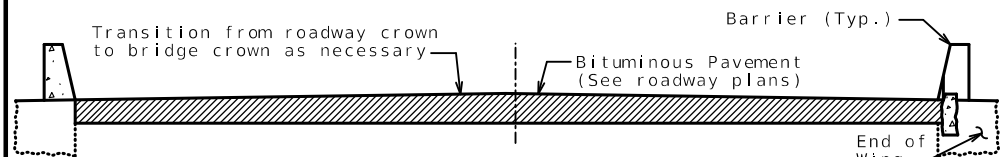


SECTION BETWEEN CURB AND BARRIER



UNDERSEAL ACCESS HOLE DETAIL
(If required)

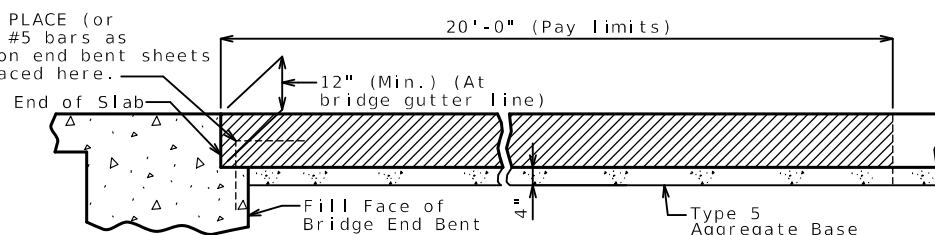
- (1) 3-#4 Bars
- (2) 9-#4 Bars
- (3) 3/4" Jt. Filler
- (4) #4 Stirrup Bars at abt. 12" cts.; 2'-0" x 8" (Min.) out to out; Actual length = 5'-10" (Min.); 90° stirrup hook at bottom; Stirrup height (8") and actual length vary due to crown.



SECTION 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.

DO NOT PLACE (or order) #5 bars as shown on end bent sheets and traced here.

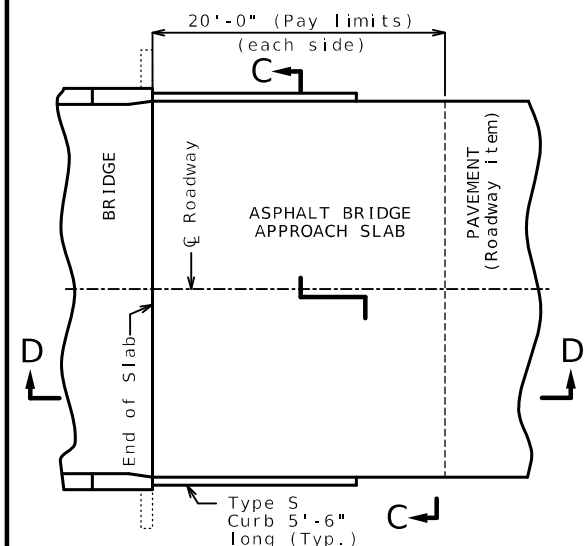


SECTION D-D

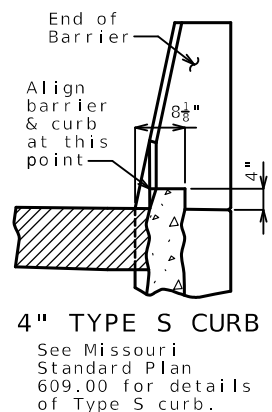
OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

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)



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

Designed MAR. 2024
Detailed APR. 2024
Checked JUL. 2024

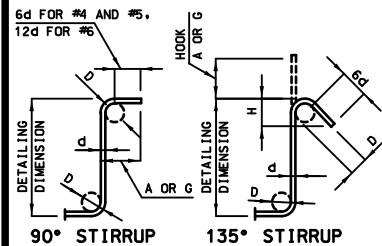
Note: This drawing is not to scale. Follow dimensions.

Sheet No. 11 of 12

Y:\Kansas\130900S\130991.01_NW_Bundle_NW0009\Eng_Docs\Bridge\A1874\B_A18741_011_JNW0009_APPROACH SLAB.dgn (Default) 8:17:31 AM 10/1/2024

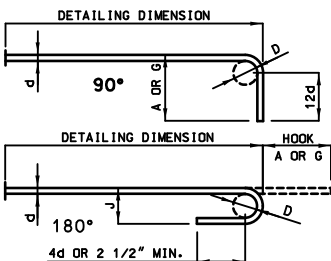
BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
										B		C		D		E		F		H					K		
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.
SUPERSTRUCTURE END BENT NO. 1																											
6	6	H10	Diaphragm	E21						1	2.25	3	4.00	3	4.00			1	0.38	7	7.13	7	10	7	7		68
6	6	H11	Diaphragm	E20						20	2.00											20	2	20	2		182
1	6	H12	Diaphragm	E20						32	10.00											32	10	32	10		49
4	6	H13	Slab	E20						32	10.00											32	10	32	10		197
34	5	H14	Approach	E20						2	6.00											2	6	2	6		89
SUPERSTRUCTURE END BENT NO. 4																											
6	6	H40	Diaphragm	E21						1	2.25	3	4.00	3	4.00			1	0.38	7	7.13	7	10	7	7		68
6	6	H41	Diaphragm	E20						20	3.00											20	3	20	3		182
1	6	H42	Diaphragm	E20						32	9.00											32	9	32	9		49
4	6	H43	Slab	E20						32	9.00											32	9	32	9		197
34	5	H44	Approach	E20						2	6.00											2	6	2	6		89
SUPERSTRUCTURE DIAPHRAGM BENT NO. 2																											
11	6	H20	Diaphragm	E20						27	1.00											27	1	27	1		447
56	5	U20	Diaphragm	E10	S							1	10.00	2	11.00							6	7	6	4		370
28	5	U21	Diaphragm	E10	S							2	0.00	1	7.25							5	7	5	5		158
16	5	V20	Diaphragm	E20						1	8.00											1	8	1	8		28
SUPERSTRUCTURE DIAPHRAGM BENT NO. 3																											
11	6	H30	Diaphragm	E20						27	1.00											27	1	27	1		447
56	5	U30	Diaphragm	E10	S							1	10.00	2	11.00							6	7	6	4		370
28	5	U31	Diaphragm	E10	S							2	0.00	1	7.25							5	7	5	5		158
16	5	V30	Diaphragm	E20						1	8.00											1	8	1	8		28
SLAB																											
124	5	S1	Slab	E20						54	2.00											54	2	54	2		7005
88	6	S2	Slab	E20						25	0.00											25	0	25	0		3304
177	5	S3	Slab	E20						28	5.00											28	5	28	5		5246
177	5	S4	Slab	E20						28	5.00											28	5	28	5		5246
62	6	S5	Slab	E20				V	2	2	3.00											2	3	2	3		1420
		Incr. = 10.3958"								28	3.00											28	3	28	3		
62	5	S6	Slab	E20				V	2	2	3.00											2	3	2	3		986
		Incr. = 10.3958"								28	3.00											28	3	28	3		
																						</					



STIRRUP HOOK DIMENSIONS				
GRADES 40 - 50 - 60 KSI				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° 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				
ALL GRADES				
BAR SIZE	D (IN.)	180° HOOKS A OR G	90° HOOKS A OR G	
#5	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.
X = STIRRUP.
V = 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.

BILL OF REINFORCING STEEL

NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
										B		C		D		E		F		H					K			
										FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
TYPE H BARRIER																												
198	5	R1	Barrier	E14	S					2	5.00	0	6.50	2	5.50					2	5.00	0	5.50	5	5	5	3	1084
198	5	R2	Barrier	E19	S					0	18.75	0	9.50										2	4	2	3	465	
198	5	R3	Barrier	E27	S							0	9.50	0	15.25	0	3.25	0	12.00	0	15.00	0	3.00	3	4	3	1	637
16	5	R4	Barrier	E20						29	4.00												29	4	29	4	490	
32	5	R5	Barrier	E20						11	8.00												11	8	11	8	389	
16	5	R6	Barrier	E20						20	9.00												20	9	20	9	346	
16	5	R7	Barrier	E20						23	2.00												23	2	23	2	387	
20	5	K1	End Post	E27	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	E27	S					0	20.75	0	9.25	0	17.25	0	3.25	0	12.00	0	17.00	0	3.25	5	3	5	3	153
48	5	K4	End Post	E19	S					2	5.00	0	10.00										3	3	3	2	159	
20	5	K5	End Post	E14	S					0	8.25	0	9.50	0	19.25					0	4.50	0	18.75	3	1	3	0	63
28	5	K6	End Post	E21	S					2	4.75			0	10.00					2	4.25	0	6.00	3	3	3	3	95
56	5	K7	End Post	E20						5	6.00												5	6	5	6	321	
SLIP FORM OPTION																												
32	5	C1	Slip Form	E20						12	0.00												12	0	12	0	401	
TOTALS																												
4																											0	
4				E																							0	
5																											0	
5				E																							24463	
6																											0	
6				E																							6610	
TOTAL																												0
TOTAL																												31073
SLAB ON STEEL GIRDER																												
4				E																							0	
5				E																							19773	
6				E																							6610	
TOTAL																												26383
TYPE H BARRIER																												
4				E																							0	
5				E																							4690	
TOTAL																												4690
SLIP FORM OPTION																												
5				E																							401	
TOTAL																												401