MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED
STATE HIGHWAY
NEW MADRID COUNTY

KEY MAP
SHOWING LOCATION OF COUNTIES

DESIGN DESIGNATION

BR # A8989
A.A.D.T. - 2022 = 660
A.A.D.T. - 2042 = 729
D.H.V. = 11%
T = 15%
V = 55 M.P.H.
D = 51%

BR # A8990
A.A.D.T. - 2022 = 660
A.A.D.T. - 2042 = 729
D.H.V. = 11%
T = 15%
V = 35 M.P.H.
D = 51%

FUNCTIONAL CLASSIFICATION - MAJOR COLLECTOR

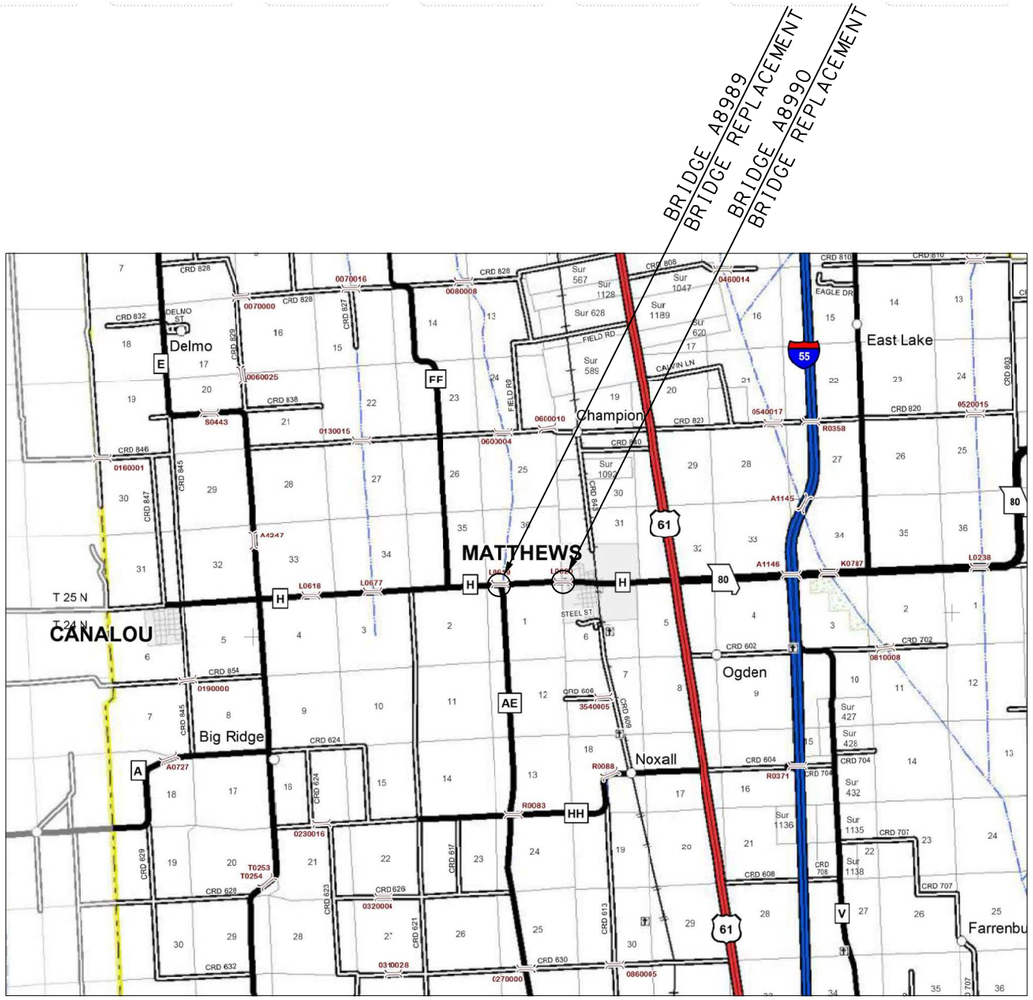
RIGHT OF WAY

RIGHT OF WAY LIMITS FOR THIS PROJECT EXTEND FROM STA 273+85.00 TO STA 277+20.00 ℄ ROUTE H, A DISTANCE OF 0.063 MILES.

CONVENTIONAL SYMBOLS
(USED IN PLANS)

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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES



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

INDEX OF SHEETS

LENGTH OF PROJECT

BRIDGE A8989
BEGINNING OF PROJECT STA 269+47.00
END OF PROJECT STA 279+64.00

APPARENT LENGTH 1,017.00 FEET

BRIDGE A8990
BEGINNING OF PROJECT STA 314+44.00
END OF PROJECT STA 319+10.00

APPARENT LENGTH 466.00 FEET

EQUATIONS AND EXCEPTIONS: NONE

TOTAL CORRECTIONS 0.00 FEET
NET LENGTH OF PROJECT 1,483.00 FEET
STATE LENGTH 0.281 MILES

FOR INFORMATION ONLY
ESTIMATED DISTURBED ACRES 2 ACRES

STATE OF MISSOURI
CHARLES E. TOUZINSKY II
NUMBER PE-2009001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	1

COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8989/A8990

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

DESCRIPTION | DATE | REV.

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

9:44:17 PM

* WIDTH = 0'
STA 269+47.00 TO STA 273+37.00
STA 275+53.50 TO STA 279+64.00

TAPER 0' TO 2'
STA 273+37.00 TO STA 273+87.00

TAPER 2' TO 0'
STA 275+03.50 TO STA 275+53.50

** WIDTH = 0'
STA 269+47.00 TO STA 273+37.00

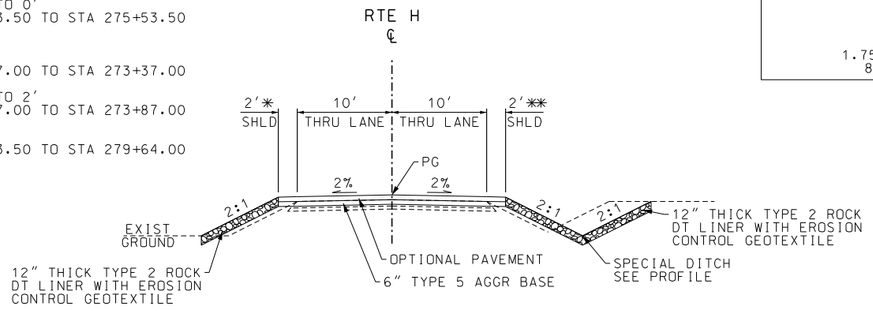
TAPER 0' TO 2'
STA 273+37.00 TO STA 273+87.00

WIDTH = 2'
STA 275+03.50 TO STA 279+64.00

OPTIONAL PAVEMENT
8" PCCP WITH 10' JOINT SPACING

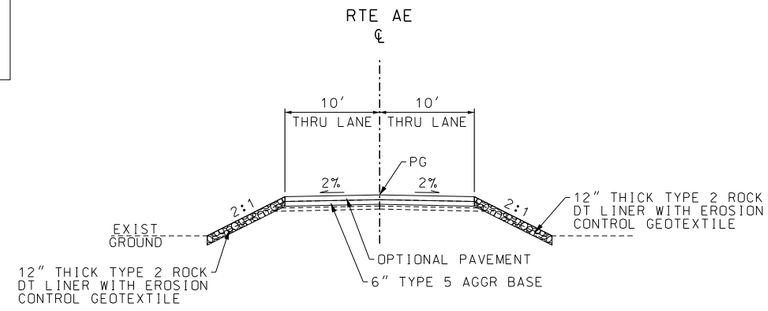
OR

1.75" BP-1 PG64-22 OVER
8.25" PMBB PG64-22



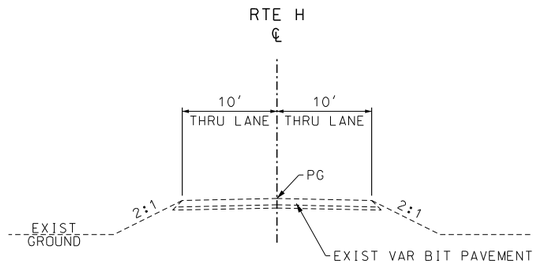
SECTION ON TANGENT

TYPICAL SECTION RTE H
STA 269+47.00 TO STA 273+87.00
STA 275+03.50 TO STA 279+64.00
BR A8989



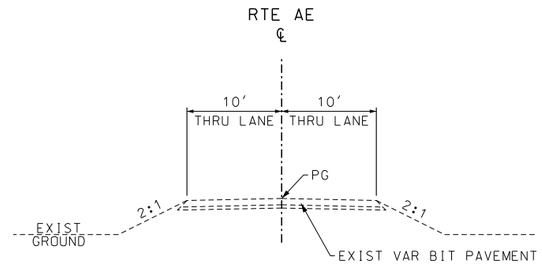
SECTION ON TANGENT

TYPICAL SECTION RTE AE
STA 0+10.64 TO STA 1+70.00



SECTION ON TANGENT

EXIST TYPICAL SECTION RTE H



SECTION ON TANGENT

EXIST TYPICAL SECTION RTE AE

TYPICAL SECTIONS
SHEET 1 OF 2

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	2

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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

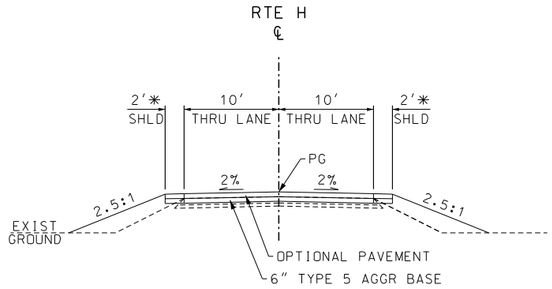
GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

REV.

* WIDTH = 0′
STA 314+44.00 TO STA 315+64.00
STA 317+80.50 TO STA 319+10.00

TAPER 0′ TO 2′
STA 315+64.00 TO STA 316+14.00

TAPER 2′ TO 0′
STA 317+30.50 TO STA 317+80.50



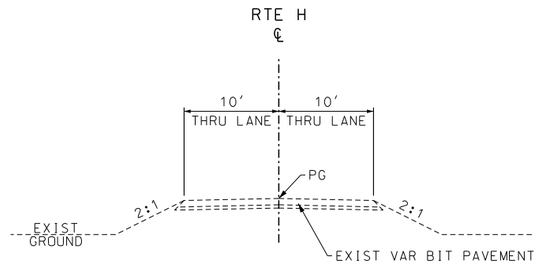
OPTIONAL PAVEMENT
8" PCCP WITH 10′ JOINT SPACING

OR

1.75" BP-1 PG64-22 OVER
8.25" PMBB PG64-22

SECTION ON TANGENT

TYPICAL SECTION RTE H
STA 314+44.00 TO STA 316+14.00
STA 317+30.50 TO STA 319+10.00
BR A8990



SECTION ON TANGENT

EXIST TYPICAL SECTION RTE H

TYPICAL SECTIONS
SHEET 2 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE H | STATE MO
DISTRICT SE | SHEET NO. 2
COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990

DESCRIPTION | DATE

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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

6" TYPE 5 AGGREGATE BASE

SHEET	ROADWAY	BEGIN STATION	END STATION	SIDE	6" TYPE 5 AGGREGATE FOR BASE (SY)	REMARKS
4	RTE H	269+47.00	273+87.00	℄	989	BR A8989
4	RTE H	275+03.50	279+64.00	℄	1,135	BR A8989
4	RTE AE	0+10.64	1+70.00	℄	547	BR A8989
6	RTE H	314+44.00	316+14.00	℄	390	BR A8990
6	RTE H	317+30.50	319+10.00	℄	416	BR A8990
6	RTE H	318+70.00	-	RT	88	BR A8990 OAK DR
PROJECT TOTAL					3,565	

MOBILIZATION

1 LUMP SUM

CONTRACTOR FURNISHED SURVEYING & STAKING

1 LUMP SUM

REMOVAL OF IMPROVEMENTS

SHEET	ROADWAY	STATION	OFFSET	SIDE	DESCRIPTION	QUANTITY	UNIT	REMARKS
4	RTE H	274+08.86	12.8	LT	SIGN	1	EA	BR A8989
4	RTE H	274+09.15	12.7	LT	SIGN	1	EA	BR A8989
4	RTE H	274+09.18	12.3	RT	SIGN	1	EA	BR A8989
4	RTE H	274+09.51	12.0	RT	SIGN	1	EA	BR A8989
4	RTE H	274+95.34	26.6	RT	24" RCP	50	LF	BR A8989
6	RTE H	316+37.26	12.6	LT	SIGN	1	EA	BR A8990
6	RTE H	316+42.54	13.8	RT	SIGN	1	EA	BR A8990
6	RTE H	316+42.73	12.8	RT	SIGN	1	EA	BR A8990
6	RTE H	317+03.14	12.8	LT	SIGN	1	EA	BR A8990
6	RTE H	317+09.06	12.7	RT	SIGN	1	EA	BR A8990
6	RTE H	317+34.51	23.9	RT	18" RCP	36	LF	BR A8990
1 LUMP SUM								

SEEDING

SHEET	ROADWAY	BEGIN STATION	END STATION	SIDE	SEEDING - COOL SEASON MIXTURES (ACRE)	REMARKS
6	RTE H	314+44.00	315+83.50	LT	0.01	BR A8990
6	RTE H	314+44.00	315+83.50	RT	0.02	BR A8990
6	RTE H	316+21.95	319+10.00	LT	0.03	BR A8990
6	RTE H	317+91.00	319+10.00	RT	0.02	BR A8990
PROJECT TOTAL					0.1	

GROUP C PIPE AND FLAP GATE

SHEET	ROADWAY	BEGIN STATION	SIDE	GROUP C PIPE 18" (LF)	GROUP C PIPE 24" (LF)	FLAP GATE 18" (EA)	FLAP GATE 24" (EA)	REMARKS
4	RTE H	273+95.29	LT				1	BR A8989
4	RTE H	274+90.72	LT				1	BR A8989
4	RTE H	275+18.00	RT		57.0		1	BR A8989
6	RTE H	317+16.88	LT			1		BR A8990
6	RTE H	317+54.00	RT	36.0		1		BR A8990
PROJECT TOTAL				36	57	2	3	

PAVEMENT MARKING

ROADWAY	BEGIN STATION	END STATION	SIDE	4" WHITE WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS SOLID (LF)	4" YELLOW WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS SOLID (LF)	4" YELLOW WATERBORNE PAVEMENT MARKING PAINT, TYPE P BEADS INTERMITTENT (LF)	REMARKS
RTE H	269+47.00	271+36.98	LT/RT	380	-	-	BR A8989 EDGE LINES
RTE H	269+47.00	271+36.98	℄	-	190	48	BR A8989 SOLID & INTERMITTENT ℄
RTE H	271+36.98	276+50.00	LT/RT	1,071			BR A8989 EDGE LINES
RTE H	271+36.98	276+50.00	℄	-	1,026	-	BR A8989 DOUBLE SOLID ℄
RTE H	276+50.00	279+64.00	LT/RT	628	-	-	BR A8989 EDGE LINES
RTE H	276+50.00	279+64.00	℄	-	-	79	BR A8989 INTERMITTENT ℄
RTE AE	0+85.69	1+70.00	℄	-	169	-	BR A8989 DOUBLE SOLID ℄
RTE H	314+44.00	319+10.00	℄	-	-	117	BR A8990 INTERMITTENT ℄
SUBTOTAL				2,079	1,385	244	
PROJECT TOTAL				2,079	1,629		

TEMPORARY EROSION CONTROL

SHEET	ROADWAY	ROCK DITCH CHECK (LF)	SEDIMENT REMOVAL (CY)	TEMP SEED & MULCH (AC)	SILT FENCE (LF)	TEMP C BERM (LF)	REMARKS
18	RTE H	200	33		1063.2	153.2	BR A8989
19	RTE H	60	8	0.08	480.8	143.3	BR A8990
PROJECT TOTAL		260	41	0.1	1,544	296	

* SEDIMENT REMOVAL ESTIMATED AT 1 CY PER DITCH CHECK, 1 CY PER 100 LF SILT FENCE, AND 1 CY PER 100 LF TYPE C BERM

OPTIONAL PAVEMENT

SHEET	ROADWAY	BEGIN STATION	END STATION	SIDE	OPTIONAL PAVEMENT (SY)	REMARKS
4	RTE H	269+47.00	273+87.00	℄	989	BR A8989
4	RTE H	275+03.50	279+64.00	℄	1,135	BR A8989
4	RTE AE	0+10.64	1+70.00	℄	547	BR A8989
6	RTE H	314+44.00	316+14.00	℄	390	BR A8990
6	RTE H	317+30.50	319+10.00	℄	416	BR A8990
6	RTE H	318+70.00	-	RT	88	BR A8990 OAK DR
PROJECT TOTAL					3,565	

POROUS BACKFILL

SHEET	ROADWAY	BEGIN STATION	END STATION	POROUS BACKFILL (CY)	REMARKS
4	RTE H	274+01.50	274+06.50	18	BR A8989
4	RTE H	274+84.00	274+89.00	18	BR A8989
6	RTE H	316+28.50	316+33.50	18	BR A8990
6	RTE H	317+11.00	317+16.00	18	BR A8990
PROJECT TOTAL				72	

GRAVEL (A) OR CRUSHED STONE (B)

SHEET	ROADWAY	BEGIN STATION	SIDE	THICKNESS (IN)	GRAVEL (A) OR CRUSHED STONE (B) 1.742 T/CY (CY)	GRAVEL (A) OR CRUSHED STONE (B) 1.742 T/CY (TON)	REMARKS
4	RTE H	273+96.00	RT	4	4.3	7.4	A8989 SW DW
4	RTE H	273+98.00	LT	4	4.1	7.1	A8989 NW DW
4	RTE H	275+00.00	LT	4	5.9	10.3	A8989 NE DW
4	RTE H	275+18.00	RT	4	5.8	10.2	A8989 SE DW
6	RTE H	317+28.00	LT	4	3.2	5.6	A8990 NE DW
6	RTE H	317+54.00	RT	4	3.7	6.5	A8990 SE DW
PROJECT TOTAL						47	

PERMANENT EROSION CONTROL

SHEET	ROADWAY	BEGIN STATION	END STATION	SIDE	TYPE 2 ROCK DITCH LINER FURNISHING (CY)	TYPE 2 ROCK DITCH LINER PLACING (CY)	TYPE 2 ROCK BLANKET FURNISHING (CY)	TYPE 2 ROCK BLANKET PLACING (CY)	PERM EROSION CONTROL GEOTEXTILE (SY)	REMARKS
4	RTE H	269+47.00	274+09.18	LT	132	132			395	BR A8989
4	RTE H	269+47.00	271+36.98	RT	37	37			111	BR A8989
4	RTE H	272+85.69	274+07.49	RT	26	26			77	BR A8989
4	RTE H	274+88.00	279+64.00	LT	146	146			439	BR A8989
4	RTE H	274+88.00	279+64.00	RT	190	190			570	BR A8989
4	RTE AE	0+10.64	1+70.00	LT	54	54			161	BR A8989
4	RTE AE	0+10.64	1+70.00	RT	56	56			169	BR A8989
4	RTE H	274+03.63	274+35.06	LT/RT			98	98	147	BR A8989
4	RTE H	274+03.63	274+35.06	LT/RT			33	33	25	BR A8989 - KEY
4	RTE H	274+55.99	274+88.00	LT/RT			138	138	207	BR A8989
4	RTE H	274+55.99	274+88.00	LT/RT			41	41	30	BR A8989 - KEY
6	RTE H	315+83.50	316+29.50	LT	26	26			78	BR A8990
6	RTE H	315+83.50	316+29.50	RT	21	21			62	BR A8990
6	RTE H	316+29.50	316+45.03	LT/RT			32	32	49	BR A8990
6	RTE H	316+29.50	316+45.03	LT/RT			24	24	18	BR A8990 - KEY
6	RTE H	316+88.96	317+15.00	LT/RT			106	106	159	BR A8990
6	RTE H	316+88.96	317+15.00	LT/RT			43	43	32	BR A8990 - KEY
PROJECT TOTAL					688	688	515	515	2,730	

MODIFIED LINEAR GRADING CLASS 2

SHEET	ROADWAY	BEGIN STATION	END STATION	SIDE	LENGTH (FT)	MODIFIED LINEAR GRADING CLASS 2 (STA)	REMARKS
4	RTE H	269+47.00	274+06.50	℄	459.50	4.60	A8989
4	RTE H	274+84.00	279+64.00	℄	480.00	4.80	A8989
4	RTE AE	0+10.64	1+70.00	℄	159.36	1.59	A8989
4	RTE H	273+96.00	-	LT	28.47	0.28	A8989 SW DW
4	RTE H	273+96.00	-	RT	23.89	0.24	A8989 SW DW
4	RTE H	273+98.00	-	LT	27.80	0.28	A8989 NW DW
4	RTE H	273+98.00	-	RT	23.22	0.23	A8989 NW DW
4	RTE H	275+00.00	-	LT	38.39	0.38	A8989 NE DW
4	RTE H	275+00.00	-	RT	38.65	0.39	A8989 NE DW
4	RTE H	275+18.00	-	LT	23.73	0.24	A8989 SE DW
4	RTE H	275+18.00	-	RT	21.77	0.22	A8989 SE DW
6	RTE H	314+44.00	316+33.50	℄	189.50	1.90	A8990
6	RTE H	317+11.00	319+10.00	℄	199.00	1.99	A8990
6	RTE H	317+28.00	-	LT	15.66	0.16	A8990 NE DW
6	RTE H	317+28.00	-	RT	21.66	0.22	A8990 NE DW
6	RTE H	317+54.00	-	LT	18.62	0.19	A8990 SE DW
6	RTE H	317+54.00	-	RT	19.26	0.19	A8990 SE DW
6	RTE H	318+70.00	-	LT	42.60	0.43	A8990 OAK DR
6	RTE H	318+70.00	-	RT	28.01	0.28	A8990 OAK DR
PROJECT TOTAL						18.6	

SUMMARY OF QUANTITIES
SHEET 1 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	3

COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989/A8990

DESCRIPTION	DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY NO. 2008013090

EFFECTIVE: 10-01-2020

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL AREA SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
WARNING SIGNS								
W01-1L	48X48	16.00						TURN (SYMBOL LEFT ARROW)
W01-1R	48X48	16.00						TURN (SYMBOL RIGHT ARROW)
W01-2L	48X48	16.00						CURVE (SYMBOL LEFT ARROW)
W01-2R	48X48	16.00						CURVE (SYMBOL RIGHT ARROW)
W01-3L	48X48	16.00						REVERSE TURN (SYMBOL LEFT ARROW)
W01-3R	48X48	16.00						REVERSE TURN (SYMBOL RIGHT ARROW)
W01-4L	48X48	16.00						REVERSE CURVE (SYMBOL LEFT ARROW)
W01-4R	48X48	16.00						REVERSE CURVE (SYMBOL RIGHT ARROW)
W01-4bL	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
W01-4bR	48X48	16.00						DOUBLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
W01-4cL	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL LT ARROWS)
W01-4cR	48X48	16.00						TRIPLE ARROW REVERSE CURVE (SYMBOL RT ARROWS)
W01-6	60X30	12.50						HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00						HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)
W01-7	60X30	12.50						DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00						DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)
W01-8	18X24	3.00						CHEVRON (SYMBOL)
W01-8a	30X36	7.50						CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1	48X48	16.00						STOP AHEAD (SYMBOL)
W03-2	48X48	16.00						YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00						SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00						BE PREPARED TO STOP
W03-5	48X48	16.00						SPEED LIMIT AHEAD
W04-1L	48X48	16.00						MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00						MERGE (SYMBOL FROM RIGHT)
W04-1aL	48X48	16.00						MERGE (ARROW SYMBOL)
W04-1aR	48X48	16.00						MERGE (ARROW SYMBOL)
W05-1	48X48	16.00						ROAD/BRIDGE/RAMP NARROWS
W05-3	48X48	16.00						ONE LANE BRIDGE
W05-5	48X48	16.00						NARROW LANES
W06-1	48X48	16.00						DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00						DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00						TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00						NEXT XX MILES (PLAQUE)
W08-1	48X48	16.00						BUMP
W08-2	48X48	16.00						DIP
W08-3	48X48	16.00						PAVEMENT ENDS
W08-4	48X48	16.00						SOFT SHOULDER
W08-5	48X48	16.00						SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00						TRUCK CROSSING
W08-6c	48X48	16.00						TRUCK ENTRANCE
W08-7	36X36	9.00						LOOSE GRAVEL
W08-7a	36X36	9.00						FRESH OIL/LOOSE GRAVEL
W08-9	48X48	16.00						LOW SHOULDER
W08-11	48X48	16.00						UNEVEN LANES
W08-12	48X48	16.00						NO CENTER LINE
W08-15	48X48	16.00						GROOVED PAVEMENT
W08-15P	30X24	5.00						MOTORCYCLE (PLAQUE)
W08-17	48X48	16.00						SHOULDER DROP-OFF (SYMBOL)
W08-17P	30X24	5.00						SHOULDER DROP-OFF (PLAQUE)
W10-1	42RND.	9.62						RAILROAD CROSSING
W012-1	24X24	4.00						DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00						LOW CLEARANCE (SYMBOL)
W012-2X	24X18	3.00						LOW CLEARANCE (PLAQUE)
W012-2a	84X24	14.00						OVERHEAD LOW CLEARANCE (FEET AND INCHES)
W012-4	120X60	50.00						LOW CLEARANCE XX FT XX IN XX MILES AHEAD
W012-5	120X60	50.00						WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
W013-1	30X30	6.25						ADVISORY SPEED (PLAQUE)
W016-2	30X24	5.00						XXX FEET (PLAQUE)
W016-3	30X24	5.00						X MILE (PLAQUE)
W020-1	48X48	16.00						ROAD/BRIDGE/RAMP WORK AHEAD
W020-2	48X48	16.00						DETOUR AHEAD
W020-3	48X48	16.00	4	64			20/20A	ROAD CLOSED AHEAD
W020-4	48X48	16.00						ONE LANE ROAD AHEAD
W020-5	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED AHEAD
W020-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
W020-6a	48X48	16.00						RIGHT/CENTER/LEFT LANE CLOSED
W020-7a	48X48	16.00						FLAGGER (SYMBOL) WITH FLAGS
W021-2	36X36	9.00						FRESH OIL
W021-5	48X48	16.00						SHOULDER WORK AHEAD
W022-1	48X48	16.00						BLASTING ZONE AHEAD
W022-2	42X36	10.50						TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50						END BLASTING ZONE
G022-1	21X15	2.19						WET PAINT (ARROW PIVOTS)

SIGN	SIZE IN.	AREA SQ.FT.	QTY EACH	TOTAL SQ.FT.	QTY RELOC EACH	TOTAL RELOC SQ.FT.	SIGN NUM.	DESCRIPTION
GUIDE SIGNS								
E05-1	36X48	12.00						GORE EXIT
E05-2	48X36	12.00						EXIT OPEN
E05-2a	48X36	12.00						EXIT CLOSED
G020-1	60X24	10.00						ROAD WORK NEXT XX MILES
G020-2	48X24	8.00						END ROAD WORK
G020-4	36X18	4.50						PILOT CAR FOLLOW ME
G020-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW
G020-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW
G020-5aP	36X24	6.00						WORK ZONE (PLAQUE)
M04-8a	24X18	3.00						END DETOUR
M04-9L	48X36	12.00						DETOUR (LEFT ARROW)
M04-9R	48X36	12.00						DETOUR (RIGHT ARROW)
M04-9P	48X12	4.00						STREET NAME (PLAQUE)
M04-10L	48X18	6.00						DETOUR (ARROW LEFT)
M04-10R	48X18	6.00						DETOUR (ARROW RIGHT)
REGULATORY SIGNS								
R1-1	48X48	13.25						STOP
R1-2	48TRI.	6.93						YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00						SPEED LIMIT XX
R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00						NO TURNS
R3-4	48X48	16.00						NO U-TURN (SYMBOL)
R3-7L	30X30	6.25						LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25						RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00						DO NOT PASS
R4-2	36X48	12.00						PASS WITH CARE
R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)
R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)
R5-1	30X30	6.25						DO NOT ENTER
R5-1a	36X24	6.00						WRONG WAY
R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00						ONE WAY (LEFT)
R6-2R	24X30	5.00						ONE WAY (RIGHT)
R9-9	24X12	2.00						SIDEWALK CLOSED
R9-11L	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE
R9-11R	24X18	3.00						SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE
R10-6	24X36	6.00						STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	2	20			29	ROAD CLOSED
R11-3a	60X30	12.50						ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50						ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00						FINE SIGN
CONST-3X	56X12	4.67						SPEEDING/PASSING (PLATE)
MISCELLANEOUS SIGNS								
CONST-5	48X36	12.00						POINT OF PRESENCE
CONST-5	96X48	32.00	2	64				POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00						RATE OUR WORK ZONE
CONST-8	48X36	12.00						WORK ZONE NO PHONE ZONE
SPECIAL	96X48	32.00	3	96			56	RTE H CLOSED

	TOTAL
616-10.05 CONSTRUCTION SIGNS	244
616-10.10 RELOCATED SIGNS	0

ITEM NUMBER	TOTAL QTY	DESCRIPTION
6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)
6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)
6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)
6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)
6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)
6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)
6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)
6122020		REPLACEMENT SAND BARREL
6122030		IMPACT ATTENUATOR (RELOCATION)
6123000A		TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
6161008	4	ADVANCED WARNING RAIL SYSTEM
6161009		FLAG ASSEMBLY
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161024		CHANNELIZER (TRIM LINE) WITH LIGHT
6161025		CHANNELIZER (TRIM LINE)
6161030	6	TYPE III MOVEABLE BARRICADE
6161031		TYPE III MOVEABLE BARRICADE WITH LIGHTS
6161033		DIRECTION INDICATOR BARRICADE
6161034		DIRECTION INDICATOR BARRICADE, WITH LIGHT
6161040		FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161052	12	WARNING LIGHT, TYPE B
6161055		SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	2	CHANGEABLE MESSAGE SIGN W/O COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6161099		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE, CONTRACTOR FURNISHED/RETAINED
6162000A		WORK ZONE TRAFFIC SIGNAL SYSTEM
6162002		TEMPORARY LONG-TERM RUMBLE STRIPS
6162004		TEMPORARY SHORT-TERM RUMBLE STRIPS
6173600D		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/RETAINED
6173602B		TEMPORARY TRAFFIC BARRIER CONTRACTOR FURNISHED/COMMISSION RETAINED
6174000A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION
6175010A		RELOCATING TEMPORARY TRAFFIC BARRIER
6176000B		TEMPORARY TRAFFIC BARRIER COMMISSION FURNISHED/RETAINED
6177000B		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION COMMISSION FURNISHED/RETAINED
6208064A		TEMPORARY RAISED PAVEMENT MARKER
9029400		TEMPORARY TRAFFIC SIGNALS
9029401		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

STATE OF MISSOURI
CHARLES E. TOUZINSKY, NUMBER PE-2009001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN DIGITALLY SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	3

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989/A8990

DESCRIPTION	DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

SUMMARY OF QUANTITIES
SHEET 2 OF 2

REV.

STA 274+06.50 TO STA 274+84.00
℄ RTE H
BUILD BRIDGE A8989
(74′) 27″ P/S CONCRETE SPREAD BOX BEAM SPAN
16″ SINGLE SLOPE (32″) BARRIER CURB
24′ ROADWAY
DA = 30.71 MI², Q = 1,530 CFS

STA 274+10.00 TO STA 274+80.00
℄ RTE H
REMOVE BRIDGE L0619
(23′-23′-23′) I-BEAM SPAN
22′ ROADWAY
DA = 35.8 MI²

SW¼ 36-T25N-R13E

SCALE 0 50 100 150

① 270

TRUSTEES OF THE CHARLES W. HAWKINS REVOCABLE TRUST &
TRUSTEES OF THE MARGARET E. HAWKINS REVOCABLE TRUST
525 SF TEMP ESM'T
80.1 AC REMAINING

② 280

RUSSELL ESTES FARMS, LLC
1000 SF TEMP ESM'T
397.3 AC REMAINING

RTE H STA 272+00.00=
RTE AE STA 0+00.00

PROT STA 272+00.00

PROT STA 0+00.00

+98 TYPE I DW
SKEW 5°LA
20′W; UIP P
24″ FLAP GATE
-19.3%
AGGR SURF
+85.00 35′ -50′

+20.00 35′ -50′

ASH SLOUGH DITCH

+80.00 35′ -60′

+20.00 35′ -60′

+00 TYPE I DW
20′W; UIP P
24″ FLAP GATE
-12.2%
AGGR SURF

TEMP CONST ESMT

TEMP CONST ESMT

STA 278+00.00

BR A8989
END PROJECT
STA 279+64.00

EXIST R/W

EXIST R/W

35′

VERT SAWCUT

℄ RTE H

N 88° 17′ 14″ E

N 88° 33′ 14″ E

SEC 36
SEC 1

EXIST R/W

EXIST R/W

BR A8989
BEGIN PROJECT
STA 269+47.00

W½ LOT NO 2
NW¼
1-T24N-R13E

+45.00 35′

+90.00 35.00′

+12.00 35.00′

EXIST PERM ESMT

R/W LINE

+20.00 35′

③

BRUCE DAWSON & KAREN DAWSON, H/W
2080 SF NEW R/W
205.0 AC REMAINING

④

BRUCE A. DEPRO &
PAULA L. DEPRO, H/W
NO ACQUISITION

+46.70 75.00′

+93.00 75′

+96 TYPE I DW
SKEW 11°RA
20′W: NO P
-18.0%
AGGR SURF

+16.00 75′

+14.00 55′

+18 TYPE I DW
SKEW 5°RA
20′W: 24″(24″) P
24″ FLAP GATE
-12.0%
AGGR SURF

LOT 2 W
LOT 2 E

E½ LOT NO 2
NW¼
1-T24N-R13E

+87.10 125.37′

+04.18 125.43′

℄ RTE AE

IPC STA 2738.45

VERT SAWCUT
℄ RTE AE
STA 1+70.00

ASH SLOUGH DITCH

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.

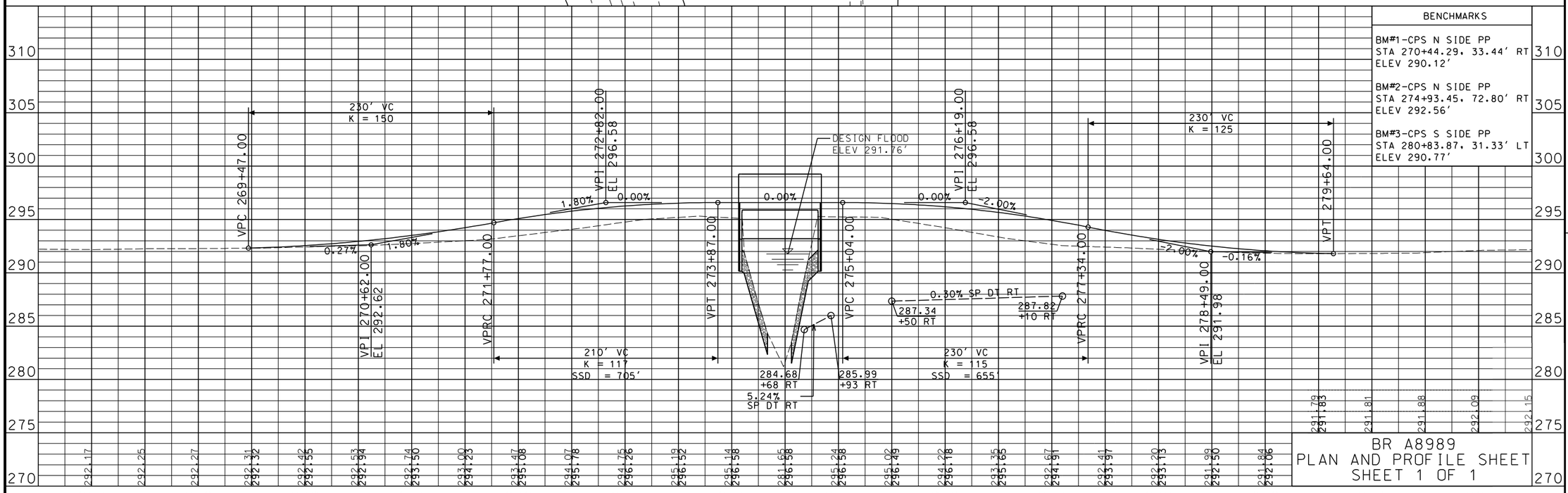
ALL BEARINGS BASED ON STATE PLANE COORDINATES MISSOURI EAST.

PROPERTY LINE LOCATIONS ARE APPROXIMATE ONLY.

RIGHT OF WAY LIMITS FOR BR A8989 EXTEND FROM STA 273+85.00 TO STA 277+20.00, A DISTANCE OF 0.063 MILES

RTE AE CURVE 1	
PI	6+19.54
PC	2+38.45
PT	9+90.76
Δ	22°34′00.0″ (RT)
D	2°59′58.8″
L	752.31′
T	381.09′
R	1,910.08′

CERTIFIED LAND CORNER
STA 278+00.00 CENTERLINE RTE H IS S88°43′32″W, 3,717.03 FT FROM THE SOUTHEAST CORNER OF SECTION 36, TOWNSHIP 25 NORTH, RANGE 13 EAST OF THE FIFTH PRINCIPAL MERIDIAN (FOUND ALUMINUM MONUMENT PER LS 1357, MLS DOCUMENT 600-42699)



BENCHMARKS

BM#1-CPS N SIDE PP
STA 270+44.29, 33.44′ RT
ELEV 290.12′

BM#2-CPS N SIDE PP
STA 274+93.45, 72.80′ RT
ELEV 292.56′

BM#3-CPS S SIDE PP
STA 280+83.87, 31.33′ LT
ELEV 290.77′

BR A8989
PLAN AND PROFILE SHEET
SHEET 1 OF 1

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	4

COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8989

DATE	DESCRIPTION

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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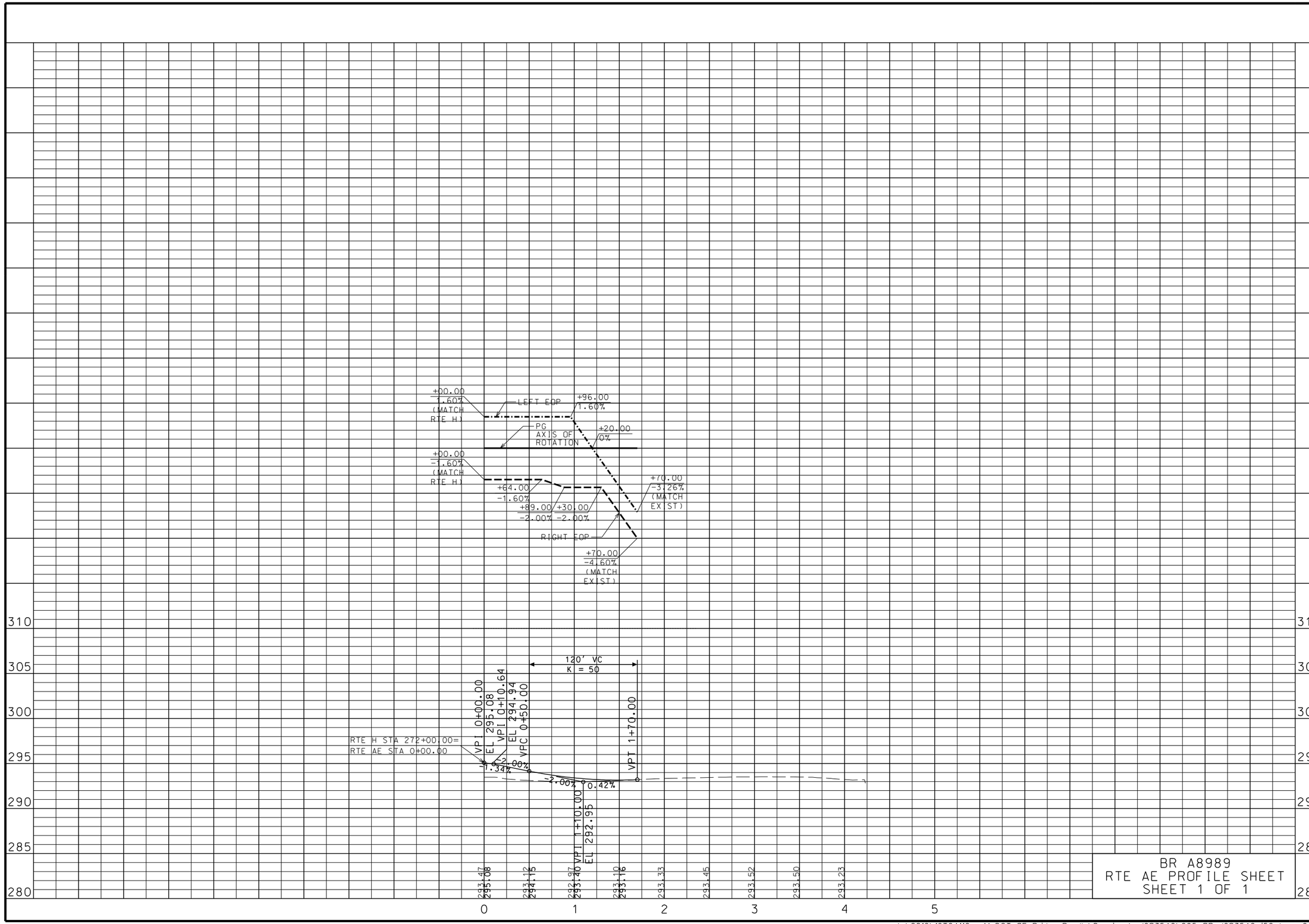


BR A8989
RTE AE PROFILE SHEET
SHEET 1 OF 1

STATE OF MISSOURI
CHARLES E. TOUZINSKY, III
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	5

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO: 2008013090

SE ¼ 36-T25N-R13E

SW ¼ 31-T25N-R14E

NW ¼ 6-T24N-R14E

E½ LOT NO 2 NE¼ 1-T24N-R13E

SEC 36/TNSHP 25N
SEC 1/TNSHP 24N

SEC 36/RNG 13E
SEC 31/RNG 14E

SEC 1/RNG 13E
SEC 6/RNG 14E

SEC 31/TNSHP 25N
SEC 6/TNSHP 24N

310 315 320

SCALE 0 50 100 150

EXIST R/W

℄ RTE H

N 89° 03' 14" E

S 83° 28' 46" E

VERT SAWCUT

BR A8990
BEGIN PROJECT
STA 314+44.00

BR A8990
END PROJECT
STA 319+10.00

DRAINAGE DITCH

+28 TYPE I DW
SKEW 23°RA
14'W; UIP P
18" FLAP GATE
-18.0%
AGGR SURF

+54 TYPE I DW
16'W; 18"(18") P
18" FLAP GATE
-14.5%
AGGR SURF

+70 TYPE I DW
SKEW 15°RA
24'W; UIP P
-7.0%
RETURN RADIUS WEST = 35'
RETURN RADIUS EAST = 15'
OPTIONAL PVMT

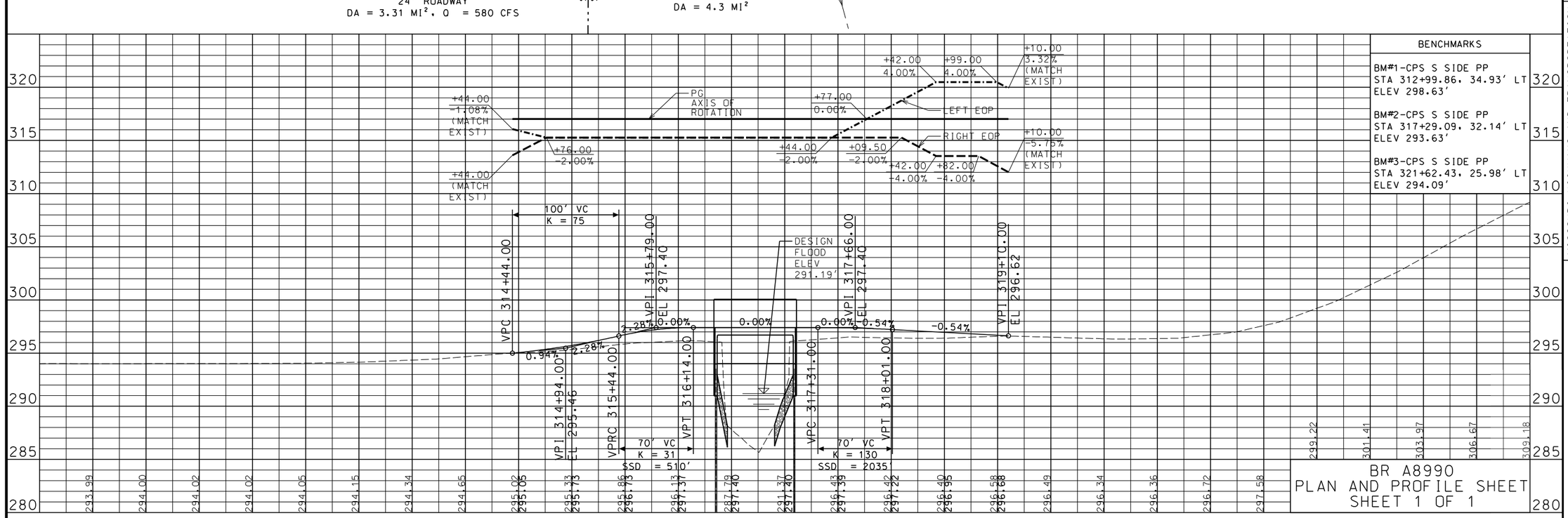
PC STA 318+20.40

PT STA 320+07.11

RTE H CURVE 1
PI 319+13.89
PC 318+20.40
PT 320+07.11
Δ 7°28'00.0" (RT)
D 3°59'57.0"
L 186.71'
T 93.48'
R 1,432.69'

STA 316+33.50 TO STA 317+11.00
℄ RTE H
BUILD BRIDGE A8990
(74') 27" P/S CONCRETE SPREAD BOX BEAM SPAN
16" SINGLE SLOPE (32") BARRIER CURB
24' ROADWAY
DA = 3.31 MI², Q = 580 CFS

STA 316+36.00 TO STA 316+99.00
℄ RTE H
REMOVE BRIDGE L0620
(21'-21'-21') I-BEAM SPAN
22' ROADWAY
DA = 4.3 MI²



BENCHMARKS
BM#1-CPS S SIDE PP STA 312+99.86, 34.93' LT ELEV 298.63'
BM#2-CPS S SIDE PP STA 317+29.09, 32.14' LT ELEV 293.63'
BM#3-CPS S SIDE PP STA 321+62.43, 25.98' LT ELEV 294.09'

BR A8990
PLAN AND PROFILE SHEET
SHEET 1 OF 1

STATE OF MISSOURI
CHARLES E. TOUZINSKY II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS SEALED, SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	6

COUNTY NEW MADRID

JOB NO. J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8990

DESCRIPTION | DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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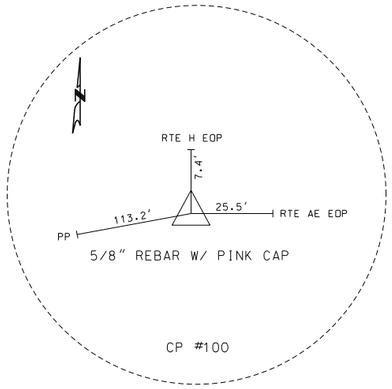
BR A8989

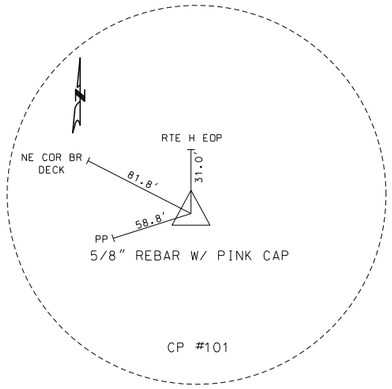


CP #100

DESCRIPTION:

5/8" REBAR W/ PINK CAP
LOCATED IN SW QUAD
OF I/S OF RTE H & RTE AE.

N = 338,335.4770
E = 1,081,576.9210
ELEV = 291.47
℄ RTE H
STA 271+56.99, 22.27' RT

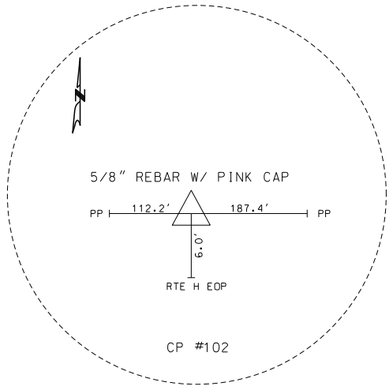


CP #101

DESCRIPTION:

5/8" REBAR W/ PINK CAP
LOCATED 300' E OF I/S
OF RTE H & RTE AE. LOCATED
ON S BACKSLOPE OF RTE H.

N = 338,327.8130
E = 1,081,963.6090
ELEV = 292.75
℄ RTE H
STA 275+43.27, 41.49' RT



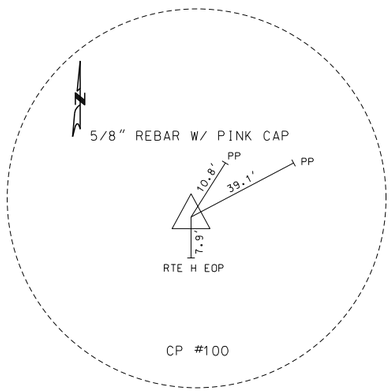
CP #102

DESCRIPTION:

5/8" REBAR W/ PINK CAP
TO LOCATE FROM I/S OF RTE H &
RTE AE, TRAVEL 1000' ON RTE H.
LOCATED ON N BACKSLOPE.

N = 338,401.4960
E = 1,082,613.2890
ELEV = 290.53
℄ RTE H
STA 281+94.80, 14.58' LT

BR A8990

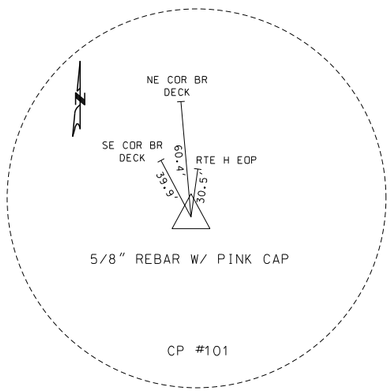


CP #100

DESCRIPTION:

5/8" REBAR W/ PINK CAP
LOCATED IN NW QUAD
OF RTE H & MATTHEWS CITY
PARK ENTRANCE.

N = 338,453.4401
E = 1,086,576.2685
ELEV = 296.71
℄ RTE H
STA 321+57.73, 16.31' LT

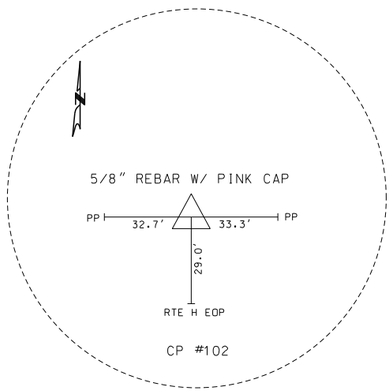


CP #101

DESCRIPTION:

5/8" REBAR W/ PINK CAP
TO LOCATE FROM I/S OF RTE H &
OAK DR, TRAVEL 150' W ON RTE H.
LOCATED ON S BACKSLOPE.

N = 338,420.6450
E = 1,086,152.4170
ELEV = 294.27
℄ RTE H
STA 317+33.71, 41.35' RT



CP #102

DESCRIPTION:

5/8" REBAR W/ PINK CAP
TO LOCATE FROM I/S OF RTE H &
OAK DR, TRAVEL 600' W ON RTE H.
LOCATED ON N BACKSLOPE.

N = 338,497.0230
E = 1,085,749.2640
ELEV = 293.05
℄ RTE H
STA 313+31.87, 41.69' LT

REFERENCE POINTS
SHEET 1 OF 1

STATE OF MISSOURI
CHARLES E. TOUZINSKY II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	7

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989/A8990

DATE	DESCRIPTION

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

COORDINATE POINT LISTING
MISSOURI COORDINATE SYSTEM OF 1983 (2011 ZONE EAST)
NAD83 HORIZONTAL DATUM
NAVD88 VERTICAL DATUM
AS OBTAINED FROM MODOT VRS NETWORK

STATION	LOCATION	OFFSET	MODIFIED STATE PLANE COORDINATES NORTHING (US FEET)	EASTING (US FEET)	DESCRIPTION
262+00.00	RTE H	-	338,329.1324	1,080,619.6966	POT
278+00.00	RTE H	-	338,376.9560	1,082,218.9819	PI
301+00.00	RTE H	-	338,435.0017	1,084,518.2493	PI
318+20.40	RTE H	-	338,463.4099	1,086,238.4147	PC
319+13.89	RTE H	3.05' LT	338,464.9536	1,086,331.8869	PI
320+07.11	RTE H	-	338,454.3375	1,086,424.7671	PT
324+86.21	RTE H	-	338,399.9314	1,086,900.7679	POT
0+00.00	RTE AE	-	338,359.0222	1,081,619.2498	POT
2+38.45	RTE AE	-	338,137.4902	1,081,707.4655	PC
6+19.54	RTE AE	37.65' LT	337,783.4350	1,081,848.4529	PI
9+90.76	RTE AE	-	337,402.3834	1,081,842.7738	PT
11+87.31	RTE AE	-	337,205.8553	1,081,839.8448	PC
15+89.88	RTE AE	4.71' RT	336,803.3248	1,081,833.8456	PI
19+92.31	RTE AE	-	336,400.9549	1,081,846.6978	PT
271+56.99	RTE H	22.27' RT	338,335.4770	1,081,576.9210	BR A8989 CP 100
275+43.27	RTE H	41.49' RT	338,327.8130	1,081,963.6090	BR A8989 CP 101
281+94.80	RTE H	14.58' LT	338,401.4960	1,082,613.2890	BR A8989 CP 102
321+57.73	RTE H	16.31' LT	338,453.4401	1,086,576.2685	BR A8990 CP 100
317+33.71	RTE H	41.35' RT	338,420.6450	1,086,152.4170	BR A8990 CP 101
313+31.87	RTE H	41.69' LT	338,497.0230	1,085,749.2640	BR A8990 CP 102

COORDINATE POINTS
SHEET 1 OF 1

STATE OF MISSOURI
CHARLES E. TOUZINSKY
NUMBER PE-2009001110
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	8

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989/A8990

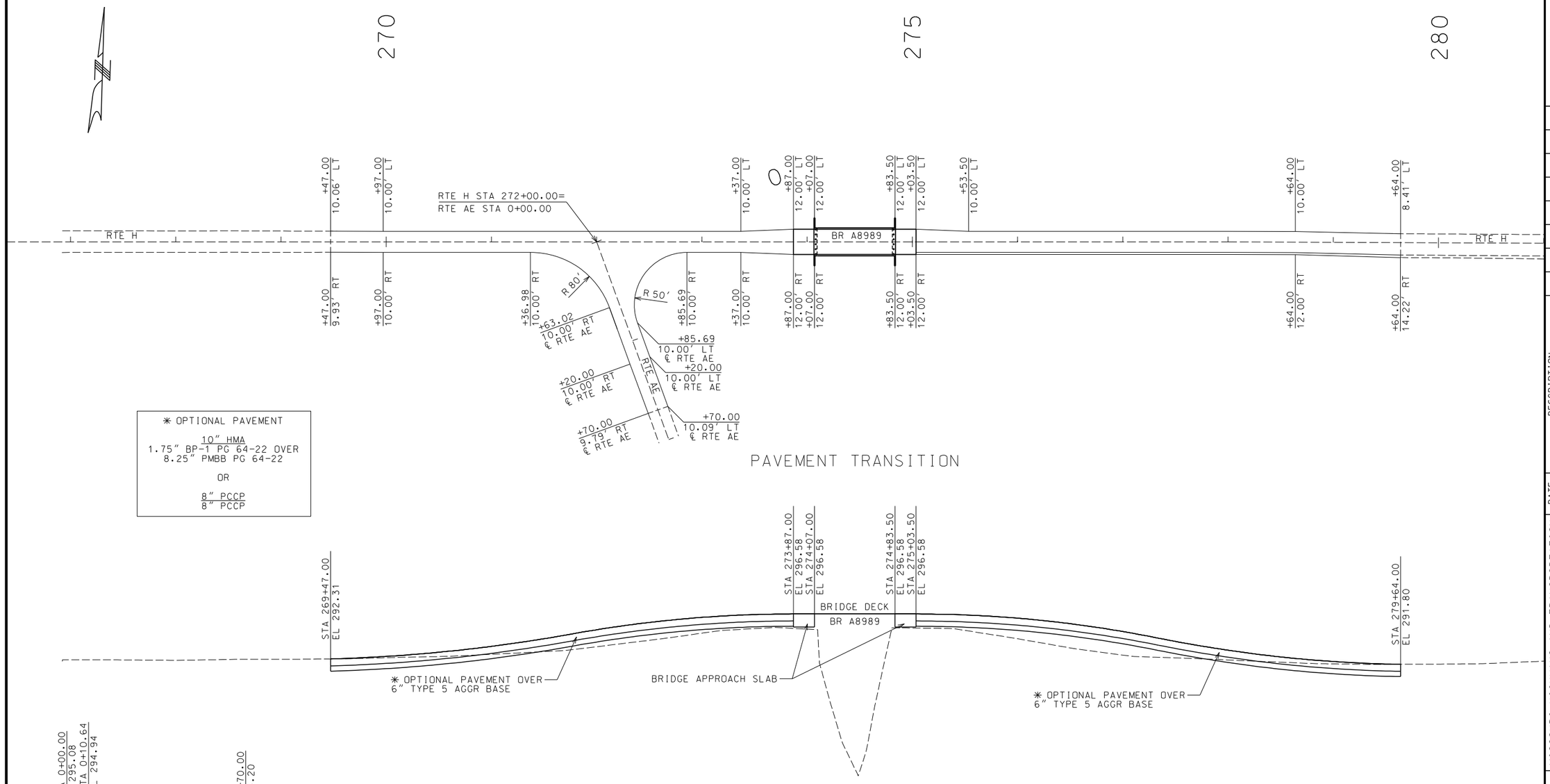
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090



DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8989
PAVEMENT DETAILS
SPECIAL SHEET
SHEET 1 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, III
NUMBER PE-2003011110
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	9

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

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

DESCRIPTION	DATE

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

CARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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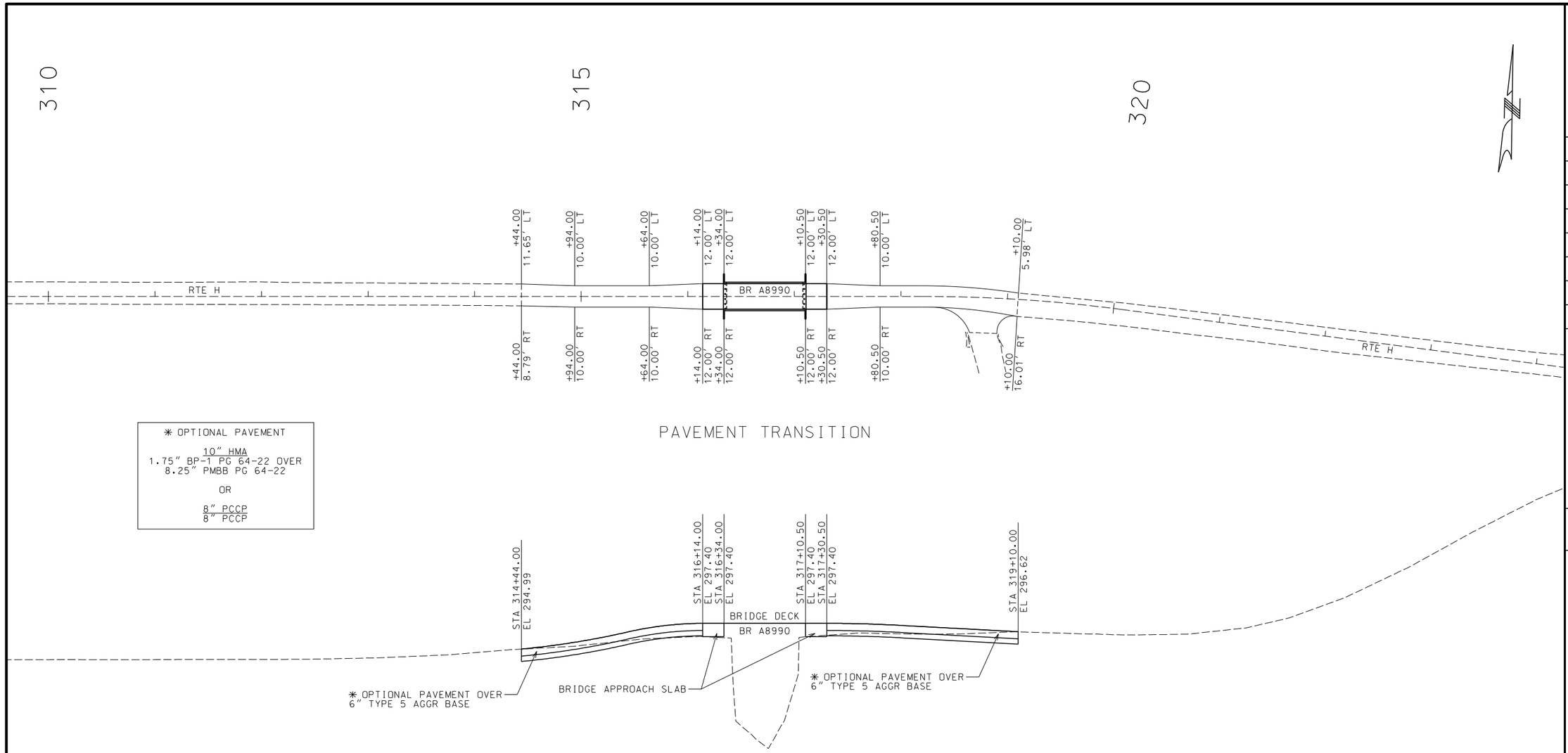
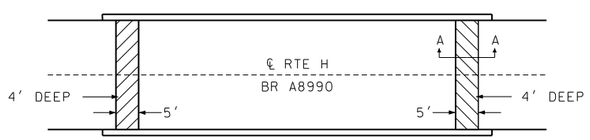


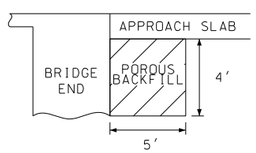
✳ OPTIONAL PAVEMENT

10" HMA
1.75" BP-1 PG 64-22 OVER
8.25" PMBB PG 64-22

OR

8" PCCP
8" PCCP





SECTION A-A

POROUS BACKFILL

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8990
PAVEMENT DETAILS
SPECIAL SHEET
SHEET 2 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	10

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DESCRIPTION	DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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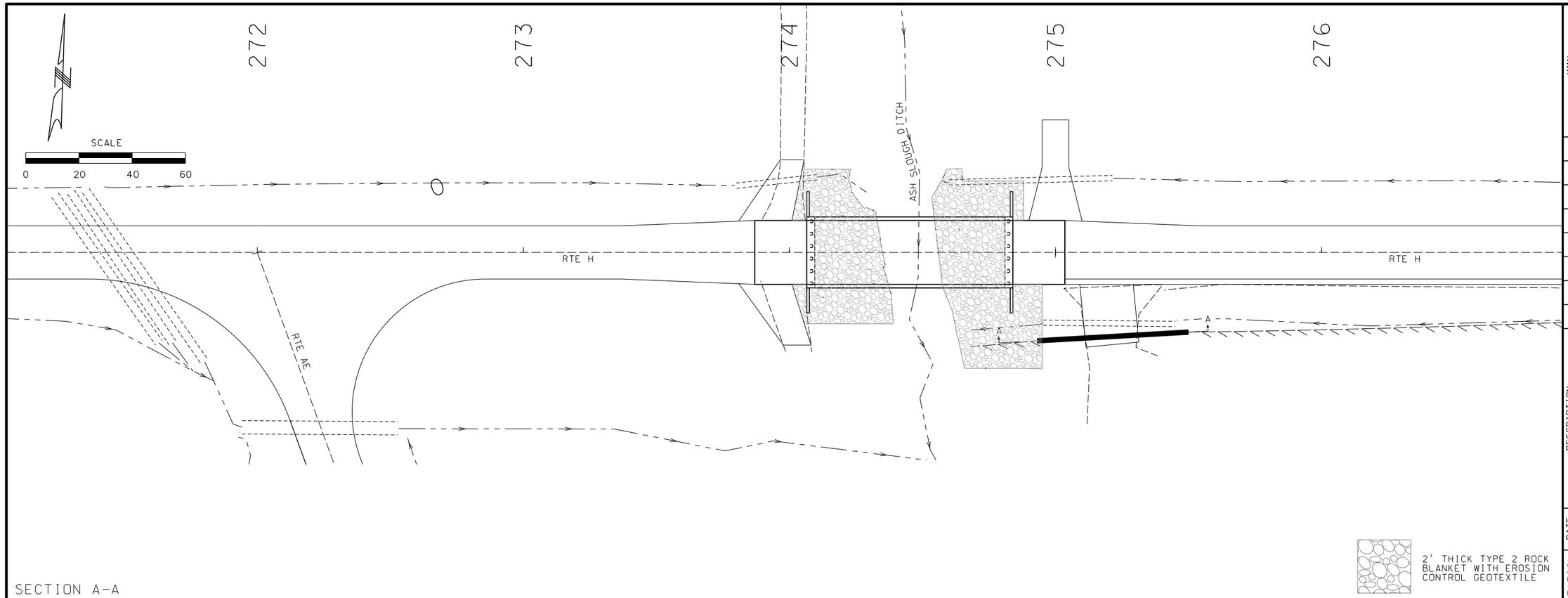
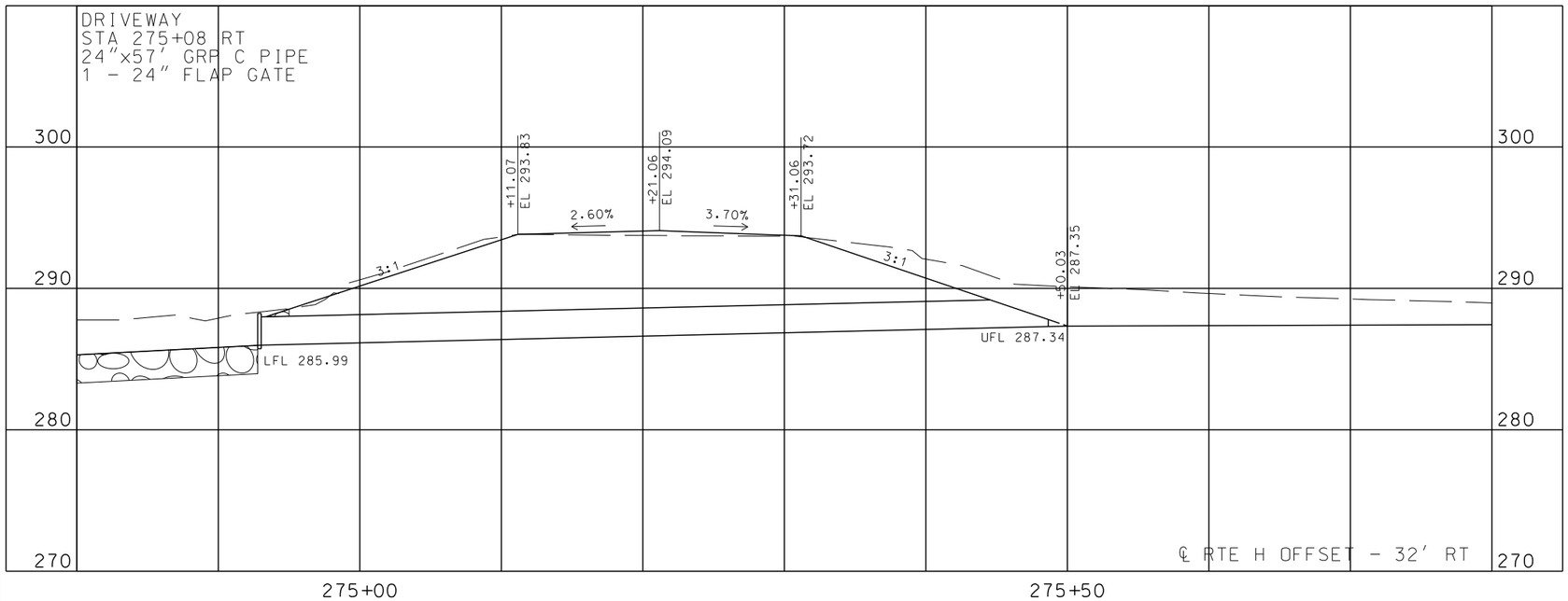
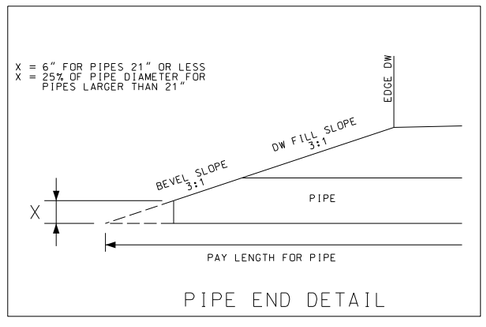


2' THICK TYPE 2 ROCK BLANKET WITH EROSION CONTROL GEOTEXTILE

SECTION A-A





PIPE END DETAIL

BR A8989
DRIVEWAY & PIPE CULVERT DETAILS
SPECIAL SHEET
SHEET 3 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, III
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	11

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

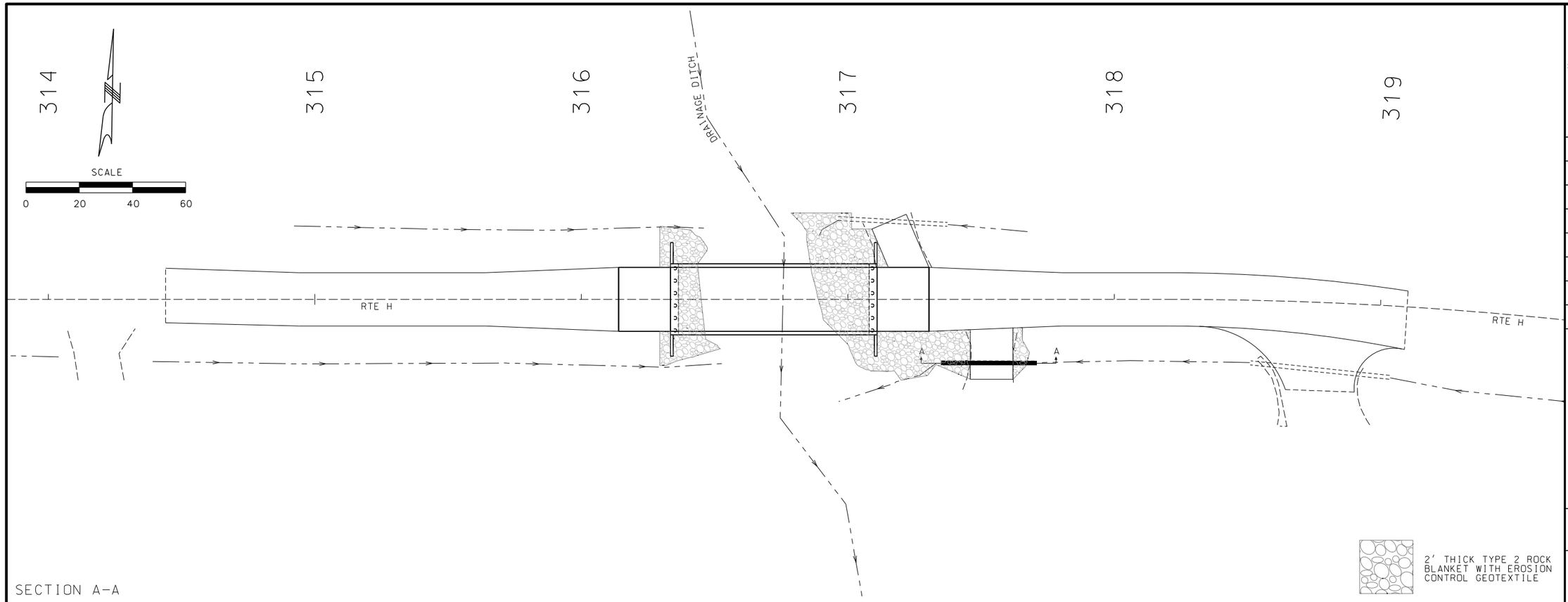
DESCRIPTION	DATE

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

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

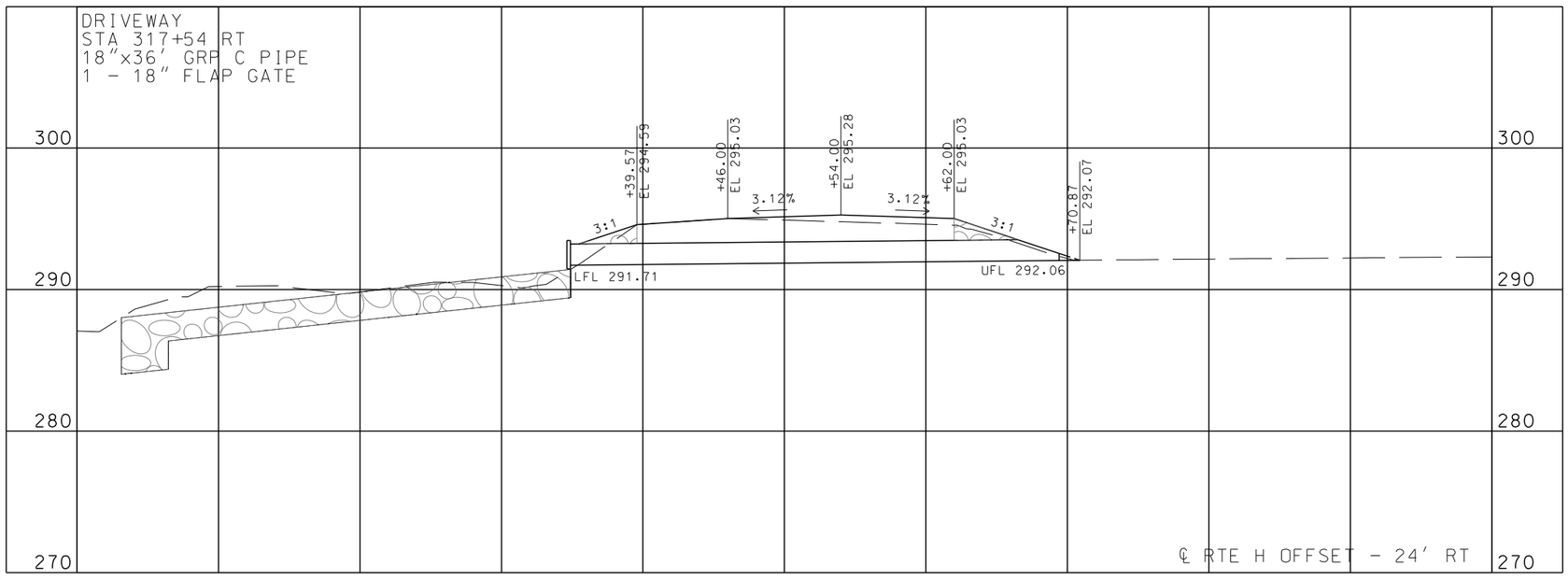
GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

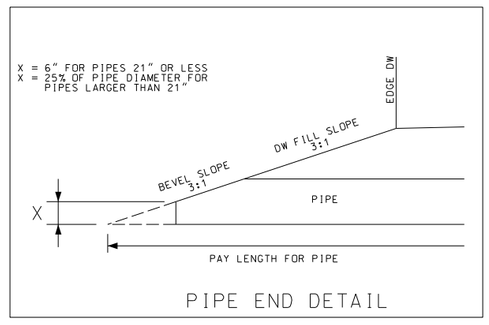
GARVER



2' THICK TYPE 2 ROCK BLANKET WITH EROSION CONTROL GEOTEXTILE

SECTION A-A





PIPE END DETAIL

BR A8990
DRIVEWAY & PIPE
CULVERT DETAILS
SPECIAL SHEET
SHEET 4 OF 7

CHARLES E. TOUZINSKY II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
STATE OF MISSOURI
THIS SHEET WAS ELECTRONICALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	12

COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8990

DATE	DESCRIPTION

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY NO. 2008013090

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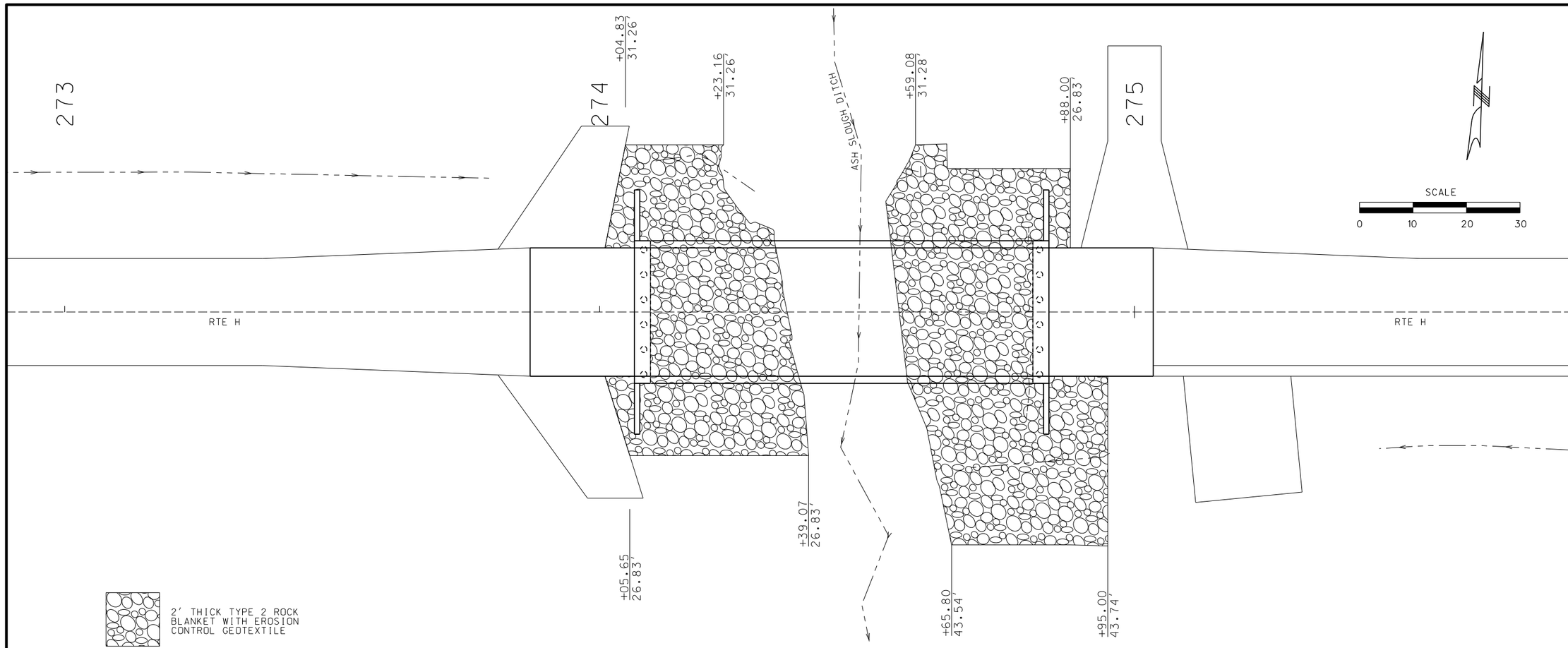
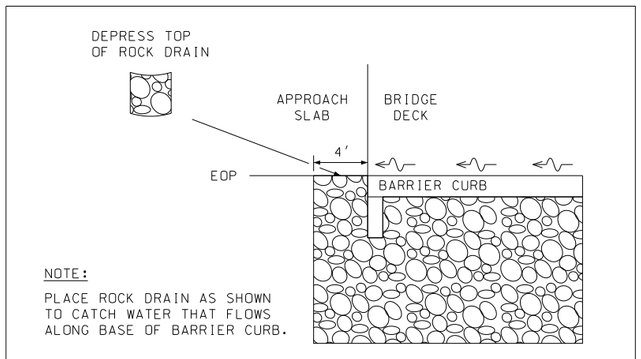
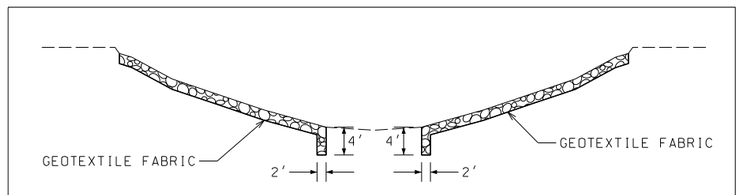


2' THICK TYPE 2 ROCK BLANKET WITH EROSION CONTROL GEOTEXTILE



ROCK DRAIN DETAIL
PLAN VIEW

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



2' THICK TYPE 2 ROCK BLANKET
WITH EROSION CONTROL GEOTEXTILE

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8989
ROCK BLANKET DETAIL
SPECIAL SHEET
SHEET 5 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	13

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DATE	DESCRIPTION

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY NO. 2008013090

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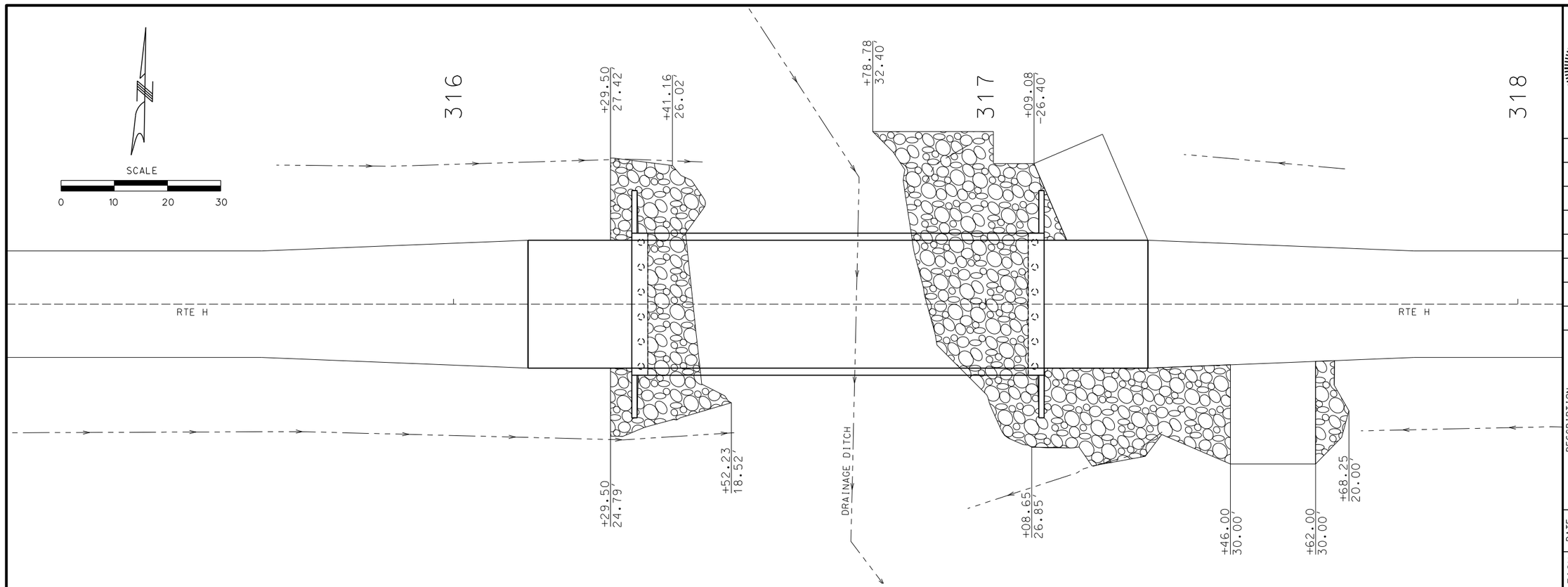
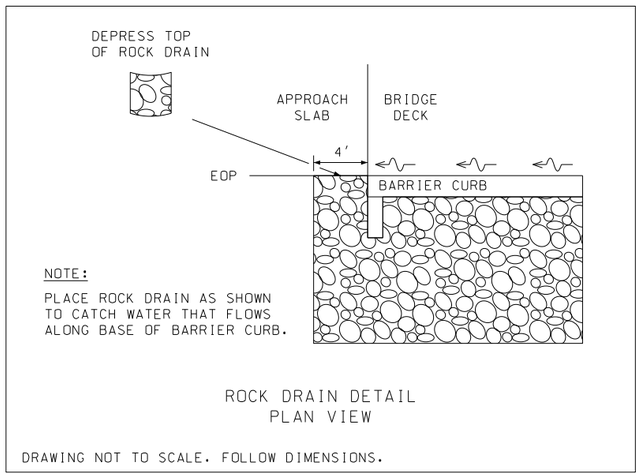


2' THICK TYPE 2 ROCK BLANKET WITH EROSION CONTROL GEOTEXTILE

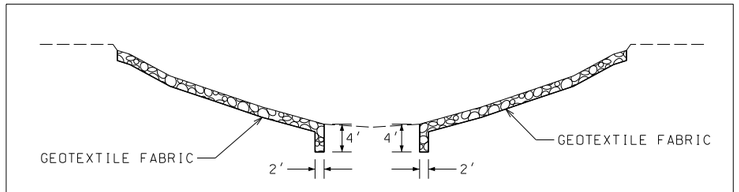


NOTE:

PLACE ROCK DRAIN AS SHOWN TO CATCH WATER THAT FLOWS ALONG BASE OF BARRIER CURB.

ROCK DRAIN DETAIL
PLAN VIEW

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.



2' THICK TYPE 2 ROCK BLANKET
WITH EROSION CONTROL GEOTEXTILE

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8990
ROCK BLANKET DETAIL
SPECIAL SHEET
SHEET 6 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	14

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DESCRIPTION	DATE

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

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

CARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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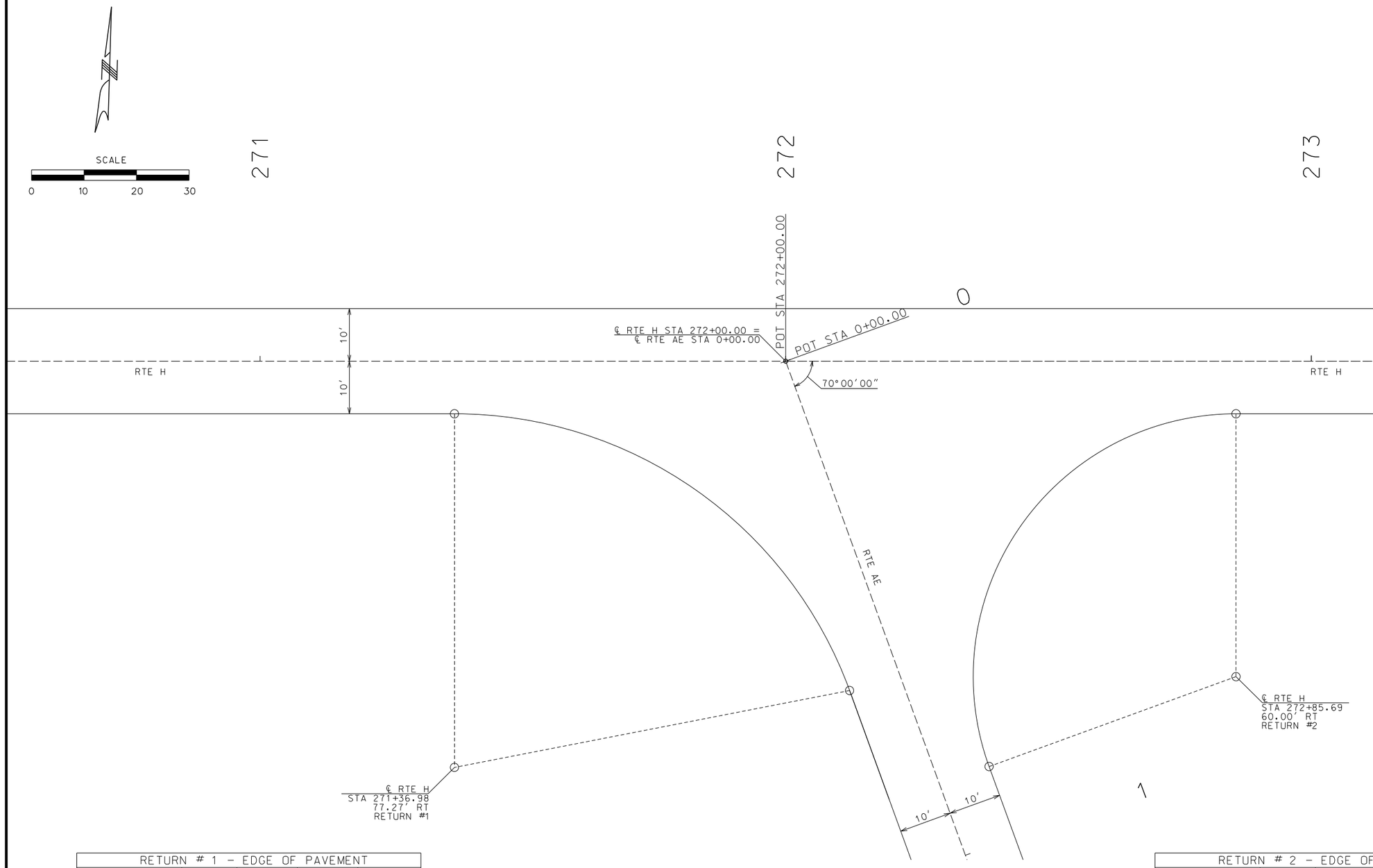


RETURN # 1 – EDGE OF PAVEMENT				
ROADWAY	LOCATION	STATION	OFFSET	ELEVATION
RTE H	PC	271+36.98	10.00' RT	293.82
L = 97.74'	1/4 PT.			294.14
R = 80.00'	1/2 PT.			294.36
Δ = 70°00'00.0"	3/4 PT.			294.12
RTE AE	PT	0+63.02	10.00' RT	293.75

RETURN # 2 – EDGE OF PAVEMENT				
ROADWAY	LOCATION	STATION	OFFSET	ELEVATION
RTE H	PC	272+85.69	10.00' RT	295.94
L = 95.99'	1/4 PT.			295.61
R = 50.00'	1/2 PT.			294.92
Δ = 110°00'00.0"	3/4 PT.			294.17
RTE AE	PT	0+85.69	10.00' LT	293.73

BR A8989
INTERSECTION DETAIL
SPECIAL SHEET
SHEET 7 OF 7

STATE OF MISSOURI
CHARLES E. TOUZINSKY, III
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	15

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

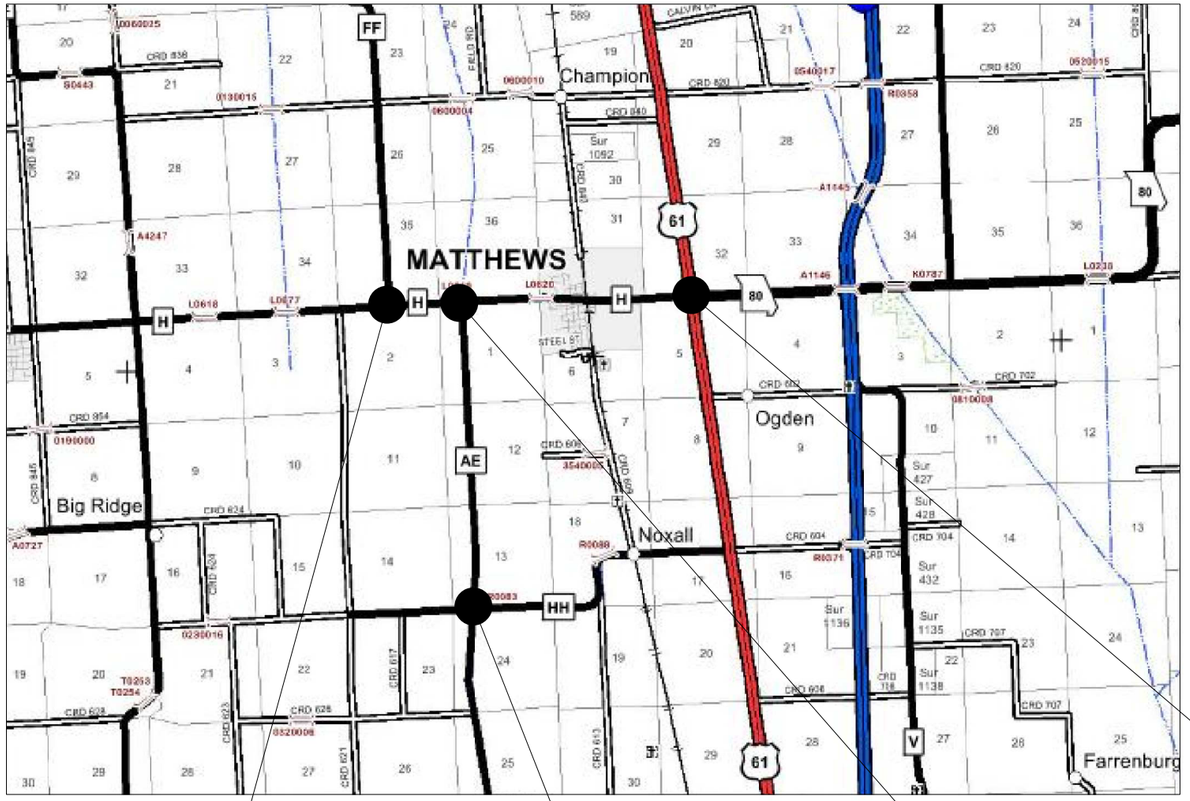
BRIDGE NO.
A8989

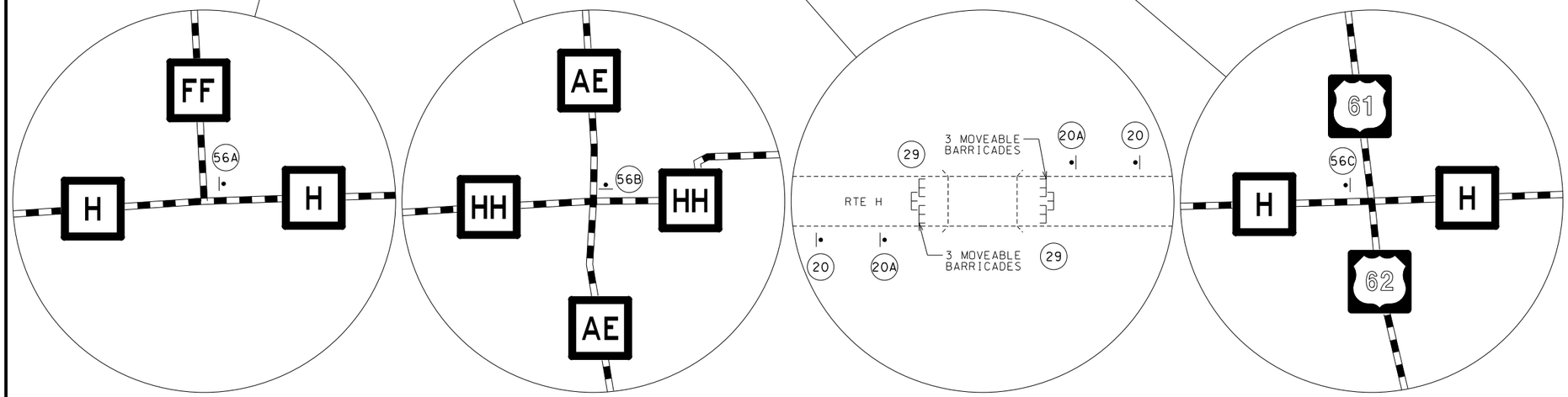
DESCRIPTION	DATE

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090





29

ROAD CLOSED

TYPE III BARRICADE

TYPE B WARNING LIGHTS AND SIGN 29 SHALL BE INSTALLED ON THE BARRICADES OR SEPARATE SUPPORTS ADJACENT TO THE BARRICADES IN ACCORDANCE WITH STD PLAN 616.10

H CLOSED 1/2 MILE AHEAD

56A

H CLOSED 3 MILES AHEAD

56B

H CLOSED 2 MILES AHEAD

56C

ROAD CLOSED AHEAD

W020-3

20

ROAD CLOSED 500 FT

W020-3

20A

ROAD CLOSED

R11-2

29

CONTRACTOR FURNISHED/RETAINED CHANGEABLE MESSAGE SIGN (CMS)

LOCATION AND MESSAGE TO BE DETERMINED BY ENGINEER

Focus on Bridges

MoDOT Fall 2021

CONST-5-96

LOCATION DETERMINED BY ENGINEER WITHIN PROJECT LIMITS

N.T.S.

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE III MOVEABLE BARRICADE
- TYPE B WARNING LIGHT

NOTES:

LOCATE SIGNS 100' FROM INTERSECTIONS AND WILL REMAIN IN PLACE FOR DURATION OF PROJECT.

SIGN SPACING IS 500'. DISTANCE MAY BE ADJUSTED TO FIELD CONDITIONS.

USE IN PLACE ALL SIGNS WHICH DO NOT CONFLICT WITH THIS PLAN. COVER AND/OR REMOVE CONFLICTING SIGNS.

ALL STATIONS, SPACING, AND DISTANCES OF TRAFFIC CONTROL DEVICES ARE APPROXIMATE AND MAY BE REVISED AS DIRECTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

BR A8989
TRAFFIC CONTROL
SHEET 1 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	16

COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DATE	DESCRIPTION

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

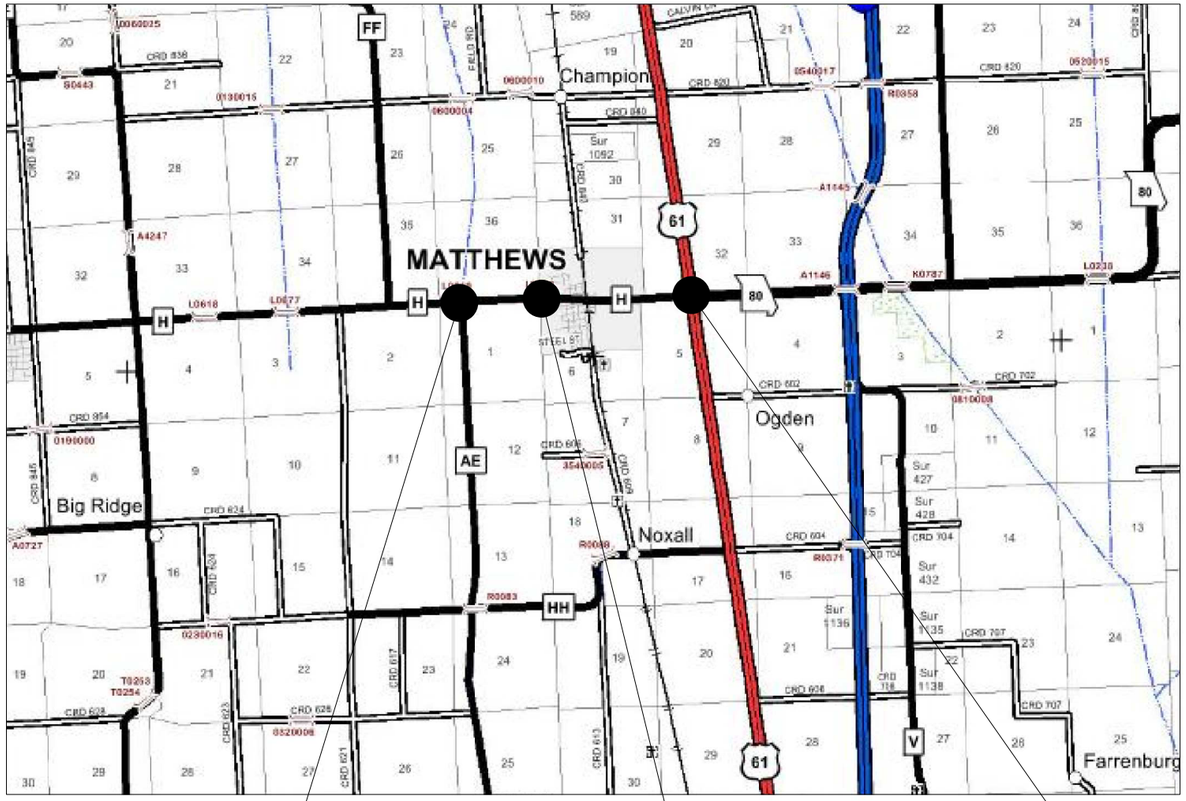
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

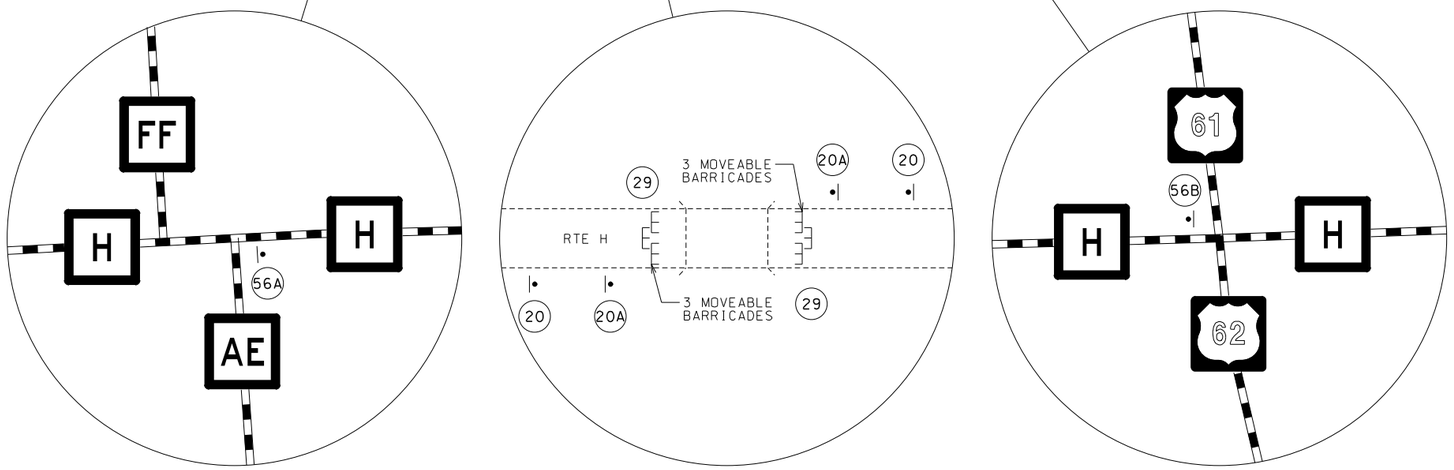
MoDOT
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

GARVER, LLC
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

GARVER

L:\2019\19T04110 - MoDOT SE Bridge Bundle\Drawings_J9S3540\016_TC_01_J9S3540_A8989_i1.dgn 10:55:17 AM 8/5/2021





TYPE III BARRICADE

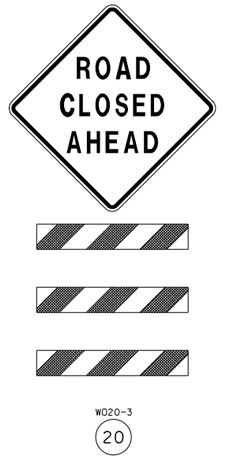
TYPE B WARNING LIGHTS AND SIGN 29 SHALL BE INSTALLED ON THE BARRICADES OR SEPARATE SUPPORTS ADJACENT TO THE BARRICADES IN ACCORDANCE WITH STD PLAN 616.10

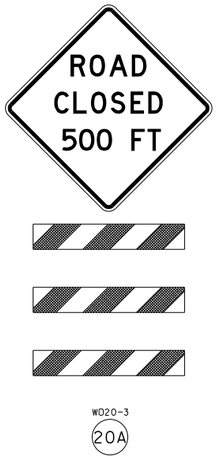
Focus on Bridges
MoDOT Fall 2021

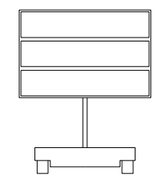
CONST-5-96

LOCATION DETERMINED BY ENGINEER WITHIN PROJECT LIMITS

N.T.S.







CONTRACTOR FURNISHED/RETAINED CHANGEABLE MESSAGE SIGN (CMS)

LOCATION AND MESSAGE TO BE DETERMINED BY ENGINEER

TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- TYPE III MOVEABLE BARRICADE
- TYPE B WARNING LIGHT

NOTES:

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BR A8990
TRAFFIC CONTROL
SHEET 2 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY III
NUMBER PE-2009001110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	17

COUNTY NEW MADRID

JOB NO. J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8990

DATE	DESCRIPTION

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

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY NO. 2008013090

GARVER

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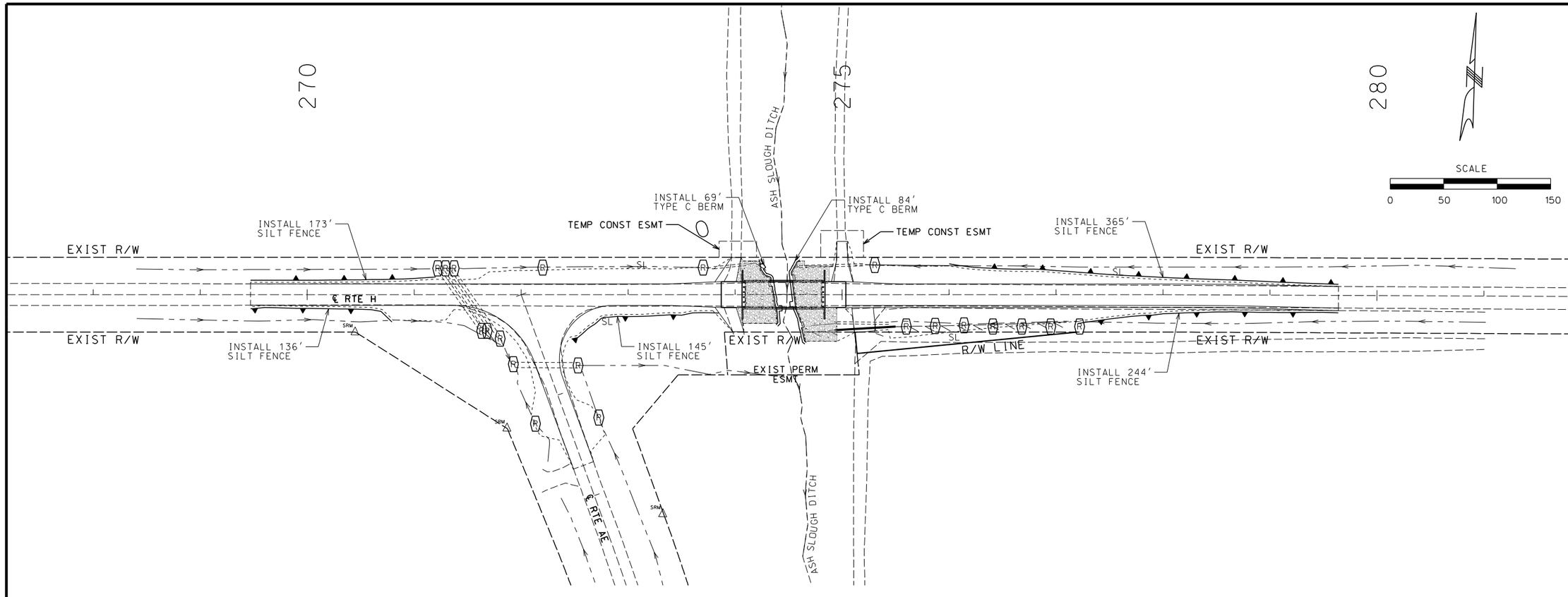

TEMPORARY EROSION CONTROL LEGEND

- ROCK DITCH CHECK
- TEMPORARY BERM TYPE C
- SILT FENCE

BR A8989
EROSION CONTROL
SHEET 1 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY, II
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	18

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

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

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

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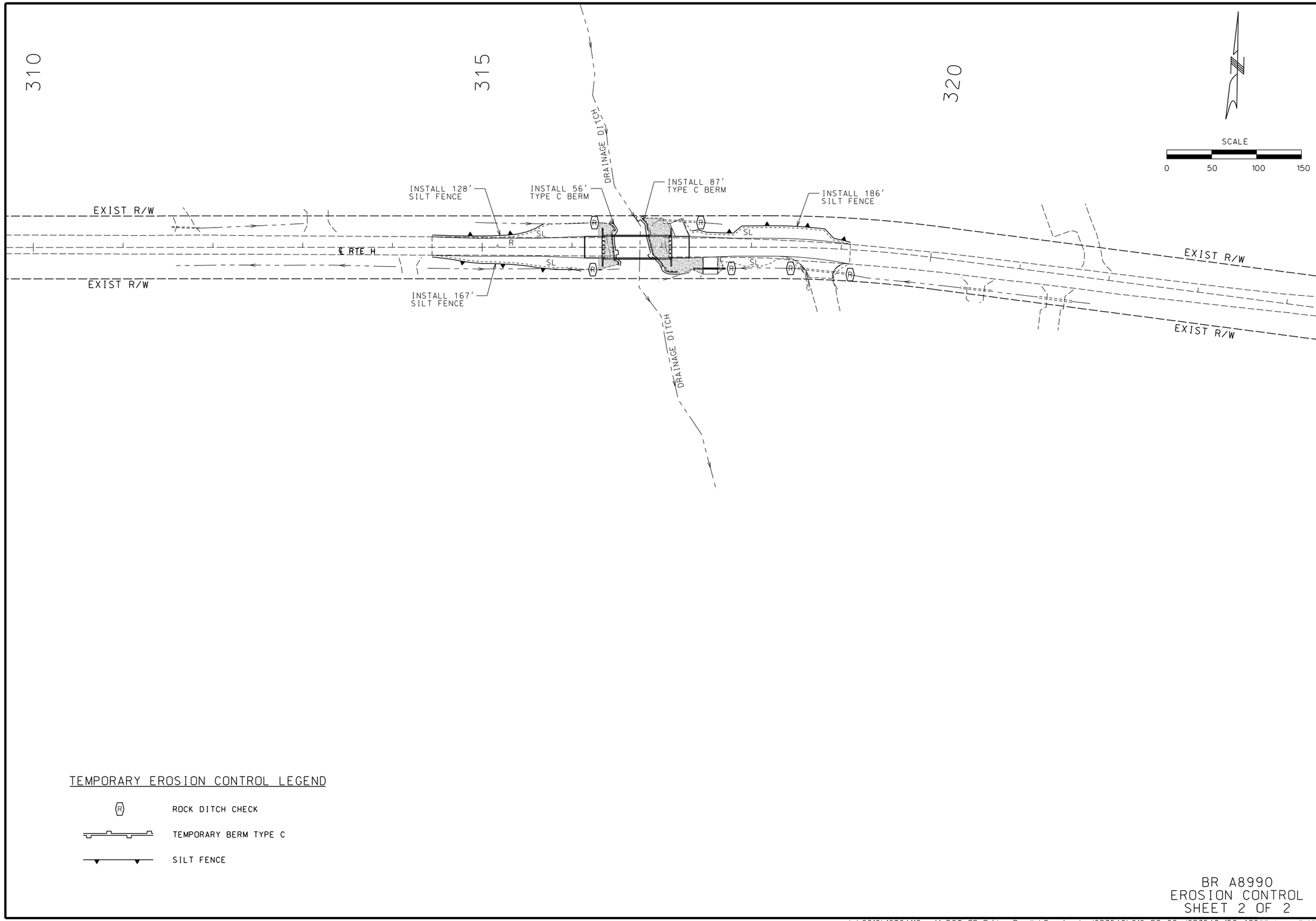

TEMPORARY EROSION CONTROL LEGEND

- (R) ROCK DITCH CHECK
- TEMPORARY BERM TYPE C
- SILT FENCE

BR A8990
EROSION CONTROL
SHEET 2 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY III
NUMBER PE-2003011110
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	19

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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PHONE: (816) 298-6465
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NO. 2008013090

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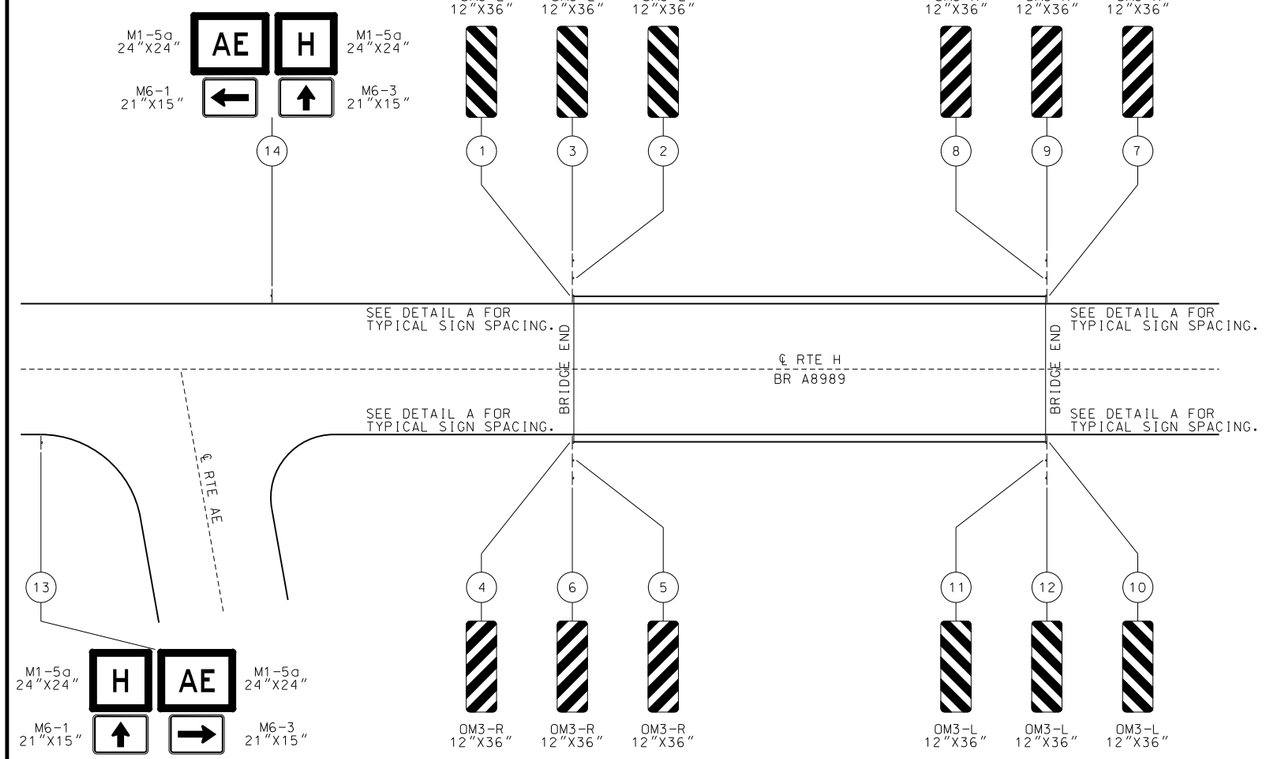
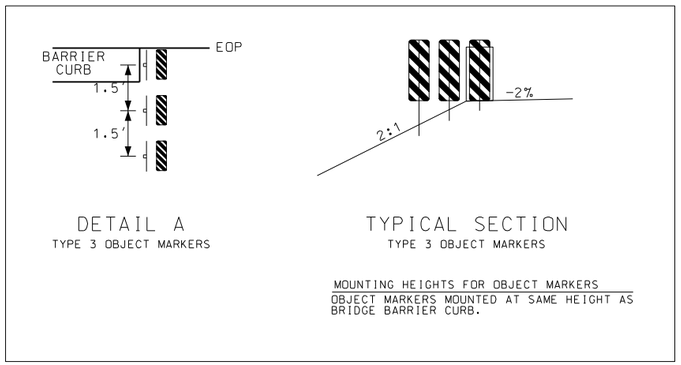




SIGN SUMMARY

STANDARD SIGN	SIGN DETAIL SHEET NO	NO EACH	SIZE, TYPE & SQ FT		
			SIZE	FLAT SHEET ITEM NO 9035004A	FLAT SHEET FLUORESCENT * ITEM NO 9035069A
M1-5a	STD	4	24"X24"	16	
M6-1	STD	2	21"X15"	4.4	
M6-3	STD	2	21"X15"	4.4	
OM3-L	STD	6	12"X36"		18
OM3-R	STD	6	12"X36"		18
		TOTAL		25	36

* ALTERNATING BLACK AND REFLECTIVE YELLOW STRIPES

SIGNS

SIGN NO.	SIGN SIZE	STATION	LOCATION	SIGN DETAIL SHEET NO	PERFORATED SQUARE STEEL TUBE POST 2 IN: POST NO 1	TOTAL ITEM NO 9031270A	ANCHOR 12 GA ITEM NO 9031271	PERFORATED SQUARE STEEL TUBE POST 2.5 IN: POST NO 1	TOTAL ITEM NO 9031280	ANCHOR 7 GA ITEM NO 9031281	STRUCTURAL STEEL BACKING BARS 2" X 3/8" BARS @ 2.55 LBS PER LIN FT: NO. EACH	LGTH IN.	TOTAL	ITEM NO 9031210 TOTAL
					LF	LF	LF	LF	LF	LF			LF	LBS
1	12X36	274+06.50	LT ℄ RTE H	STD	3.50	3.50	3							
2	12X36	274+06.50	LT ℄ RTE H	STD	4.00	4.00	3							
3	12X36	274+06.50	LT ℄ RTE H	STD	4.75	4.75	3							
4	12X36	274+06.50	RT ℄ RTE H	STD	3.50	3.50	3							
5	12X36	274+06.50	RT ℄ RTE H	STD	4.00	4.00	3							
6	12X36	274+06.50	RT ℄ RTE H	STD	4.75	4.75	3							
7	12X36	274+84.00	LT ℄ RTE H	STD	3.50	3.50	3							
8	12X36	274+84.00	LT ℄ RTE H	STD	4.00	4.00	3							
9	12X36	274+84.00	LT ℄ RTE H	STD	4.75	4.75	3							
10	12X36	274+84.00	RT ℄ RTE H	STD	3.50	3.50	3							
11	12X36	274+84.00	RT ℄ RTE H	STD	4.00	4.00	3							
12	12X36	274+84.00	RT ℄ RTE H	STD	4.75	4.75	3							
13	ASSBLY	271+19.00	22' RT ℄ RTE H	STD				14.92	14.92	3	4	50	16.67	42.5
14	ASSBLY	272+08.00	22' LT ℄ RTE H	STD				14.92	14.92	3	4	50	16.67	42.5
				TOTAL		49	36		30	6				90

STANDARD SIGN ASSEMBLIES

SIGN NO.	STATION	LOCATION	SIGN DESCRIPTION, SIZES & NUMBER OF EACH: FLAT SHEET H M1-5a (24"X24")	FLAT SHEET AE M1-5a (24"X24")	FLAT SHEET M6-1 (21"X15")	FLAT SHEET M6-3 (21"X15")	FLAT SHEET FLUORESCENT OM3-L (12"X36")	FLAT SHEET FLUORESCENT OM3-R (12"X36")
1	274+06.50	LT ℄ RTE H					1	
2	274+06.50	LT ℄ RTE H					1	
3	274+06.50	LT ℄ RTE H					1	
4	274+06.50	RT ℄ RTE H						1
5	274+06.50	RT ℄ RTE H						1
6	274+06.50	RT ℄ RTE H						1
7	274+84.00	LT ℄ RTE H					1	
8	274+84.00	LT ℄ RTE H					1	
9	274+84.00	LT ℄ RTE H					1	
10	274+84.00	RT ℄ RTE H						1
11	274+84.00	RT ℄ RTE H						1
12	274+84.00	RT ℄ RTE H						1
13	271+19.00	22' RT ℄ RTE H	1	1	1	1		
14	272+08.00	22' LT ℄ RTE H	1	1	1	1		
		TOTAL	2	2	2	2	6	6

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8989
SIGNING
SHEET 1 OF 2

DATE PREPARED 1/12/2021

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
SE	20

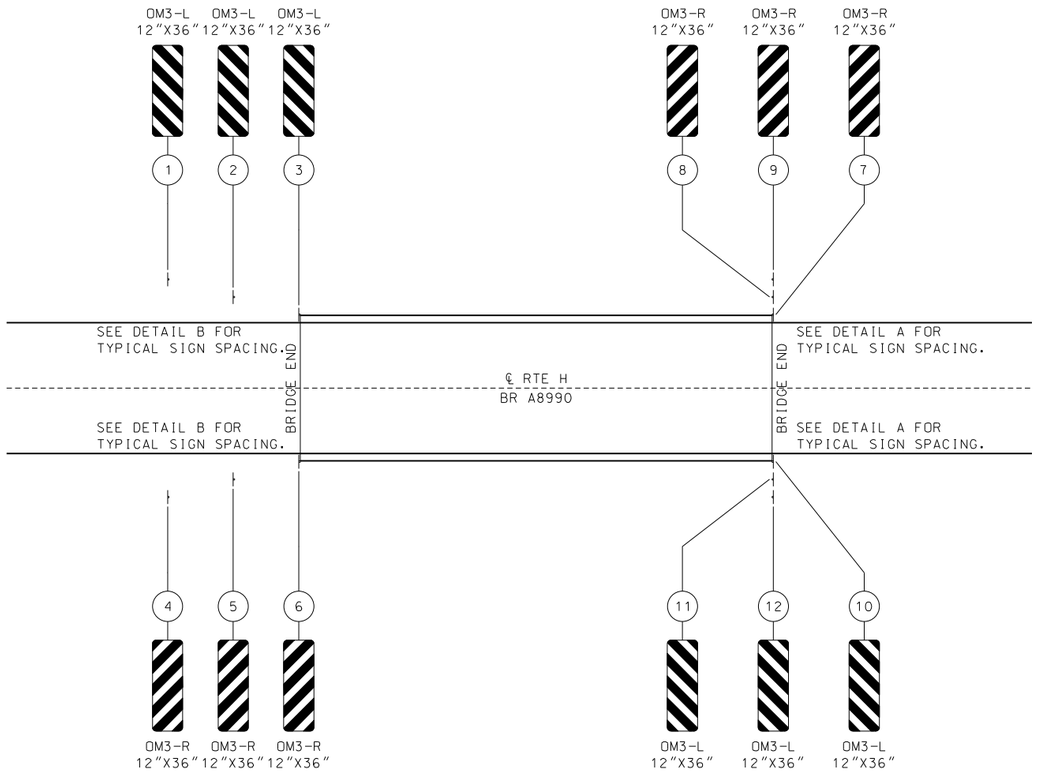
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DESCRIPTION | DATE

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

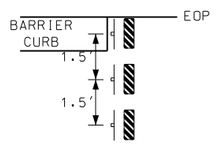
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

GARVER, LLC.
7410 NW TIFFANY SPRINGS
PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY
NO. 2008013090

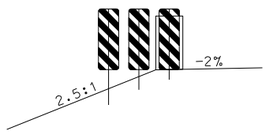


SIGNS					PERFORATED SQUARE STEEL TUBE POST 2 IN		
SIGN NO.	SIGN SIZE	STATION	LOCATION	SIGN DETAIL SHEET NO	POST NO 1	TOTAL ITEM NO 9031270A	ANCHOR 12 GA ITEM NO 9031271
					LF	LF	LF
1	12X36	315+93.50	LT ℄ RTE H	STD	9.00	9.00	3
2	12X36	316+13.50	LT ℄ RTE H	STD	6.50	6.50	3
3	12X36	316+33.50	LT ℄ RTE H	STD	3.50	3.50	3
4	12X36	315+93.50	RT ℄ RTE H	STD	9.00	9.00	3
5	12X36	316+13.50	RT ℄ RTE H	STD	6.50	6.50	3
6	12X36	316+33.50	RT ℄ RTE H	STD	3.50	3.50	3
7	12X36	317+11.00	LT ℄ RTE H	STD	3.50	3.50	3
8	12X36	317+11.00	LT ℄ RTE H	STD	4.00	4.00	3
9	12X36	317+11.00	LT ℄ RTE H	STD	4.50	4.50	3
10	12X36	317+11.00	RT ℄ RTE H	STD	3.50	3.50	3
11	12X36	317+11.00	RT ℄ RTE H	STD	4.00	4.00	3
12	12X36	317+11.00	RT ℄ RTE H	STD	4.50	4.50	3
				TOTAL		62	36

STANDARD SIGN ASSEMBLIES				
SIGN NO.	STATION	LOCATION	SIGN DESCRIPTION, SIZES & NUMBER OF EACH FLAT SHEET FLUORESCENT	
			OM3-L (12"X36")	OM3-R (12"X36")
1	315+93.50	LT ℄ RTE H	1	
2	316+13.50	LT ℄ RTE H	1	
3	316+33.50	LT ℄ RTE H	1	
4	315+93.50	RT ℄ RTE H		1
5	316+13.50	RT ℄ RTE H		1
6	316+33.50	RT ℄ RTE H		1
7	317+11.00	LT ℄ RTE H	1	
8	317+11.00	LT ℄ RTE H	1	
9	317+11.00	LT ℄ RTE H	1	
10	317+11.00	RT ℄ RTE H		1
11	317+11.00	RT ℄ RTE H		1
12	317+11.00	RT ℄ RTE H		1
		TOTAL	6	6

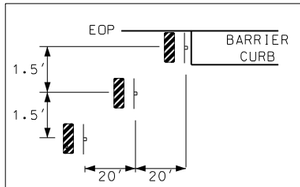


DETAIL A
TYPE 3 OBJECT MARKERS



TYPICAL SECTION
TYPE 3 OBJECT MARKERS

MOUNTING HEIGHTS FOR OBJECT MARKERS
OBJECT MARKERS MOUNTED AT SAME HEIGHT AS BRIDGE BARRIER CURB.



DETAIL B
TYPE 3 OBJECT MARKERS

MOUNTING HEIGHTS FOR OBJECT MARKERS
- OBJECT MARKER (1) MOUNTED AT SAME HEIGHT AS BRIDGE BARRIER CURB
- OBJECT MARKER (2) MOUNTED AT ½ STANDARD HEIGHT
- OBJECT MARKER (3) MOUNTED AT STANDARD HEIGHT

SIGN SUMMARY				
STANDARD SIGN	SIGN DETAIL SHEET NO	NO EACH	SIZE, TYPE & SQ FT SIZE	FLAT SHEET FLUORESCENT * ITEM NO 9035069A
OM3-L	STD	6	12"X36"	18
OM3-R	STD	6	12"X36"	18
		TOTAL		36

* ALTERNATING BLACK AND REFLECTIVE YELLOW STRIPES

DRAWING NOT TO SCALE. FOLLOW DIMENSIONS.

BR A8990
SIGNING
SHEET 2 OF 2

STATE OF MISSOURI
CHARLES E. TOUZINSKY
NUMBER PE-2003001110
PROFESSIONAL ENGINEER
THIS SHEET WAS DIGITALLY SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 1/12/2021
ROUTE H | STATE MO
DISTRICT SE | SHEET NO. 21
COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990

DESCRIPTION | DATE

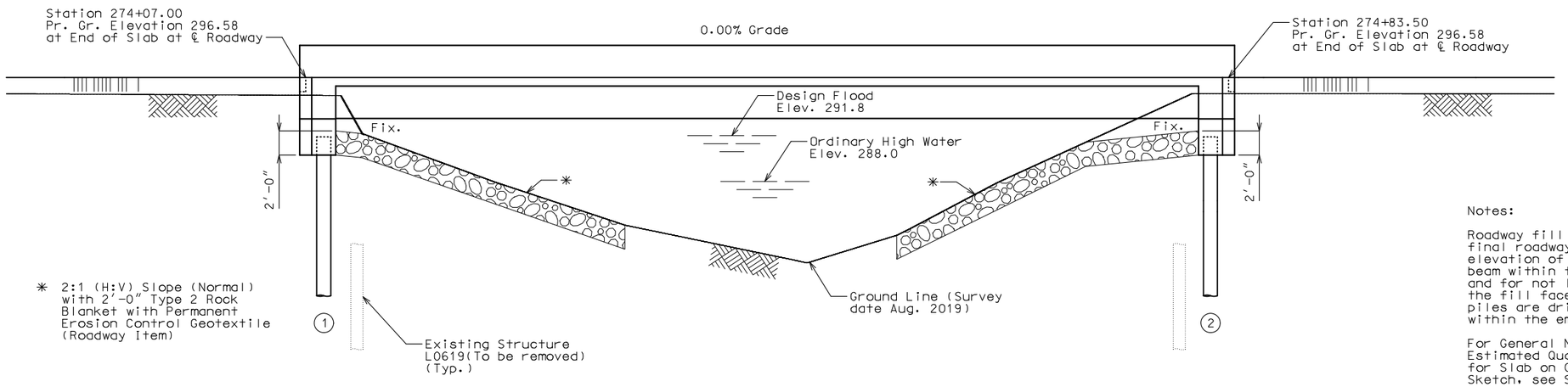
IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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

GARVER, LLC.
7410 NW TIFFANY SPRINGS PARKWAY, SUITE 200
KANSAS CITY, MO 64153
PHONE: (816) 298-6465
CERTIFICATE OF AUTHORITY NO. 2008013090

SEC/SUR 1, 36 TWP 24N, 25N RGE 13E

(74′) PRESTRESSED CONCRETE SPREAD BOX BEAM SPAN



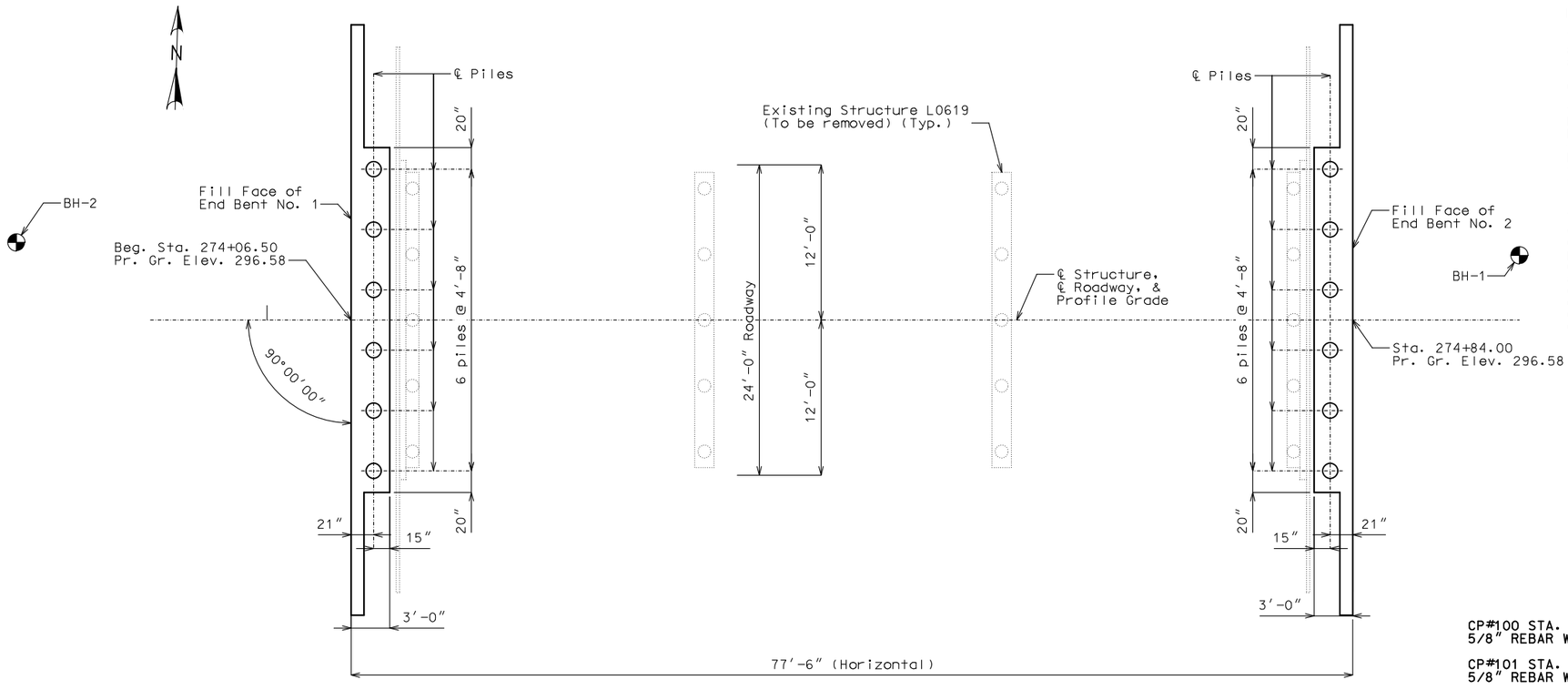
* 2:1 (H:V) Slope (Normal) with 2′-0″ Type 2 Rock Blanket with Permanent Erosion Control Geotextile (Roadway Item)

GENERAL ELEVATION

Notes:

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

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



SPAN (1-2)

PLAN

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheets for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheets No. 19-20 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

CP#100 STA. 271+56.99, 22.27′ RT., ELEV. 291.47
5/8″ REBAR WITH PINK CAP

CP#101 STA. 275+43.27, 41.49′ RT., ELEV. 292.75
5/8″ REBAR WITH PINK CAP

BRIDGE: ROUTE H OVER ASH SLOUGH DITCH

STATE ROUTE H FROM ROUTE I-55 TO ROUTE E
ABOUT 3.8 MILES WEST OF ROUTE I-55
STA. 274+06.50

STD. 609.00
STD. 617.10
STD. 706.35

Designed NOV. 2020
Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

Kaskaska Engineering Group, LLC
208 East Main Street, Suite 100
BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	120		120
Removal of Bridges (L0619)	lump sum			1
Bridge Approach Slab (Minor Road)	sq. yard			109
Galvanized Cast-In-Place Concrete Piles (14 in.)	linear foot	660		660
Dynamic Pile Testing	each	2		2
Class B Concrete (Substructure)	cu. yard	21.6		21.6
Type H Barrier	linear foot		155	155
Slab on Concrete Beam	sq. yard		227	227
27 in., Prestressed Concrete Spread Box Beam	linear foot		224	224
Slab Drain	each		16	16
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		6	6

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

All reinforcement in the end bents and all reinforcement in cast-in-place pile at end bents is included in the Estimated Quantities for Slab on Concrete Beam.

Estimated Quantities for Slab on Concrete Beam

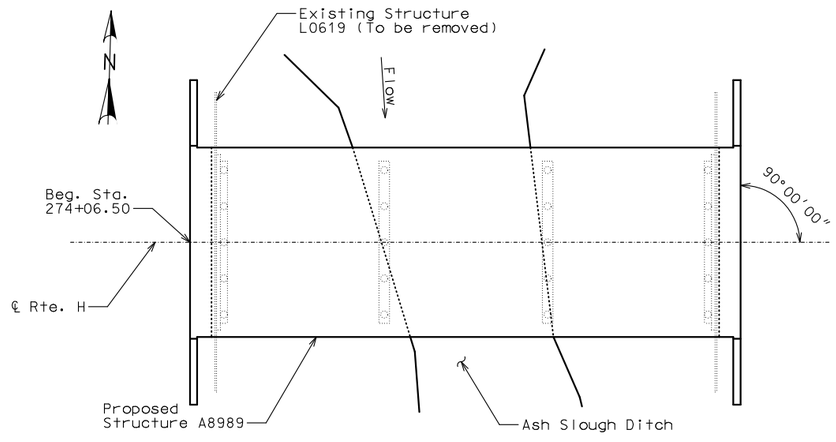
Item		Total
Class B-2 Concrete	cu. yard	68
Reinforcing Steel (Epoxy Coated)	pound	20,480

The table of Estimated Quantities for Slab on Concrete Beam 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 prestressed panels, conventional forms, and all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

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

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete Beam.

Hydrologic Data
Drainage Area = 31 mi^2
Design Flood Frequency = 50 years
Design Flood Discharge = 1530 cfs
Design Flood (D.F.) Elevation = 291.8 ft
Base Flood (100-year)
Base Flood Elevation = 291.9 ft
Base Flood Discharge = 1640 cfs
Estimated Backwater = 0.2 ft
Average Velocity thru Opening = 4.6 ft/s
Freeboard (50-year)
Freeboard = 1.4 ft
Roadway Overtopping
Overtopping Flood Discharge = 1530
Overtopping Flood Frequency = 50
Overtopping Flood Elevation = 291.8 ft



LOCATION SKETCH

GENERAL NOTES:

DESIGN SPECIFICATIONS:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)

2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)

Seismic Design Category = D

DESIGN LOADING:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (min.)
Superstructure: Non-composite for dead load.
Composite for live load.

DESIGN UNIT STRESSES:

Class B Concrete (Substructure, except CIP pile) f'c = 3,000 psi

Class B-1 Concrete (Type H Barrier and CIP pile) f'c = 4,000 psi

Class B-2 Concrete (Superstructure except Prestressed Box Beams and Type H Barrier) f'c = 4,000 psi

Reinforcing Steel (Grade 60) fy = 60,000 psi

Welded or Seamless steel shell (pipe) for CIP pile (ASTM A252 Grade 3) fy = 45,000 psi

For precast prestressed panel stresses, see Sheet No. 10.

For Prestressed Box Beam Stresses, see Sheet No. 8.

NEOPRENE BEARING PADS:

Plain Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec. 716.

JOINT FILLER:

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

REINFORCING STEEL:

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

TRAFFIC HANDLING:

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

Foundation Data

Type	Design Data		Bent Number 1	Bent Number 2
Load Bearing Pile	Pile Type and Size		CECIP 14"	CECIP 14"
	Number	ea	6	6
	Approximate Length Per Each	ft	55	55
	Pile Point Reinforcement	ea	--	--
	Min. Galvanized Penetration (Elev.)	ft	Full Length	Full Length
	Est. Max. Scour Depth 100 (Elev.)	ft	--	--
	Minimum Tip Penetration (Elev.)	ft	237	237
	Criteria for Min. Tip Penetration		Penetration of soft geotechnical layers	Penetration of soft geotechnical layers
	Pile Driving Verification Method		DT	DT
	Resistance Factor		0.65	0.65
	Minimum Nominal Axial Compressive Resistance	kip	221	221

CECIP = Closed Ended Cast-In-Place concrete pile

DT = Dynamic Testing

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
08/09/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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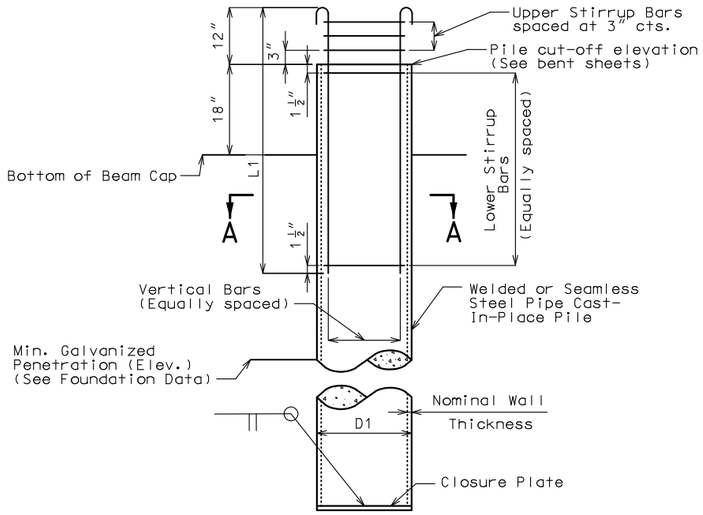
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

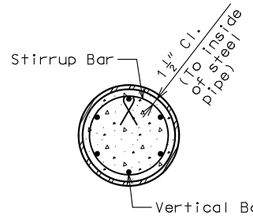
Detailed NOV. 2020
Checked NOV. 2020

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

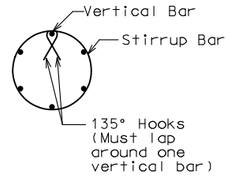
GENERAL NOTES AND QUANTITIES



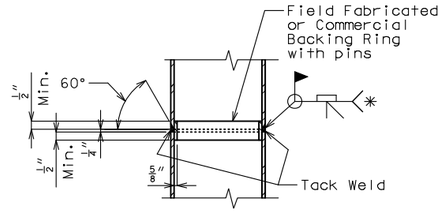
GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE WITHOUT PILE POINT REINFORCEMENT



SECTION A-A



DETAIL OF SEISMIC STIRRUP BAR



STEEL PIPE PILE SPLICE

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

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data		
Bent Number	1	2
D1, CECIP Pile (O.D.)	14"	14"
Min. Nominal Wall Thickness	0.5"	0.5"
Closure Plate Thickness	3/4"	3/4"
Pile Point Reinforcement	--	--
Vertical Bars	6-#5-V13	6-#5-V13
L1, Length of Vertical Bars	5'-3"	5'-3"
Upper Stirrup Bars	3-#4-P10	3-#4-P10
Lower Stirrup Bars	5-#4-P10	5-#4-P10

Notes:

Welded or seamless steel shell (pipe) shall be ASTM A252 Grade 3 (fy = 45,000 psi).

Concrete for cast-in-place pile shall be Class B-1.

Steel for closure plate shall be ASTM A709 Grade 50.

The minimum wall thickness of any spot or local area of any type shall not be more than 12.5% under the specified nominal wall thickness.

The contractor shall determine the pile wall thickness required to avoid damage from all driving activities, but wall thickness shall not be less than the minimum specified. No additional payment will be made for furnishing a thicker pile wall than specified on the plans.

Closure plate shall not project beyond the outside diameter of the pipe pile. Satisfactory weldments may be made by beveling tip end of pipe or by use of inside backing rings. In either case, proper gaps shall be used to obtain weld penetration full thickness of pipe. Payment for furnishing and installing closure plate will be considered completely covered by the contract unit price for Galvanized Cast-In-Place Concrete Piles.

Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5 feet in length.

The hooks of vertical bars embedded in the beam cap should not be turned outward, away from the pile core.

Closure plate need not be galvanized.

Reinforcing steel for cast-in-place piles is included in the Bill of Reinforcing Steel.

All reinforcement for cast-in-place pile is included in the estimated quantities for Slab on Concrete Beam.

For Foundation Data table, see Sheet No. 2.

MOSHE L. COHEN NUMBER PE-2017018957 STATE OF MISSOURI PROFESSIONAL ENGINEERS
ENGINEER: MOSHE L. COHEN PE-2017018957

DATE PREPARED 05/12/21

ROUTE H | STATE MO

DISTRICT BR | SHEET NO. 3

COUNTY NEW MADRID

JOB NO. J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8989

DESCRIPTION	DATE

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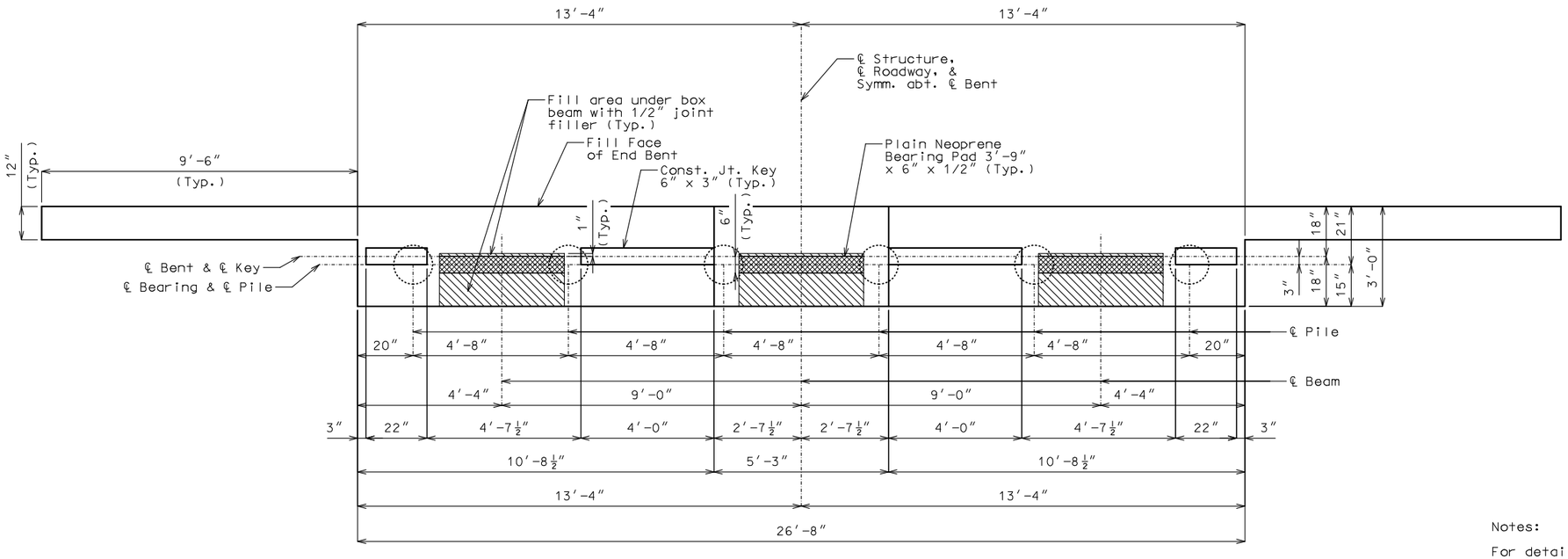
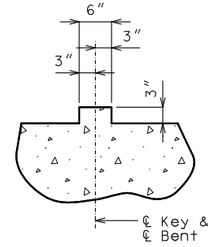
DETAILS OF GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE

Detailed NOV. 2020
Checked NOV. 2020

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



PLAN OF BEAM



SECTION THRU KEY

Notes:

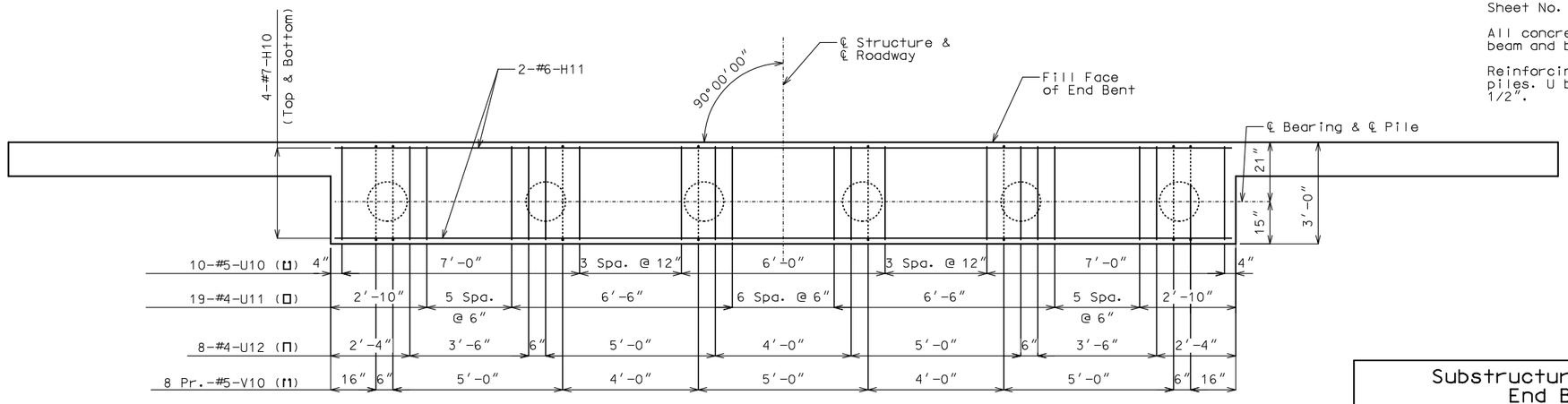
For details of End Bents not shown, see Sheets No. 5 & 6.

Strand at ends of beams shall be field bent or, if necessary, cut in field to maintain 1 1/2″ minimum clearance to fill face of end bent.

For details of Vertical Drain at End Bents, see Sheet No. 7.

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

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



PLAN OF BEAM SHOWING REINFORCEMENT

(Steps and keys not shown for clarity)
(Wing reinforcement not shown for clarity)

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Substructure Quantity Table for End Bents No. 1 & 2

Item		No. 1 Quantity	No. 2 Quantity
Class 1 Excavation	cu. yard	60	60
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	330	330
Dynamic Pile Testing	each	1	1
Class B Concrete (Substructure)	cu. yard	10.8	10.8

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

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 08/04/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 4
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DATE | DESCRIPTION

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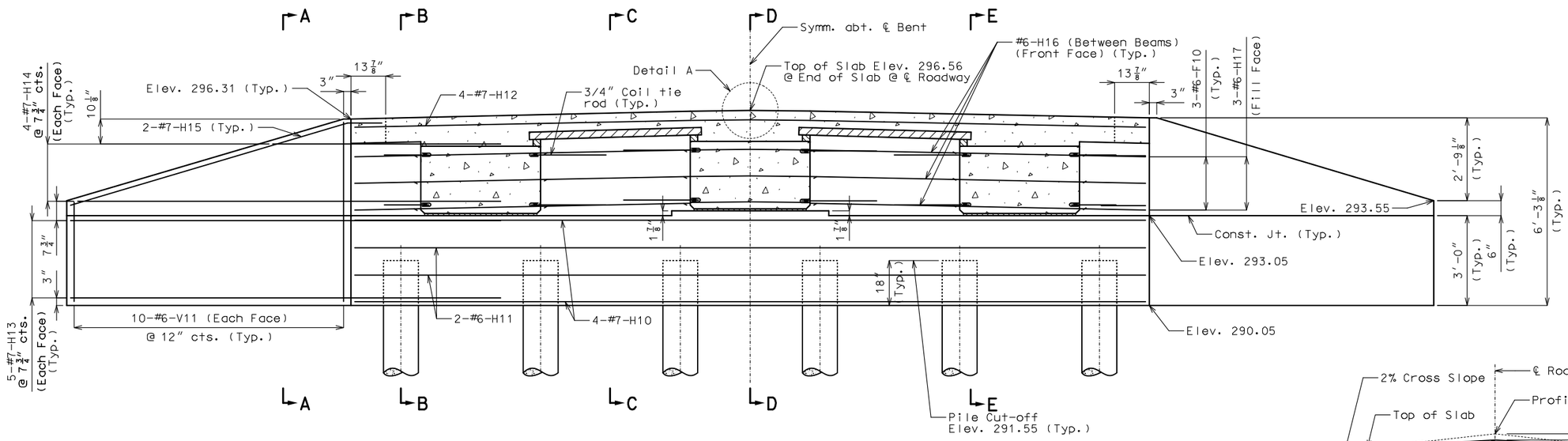
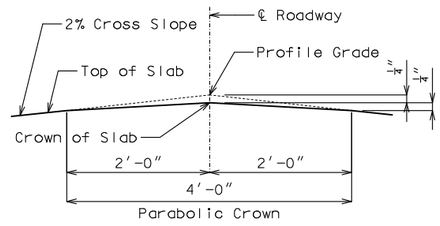
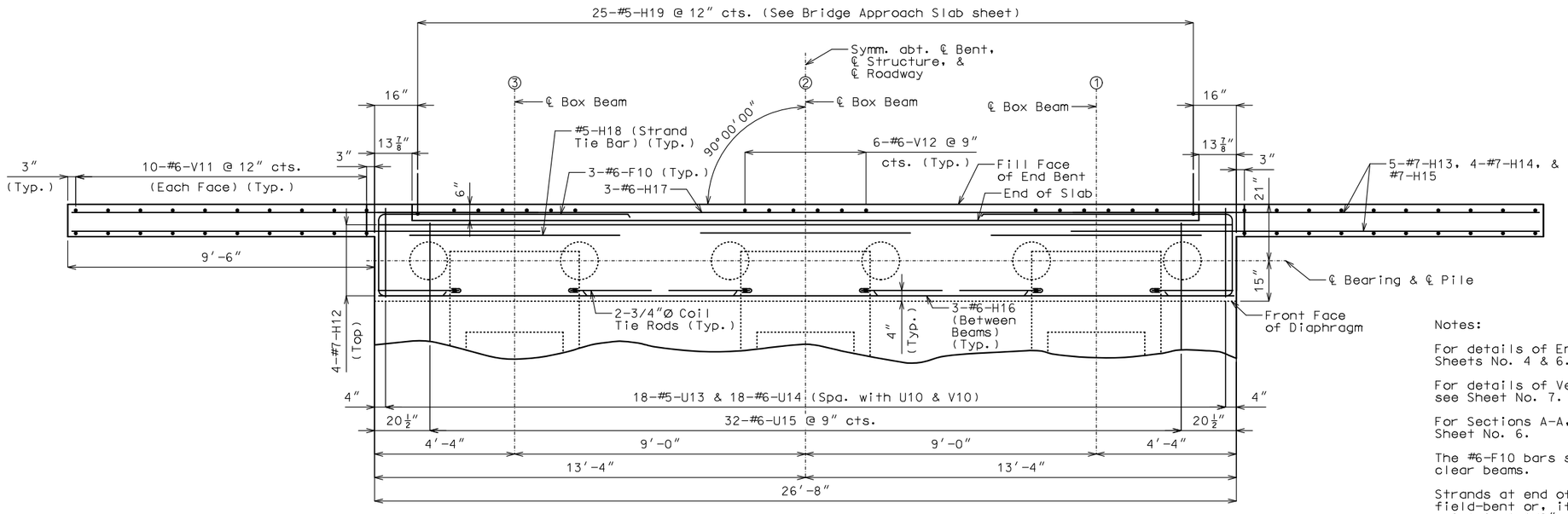


SECTION NEAR END BENT



DETAIL A



PART PLAN

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Notes:

For details of End Bents not shown, see Sheets No. 4 & 6.

For details of Vertical Drain at End Bents, see Sheet No. 7.

For Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 6.

The #6-F10 bars shall be bent in the field to clear beams.

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

For location of Coil Tie Rods and #5-H18 (Strand Tie Bar), see Sheet No. 9.

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

Detailed NOV. 2020
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Note: This drawing is not to scale. Follow dimensions.

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/12/21
ROUTE: H
STATE: MO
DISTRICT: BR
SHEET NO.: 5
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

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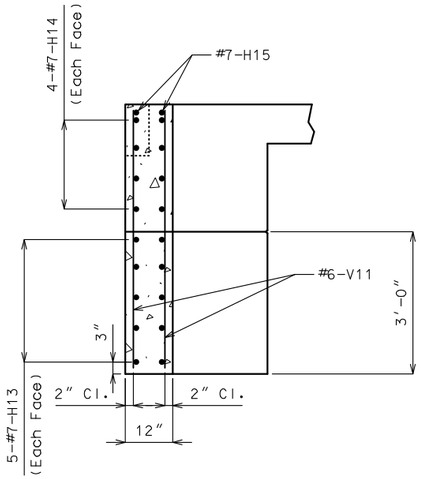
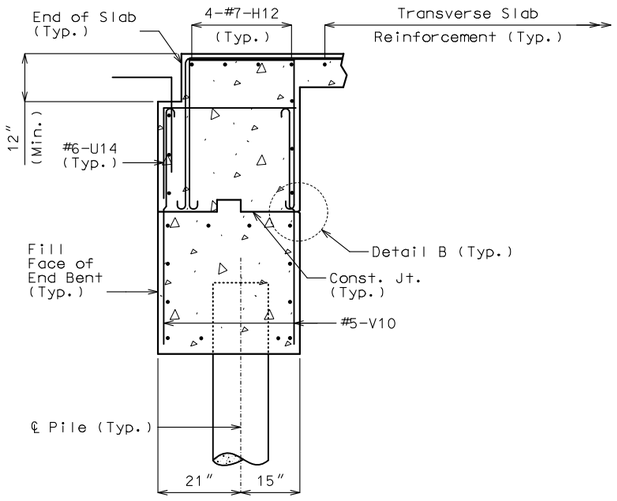
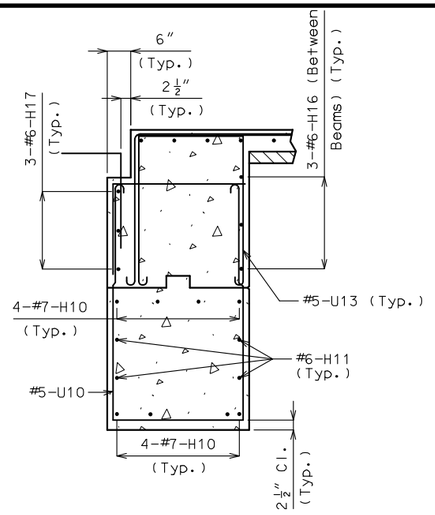


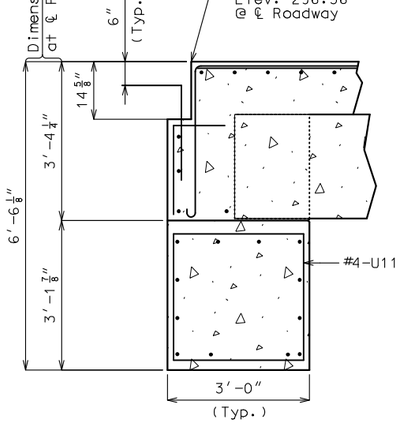
SECTION A-A



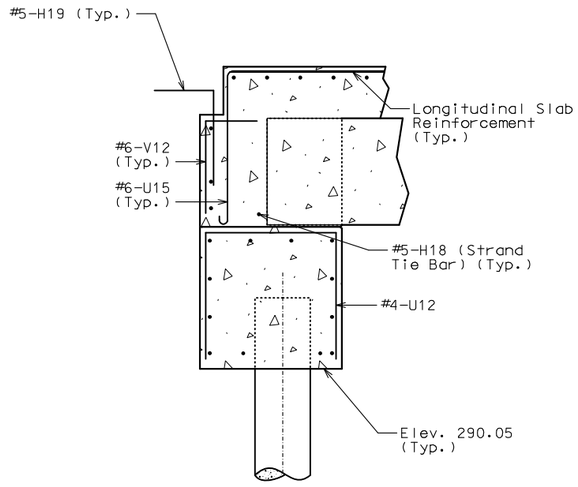
SECTION B-B



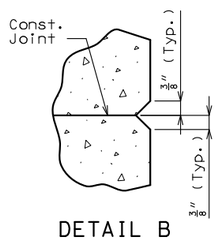
SECTION C-C



SECTION D-D



SECTION E-E



DETAIL B

Notes:

For details of End Bents not shown, see Sheets No. 4 & 5.

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

The #6-F10 bars shall be bent in the field to clear beams.

For details and reinforcement of the Type H Barrier, see Sheets No. 14 & 15.

For details of Vertical Drain at End bents, see Sheet No. 7.

For locations of Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 5.

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Detailed NOV. 2020
Checked NOV. 2020

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STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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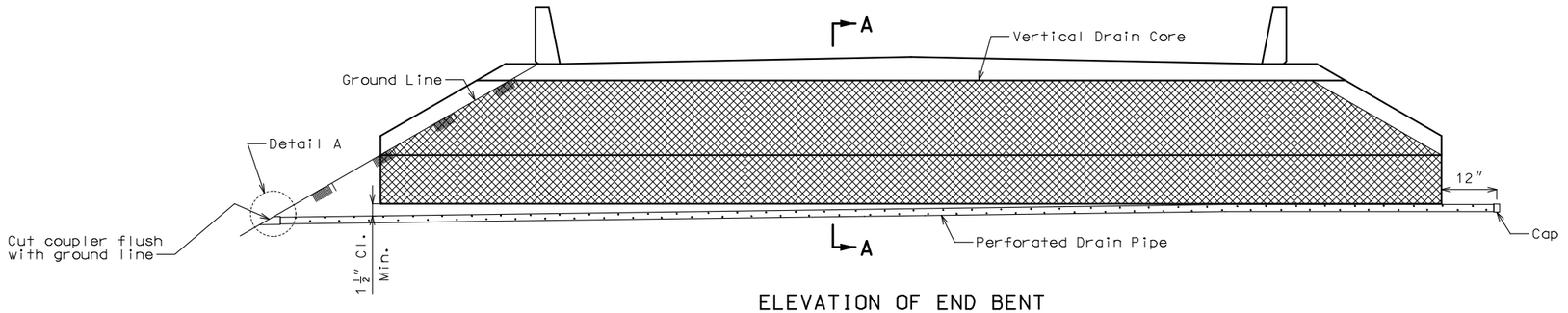
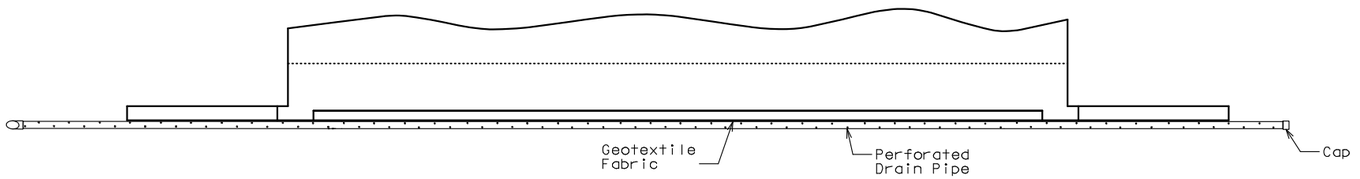
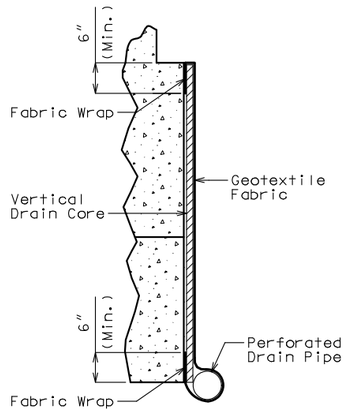


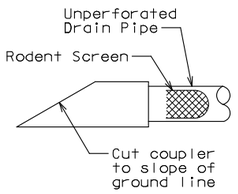
ELEVATION OF END BENT



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 fill 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 fill face of wings at the bottom of end bent. Plain pipe may be used in lieu of perforated pipe between the ground line and end of wing at the low elevation end of the drain pipe, with an added coupler (No additional payment will be made for this substitution).

VERTICAL DRAIN AT END BENTS

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
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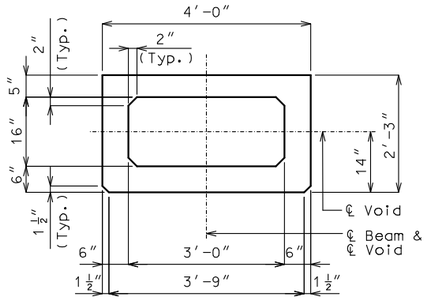
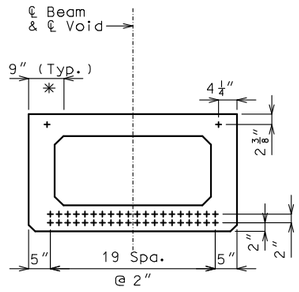


DIMENSIONS



STRAND ARRANGEMENT

(+) Indicates prestressing strand.

Use 42 strands with an initial prestress force of 1846 kips.

✳ Beam top flange shall be steel troweled to a smooth finish for 9″ at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.

Table of Strand Instructions

⊕	Cut and shop bend with 2′-0″ projection. ✳✳
⊞	Strands debonded for 4′-0″ from end of beam
⧋	Strands debonded for 8′-0″ from end of beam
⧈	Strands debonded for 14′-0″ from end of beam

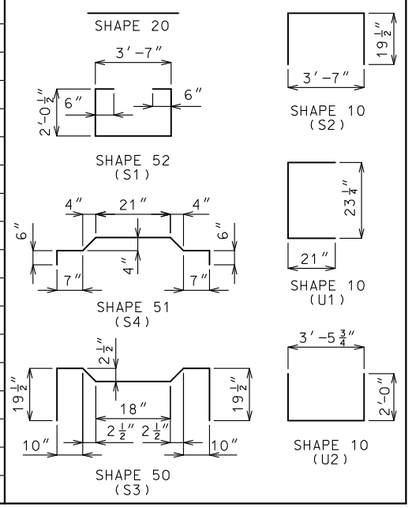
All strands are fully bonded unless otherwise noted.

✳✳ At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

BILL OF REINFORCING STEEL - EACH BEAM

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
10	5 A1	38′-6″	20
8	4 A2	38′-3″	20
23	4 C1	3′-7″	20
112	5 S1	8′-3″	52
12	5 S2	6′-8″	10
100	5 S3	6′-9″	50
100	5 S4	4′-6″	51
12	5 U1	5′-3″	10
6	4 U2	7′-4″	10

BENDING DIAGRAM



All dimensions are out to out.

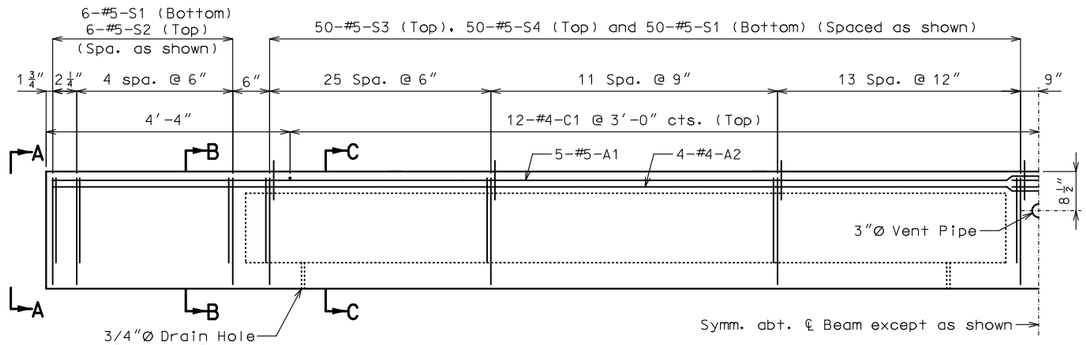
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

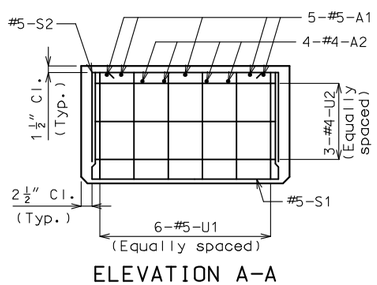
All reinforcement shall be Grade 60.

All S4 bars shall be epoxy coated.

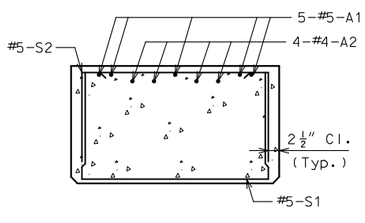


HALF ELEVATION OF BOX BEAM ALONG ℄ BEAM

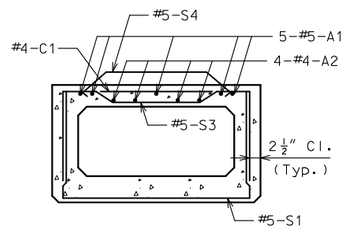
Exterior and interior box beams are the same, except for coil ties and coil inserts for slab drains. See Sheet No. 9 for spacing of U1 and U2 bars.



ELEVATION A-A
(Strands not shown for clarity)



SECTION B-B
(Strands not shown for clarity)



SECTION C-C
(Strands not shown for clarity)

DETAILS OF SPREAD BOX BEAMS SPAN (1-2)

General Notes:

Concrete for prestressed beams shall be Class A-1 with f′c = 8,000 psi and f′ci = 7,000 psi.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter conforming to AASHTO M203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

For Beam Camber Diagram, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 11.

3/4″Ø drain holes shall be provided at each end of each void, and shall be kept open at all times.

Beams shall be kept upright at all times. Support shall be within 12 inches of the ends only.

Void filler shall be non-absorptive cellular polystyrene, according to ASTM C 578, designed to withstand the forces imposed upon them during fabrication without substantial deformation such as bulging, sagging, or collapsing. Cardboard void filler will not be allowed. The outside dimensions of void filler shall be as shown on the plans. When two or more sections of void filler are used to make up a required length, they shall be effectively taped or spliced together.

Beams shall be finished similarly in accordance with Sec 1029, except as noted.

Work this sheet with Sheet No. 9.

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/12/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 8
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

NO.	DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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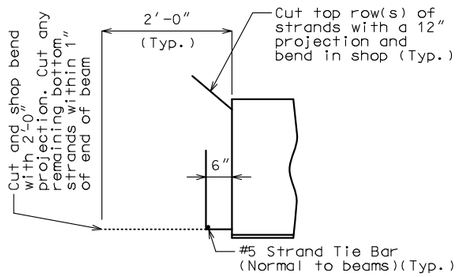
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

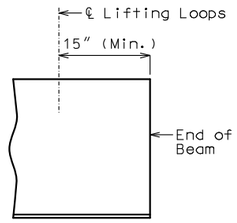
Detailed NOV. 2020
Checked NOV. 2020

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

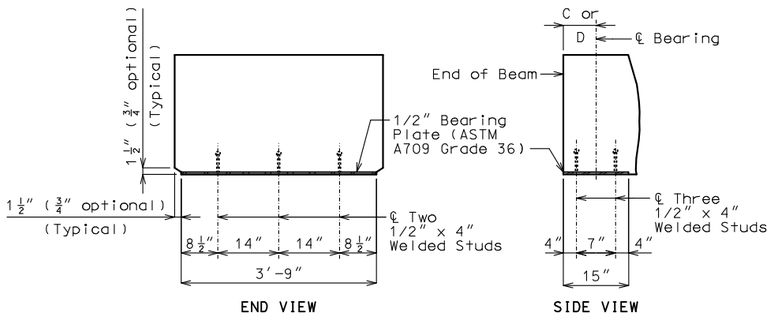


STRAND DETAILS AT BEAM ENDS

(See Table of Strand Instructions)



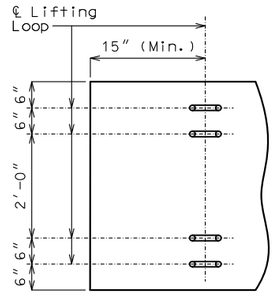
LOCATION OF LIFTING LOOPS



BEARING PLATE DETAILS

Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

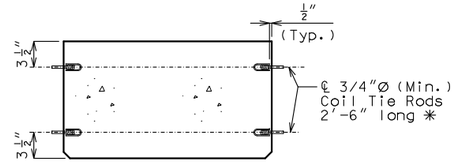
Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed box beam will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.



PART PLAN SHOWING LOCATION OF LIFTING LOOPS

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

✳ Length of coil tie rods at exterior face of exterior beams at end bents = 2'-2".



DETAILS OF COIL TIES

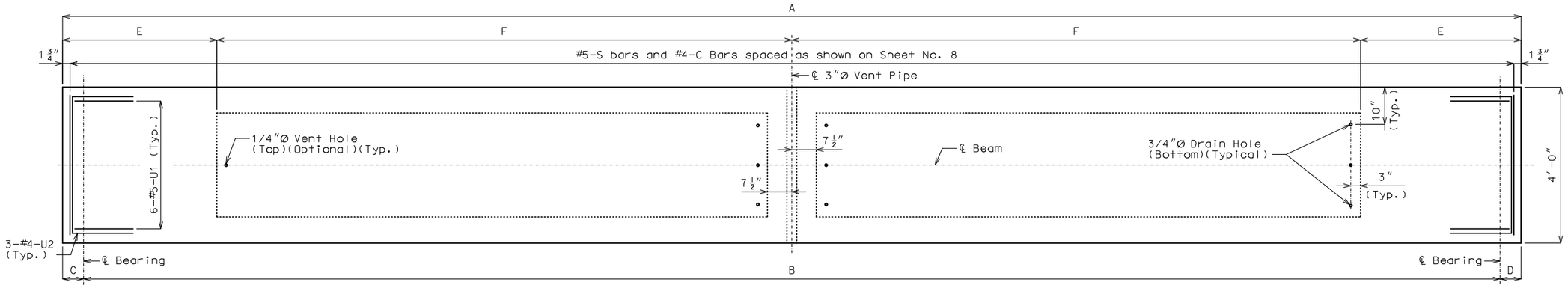
(Strands and reinforcement not shown for clarity)

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

For location of coil ties at concrete bent diaphragms, see Sheet No. 5.

Table of Dimensions for Plan of Beam						
Span	Beam Length A	℄ Brg. to ℄ Brg. B	Left ℄ Brg. C	Right ℄ Brg. D	End Length E	F
(1-2)	74'-8"	74'-0"	4"	4"	2'-6"	34'-10"



PLAN OF BEAM

(S bars, C bars and strands not shown for clarity)

Note: Work this sheet with Sheet No. 8.

DETAILS OF SPREAD BOX BEAMS

Detailed NOV. 2020
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Note: This drawing is not to scale. Follow dimensions.

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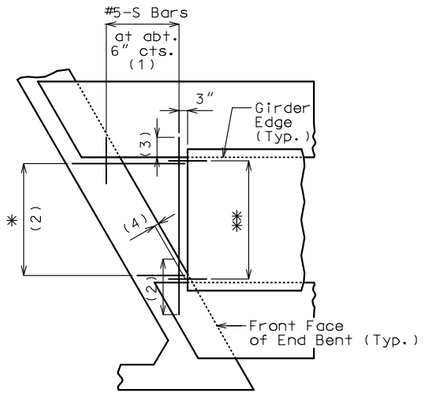
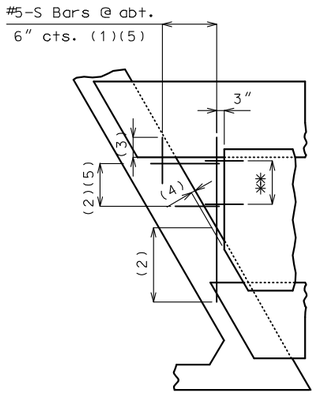
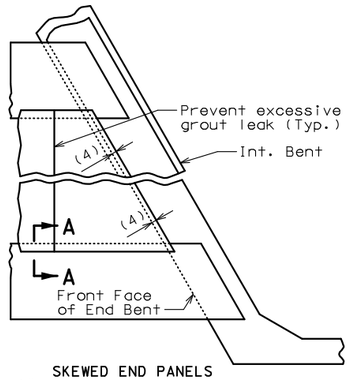
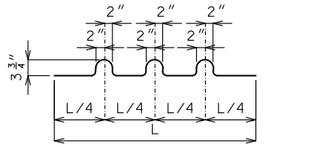






SQUARED END PANELS OR TRUNCATED END PANELS

SKEWED END PANELS

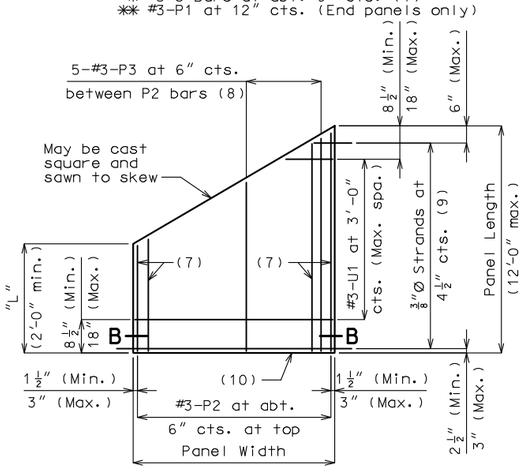


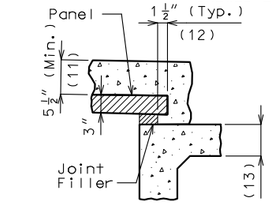
BENDING DIAGRAM FOR U1 BAR

U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.

PLAN SHOWING PANELS PLACEMENT

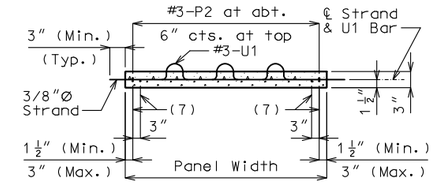
✱ #5-S Bars at abt. 9" cts. (1)
✱✱ #3-P1 at 12" cts. (End panels only)



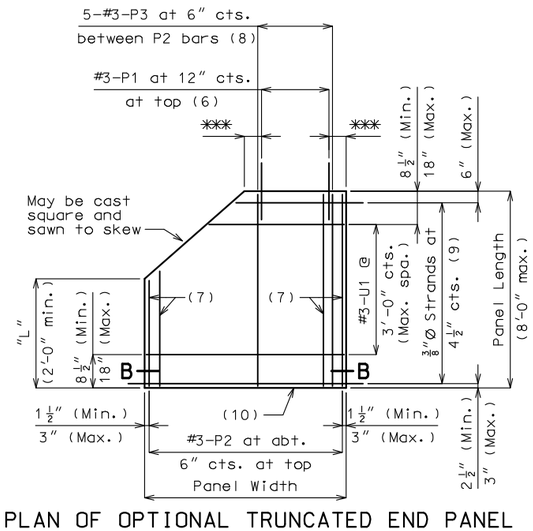


SECTION A-A

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"

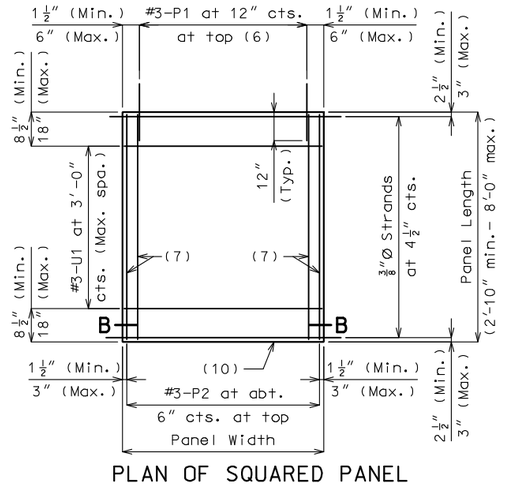


SECTION B-B



PLAN OF OPTIONAL TRUNCATED END PANEL

✱✱✱ 3" (Min.), 6" (Max.)



PLAN OF SQUARED PANEL

PLAN OF OPTIONAL SKEWED END PANEL

General Notes:

Prestressed Panels:

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

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

Reinforcing Steel:

All dimensions are out to out.

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

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. 13 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the beam to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the beam. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

Reference Notes:

Plan of Panels Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to beam camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

DETAILS OF PRESTRESSED PANELS

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER:
MOSHE L. COHEN
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DATE PREPARED: 05/12/21

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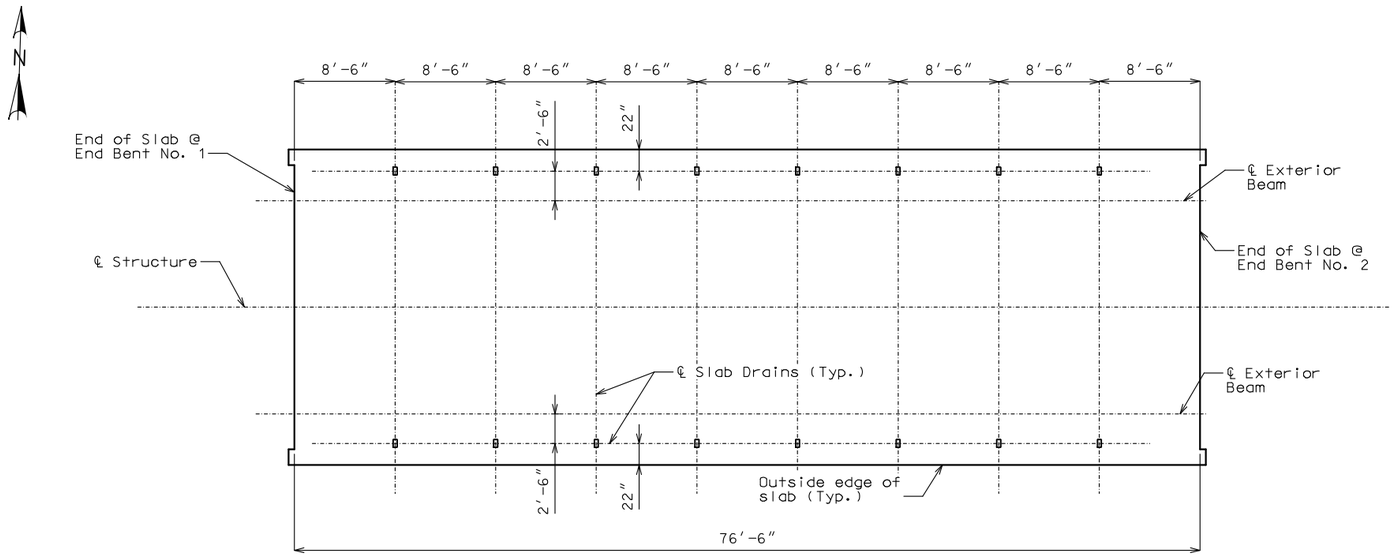
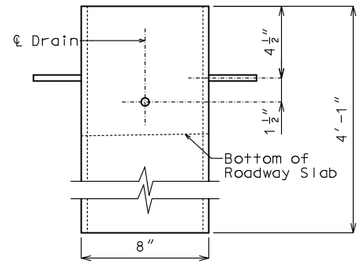
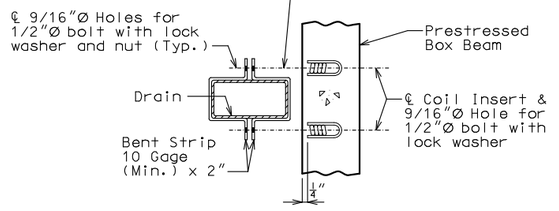


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

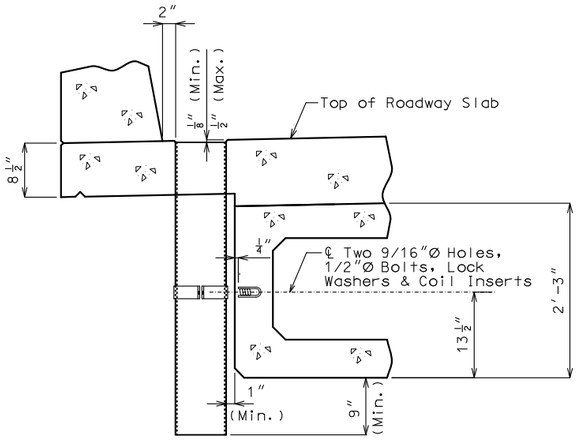
Note: Longitudinal dimensions are horizontal.



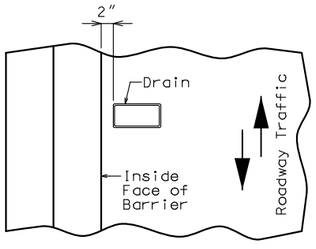
ELEVATION OF DRAIN



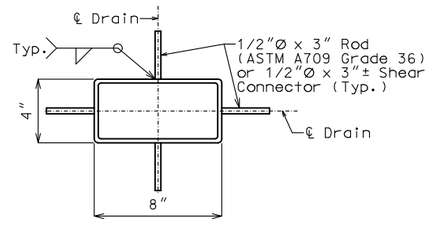
PART SECTION SHOWING BRACKET ASSEMBLY



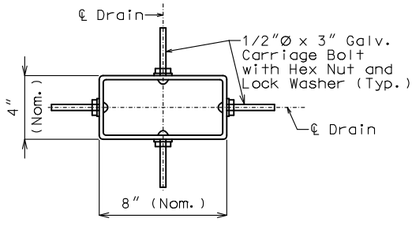
PART SECTION NEAR DRAIN



PART PLAN OF SLAB AT 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 coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.

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

All 1/2″Ø bolts shall be ASTM A307.

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

The coil inserts required for the bracket assembly attachment shall be located on the prestressed beam shop drawings.

Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolts required to attach the slab drain bracket assembly to the prestressed beam shall be supplied by the prestressed beam fabricator.

Notes for Steel Drain:

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

Outside dimensions of drains are 8″ x 4″.

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

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

Minimum reinforced wall thickness shall be 1/4 inch.

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

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

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

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

SLAB DRAIN DETAILS

Detailed NOV. 2020
Checked NOV. 2020

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

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MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER: MOSHE L. COHEN PE-2017018957

DATE PREPARED 05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	11

COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DESCRIPTION	DATE

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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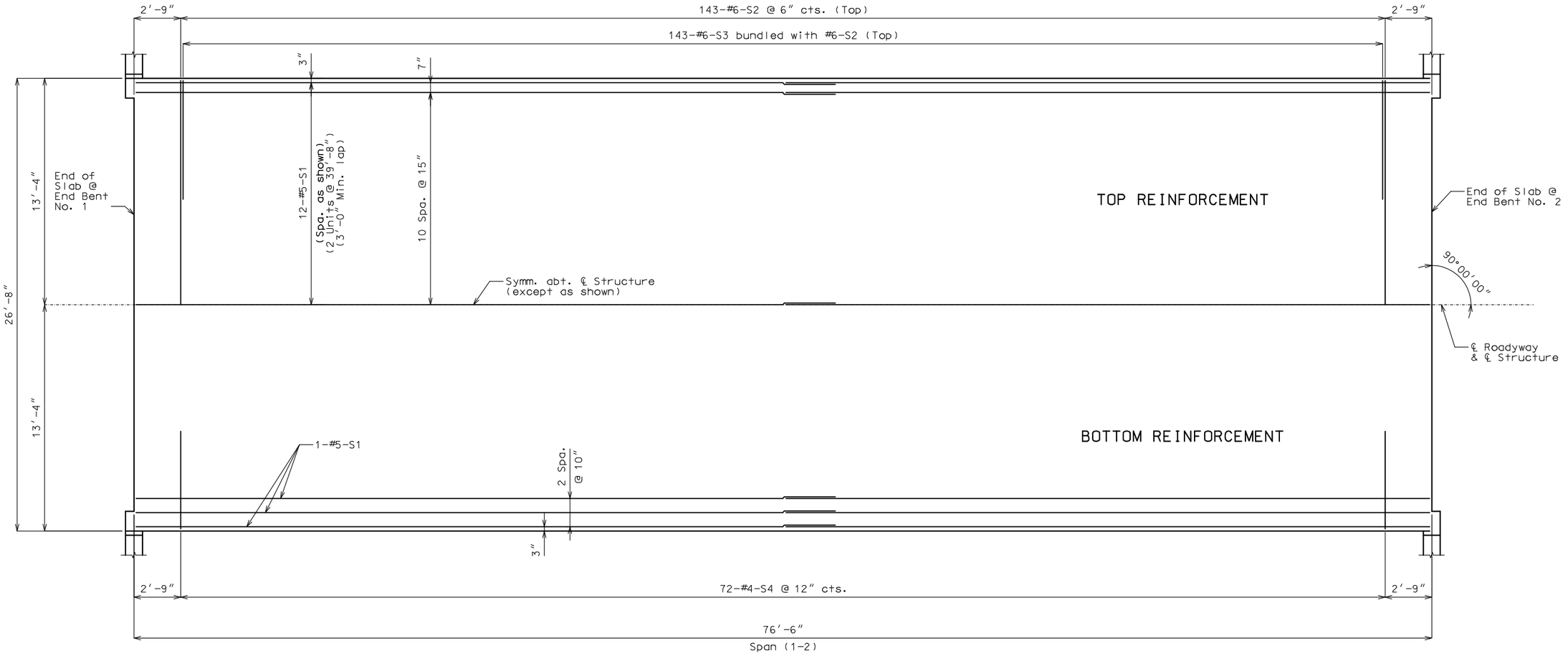

PLAN OF SLAB SHOWING REINFORCEMENT

Notes:

Longitudinal slab dimensions are measured horizontally.

For Section Thru Slab, Theoretical Slab Haunching Diagram, and Theoretical Bottom of Slab Elevations, see Sheet No. 13.

For Details and Reinforcement of Type H Barrier not shown, see Sheets No. 14 & 15.

For details and locations of Slab Drains, see Sheet No. 11.

SLAB DETAILS

Detailed NOV. 2020
Checked NOV. 2020

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PROFESSIONAL ENGINEER

ENGINEER:
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ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	12

COUNTY
NEW MADRID

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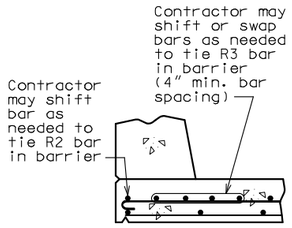
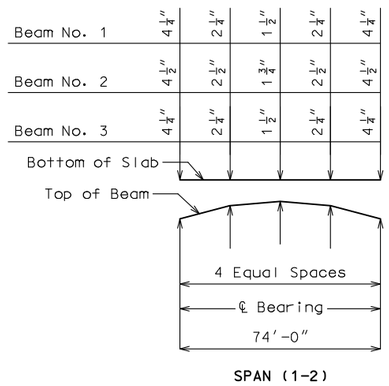
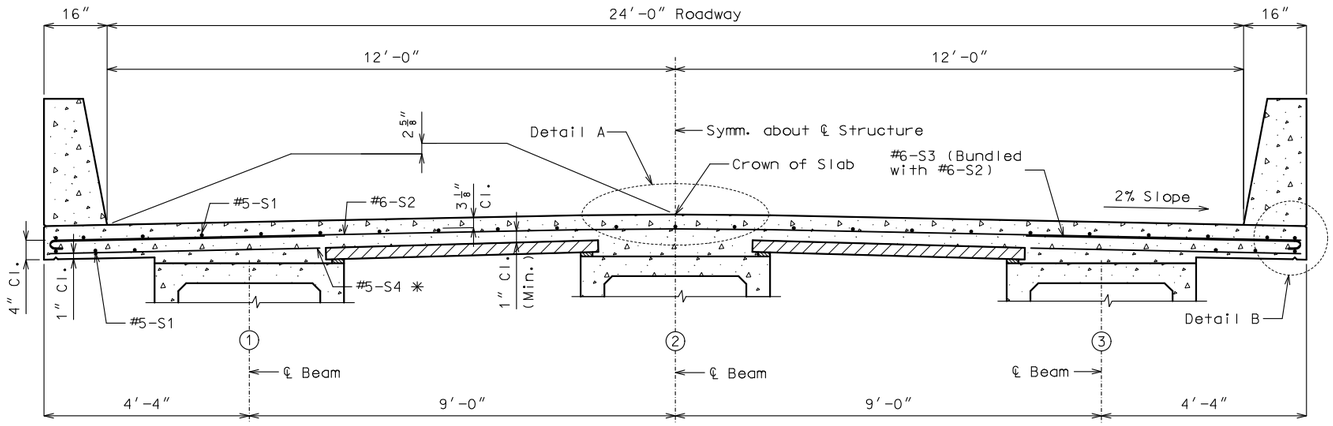


OPTIONAL SHIFTING TOP BARS AT BARRIER



SPAN (1-2)



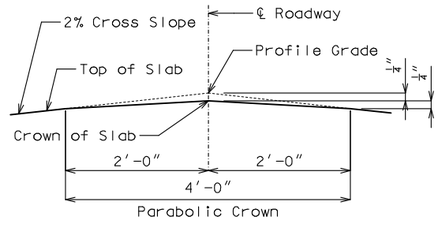
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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

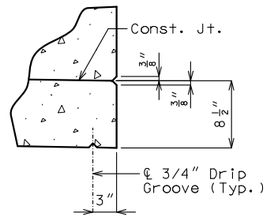
Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.

SECTION THRU SLAB

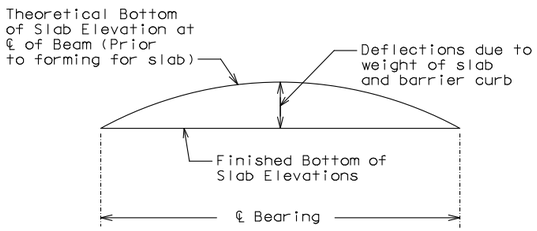
✳ Alternate bar shape available, see barrier sheet.



DETAIL A



DETAIL B

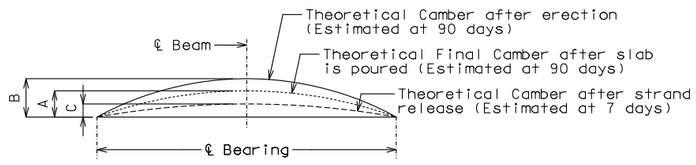


TYPICAL SLAB ELEVATIONS DIAGRAM

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

Beam Number	Span (1-2) (74'-0" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	.25	.50	.75	℄ Brg.
1	295.69	295.82	295.87	295.82	295.69
2	295.85	295.98	296.03	295.98	295.85
3	295.69	295.82	295.87	295.82	295.69

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



Beam	Span (1-2)		
	A	B	C
Exterior	3"	4 7/8"	2 3/4"
Interior	3"		

BEAM CAMBER DIAGRAM

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

0.25 pt. = 0.7125 x 0.5 pt.

SLAB DETAILS

Notes:

For details of precast prestressed panels, see Sheet No. 10.

For reinforcement of barrier not shown, see Sheets No. 14 & 15.

For Plan of Slab Showing Reinforcement, see Sheet No. 12.

The contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 25 cubic yards per hour.

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

Detailed NOV. 2020
Checked NOV. 2020

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

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PROFESSIONAL ENGINEER
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ROUTE H | STATE MO
DISTRICT BR | SHEET NO. 13
COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8989

DESCRIPTION | DATE

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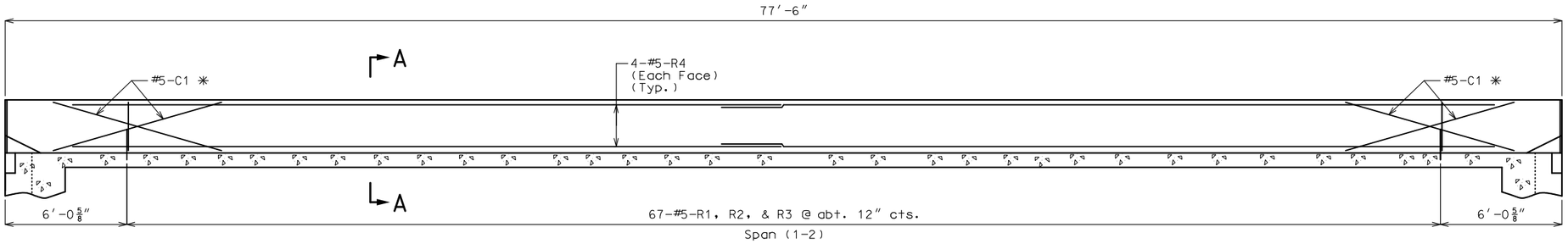
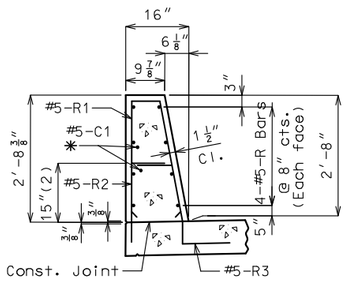


ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)

Longitudinal dimensions are horizontal.

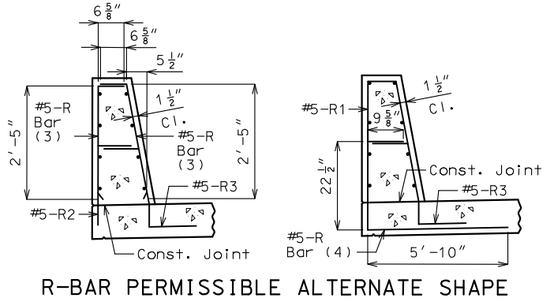


SECTION A-A

Use a minimum lap of 3′-1″ for #5 horizontal barrier bars.

The cross-sectional area above the slab is 2.89 square feet.

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

(4) The R2 bar and #5 bottom transverse slab bar in cantilever (prestressed panels only) combination may be furnished as one bar as shown, at the contractor's option.

General Notes:

✳ Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints normal to grade.

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

TYPE H BARRIER

Detailed NOV. 2020
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05/12/21

ROUTE	STATE
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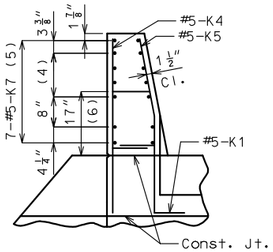
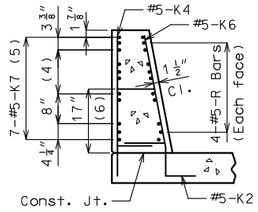
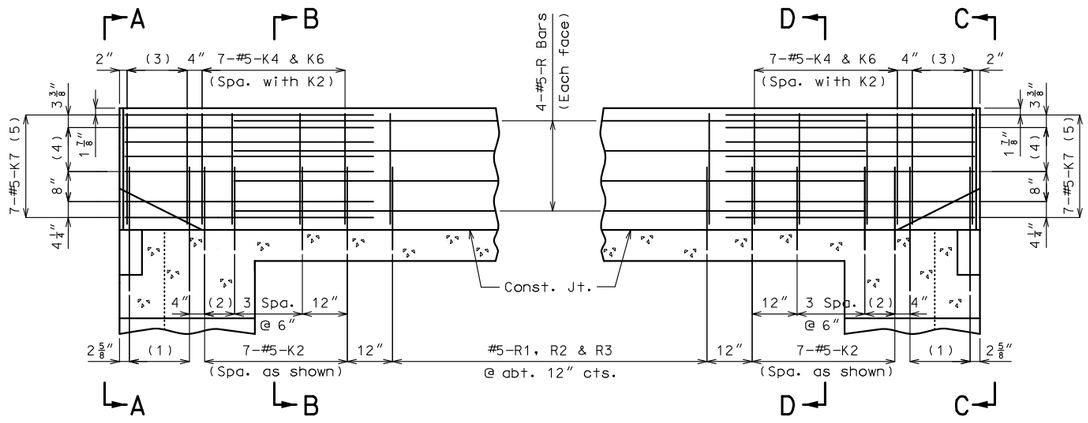


ELEVATION A-A



SECTION B-B



PART ELEVATION

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

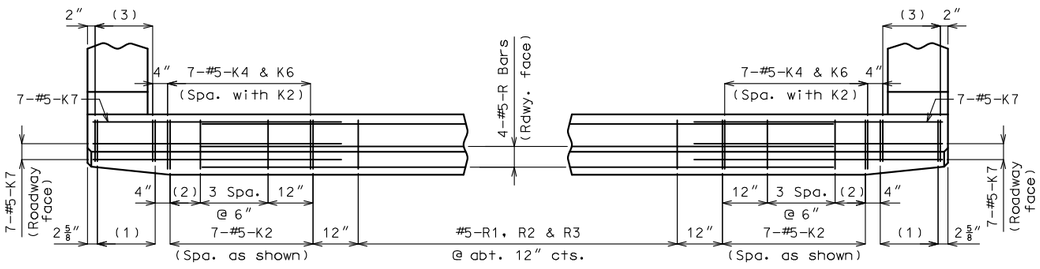
(2) 2 Spaces @ 4"

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

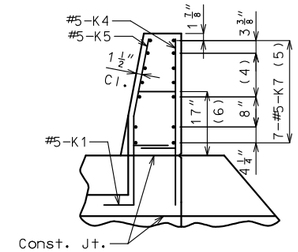
(4) 3 Spaces @ 3 13/16"

(5) Spaced as shown, each face

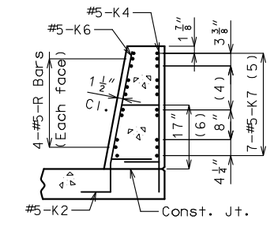
(6) To top of bar



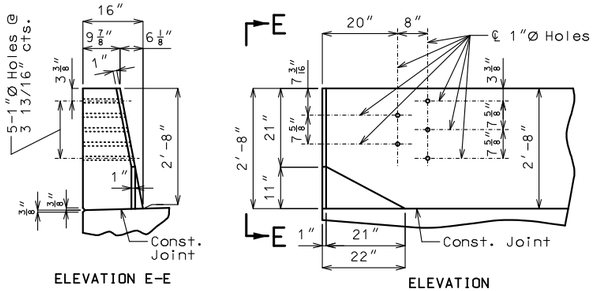
PART PLAN



ELEVATION C-C

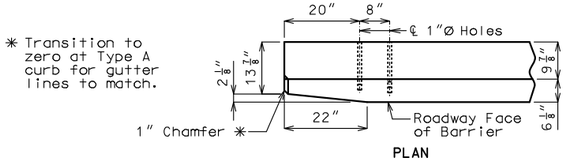


SECTION D-D



ELEVATION E-E

ELEVATION



PLAN

DETAILS OF GUARD RAIL ATTACHMENT

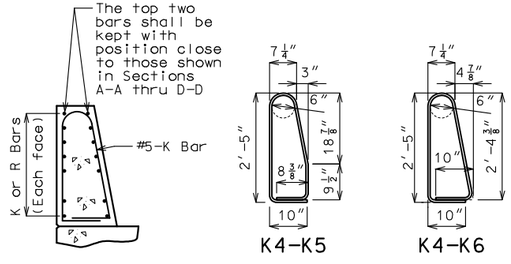
General Notes:

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.



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.

TYPE H BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed NOV. 2020
Checked NOV. 2020

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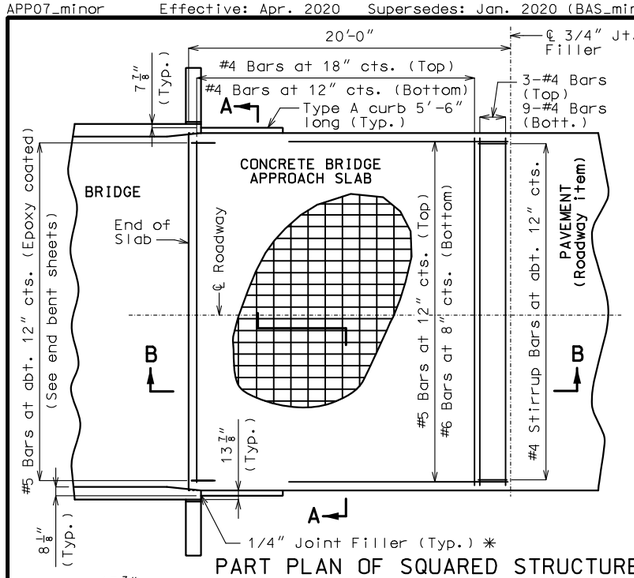
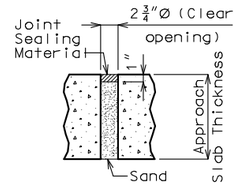
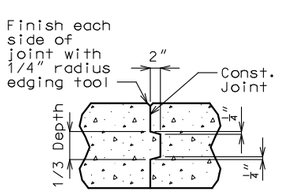


PART PLAN OF SQUARED STRUCTURE



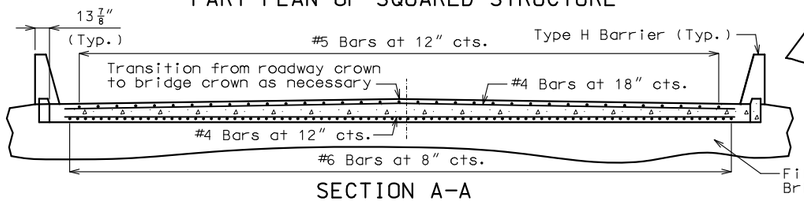
UNDERSEAL ACCESS HOLE DETAIL

(If required)



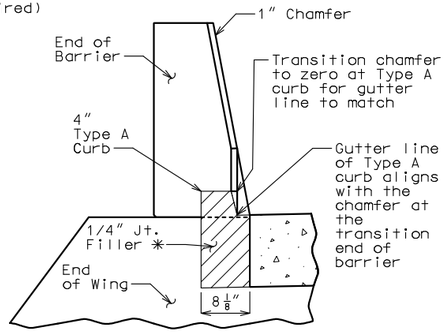
CONSTRUCTION JOINT DETAIL

(If required)



SECTION A-A

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



SECTION BETWEEN CURB AND BARRIER

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 lap splicing the #4 bars 29".

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 Road) per square yard.

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

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

General Notes:

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

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

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.

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

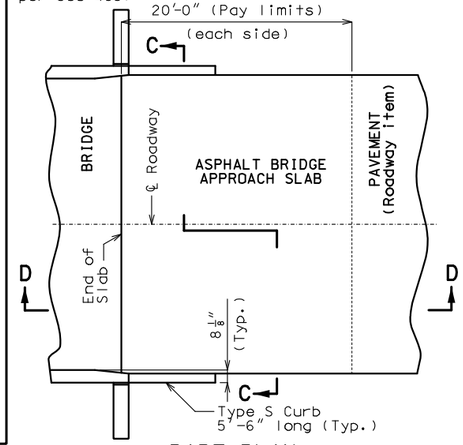
☐ Concrete Bridge Approach Slab

☐ 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, underdrain 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 Road) per square yard.

Application of tack is required between lifts per Sec 403.



PART PLAN

(1) 3-#4 Bars

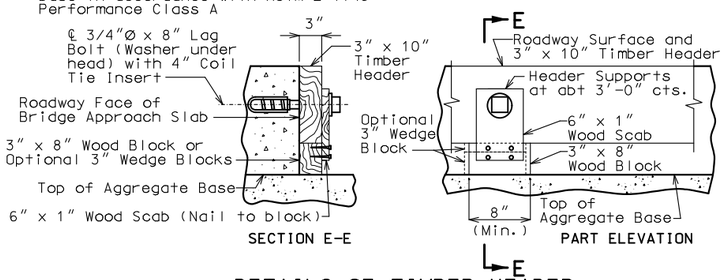
(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

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

SECTION B-B

(Integral end bent)



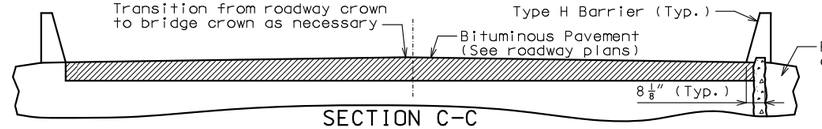
SECTION E-E

PART ELEVATION

DETAILS OF TIMBER HEADER

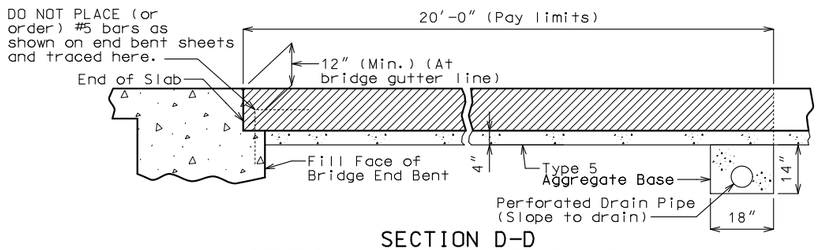
Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB



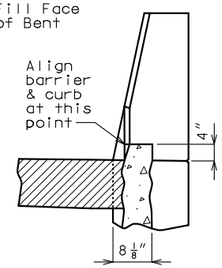
SECTION C-C

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



SECTION D-D

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)



4" TYPE S CURB

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

BRIDGE APPROACH SLAB (MINOR ROAD)

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER: MOSHE L. COHEN PE-2017018957

DATE PREPARED 05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	16

COUNTY: NEW MADRID

JOB NO.: J9S3540

CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.: A8989

DESCRIPTION	DATE

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

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

Kaskaska Engineering Group, LLC
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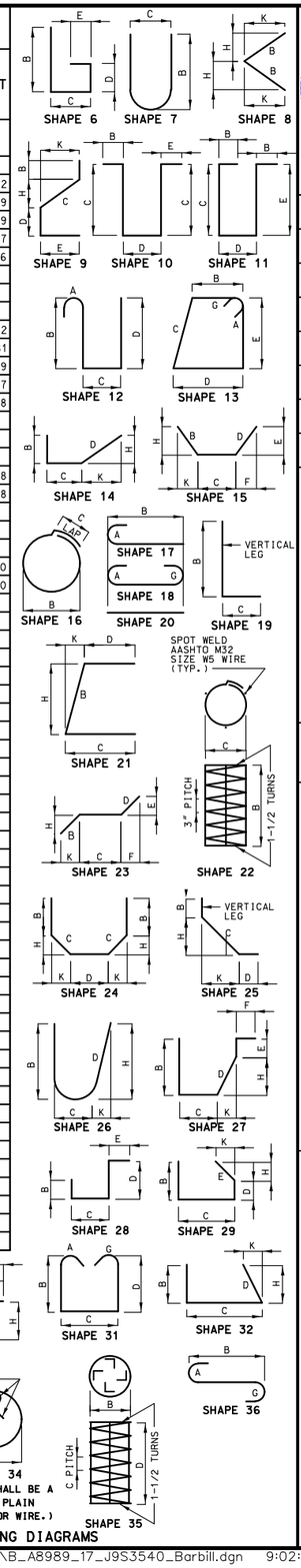
BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

BILL OF REINFORCING STEEL

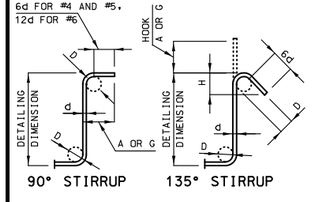
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTRUCTURE																									
			END BENTS NO.																									
			1 & 2																									
12	6	F10	DIAPHRAGM	E	11	S						7	8.500	2	9.000	2	1.000							12	7	12	3	221
16	7	H10	BEAM	E	20					26	5.000													26	5	26	5	864
8	6	H11	BEAM	E	20					26	5.000													26	5	26	5	317
8	7	H12	DIAPHRAGM	E	20					26	5.000													26	5	26	5	432
40	7	H13	WING	E	20					14	5.000													14	5	14	5	1,179
32	7	H14	WING	E	20			V	8	7	10.000													7	10	7	10	719
			INCR.= 25.375"							14	2.000													14	2	14	2	
8	7	H15	WING	E	23						13.750	9	8.000							4.000		13.125		10	10	10	7	173
12	6	H16	DIAPHRAGM	E	20					4	9.000													4	9	4	9	86
6	6	H17	DIAPHRAGM	E	20					26	5.000													26	5	26	5	238
6	5	H18	STRAND TIE	E	20					6	6.000													6	6	6	6	41
50	5	H19	APP NOTCH	E	19					2	0.000		15.000											3	3	3	1	161
96	4	P10	PILE	E	34	S					10.000													3	5	3	3	209
20	5	U10	BEAM	E	31	S				4	8.000	2	9.000	4	8.000									13	0	12	9	266
38	4	U11	BEAM	E	13	S				2	9.000	2	8.000	2	9.000	2	8.000							11	7	11	4	288
16	4	U12	BEAM	E	10	S						2	8.000	2	9.000									8	1	7	11	85
36	5	U13	DIAPHRAGM	E	31	S				3	0.000	2	3.000	3	0.000									9	2	8	11	335
36	6	U14	DIAPHRAGM	E	19	S					23.000	2	9.000											4	8	4	6	243
64	6	U15	DIAPHRAGM	E	12					3	0.000	4	7.000											8	3	8	1	777
32	5	V10	BEAM	E	17					4	8.000													5	3	5	3	175
80	6	V11	WING	E	20			V	8	3	3.750													3	4	3	4	561
			INCR.= 3.500"							5	11.750													6	0	6	0	
36	6	V12	DIAPHRAGM	E	19	S					23.000		13.000											3	0	2	10	153
72	5	V13	PILE	E	17					5	3.000													5	10	5	10	438
			SLAB																									
58	5	S1	SLAB	E	20					39	8.000													39	8	39	8	2,400
143	6	S2	SLAB	E	18					26	5.000													27	9	27	9	5,960
286	6	S3	SLAB	E	17					7	0.000													7	8	7	8	3,293
144	5	S4	SLAB	E	20					5	9.000													5	9	5	9	864
			BARRIER																									
20	5	K1	BARRIER	E	27	S				2	9.000	9.250		5.250		2	3.875	12.000		5.125		1.000		7	3	7	0	146
28	5	K2	BARRIER	E	27	S					22.250	9.250		17.250		5.250		12.000		17.000		3.250		5	6	5	2	151
48	5	K4	BARRIER	E	19	S				2	5.000	10.000												3	3	3	2	159
20	5	K5	BARRIER	E	14	S					8.375	9.500		19.375						4.250		18.875		3	1	3	0	63
28	5	K6	BARRIER	E	21	S				2	5.000	10.000								2	4.375	6.000		3	3	3	1	90
56	5	K7	BARRIER	E	20					5	6.000													5	6	5	6	321
134	5	R1	BARRIER	E	14	S				2	5.000	6.625		2	5.500					2	5.000		5.500		5	5	5	3	734
134	5	R2	BARRIER	E	19	S					20.250	9.625												2	6	2	5	338
134	5	R3	BARRIER	E	27	S						9.625		15.250		5.250		12.000		15.000		2.875		3	6	3	4	466
32	5	R4	BARRIER	E	20					37	9.000													37	9	37	9	1,260
			SLIP FORM																									
8	5	C1	SLIP FORM	E	20					12	0.000													12	0	12	0	100

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTALS																									
	4			E																								582
	5			E																								8,509
	6			E																								11,849
	7			E																								3,367
			TOTAL	E																								24,306
			SLAB ON																									
			CONCRETE BEAM																									
	4			E																								582
	5			E																								4,681
	6			E																								11,849
	7			E																								3,367
			TOTAL	E																								20,478
			BARRIER																									
	5			E																								3,728
			TOTAL	E																								3,728
			SLIP FORM																									
			OPTION																									
	5			E																								100
			TOTAL	E																								100



BENDING DIAGRAMS

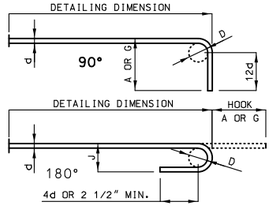


STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS

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

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

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

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

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

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

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

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

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/12/21
ROUTE: H
STATE: MO
DISTRICT: BR
SHEET NO.: 17
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DESCRIPTION | DATE

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

Kaskaska Engineering Group, LLC
208 East Main Street, Suite 100
BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

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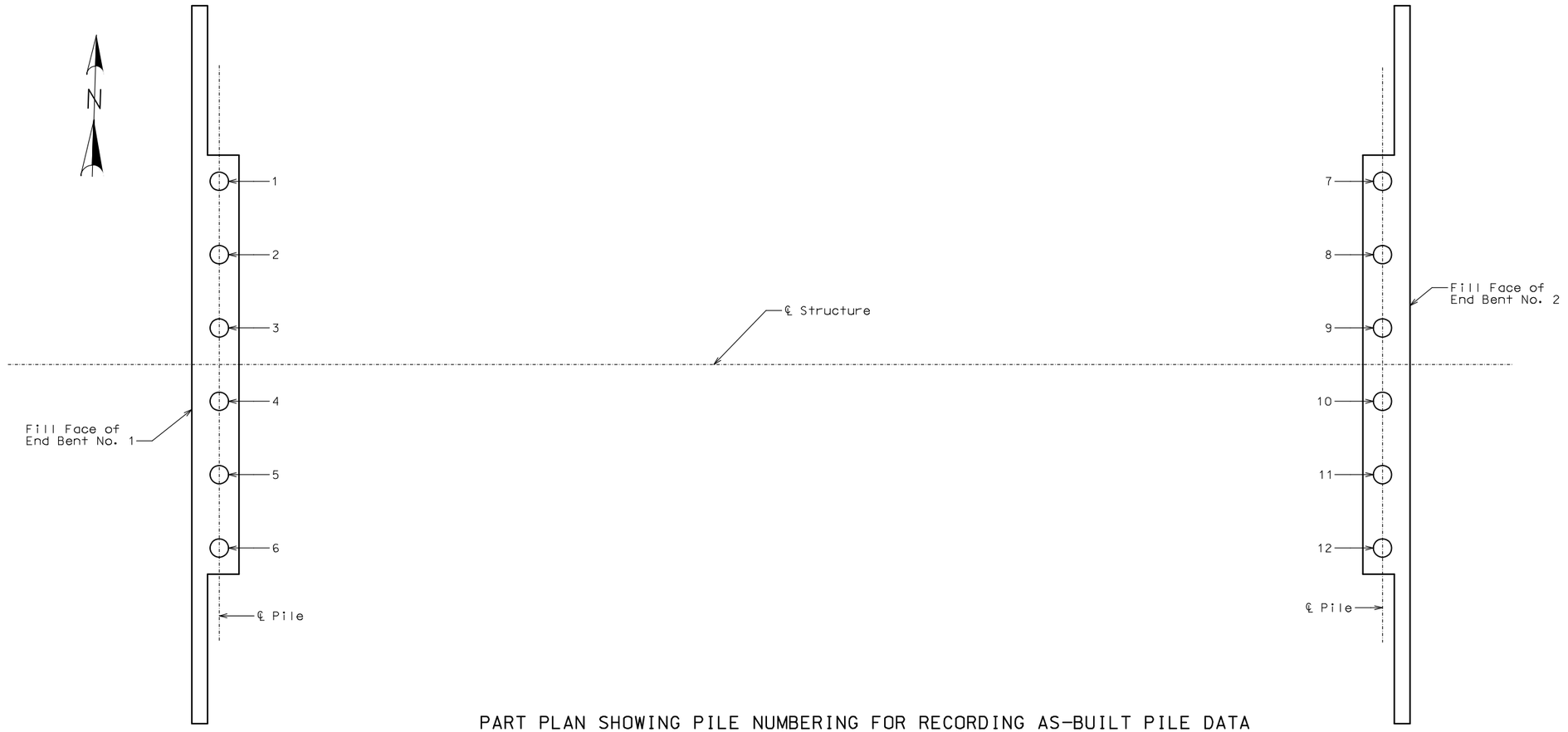

PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
5					
6					

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 2
7					
8					
9					
10					
11					
12					

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count due to minimum tip elevation requirement. A plus sign (+) shall be placed after the PDA nominal axial compressive resistance value indicating actual value is higher than PDA value.)

This sheet to be completed by MoDOT construction personnel.

PILE AS-BUILT PLAN

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER
PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	18

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8989

DESCRIPTION	DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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www.kaskaskiaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

NOTE: BORING LOGS SHOWN ARE AS PROVIDED BY OTHERS.

SMITH&CO. ENGINEERS
901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
URL: www.shsmithco.com; email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG | **BH - 1** | Page 1 of 2

Client Garver, LLC | Project No: P200051
Project Name: SE District Bridge Bundle-LO619 | Project Location: H Hwy, Mathews, MO 63867

Date(s) Drilled:	7/27/2020	Drill Rig Type	CME 750 ATV
Logged By:	MBF	Drill Bit Size/Type	2.75in ID/2.25in OD
Drilled By:	FJD	Drilling Method	Hollow Stem Augers/Mud Rotary
Reviewed/ Approved By:	WJC	Depth Drilled: 61ft	Surface Elevation: 295.80
Comments:			

Water Level: 15ft ATD
Backfill Type: Drill Cuttings, Bentonite Chips
Boring Location: 8ft East of East end of bridge and center of East bound lane of H Hwy

BOREHOLE Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	Graphic Log	MATERIAL DESCRIPTION	NOTES
0	296								Surface: Asphalt	Start Time: 9:45 AM Finish Time: 3:45 PM
									GRAVEL ~6-8in	
5	291		1	16	1 2 2	4	1.25		LEAN CLAY (CL), tan-brown to grey, soft	LL=43 PL=14 PI=29
10	286		2	17	3 5 7	12	-		SAND, tan-brown, soft, with fine grained sand, medium dense, moist	
15	281		3	13	2 5 9	14	-		grey, fine-medium grained, medium dense, saturated, with trace fine gravel	Sand heaved into auger, Drillers gel added to continue
20	276		4	15	3 9 11	20	-			
25	271									

LEGEND/NOTES (SEE GEOTECHNICAL NOTES TERMS, AND SYMBOLS FOR ADDITIONAL INFORMATION)

- 2" O.D. split-barrel sampler driven with 140-lb SPT hammer
- 3" O.D. thin-walled (Shelby) tube push sampler
- 2" O.D. Continuous rock core (NQ unless otherwise specified)
- 2-3/4" I.D. CME continuous soil sampler
- 3" O.D. split-barrel sampler with or without liners driven with 140-lb hammer

2 5 8 — Standard Penetration Test (SPT) Blow Counts with 140 pound hammer falling 30" to drive split spoon sample in 3 - 6" increments. Sum of last two numbers is the blow count per foot (or as listed) or the SPT N-value.

Free water depth in boring

ATD — At Time Drilled

RQD — Rock Quality Designation = Amount, in percent, of intact rock core pieces greater than 4 inches in length in each coring interval; calculated as the sum of the lengths of intact core, divided by the length of the core run. Recovery typically expressed in inches for soil or rock recovered in sampler. Percent recovery is the ratio of recovery to sampling interval advancement.

PP — Pocket Penetrometer Reading of unconfined strength (approximate TSF) on undisturbed samples. PP Reading on disturbed SPT samples are higher than actual.

Qu — Laboratory Unconfined Compressive Strength (PSF)

Geotechnical Borehole Log - BH1 | Print Date: 9/10/2020 | FORM REVISED: 12/05/2013 MBF

SMITH&CO. ENGINEERS
901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
URL: www.shsmithco.com email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG | **BH - 1** | Page 2 of 2

Client Garver, LLC | Project No: P200051
Project Name: SE District Bridge Bundle-LO619 | Project Location: H Hwy, Mathews, MO 63867

Drilled By: FJD | Logged By: MBF | Approved By: WJC
Comments: | Other:

BOREHOLE Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	Graphic Log	MATERIAL DESCRIPTION	NOTES
25	271									
30	266		5	17	7 11 12	23	-		SAND, grey, fine to medium grained, medium dense, saturated, with fine gravel	
35	261									
40	256		6	18	2 5 5	10	-		with fine-coarse gravel	
45	251									
50	246		7	14	9 11 12	23	-		with fine gravel	
55	241									
60	236		8	2	11 15 14	29	-			Abandoned using 2 bags of bentonite, drill cuttings
65	231								BORING TERMINATED AT 61ft, 7-27-2020	

Geotechnical Borehole Log - BH1 | Print Date: 9/10/2020 | FORM REVISED: 12/05/2013 MBF

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/19/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 19
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DESCRIPTION | DATE

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
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MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

BORING DATA

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

Detailed NOV. 2020
Checked NOV. 2020

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

NOTE: BORING LOGS SHOWN ARE AS PROVIDED BY OTHERS.

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URL: www.shsmithco.com; email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG — **BH - 2** — Page 1 of 2

Client: Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO619 — Project Location: H Hwy, Mathews, MO 63867

Date(s) Drilled:	7/28/2020	Drill Rig Type:	CME 750 ATV
Logged By:	MBF	Drill Bit Size/Type:	2.75in ID/2.25in OD
Drilled By:	FJD	Drilling Method:	Hollow Stem Augers/Mud Rotary
Reviewed/ Approved By:	WJC	Depth Drilled:	61ft
Comments:		Surface Elevation:	295.79

Water Level: 15ft ATD
Backfill Type: Drill Cuttings, Bentonite Chips
Boring Location: West end of bridge, ~ 30ft West of Northwest corner, center of West bound lane

BOREHOLE		SAMPLES & FIELD TESTS							MATERIAL DESCRIPTION	NOTES
Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	Graphic Log		
0	296								Surface: Asphalt	Start Time: 9:55 AM Finish Time: 3:35 PM
									GRAVEL ~8in	
5	291		1	18	2 2 4	6	3		CLAY, tan-grey, medium stiff, with sand	
10	286		2	16	4 7 9	16	-		SAND, tan-brown, fine grained, medium dense, moist	
15	281		3	15	2 6 10	16	-		medium dense, saturated	Sand heaved into augers, Drillers gel added to continue
20	276		4	15	4 8 12	20	-		with trace of fine gravel	
25	271									

LEGEND/NOTES (SEE GEOTECHNICAL NOTES TERMS, AND SYMBOLS FOR ADDITIONAL INFORMATION)

- 2" O.D. split-barrel sampler driven with 140-lb SPT hammer
- 3" O.D. thin-walled (Shelby) tube push sampler
- 2" O.D. Continuous rock core (NQ unless otherwise specified)
- 2-3/4" I.D. CME continuous soil sampler
- 3" O.D. split-barrel sampler with or without liners driven with 340-lb hammer

2 / 5 / 8 — Standard Penetration Test (SPT) Blow Counts with 140 pound hammer falling 30" to drive split spoon sample in 3 - 6" increments. Sum of last two numbers is the blow count per foot (or as listed) or the SPT N-value.

Free water depth in boring

ATD — At Time Drilled

RQD — Rock Quality Designation = Amount, in percent, of intact rock core pieces greater than 4 inches in length in each coring interval; calculated as the sum of the lengths of intact core, divided by the length of the core run. Recovery typically expressed in inches for soil or rock recovered in sampler. Percent recovery is the ratio of recovery to sampling interval advancement.

PP — Pocket Penetrometer Reading of unconfined strength (approximate TSF) on undisturbed samples. PP Reading on disturbed SPT samples are higher than actual.

Qu — Laboratory Unconfined Compressive Strength (PSF)

Geotechnical Borehole Log - BH2 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

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901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
URL: www.shsmithco.com email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG — **BH - 2** — Page 2 of 2

Client: Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO619 — Project Location: H Hwy, Mathews, MO 63867

Drilled By: FJD — Logged By: MBF — Approved By: WJC
Comments: — Other:

BOREHOLE		SAMPLES & FIELD TESTS							MATERIAL DESCRIPTION	NOTES
Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	Graphic Log		
25	271								gre	
30	266		5	15	6 6 7	13	-		SAND, grey, fine to medium grained, medium dense, with fine gravel	
35	261									
40	256		6	14	3 6 8	14	-		POORLY GRADED SAND WITH GRAVEL (SP), grey, medium to coarse grained, medium dense	w=22.7%, %passing: #4 - 78, #10 - 70, #40 - 8, #200 - 1
45	251									40-50ft significant gravel
50	246		7	14	7 10 10	20	-		medium grained, medium dense, with fine gravel and lignite	
55	241									
60	236		8	12	10 14 14	28	-		medium to coarse grained, medium dense, with fine gravel	Abandoned using 2 bags of bentonite, drill cuttings
									BORING TERMINATED AT 61ft, 7-28-2020	
65	231									

Geotechnical Borehole Log - BH2 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

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STATE OF MISSOURI — MOSHE L. COHEN — NUMBER PE-2017018957 — PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/19/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 20
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8989

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
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MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

BORING DATA

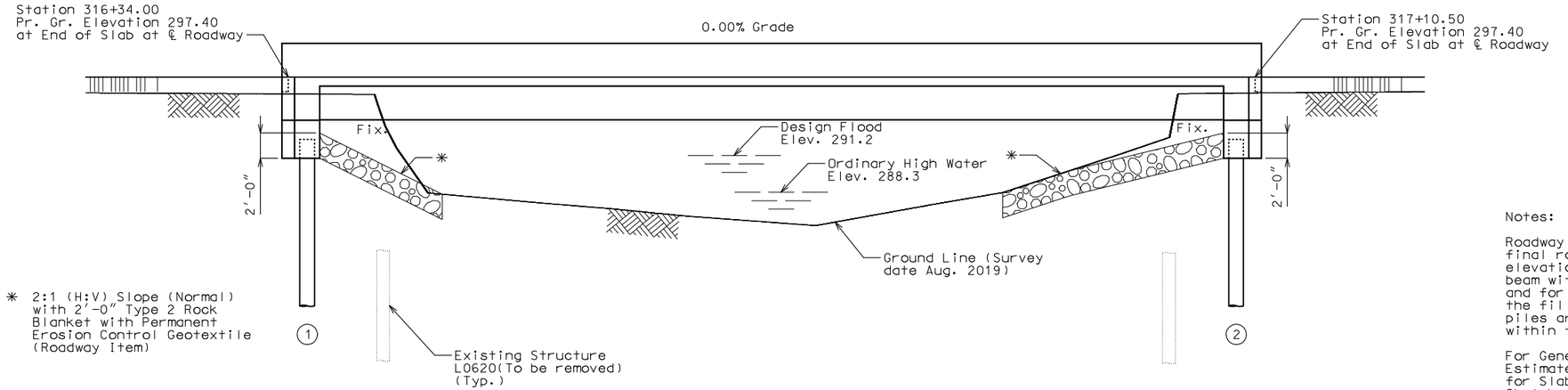
Note: For locations of borings, see Sheet No. 1.

Detailed NOV. 2020
Checked NOV. 2020

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

SEC/SUR 31 & 6 TWP 25N & 24N RGE 14E

(74′) PRESTRESSED CONCRETE SPREAD BOX BEAM SPAN

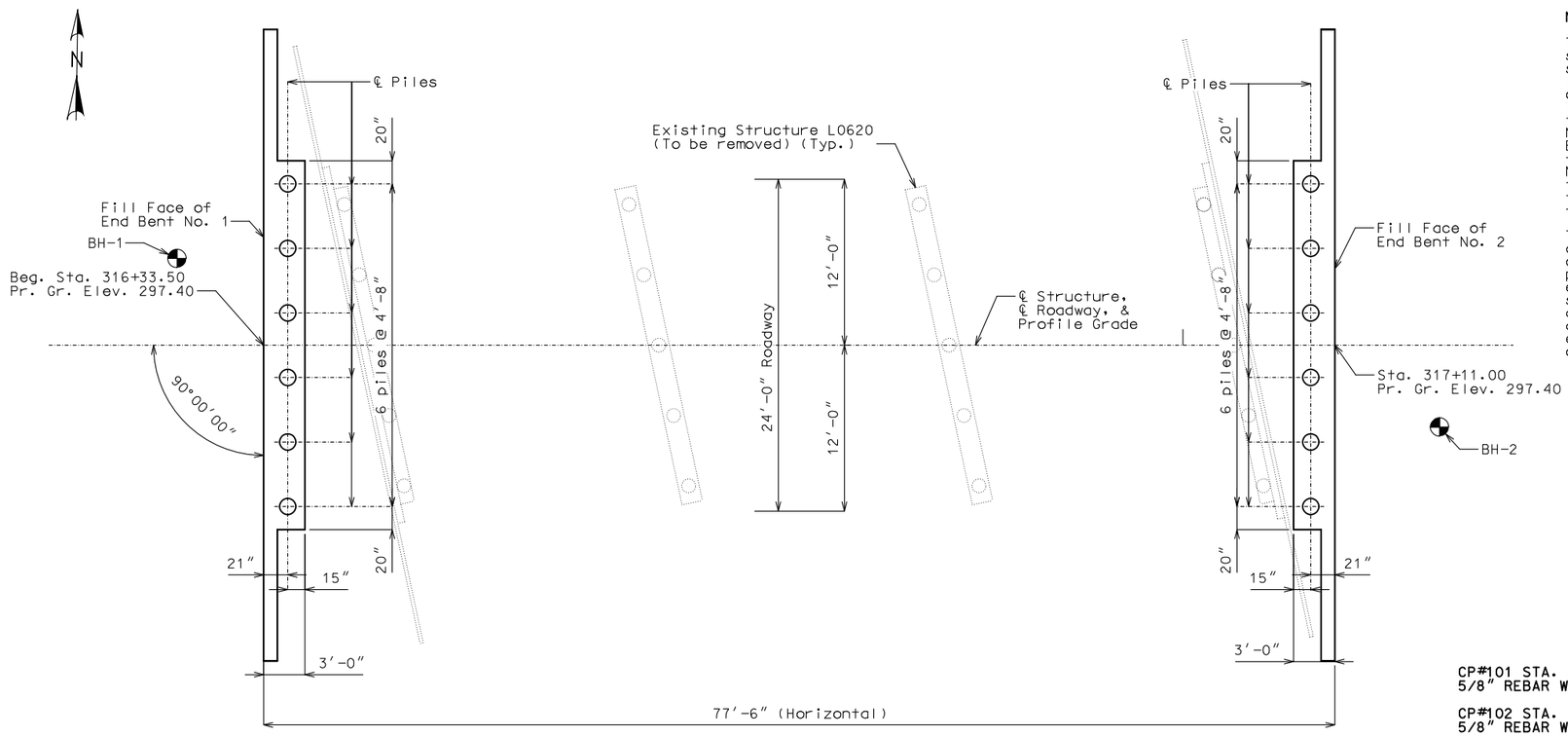


GENERAL ELEVATION

Notes:

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

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



SPAN (1-2)

PLAN

Indicates location of borings.

Notice and Disclaimer Regarding Boring Log Data

The locations of all subsurface borings for this structure are shown on the plan sheets for this structure. The boring data for all locations indicated, as well as any other boring logs or other factual records of subsurface data and investigations performed by the department for the design of the project, are shown on Sheets No. 19-20 and may be included in the Electronic Bridge Deliverables. They will also be available from the Project Contact upon written request. No greater significance or weight should be given to the boring data depicted on the plan sheets than is given to the subsurface data available from the district or elsewhere.

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

CP#101 STA. 317+33.71, 41.35′ RT., ELEV 294.27
5/8″ REBAR WITH PINK CAP

CP#102 STA. 313+31.87, 41.69′ RT., ELEV 293.05
5/8″ REBAR WITH PINK CAP

BRIDGE: ROUTE H OVER DRAINAGE DITCH

STATE ROUTE H FROM ROUTE I-55 TO ROUTE E
ABOUT 3.0 MILES WEST OF ROUTE I-55
STA. 316+33.50

STD. 609.00
STD. 617.10
STD. 706.35

Designed NOV. 2020
Detailed NOV. 2020
Checked NOV. 2020

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STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	1

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DESCRIPTION	DATE

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Estimated Quantities

Item		Substr.	Superstr.	Total
Class 1 Excavation	cu. yard	120		120
Removal of Bridges (L0620)	lump sum			1
Bridge Approach Slab (Minor Road)	sq. yard			109
Galvanized Cast-In-Place Concrete Piles (14 in.)	linear foot	564		564
Dynamic Pile Testing	each	2		2
Class B Concrete (Substructure)	cu. yard	21.6		21.6
Type H Barrier	linear foot		155	155
Slab on Concrete Beam	sq. yard		227	227
27 in., Prestressed Concrete Spread Box Beam	linear foot		224	224
Slab Drain	each		16	16
Vertical Drain at End Bents	each			2
Plain Neoprene Bearing Pad	each		6	6

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

All reinforcement in the end bents and all reinforcement in cast-in-place pile at end bents is included in the Estimated Quantities for Slab on Concrete Beam.

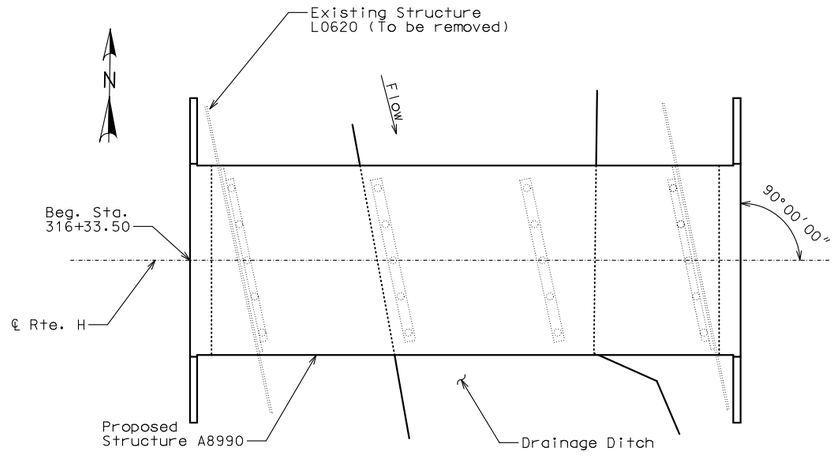
Estimated Quantities for Slab on Concrete Beam		
Item		Total
Class B-2 Concrete	cu. yard	68
Reinforcing Steel (Epoxy Coated)	pound	20,480

The table of Estimated Quantities for Slab on Concrete Beam 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 prestressed panels, conventional forms, and all concrete and epoxy coated reinforcing steel will be considered completely covered by the contract unit price for the slab. Variations may be encountered in the estimated quantities but the variations cannot be used for an adjustment in the contract unit price.

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

The prestressed panel quantities are not included in the table of Estimated Quantities for Slab on Concrete Beam.

Hydrologic Data
Drainage Area = 3.3 mi^2
Design Flood Frequency = 50 years
Design Flood Discharge = 580 cfs
Design Flood (D.F.) Elevation = 291.2 ft
Base Flood (100-year)
Base Flood Elevation = 291.8 ft
Base Flood Discharge = 690 cfs
Estimated Backwater = 0.04 ft
Average Velocity thru Opening = 3.2 ft/s
Freeboard (50-year)
Freeboard = 2.8 ft
Roadway Overtopping
Overtopping Flood Discharge = N/A
Overtopping Flood Frequency > 500 years
500-Year Flood Elevation = 292.7 ft



LOCATION SKETCH

GENERAL NOTES:

DESIGN SPECIFICATIONS:

2020 AASHTO LRFD Bridge Design Specifications (9th Ed.)

2011 AASHTO Guide Specifications for LRFD Seismic Bridge Design (2nd Ed.) and 2014 Interim Revisions (Seismic Details)

Seismic Design Category = D

DESIGN LOADING:

Vehicular = HL-93
Future Wearing Surface = 35 lb/sf
Earth = 120 lb/cf
Equivalent Fluid Pressure = 45 lb/cf (min.)
Superstructure: Non-composite for dead load.
Composite for live load.

DESIGN UNIT STRESSES:

Class B Concrete (Substructure, except CIP pile)	f'c = 3,000 psi
Class B-1 Concrete (Type H Barrier and CIP pile)	f'c = 4,000 psi
Class B-2 Concrete (Superstructure except Prestressed Box Beams and Type H Barrier)	f'c = 4,000 psi
Reinforcing Steel (Grade 60)	fy = 60,000 psi
Welded or Seamless steel shell (pipe) for CIP pile (ASTM A252 Grade 3)	fy = 45,000 psi

For precast prestressed panel stresses, see Sheet No. 10.

For Prestressed Box Beam Stresses, see Sheet No. 8.

NEOPRENE BEARING PADS:

Plain Neoprene Bearing Pads shall be 60 durometer and shall be in accordance with Sec. 716.

JOINT FILLER:

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

REINFORCING STEEL:

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

TRAFFIC HANDLING:

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

Foundation Data				
Type	Design Data		Bent Number 1	Bent Number 2
Load Bearing Pile	Pile Type and Size		CECIP 14"	CECIP 14"
	Number	ea	6	6
	Approximate Length Per Each	ft	47	47
	Pile Point Reinforcement	ea	--	--
	Min. Galvanized Penetration (Elev.)	ft	Full Length	Full Length
	Est. Max. Scour Depth 100 (Elev.)	ft	--	--
	Minimum Tip Penetration (Elev.)	ft	245	245
	Criteria for Min. Tip Penetration		Penetration of soft geotechnical layers	Penetration of soft geotechnical layers
	Pile Driving Verification Method		DT	DT
	Resistance Factor		0.65	0.65
	Minimum Nominal Axial Compressive Resistance	kip	221	221

CECIP = Closed Ended Cast-In-Place concrete pile

DT = Dynamic Testing

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
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PE-2017018957

DATE PREPARED
08/09/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	2

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
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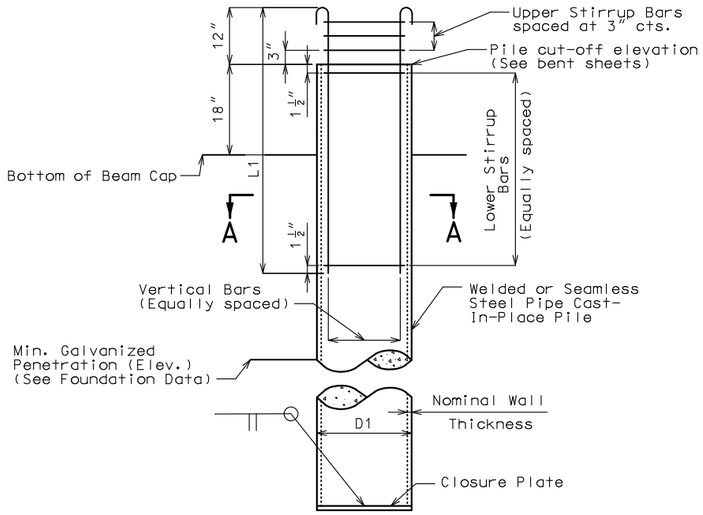
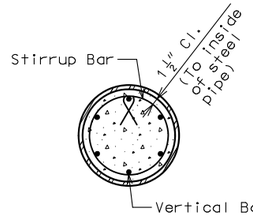
Detailed NOV. 2020
Checked NOV. 2020

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

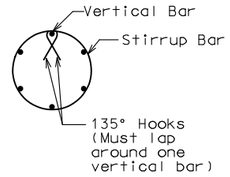
GENERAL NOTES AND QUANTITIES



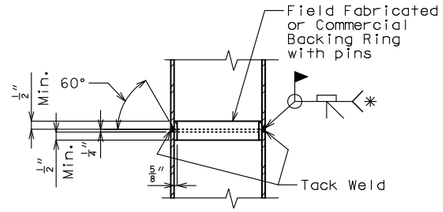
GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE WITHOUT PILE POINT REINFORCEMENT



SECTION A-A



DETAIL OF SEISMIC STIRRUP BAR



STEEL PIPE PILE SPLICE

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

Galvanized Closed Ended Cast-In-Place (CECIP) Concrete Pile Data		
Bent Number	1	2
D1, CECIP Pile (O.D.)	14"	14"
Min. Nominal Wall Thickness	0.5"	0.5"
Closure Plate Thickness	3/4"	3/4"
Pile Point Reinforcement	--	--
Vertical Bars	6-#5-V13	6-#5-V13
L1, Length of Vertical Bars	5'-3"	5'-3"
Upper Stirrup Bars	3-#4-P10	3-#4-P10
Lower Stirrup Bars	5-#4-P10	5-#4-P10

Notes:

Welded or seamless steel shell (pipe) shall be ASTM A252 Grade 3 (fy = 45,000 psi).

Concrete for cast-in-place pile shall be Class B-1.

Steel for closure plate shall be ASTM A709 Grade 50.

The minimum wall thickness of any spot or local area of any type shall not be more than 12.5% under the specified nominal wall thickness.

The contractor shall determine the pile wall thickness required to avoid damage from all driving activities, but wall thickness shall not be less than the minimum specified. No additional payment will be made for furnishing a thicker pile wall than specified on the plans.

Closure plate shall not project beyond the outside diameter of the pipe pile. Satisfactory weldments may be made by beveling tip end of pipe or by use of inside backing rings. In either case, proper gaps shall be used to obtain weld penetration full thickness of pipe. Payment for furnishing and installing closure plate will be considered completely covered by the contract unit price for Galvanized Cast-In-Place Concrete Piles.

Splices of pipe for cast-in-place concrete pile shall be made watertight and to the full strength of the pipe above and below the splice to permit hard driving without damage. Pipe damaged during driving shall be replaced without cost to the state. Pipe sections used for splicing shall be at least 5 feet in length.

The hooks of vertical bars embedded in the beam cap should not be turned outward, away from the pile core.

Closure plate need not be galvanized.

Reinforcing steel for cast-in-place piles is included in the Bill of Reinforcing Steel.

All reinforcement for cast-in-place pile is included in the estimated quantities for Slab on Concrete Beam.

For Foundation Data table, see Sheet No. 2.

STATE OF MISSOURI
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05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	3

COUNTY
NEW MADRID

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J9S3540

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DETAILS OF GALVANIZED CLOSED ENDED CAST-IN-PLACE (CECIP) CONCRETE PILE

Detailed NOV. 2020
Checked NOV. 2020

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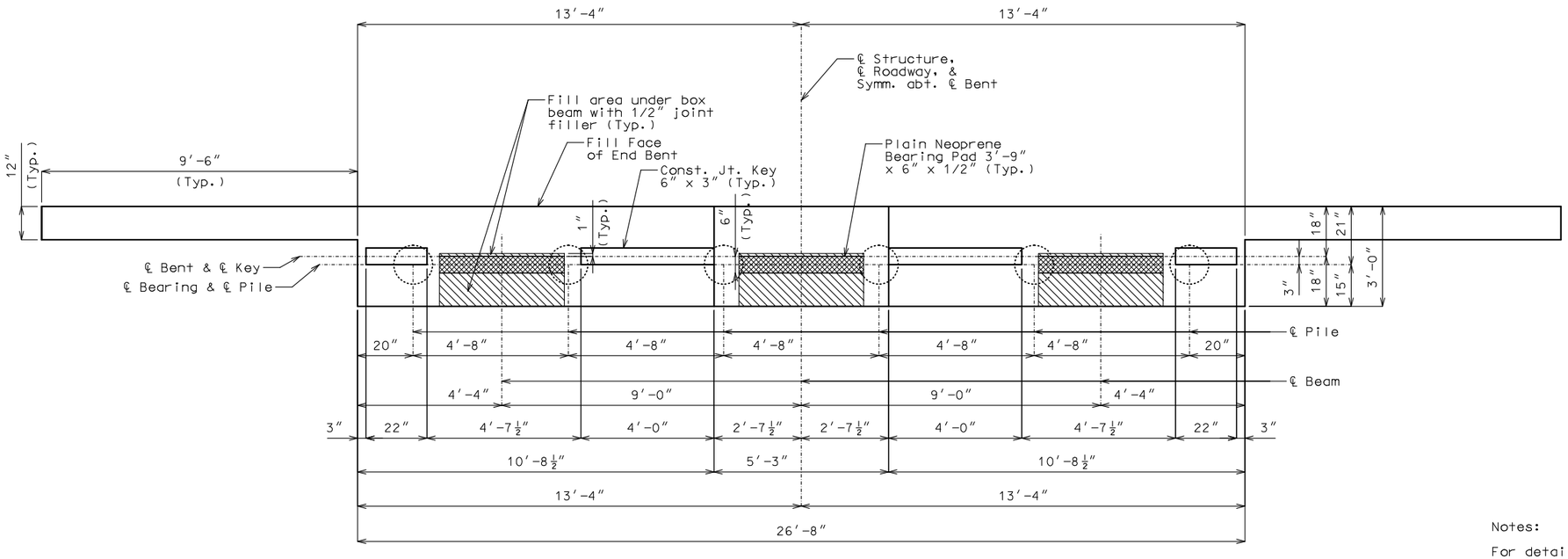
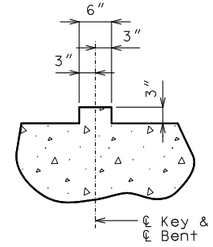


PLAN OF BEAM



SECTION THRU KEY

Notes:

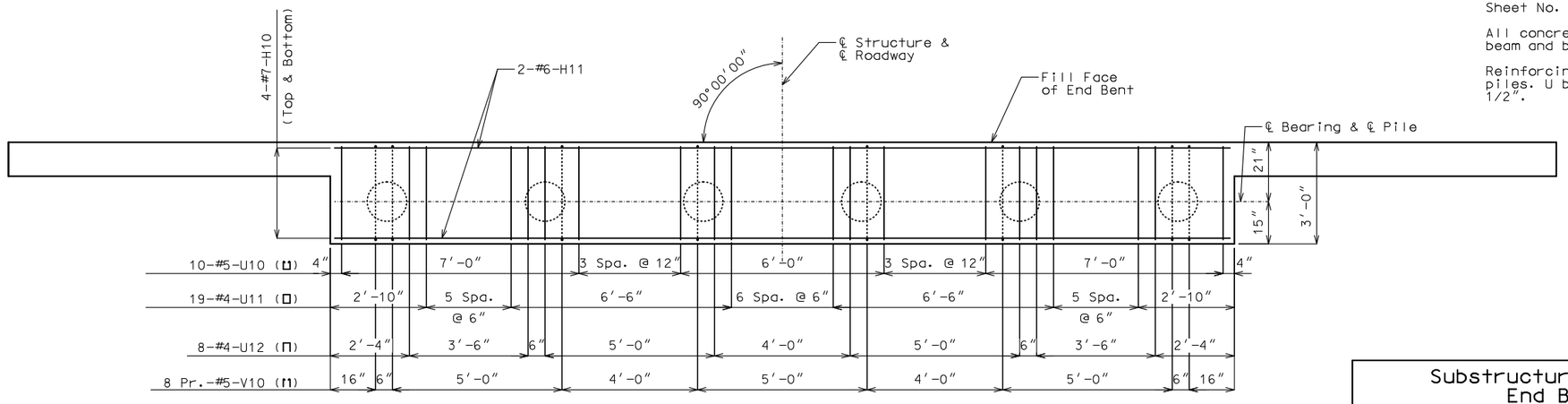
For details of End Bents not shown, see Sheets No. 5 & 6.

Strand at ends of beams shall be field bent or, if necessary, cut in field to maintain 1 1/2″ minimum clearance to fill face of end bent.

For details of Vertical Drain at End Bents, see Sheet No. 7.

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

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



PLAN OF BEAM SHOWING REINFORCEMENT

(Steps and keys not shown for clarity)
(Wing reinforcement not shown for clarity)

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Substructure Quantity Table for End Bents No. 1 & 2

Item		No. 1 Quantity	No. 2 Quantity
Class 1 Excavation	cu. yard	60	60
Galvanized Cast-in-Place Concrete Piles (14 in.)	linear foot	282	282
Dynamic Pile Testing	each	1	1
Class B Concrete (Substructure)	cu. yard	10.8	10.8

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

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 08/04/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 4
COUNTY: NEW MADRID
JOB NO.: J9S3540
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BRIDGE NO.: A8990

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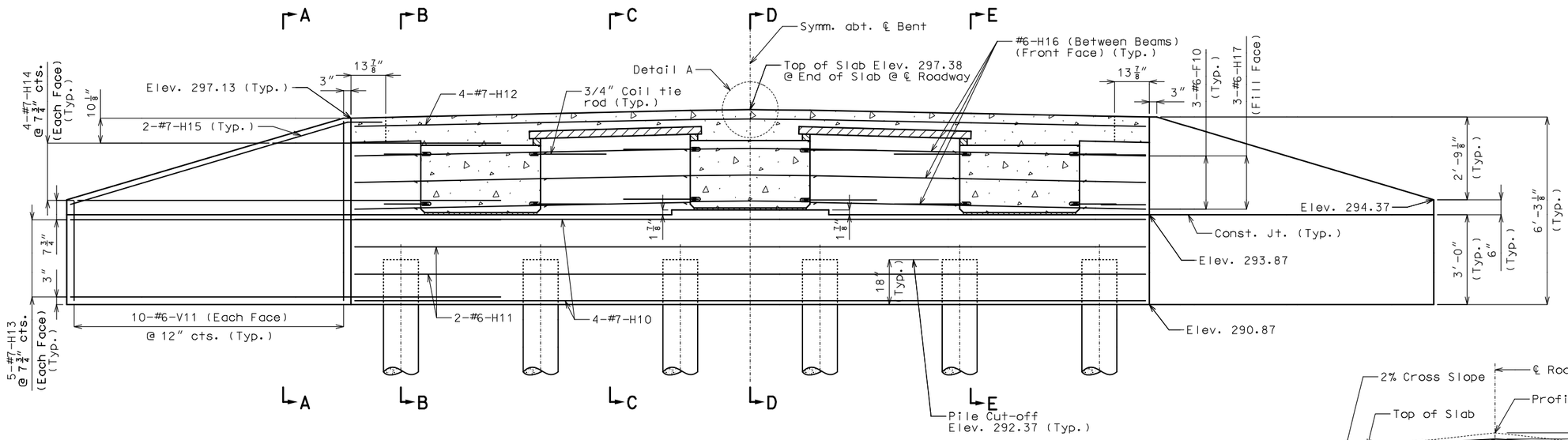
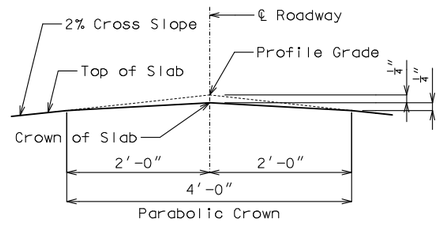
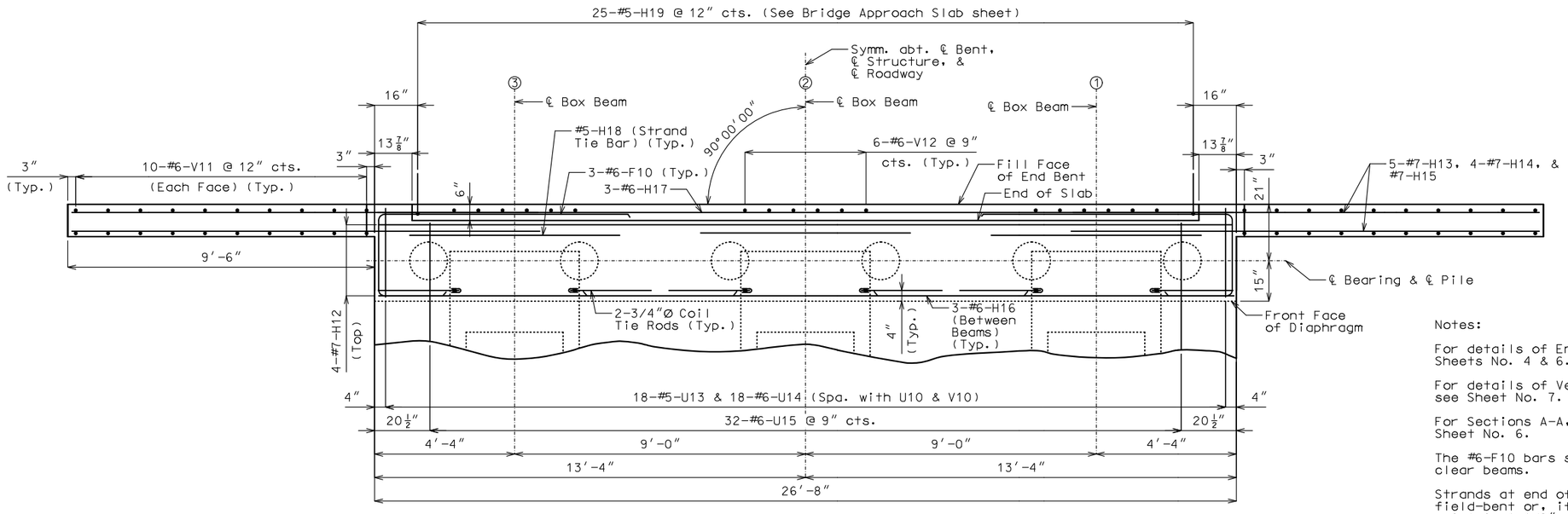


SECTION NEAR END BENT



DETAIL A



PART PLAN

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Notes:

For details of End Bents not shown, see Sheets No. 4 & 6.

For details of Vertical Drain at End Bents, see Sheet No. 7.

For Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 6.

The #6-F10 bars shall be bent in the field to clear beams.

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

For location of Coil Tie Rods and #5-H18 (Strand Tie Bar), see Sheet No. 9.

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

Detailed NOV. 2020
Checked NOV. 2020

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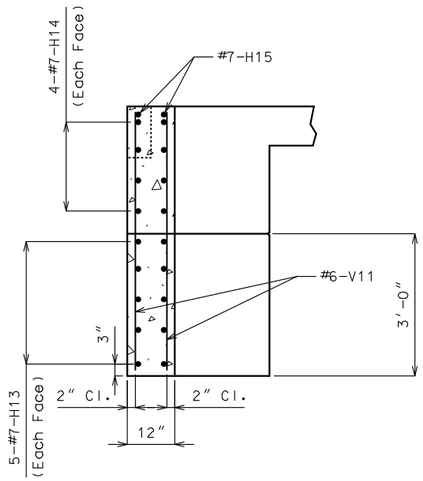
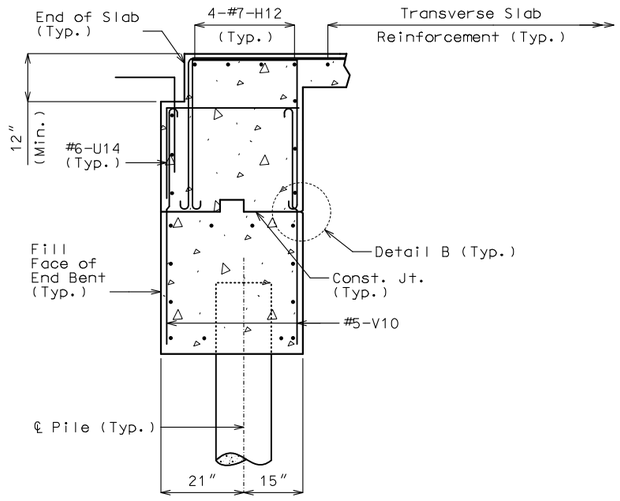
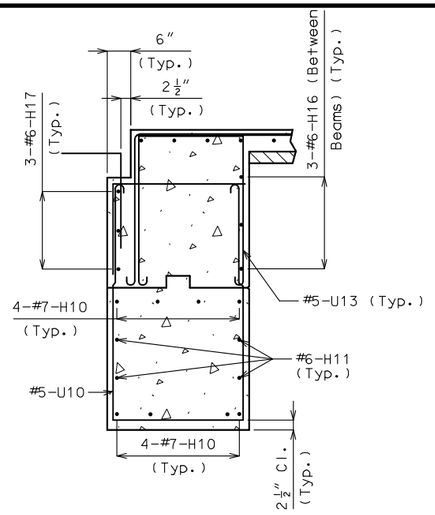


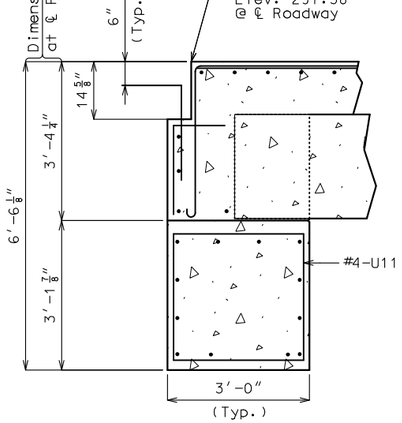
SECTION A-A



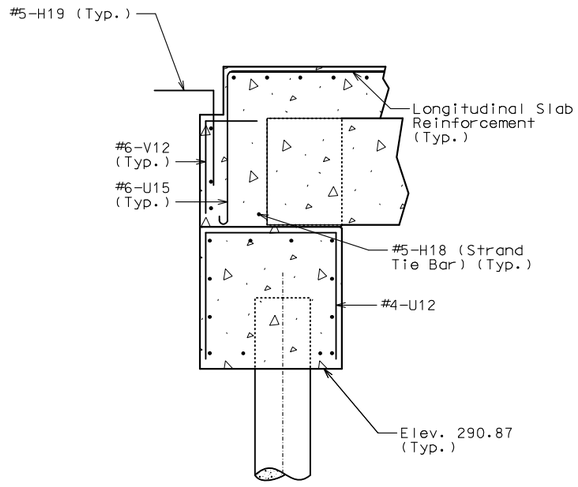
SECTION B-B



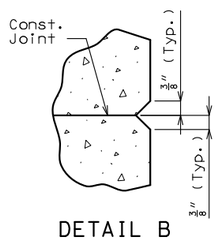
SECTION C-C



SECTION D-D



SECTION E-E



DETAIL B

Notes:

For details of End Bents not shown, see Sheets No. 4 & 5.

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

The #6-F10 bars shall be bent in the field to clear beams.

For details and reinforcement of the Type H Barrier, see Sheets No. 14 & 15.

For details of Vertical Drain at End bents, see Sheet No. 7.

For locations of Sections A-A, B-B, C-C, D-D, & E-E, see Sheet No. 5.

DETAILS OF END BENTS NO. 1 & 2

Note: End Bent No. 1 shown, End Bent No. 2 similar.

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	6

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DESCRIPTION	DATE

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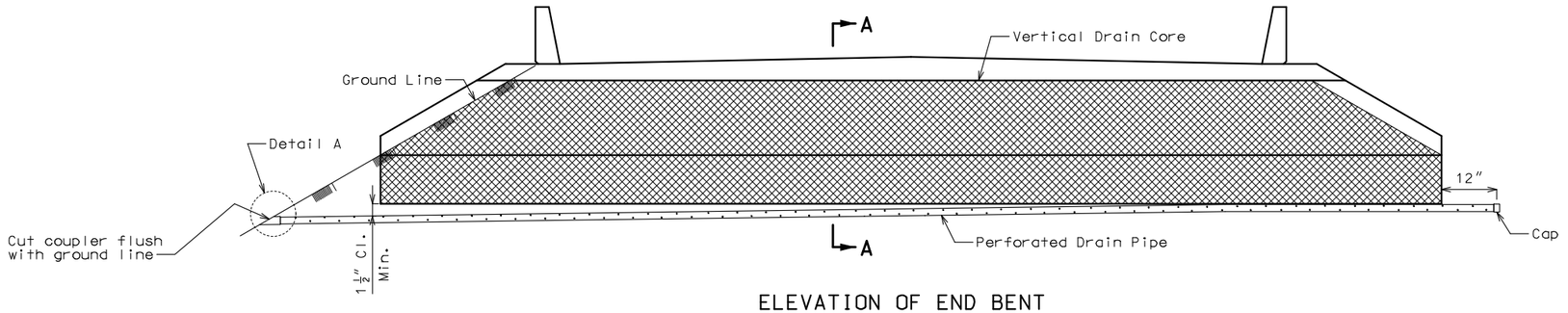
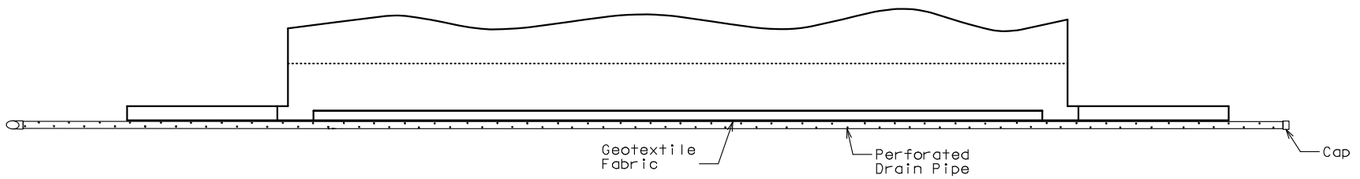
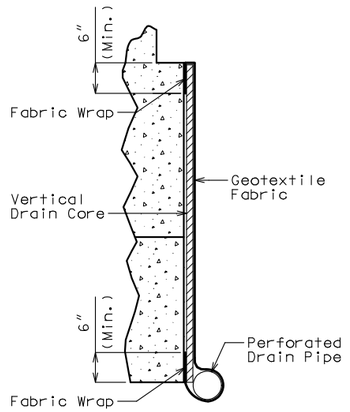


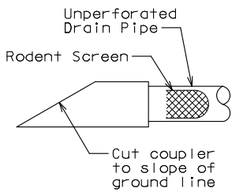
ELEVATION OF END BENT



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 fill 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 fill face of wings at the bottom of end bent. Plain pipe may be used in lieu of perforated pipe between the ground line and end of wing at the low elevation end of the drain pipe, with an added coupler (No additional payment will be made for this substitution).

VERTICAL DRAIN AT END BENTS

Detailed NOV. 2020
Checked NOV. 2020

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ENGINEER:
MOSHE L. COHEN
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DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	7

COUNTY
NEW MADRID

JOB NO.
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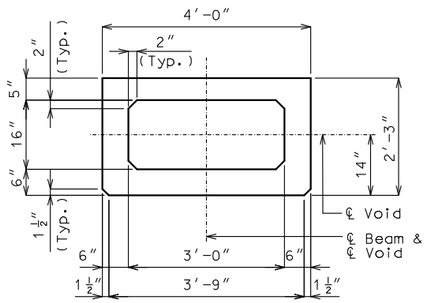
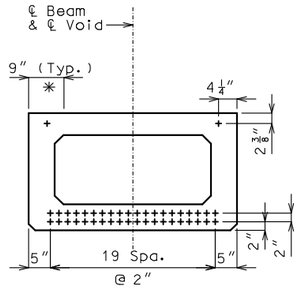


DIMENSIONS



STRAND ARRARNGEMENT

(+) Indicates prestressing strand.

Use 42 strands with an initial prestress force of 1846 kips.

✳ Beam top flange shall be steel troweled to a smooth finish for 9" at the edges, as shown. Apply two layers of 30-lb roofing felt as a bond breaker to this region only excluding where joint filler is applied. The center portion shall be rough finished by scarifying the surface transversely with a wire brush, and no laitance shall remain on the surface.

Table of Strand Instructions

⊕	Cut and shop bend with 2'-0" projection. ✳✳
⊞	Strands debonded for 4'-0" from end of beam
⧋	Strands debonded for 8'-0" from end of beam
⧈	Strands debonded for 14'-0" from end of beam

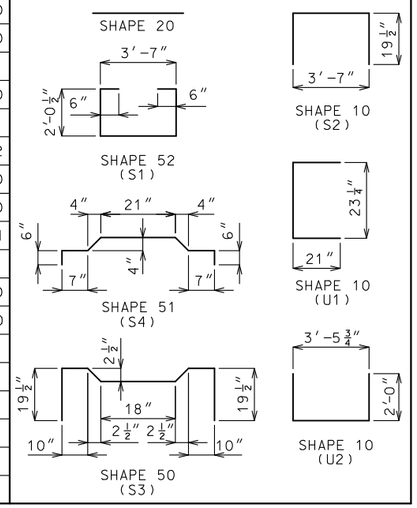
All strands are fully bonded unless otherwise noted.

✳✳ At the contractor's option the location for bent-up strands may be varied from that shown. The total number of bent-up strands shall not be changed. One strand tie bar is required for each layer of bent-up strands except at end bents which require one bar on the bottom layer of strands only. No additional payment will be made if additional strand tie bars are required.

BILL OF REINFORCING STEEL - EACH BEAM

NO.	SIZE & MARK	ACTUAL LENGTH	SHAPE
10	5 A1	38'-6"	20
8	4 A2	38'-3"	20
23	4 C1	3'-7"	20
112	5 S1	8'-3"	52
12	5 S2	6'-8"	10
100	5 S3	6'-9"	50
100	5 S4	4'-6"	51
12	5 U1	5'-3"	10
6	4 U2	7'-4"	10

BENDING DIAGRAM



All dimensions are out to out.

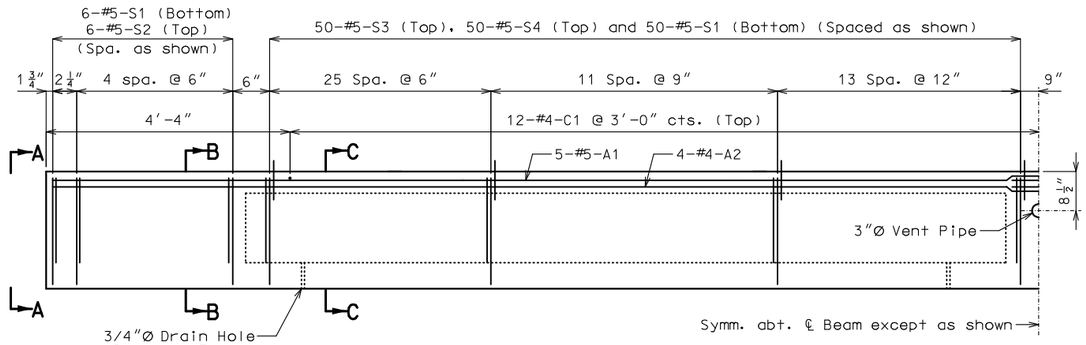
Hooks and bends shall be in accordance with the CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures, Stirrup and Tie Dimensions.

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

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

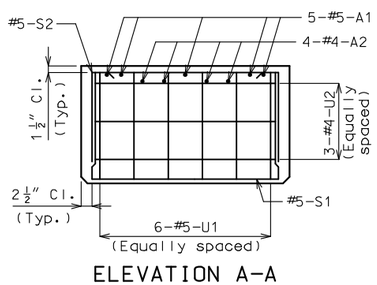
All reinforcement shall be Grade 60.

All S4 bars shall be epoxy coated.

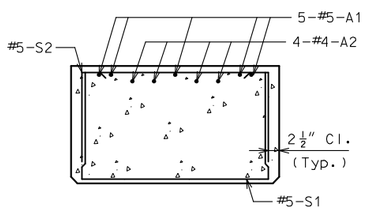


HALF ELEVATION OF BOX BEAM ALONG ℄ BEAM

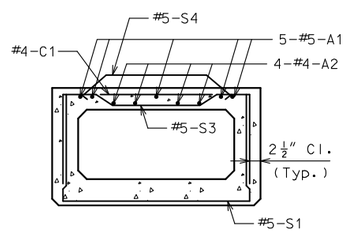
Exterior and interior box beams are the same, except for coil ties and coil inserts for slab drains. See Sheet No. 9 for spacing of U1 and U2 bars.



ELEVATION A-A
(Strands not shown for clarity)



SECTION B-B
(Strands not shown for clarity)



SECTION C-C
(Strands not shown for clarity)

General Notes:

Concrete for prestressed beams shall be Class A-1 with f'c = 8,000 psi and f'ci = 7,000 psi.

Prestressing tendons shall be uncoated, seven-wire, low-relaxation strands, 0.6 inch diameter conforming to AASHTO M203, Grade 270. Pretensioned members shall be in accordance with Sec 1029.

For Beam Camber Diagram, see Sheet No. 13.

For location of coil inserts at slab drains, see Sheet No. 11.

3/4"Ø drain holes shall be provided at each end of each void, and shall be kept open at all times.

Beams shall be kept upright at all times. Support shall be within 12 inches of the ends only.

Void filler shall be non-absorptive cellular polystyrene, according to ASTM C 578, designed to withstand the forces imposed upon them during fabrication without substantial deformation such as bulging, sagging, or collapsing. Cardboard void filler will not be allowed. The outside dimensions of void filler shall be as shown on the plans. When two or more sections of void filler are used to make up a required length, they shall be effectively taped or spliced together.

Beams shall be finished similarly in accordance with Sec 1029, except as noted.

Work this sheet with Sheet No. 9.

DETAILS OF SPREAD BOX BEAMS SPAN (1-2)

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/12/21
ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 8
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8990

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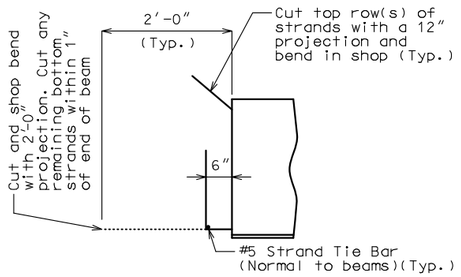
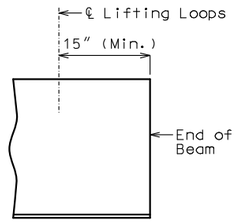
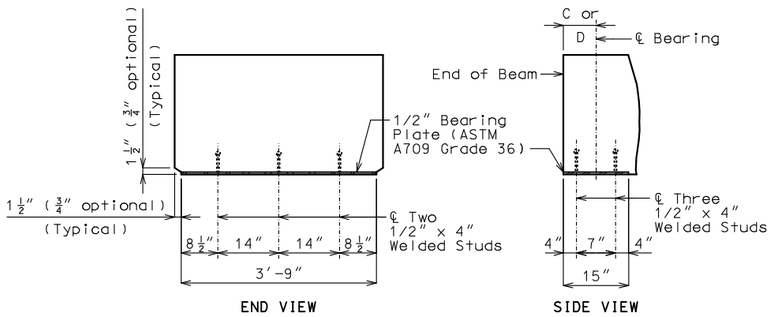


STRAND DETAILS AT BEAM ENDS

(See Table of Strand Instructions)



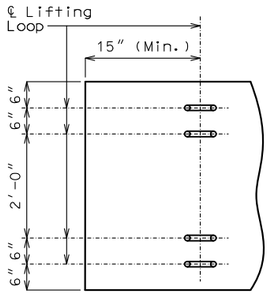
LOCATION OF LIFTING LOOPS



BEARING PLATE DETAILS

Galvanize the 1/2" bearing plate (ASTM A709 Grade 36) in accordance with ASTM A123.

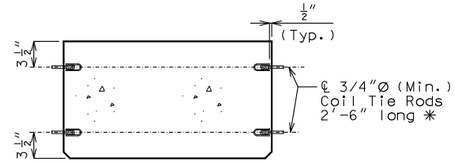
Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed box beam will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.



PART PLAN SHOWING LOCATION OF LIFTING LOOPS

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

✳ Length of coil tie rods at exterior face of exterior beams at end bents = 2'-2".



DETAILS OF COIL TIES

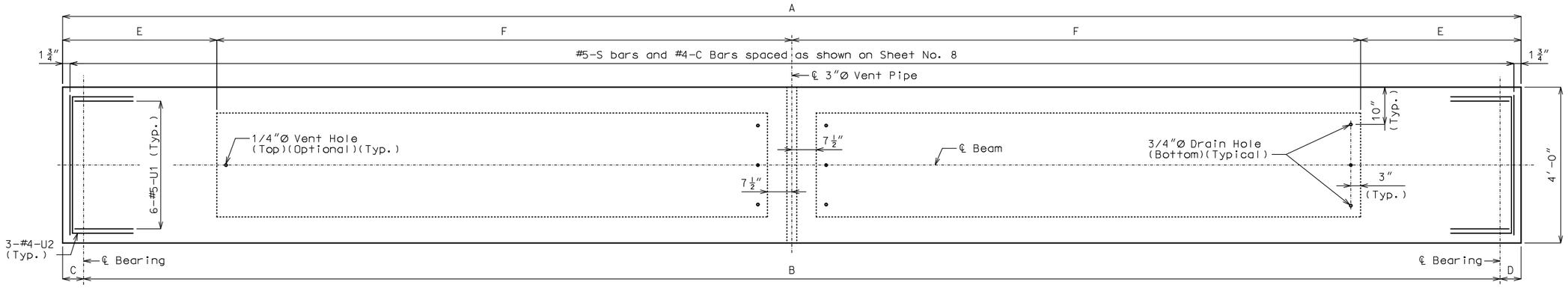
(Strands and reinforcement not shown for clarity)

Cost of 3/4"Ø coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

For location of coil ties at concrete bent diaphragms, see Sheet No. 5.

Table of Dimensions for Plan of Beam						
Span	Beam Length A	℄ Brg. to ℄ Brg. B	Left ℄ Brg. C	Right ℄ Brg. D	End Length E	F
(1-2)	74'-8"	74'-0"	4"	4"	2'-6"	34'-10"



PLAN OF BEAM

(S bars, C bars and strands not shown for clarity)

Note: Work this sheet with Sheet No. 8.

DETAILS OF SPREAD BOX BEAMS

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED 05/12/21
ROUTE H | STATE MO
DISTRICT BR | SHEET NO. 9
COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990
DESCRIPTION | DATE
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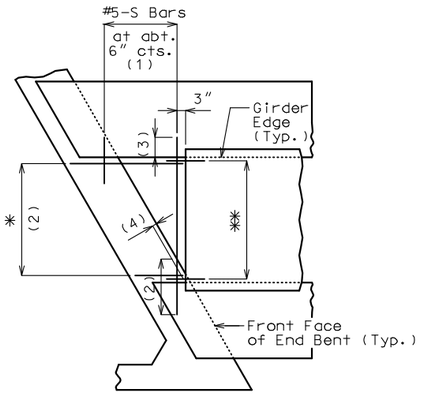
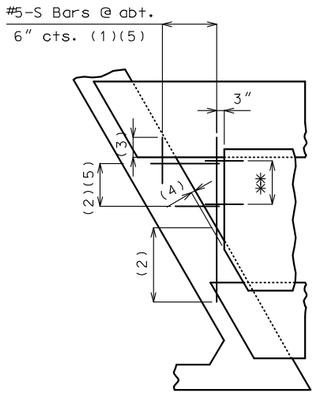
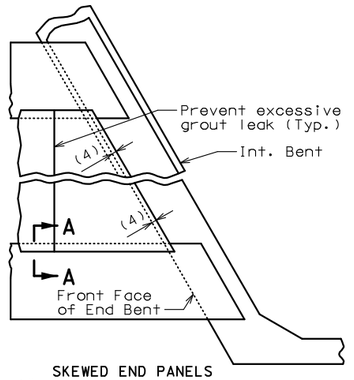
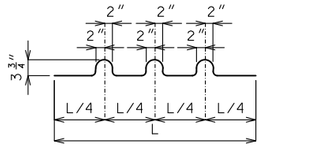






SQUARED END PANELS OR TRUNCATED END PANELS

SKEWED END PANELS

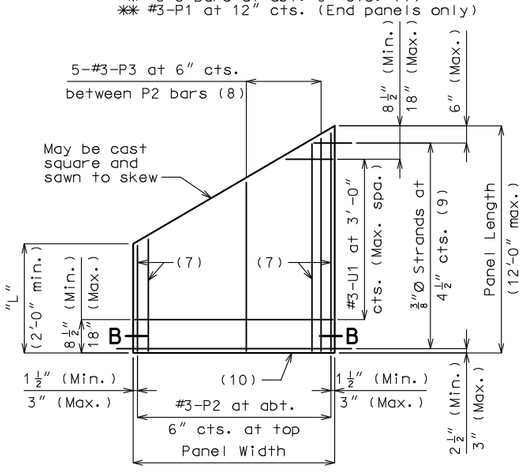


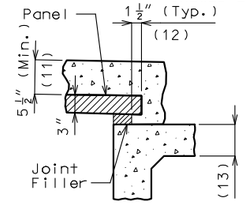
BENDING DIAGRAM FOR U1 BAR

U1 Bars may be oriented at right angles to location and spacing shown. U1 Bars shall be placed between P1 bars.

PLAN SHOWING PANELS PLACEMENT

✱ #5-S Bars at abt. 9" cts. (1)
✱✱ #3-P1 at 12" cts. (End panels only)

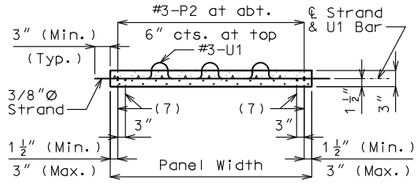


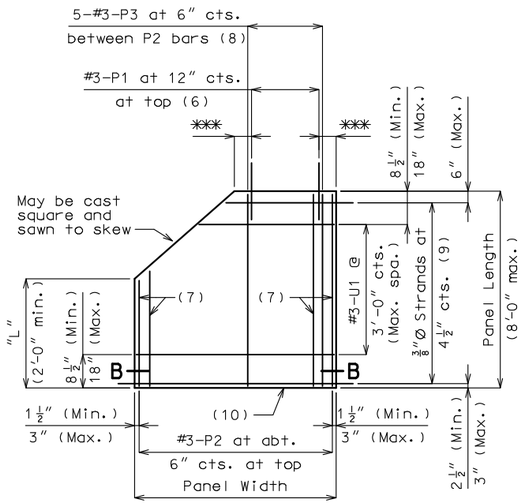


SECTION A-A

Joint Filler Dimensions		
Width	Height	
	Min.	Max.
3"	1"	4"

SECTION B-B

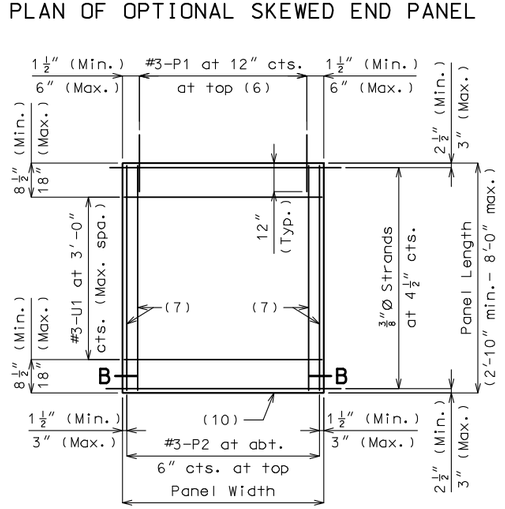




PLAN OF OPTIONAL TRUNCATED END PANEL

✱✱✱ 3" (Min.), 6" (Max.)

PLAN OF OPTIONAL SKEWED END PANEL



PLAN OF SQUARED PANEL

Reference Notes:

Plan of Panels Placement:

(1) S-bars shown are bottom steel in slab between panels and used with squared and truncated end panels only.

(2) Extend S-bars 18 inches beyond the front face of end bents and int. bents for squared and truncated end panels only.

(3) Extend S-bars 9 inches beyond edge of girder (Typ.).

(4) End panels shall be dimensioned 1/2" min. to 1 1/2" max. from the inside face of diaphragm.

(5) For truncated end panels, use a min. of #5-S bars at 6" crossings in openings, or min. 4x4-W7xW7.

Plans of Panels:

(6) For end panels only, P1 bars shall be 2'-0" in length and embedded 12". P1 bars will not be required for panels at squared integral end bents.

(7) #3-P2 bars near edge of panel at bottom (under strands).

(8) Use #3-P3 bars if panel is skewed 45° or greater.

(9) Any strand 2'-0" or shorter shall have a #4 reinforcing bar on each side of it, centered between strands. Strands 2'-0" or shorter may then be debonded at the fabricator's option.

(10) Optional 1/2" x 45° Chamfer one or both sides at bottom.

Section A-A:

(11) Slab thickness over prestressed panels varies due to beam camber. In order to maintain minimum slab thickness, it may be necessary to raise the grade uniformly throughout the structure. No payment will be made for additional labor or materials required for necessary grade adjustment.

(12) Contractor shall ensure proper consolidation under and between panels.

(13) At the contractor's option, the variation in slab thickness over prestressed panels may be eliminated or reduced by increasing and varying the girder top flange thickness. Dimensions shall be shown on the shop drawings.

General Notes:

Prestressed Panels:

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

The top surface of all panels shall receive a scored finish with a depth of scoring of 1/8" perpendicular to the prestressing strands in the panels.

Prestressing tendons shall be high-tensile strength, uncoated, seven-wire, low-relaxation strands for prestressed concrete in accordance with AASHTO M 203 Grade 270, with nominal diameter of strand = 3/8" and nominal area = 0.085 sq.in. and minimum ultimate strength = 22.95 kips (270 ksi). Larger strands may be used with the same spacing and initial tension.

Initial prestressing force = 17.2 kips/strand.

The method and sequence of releasing the strands shall be shown on the shop drawings.

Suitable anchorage devices for lifting panels may be cast in panels, provided the devices are shown on the shop drawings and approved by the engineer. Panel lengths shall be determined by the contractor and shown on the shop drawings.

When squared end panels are used at skewed bents, the skewed portion shall be cast full depth. No separate payment will be made for additional concrete and reinforcing required.

Support from diaphragm forms is required under the optional skewed end until cast-in-place concrete has reached 3,000 psi compressive strength.

Prestressed panels shall be brought to saturated surface-dry (SSD) condition just prior to the deck pour. There shall be no free standing water on the panels or in the area to be cast.

The prestressed panel quantities are not included in the table of estimated quantities for the slab.

Reinforcing Steel:

All dimensions are out to out.

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

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

If U1 bars interfere with placement of slab steel, U1 loops may be bent over, as necessary, to clear slab steel.

Deformed welded wire reinforcement (WWR) providing a minimum area of reinforcing perpendicular to strands of 0.22 sq in./ft, with spacing parallel to strands sufficient to ensure proper handling, may be used in lieu of the #3-P2 bars shown. Wire diameter shall not be larger than 0.375 inch. The above alternative reinforcement criteria may be used in lieu of the #3-P3 bars, when required, and placed over a width not less than 2 feet.

The following reinforcing steel shall be tied securely to the strands with the following maximum spacing in each direction:
#3-P2 bars at 16 inches.
WWR at 24 inches.

The #3-U1 bars shall be tied securely to #3-P2 bars, to WWR or to strands (when placed between P1 bars) at about 3-foot centers.

Minimum reinforcement steel length shall be 2'-0".

All reinforcement other than prestressing strands shall be epoxy coated.

Precast panels may be in contact with stirrup reinforcing in diaphragms.

S-bars are not listed in the bill of reinforcing.

Cost of S-bars will be considered completely covered by the contract unit price for the slab.

Joint Filler:

Joint filler shall be preformed fiber expansion joint material in accordance with Sec 1057 or expanded or extruded polystyrene bedding material in accordance with Sec 1073.

Use Slab Haunching Diagram on Sheet No. 13 for determining thickness of joint filler within the limits noted in the table of Joint Filler Dimensions.

Thicker material may be used on one or both sides of the beam to reduce cast-in-place concrete thickness to within tolerances.

The same thickness of preformed fiber expansion joint material shall be used under any one edge of any panel except at locations where top flange thickness may be stepped. The maximum change in thickness between adjacent panels shall be 1/4 inch. The polystyrene bedding material may be cut with a transition to match haunch height above top of flange.

Joint filler shall be glued to the beam. When thickness exceeds 1 1/2 inches, the joint filler shall be glued top and bottom. The glue used shall be the type recommended by the joint filler manufacturer.

Edges of panels shall be uniformly seated on the joint filler before slab reinforcement is placed.

DETAILS OF PRESTRESSED PANELS

Detailed NOV. 2020
Checked NOV. 2020

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

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MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER: MOSHE L. COHEN PE-2017018957

DATE PREPARED 05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	10

COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990

DATE	DESCRIPTION

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JEFFERSON CITY, MO 65102
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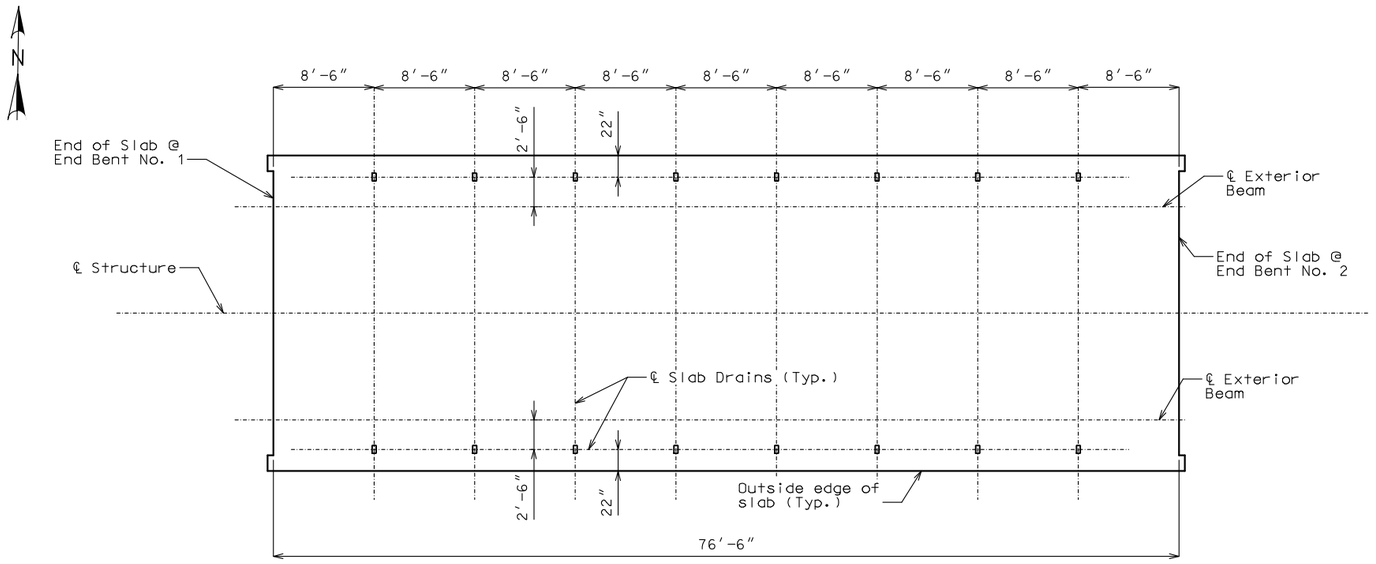
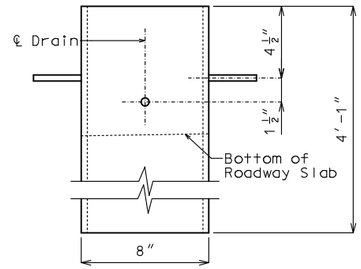
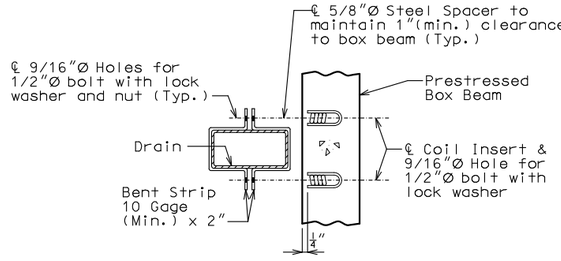


PLAN OF SLAB SHOWING SLAB DRAIN LOCATIONS

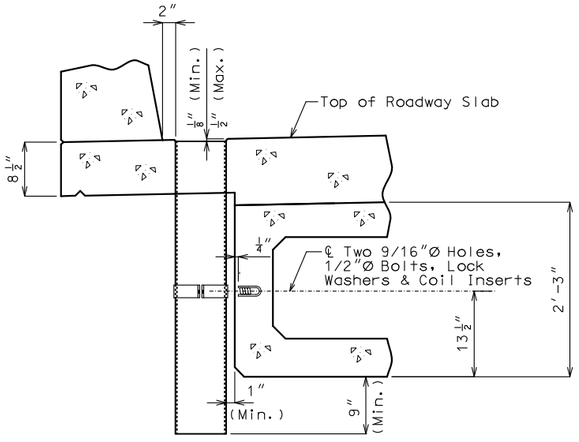
Note: Longitudinal dimensions are horizontal.



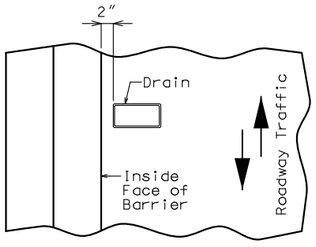
ELEVATION OF DRAIN



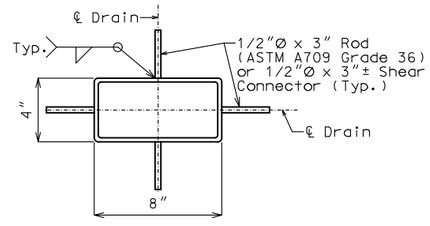
PART SECTION SHOWING BRACKET ASSEMBLY



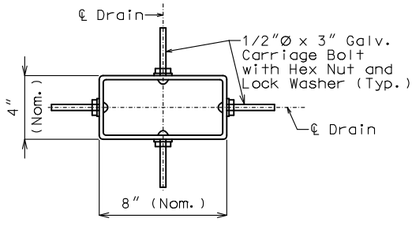
PART SECTION NEAR DRAIN



PART PLAN OF SLAB AT 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 coil inserts and bracket assembly shall be galvanized in accordance with ASTM A123.

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

All 1/2″Ø bolts shall be ASTM A307.

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

The coil inserts required for the bracket assembly attachment shall be located on the prestressed beam shop drawings.

Coil inserts shall have a concrete pull-out strength (ultimate load) of at least 2,500 pounds in 5,000 psi concrete.

The bolts required to attach the slab drain bracket assembly to the prestressed beam shall be supplied by the prestressed beam fabricator.

Notes for Steel Drain:

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

Outside dimensions of drains are 8″ x 4″.

The drains shall be galvanized in accordance with ASTM A123.

Notes for FRP Drain:

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

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

Minimum reinforced wall thickness shall be 1/4 inch.

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

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

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

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

SLAB DRAIN DETAILS

Detailed NOV. 2020
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ENGINEER: MOSHE L. COHEN PE-2017018957

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ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	11

COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990

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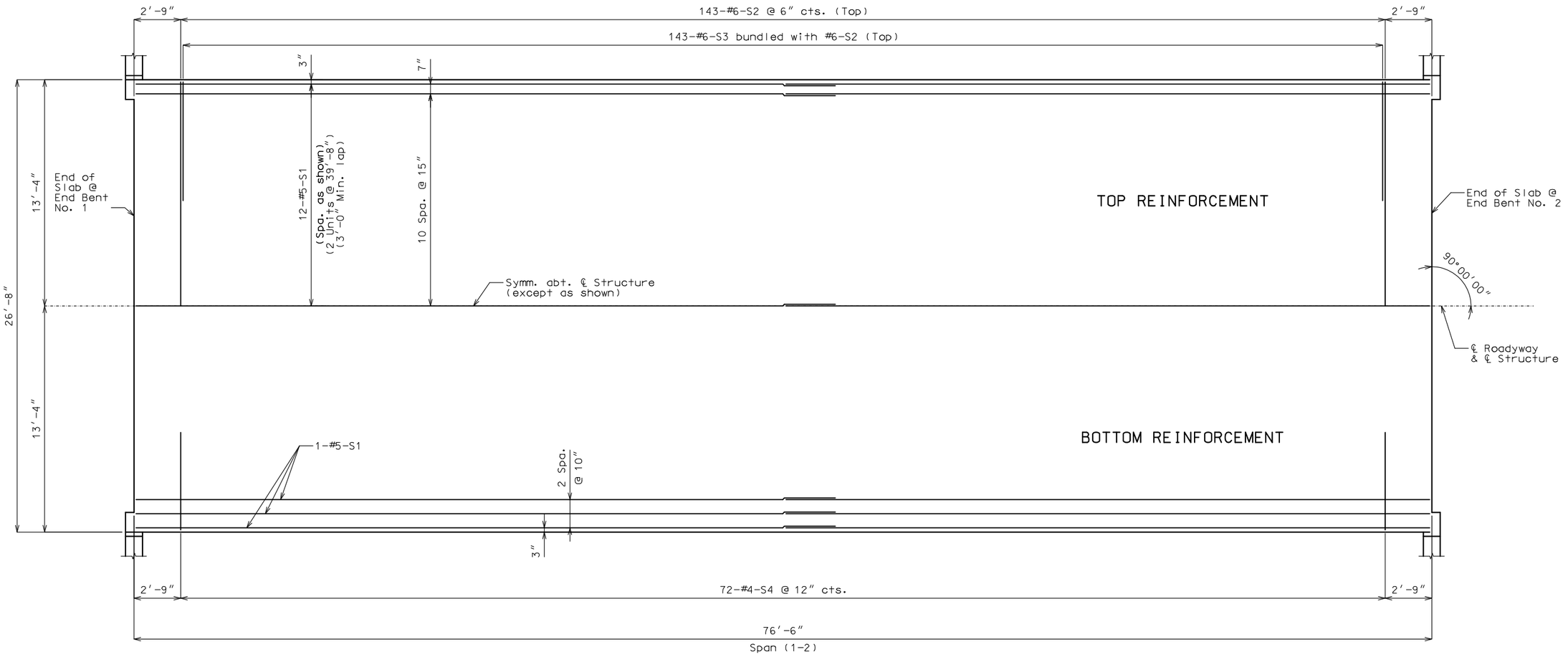

PLAN OF SLAB SHOWING REINFORCEMENT

Notes:

Longitudinal slab dimensions are measured horizontally.

For Section Thru Slab, Theoretical Slab Haunching Diagram, and Theoretical Bottom of Slab Elevations, see Sheet No. 13.

For Details and Reinforcement of Type H Barrier not shown, see Sheets No. 14 & 15.

For details and locations of Slab Drains, see Sheet No. 11.

SLAB DETAILS

Detailed NOV. 2020
Checked NOV. 2020

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PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

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05/12/21

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H	MO
DISTRICT	SHEET NO.
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COUNTY
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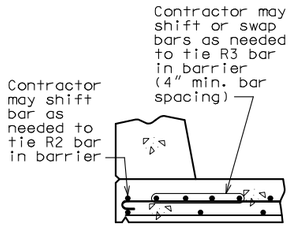
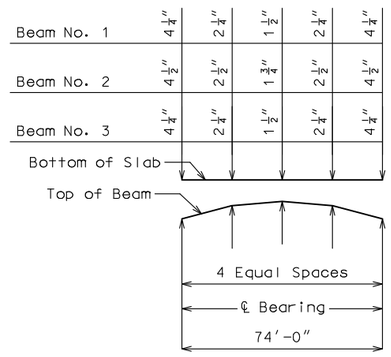
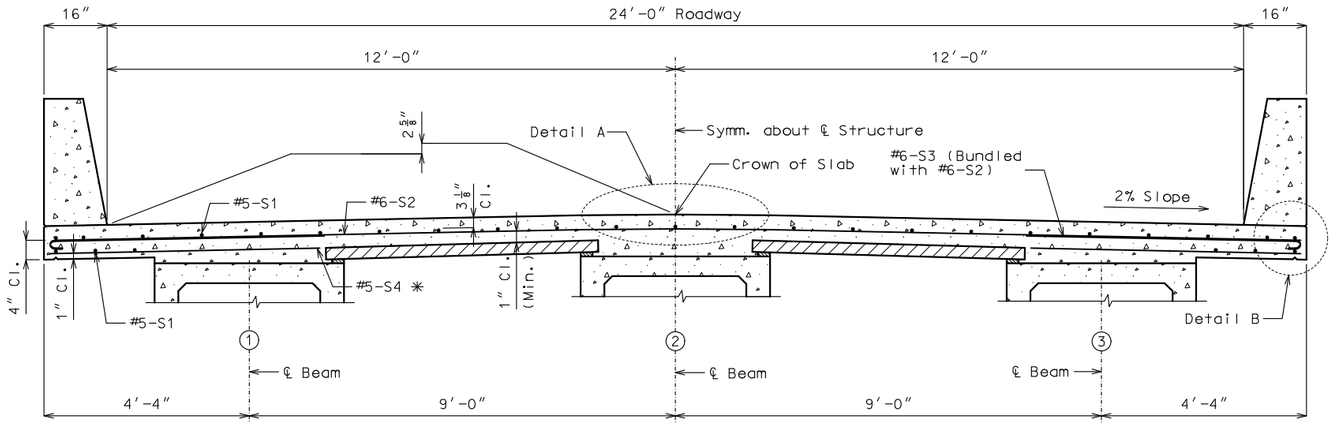


OPTIONAL SHIFTING TOP BARS AT BARRIER



SPAN (1-2)



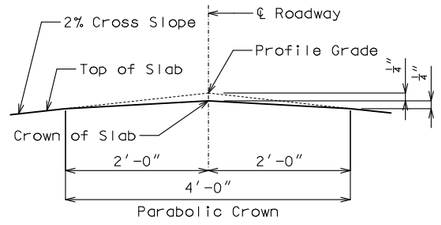
THEORETICAL SLAB HAUNCHING DIAGRAM (ESTIMATED AT 90 DAYS)

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

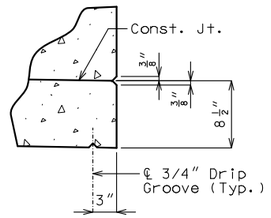
Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.

SECTION THRU SLAB

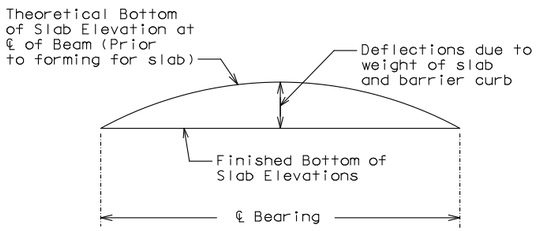
✳ Alternate bar shape available, see barrier sheet.



DETAIL A



DETAIL B

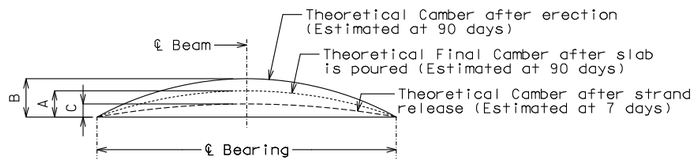


TYPICAL SLAB ELEVATIONS DIAGRAM

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

Beam Number	Span (1-2) (74'-0" ℄ Brg. - ℄ Brg.)				
	℄ Brg.	.25	.50	.75	℄ Brg.
1	296.51	296.64	296.69	296.64	296.51
2	296.67	296.80	296.85	296.80	296.67
3	296.51	296.64	296.69	296.64	296.51

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



Beam	Span (1-2)		
	A	B	C
Exterior	3"	4 7/8"	2 3/4"
Interior	3"		

BEAM CAMBER DIAGRAM

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

0.25 pt. = 0.7125 x 0.5 pt.

SLAB DETAILS

Notes:

For details of precast prestressed panels, see Sheet No. 10.

For reinforcement of barrier not shown, see Sheets No. 14 & 15.

For Plan of Slab Showing Reinforcement, see Sheet No. 12.

The contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 25 cubic yards per hour.

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

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ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	13

COUNTY NEW MADRID

JOB NO. J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8990

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DESCRIPTION	DATE

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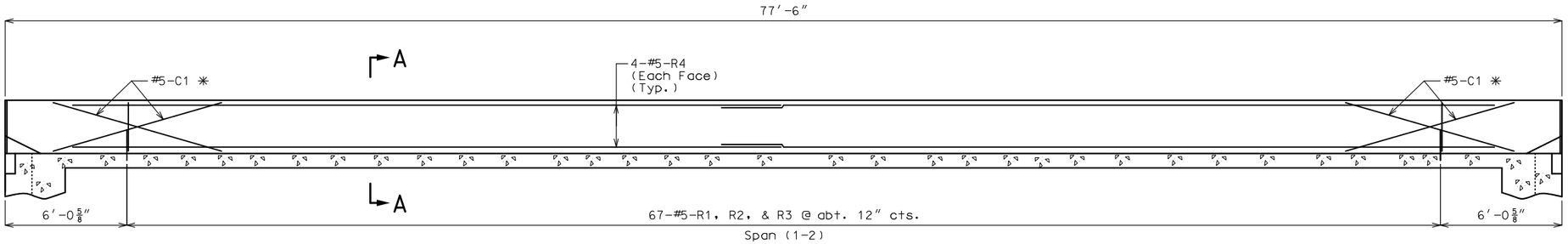
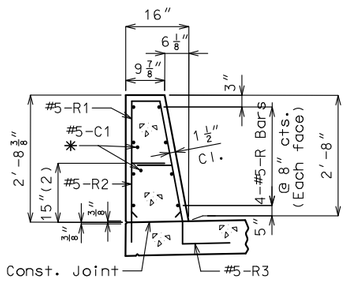


ELEVATION OF BARRIER

(Left barrier shown, right barrier similar)
Longitudinal dimensions are horizontal.

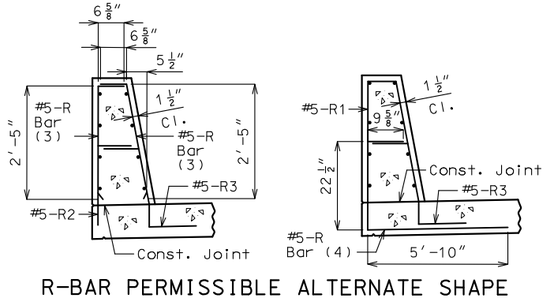


SECTION A-A

Use a minimum lap of 3′-1″ for #5 horizontal barrier bars.

The cross-sectional area above the slab is 2.89 square feet.

(2) To top of bar



R-BAR PERMISSIBLE ALTERNATE SHAPE

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

(4) The R2 bar and #5 bottom transverse slab bar in cantilever (prestressed panels only) combination may be furnished as one bar as shown, at the contractor's option.

General Notes:

✳ Slip-formed option only.

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

Top of barrier shall be built parallel to grade and barrier joints normal to grade.

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

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

Concrete in barrier shall be Class B-1.

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

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

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

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

TYPE H BARRIER

Detailed NOV. 2020
Checked NOV. 2020

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05/12/21

ROUTE	STATE
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DISTRICT	SHEET NO.
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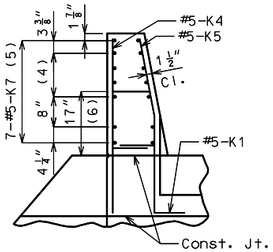
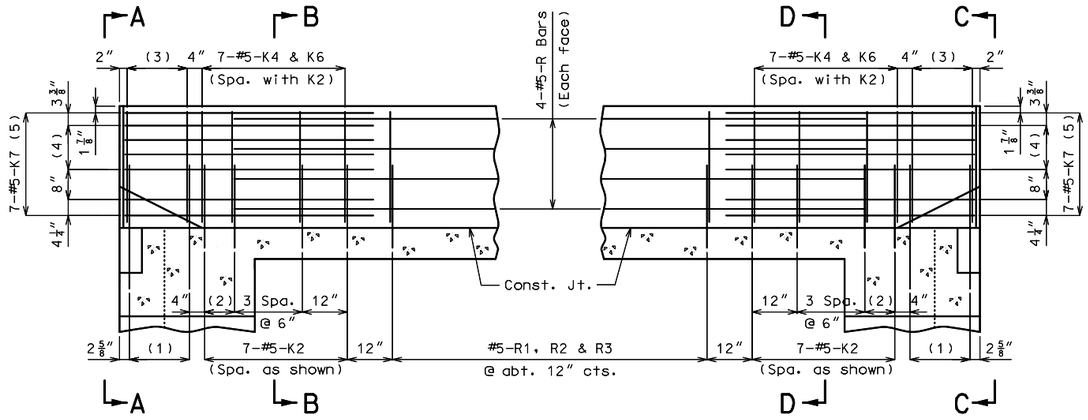
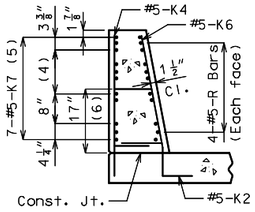


ELEVATION A-A

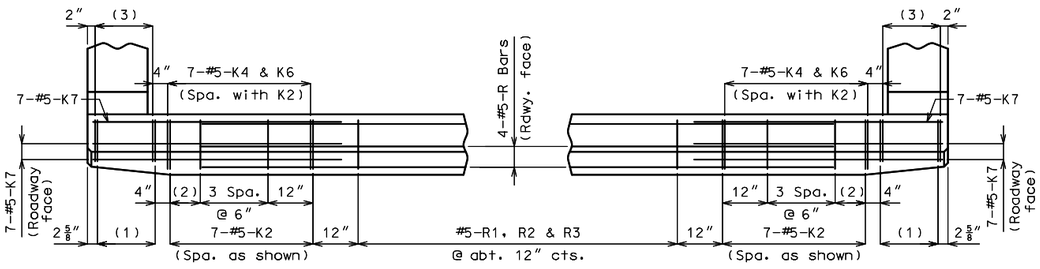


PART ELEVATION

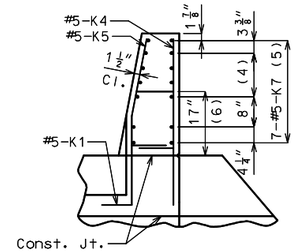
(1) 5-#5-K1 @ 4" cts.
(2) 2 Spaces @ 4"
(3) 5-#5-K4 and 5-#5-K5, spaced with K1
(4) 3 Spaces @ 3 13/16"
(5) Spaced as shown, each face
(6) To top of bar



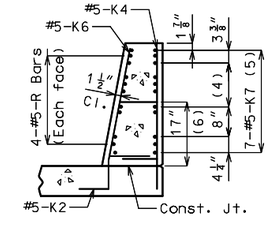
SECTION B-B



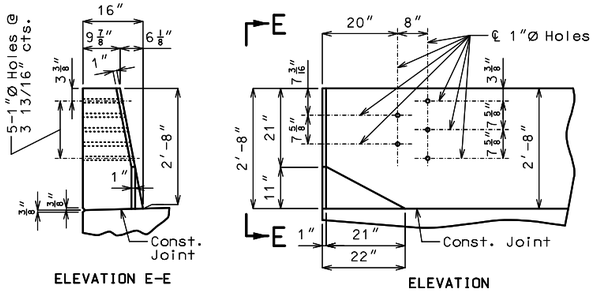
PART PLAN



ELEVATION C-C



SECTION D-D



ELEVATION E-E

ELEVATION

PLAN

DETAILS OF GUARD RAIL ATTACHMENT

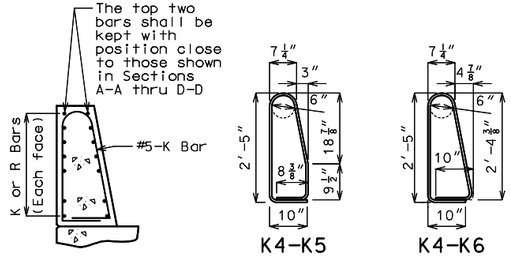
General Notes:

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.



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.

TYPE H BARRIER AT END BENTS

(Left barrier shown, right barrier similar)

Detailed NOV. 2020
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ENGINEER: MOSHE L. COHEN PE-2017018957
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ROUTE: H | STATE: MO
DISTRICT: BR | SHEET NO.: 15
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8990

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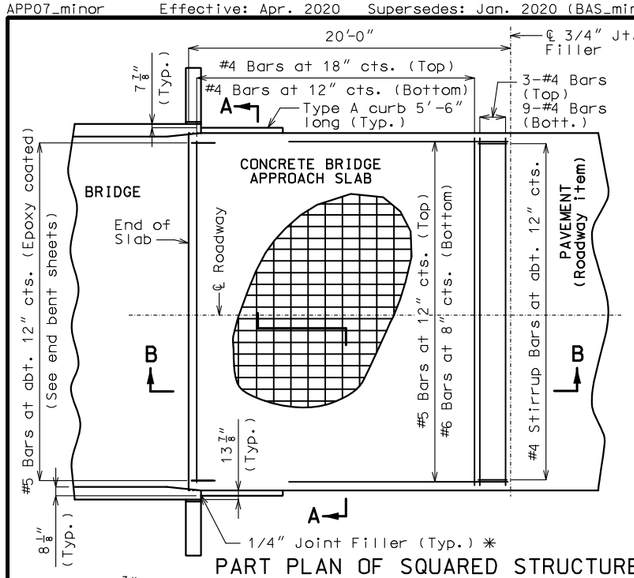
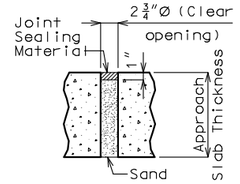
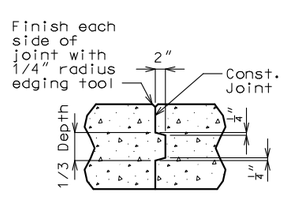


PART PLAN OF SQUARED STRUCTURE



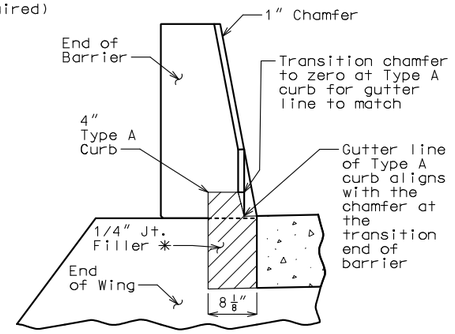
UNDERSEAL ACCESS HOLE DETAIL

(If required)

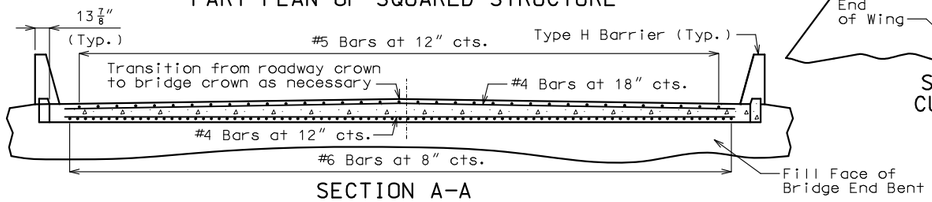


CONSTRUCTION JOINT DETAIL

(If required)

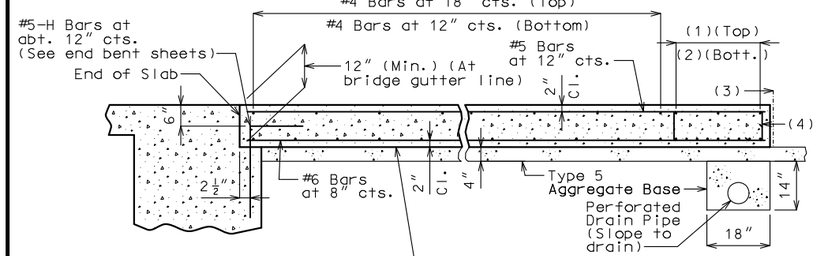


SECTION BETWEEN CURB AND BARRIER



SECTION A-A

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



SECTION B-B

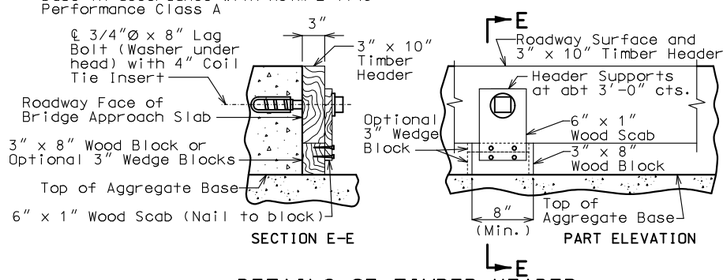
(Integral end bent)

(1) 3-#4 Bars

(2) 9-#4 Bars

(3) ℄ 3/4" Jt. Filler

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



DETAILS OF TIMBER HEADER

Remove timber header when concrete pavement is placed.

OPTIONAL CONCRETE SLAB

Notes For Concrete Slab Only:

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

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

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

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

The reinforcing steel in the bridge approach slab shall be continuous. The transverse reinforcing steel may be made continuous by lap splicing the #4 bars 29".

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 Road) per square yard.

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

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

General Notes:

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

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

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.

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

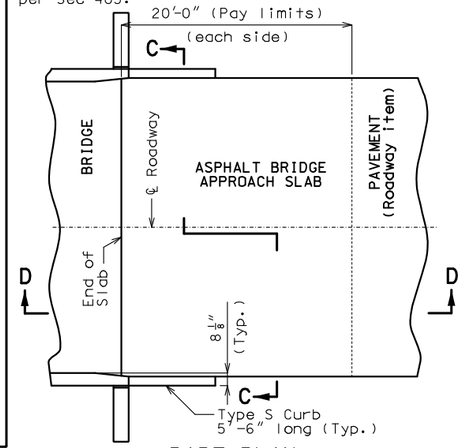
☐ Concrete Bridge Approach Slab

☐ Asphalt Bridge Approach Slab

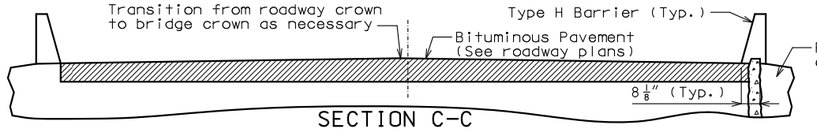
Notes For Asphalt Slab Only:

Payment for furnishing all materials, labor and excavation necessary to construct the asphalt bridge approach slab, including tack, curb, underdrain 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 Road) per square yard.

Application of tack is required between lifts per Sec 403.

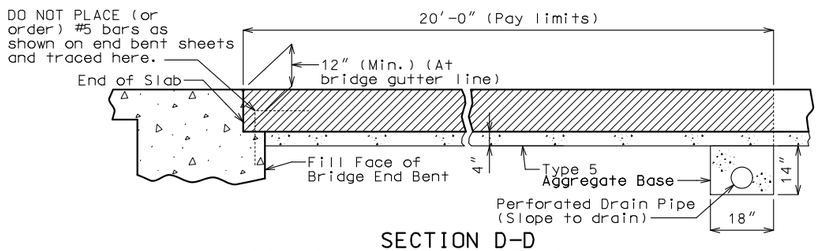


PART PLAN

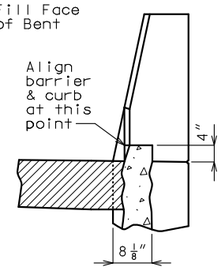


SECTION C-C

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



SECTION D-D



4" TYPE S CURB

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

OPTIONAL ASPHALT SLAB (NOT ALLOWED WITH CONCRETE PAVEMENT)

BRIDGE APPROACH SLAB (MINOR ROAD)

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER
ENGINEER: MOSHE L. COHEN PE-2017018957

DATE PREPARED 05/12/21

ROUTE H | STATE MO

DISTRICT BR | SHEET NO. 16

COUNTY NEW MADRID

JOB NO. J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO. A8990

DESCRIPTION	DATE

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

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

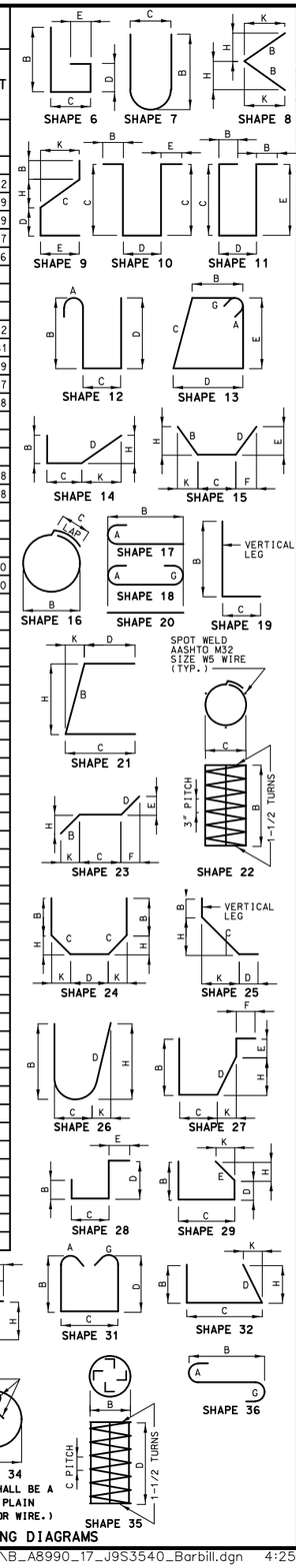
Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskiaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

BILL OF REINFORCING STEEL

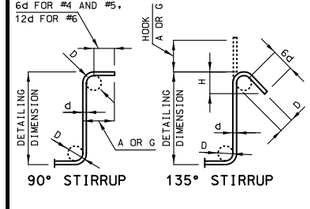
NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			SUPERSTRUCTURE																									
			END BENTS NO.																									
			1 & 2																									
12	6	F10	DIAPHRAGM	E	11	S						7	8.500	2	9.000	2	1.000							12	7	12	3	221
16	7	H10	BEAM	E	20					26	5.000													26	5	26	5	864
8	6	H11	BEAM	E	20					26	5.000													26	5	26	5	317
8	7	H12	DIAPHRAGM	E	20					26	5.000													26	5	26	5	432
40	7	H13	WING	E	20					14	5.000													14	5	14	5	1,179
32	7	H14	WING	E	20			V	8	7	10.000													7	10	7	10	719
			INCR.= 25.375"							14	2.000													14	2	14	2	
8	7	H15	WING	E	23						13.750	9	8.000							4.000		13.125		10	10	10	7	173
12	6	H16	DIAPHRAGM	E	20					4	9.000													4	9	4	9	86
6	6	H17	DIAPHRAGM	E	20					26	5.000													26	5	26	5	238
6	5	H18	STRAND TIE	E	20					6	6.000													6	6	6	6	41
50	5	H19	APP NOTCH	E	19					2	0.000		15.000											3	3	3	1	161
96	4	P10	PILE	E	34	S					10.000													3	5	3	3	209
20	5	U10	BEAM	E	31	S				4	8.000	2	9.000	4	8.000									13	0	12	9	266
38	4	U11	BEAM	E	13	S				2	9.000	2	8.000	2	9.000	2	8.000							11	7	11	4	288
16	4	U12	BEAM	E	10	S						2	8.000	2	9.000									8	1	7	11	85
36	5	U13	DIAPHRAGM	E	31	S				3	0.000	2	3.000	3	0.000									9	2	8	11	335
36	6	U14	DIAPHRAGM	E	19	S					23.000	2	9.000											4	8	4	6	243
64	6	U15	DIAPHRAGM	E	12					3	0.000	4	7.000											8	3	8	1	777
32	5	V10	BEAM	E	17					4	8.000													5	3	5	3	175
80	6	V11	WING	E	20			V	8	3	3.750													3	4	3	4	561
			INCR.= 3.500"							5	11.750													6	0	6	0	
36	6	V12	DIAPHRAGM	E	19	S					23.000		13.000											3	0	2	10	153
72	5	V13	PILE	E	17					5	3.000													5	10	5	10	438
			SLAB																									
58	5	S1	SLAB	E	20					39	8.000													39	8	39	8	2,400
143	6	S2	SLAB	E	18					26	5.000													27	9	27	9	5,960
286	6	S3	SLAB	E	17					7	0.000													7	8	7	8	3,293
144	5	S4	SLAB	E	20					5	9.000													5	9	5	9	864
			BARRIER																									
20	5	K1	BARRIER	E	27	S				2	9.000	9.250		5.250		2	3.875	12.000		5.125		1.000		7	3	7	0	146
28	5	K2	BARRIER	E	27	S					22.250	9.250		17.250		5.250		12.000		17.000		3.250		5	6	5	2	151
48	5	K4	BARRIER	E	19	S				2	5.000	10.000												3	3	3	2	159
20	5	K5	BARRIER	E	14	S					8.375	9.500		19.375						4.250		18.875		3	1	3	0	63
28	5	K6	BARRIER	E	21	S				2	5.000	10.000								2	4.375	6.000		3	3	3	1	90
56	5	K7	BARRIER	E	20					5	6.000													5	6	5	6	321
134	5	R1	BARRIER	E	14	S				2	5.000	6.625		2	5.500					2	5.000		5.500		5	5	5	3	734
134	5	R2	BARRIER	E	19	S					20.250	9.625												2	6	2	5	338
134	5	R3	BARRIER	E	27	S						9.625		15.250		5.250		12.000		15.000		2.875		3	6	3	4	466
32	5	R4	BARRIER	E	20					37	9.000													37	9	37	9	1,260
			SLIP FORM																									
8	5	C1	SLIP FORM	E	20					12	0.000													12	0	12	0	100

BILL OF REINFORCING STEEL

NO. REQ'D.	MARK NO. SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	B FT.	B IN.	C FT.	C IN.	D FT.	D IN.	E FT.	E IN.	F FT.	F IN.	H FT.	H IN.	K FT.	K IN.	NOMINAL LENGTH FT.	NOMINAL LENGTH IN.	ACTUAL LENGTH FT.	ACTUAL LENGTH IN.	WEIGHT LBS.
			TOTALS																									
	4			E																								582
	5			E																								8,509
	6			E																								11,849
	7			E																								3,367
			TOTAL	E																								24,306
			SLAB ON																									
			CONCRETE BEAM																									
	4			E																								582
	5			E																								4,681
	6			E																								11,849
	7			E																								3,367
			TOTAL	E																								20,478
			BARRIER																									
	5			E																								3,728
			TOTAL	E																								3,728
			SLIP FORM																									
			OPTION																									
	5			E																								100
			TOTAL	E																								100



BENDING DIAGRAMS

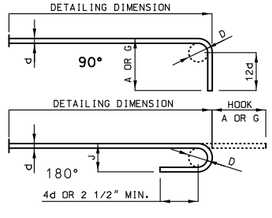


STIRRUP HOOK DIMENSIONS

GRADES 40 - 50 - 60 KSI

BAR SIZE	D (IN.)	90° HOOK HOOK A OR G	135° HOOK HOOK A OR G	135° HOOK APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

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



END HOOK DIMENSIONS

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

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

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

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

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

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

PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.

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

REINFORCING STEEL (GRADE 60) FY = 60.000 PSI.

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

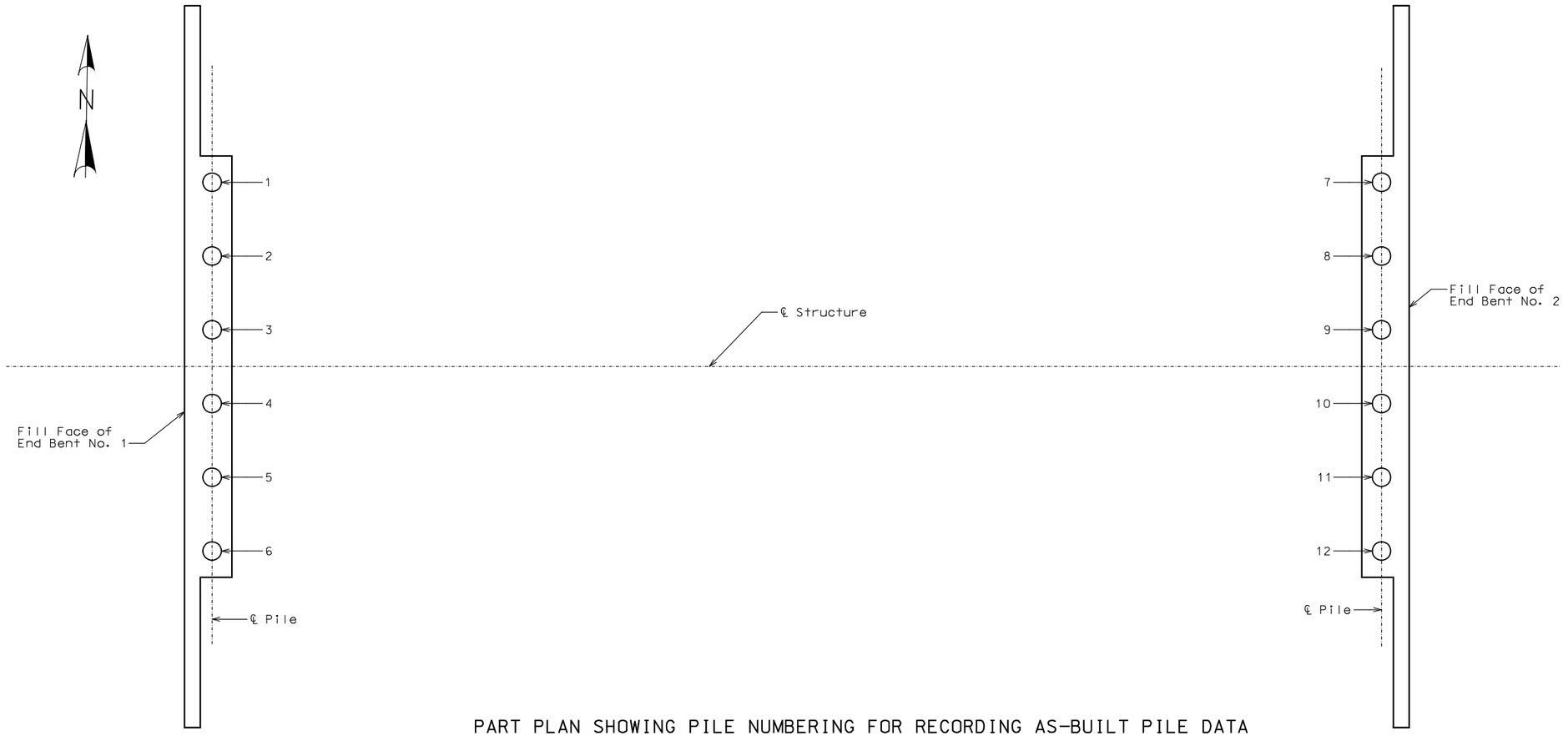
ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED 05/12/21
ROUTE H | STATE MO
DISTRICT BR | SHEET NO. 17
COUNTY NEW MADRID
JOB NO. J9S3540
CONTRACT ID.
PROJECT NO.
BRIDGE NO. A8990

DESCRIPTION | DATE

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

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

Kaskaska Engineering Group, LLC
208 East Main Street, Suite 100
BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997



PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 1
1					
2					
3					
4					
5					
6					

As-Built Pile Data					
Pile No.	Length in Place (ft)	PDA Nom. Axial Compressive Resistance (kips)	PDA End of Drive Blow Count (blows/in.)	Actual End of Drive Blow Count (blows/in.)	Remarks
					End Bent No. 2
7					
8					
9					
10					
11					
12					

Note:
Indicate in remarks column:
A. Pile type and grade
B. Batter
C. Driven to practical refusal
D. PDA test pile
E. Minimum tip elevation controlled
(Use when actual blow count is less than PDA blow count due to minimum tip elevation requirement. A plus sign (+) shall be placed after the PDA nominal axial compressive resistance value indicating actual value is higher than PDA value.)

This sheet to be completed by MoDOT construction personnel.

PILE AS-BUILT PLAN

Detailed NOV. 2020
Checked NOV. 2020

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

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER:
MOSHE L. COHEN
PE-2017018957

DATE PREPARED
05/12/21

ROUTE	STATE
H	MO
DISTRICT	SHEET NO.
BR	18

COUNTY
NEW MADRID

JOB NO.
J9S3540

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A8990

DESCRIPTION	DATE

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105 WEST CAPITOL
JEFFERSON CITY, MO 65102
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Kaskaskia Engineering Group, LLC
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BELLEVILLE, IL 62220
618.233.5877 PHONE 618.233.5977 FAX
www.kaskaskiaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

NOTE: BORING LOGS SHOWN ARE AS PROVIDED BY OTHERS.

SMITH&CO. ENGINEERS
901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
URL: www.shsmithco.com; email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG — **BH - 1** — Page 1 of 2

Client Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO620 — Project Location: H Hwy, Mathews, MO 63867

Date(s) Drilled:	7/29/2020	Drill Rig Type:	CME 750 ATV
Logged By:	MBF	Drill Bit Size/Type:	2.75in ID/2.25in OD
Drilled By:	FJD	Drilling Method:	Hollow Stem Augers/Mud Rotary
Reviewed/ Approved By:	WJC	Depth Drilled:	61ft
Surface Elevation:	294.95	Water Level:	15ft ATD
Backfill Type:	Drill Cuttings, Bentonite Chips	Boring Location:	Northwest corner of bridge, 46ft W and center of west bound lane

Comments:

BOREHOLE Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value	RQD-inches	PP Reading, RQD%	Graphic Log	MATERIAL DESCRIPTION	NOTES
0	295									Surface: Asphalt	Start Time: 9:45 AM Finish Time: 2:00 PM
										GRAVEL ~8in	
5	290		1	16	2 2 3	5		1		SANDY FAT CLAY (CH), blackish-brown, medium stiff	LL=56 PL=16 PI=40
10	285		2	16	2 2 4	6		-		SAND, brown-grey, fine grained, loose, with some clay, moist	
15	280		3	14	2 6 7	13		-		medium dense, saturated	Sand heaved, Drillers gel added to continue
20	275		4	13	5 6 7	13		-		medium grained, medium dense, with fine gravel	
25	270										

LEGEND/NOTES (SEE GEOTECHNICAL NOTES TERMS, AND SYMBOLS FOR ADDITIONAL INFORMATION)

- 2" O.D. split-barrel sampler driven with 140-lb SPT hammer
- 3" O.D. thin-walled (Shelby) tube push sampler
- 2" O.D. Continuous rock core (NQ unless otherwise specified)
- 2-3/4" I.D. CME continuous soil sampler
- 3" O.D. split-barrel sampler with or without liners driven with 140-lb hammer

2 / 5 / 8 — Standard Penetration Test (SPT) Blow Counts with 140 pound hammer falling 30" to drive split spoon sample in 3 - 6" increments. Sum of last two numbers is the blow count per foot (or as listed) or the SPT N-value.

Free water depth in boring

ATD — At Time Drilled

RQD — Rock Quality Designation = Amount, in percent, of intact rock core pieces greater than 4 inches in length in each coring interval; calculated as the sum of the lengths of intact core, divided by the length of the core run. Recovery typically expressed in inches for soil or rock recovered in sampler. Percent recovery is the ratio of recovery to sampling interval advancement.

PP — Pocket Penetrometer Reading of unconfined strength (approximate TSF) on undisturbed samples. PP Reading on disturbed SPT samples are higher than actual.

Qu — Laboratory Unconfined Compressive Strength (PSF)

Geotechnical Borehole Log - BH1 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

SMITH&CO. ENGINEERS
901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
URL: www.shsmithco.com email: info@shsmithco.com

GEOTECHNICAL BOREHOLE LOG — **BH - 1** — Page 2 of 2

Client Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO620 — Project Location: H Hwy, Mathews, MO 63867

Drilled By: FJD — Logged By: MBF — Approved By: WJC
Comments: — Other:

BOREHOLE Depth	Elevation	Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value	RQD-inches	PP Reading, RQD%	Graphic Log	MATERIAL DESCRIPTION	NOTES
25	270										
30	265		5	15	6 10 13	23		-		SAND, grey, fine to coarse grained, medium dense, with fine gravel	
35	260										
40	255		6	14	6 6 5	11		-		SAND, grey, fine grained, medium dense, with fine gravel	40-50ft- significant gravel
45	250										
50	245		7	1	13 20 22	42		-		dense, with fine gravel	
55	240										
60	235		8	13	13 14 19	33		-		medium grained, dense, with fine gravel	Abandoned using 2 bags of bentonite, drill cuttings
										BORING TERMINATED AT 61ft, 7-29-2020	
65	230										

Geotechnical Borehole Log - BH1 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

STATE OF MISSOURI
MOSHE L. COHEN
NUMBER PE-2017018957
PROFESSIONAL ENGINEER

ENGINEER: MOSHE L. COHEN PE-2017018957
DATE PREPARED: 05/19/21
ROUTE: H — STATE: MO
DISTRICT: BR — SHEET NO.: 19
COUNTY: NEW MADRID
JOB NO.: J9S3540
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.: A8990

DESCRIPTION | DATE

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

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

Kaskaskia Engineering Group, LLC
208 East Main Street, Suite 100
BELLEVILLE, IL 62220
618.233.5977 PHONE 618.233.5977 FAX
www.kaskaskiaeng.com
MISSOURI CERTIFICATE OF AUTHORITY NO. 2006034997

BORING DATA

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

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

Detailed NOV. 2020
Checked NOV. 2020

Sheet No. 19 of 20

NOTE: BORING LOGS SHOWN ARE AS PROVIDED BY OTHERS.

SMITH&CO. ENGINEERS
901 Vine Street, P.O. Box 72
Poplar Bluff, MO 63901
Ph: 573.785.9621 Fax: 573.785.2651
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GEOTECHNICAL BOREHOLE LOG — **BH - 2** — Page 1 of 2

Client: Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO620 — Project Location: H Hwy, Mathews, MO

Date(s) Drilled:	7/30/2020	Drill Rig Type:	CME 750 ATV
Logged By:	MBF	Drill Bit Size/Type:	2.75in ID/2.25in OD
Drilled By:	FJD	Drilling Method:	Hollow Stem Augers/Mud Rotary
Reviewed/ Approved By:	WJC	Depth Drilled: 61ft	Surface Elevation: 294.96
Comments:			

Water Level: 15ft ATD
Backfill Type: Drill Cuttings, Bentonite Chips
Boring Location: East End of Bridge, ~35 ft East and center of East bound lane

BOREHOLE Depth	Elevation	SAMPLES & FIELD TESTS: Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	MATERIAL DESCRIPTION: Graphic Log		NOTES
0	295								Surface: Asphalt	Start Time: 9:30 AM Finish Time: 2:00 PM
									GRAVEL ~8in	
5	290		1	14	3 2 2	4	1		CLAY, black-grey, soft, with sand and debris(wood)	
10	285		2	14	4 5 5	10	-		SAND, grey-brown-black, fine grained, medium dense, with debris(wood), moist	
15	280		3	13	3 3 7	10	-		medium grained, medium dense, with fine grained, saturated	Sand heaved into augers, Drillers gel added to continue
20	275		4	14	4 6 6	12	-		medium grained, with fine gravel	
25	270									

LEGEND/NOTES (SEE GEOTECHNICAL NOTES TERMS, AND SYMBOLS FOR ADDITIONAL INFORMATION)

- 2" O.D. split-barrel sampler driven with 140-lb SPT hammer
- 3" O.D. thin-walled (Shelby) tube push sampler
- 2" O.D. Continuous rock core (NQ unless otherwise specified)
- 2-3/4" I.D. CME continuous soil sampler
- 3" O.D. split-barrel sampler with or without liners driven with 140-lb hammer

2 / 5 / 8 — Standard Penetration Test (SPT) Blow Counts with 140 pound hammer falling 30" to drive split spoon sample in 3 - 6" increments. Sum of last two numbers is the blow count per foot (or as listed) or the SPT N-value.

Free water depth in boring

ATD — At Time Drilled

RQD — Rock Quality Designation = Amount, in percent, of intact rock core pieces greater than 4 inches in length in each coring interval; calculated as the sum of the lengths of intact core, divided by the length of the core run. Recovery typically expressed in inches for soil or rock recovered in sampler. Percent recovery is the ratio of recovery to sampling interval advancement.

PP — Pocket Penetrometer Reading of unconfined strength (approximate TSF) on undisturbed samples. PP Reading on disturbed SPT samples are higher than actual.

Qu — Laboratory Unconfined Compressive Strength (PSF)

Geotechnical Borehole Log - BH2 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

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GEOTECHNICAL BOREHOLE LOG — **BH - 2** — Page 2 of 2

Client: Garver, LLC — Project No: P200051
Project Name: SE District Bridge Bundle-LO620 — Project Location: H Hwy, Mathews, MO

Drilled By: FJD — Logged By: MBF — Approved By: WJC
Comments: — Other:

BOREHOLE Depth	Elevation	SAMPLES & FIELD TESTS: Sample Type	Number	Recovery, Inches	SPT Blow Counts @ 6"	SPT N-value, RQD-inches	PP Reading, RQD%	MATERIAL DESCRIPTION: Graphic Log		NOTES
25	270									
30	265		5	13	7 9 12	21	-		SAND, grey, fine to medium grained, medium dense, with fine gravel	
35	260									
40	255		6	14	9 12 14	26	-		POORLY GRADED SAND (SP), grey, fine grained, medium dense, with trace fine gravel	w=14.5%, %passing: #4 - 88, #10 -74, #40 - 20, #200 -2
45	250									
50	245		7	14	7 11 14	25	-		medium grained, medium dense, with fine gravel	
55	240									50-60ft significant gravel
60	235		8	0	12 14 16	30	-		dense	Abandoned using 2 bags of bentonite, drill cuttings
65	230								BORING TERMINATED AT 61ft, 7-30-2020	

Geotechnical Borehole Log - BH2 — Print Date: 9/10/2020 — FORM REVISED: 12/05/2013 MBF

BORING DATA

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

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

Detailed NOV. 2020
Checked NOV. 2020