DESIGN DESIGNATION

A.A.D.T. – 2021 = 61000
A.A.D.T. – 2041 = 67000
D.H.V. = 5900
T = 13%
V = 65–70 M.P.H.
FUNCTIONAL CLASSIFICATION– INTERSTATE

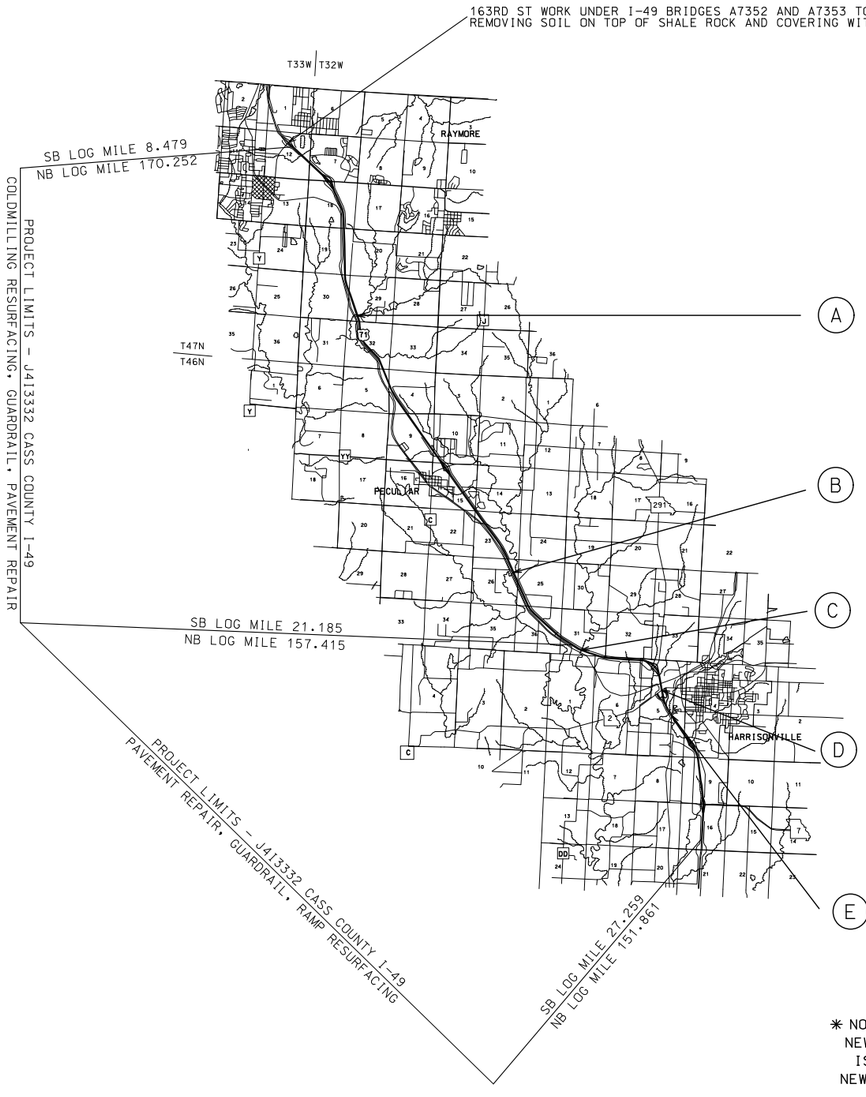
NO RIGHT OF WAY IS ACQUIRED ON THIS PROJECT

CONVENTIONAL SYMBOLS
(USED IN PLANS)

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

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR PROPOSED STATE HIGHWAY
CASS COUNTY



NOT TO SCALE

EXEMPTIONS

BR. A2067 – 195TH ST
SB: LOG MI. 12.553 – 12.618

BR. A2067 – 195TH ST
NB: LOG MI. 166.072 – 166.137

BR. A2069 – EAST BRANCH SOUTH GRAND RIVER
SB: LOG MI. 19.208 – 19.254

BR. A2069 – EAST BRANCH SOUTH GRAND RIVER
NB: LOG MI. 159.451 – 159.497

BR. G0485 – E FORK E BRANCH SOUTH GRAND RIVER
SB: LOG MI. 21.561 – 21.585

BR. G0485 – E FORK E BRANCH SOUTH GRAND RIVER
NB: LOG MI. 157.143 – 157.167

BR. A1624 – OVER MECHANIC ST
SB: LOG MI. 23.757 – 23.784

BR. A1624 – OVER MECHANIC ST
NB: LOG MI. 154.920 – 154.947

BR. A1490 – OVER RAILROAD
SB: LOG MI. 24.377 – 24.419

BR. A1490 – OVER RAILROAD
NB: LOG MI. 154.308 – 154.350

* NORTHBOUND LOG MILES USED ARE OLD LOG MILES. NEW LOG MILES FOR THE NORTHBOUND SECTION OF IS 49 INCREASED BY 5.265 MILES DUE TO THE NEW SECTION OF IS 49 TO ARKANSAS BEING ADDED INTO TMS

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

	SB I-49	NB I-49
BEGINNING OF PROJECT	LM 8.479	151.861
END OF PROJECT	LM 27.259	170.252
APPARENT LENGTH	99158.4 FT	97104.5 FT

EQUATIONS AND EXCEPTIONS:

(A) BR. A2067 – 195TH ST
SB: LOG MI. 12.553 – 12.618 -343 FT
NB: LOG MI. 166.072 – 166.137 -343 FT

(B) BR. A2069 – EAST BRANCH SOUTH GRAND RIVER
SB: LOG MI. 19.208 – 19.254 -244 FT
NB: LOG MI. 159.451 – 159.497 -244 FT

(C) BR. G0485 – E FORK E BRANCH S GRAND RIVER
SB: LOG MI. 21.561 – 21.585 -126 FT
NB: LOG MI. 157.143 – 157.167 -126 FT

(D) BR. A1624 – MECHANIC ST
SB: LOG MI. 23.757 – 23.784 -142 FT
NB: LOG MI. 154.920 – 154.947 -142 FT

(E) BR. A1490 – OVER RAILROAD
SB: LOG MI. 24.377 – 24.419 -224 FT
NB: LOG MI. 154.308 – 154.350 -224 FT

	SB I-49	NB I-49
TOTAL CORRECTIONS	1079 FT	1079 FT
NET LENGTH OF PROJECT	98079.4 FT	96025.5 FT
STATE LENGTH	18.576 MI.	18.187 MI.

FOR INFORMATION ONLY
ESTIMATED DISTURBED ACRES 0.98 ACRES

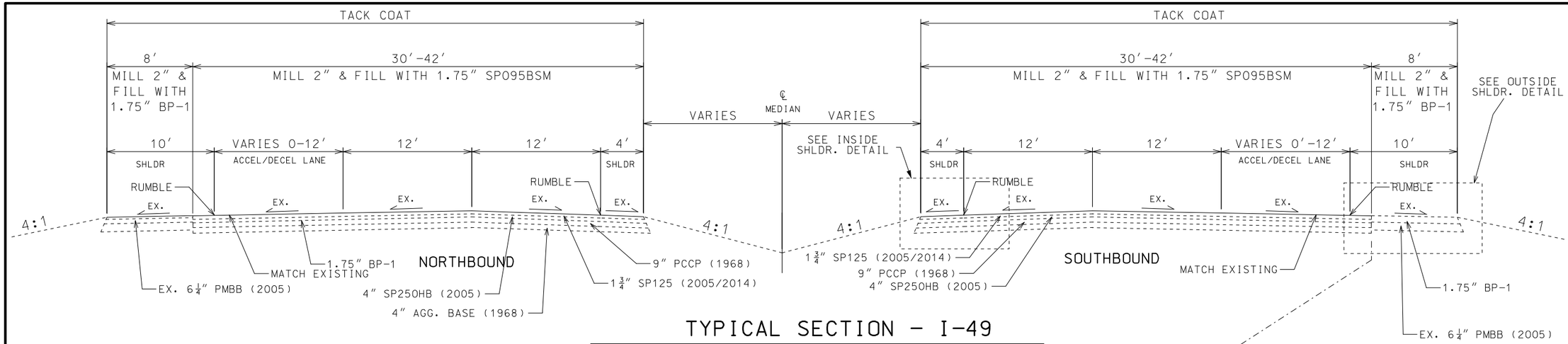
STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021
ROUTE 49 | STATE MO
DISTRICT KC | SHEET NO. 1
COUNTY CASS
JOB NO. J413332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

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

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

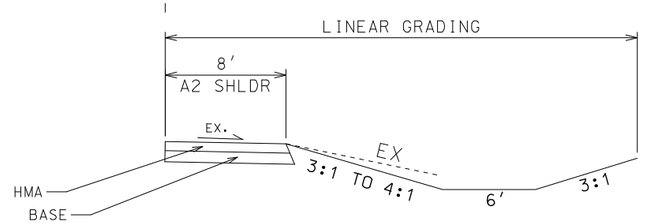


TYPICAL SECTION - I-49

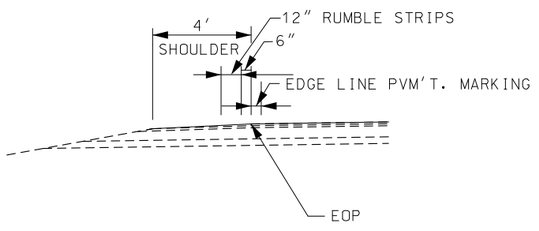
ESTIMATE FACTORS	FOR INFORMATION PURPOSES ONLY
SP095BSM PG 76-22	1.939 TONS/CY
BP-1 PG 64-22	1.993 TONS/CY
TACK COAT	0.10 GAL/SY

SB LOG MILE: 8.479 TO 8.881
SB LOG MILE: 9.329 TO 11.141
SB LOG MILE: 11.351 TO 11.671
SB LOG MILE: 11.872 TO 12.553
SB LOG MILE: 12.618 TO 14.693
SB LOG MILE: 14.981 TO 15.199
SB LOG MILE: 15.402 TO 19.208
SB LOG MILE: 19.254 TO 21.185

NB LOG MILE: 157.415 TO 159.451
NB LOG MILE: 159.497 TO 163.348
NB LOG MILE: 163.561 TO 163.778
NB LOG MILE: 163.988 TO 166.072
NB LOG MILE: 166.137 TO 166.858
NB LOG MILE: 167.077 TO 167.425
NB LOG MILE: 167.629 TO 170.252

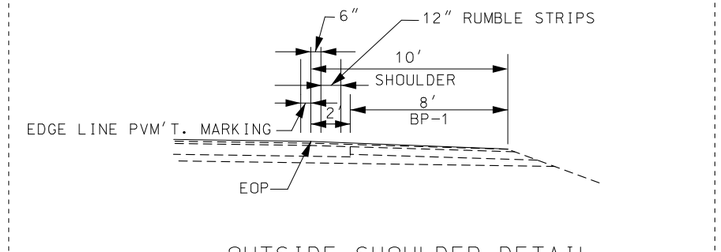


SB LOG MILE: 9.482 TO 9.558



INSIDE SHOULDER DETAIL

✳ AVERAGE DEPTH OF PAVEMENT IS 15″



OUTSIDE SHOULDER DETAIL

TYPICAL SECTION
SHEET 1 OF 4

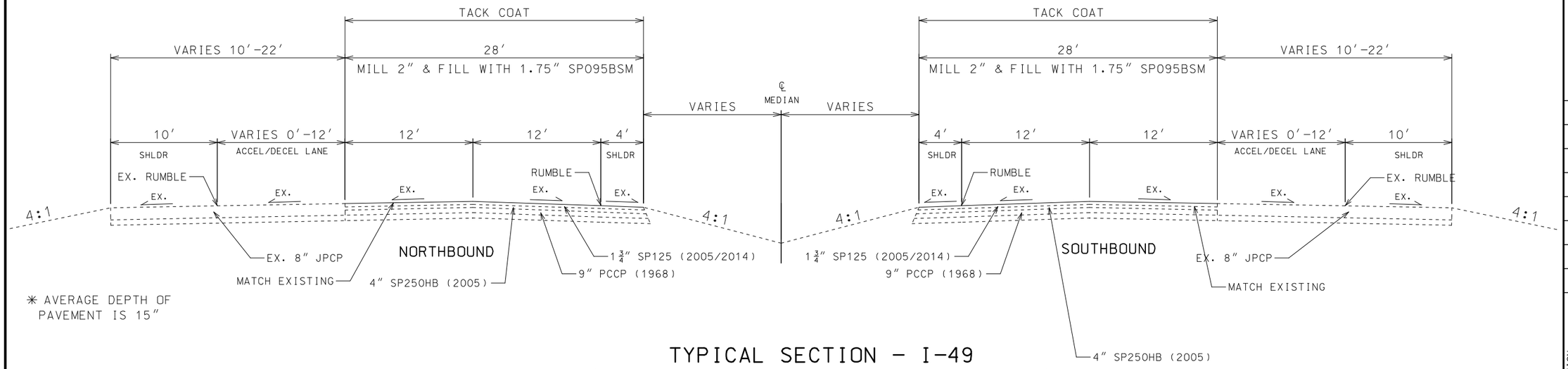
STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021
ROUTE I-49 | STATE MO
DISTRICT KC | SHEET NO. 2
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

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



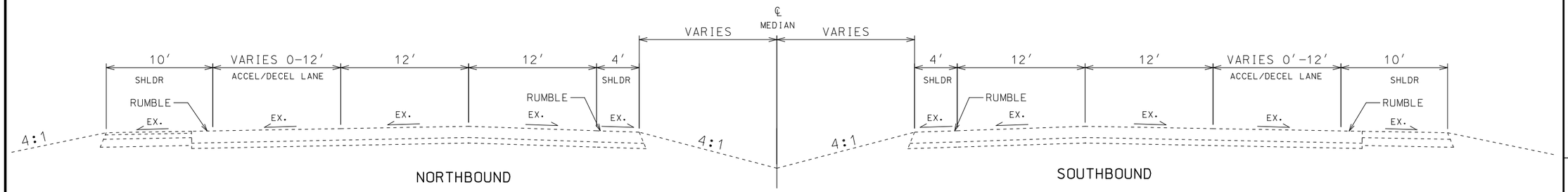
✳ AVERAGE DEPTH OF PAVEMENT IS 15"

TYPICAL SECTION - I-49

SB LOG MILE: 8.881 TO 9.329
SB LOG MILE: 11.141 TO 11.351
SB LOG MILE: 11.671 TO 11.872
SB LOG MILE: 14.693 TO 14.981
SB LOG MILE: 15.199 TO 15.402

NB LOG MILE: 163.348 TO 163.561
NB LOG MILE: 163.778 TO 163.988
NB LOG MILE: 166.858 TO 167.077
NB LOG MILE: 167.425 TO 167.629

ESTIMATE FACTORS	FOR INFORMATION PURPOSES ONLY
SP095BSM PG 76-22	1.939 TONS/CY
BP-1 PG 64-22	1.993 TONS/CY
TACK COAT	0.10 GAL/SY



TYPICAL SECTION - I-49

SB LOG MILE: 21.185 TO 27.259
NB LOG MILE: 151.861 TO 157.415

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
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DATE PREPARED 8/9/2021
ROUTE I-49 | STATE MO
DISTRICT KC | SHEET NO. 2
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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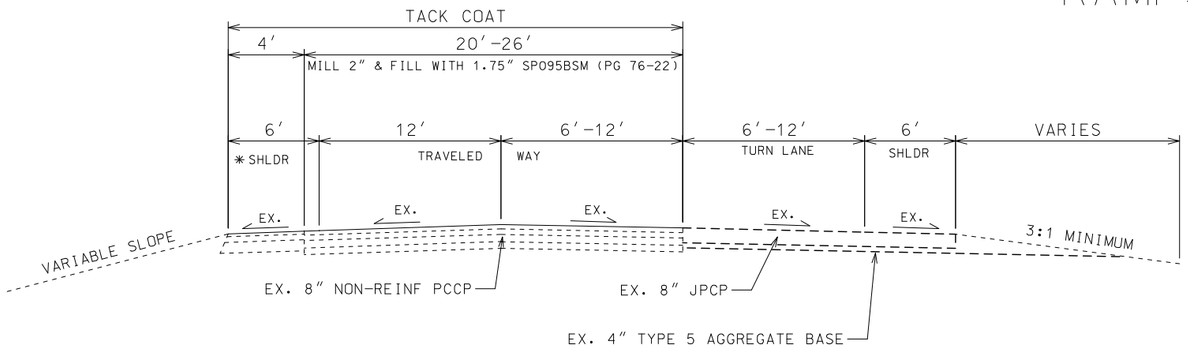
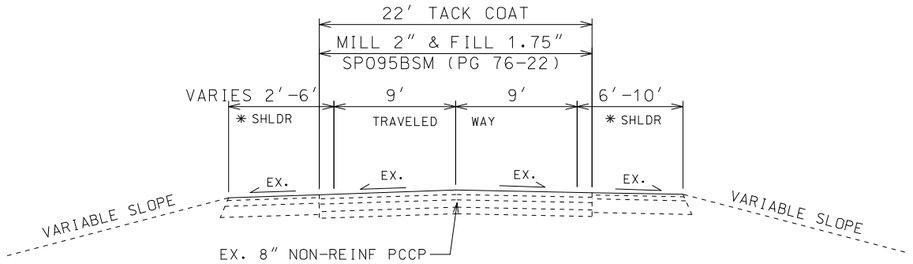
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

RAMPS



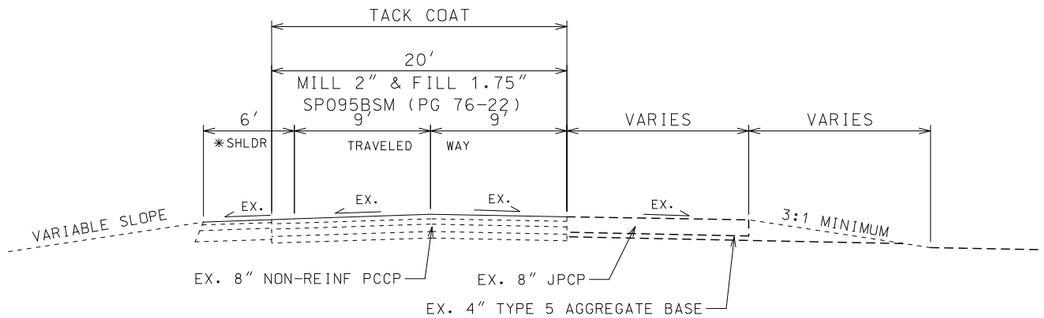
TYPICAL SECTION – I-49 RAMPS

SB OFF RAMP ROUTE 58



TYPICAL SECTION – I-49 RAMPS

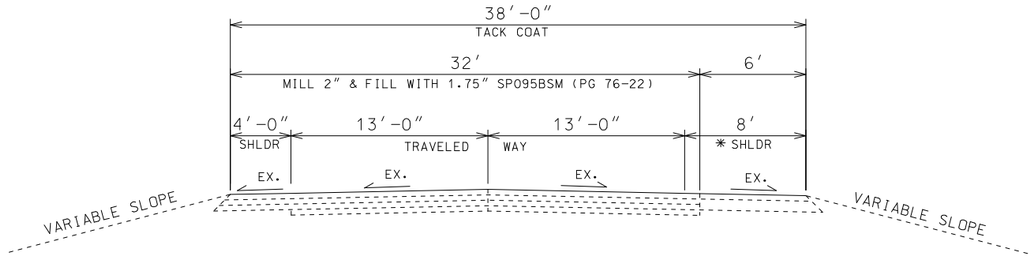
SB ON RAMP ROUTE 58
SB ON RAMP ROUTE C/J
NB OFF RAMP ROUTE C/J
NB ON RAMP ROUTE C/J
NB OFF RAMP ROUTE 58
NB ON RAMP ROUTE 58
SB ON RAMP RTE 7 (275TH ST)



TYPICAL SECTION – I-49 RAMPS

SB OFF RAMP ROUTE C/J

✳ SHOULDERS:
MILL 2″ AND FILL 1¾″ WITH BP-1 IF EXISTING SHOULDER IS ASPHALT
ADD GRAVEL IF EXISTING SHOULDER IS GRAVEL. SEE QUANTITY SHEET FOR LOCATIONS



TYPICAL SECTION – I-49 RAMPS

SB OFF RAMP RTE 2/7 (MECHANIC ST)
SB ON RAMP RTE 2/7 (MECHANIC ST)
NB OFF RAMP RTE 2/7 (MECHANIC ST)
NB ON RAMP RTE 2/7 (MECHANIC ST)

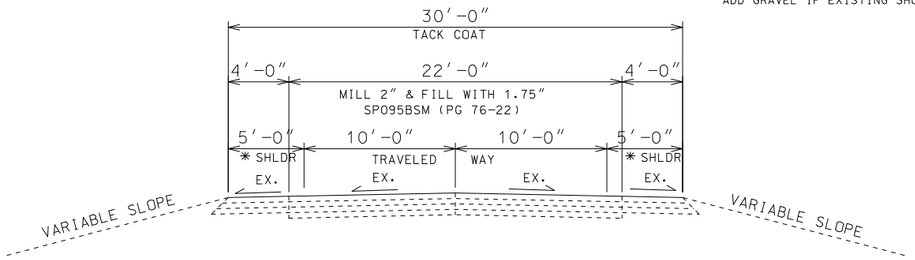
DATE PREPARED 8/9/2021
ROUTE I-49 | STATE MO
DISTRICT KC | SHEET NO. 2
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

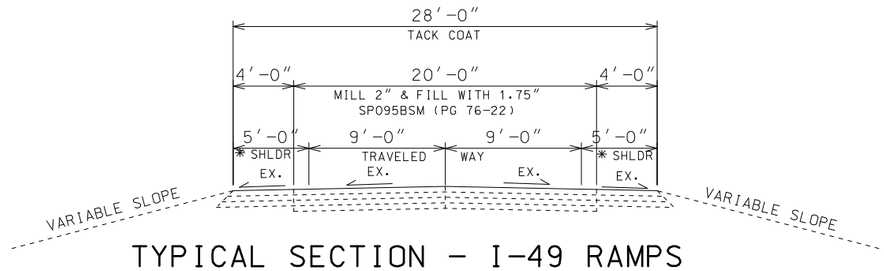
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

* SHOULDERS:
MILL 2" AND FILL 1¾" WITH BP-1 IF EXISTING SHOULDER IS ASPHALT
ADD GRAVEL IF EXISTING SHOULDER IS GRAVEL. SEE QUANTITY SHEET FOR LOCATIONS



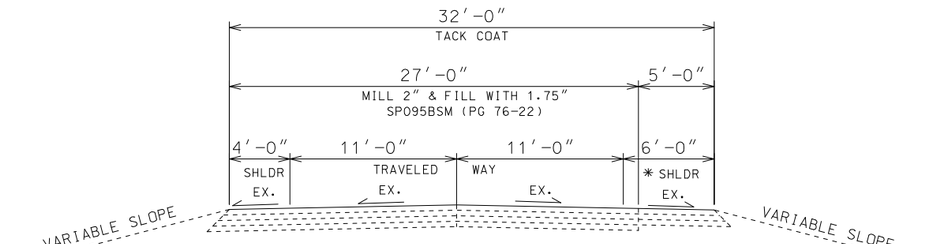
TYPICAL SECTION – I-49 RAMPS

SB OFF RAMP COMMERCIAL ST



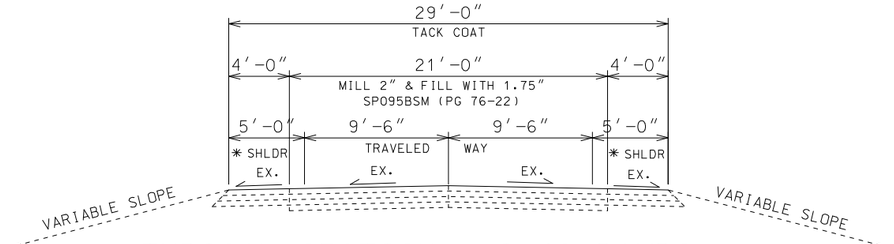
TYPICAL SECTION – I-49 RAMPS

SB ON RAMP COMMERCIAL ST



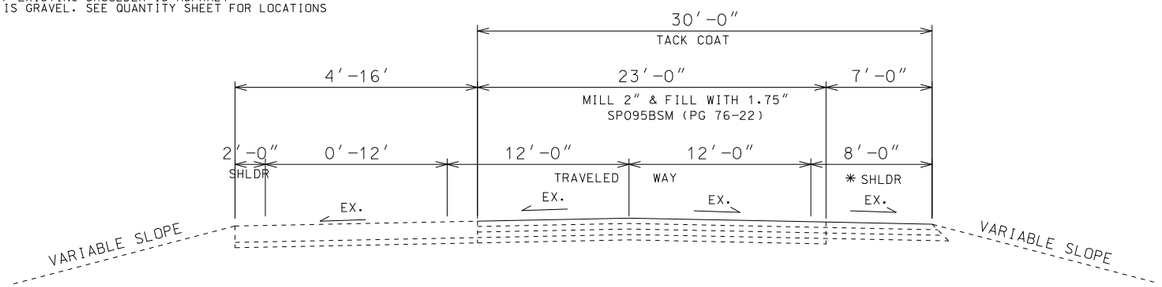
TYPICAL SECTION – I-49 RAMPS

NB OFF RAMP COMMERCIAL ST



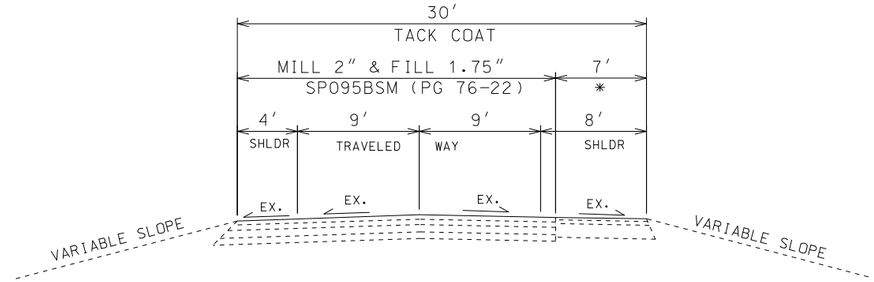
TYPICAL SECTION – I-49 RAMPS

NB ON RAMP COMMERCIAL ST



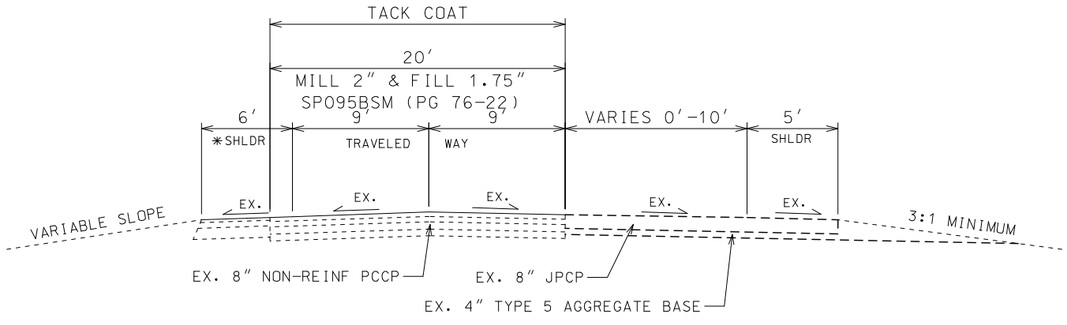
TYPICAL SECTION – I-49 RAMPS

SB OFF RAMP RTE 7 (275TH ST)



TYPICAL SECTION – I-49 RAMPS

NB OFF RAMP RTE 7 (275TH ST)



TYPICAL SECTION – I-49 RAMPS

NB ON RAMP RTE 7 (275TH ST)

TYPICAL SECTION
SHEET 4 OF 4

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021
ROUTE I-49 | STATE MO
DISTRICT KC | SHEET NO. 2
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION	DATE

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

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

PAVEMENT QUANTITIES

LOG MILE START	LOG MILE END	LENGTH (FT)	MAINLINE PAVEMENT WIDTH (FT)	OUTSIDE SHLDR WIDTH (FT)	1.75" SP095BSM PG76-22 (1.939 TONS/CY) (TONS)	1.75" BP-1 PG64-22 (1.993 TONS/CY) (TONS)	TACK COAT (GAL)	COLDMILLING (SY)	GRAVEL *ASSUME 1.5IN (1.5 TONS/CY) (TONS)	NOTES
SOUTHBOUND										
8.479	8.629	792.0	42	8	348.4	68.2	440	4400		
8.629	8.697	359.0	36	8	135.4	30.9	176	1755		
8.697	8.881	971.5	30	8	305.2	83.7	410	4102		
8.881	9.329	2365.4	28	0	693.7	0.0	736	7359		
9.329	9.482	807.8	30	8	253.8	69.6	341	3411		
9.482	9.558	401.3	30		126.1	0.0	134	1338		A2 SHOULDER REPLACED THROUGH SECTION
9.558	9.738	950.4	30	8	298.6	81.8	401	4013		
9.738	9.850	591.4	42	8	260.1	50.9	329	3285		
9.850	9.900	264.0	36	8	99.5	22.7	129	1291		
9.900	11.141	6552.5	30	8	2058.7	564.3	2767	27666	8.11	GRAVEL FOR MEDIAN OPENING @ LM 10.86
11.141	11.351	1108.8	28	0	325.1	0.0	345	3450		
11.351	11.671	1689.6	30	8	530.9	145.5	713	7134		
11.671	11.872	1061.3	28	0	311.2	0.0	330	3302		
11.872	12.553	3595.7	30	8	1129.7	309.7	1518	15182	9.88	GRAVEL FOR MEDIAN OPENING @ LM 12.3
12.618	14.693	12476.6	30	8	3920.0	1074.5	5268	52679	9.86	GRAVEL FOR MEDIAN OPENING @ LM 13.78
14.693	14.981	1520.6	28	0	445.9	0.0	473	4731		
14.981	15.199	1151.0	30	8	361.6	99.1	486	4860		
15.199	15.402	1071.8	28	0	314.3	0.0	333	3335	11.06	GRAVEL FOR MEDIAN OPENING @ LM 15.22
15.402	16.190	4160.6	30	8	1307.2	358.3	1757	17567		
16.190	16.240	264.0	36	8	99.5	22.7	129	1291		
16.240	16.308	359.0	42	8	157.9	30.9	199	1995		
16.308	16.674	1932.5	30	8	607.2	166.4	816	8159		
16.674	16.770	506.9	42	8	223.0	43.7	282	2816		
16.770	16.841	374.9	36	8	141.3	0.0	150	1500	187.44	GRAVEL OUTSIDE SHOULDER ON TAPER FROM RAMP
16.841	19.208	12497.8	30	8	3926.7	1076.3	5277	52768	10.56	GRAVEL FOR MEDIAN OPENING @ LM 18.14
19.254	21.185	10195.7	30	8	3203.4	878.0	4305	43048	9.21	GRAVEL FOR MEDIAN OPENING @ LM 20.36
NORTHBOUND										
157.415	159.451	10750.1	30	8	3377.6	925.8	4539	45389		
159.497	161.938	12888.5	30	8	4049.4	1109.9	5442	54418		
161.938	161.979	216.5	36	8	81.6	0.0	87	866	108.24	GRAVEL OUTSIDE SHOULDER ON TAPER TO RAMP
161.979	162.039	316.8	42	8	139.3	27.3	176	1760	158.40	GRAVEL OUTSIDE SHOULDER RAMP LANE UP TO GORE
162.039	162.409	1953.6	30	8	613.8	168.2	825	8249		
162.409	162.519	580.8	42	8	255.5	0.0	271	2710	290.40	GRAVEL OUTSIDE SHOULDER AT END OF RAMP
162.519	162.537	95.0	36	8	35.8	0.0	46	465	47.52	GRAVEL OUTSIDE SHOULDER ON TAPER FROM RAMP
162.537	162.579	221.8	36	8	83.6	19.1	108	1084		
162.579	163.348	4060.3	30	8	1275.7	349.7	1714	17144		
163.348	163.561	1124.6	28	0	329.8	0.0	350	3499		
163.561	163.778	1145.8	30	8	360.0	98.7	484	4838		
163.778	163.988	1108.8	28	0	325.1	0.0	345	3450		
163.988	166.072	11003.5	30	8	3457.2	947.6	4646	46459		
166.137	166.858	3806.9	30	8	1196.1	327.8	1607	16073		
166.858	167.077	1156.3	28	0	339.1	0.0	360	3597		
167.077	167.425	1837.4	30	8	577.3	158.2	776	7758		
167.425	167.629	1077.1	28	0	315.9	0.0	335	3351		
167.629	168.776	6056.2	30	8	1902.8	521.5	2557	25570		
168.776	168.817	216.5	36	8	81.6	18.6	106	1058		
168.817	168.975	834.2	42	8	367.0	71.8	463	4635		
168.975	169.345	1953.6	30	8	613.8	168.2	825	8249		
169.345	169.477	697.0	42	8	306.6	60.0	387	3872		
169.477	169.537	316.8	36	8	119.4	27.3	155	1549		
169.537	170.067	2798.4	30	8	879.2	241.0	1182	11815		
170.067	170.098	163.7	36	8	61.7	14.1	80	800		
170.098	170.252	813.1	42	8	357.7	70.0	452	4517		
SUBTOTAL 1					43087.2	10502.2	56561.1	565611.2	850.7	

SUMMARY OF QUANTITIES
SHEET 1 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002033198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 8/9/2021
ROUTE: 49 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DATE	DESCRIPTION

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

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

PAVEMENT QUANTITIES (CONT.)

RAMPS

LOCATION	GORE AND SHOULDER AREAS (SY)	RAMP AREA (SY)	1.75" SP095BSM PG76-22 (1.939TONS/CY) (TONS)	1.75" BP-1 PG64-22 (1.993 TONS/CY) (TONS)	TACK COAT (GAL)	COLDMILLING (SY)	GRAVEL *ASSUME 1.5IN (1.5 TONS/CY) (TONS)	NOTES
RTE Y (E 163RD ST) TO I-49 S	451.8	0.0	0.0	43.8	45	452		
I-49 S TO RTE 58 (E 171ST ST)	1306.2	2733.5	257.7	126.5	404	4040		
RTE 58 (E 171ST ST) TO I-49 S	433.0	2745.3	258.8	41.9	318	3178	56.2	
I-49 S TO ROUTE C/J	196.2	1257.0	118.5	19.0	145	1453	35.2	
ROUTE C/J TO I-49 S	84.1	1915.2	180.5	8.1	200	1999	94.3	BP-1 ONLY FOR GORE
I-49 S TO MECHANIC ST	1362.0	2727.9	257.1	132.0	409	4090		
MECHANIC ST TO I-49 S	1005.0	2575.0	242.7	97.4	358	3580		
I-49 S TO COMMERCIAL ST	1088.0	2198.0	207.2	105.4	329	3286		
COMMERCIAL ST TO I-49 S	1413.0	2300.0	216.8	136.9	371	3713		
I-49 S TO 275TH ST	500.0	1293.0	121.9	48.4	179	1793		
275TH ST TO I-49 S	511.0	1066.0	100.5	49.5	158	1577		
I-49 N TO 275TH ST	709.0	984.0	92.7	68.7	169	1693		
275TH ST TO I-49 N	1037.0	2197.0	207.1	100.5	323	3234		
I-49 N TO COMMERCIAL ST	773.0	1745.0	164.5	74.9	252	2518		
COMMERCIAL ST TO I-49 N	569.0	1239.0	116.8	55.1	181	1808		
I-49 N TO MECHANIC ST	1611.0	3888.0	366.5	156.1	550	5499		
MECHANIC ST TO I-49 N	1729.0	3458.0	325.9	167.5	519	5187		
I-49 N TO ROUTE C/J	146.9	2704.3	254.9	14.2	285	2851	62.9	BP-1 ONLY FOR GORE
ROUTE C/J TO I-49 N	113.2	2415.3	227.7	11.0	253	2529	91.1	BP-1 ONLY FOR GORE
I-49 N TO RTE 58 (E 171ST ST)	739.4	2601.5	245.2	71.6	334	3341		
RTE 58 (E 171ST ST) TO I-49 N	1041.4	3422.4	322.6	100.9	446	4464		
I-49 N TO RTE Y (E 163RD ST)	297.0	0.0	0.0	28.8	30	297		
SUBTOTAL 1			43087.2	10502.2	56561.1	565611.2	850.7	
SUBTOTAL 2			4285.4	1658.3	6258.2	62581.6	339.6	
PAY TOTAL			47372.6	12160.4	62819	628193	1190	

A2 SHOULDER

LOG MILE START	LOG MILE END	LENGTH (LF)	WIDTH (LF)	A2 SHLDR (SY)	COMMENTS
9.484	9.558	387	8	344.0	FROM CULVERT TO CULVERT ON EACH SIDE OF RTE 58
			PAY TOTAL	344.0	

PAVEMENT MARKING REMOVAL

LOCATION	LOG MILE START	LOG MILE END	LENGTH (LF)	PM REMOVAL (LF)	COMMENTS
SB I-49	23.461	23.877	2196	549	REMOVE INTERMITTENT STRIPES FROM AUX LANE
	25.401	25.638	1251	313	REMOVE INTERMITTENT STRIPES FROM AUX LANE
	25.899	26.299	2112	528	REMOVE INTERMITTENT STRIPES FROM AUX LANE
NB I-49	157.66	158.029	1948	487	REMOVE INTERMITTENT STRIPES FROM AUX LANE
	158.342	158.685	1811	453	REMOVE INTERMITTENT STRIPES FROM AUX LANE
	160.082	160.54	2418	605	REMOVE INTERMITTENT STRIPES FROM AUX LANE
			PAY TOTAL	2934	

REMOVAL OF IMPROVEMENTS

LOCATION	LOG MILE START	LOG MILE END	QUANTITY	UNITS	COMMENTS
SB I-49	9.457	9.554	538	LF	REMOVE CET, GUARDRAIL, AND END ANCHOR
	9.484	9.558	344	SY	A2 SHOULDER REMOVAL
	12.481	12.561	50	LF	REMOVE CET
	21.401	21.551	50	LF	REMOVE CET
	21.821	22.02	50	LF	REMOVE CET
	22.501	22.678	50	LF	REMOVE CET
	23.059		50	LF	REMOVE CET
	24.858	24.918	50	LF	REMOVE CET
	25.678	25.704	50	LF	REMOVE CET
	25.919	26.199	50	LF	REMOVE CET
NB I-49	152.84	152.88	50	LF	REMOVE CET
	153.021	153.121	50	LF	REMOVE CET
	153.382	153.444	50	LF	REMOVE CET
	153.533	153.601	50	LF	REMOVE CET
	153.654	153.754	50	LF	REMOVE CET
	154.249	154.323	50	LF	REMOVE CET
	155.582	155.682	50	LF	REMOVE CET
	156.209	156.661	50	LF	REMOVE CET
	157.081	157.141	50	LF	REMOVE CET
		PAY TOTAL = 1 LUMP SUM			

SUMMARY OF QUANTITIES
SHEET 2 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 8/9/2021
ROUTE: 49 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

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

PERMANENT PAVEMENT MARKING

LOCATION		LENGTH	6" WATERBORNE YELLOW PAVEMENT MARKING PAINT TYPE L BEADS	6" WATERBORNE WHITE PAVEMENT MARKING PAINT TYPE L BEADS	12" WATERBORNE WHITE PAVEMENT MARKING PAINT TYPE L BEADS	PREFORMED THERMOPLASTIC PAVEMENT MARKING LEFT/RIGHT ARROW	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 24 IN. WHITE STOP BAR	PREFORMED THERMOPLASTIC PAVEMENT MARKING 30" WHITE MIDBLOCK	PREFORMED THERMOPLASTIC PAVEMENT MARKING 12" WHITE YIELD LINE TRIANGLES
LOG MILE START	LOG MILE END	(FT)	(LF)	(LF)	(LF)	(EACH)	(LF)	(EACH)	(EACH)
SOUTHBOUND									
8.479	8.519	211	211	264	422	0	0	0	0
8.519	8.599	422	422	634	0	0	0	0	0
8.599	8.899	1584	1584	396	0	0	0	0	0
8.899	9.239	1795	1795	2693	0	0	0	0	0
9.239	9.339	528	528	792	1056	0	0	0	0
9.339	9.740	2117	2117	529	0	0	0	0	0
9.740	9.780	211	211	264	422	0	0	0	0
9.780	9.840	317	317	475	0	0	0	0	0
9.840	11.142	6875	6875	8593	0	0	0	0	0
11.142	11.281	734	734	1101	0	0	0	0	0
11.281	11.302	111	111	139	222	0	0	0	0
11.302	11.322	106	106	26	106	0	0	0	0
11.322	11.663	1800	1800	2251	0	0	0	0	0
11.663	11.703	211	211	264	422	0	0	0	0
11.703	11.782	417	417	626	0	0	0	0	0
11.782	14.759	15719	15719	19648	0	0	0	0	0
14.759	14.899	739	739	1109	0	0	0	0	0
14.899	14.939	211	211	264	422	0	0	0	0
14.939	15.199	1373	1373	1716	0	0	0	0	0
15.199	15.239	211	211	264	422	0	0	0	0
15.239	15.319	422	422	634	0	0	0	0	0
15.319	16.200	4652	4652	5815	0	0	0	0	0
16.200	16.261	322	322	483	0	0	0	0	0
16.261	16.320	312	312	389	623	0	0	0	0
16.320	16.680	1901	1901	2376	0	0	0	0	0
16.680	16.700	106	106	132	211	0	0	0	0
16.700	16.740	211	211	317	0	0	0	0	0
16.740	21.182	23454	23454	29317	0	0	0	0	0
23.461	23.877	2196	0	✳ 549	0	0	0	0	0
25.401	25.638	1251	0	✳ 313	0	0	0	0	0
25.899	26.299	2112	0	✳ 528	0	0	0	0	0
NORTHBOUND									
152.395	152.764	1948	0	✳ 487	0	0	0	0	0
153.077	153.420	1811	0	✳ 453	0	0	0	0	0
154.817	155.275	2418	0	✳ 605	0	0	0	0	0
157.421	161.936	23839	23839	29799	0	0	0	0	0
161.936	161.996	317	317	475	0	0	0	0	0
161.996	162.057	322	322	403	644	0	0	0	0
162.057	162.416	1896	1896	2369	0	0	0	0	0
162.416	162.437	111	111	139	222	0	0	0	0
162.437	162.516	417	417	626	0	0	0	0	0
162.516	163.395	4641	4641	5801	0	0	0	0	0
163.395	163.475	422	422	634	0	0	0	0	0
163.475	163.516	216	216	271	433	0	0	0	0
163.516	163.775	1368	1368	1709	0	0	0	0	0
163.775	163.814	206	206	257	412	0	0	0	0
163.814	163.895	428	428	642	0	0	0	0	0
163.895	166.872	15719	15719	19648	0	0	0	0	0
166.872	166.992	634	634	950	0	0	0	0	0
166.992	167.033	216	216	271	433	0	0	0	0
167.033	167.430	2096	2096	2620	0	0	0	0	0
167.430	167.471	216	216	271	433	0	0	0	0
167.471	167.530	312	312	467	0	0	0	0	0
167.530	168.771	6552	6552	8191	0	0	0	0	0
168.771	168.931	845	845	1267	0	0	0	0	0
168.931	168.991	317	317	396	634	0	0	0	0
168.991	169.351	1901	1901	2376	0	0	0	0	0
169.351	169.391	211	211	264	422	0	0	0	0
169.391	169.451	317	317	475	0	0	0	0	0
169.451	170.072	3279	3279	4099	0	0	0	0	0
170.072	170.212	739	739	1109	0	0	0	0	0
170.212	170.252	211	211	264	422	0	0	0	0
SUB TOTAL 1			134820	170236	8385	0	0	0	0

✳ REPLACE WHITE INTERMITTENT LANE LINE WITH WHITE DOTTED LANE LINE

SUMMARY OF QUANTITIES
SHEET 3 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	3

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

PERMANENT PAVEMENT MARKING (CONT.)

LOCATION	LENGTH (FT)	6" WATERBORNE YELLOW PAVEMENT MARKING PAINT TYPE L BEADS (LF)	6" WATERBORNE WHITE PAVEMENT MARKING PAINT TYPE L BEADS (LF)	12" WATERBORNE WHITE PAVEMENT MARKING PAINT TYPE L BEADS (LF)	PREFORMED THERMOPLASTIC PAVEMENT MARKING LEFT/RIGHT ARROW (EACH)	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 24 IN. WHITE STOP BAR (LF)	PREFORMED THERMOPLASTIC PAVEMENT MARKING 30" WHITE MIDBLOCK (EACH)	PREFORMED THERMOPLASTIC PAVEMENT MARKING 12" WHITE YIELD LINE TRIANGLES (EACH)
RAMPS								
I-49 S TO E 171ST ST		842	852	0	11	27	9	0
E 171ST ST TO I-49 S		1191	1196	0	0	0	10	0
I-49 S TO ROUTE J		646	760	0	0	0	0	0
ROUTE J TO I-49 S		917	917	0	0	0	0	0
I-49 S TO MECHANICS ST		1008	1200	0	0	16	0	0
MECHANICS ST TO I-49 S		925	1123	0	0	0	0	0
I-49 S TO COMMERCIAL ST		876	1008	0	0	34	0	0
COMMERCIAL ST TO I-49 S		1085	1087	0	0	0	0	0
I-49 S TO 275TH ST		90	814	18	2	0	0	0
275TH ST TO I-49 S		435	456	0	0	0	0	0
I-49 N TO 275TH ST		452	470	0	0	28	0	0
275TH ST TO I-49 N		1084	314	427	0	0	0	6
I-49 N TO COMMERCIAL ST		664	680	0	0	40	0	0
COMMERCIAL ST TO I-49 N		514	545	0	0	0	0	0
I-49 N TO MECHANICS ST		1640	1766	0	0	18	0	0
MECHANICS ST TO I-49 N		1384	1367	0	0	0	0	0
I-49 N TO ROUTE J		897	1250	0	0	16	5	0
ROUTE J TO I-49 N		1037	1061	0	0	0	10	0
I-49 N TO E 171ST ST		867	1096	0	2	14	8	0
E 171ST ST TO I-49 N		1148	1352	0	2	0	9	0
SUB TOTAL 1		134820	170236	8385	0	0	0	0
SUB TOTAL 2		17703	19315	445	17	193	51	6
PAY TOTAL		152523	189551	8830	17	193	51	6

PCCP JOINT CRACK SEALING

LOCATION	LOG MILE	JOINT LENGTH (LF)	NOTES	COMMENTS
SB I-49	21.582	38	CLEANOUT, REPACK AND HOT POUR	SOUTHSIDE OF EAST FORK EAST BRANCH SOUTH GRAND RIVER
NB I-49	154.957	46	CLEANOUT AND RESTORE	NORTHSIDE OF BRIDGE OVER MECHANIC ST
	154.91	46	CLEANOUT AND RESTORE	SOUTH SIDE OF BRIGE OVER MECHANIC
	PAY TOTAL	130		

SUMMARY OF QUANTITIES
SHEET 4 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 8/9/2021
ROUTE: 49 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

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

RUMBLE STRIPS

LOG MILE START	LOG MILE END	LENGTH (FT)	INSIDE LANE RUMBLE	OUTSIDE LANE RUMBLE	LENGTH OF STRIPS (STA)
SOUTHBOUND					
8.479	8.699	1162	X		11.6
8.699	8.881	961	X	X	19.2
8.881	9.339	2418	X		24.2
9.339	9.740	2117	X	X	42.3
9.740	9.900	845	X		8.4
9.900	11.142	6558	X	X	131.2
11.142	11.362	1162	X		11.6
11.362	11.664	1595	X	X	31.9
11.664	11.881	1146	X		11.5
11.881	12.553	3548	X	X	71.0
12.618	14.699	10988	X	X	219.8
14.699	14.999	1584	X		15.8
14.999	15.199	1056	X	X	21.1
15.199	15.420	1167	X		11.7
15.420	16.200	4118	X	X	82.4
16.200	16.300	528	X		5.3
16.300	16.680	2006	X	X	40.1
16.680	16.840	845	X		8.4
16.840	19.208	12503	X	X	250.1
19.254	21.182	10180	X	X	203.6
NORTHBOUND					
157.421	159.451	10718	X	X	214.4
159.497	161.936	12878	X	X	257.6
161.936	162.036	528	X		5.3
162.036	162.416	2006	X	X	40.1
162.416	162.576	845	X		8.4
162.576	163.355	4113	X	X	82.3
163.355	163.575	1162	X		11.6
163.575	163.775	1056	X	X	21.1
163.775	163.994	1156	X		11.6
163.994	166.072	10972	X	X	219.4
166.137	166.853	3780	X	X	75.6
166.853	167.091	1257	X		12.6
167.091	167.431	1795	X	X	35.9
167.431	167.630	1051	X		10.5
167.630	168.771	6024	X	X	120.5
168.771	168.971	1056	X		10.6
168.971	169.351	2006	X	X	40.1
169.351	169.531	950	X		9.5
169.531	170.072	2856	X	X	57.1
170.072	170.252	950	X		9.5
TOTAL					2474.8

GUARDRAIL

LOG MILE START	LOG MILE END	TYPE A CRASHWORTHY END TERMINAL (MASH) (EACH)	MGS GUARDRAIL (LF)	END ANCHOR (EA)	SHAPING SLOPES CLASS III (100FT)	GRADING COMMENTS	REMARKS
SOUTHBOUND							
9.457	9.554	1	450	1	0.5	GRADING NEEDED	RIGHT SIDE
12.481	12.561	1				NO GRADING IS NECESSARY	LEFT SIDE
21.401	21.551	1				NO GRADING IS NECESSARY	RIGHT SIDE
21.821	22.020	1				NO GRADING IS NECESSARY	RIGHT SIDE
22.501	22.678	1				NO GRADING IS NECESSARY	RIGHT SIDE
23.059		1				NO GRADING IS NECESSARY	LEFT SIDE OF 291 OFF RAMP
24.858	24.918	1				NO GRADING IS NECESSARY	LEFT SIDE
25.678	25.704	1				NO GRADING IS NECESSARY	RIGHT SIDE
25.919	26.199	1				NO GRADING IS NECESSARY	RIGHT SIDE
NORTHBOUND							
152.840	152.880	1				NO GRADING IS NECESSARY	RIGHT SIDE
153.021	153.121	1				NO GRADING IS NECESSARY	RIGHT SIDE FROM WEIGH STATION
153.382	153.444	1				NO GRADING IS NECESSARY	RIGHT SIDE
153.533	153.601	1				NO GRADING IS NECESSARY	RIGHT SIDE
153.654	153.754	1			0.5	GRADING NEEDED	RIGHT SIDE OF COMMERCIAL ST ON RAMP
154.249	154.323	1				NO GRADING IS NECESSARY	RIGHT SIDE
155.582	155.682	1				NO GRADING IS NECESSARY	RIGHT SIDE OF 291 ON RAMP
156.209	156.661	1				NO GRADING IS NECESSARY	RIGHT SIDE
157.081	157.141	1				NO GRADING IS NECESSARY	RIGHT SIDE
TOTAL		18	450	1	1		

GRADING AND EXCAVATION

LOCATION	START (STA OR LOG MILE)	END (STA OR LOG MILE)	LINEAR GRADING CLASS 1 (STA)	CLASS A EXCAVATION (CY)
RTE Y (163RD)	0+17.52	2+45.70		1304
RTE Y (163RD)	0+63	1+17.61	0.54	
RTE Y (163RD)	1+44.10	1+98.41	0.54	
I-49	9.482	9.558	4.0	
PAY TOTAL			5.1	1304

SEEDING

LOCATION	START	END	COOL SEASON (AC)	COMMENTS
163RD ST	0+17.52	2+45.70	0.1	
		PAY TOTAL	0.1	

MOBILIZATION

PAY TOTAL = 1 LUMP SUM

PAVER MOUNTED THERMAL PROFILES

PAY TOTAL = 1 LUMP SUM

INTELLIGENT COMPACTION

PAY TOTAL = 1 LUMP SUM

ASPHALT PERFORMANCE TESTING

PAY TOTAL = 1 LUMP SUM

PORTLAND CEMENT CONCRETE SHOULDER RUMBLE STRIPS

LOCATION	LOG MILE START	LOG MILE END	RUMBLE LENGTH (STA)	COMMENTS
SB I-49	21.185	27.259	320.7	INSIDE LANE
	21.508	27.259	303.7	OUTSIDE LANE
NB I-49	151.861	157.415	293.3	INSIDE LANE
	151.861	157.415	293.3	OUTSIDE LANE
		PAY TOTAL	1210.9	

EROSION AND SEDIMENT CONROL

LOCATION	START (STA)	END (STA)	FURNISHING TYPE 2 ROCK BLANKET (CY)	PLACING TYPE 2 ROCK BLANKET (CY)	TYPE 1C EROSION CONTROL BLANKET (SY)	FURNISHING TYPE 1 ROCK DITCH LINER (CY)	PLACING TYPE 1 ROCK DITCH LINER (CY)	PERMANENT EROSION CONTROL GEOTEXTILE (SY)	SILT FENCE (LF)	SEDIMENT REMOVAL (CY)
RTE Y (163RD)	0+17.52	0+63.00			90					
RTE Y (163RD)	0+63.00	1+98.41	447	447				671		
RTE Y (163RD)	0+63.00	1+17.61				21.6	21.6	97		
RTE Y (163RD)	1+44.10	1+98.41				22.4	22.4	101		
RTE Y (163RD)	1+98.41	2+45.70			179					
RTE Y (163RD)	0+1.08	2+69.85							496	5
PAY TOTAL			447	447	269	44	44	869	496	5

SUMMARY OF QUANTITIES
SHEET 5 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002033198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 8/9/2021
ROUTE: 49 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION | DATE

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

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

PAVEMENT REPAIR

LOG MILE	LANE ONE	LANE TWO	LENGTH	WIDTH	FULL DEPTH				
					FURNISHING AND PLACING CONC. MAT'L FULL DEPTH	SUBGRADE COMPACTION	TYPE 1 OR 5 AGGR. FOR BASE	DOWEL BARS	SAW CUT
			FT	FT	SY	SY	SY	EA	LF
9.332	X		6	12	8.0	0.8	0.8	20	36
9.373		X	6	12	8.0	0.8	0.8	20	36
9.398		X	6	12	8.0	0.8	0.8	20	36
9.404		X	6	12	8.0	0.8	0.8	20	36
9.561		X	6	12	8.0	0.8	0.8	20	36
9.98		X	6	12	8.0	0.8	0.8	20	36
10.215	X		6	12	8.0	0.8	0.8	20	36
10.326		X	6	12	8.0	0.8	0.8	20	36
10.528		X	6	12	8.0	0.8	0.8	20	36
11.588	X		6	12	8.0	0.8	0.8	20	36
11.732	X		6	12	8.0	0.8	0.8	20	36
11.77	X		6	12	8.0	0.8	0.8	20	36
11.774	X		6	12	8.0	0.8	0.8	20	36
12.415	X	X	6	24	16.0	1.6	1.6	40	66
12.471	X		6	12	8.0	0.8	0.8	20	36
12.484	X		6	12	8.0	0.8	0.8	20	36
12.504	X	X	6	24	16.0	1.6	1.6	40	66
12.505		X	6	12	8.0	0.8	0.8	20	36
12.512		X	6	12	8.0	0.8	0.8	20	36
12.867	X	X	6	24	16.0	1.6	1.6	40	66
12.88	X	X	6	24	16.0	1.6	1.6	40	66
12.908	X		6	12	8.0	0.8	0.8	20	36
12.915	X		6	12	8.0	0.8	0.8	20	36
12.952	X		6	12	8.0	0.8	0.8	20	36
12.955	X		6	12	8.0	0.8	0.8	20	36
13.032	X		6	12	8.0	0.8	0.8	20	36
13.111	X		6	12	8.0	0.8	0.8	20	36
13.117	X		6	12	8.0	0.8	0.8	20	36
16.198	X	X	6	24	16.0	1.6	1.6	40	66
16.481	X		6	12	8.0	0.8	0.8	20	36
16.912	X	X	6	24	16.0	1.6	1.6	40	66
16.914	X	X	6	24	16.0	1.6	1.6	40	66
17.045	X		6	12	8.0	0.8	0.8	20	36
17.104	X		6	12	8.0	0.8	0.8	20	36
17.367	X		6	12	8.0	0.8	0.8	20	36
17.51	X		6	12	8.0	0.8	0.8	20	36
17.819	X		6	12	8.0	0.8	0.8	20	36
17.844	X		6	12	8.0	0.8	0.8	20	36
18.042	X		6	12	8.0	0.8	0.8	20	36
18.296	X		6	12	8.0	0.8	0.8	20	36
18.523	X		6	12	8.0	0.8	0.8	20	36
18.623	X		6	12	8.0	0.8	0.8	20	36
18.626	X		6	12	8.0	0.8	0.8	20	36
18.796		X	6	12	8.0	0.8	0.8	20	36
18.802	X	X	6	24	16.0	1.6	1.6	40	66
19.107	X	X	6	24	16.0	1.6	1.6	40	66
19.285	X	X	6	24	16.0	1.6	1.6	40	66
19.296	X	X	6	24	16.0	1.6	1.6	40	66
19.339	X	X	6	24	16.0	1.6	1.6	40	66
19.43		X	6	12	8.0	0.8	0.8	20	36
20.17	X		6	12	8.0	0.8	0.8	20	36
20.685		X	6	12	8.0	0.8	0.8	20	36
20.719	X	X	6	24	16.0	1.6	1.6	40	66
21.035	X		6	12	8.0	0.8	0.8	20	36
21.095	X		6	12	8.0	0.8	0.8	20	36
21.119	X		6	12	8.0	0.8	0.8	20	36
23.054	X		6	12	8.0	0.8	0.8	20	36
23.236		X	6	12	8.0	0.8	0.8	20	36
23.3	X		6	12	8.0	0.8	0.8	20	36
25.048		X	6	12	8.0	0.8	0.8	20	36
25.083		X	6	12	8.0	0.8	0.8	20	36
			SB SUB TOTAL		592.0	59	59	1480	2586
			20% ADDITIONAL		118.4	12	12	296	517
			SB TOTAL		710.4	71	71	1776	3103

PAVEMENT REPAIR

LOG MILE	LANE ONE	LANE TWO	LENGTH	WIDTH	FULL DEPTH				
					FURNISHING AND PLACING CONC. MAT'L FULL DEPTH	SUBGRADE COMPACTION	TYPE 1 OR 5 AGGR. FOR BASE	DOWEL BARS	SAW CUT
			FT	FT	SY	SY	SY	EA	LF
153.840	X		6	12	8.0	0.8	0.8	20	36
153.903	X		6	12	8.0	0.8	0.8	20	36
153.989	X		6	12	8.0	0.8	0.8	20	36
154.015	X		6	12	8.0	0.8	0.8	20	36
154.194	X		6	12	8.0	0.8	0.8	20	36
155.108	X		6	12	8.0	0.8	0.8	20	36
155.343	X		6	12	8.0	0.8	0.8	20	36
155.352	X		6	12	8.0	0.8	0.8	20	36
155.401		X	6	12	8.0	0.8	0.8	20	36
155.445		X	6	12	8.0	0.8	0.8	20	36
155.520		X	6	12	8.0	0.8	0.8	20	36
158.758		X	6	12	8.0	0.8	0.8	20	36
159.145		X	6	12	8.0	0.8	0.8	20	36
159.418		X	6	12	8.0	0.8	0.8	20	36
159.425		X	6	12	8.0	0.8	0.8	20	36
159.512		X	6	12	8.0	0.8	0.8	20	36
159.518		X	6	12	8.0	0.8	0.8	20	36
159.521	X	X	6	24	16.0	1.6	1.6	40	66
160.120	X		6	12	8.0	0.8	0.8	20	36
162.306		X	6	12	8.0	0.8	0.8	20	36
163.062	X		6	12	8.0	0.8	0.8	20	36
163.502	X	X	6	24	16.0	1.6	1.6	40	66
166.076		X	6	12	8.0	0.8	0.8	20	36
166.078		X	6	12	8.0	0.8	0.8	20	36
169.319	X	X	6	24	16.0	1.6	1.6	40	66
169.328	X		6	12	8.0	0.8	0.8	20	36
169.330	X		6	12	8.0	0.8	0.8	20	36
169.584		X	6	12	8.0	0.8	0.8	20	36
170.169		X	6	12	8.0	0.8	0.8	20	36
170. 173		X	6	12	8.0	0.8	0.8	20	36
170.184		X	6	12	8.0	0.8	0.8	20	36
170.192		X	6	12	8.0	0.8	0.8	20	36
170.206		X	6	12	8.0	0.8	0.8	20	36
170.217		X	6	12	8.0	0.8	0.8	20	36
170.233		X	6	12	8.0	0.8	0.8	20	36
			NB SUB TOTAL		304.0	30	30	760	1350
			20% ADDITIONAL		60.8	6	6	152	270
			NB TOTAL		364.8	36	36	912	1620
			PAY TOTAL		1075.2	107	107	2688	4723

PAVEMENT REPAIR

LOCATION	LOG MILE	LANE ONE	LANE TWO	LANE THREE	LENGTH	WIDTH	PARTIAL DEPTH	
							FURNISHING AND PLACING CONC. MAT'L CLASS A PARTIAL DEPTH	REMOVAL FOR CLASS A PARTIAL DEPTH PAV'T REPAIR
					FT	FT	CY	SY
SB I-49	24.130	X			6	6	0.50	4.00
NB I-49	154.180	X			6	2	0.17	1.33
	155.139			X	3	2	0.08	0.67
	155.579	X			2	2	0.06	0.44
	156.015	X			8	3	0.33	2.67
					SUB TOTAL		1.1	9.1
					20% ADDITIONAL		0.2	1.8
					PAY TOTAL		1.3	10.9

SUMMARY OF QUANTITIES
SHEET 6 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002033198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED: 8/9/2021
ROUTE: 49 | STATE: MO
DISTRICT: KC | SHEET NO.: 3
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DATE | DESCRIPTION

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

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

DELINEATORS

LOCATION	LOG MILE START	LOG MILE END	GUARDRAIL DELINEATOR WHITE (EA)	GUARDRAIL DELINEATOR YELLOW (EA)	GUARDRAIL DELINEATOR WHITE/RED (EA)	GUARDRAIL DELINEATOR YELLOW/RED (EA)	TRAFFIC BARRIER DELINEATOR WHITE (EA)	TRAFFIC BARRIER DELINEATOR YELLOW (EA)	COMMENTS
SB I-49	12.566	12.608	0	0	0	0	5	5	
	21.441	21.521	6	0	0	0	0	0	OUTSIDE GUARDRAIL
	21.461	21.541	0	6	0	0	0	0	INSIDE GUARDRAIL
	21.581	21.741	18	0	0	0	0	0	OUTSIDE GUARDRAIL
	21.821	22.02	16	0	0	0	0	0	OUTSIDE GUARDRAIL
	22.24	22.442	13	0	0	0	0	0	OUTSIDE GUARDRAIL
	22.5	22.666	18	0	0	0	0	0	OUTSIDE GUARDRAIL
	22.94		5	0	8	0	0	0	291 RAMP OUTSIDE GUARDRAIL
	23.059		0	0	0	2	0	0	291 RAMP INSIDE GUARDRAIL
	23.439	23.749	24	0	0	0	0	0	OUTSIDE GUARDRAIL
	23.659	23.749	0	9	0	0	0	0	INSIDE GUARDRAIL
	23.749	23.781	0	0	0	0	2	1	
	23.781	23.859	4	0	0	0	0	0	OUTSIDE GUARDRAIL
	23.781	23.859	0	4	0	0	0	0	INSIDE GUARDRAIL
	24.268	24.358	0	7	0	0	0	0	INSIDE GUARDRAIL
	24.368	24.418	0	0	0	0	3	0	
	24.862		5	0	1	0	0	0	COMMERCIAL ST RAMP OUTSIDE GUARDRAIL
	24.858	24.918	0	5	0	0	0	0	INSIDE GUARDRAIL
	25.041	25.121	3	0	0	0	0	0	OUTSIDE GUARDRAIL
	25.915	26.199	24	0	0	0	0	0	OUTSIDE GUARDRAIL
	26.423	26.5	8	0	0	0	0	0	OUTSIDE GUARDRAIL
NB I-49	152.109	152.184	8	0	0	0	0	0	OUTSIDE GUARDRAIL
	152.42	152.469	0	4	0	0	0	0	INSIDE GUARDRAIL
	153.018	153.118	9	0	0	0	0	0	OUTSIDE GUARDRAIL
	153.379	153.441	6	0	0	0	0	0	OUTSIDE GUARDRAIL
	153.369	153.441	0	3	0	0	0	0	INSIDE GUARDRAIL
	153.524	153.59	3	0	0	0	0	0	OUTSIDE GUARDRAIL
	154.244	154.315	8	0	0	0	0	0	OUTSIDE GUARDRAIL
	154.315	154.36	0	0	0	0	4	5	
	154.36	154.58	15	0	0	0	0	0	OUTSIDE GUARDRAIL
	154.86	154.919	1	0	0	0	0	0	OUTSIDE GUARDRAIL
	154.919	154.948	0	0	0	0	0	2	
	154.948	155.42	35	0	0	0	0	0	OUTSIDE GUARDRAIL
	155.128	155.218	0	4	0	0	0	0	INSIDE GUARDRAIL
	155.998	156.177	15	0	0	0	0	0	OUTSIDE GUARDRAIL
	156.207	156.658	23	0	0	0	0	0	OUTSIDE GUARDRAIL
	157.058	157.138	0	5	0	0	0	0	INSIDE GUARDRAIL
	157.068	157.138	4	0	0	0	0	0	OUTSIDE GUARDRAIL
	157.138	157.168	0	0	0	0	3	1	
	165.903	166.084	3	0	0	0	0	0	OUTSIDE GUARDRAIL
	166.004	166.084	0	1	0	0	0	0	INSIDE GUARDRAIL
	166.084	166.124	0	0	0	0	4	5	
	169.894	170.057	2	0	0	0	0	0	OUTSIDE GUARDRAIL
		PAY TOTAL	276	48	9	2	21	19	

SUMMARY OF QUANTITIES
SHEET 7 OF 8

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	3

COUNTY
CASS

JOB NO.
J4I3332

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

EFFECTIVE: 04-01-2021

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	2	32.00			40	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	2	32.00			6A	MERGE (ARROW SYMBOL)
W04-1aR	48X48	16.00						MERGE (ARROW SYMBOL)
W05-1	48X48	16.00	4	64.00			43	ROAD/BRIDGE/RAMP NARROWS
W05-3	48X48	16.00						ONE LANE BRIDGE
W05-5	48X48	16.00	4	64.00			34	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	4	20.00			44A	NEXT 1 MILE (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 (WITH FLAGS)
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	2	12.50			44	ADVISORY SPEED (PLAQUE)
W016-2	30X24	5.00						XXX FEET (PLAQUE)
W016-3	30X24	5.00						X MILE (PLAQUE)
W020-1	48X48	16.00	17	272.00			2	ROAD/BRIDGE/RAMP WORK AHEAD
W020-2	48X48	16.00						DETOUR AHEAD
W020-3	48X48	16.00						ROAD CLOSED AHEAD
W020-4	48X48	16.00						ONE LANE ROAD AHEAD
W020-5	48X48	16.00	4	64.00			5	RIGHT/CENTER/LEFT LANE CLOSED AHEAD
W020-5a	48X48	16.00						2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD
W020-6a	48X48	16.00	4	64.00			6	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	4	64.00			21	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	4	8.76				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	4	40.00			1	ROAD WORK NEXT 19 MILES
G020-2	48X24	8.00	4	32.00			26	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	4	24.00			54	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	2	13.86			13	YIELD
R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50						ALL WAY (PLAQUE)
R2-1	36X48	12.00	8	96.00			4.25	SPEED LIMIT 2-55, 2-60, 2-65, 2-70
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						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	64.00				POINT OF PRESENCE
CONST-7	48X24	8.00						RATE OUR WORK ZONE
CONST-7	72X36	18.00	2	36.00				RATE OUR WORK ZONE
CONST-8	48X36	12.00	4	48.00				WORK ZONE NO PHONE ZONE

616-10.05 CONSTRUCTION SIGNS	TOTAL
	1052

616-10.10 RELOCATED SIGNS	TOTAL
	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	4	TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
6161008	27	ADVANCED WARNING RAIL SYSTEM
6161012		BUOYS (BOATS KEEP OUT)
6161013		BUOYS (NO WAKE)
6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)
6161025	360	CHANNELIZER (TRIM LINE)
6161030	3	TYPE III MOVEABLE BARRICADE
6161033	30	DIRECTION INDICATOR BARRICADE
6161040	4	FLASHING ARROW PANEL
6161047		TYPE III OBJECT MARKER
6161051		WARNING LIGHT, TYPE A
6161052		WARNING LIGHT, TYPE B
6161053		WARNING LIGHT, TYPE C
6161055	30	SEQUENTIAL FLASHING WARNING LIGHT
6161070		TUBULAR MARKER
6161095		RADAR SPEED ADVISORY SYSTEM
6161096		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
6161098A	4	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	8	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

✳ QUANTITIES BASED ON 1 MILE OF TTC

SUMMARY OF QUANTITIES
SHEET 8 OF 8

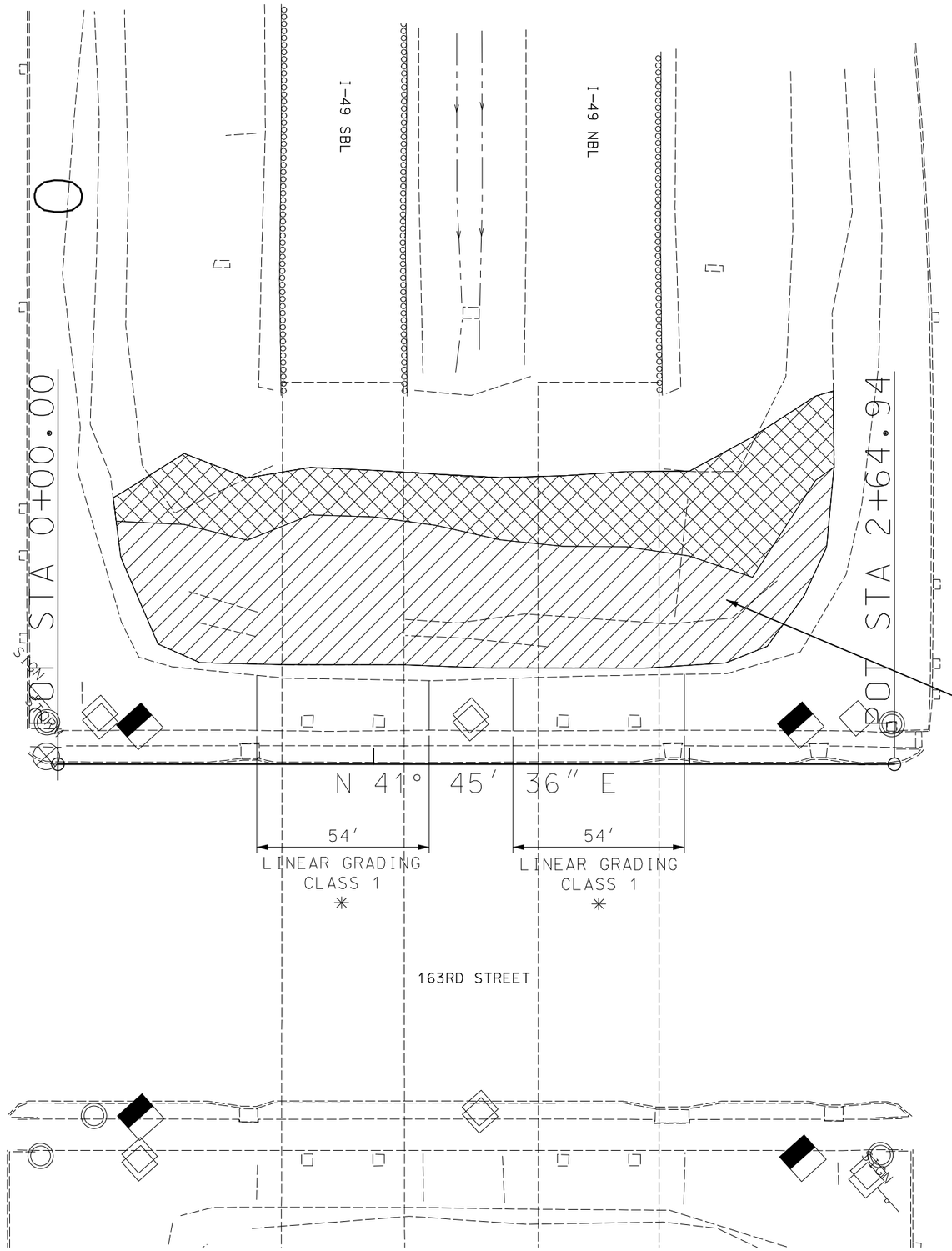
STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002033198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021
ROUTE 49 | STATE MO
DISTRICT KC | SHEET NO. 3
COUNTY CASS
JOB NO. J413332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

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

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



CLASS A EXCAVATION

3:1 SLOPE OR GREATER
CONTINUE EXISTING SLOPE
CLASS A EXCAVATION

CLASS A EXCAVATION
1303.58 CY
REMOVE SOIL DOWN TO TOP OF ROCK

* TO CREATE 8" BED FOR
ROCK DITCH LINER

SCALE
0 20 40 60

PLAN SHEET
SHEET 1 OF 1

APPROX I-49 LOG MILE 8.479
AT BEGINNING OF PROJECT

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	4

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

NOT TO SCALE

RAMP BITUMINOUS PAVING LIMITS

SPECIAL SHEET
SHEET 1 OF 6
171ST ST RAMP
PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	5

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

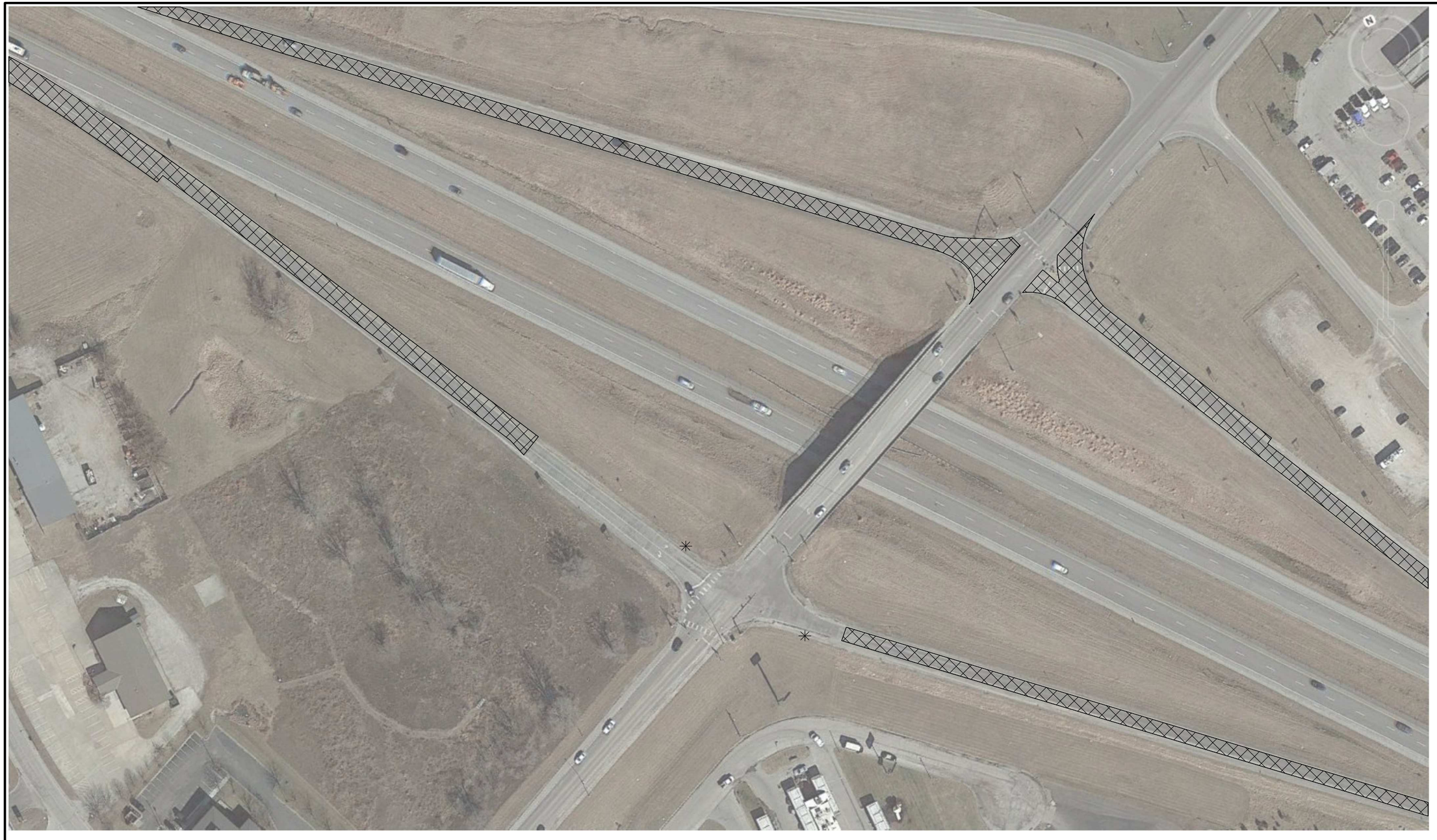
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



✳FOR GRAVEL SHOULDERS PLACE GRAVEL UP TO INTERSECTION

RAMP BITUMINOUS PAVING LIMITS

NOT TO SCALE

SPECIAL SHEET
SHEET 2 OF 6
ROUTE C & J RAMP
PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	6

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

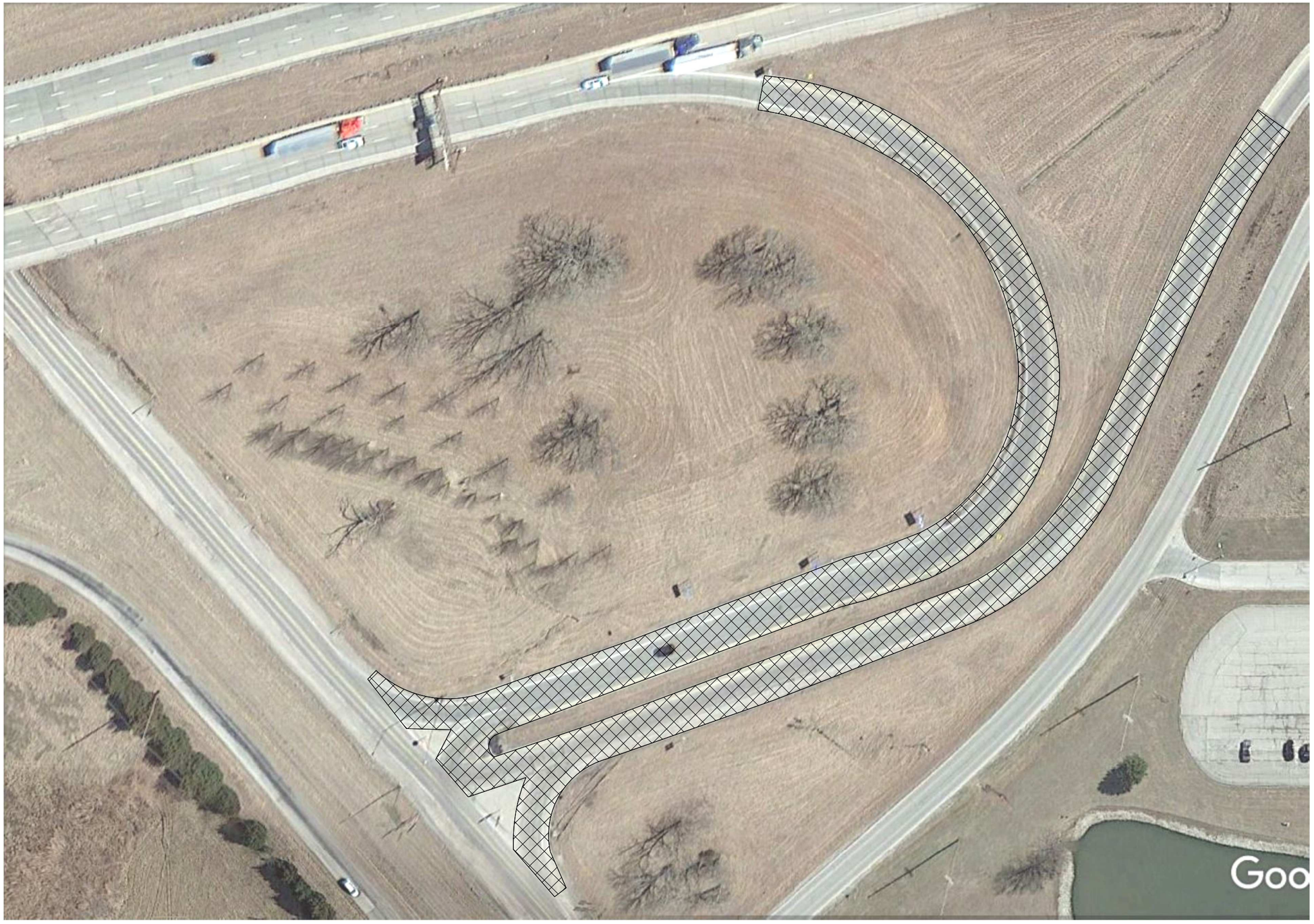
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



NOT TO SCALE

RAMP BITUMINOUS PAVING LIMITS

SPECIAL SHEET
SHEET 3 OF 6
SB 49 TO MECHANIC ST
RAMP PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	7

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

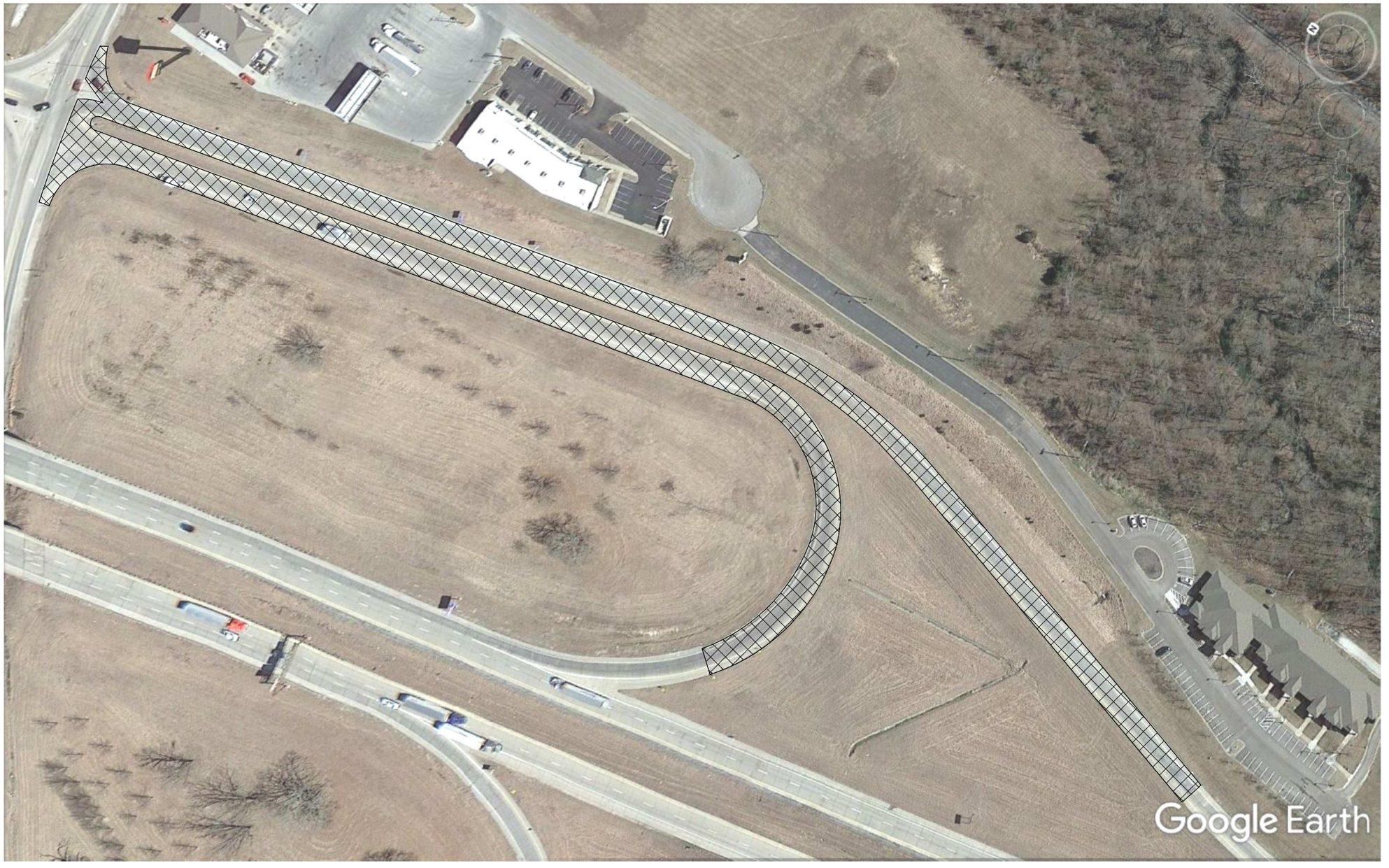
BRIDGE NO.

DATE	DESCRIPTION

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

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



NOT TO SCALE

RAMP BITUMINOUS PAVING LIMITS

SPECIAL SHEET
SHEET 4 OF 6
NB 49 TO MECHANIC ST
RAMP PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	8

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

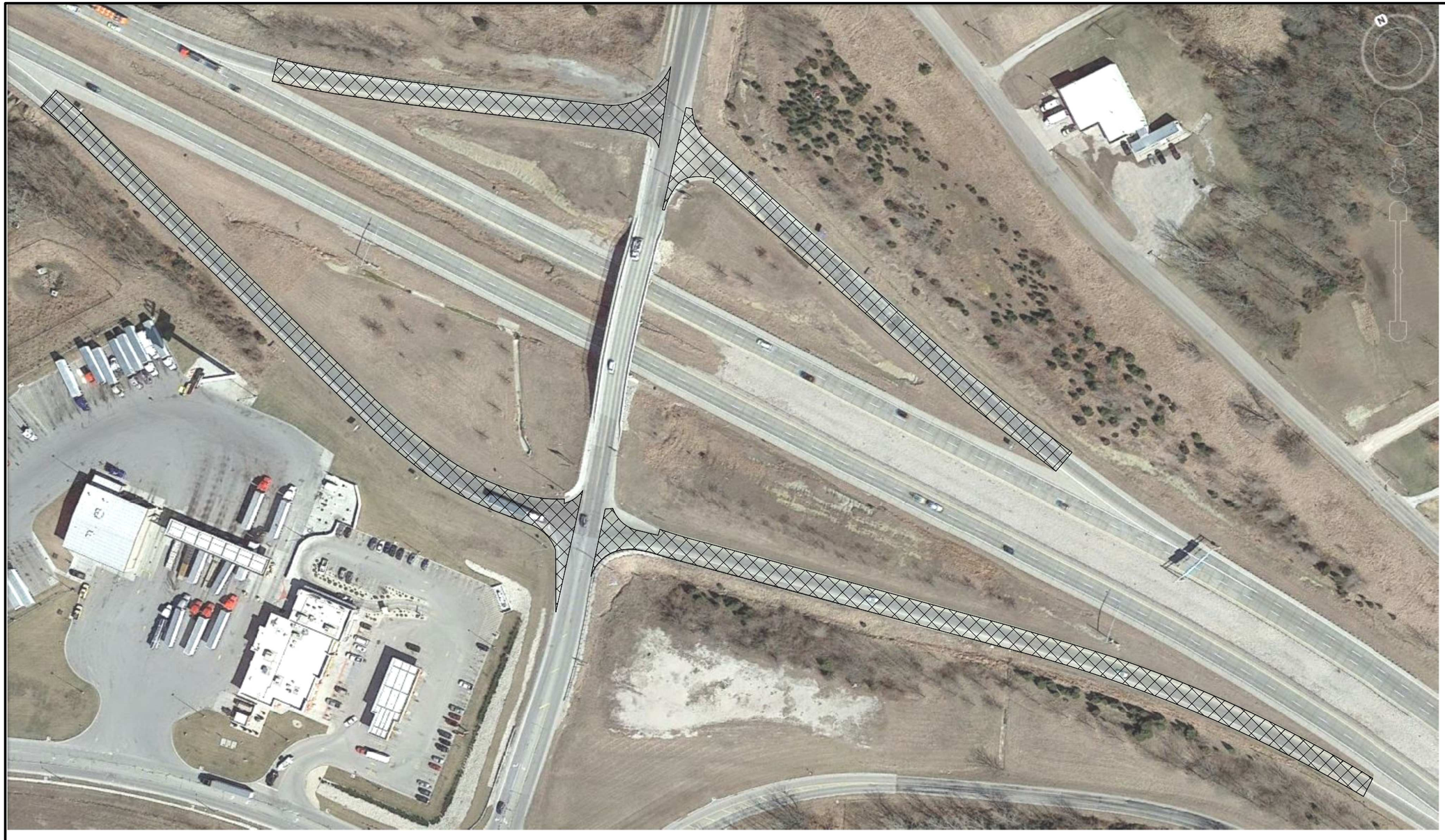
PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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



NOT TO SCALE

RAMP BITUMINOUS PAVING LIMITS

SPECIAL SHEET
SHEET 5 OF 6
COMMERCIAL ST RAMP
PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	9

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DATE	DESCRIPTION

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

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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

RAMP BITUMINOUS PAVING LIMITS

NOT TO SCALE

SPECIAL SHEET
SHEET 6 OF 6
275TH ST RAMP
PAVING LIMITS

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	10

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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

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

SPACING AND TAPER LENGTHS FOR WORK ZONE SIGNS, CHANNELIZERS AND CONCRETE BARRIER

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

TAPER LENGTHS AND END TREATMENTS FOR CONCRETE BARRIER				
PERMANENT POSTED SPEED MPH	MINIMUM LANE TAPER LENGTH (3) 10′	11′	12′	END TREATMENT (4)
LT 40	160′	168′	176′	BARRIER HEIGHT TRANSITION
GT 40	160′	168′	176′	APPROVED CRASH CUSHION

NOTE:

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

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

(3) TAPER LENGTHS SHOWN INCLUDE LENGTH REQUIRED FOR LANE AND 10' SHOULDER

(4) CONCRETE BARRIER MAY BE INSTALLED AT 8:1 FLARE RATE FROM THE SHOULDER POINT OF THE LIMITS OF THE CLEAR ZONE WHERE THE SIDE SLOPE IS 6:1 OR FLATTER

TAPER LENGTHS AND SPACING FOR CHANNELIZERS							
PERMANENT POSTED SPEED MPH	MINIMUM LANE TAPER LENGTH (3) 10′	11′	12′	MINIMUM SHOULDER TAPER LENGTH BASED ON 10′ SHOULDER	BUFFER LENGTH FT	MAXIMUM CHANNELIZER SPACING THROUGH TAPER	THROUGH WORK AREA
0-35	205′	225′	245′	70′	280′	35′	40′
40-45	450′	495′	540′	150′	400′	40′	80′
50-55	550′	605′	660′	185′	560′	50′	80′
60-70	700′	770′	840′	235′	840′	60′	120′

TEMPORARY
TRAFFIC CONTROL
SHEET 1 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

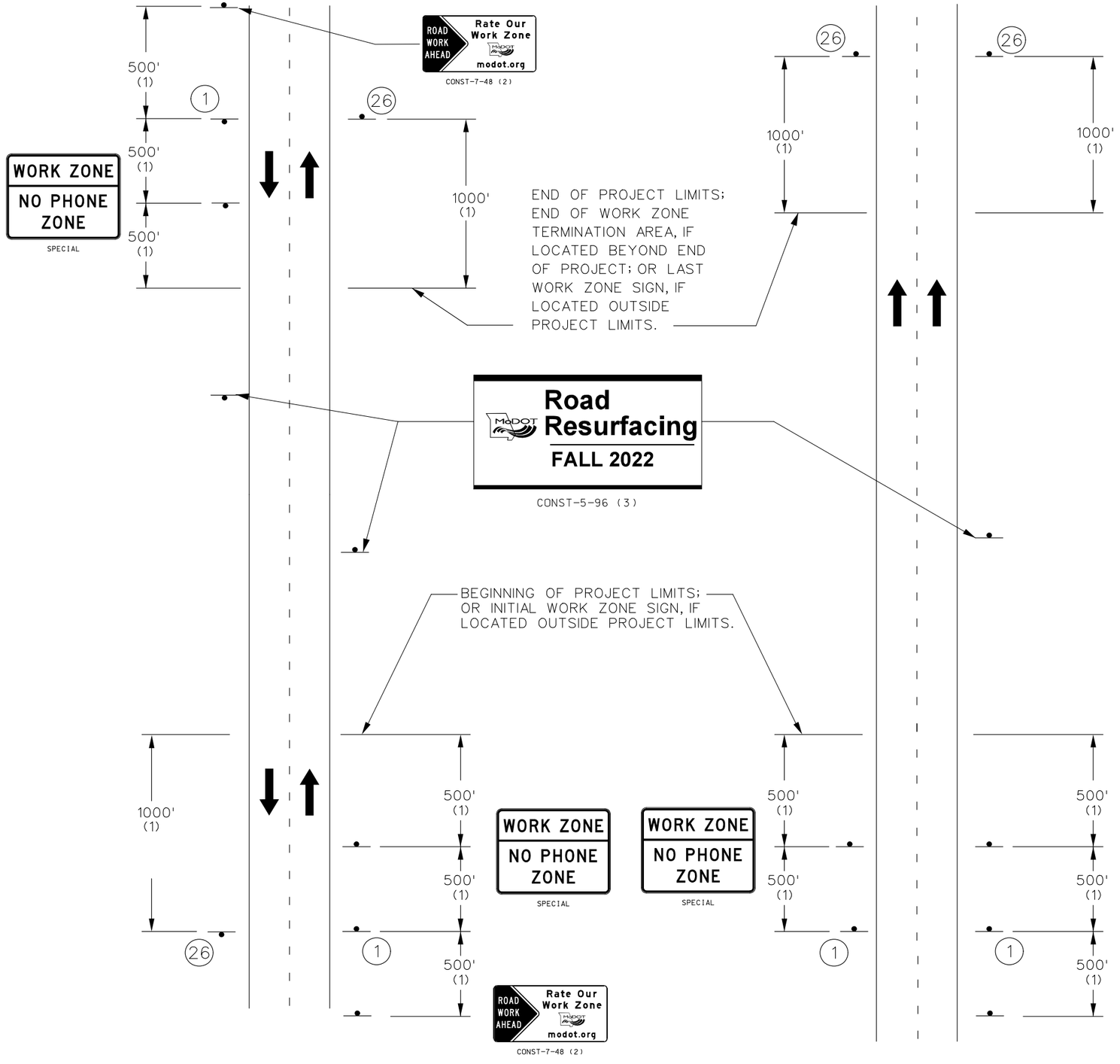
DATE PREPARED 8/9/2021
ROUTE 49 | STATE MO
DISTRICT KC | SHEET NO. 11
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DESCRIPTION | DATE

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

REV.

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



NOTES:

SIGN G020-2 IS USED ON ALL PROJECTS WHERE SIGN G020-1 IS USED.

OTHER SIGNS SUCH AS DETOUR OR ALTERNATE ROUTE SIGNING MAY BE USED OUTSIDE THE PROJECT LIMITS.

ANY EXISTING SIGNING THAT CONFLICTS WITH THE TRAFFIC CONTROL SIGNING SHALL BE COMPLETELY COVERED OR REMOVED.

(1) DISTANCE MAY BE ADJUSTED ACCORDING TO FIELD CONDITIONS. WHERE TRAFFIC BACKUPS ARE EXPECTED BEYOND THE ADVANCE WARNING AREA, ADDITIONAL SIGNING MAY BE NEEDED.

(2) SIGN CONST-7-48 OR CONST-7-72 IS PLACED 500 FEET BEFORE THE BEGINNING OF PROJECT LIMITS OR THE ROAD WORK AHEAD SIGN OR ROAD WORK NEXT XX MILES SIGN, IF USED, WHEN THESE SIGNS ARE LOCATED OUTSIDE THE PROJECT LIMITS.

(3) SIGN CONST-5-96 OR CONST-5-48 IS PLACED IN A VISIBLE AREA WITHIN THE PROJECT LIMITS PROVIDED ITS PLACEMENT DOES NOT DISRUPT A SEQUENCE OF SIGNS. IF A VISIBLE LOCATION WITHIN THE PROJECT IS NOT AVAILABLE, THE SIGN MAY BE PLACED 500 FEET BEFORE SIGN CONST-7-48 OR CONST-7-72.

(4) THE "RATE OUR WORK ZONE" SIGN IS AVAILABLE IN TWO SIZES DEPENDING ON ROADWAY CONDITIONS. THE 48 IN. X 24 IN. SIGN IS USED ON LOW VOLUME ROUTES THAT CARRY 400 AADT OR LESS,ON PROJECTS THAT HAVE A DURATION OF 4 WEEKS OR LESS OR IN URBAN AREAS WHERE THERE IS INSUFFICIENT RIGHT OF WAY FOR A SIX FOOT WIDE SIGN. THE 72 IN. X 36 IN. VERSION OF THE SIGN IS USED IN ALL OTHER APPLICATIONS. BUT CAN ALSO BE USED IN PLACE OF THE 48 IN. X 24 IN. SIGN IF ADDED EMPHASIS IS DEEMED NECESSARY.

(5) THE "POINT OF PRESENCE" SIGN IS AVAILABLE IN TWO SIZES DEPENDING ON ROADWAY CONDITION. THE 48 IN. X 36 IN. SIGN IS USED ON LOW VOLUME ROUTES THAT CARRY 400 AADT OR LESS, ON PROJECTS THAT HAVE A DURATION OF 4 WEEKS OR LESS OR IN URBAN AREAS WHERE THERE IS INSUFFICIENT RIGHT OF WAY FOR AN EIGHT FOOT WIDE SIGN. THE 96IN. X 48 IN. VERSION OF THE SIGN IS USED IN ALL OTHER APPLICATIONS. BUT CAN ALSO BE USED IN PLACE OF THE 48 IN. X 36 IN. SIGN IF ADDED EMPHASIS IS DEEMED NECESSARY.

(6) THE "WORK ZONE NO PHONE ZONE" SIGN IS PLACED A MINIMUM OF 500 FEET BEFORE THE ROAD WORK AHEAD SIGN.

BEGIN/END TEMPORARY TRAFFIC CONTROL SHEET 2 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

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

DATE PREPARED: 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	12

COUNTY: CASS

JOB NO.: J4I3332

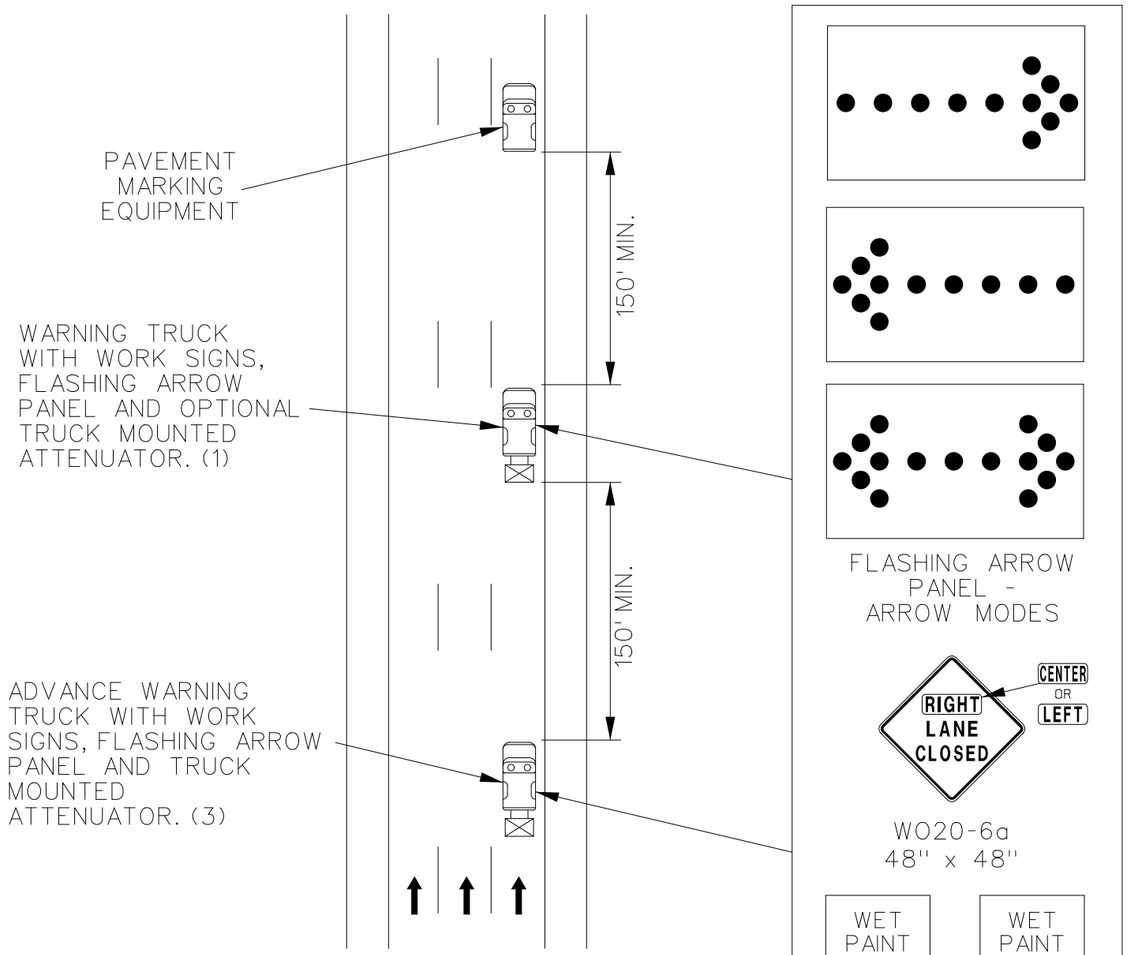
CONTRACT ID.:

PROJECT NO.:

BRIDGE NO.:

DESCRIPTION	DATE

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



MULTI-LANE DIVIDED HIGHWAY

MOVING OPERATION ON HIGHWAY OPEN TO TRAFFIC

NOTES:

ALL SIGNS HAVE TYPE 3 FLUORESCENT ORANGE RETROFLECTIVE SHEETING.

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

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

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

(1). TRUCK IS OPTIONAL ON TWO-LANE UNDIVIDED HIGHWAYS IF SIGNING AND ARROW BOARD IS MOUNTED ON THE PAVEMENT MARKING EQUIPMENT.

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

(3). ADVANCE WARNING TRUCK IS POSITIONED AT THE NO TRACK POINT OF THE PAVEMENT MARKING MATERIAL OR SPACING SHOWN, WHICHEVER IS GREATER.

TA-17A

MOVING OPERATION
OPEN TO TRAFFIC
TEMPORARY
TRAFFIC CONTROL
SHEET 3 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	13

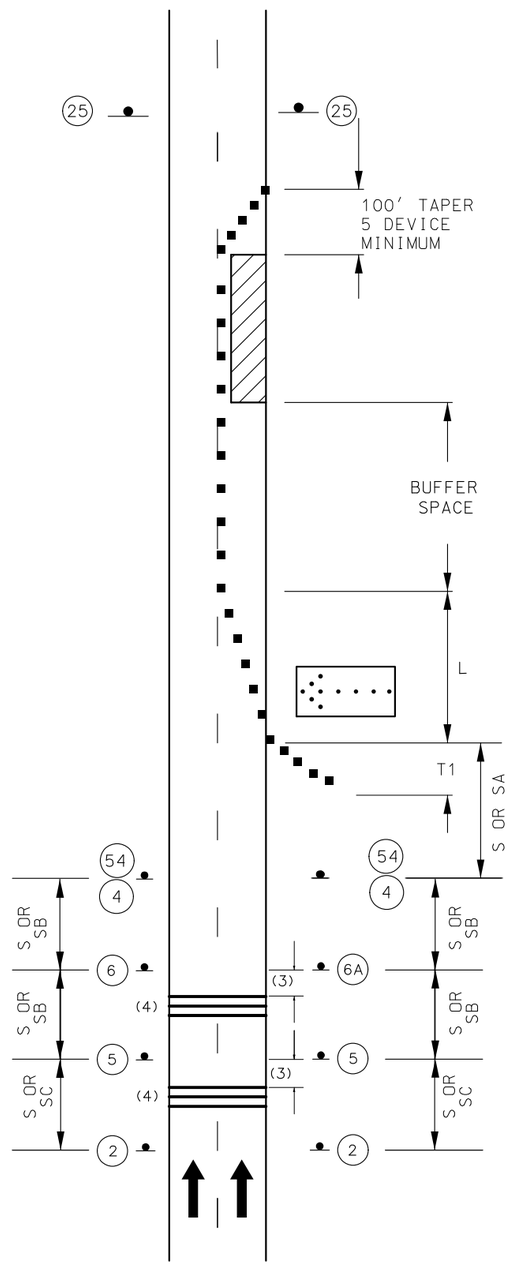
COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

DESCRIPTION	DATE

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

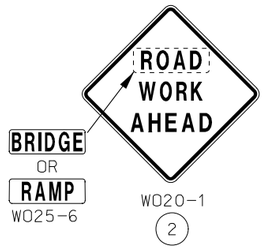
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

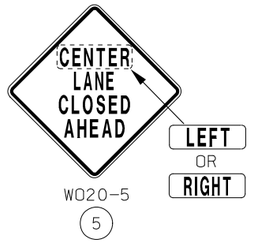
EFFECTIVE: 02-01-2009

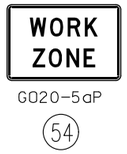


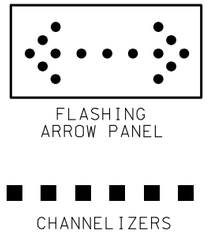
TWO-LANE DIVIDED HIGHWAY

TA-33









NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

REMOVE AND/OR MODIFY ANY EXISTING PAVEMENT MARKING AS NEEDED.

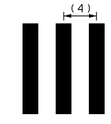
TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM CLOSURES.

THIS INFORMATION ALSO SHALL BE USED WHEN WORK IS BEING PREFORMED IN THE LANE ADJACENT TO THE MEDIAN ON A DIVIDED HIGHWAY. IN THIS CASE, THE LEFT LANE CLOSED SIGNS AND THE CORRESPONDING MERGE OR LANE ENDS SIGN SHALL BE SUBSTITUTED.

WHEN A SIDE ROAD INTERSECTS THE HIGHWAY WITHIN THE TTC ZONE ADDITIONAL TTC DEVICES SHALL BE PLACED AS NEEDED.

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

SHORT-TERM RUMBLE STRIPS		
SPEED MPH	DISTANCE (3)	SPACING (4)
0-45 (OPTIONAL)	120 FT	10 FT
50-55	160 FT	20 FT
60-70	200 FT	30 FT



SPACING EXAMPLE

STATIONARY
LANE CLOSURE
ON DIVIDED HIGHWAY
TEMPORARY
TRAFFIC CONTROL
SHEET 4 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED 8/9/2021

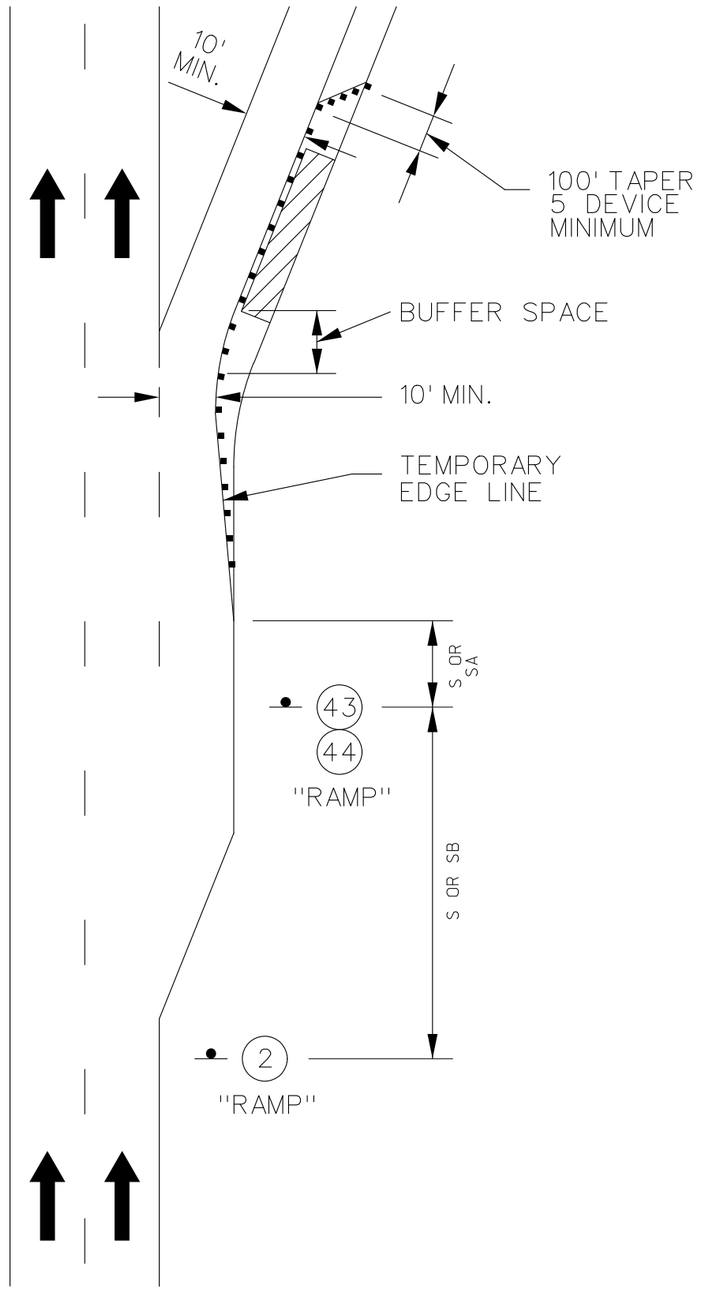
ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	14

COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

DATE	DESCRIPTION

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

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



LANE CLOSURE
PARTIAL RAMP LANE

W020-1
(2)

W05-1
(43)

CHANNELIZERS

W013-1
(44)

NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

TEMPORARY PAVEMENT MARKING OPTIONAL FOR SHORT TERM OPERATIONS.

TA-43

PARTIAL EXIT RAMP
CLOSURE
TEMPORARY
TRAFFIC CONTROL
SHEET 5 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	15

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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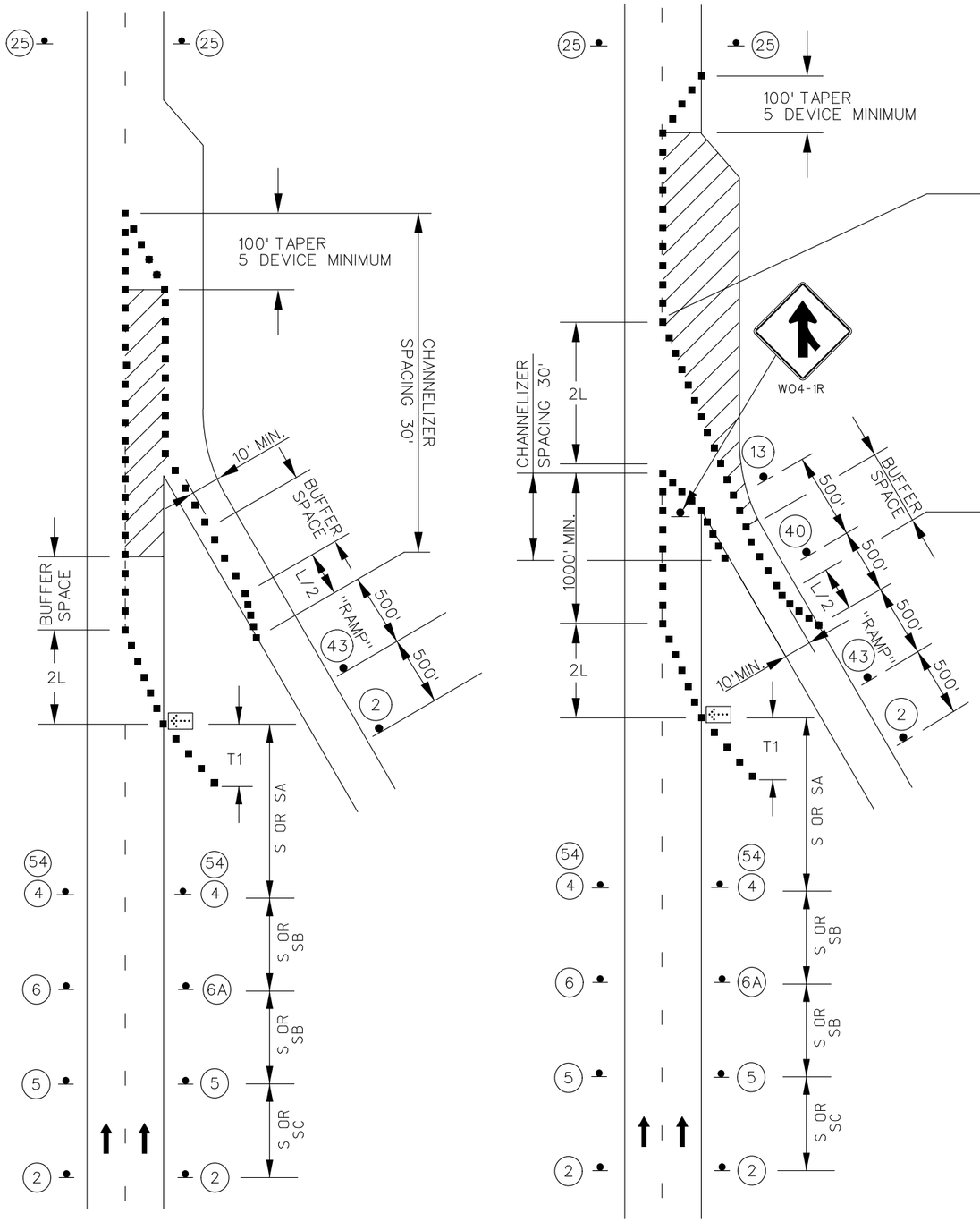
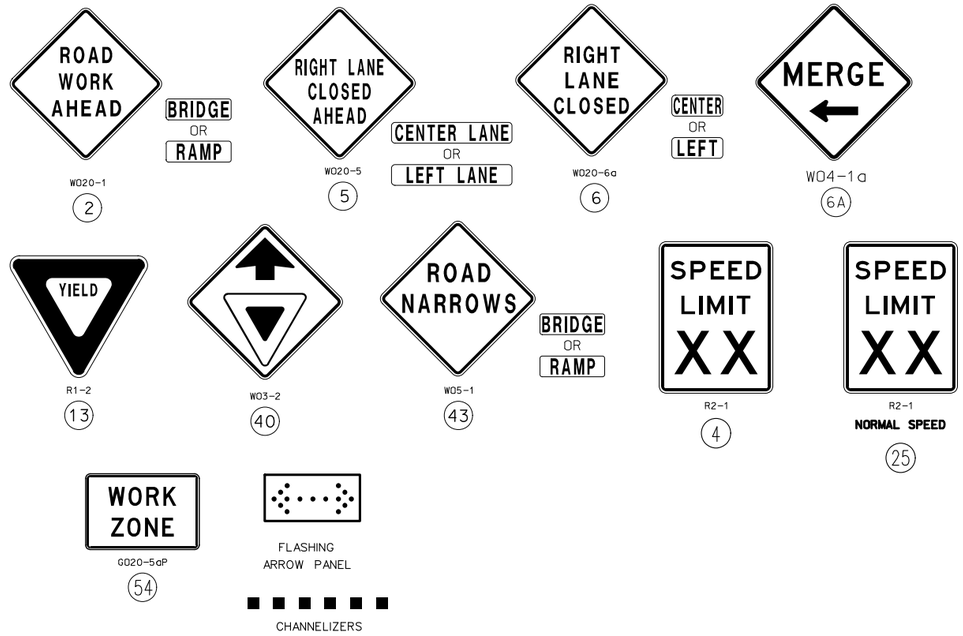


TA-44 - LANE CLOSURE
ENTRANCE RAMP AREAS



NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

REMOVE AND/OR MODIFY EXISTING PAVEMENT MARKING AS NEEDED.

TEMPORARY PAVEMENT MARKING REQUIRED WITH LONG TERM LANE CLOSURES.

RAMP NARROWS SIGN IS REQUIRED WHEN RAMP WIDTH IS REDUCED.

YIELD SIGN SHOULD BE PLACED ON THE RAMP TO PROVIDE ADEQUATE VISIBILITY OF MAINLINE TRAFFIC. WHERE INADEQUATE ACCELERATION DISTANCE EXISTS FOR THE TEMPORARY ENTRANCE, THE YIELD SIGN SHALL BE REPLACED WITH STOP SIGNS (ONE EACH SIDE OF THE APPROACH).

THE LOCATION OF THE SIGN SEQUENCE AND MERGE TAPER SHOULD BE ADJUSTED SO THAT THE ARROW PANEL LOCATION IS NOT CONFUSING TO MOTORISTS ON THE RAMP.

THE YEILD SIGN SHOULD BE PLACED ON THE RAMP TO PROVIDE ADEQUATE VISIBILITY OF MAINLINE TRAFFIC.

FOR WORK ZONES WHERE DEVICES ARE IN PLACE OVER NIGHT, USE TRIM-LINE CHANNELIZERS.

WORK IN VICINITY
OF ENTRANCE RAMP
TEMPORARY
TRAFFIC CONTROL
SHEET 6 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
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PROFESSIONAL ENGINEER
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DATE	DESCRIPTION

DATE PREPARED: 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	16

COUNTY: CASS
JOB NO.: J4I3332
CONTRACT ID.:
PROJECT NO.:
BRIDGE NO.:

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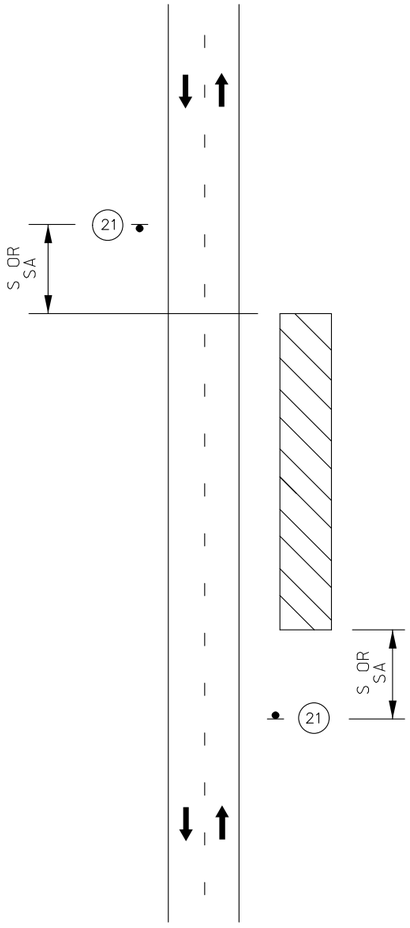


WORK BEYOND SHOULDER

NOTES:

ONLY APPLICABLE WHEN WORK IS WITHIN THE CLEAR ZONE.

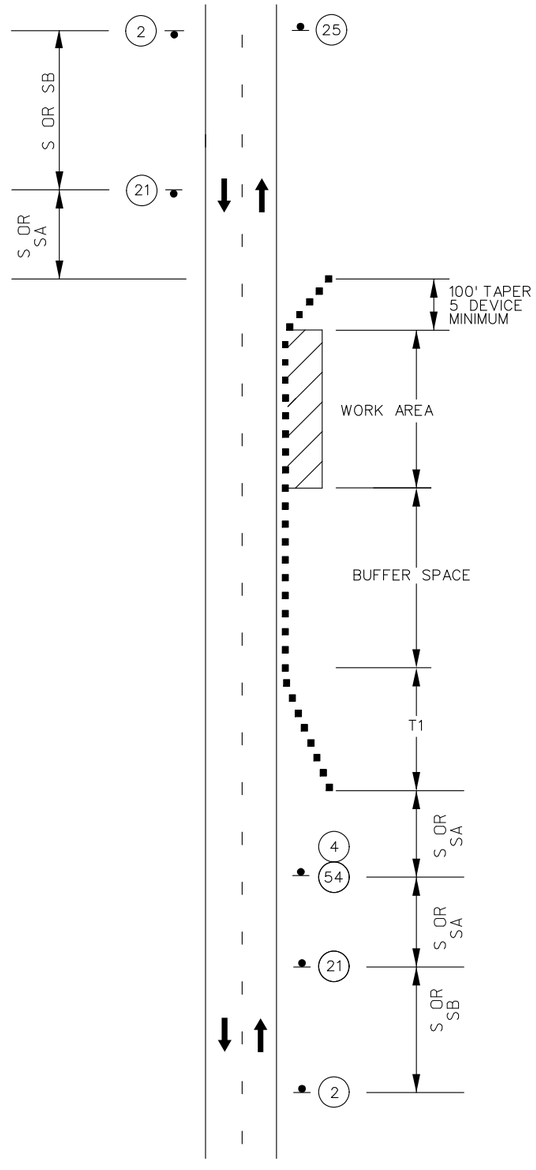
SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

ON MULTI-LANE, DIVIDED HIGHWAYS SIGNS ADVISING OF SHOULDER WORK OR THE CONDITION OF THE SHOULDER SHOULD BE PLACED ONLY ON THE SIDE OF THE AFFECTED SHOULDER.

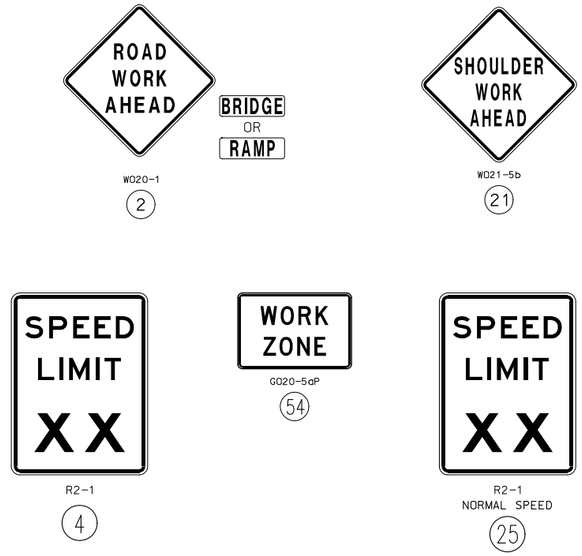
VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S HIGH -INTENSITY ROTATING FLASHING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

TA-01



SHOULDER WORK WITH NO TRAVELWAY ENCROACHMENT

TA-03



NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORK ZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

SIGN 2 NOT REQUIRED IF SHOULDER WORK IS LOCATED WITHIN THE LIMITS OF AN ACTIVITY AREA WHERE ANOTHER SIGN 2 IS ALREADY USED.

PROVIDE SIGNS ON LEFT AND RIGHT SIDE OF DIVIDED HIGHWAYS.

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

WHEN PAVED SHOULDERS HAVING A WIDTH OF 8 FEET OR MORE ARE CLOSED, AT LEAST ONE ADVANCE WARNING SIGN SHALL BE USED. IN ADDITION, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK SPACE AND DIRECT VEHICULAR TRAFFIC TO REMAIN WITHIN THE TRAVELED WAY.

SHOULDER WORK
TEMPORARY
TRAFFIC CONTROL
SHEET 7 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

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DATE PREPARED
8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	17

COUNTY
CASS

JOB NO.
J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

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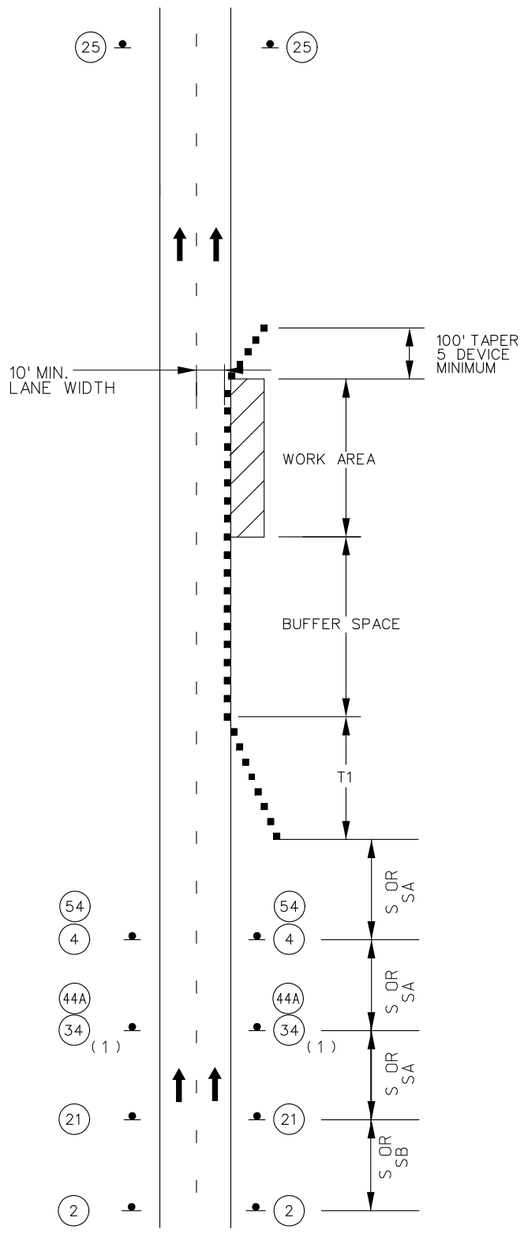
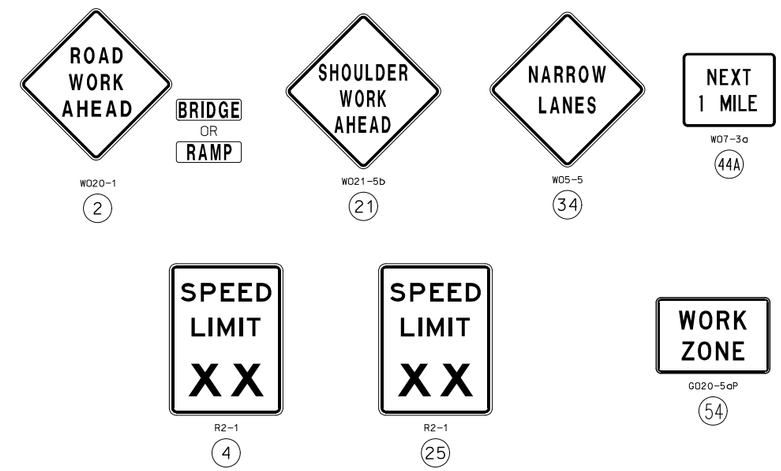
REV.



MULTI-LANE DIVIDED
SHOULDER WORK
MINOR TRAVELWAY ENCROACHMENT



NOTES:

SEE TRAFFIC CONTROL SHEET 1 FOR WORKZONE SPEED LIMIT GUIDELINES.

SEE TRAFFIC CONTROL SHEET 1 FOR SIGN SPACING, DEVICE SPACING AND CHANNELIZING TAPER LENGTHS.

SIGN 2 NOT REQUIRED IF SHOULDER WORK IS LOCATED WITHIN THE LIMITS OF AN ACTIVITY AREA WHERE ANOTHER SIGN 2 IS ALREADY USED.

THE PROTECTIVE VEHICLE MAY BE OMITTED IF A TAPER AND CHANNELIZING DEVICES ARE USED.

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

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

SHADOW AND WORK VEHICLES SHALL DISPLAY HIGH-DENSITY ROTATING, FLASHING, OSCILLATING, OR STROBE LIGHTS.

(1). SIGN 44A NOT REQUIRED FOR NARROW LANE SECTIONS LESS THAN ONE MILE.

TA-06

SHOULDER WORK
MINOR ENCROACHMENT
TEMPORARY
TRAFFIC CONTROL
SHEET 8 OF 9

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
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PROFESSIONAL ENGINEER
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DATE PREPARED 8/9/2021
ROUTE 49 | STATE MO
DISTRICT KC | SHEET NO. 18
COUNTY CASS
JOB NO. J4I3332
CONTRACT ID.
PROJECT NO.
BRIDGE NO.

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

DESCRIPTION | DATE | REV.

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

www.invarion.com

Figure: 616.6.83 Sequential Flashing Warning Light

SPEED	SIGN SPACING (ft.)		TAPER LENGTH (ft.)		OPTIONAL	CHANNELIZER SPACING (ft.)	
	Undivided (S)	Divided (S)	Shoulder (1) (T1)	Lane (2) (T2)	BUFFER LENGTH (ft.) (B)	Tapers	Buffer/ Work Areas
0-35	200	200	70	245	250	35	50
40-45	350	500	150	540	360	40	100
50-55	500	1000	185	660	495	50	100
60-70	SA - 1000, SB - 1500, and SC - 2640		235	840	730	60	100

1 Shoulder taper length based on 10 ft. (standard shoulder width) offset. 2 Lane taper length based on 12 ft. (standard lane width) offset.

This Sequential Flashing Warning Light sheet provides guidance on the placement of lights within shoulder and merge taper and operational information. Review appropriate typical applications for signs, sign spacing, taper length, buffer length, channelizer spacing, TMAs, channelizers, etc.

The sequential lights should be self-contained and placed within the merging taper and still communicate with any light within the sequence. The lights should be capable to be spaced at least 60' and may have a offset capability of at least 6'.

Pay item description: The number of sequential lights used in the merge taper will be dependent on the above table criteria based on posted speed limit. Depending on project location and intesity of lighting, the number of lights may be reduce to a minimum of 10 lights within the merge taper. Contract cost of light would be based on purchase, installing and maintaining per light.

Battery Recommendation:
6-Volt Battery: Sequential lights with one 6-volt battery were used on several projects and the lights were getting about 3 weeks of battery life. Several different types of batteries (6-volt) were used on the projects. This is based on continuous use of the light (24/7).

4 D-cell Batteries: Sequential lights with 4 D-Cell batteries with converter were used on several projects and were getting about 3 weeks of battery life. This is based on continuous use of the light (24/7).


6-Volt Batteries


4 D-Cell Batteries


Attachment of Light

Number of Batteries Used on Channelizers:

Due to weight and consistency, a 6-volt battery and 4 D-cell batteries with converter will be considered as equal. All sequential lights must be securely mounted to all channelizers.

If sequential lights are used on Drum-like channelizers, two batteries can be installed.

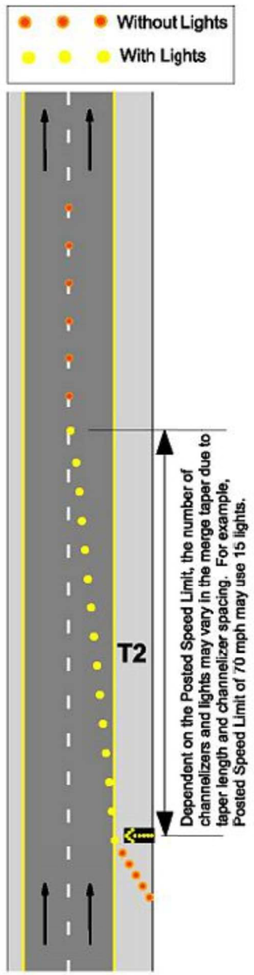
If they are mounted on a Trimline, only one battery may be installed. An extra ballast ring may be necessary to keep the trimline from tipping over.

If they are mounted on a Directional Indicator Board, only one battery may be installed.


Two Batteries


One Battery


One Battery



6/12

DATE PREPARED 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	19

COUNTY CASS

JOB NO. J4I3332

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION | DATE

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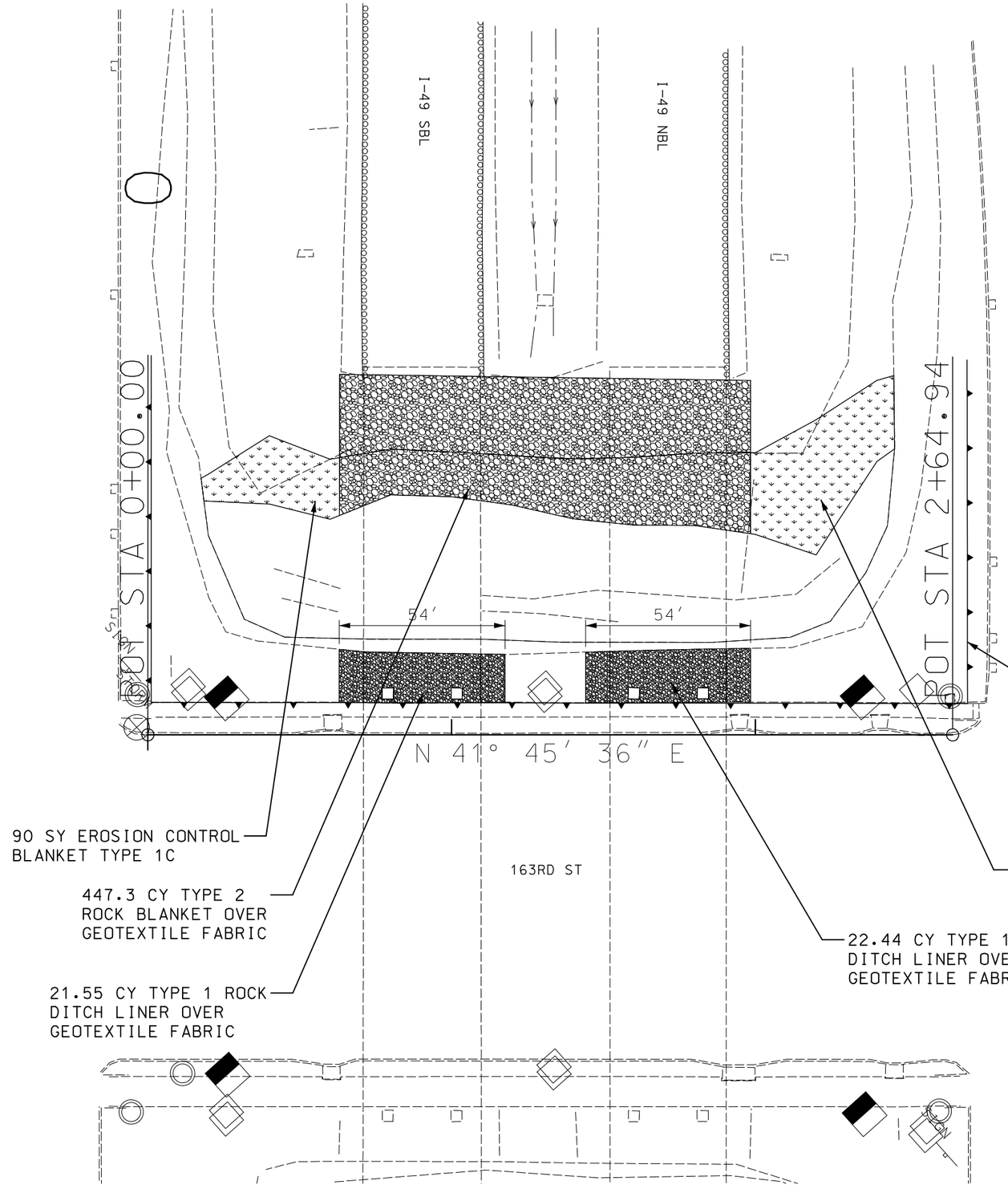
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)



EROSION CONTROL LEGEND

SILT FENCE

TYPE 2 ROCK BLANKET

EROSION CONTROL BLANKET – TYPE 1C

TYPE 1 ROCK DITCH LINER

SCALE

0 20 40 60

EROSION CONTROL SHEET

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER
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DATE PREPARED 8/9/2021

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49	MO
DISTRICT	SHEET NO.
KC	20

COUNTY CASS

JOB NO. J4I3332

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PROJECT NO.

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

EFFECTIVE: 10-01-2015

CONDUIT (WITH #14 TRACER WIRE)

FROM	TO	CENTER TO CENTER DISTANCE	LOOP DET.	TRENCH				PUSHED			MEDIAN			ON STRUCTURE			REMARKS
			1″	2″	3″	4″		2″	3″	4″	2″	3″	4″	2″	3″		
SUBTOTALS																	
TOTALS																	

CABLE

FROM	TO	CENTER TO CENTER DISTANCE	POWER		CONTROL				CLOSED LOOP INTERCONNECT	LUMINAIRE		DETECTOR		FIBER		REMARKS
					2c #16	5c #16	7c #16	3c #16	3 PAIR #16	CONTROL 2c #12	POLE & BRACKET 1c #10	1c #14 IN DUCT	2c #14 LEAD-IN CABLE	SINGLE-MODE	MULTI-MODE	
EOP	D27	4										271				LEFT TURN LANE LOOP
EOP	D29	10										277				RIGHT TURN LANE LOOP
SUBTOTALS			0	0	0	0	0	0	0	0	0	548	0	0	0	
TOTALS			0	0	0	0	0	0	0	0	0	580	0	0	0	INCLUDE 5% FOR SNAKING

INTERSECTION NORTHBOUND 49 RTE 58 EXIT

D-37B

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
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DATE PREPARED 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	21

COUNTY CASS

JOB NO. J4I3332

CONTRACT ID.

PROJECT NO.

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DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

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EFFECTIVE 04-01-2018

POWER SUPPLY

LOCATION			POWER SUPPLY ASSEMBLY		CIRCUIT BREAKER TRIP RATING*				LIGHTING CONTROL * (ON POWER SUPPLY)		SERVICE POLE	
					CONTROLLER		POWER SUPPLY DISCONNECT					
APPROACH	STATION	OFFSET	DRAWING 902.15	DRAWING	AUXILIARY BREAKER	CONT & SIGNAL LAMPS	MAIN BREAKER		120 VOLT CONTROL CABINET	MAIN BREAKER	CONTRACT FURNISH	UTILITY COMPANY
							SIGNALS	LIGHTING				
			Type		15 Amps	· Amps	Amps	Amps		Amps	Ci. Ft.	
			Type		15 Amps	Amps	Amps	Amps		Amps	Ci. Ft.	

CONTROLLER ASSEMBLY AND AUXILIARY EQUIPMENT

LOCATION			SYSTEM MASTER (CLOSED LOOP)		ACTUATED		ON-OFF* SWITCH TYPE		COORDINATION INTERFACE *					TIME * CLOCK	NEMA CABINET TYPE *			170 CABINET TYPE *		170 SOFTWARE *	
APPROACH	STATION	OFFSET	NEMA	170	NEMA	170	I	II	12C/7C HARDWIRE (1) MASTER	12C/7C HARDWIRE (1) LOCAL	TIME BASE	CLOSED LOOP NEMA	CLOSED LOOP 170	FIBER		E	EV	DOUBLE	332	336S	BITRAN	WAPITI

NEMA DETECTOR ASSIGNMENT

		CARD POSITION							
		1	2	3	4	5	6	7	8
CHANNEL	1								
	2								

TOTAL NUMBER OF DETECTOR CARDS(2-CHANNEL) = (2)

NEMA LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12

SIGNAL SIGNS

QUANTITY	MUTCD SIGN NUMBER	SIZE	AREA	SIGN TOTAL AREA ITEM NO. 90208.33	SIGNAL SIGN MOUNTING HARDWARE ITEM NO. 90208.34
		INCHES	SQ.FT.	SQ.FT.	EA.
	R10-10L	24 X 30	5.0		
	R10-10R	24 X 30	5.0		
	R3-5L	30 X 36	7.5		
	R3-5R	30 X 36	7.5		
	R3-5A	30 X 36	7.5		
	R3-6L	30 X 36	7.5		
	R3-6R	30 X 36	7.5		
	R3-2	24 X 24	4.0		
	R3-1	24 X 24	4.0		
	R3-3	24 X 24	4.0		
	D3-1 ***	VAR. X 18			
	D3-1B ***	VAR. X 18			
	R10-3E	9 X 15	0.9		
	R10-11A	24 X 30	5.0		
	R10-13	36 X 24	6.0		
	R10-27A	30 X 36	7.5		
			SUBTOTAL		
			TOTAL		

DETECTOR SCHEDULE

DETECTOR NUMBER	APPROACH	TYPE				
		PUSH BUTTON	INDUCTION LOOP (2) STANDARD	INDUCTION LOOP (2) DELAY/ EXTEND *	INDUCTION LOOP (2) CALL UNIT *	VIDEO
27	RTE 58 NB EXIT LT LANE		1			
29	RTE 58 NB EXIT RT LANE		1			
TOTAL			2			

* ITEMS FOR WHICH SEPARATE PAYMENT WILL NOT BE MADE.

*** USE D3-1 FOR ONE LINE. USE D3-1B FOR TWO LINE.

(1) MoDOT "D" PLUG SHALL BE WIRED INTO ALL NEMA CONTROLLERS WITH 7C HARDWIRE INTERCONNECT.

(2) PAYMENT IS MADE FOR THE NUMBER OF 2-CHANNEL DETECTOR CARDS AS SHOWN BELOW THE ASSIGNMENT CHART.

170 INPUT FILE ASSIGNMENTS

	CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U														
	L														
"J"	U														
	L														

TOTAL NUMBER OF DETECTOR CARDS(2-CHANNEL) = (2)

170 OUTPUT FILE ASSIGNMENTS

FR1								MONITOR
FR2								
FR3								
FR4								

170 AUXILIARY OUTPUT FILE

FR5							X
FR6							

NB IS 49 RTE 58 EXIT

INTERSECTION

D-37C

STATE OF MISSOURI
ALLAN JEFFREY LUDIKER
NUMBER PE-2002003198
PROFESSIONAL ENGINEER

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DATE PREPARED 8/9/2021

ROUTE	STATE
49	MO
DISTRICT	SHEET NO.
KC	22

COUNTY CASS

JOB NO. J4I3332

CONTRACT ID.

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