MISSOURI
HIGHWAYS and TRANSPORTATION
COMMISSION

JEFFERSON CITY, MISSOURI

SUPPLEMENTAL PLANS TO JULY 2023 MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION

EFFECTIVE April 1, 2024

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

EFFECTIVE: 04/01/2024

MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION

TABLE OF CONTENTS

* REVISED OR ADDED SINCE JULY 2023

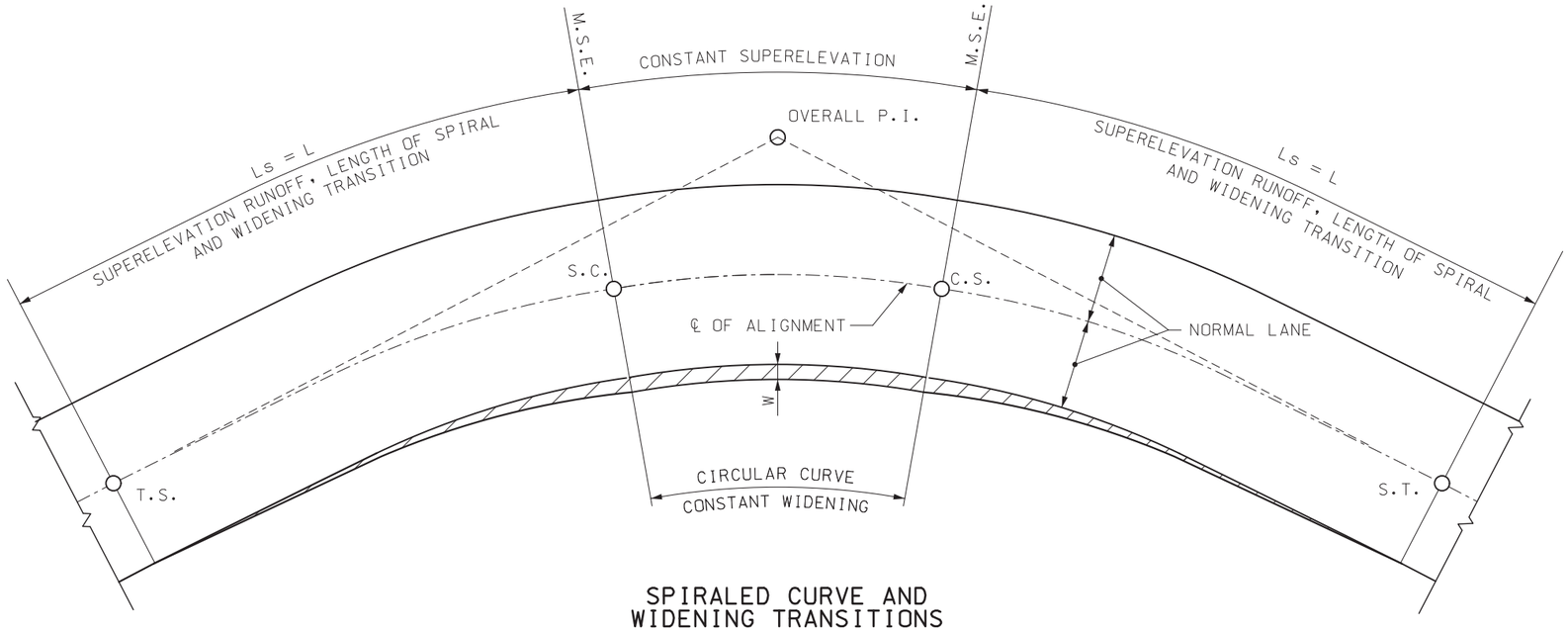
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

EFFECTIVE: 04/01/2024

MISSOURI STANDARD PLANS FOR HIGHWAY CONSTRUCTION

TABLE OF CONTENTS

* REVISED OR ADDED SINCE JULY 2023

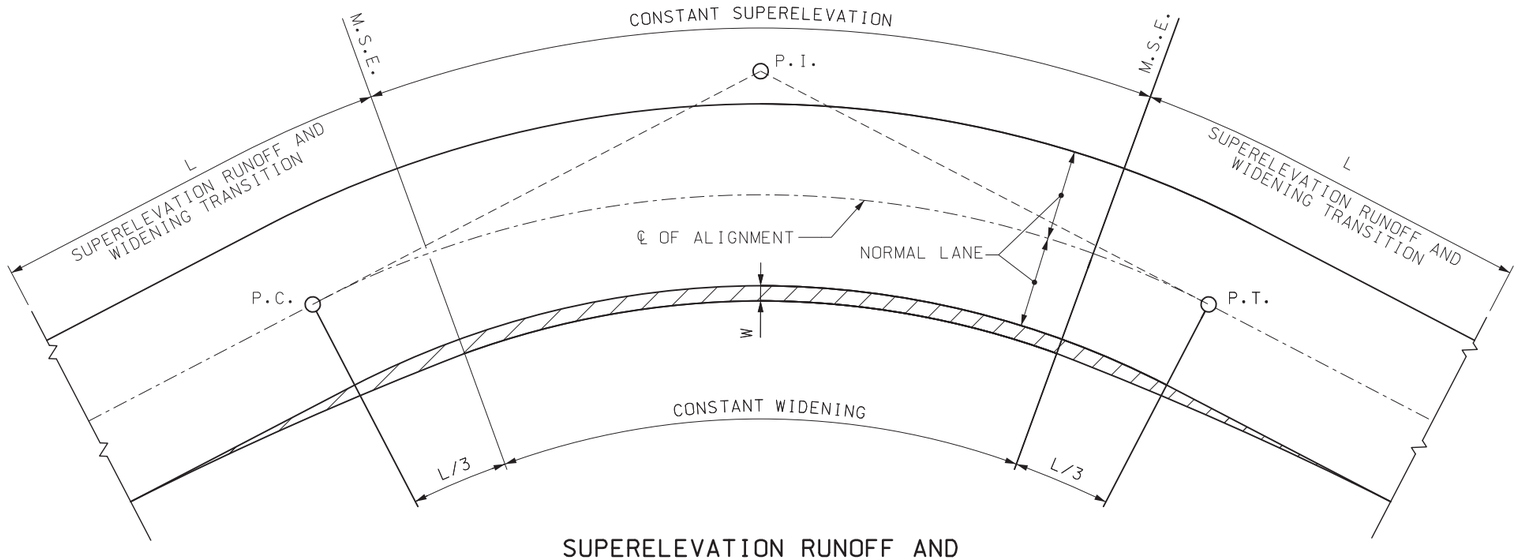


SPIRALED CURVE AND
WIDENING TRANSITIONS

MULTILANE FACTORS FOR "L"
1.0 LANE ROTATED (2 LANE ROADBED) = 1.00
1.5 LANE ROTATED (3 LANE ROADBED) = 1.25
2.0 LANE ROTATED (4 LANE ROADBED) = 1.50
2.5 LANE ROTATED (5 LANE ROADBED) = 1.75
3.0 LANE ROTATED (6 LANE ROADBED) = 2.00
3.5 LANE ROTATED (7 LANE ROADBED) = 2.25

MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION	
DESIGN SPEED	MAXIMUM RADIUS (FT)
30	456
35	620
40	810
45	1025
50	1265
55	1531
60	1822
65	2138
70	2479

TABLE NOTE: THE EFFECT OF SPIRAL CURVE TRANSITION ON LATERAL ACCELERATION IS LIKELY TO BE NEGLIGIBLE FOR LARGER RADII.



SUPERELEVATION RUNOFF AND
WIDENING TRANSITIONS
WITHOUT SPIRALS

GENERAL NOTES:

A PRACTICAL CONTROL FOR THE LENGTH OF SPIRAL "Ls" IS CONSIDERED TO BE THE SUPERELEVATION RUNOFF "L", SEE STANDARD PLANS 203.22 SHEET 1 OF 2.

"W" THE WIDENING FOR SURFACING AT INSIDE SHOULDERS, SEE STANDARD PLANS 203.22 SHEET 2 OF 2.

WIDENING TRANSITION VARIES IN DIRECT PROPORTION TO DISTANCE.

SPIRAL CURVES ARE USED ON ALL ROADWAYS THAT HAVE DESIGN TRAFFIC GREATER THAN 400 VEHICLES PER DAY, AND HAVE A RADIUS LESS THAN THE VALUES LISTED IN THE "MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION" TABLE.

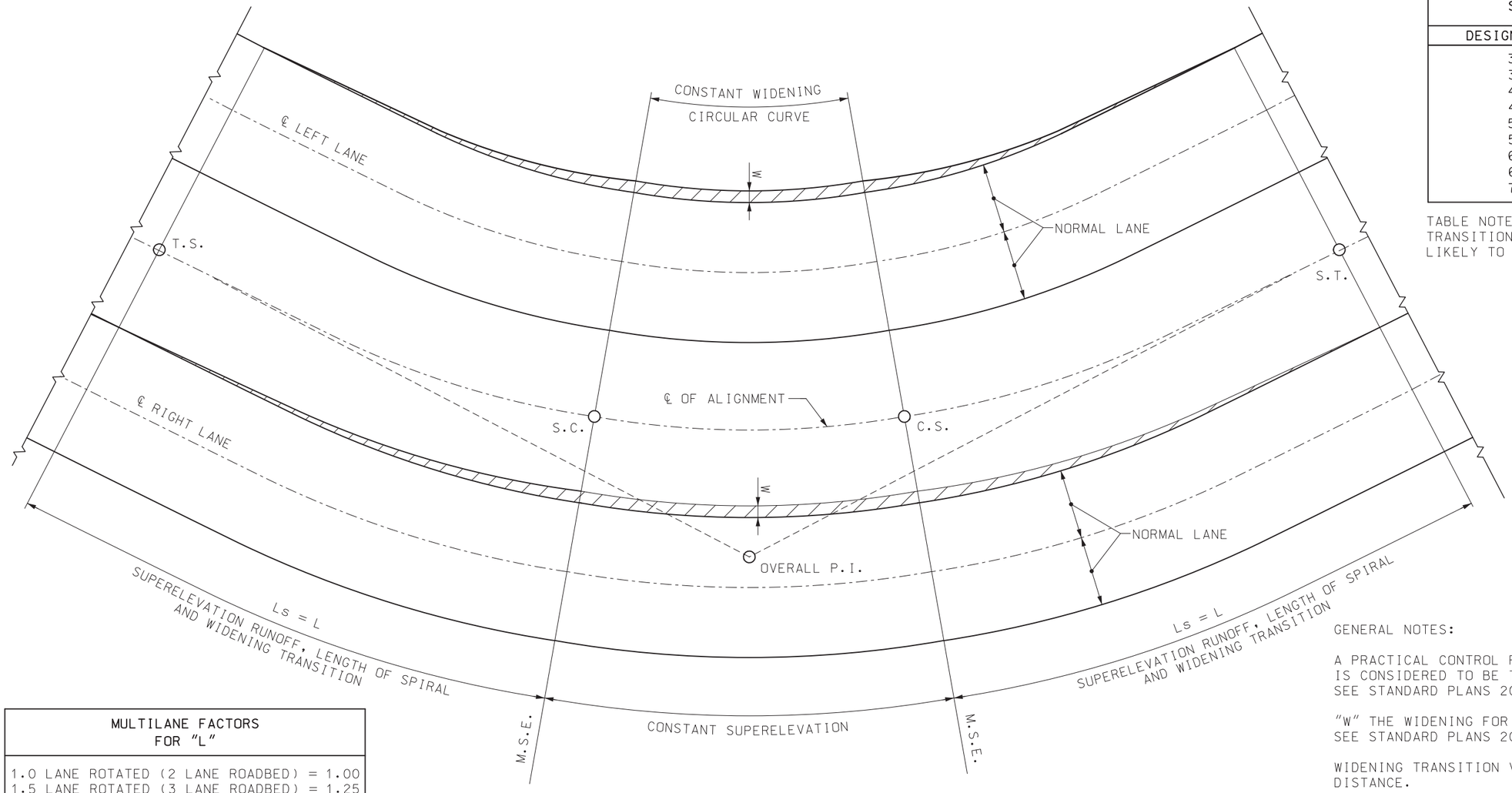
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SUPERELEVATION SPIRALS AND WIDENING
UNDIVIDED HIGHWAYS

DATE EFFECTIVE: 07/01/2017
DATE PREPARED: 1/16/2024

203.20G



MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION	
DESIGN SPEED	MAXIMUM RADIUS (FT)
30	456
35	620
40	810
45	1025
50	1265
55	1531
60	1822
65	2138
70	2479

TABLE NOTE: THE EFFECT OF SPIRAL CURVE TRANSITION ON LATERAL ACCELERATION IS LIKELY TO BE NEGLIGIBLE FOR LARGER RADII.

GENERAL NOTES:

A PRACTICAL CONTROL FOR THE LENGTH OF SPIRAL "Ls" IS CONSIDERED TO BE THE SUPERELEVATION RUNOFF "L", SEE STANDARD PLANS 203.22 SHEET 1 OF 2.

"W" THE WIDENING FOR SURFACING AT INSIDE SHOULDER, SEE STANDARD PLANS 203.22 SHEET 2 OF 2.

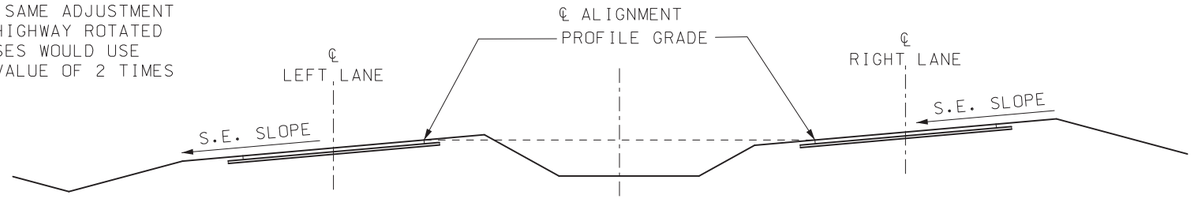
WIDENING TRANSITION VARIES IN DIRECT PROPORTION TO DISTANCE.

SPIRAL CURVES ARE USED ON ALL ROADWAYS THAT HAVE DESIGN TRAFFIC GREATER THAN 400 VEHICLES PER DAY, AND HAVE A RADIUS LESS THAN THE VALUES LISTED IN THE "MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION" TABLE.

MULTILANE FACTORS FOR "L"
1.0 LANE ROTATED (2 LANE ROADBED) = 1.00
1.5 LANE ROTATED (3 LANE ROADBED) = 1.25
2.0 LANE ROTATED (4 LANE ROADBED) = 1.50
2.5 LANE ROTATED (5 LANE ROADBED) = 1.75
3.0 LANE ROTATED (6 LANE ROADBED) = 2.00
3.5 LANE ROTATED (7 LANE ROADBED) = 2.25

EXAMPLE: A SIX LANE DIVIDED HIGHWAY (3 LANES IN EACH DIRECTION) ROTATED SEPARATELY ABOUT ITS MEDIAN EDGES WOULD USE THE SAME ADJUSTMENT VALUE AS A SIX LANE UNDIVIDED HIGHWAY ROTATED ABOUT THE CENTERLINE. BOTH CASES WOULD USE THE 3 LANE ROTATED ADJUSTMENT VALUE OF 2 TIMES THE VALUE OF ONE LANE ROTATED.

SPIRALED CURVE AND WIDENING TRANSITIONS



SECTION ON SUPERELEVATED CURVE
CURVE TO LEFT (ILLUSTRATED)

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

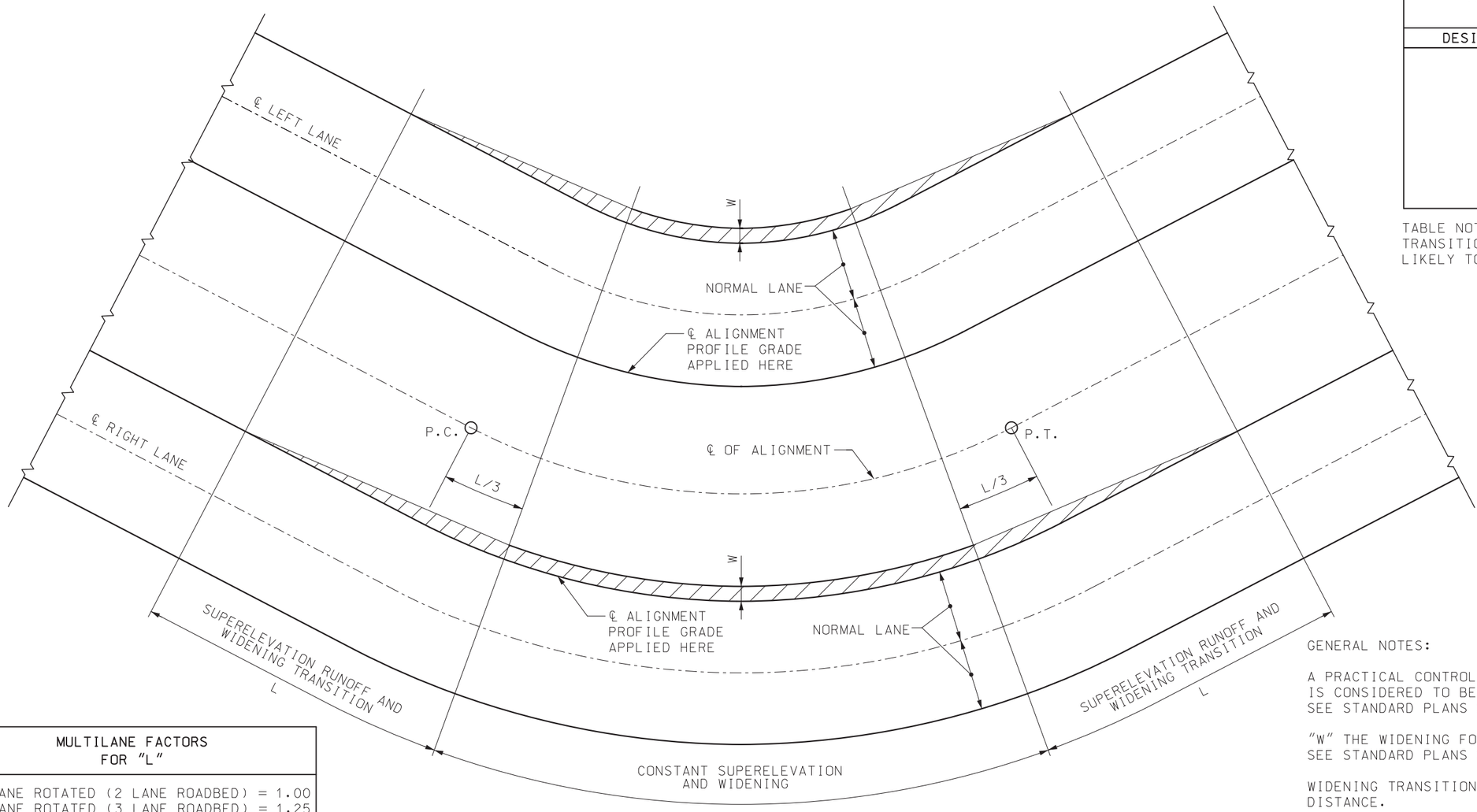
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SUPERELEVATION, SPIRALS AND WIDENING
DIVIDED HIGHWAYS

DATE EFFECTIVE: 07/01/2017
DATE PREPARED: 1/16/2024

203.21K

SHEET NO. 1 OF 3



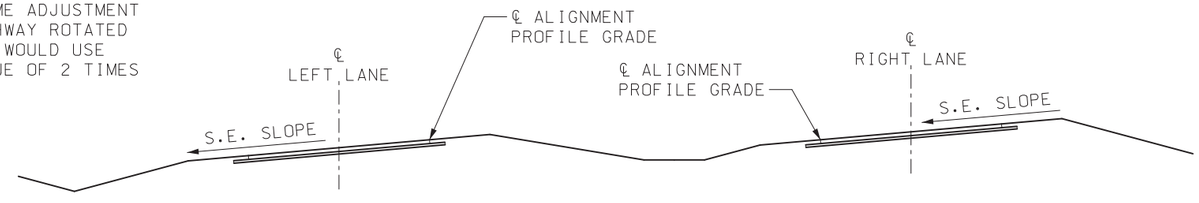
MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION	
DESIGN SPEED	MAXIMUM RADIUS (FT)
30	456
35	620
40	810
45	1025
50	1265
55	1531
60	1822
65	2138
70	2479

TABLE NOTE: THE EFFECT OF SPIRAL CURVE TRANSITION ON LATERAL ACCELERATION IS LIKELY TO BE NEGLIGIBLE FOR LARGER RADII.

MULTILANE FACTORS FOR "L"
1.0 LANE ROTATED (2 LANE ROADBED) = 1.00
1.5 LANE ROTATED (3 LANE ROADBED) = 1.25
2.0 LANE ROTATED (4 LANE ROADBED) = 1.50
2.5 LANE ROTATED (5 LANE ROADBED) = 1.75
3.0 LANE ROTATED (6 LANE ROADBED) = 2.00
3.5 LANE ROTATED (7 LANE ROADBED) = 2.25

EXAMPLE: A SIX LANE DIVIDED HIGHWAY (3 LANES IN EACH DIRECTION) ROTATED SEPARATELY ABOUT ITS MEDIAN EDGES WOULD USE THE SAME ADJUSTMENT VALUE AS A SIX LANE UNDIVIDED HIGHWAY ROTATED ABOUT THE CENTERLINE. BOTH CASES WOULD USE THE 3 LANE ROTATED ADJUSTMENT VALUE OF 2 TIMES THE VALUE OF ONE LANE ROTATED.

SUPERELEVATION RUNOFF AND WIDENING TRANSITIONS WITHOUT SPIRALS



SECTION ON SUPERELEVATED CURVE
CURVE TO LEFT (ILLUSTRATED)

GENERAL NOTES:

A PRACTICAL CONTROL FOR THE LENGTH OF SPIRAL "Ls" IS CONSIDERED TO BE THE SUPERELEVATION RUNOFF "L", SEE STANDARD PLANS 203.22 SHEET 1 OF 2.

"W" THE WIDENING FOR SURFACING AT INSIDE SHOULDER, SEE STANDARD PLANS 203.22 SHEET 2 OF 2.

WIDENING TRANSITION VARIES IN DIRECT PROPORTION TO DISTANCE.

SPIRAL CURVES ARE USED ON ALL ROADWAYS THAT HAVE DESIGN TRAFFIC GREATER THAN 400 VEHICLES PER DAY, AND HAVE A RADIUS LESS THAN THE VALUES LISTED IN THE "MAXIMUM RADIUS FOR USE OF A SPIRAL CURVE TRANSITION" TABLE.

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SUPERELEVATION, SPIRALS AND WIDENING
DIVIDED HIGHWAYS

DATE EFFECTIVE: 07/01/2017
DATE PREPARED: 1/16/2024

203.21K

SHEET NO. 2 OF 3

MINIMUM RADII FOR DESIGN SUPERELEVATION RATES, DESIGN SPEEDS, AND e_{max} = 4%

e%	DESIGN SPEED (MPH)																				
	30			35			40			45			50			55			60		
	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2
NC	2,830	0	0	3,730	0	0	4,770	0	0	5,930	0	0	7,220	0	0	8,650	0	0	10,300	0	0
RC	1,880	36	55	2,490	39	58	3,220	41	62	4,040	44	67	4,940	48	72	5,950	48	72	7,080	48	72
2.2	1,580	40	60	2,120	43	64	2,760	46	58	3,480	49	73	4,280	53	79	5,180	53	79	6,190	53	79
2.4	1,270	44	65	1,760	46	70	2,340	50	74	2,980	53	80	3,690	58	86	4,500	58	86	5,410	58	86
2.6	1,000	47	71	1,420	50	75	1,930	54	81	2,490	58	87	3,130	62	94	3,870	62	94	4,700	62	94
2.8	817	51	76	1,170	54	81	1,620	58	87	2,100	62	93	2,660	67	101	3,310	67	101	4,060	67	101
3.0	681	55	82	982	58	87	1,370	62	93	1,800	67	100	2,290	72	108	2,860	72	108	3,530	72	108
3.2	576	58	87	835	62	93	1,180	66	99	1,550	71	107	1,980	77	115	2,490	77	115	3,090	77	115
3.4	490	62	93	714	66	99	1,010	70	106	1,340	76	113	1,720	82	122	2,170	82	122	2,700	82	122
3.6	416	65	98	610	70	105	865	74	112	1,150	80	120	1,480	86	130	1,880	86	130	2,350	86	130
3.8	348	69	104	512	74	110	730	79	118	970	84	127	1,260	91	137	1,600	91	137	2,010	91	137
4.0	250	73	109	371	77	116	533	83	124	711	89	133	926	96	144	1,190	96	144	1,500	96	144

MINIMUM RADII FOR DESIGN SUPERELEVATION RATES, DESIGN SPEEDS, AND e_{max} = 8%

e%	DESIGN SPEED (MPH)																								
	30			35			40			45			50			55			60			65			70		
	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2	RADIUS	L1	L2
NC	3,240	0	0	4,260	0	0	5,410	0	0	6,710	0	0	8,150	0	0	9,720	0	0	11,500	0	0	12,900	0	0	14,500	0	0
RC	2,370	36	55	3,120	39	58	3,970	41	62	4,930	44	67	5,990	48	72	7,150	48	72	8,440	48	72	9,510	48	72	10,700	48	72
2.2	2,130	40	60	2,800	43	64	3,570	46	58	4,440	49	73	5,400	53	79	6,450	53	79	7,620	53	79	8,600	53	79	9,660	53	79
2.4	1,930	44	65	2,540	46	70	3,240	50	74	4,030	53	80	4,910	58	86	5,870	58	86	6,930	58	86	7,830	58	86	8,810	58	86
2.6	1,760	47	71	2,320	50	75	2,960	54	81	3,690	58	87	4,490	62	94	5,370	62	94	6,350	62	94	7,180	62	94	8,090	62	94
2.8	1,610	51	76	2,130	54	81	2,720	58	87	3,390	62	93	4,130	67	101	4,950	67	101	5,850	67	101	6,630	67	101	7,470	67	101
3.0	1,480	55	82	1,960	58	87	2,510	62	93	3,130	67	100	3,820	72	108	4,580	72	108	5,420	72	108	6,140	72	108	6,930	72	108
3.2	1,370	58	87	1,820	62	93	2,330	66	99	2,900	71	107	3,550	77	115	4,250	77	115	5,040	77	115	5,720	77	115	6,460	77	115
3.4	1,270	62	93	1,690	66	99	2,170	70	106	2,700	76	113	3,300	82	122	3,970	82	122	4,700	82	122	5,350	82	122	6,050	82	122
3.6	1,180	65	98	1,570	70	105	2,020	74	112	2,520	80	120	3,090	86	130	3,710	86	130	4,400	86	130	5,010	86	130	5,680	86	130
3.8	1,100	69	104	1,470	74	110	1,890	79	118	2,360	84	127	2,890	91	137	3,480	91	137	4,140	91	137	4,700	91	137	5,350	91	137
4.0	1,030	73	109	1,370	77	116	1,770	83	124	2,220	89	133	2,720	96	144	3,270	96	144	3,890	96	144	4,450	96	144	5,050	96	144
4.2	955	76	115	1,280	81	122	1,660	87	130	2,080	93	140	2,560	101	151	3,080	101	151	3,670	101	151	4,200	101	151	4,780	101	151
4.4	893	80	120	1,200	85	128	1,560	91	137	1,960	98	147	2,410	106	158	2,910	106	158	3,470	106	158	3,980	106	158	4,540	106	158
4.6	834	84	125	1,130	89	134	1,470	95	143	1,850	102	153	2,280	110	166	2,750	110	166	3,290	110	166	3,770	110	166	4,310	110	166
4.8	779	87	131	1,060	93	139	1,390	99	149	1,750	107	160	2,160	115	173	2,610	115	173	3,120	115	173	3,590	115	173	4,100	115	173
5.0	727	91	136	991	97	145	1,310	103	155	1,650	111	167	2,040	120	180	2,470	120	180	2,960	120	180	3,410	120	180	3,910	120	180
5.2	676	95	142	929	101	151	1,230	108	161	1,560	116	173	1,930	125	187	2,350	125	187	2,820	125	187	3,250	125	187	3,740	125	187
5.4	627	98	147	870	105	157	1,160	112	168	1,480	120	180	1,830	130	194	2,230	130	194	2,680	130	194	3,110	130	194	3,570	130	194
5.6	582	102	153	813	108	163	1,090	116	174	1,390	124	187	1,740	134	202	2,120	134	202	2,550	134	202	2,970	134	202	3,420	134	202
5.8	542	105	158	761	112	168	1,030	120	180	1,320	129	193	1,650	139	209	2,010	139	209	2,430	139	209	2,840	139	209	3,280	139	209
6.0	506	109	164	713	116	174	965	124	186	1,250	133	200	1,560	144	216	1,920	144	216	2,320	144	216	2,710	144	216	3,150	144	216
6.2	472	113	169	669	120	180	909	128	192	1,180	138	207	1,480	149	223	1,820	149	223	2,210	149	223	2,600	149	223	3,020	149	223
6.4	442	116	175	628	124	186	857	132	199	1,110	142	213	1,400	154	230	1,730	154	230	2,110	154	230	2,490	154	230	2,910	154	230
6.6	413	120	180	590	128	192	808	137	205	1,050	147	220	1,330	158	238	1,650	158	238	2,010	158	238	2,380	158	238	2,790	158	238
6.8	386	124	185	553	132	197	761	141	211	990	151	227	1,260	163	245	1,560	163	245	1,910	163	245	2,280	163	245	2,690	163	245
7.0	360	127	191	518	135	203	716	145	217	933	156	233	1,190	168	252	1,480	168	252	1,820	168	252	2,180	168	252	2,580	168	252
7.2	336	131	196	485	139	209	672	149	223	878	160	240	1,120	173	259	1,400	173	259	1,720	173	259	2,070	173	259	2,470	173	259
7.4	312	135	202	451	143	215	628	153	230	822	164	247	1,060	178	266	1,320	178	266	1,630	178	266	1,970	178	266	2,350	178	266
7.6	287	138	207	417	147	221	583	157	236	765	169	253	980	182	274	1,230	182	274	1,530	182	274	1,850	182	274	2,230	182	274
7.8	261	142	213	380	151	226	533	161	242	701	173	260	901	187	281	1,140	187	281	1,410	187	281	1,720	187	281	2,090	187	281
8.0	214	145	218	314	155	232	444	166	248	587	178	267	758	192	288	960	192	288	1,200	192	288	1,480	192	288	1,810	192	288

TABLE NOTES:

"NC" DENOTES NORMAL CROSS SLOPE.

"RC" DENOTES REMOVE ADVERSE CROSS SLOPE, SUPERELEVATE AT NORMAL CROSS SLOPE.

"e" DENOTES THE SUPERELEVATION IN PERCENT (%).

"L" THE LENGTH OF SUPERELEVATION RUNOFF AND WIDENING TRANSITION IN FEET FOR A 2 LANE ROADWAY.

THE L1 COLUMN IS FOR 1 LANE ROTATED
THE L2 COLUMN IS FOR 2 LANES ROTATED

1 LANE ROTATED IS TYPICALLY FOR A 2-LANE HIGHWAY
2 LANE ROTATED IS TYPICALLY FOR A 4-LANE HIGHWAY

WHEN USING ONE OF THE TABLES FOR A GIVEN RADIUS, INTERPOLATION IS NOT NECESSARY AS THE SUPERELEVATION RATE SHOULD BE DETERMINED FROM A RADIUS EQUAL TO, OR SLIGHTLY SMALLER THAN, THE RADII PROVIDED IN THE TABLE. THE RESULT IS A SUPERELEVATION RATE THAT IS ROUNDED UP TO THE NEAREST 0.2 OF A PERCENT.

EXAMPLE: A 50 MPH CURVE WITH A MAXIMUM SUPERELEVATION RATE OF 8 PERCENT, AND A RADIUS OF 1,910 FT, SHOULD USE THE RADIUS OF 1,830 FT TO OBTAIN A SUPERELEVATION RATE OF 5.4 PERCENT.

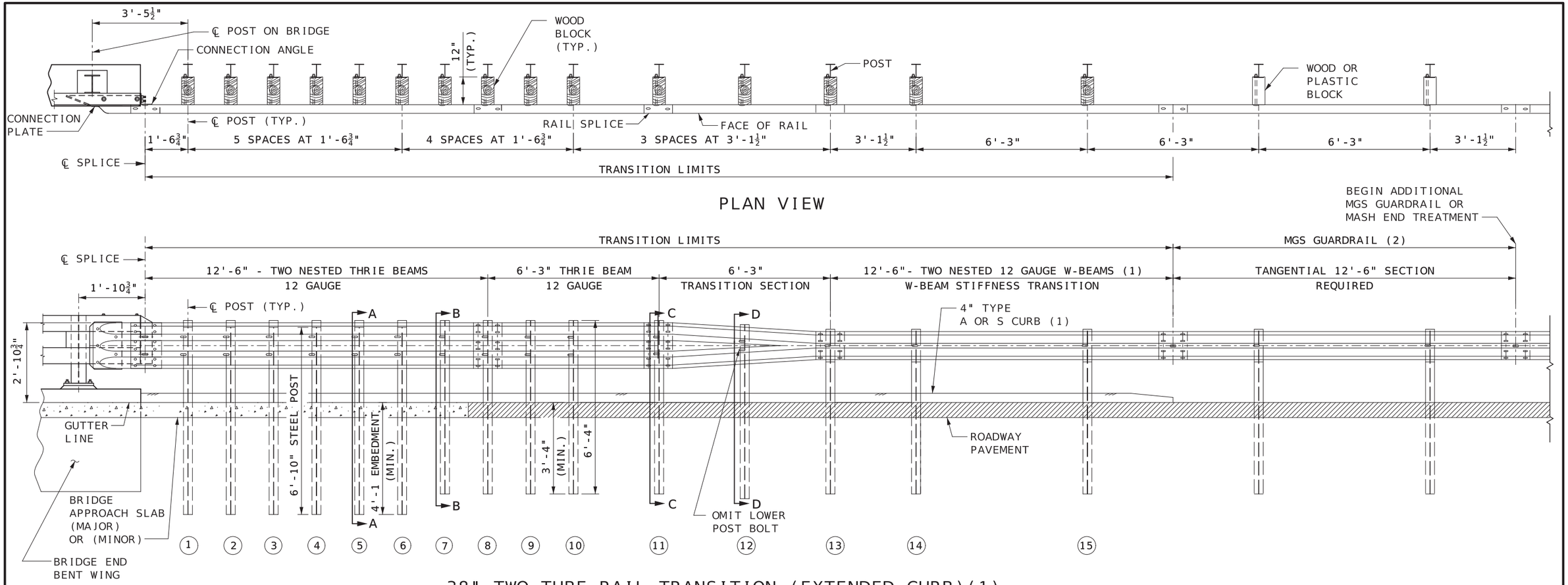
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SUPERELEVATION, SPIRALS AND WIDENING

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

203.22A



PLAN VIEW

38" TWO-TUBE RAIL TRANSITION (EXTENDED CURB)(1)

GENERAL NOTES:

MGS GUARDRAIL SHALL BE TANGENTIAL WITH BRIDGE APPROACH TRANSITION FOR 12'-6" BEYOND THE TWO NESTED W-BEAM STIFFNESS TRANSITION AND 25'-0" BEYOND THRIE BEAM TRANSITION SECTION.

AT THE CONTRACTORS OPTION, A SINGLE 18'-9" PIECE OF THRIE BEAM MAY BE SUBSTITUTED FOR ONE OF THE 12'-6" PANELS AND THE 6'-3" SECTION AS SHOWN.

FOR PROTECTIVE COATING AND MATERIAL REQUIREMENTS, SEE SEC 1040 OF THE STANDARD SPECIFICATIONS.

RAIL POSTS SHALL BE SET PERPENDICULAR TO THE ROADWAY PROFILE GRADE AND VERTICALLY IN CROSS SECTION.

USE 5/8" BUTTON-HEAD OVAL SHOULDER BOLTS WITH HEX NUTS AT ALL SLOTS (THICKNESS OF HEX NUTS = 3/8" MIN.).

THE CONNECTION PLATE AND ANGLE SHALL BE FABRICATED FROM ASTM A709 GRADE 50 STEEL AND GALVANIZED.

ALL LAP SPLICES, INCLUDING END SHOES, SHALL BE MADE IN THE DIRECTION OF TRAFFIC.

THE COST OF FURNISHING, FABRICATING AND INSTALLING BRIDGE APPROACH TRANSITION (EXTENDED CURB), COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH.

THE CONTRACTOR MAY, AT THEIR OPTION, FURNISH EQUIVALENT SECTIONS FABRICATED FROM MATERIAL MEETING AND IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A769 GRADE 36 OR 40. THE SECTIONS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH REQUIREMENTS OF AASHTO M 111.

(1) WHERE CURB EXTENDS UPSTREAM OF POST NO. (11) FOR DRAINAGE PURPOSES, A STIFFNESS TRANSITION CONSISTING OF AN EXTRA 12'-6" BEAM OF 12 GAUGE W-BEAM MUST BE NESTED PRIOR TO THE TRANSITION SECTION (UPSTREAM OF POST NO. (13)). THE CURB SHALL BE EXTENDED TO THE END OF THE 12'-6" 12 GAUGE W-BEAM STIFFNESS TRANSITION SEE STD. PLAN 609.40 FOR DETAILS. WHEN CURBS DO NOT EXTEND UPSTREAM OF POST NO. (11), PAY FOR A TWO-TUBE RAIL TRANSITION (REGULAR CURB/NO CURB). FOR DETAILS OF TWO-TUBE RAIL TRANSITION (REGULAR CURB/NO CURB), SEE SHEET 2 OF 3.

(2) THE ADDITIONAL REQUIRED MGS GUARDRAIL IS INCLUDED IN THE TOTAL LENGTH OF NEED AND SHALL BE PAID FOR AS A GUARDRAIL PAY ITEM.

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

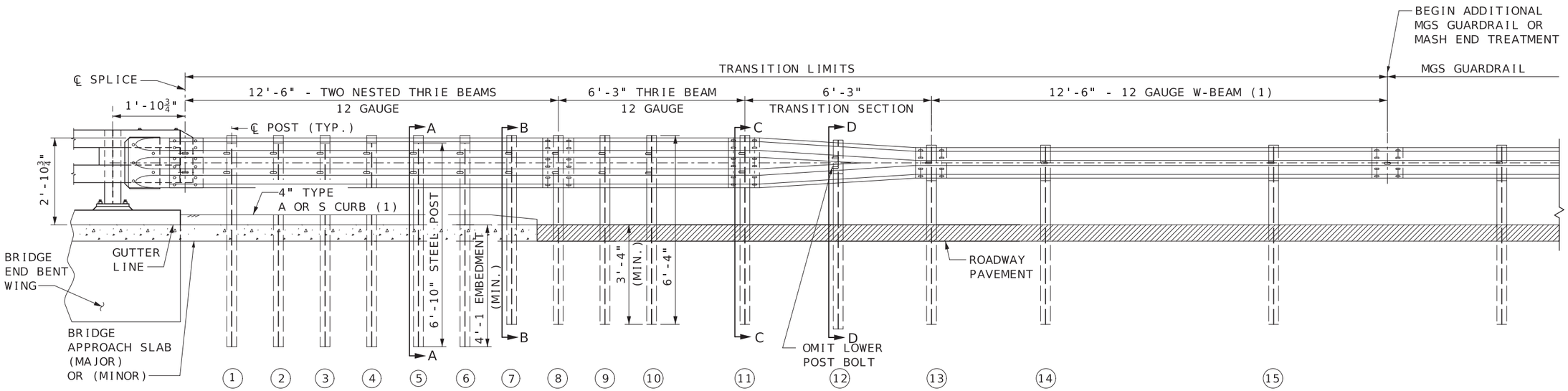
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

MIDWEST GUARDRAIL SYSTEM (MGS)
38-INCH TWO-TUBE RAIL TRANSITIONS

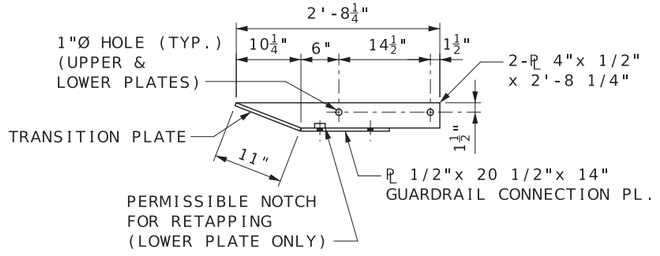
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/9/2024

606.61

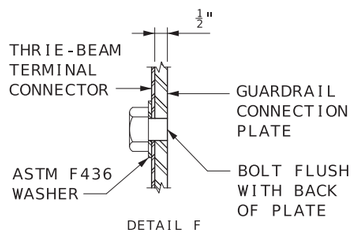
SHEET NO. 1 OF 3



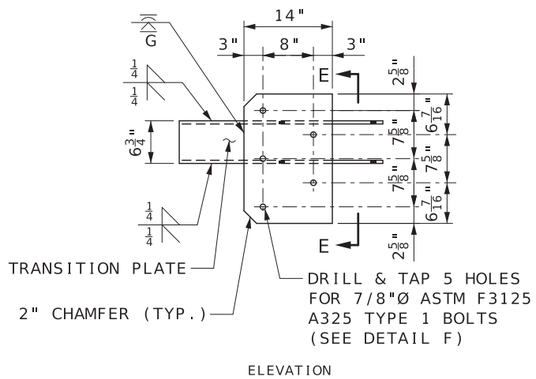
38" TWO-TUBE RAIL TRANSITION (WITH REGULAR LENGTH CURB OR NO CURB)(1)



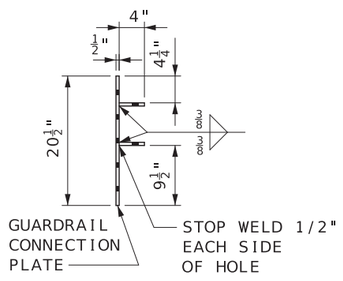
PLAN



DETAIL F

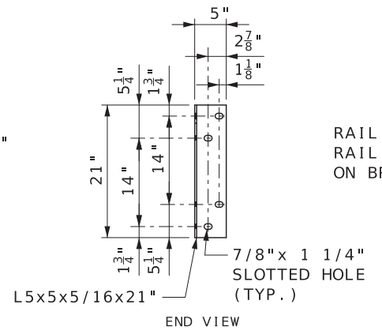


ELEVATION

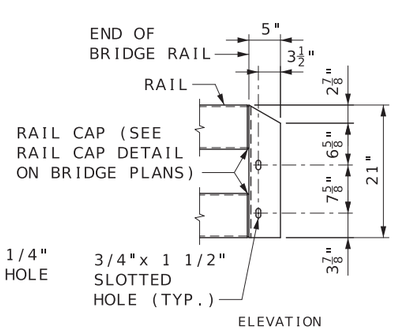


SECTION E-E

GUARDRAIL CONNECTION PLATE



END VIEW



ELEVATION

CONNECTION ANGLE

GENERAL NOTES:
SEE SHEET 1 FOR ADDITIONAL NOTES NOT INCLUDED ON THIS SHEET.

THE COST OF FURNISHING, FABRICATING AND INSTALLING BRIDGE APPROACH TRANSITION (REGULAR/NO CURB), COMPLETE IN PLACE, WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER EACH.

(1) WHERE CURB EXTENDS UPSTREAM OF POST NO. (11) FOR DRAINAGE PURPOSES, A STIFFNESS TRANSITION CONSISTING OF AN EXTRA 12'-6" BEAM OF 12 GAUGE W-BEAM MUST BE NESTED PRIOR TO THE TRANSITION SECTION (UPSTREAM OF POST NO. (13)). THE CURB SHALL BE EXTENDED TO THE END OF THE 12'-6" 12 GAUGE W-BEAM STIFFNESS TRANSITION SEE STD. PLAN 609.40 FOR DETAILS. IF CURB EXTENDS BEYOND POST NO. (11), PAY FOR A TWO-TUBE RAIL TRANSITION (EXTENDED CURB). FOR DETAILS OF TWO-TUBE RAIL TRANSITION (EXTENDED CURB), SEE SHEET 1 OF 3.

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

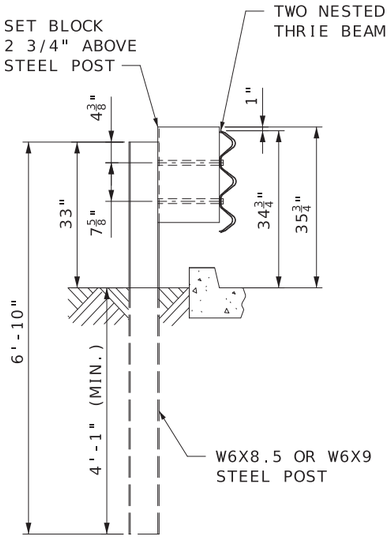
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

MIDWEST GUARDRAIL SYSTEM (MGS) 38-INCH TWO-TUBE RAIL TRANSITIONS

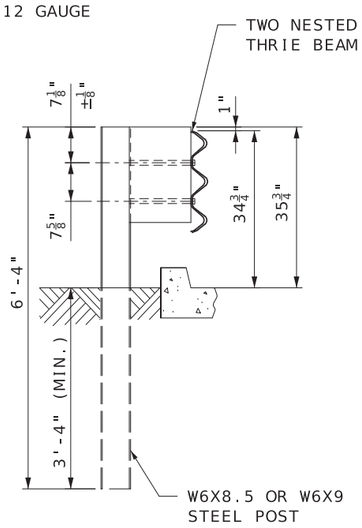
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/9/2024

606.61

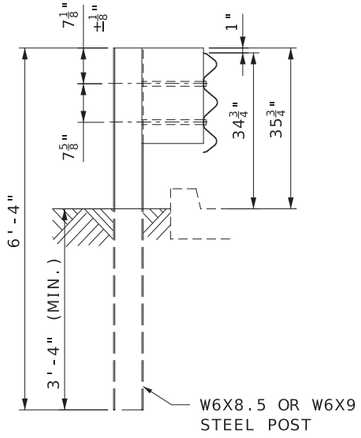
SHEET NO. 2 OF 3



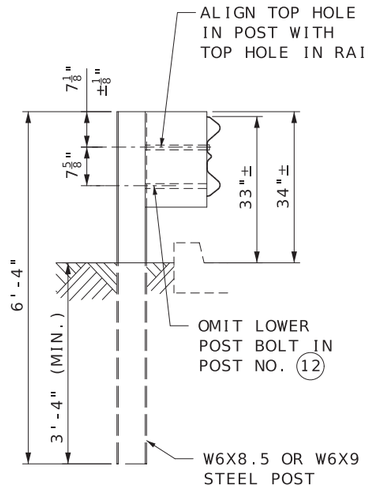
SECTION A-A



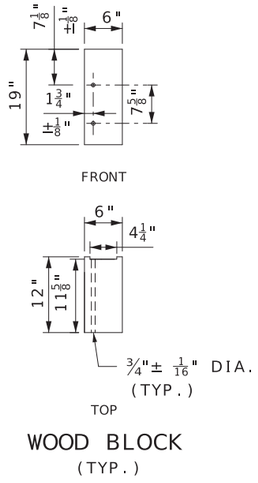
SECTION B-B



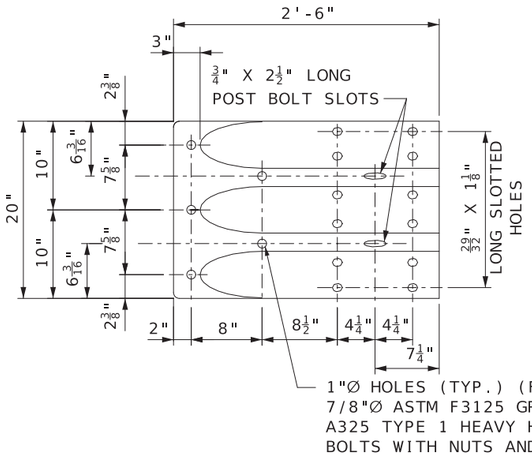
SECTION C-C



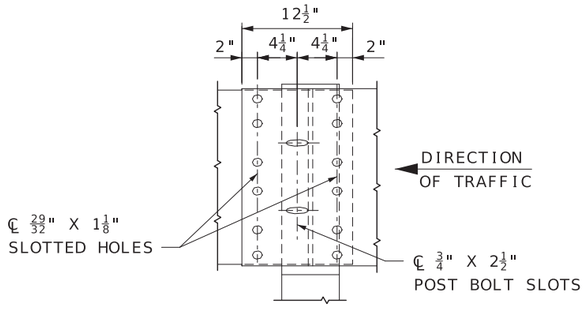
SECTION D-D



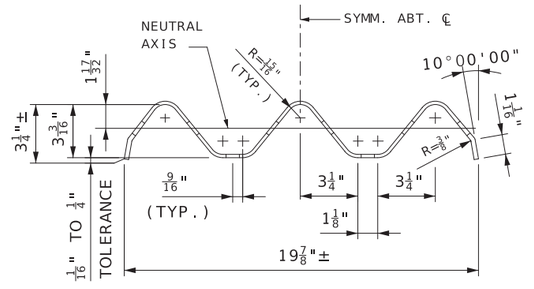
WOOD BLOCK
(TYP.)



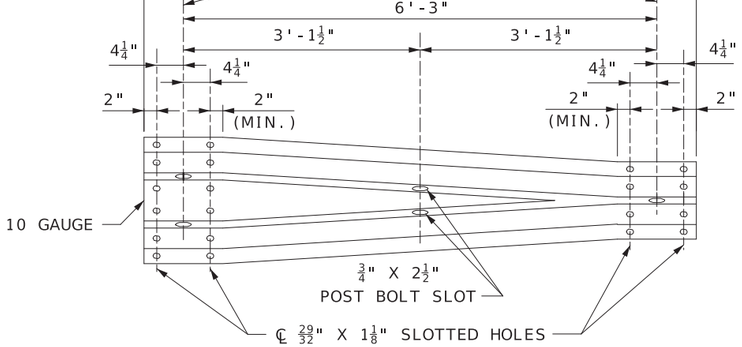
TERMINAL CONNECTOR
(10 GAUGE OR 12 GAUGE)



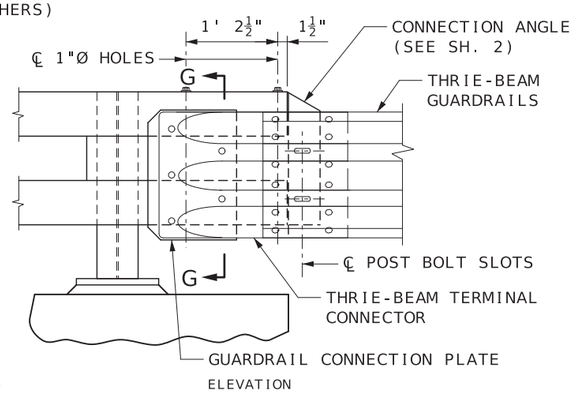
THRIE BEAM RAIL SPLICE AT POST



SECTION THROUGH THRIE BEAM RAIL

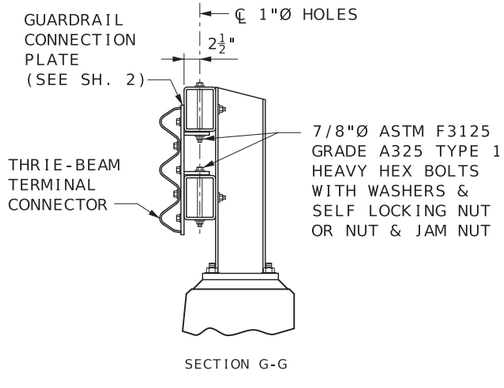


TRANSITION SECTION



ELEVATION

TRANSITION CONNECTION



SECTION G-G

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

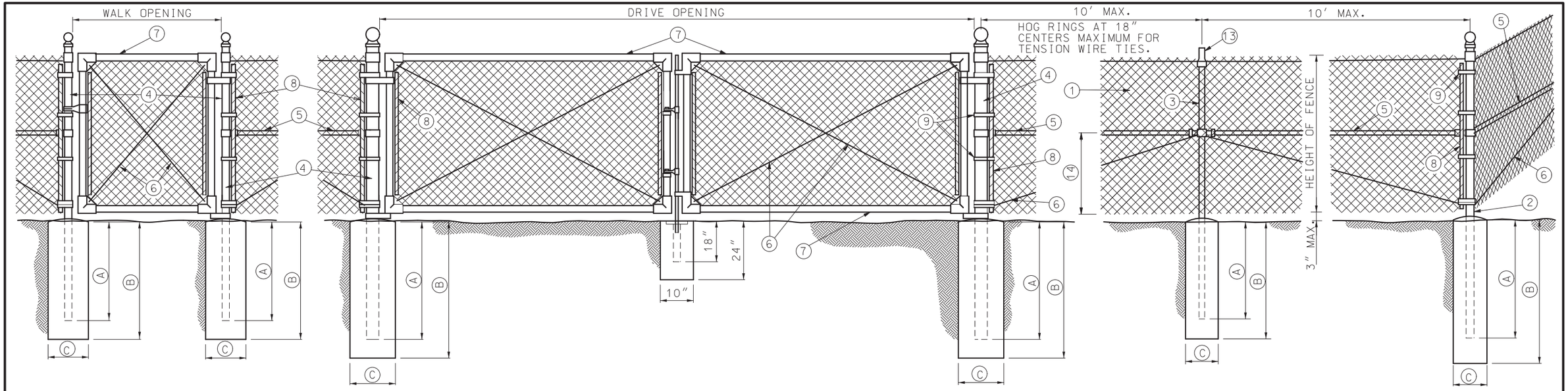
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

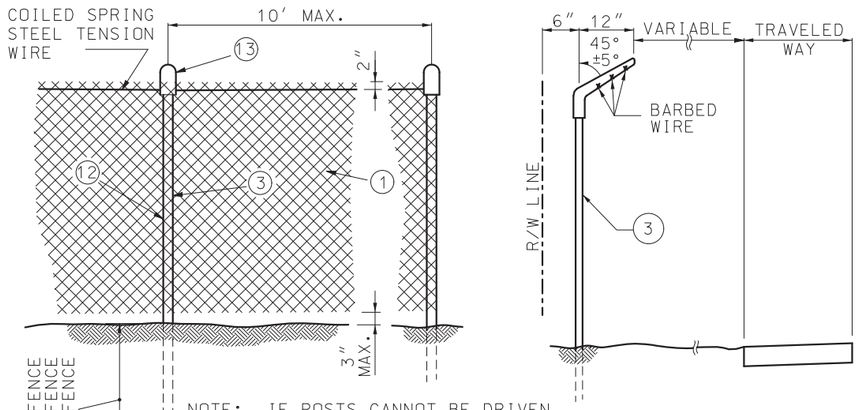
MIDWEST GUARDRAIL SYSTEM (MGS) 38-INCH TWO-TUBE RAIL TRANSITIONS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/9/2024

606.61

SHEET NO. 3 OF 3

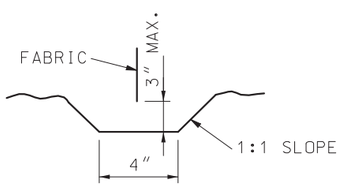




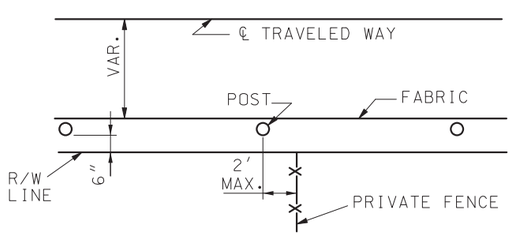
NOTE: IF POSTS CANNOT BE DRIVEN TO DEPTHS INDICATED BECAUSE OF ROCKY SOILS OR OTHER CONDITIONS, THEY SHALL BE REMOVED AND RE-PLACED IN FOOTINGS. POST TOPS SHALL BE PROTECTED AGAINST DAMAGE AND ALL POSTS WHICH ARE DAMAGED DURING INSTALLATION SHALL BE REMOVED AND REPLACED.

ALTERNATE LINE POST ANCHORAGE (DRIVEN)

BARBED WIRE EXTENSION BRACKET



TYPICAL TRENCH DETAILS



TYPICAL LOCATION

MINIMUM DEPTH FOR SETTING POSTS

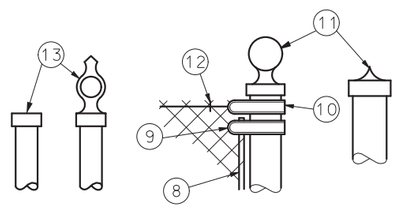
DESCRIPTION		HEIGHT OF FENCE 48″ SIZE(IN.)	60″ SIZE(IN.)	72″ SIZE(IN.)
② END CORNER & PULL POST	Ⓐ	30	36	36
	Ⓑ	36	42	42
	Ⓒ	10	12	12
③ LINE POST	Ⓐ	24	27	36
	Ⓑ	30	36	42
	Ⓒ	10	12	12
④ GATE POST	Ⓐ	30	36	36
	Ⓑ	36	42	42
	Ⓒ	10	12	12

LEGEND

① FABRIC
② END, CORNER OR PULL POST
③ LINE POST
④ GATE POST
⑤ BRACE
⑥ TRUSS ROD
⑦ GATE FRAME
⑧ STRETCHER BAR $\frac{1}{4}$″ X $\frac{3}{4}$″ PLATE
⑨ STRETCHER BAR BAND
⑩ END OR CORNER CLAMP
⑪ POST TOPS (OTHER THAN LINE POSTS)
⑫ FABRIC TIES
⑬ LINE POST TOPS WITH OR WITHOUT TOP RAILS
⑭ ONE-HALF FABRIC HEIGHT OR AS RECOMMENDED BY MANUFACTURER

MINIMUM SIZE FOR FENCE HARDWARE

	WIDTH	DIA.(IN.)	LBS/FT
② END CORNER OR PULL POST	N/A	$2\frac{1}{2}$	5.79
③ LINE POST	N/A	2	3.65
④ GATE POST (SINGLE GATE OR 1 LEAF OF DOUBLE)	≤ 6′	$2\frac{1}{2}$	5.79
	≤ 13′	$3\frac{1}{2}$	9.10
	≤ 18′	6	18.97
	> 18′	8	24.70
⑤ BRACE	N/A	$1\frac{1}{4}$	2.27
⑥ TRUSS ROD	N/A	$\frac{3}{8}$	–
⑦ GATE FRAME	N/A	$1\frac{1}{2}$	2.72



POST TOPS TO BE PRESSURE FITTED OR SCREWED. POST TOPS MAY BE ELIMINATED FOR ALL POSTS EXCEPT PIPE POSTS. IF POST TOPS ARE ELIMINATED, POST LENGTH SHALL BE INCREASED 3″.

POST TOPS

WIRE SIZE AND HEIGHT OF FABRIC			
SPECIFIED DIAMETER			HEIGHT OF FABRIC INCHES
INCHES	GAGE	MESH INCHES	
0.120	11	2	36, 42
0.148	9	2	48, 60
0.192	6	2	72, 84

GENERAL NOTES:

WEIGHTS OF MATERIALS SHOWN IN TABLE ARE FOR ASTM F 1043, GROUP IA. NOMINAL INSIDE DIAMETER SIZES SHOWN ARE FOR STEEL AND ALUMINUM. EQUIVALENT ASTM F 1043 ALTERNATIVES MAY BE USED.

PULL POSTS SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE OR AT APPROXIMATE 500′ CENTERS ON STRAIGHT RUNS OR AS DIRECTED BY THE ENGINEER.

DRILLED HOLES Ⓒ IN SOLID ROCK SHALL PROVIDE A DIAMETER OF NOT LESS THAN 2″ GREATER THAN THE MAXIMUM TRANSVERSE DIMENSION OF THE POST SECTION.

ALL POSTS SHALL HAVE PROVISIONS TO SECURELY HOLD THE TOP TENSION WIRE IN POSITION AND ALLOW FOR REMOVAL AND REPLACEMENT OF A POST WITHOUT DAMAGING THE TOP TENSION WIRE.

THE MESH SIZE SHALL BE 2 INCHES ±$\frac{1}{8}$ IN. MEASURED IN EITHER DIRECTION AS THE MINIMUM CLEAR DISTANCE BETWEEN THE WIRES FORMING THE PARALLEL SIDES OF THE MESH.

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

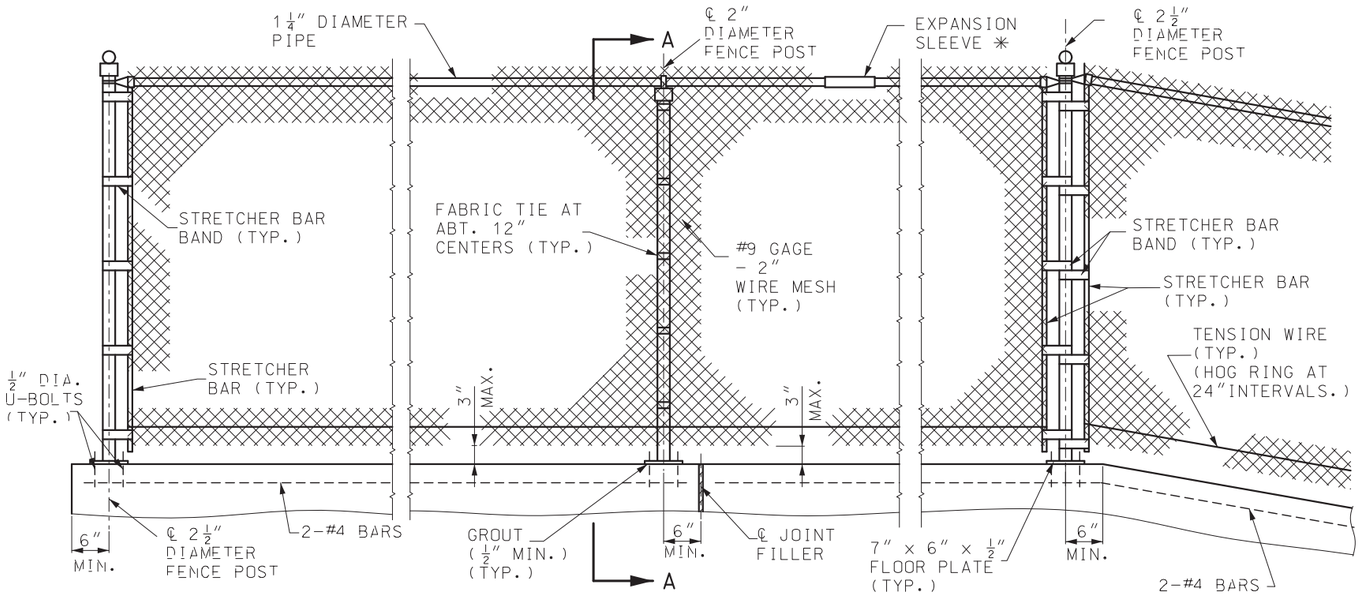
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

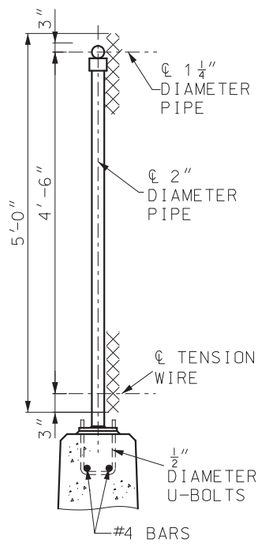
CHAIN-LINK FENCE

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

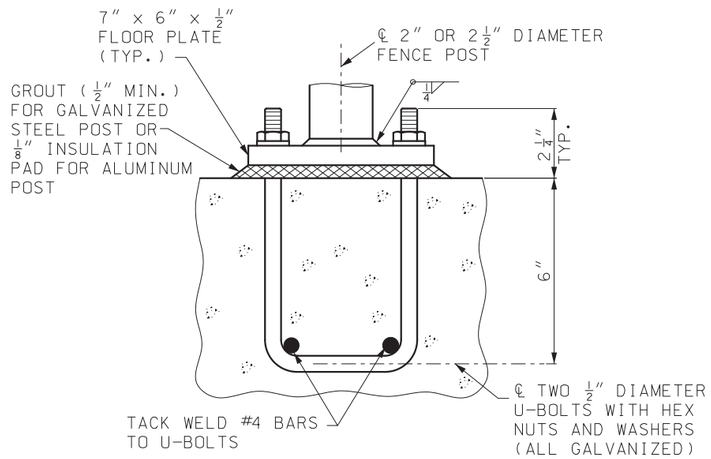
607.10W

SHEET NO. 1 OF 1





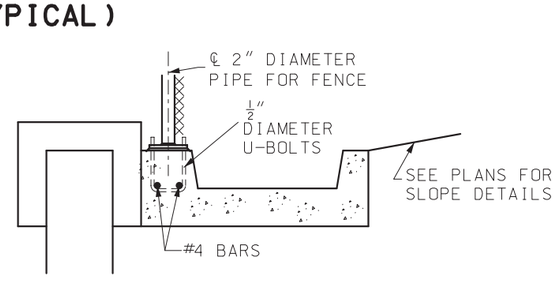
SECTION A–A



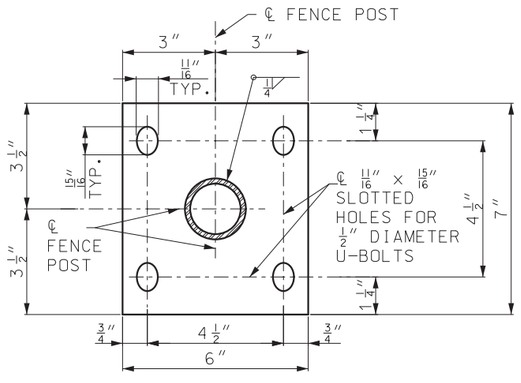
TYPICAL FENCE POST CONNECTION

✳ PLACE EXPANSION SLEEVE AT ABOUT 30'-0" CENTERS WITH AT LEAST ONE EXPANSION SLEEVE BETWEEN PULL POSTS.

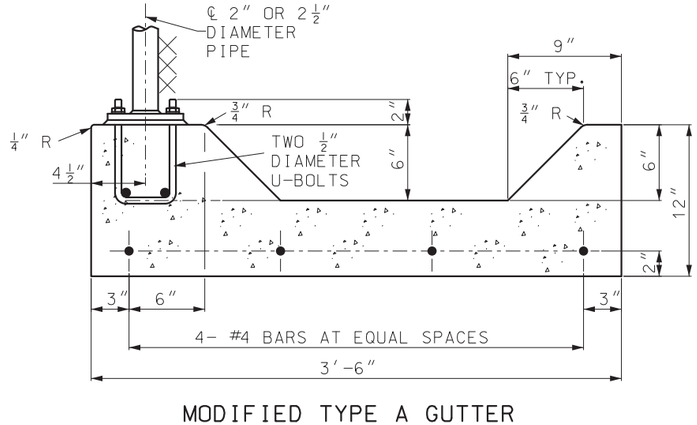
PART ELEVATION (TYPICAL)



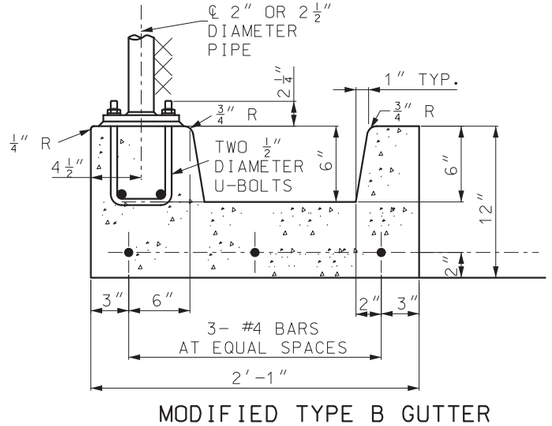
ALTERNATE SECTION A–A FOR MSE WALLS



PLAN OF FLOOR PLATE



MODIFIED TYPE A GUTTER



MODIFIED TYPE B GUTTER

FENCE CONNECTION FOR MSE WALLS

GENERAL NOTES:

PAYMENT FOR U-BOLTS WITH NUTS, WASHERS, AND #4 BARS WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR CHAIN-LINK FENCE (RETAINING WALLS).

PULL POST SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE OR AT APPROXIMATE 100'-0" CENTERS ON STRAIGHT RUNS.

THE CHAIN-LINK FENCE SHALL BE IN ACCORDANCE WITH APPLICABLE PARTS OF SEC 607.

MAXIMUM POST SPACING IN HORIZONTAL DIRECTION SHALL BE 10'-0".

PIPE POST SIZES ARE NOMINAL INSIDE DIAMETERS.

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

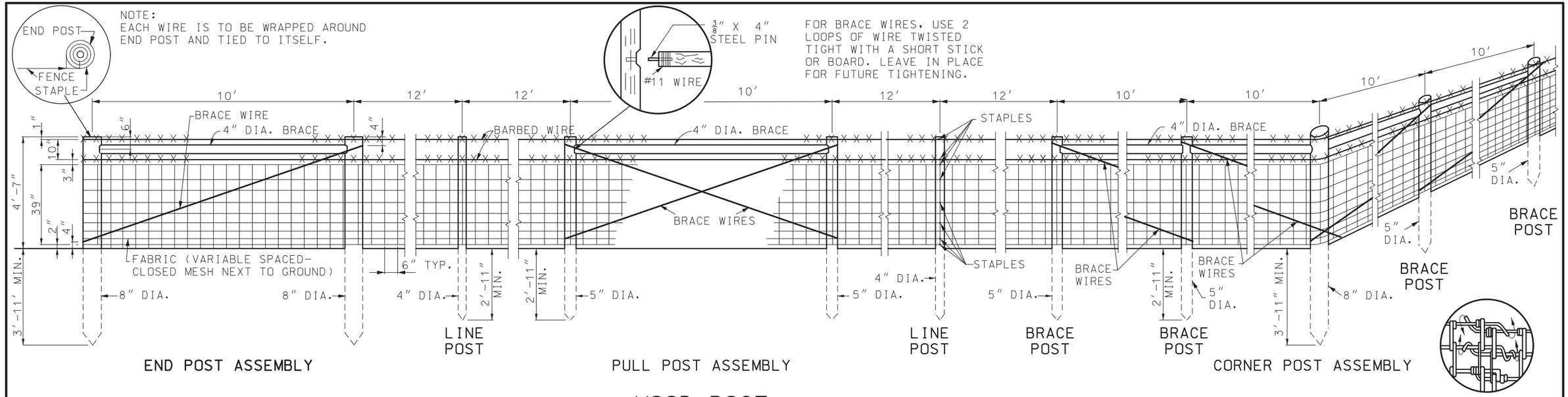
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

CHAIN-LINK FENCE FOR RETAINING WALLS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

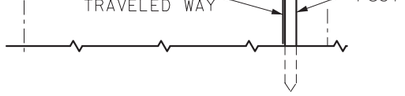
607.11J

SHEET NO. 1 OF 1



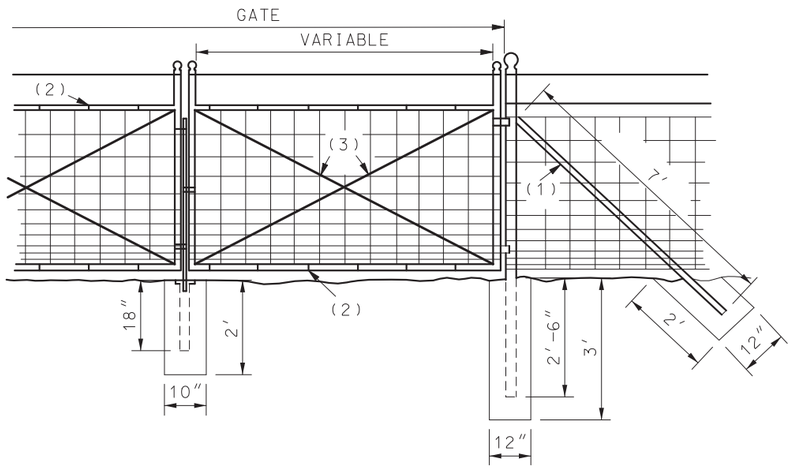
WOOD POST

TYPICAL SPLICE



TYPICAL FENCE LOCATION

GATE OPENING	GATE POST SIZE (NOM. I.D.)	LBS/FT
≤ 6′	2″	3.65
≤13′	2 1/2″	5.79
≤18′	3 1/2″	9.10
>18′	6″	18.97
GATE FRAME	1 1/2″	2.72



1. BRACES
2. WIRE TIES
3. 3.8″ ADJUSTABLE TRUSS RODS.

GENERAL NOTES:

STEEL LINE POSTS SHALL BE OF AN APPROVED "U", "Y", "T" OR CHANNEL SECTION, NOTCHED OR STUDDED WITH AN ANCHOR PLATE. POST PUNCHED WITH HOLES OR SELF FASTENING LUGS WILL NOT BE PERMITTED.

STAPLES SHALL BE SCREW SHANK TYPE OR EQUIVALENT (1 1/4" MINIMUM LENGTH).

STRETCHED FABRIC AND BARBED WIRE ON OUTSIDE OF POST ON CORNERS AND CURVES.

ATTACHMENT OF FABRIC TO STEEL LINE POSTS IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATION.

GATES FOR WOVEN WIRE FENCE SHALL BE IN ACCORDANCE WITH SEC 607.20 AND 1043.3.6 OF THE STANDARD SPECIFICATIONS. EXCEPT THE FILLER SHALL BE WOVEN WIRE FABRIC OF THE SAME KIND AS USED FOR THE FENCE.

SINGLE LEAF GATES REQUIRE UP TO 12" OPENING. DOUBLE LEAF GATES REQUIRE OVER 12" OPENING. DIRECTION OF SWING OF GATES SHALL BE AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

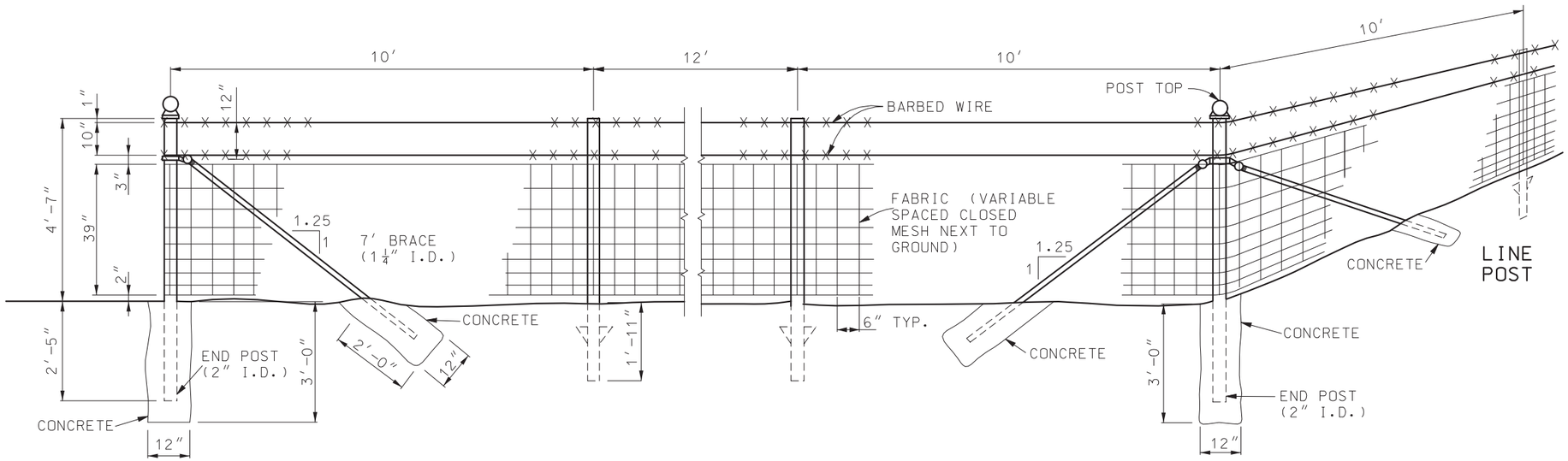
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

WOVEN WIRE FENCE

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

607.20H

SHEET NO. 1 OF 2

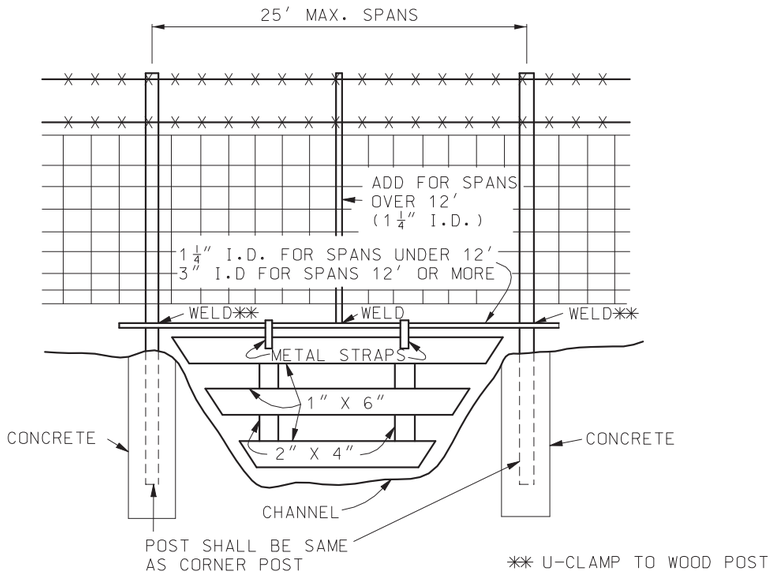


END POST ASSEMBLY

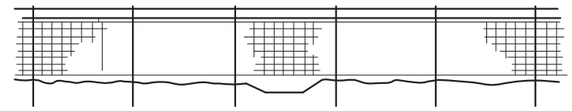
LINE POST

CORNER OR PULL POST ASSEMBLY

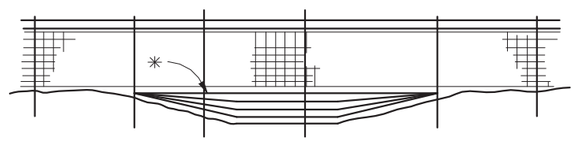
STEEL POST



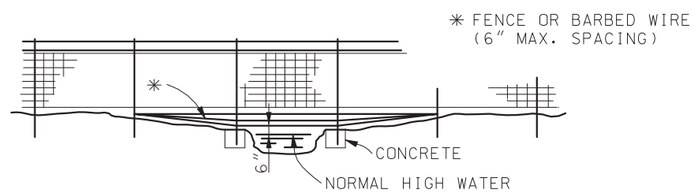
TYPICAL
WATER CROSSING GATE



ROADWAY DITCHES OR SMALL SHALLOW CHANNELS
(SPAN WITH NORMAL LINE POST SPACING)



POORLY DEFINED CHANNELS (SMALL DRAINAGE AREAS)



WELL DEFINED CHANNELS (LARGE DRAINAGE AREAS)

TYPICAL FENCING AT
CHANNEL CROSSING

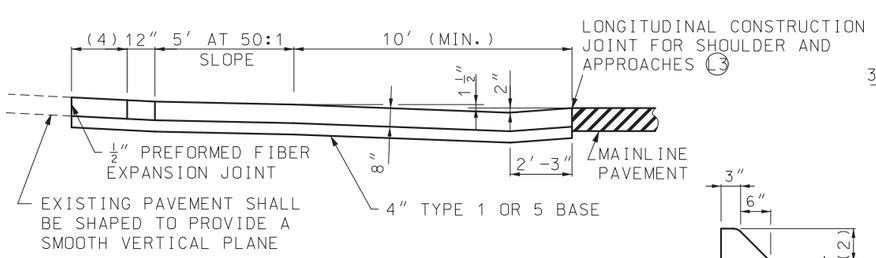
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

WOVEN WIRE FENCE

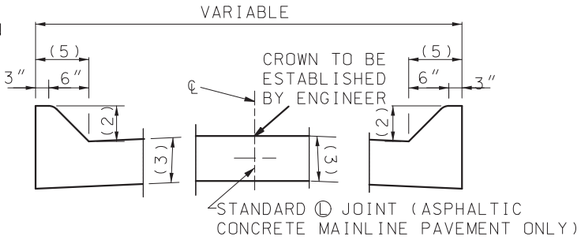
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

607.20H



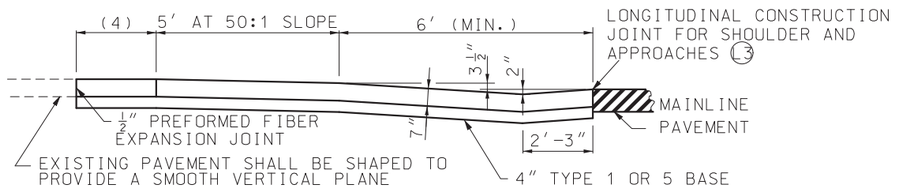
SECTION A-A

SECTION B-B



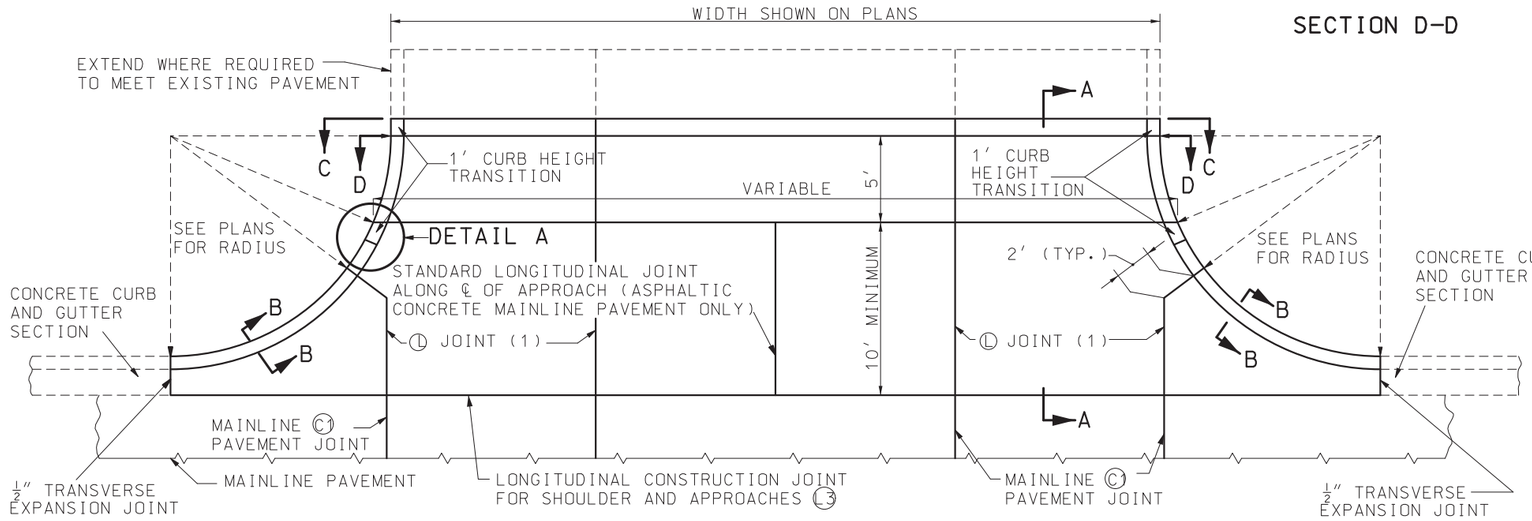
SECTION C-C

SECTION D-D

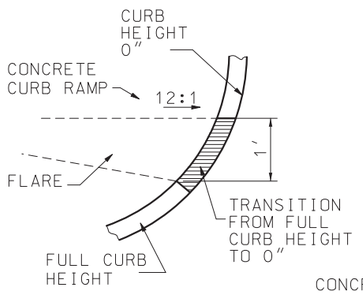


SECTION E-E

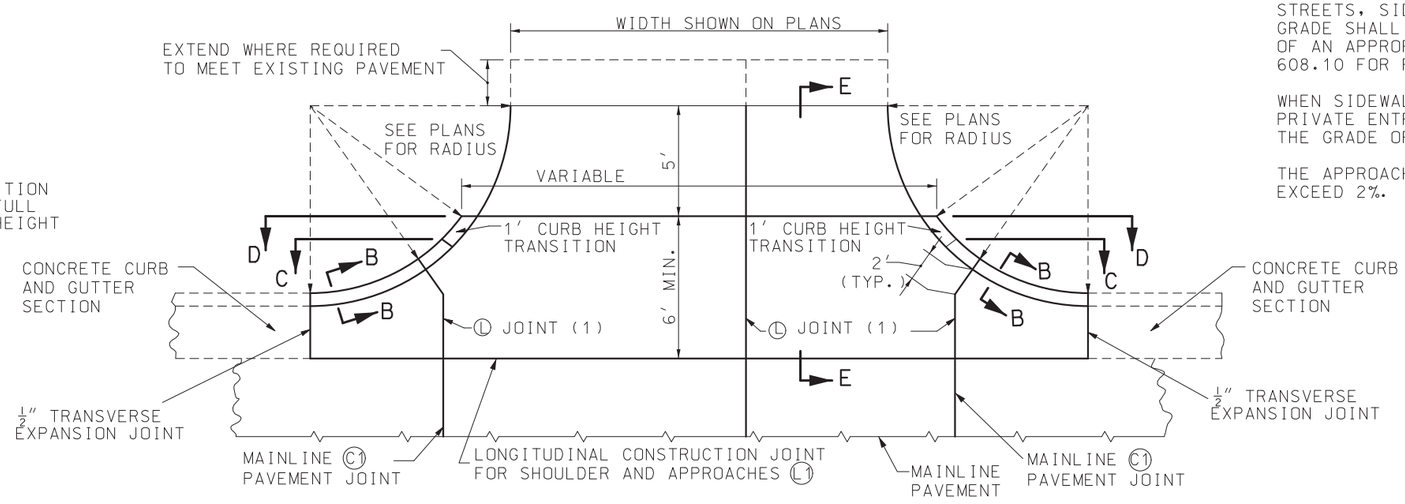
(1) THE NUMBER OF Ⓛ JOINTS SHOWN IN PAVED APPROACH ARE FOR ILLUSTRATIVE PURPOSES ONLY, JOINTS PLACED IN PAVED APPROACHES SHALL MATCH THE (C1) PAVEMENT TRANSVERSE MAINLINE PAVEMENT JOINT LOCATION.
(2) 6" - EXCEPT WHERE VARIED TO MEET EXISTING IMPROVEMENTS.
(3) 8" NRPCCP - FOR STREET, SIDEROAD, ALLEY OR COMMERCIAL APPROACHES. 7" NRPCCP - FOR PRIVATE APPROACHES.
(4) EXTEND WHERE REQUIRED TO MEET EXISTING PAVEMENT.
(5) VARY TO MEET EXISTING IMPROVEMENTS.



PLAN OF STREET, SIDEROAD, ALLEY OR COMMERCIAL APPROACHES



DETAIL A



PLAN OF PRIVATE APPROACHES

GENERAL NOTES:

WHERE PAVED APPROACH MEETS EXISTING CONCRETE PAVEMENT OR SIDEWALK, PLACE ½" PREFORMED FIBER EXPANSION JOINT, CUT TO TEMPLATE, THROUGH NEW CONCRETE AND 1' FROM JUNCTION WITH EXISTING CONCRETE, OR ALONG INSIDE EDGE OF SIDEWALK. WHERE PAVED APPROACH MEETS EXISTING BITUMINOUS CONSTRUCTION, OMIT JOINT.

4 INCHES OF TYPE 1 OR 5 BASE SHALL BE PLACED AND COMPACTED BENEATH THE AREAL SURFACE OF PAVED APPROACHES.

SEE STANDARD PLAN 608.10 FOR CONCRETE CURB RAMPS.

SEE STANDARD PLAN 502.05 FOR JOINT DETAILS.

SEE STANDARD PLAN 609.00 FOR TRANSVERSE EXPANSION JOINT DETAILS.

WHERE DRAINAGE IS NOT TO BE CARRIED ACROSS THE PAVED APPROACH, SECTION A-A SHALL BE MODIFIED TO ELIMINATE THE GUTTER LINE AND SHALL BE CROWNED AS DIRECTED BY THE ENGINEER.

IF SIDEWALKS ARE NOT INCLUDED IN CONSTRUCTION OF PAVED APPROACH, PLACE GROUND COVER, AS SHOWN ON PLANS, BEHIND CURB THROUGH RADIUS. GROUND COVER SHALL CONFORM TO FINISHED GRADING FOR CURB RAMP.

HAND FINISHING PERMITTED ON PAVED APPROACH.

WHEN SIDEWALKS ARE PRESENT ADJACENT TO THE PAVED APPROACHES OF STREETS, SIDEROADS, ALLEYS OR COMMERCIAL ENTRANCES, THE SIDEWALK GRADE SHALL BE TRANSITIONED TO THE GRADE OF THE APPROACH BY WAY OF AN APPROPRIATE RAMP AS SHOWN ON THE PLANS. SEE STANDARD PLAN 608.10 FOR RAMP DETAILS.

WHEN SIDEWALKS ARE PRESENT ADJACENT TO THE PAVED APPROACHES OF PRIVATE ENTRANCES, THE APPROACH GRADE SHALL BE TRANSITIONED TO THE GRADE OF THE SIDEWALK.

THE APPROACH GRADE THROUGH THE LIMITS OF A SIDEWALK SHALL NOT EXCEED 2%.

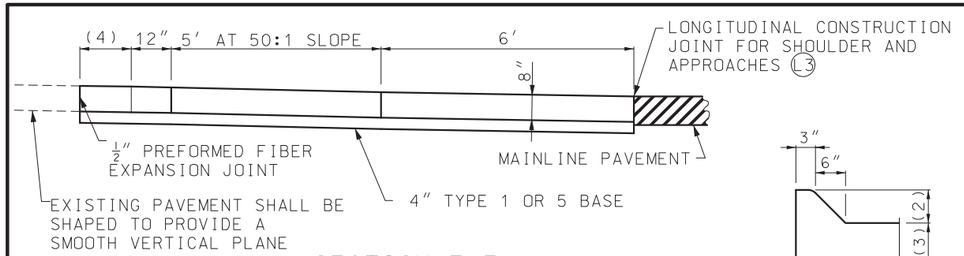
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PAVED APPROACHES
ADJOINING CURB AND GUTTER SECTIONS

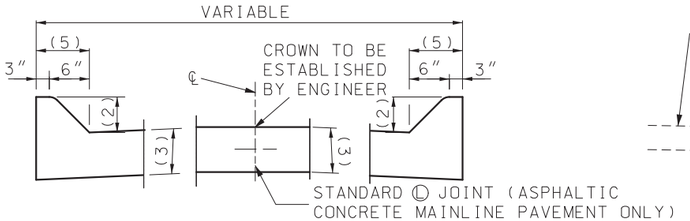
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

608.00L

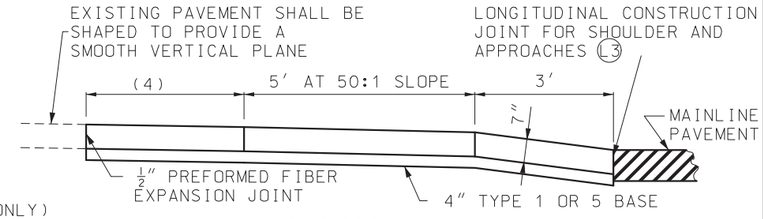


SECTION F-F

SECTION G-G

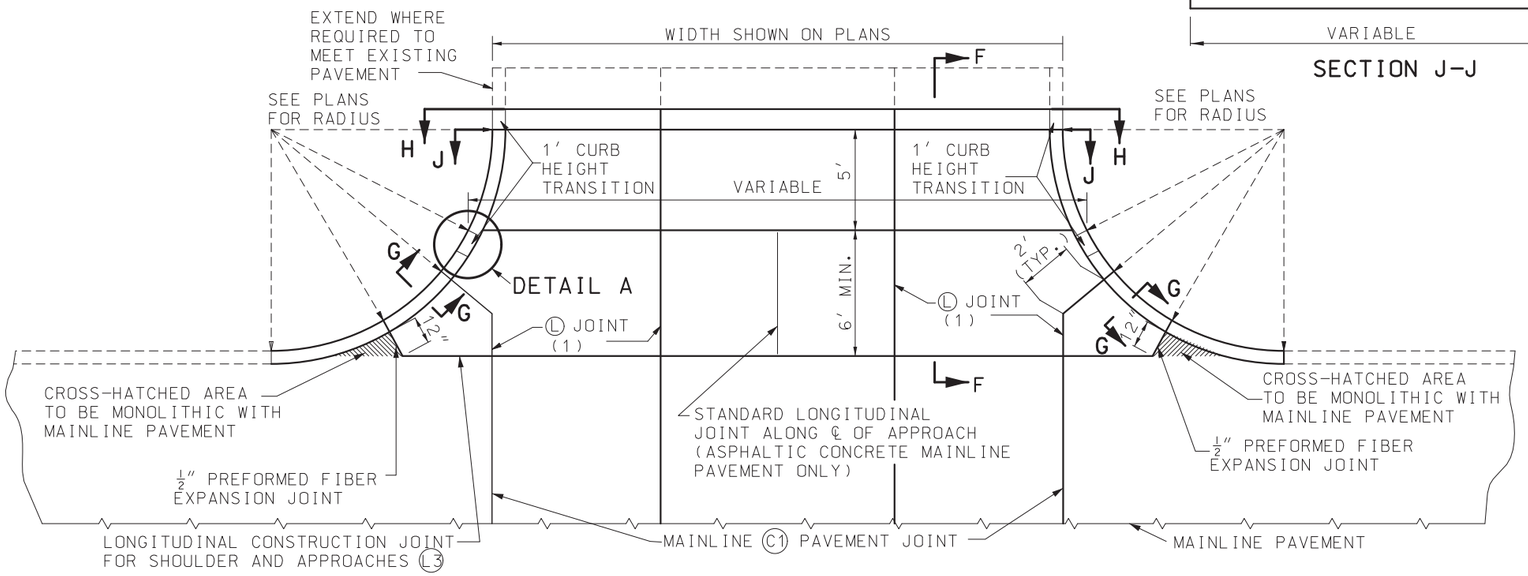


SECTION H-H

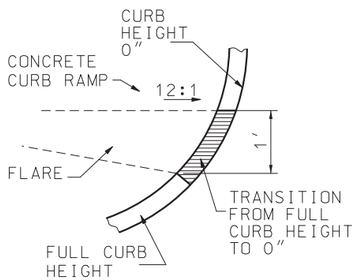


SECTION K-K

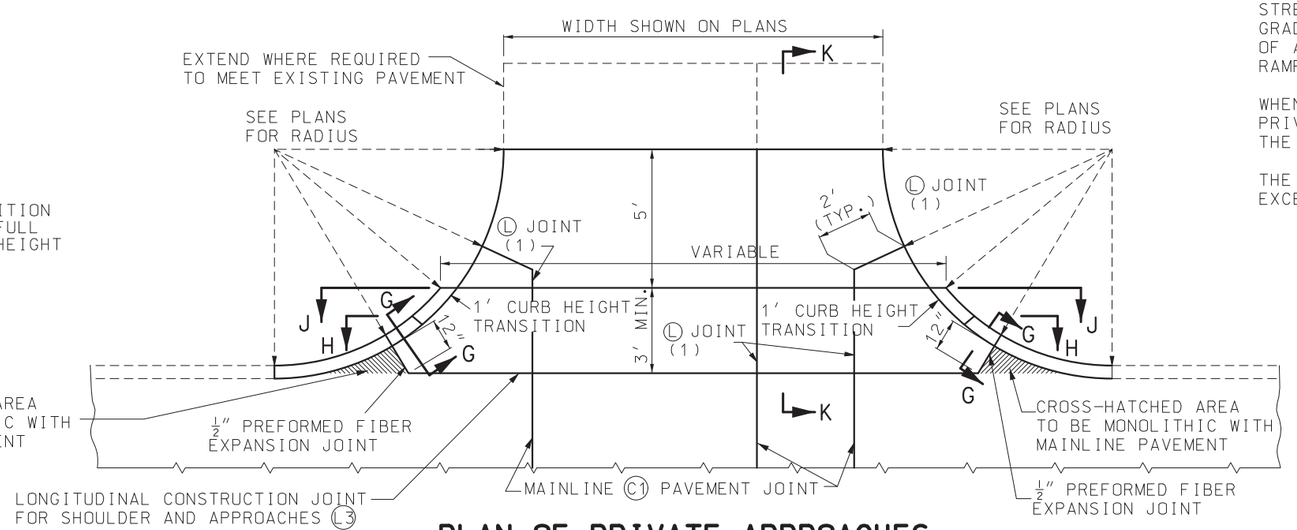
SECTION J-J



PLAN OF STREET, SIDEROAD, ALLEY OR COMMERCIAL APPROACHES



DETAIL A



PLAN OF PRIVATE APPROACHES

(1) THE NUMBER OF Ⓛ JOINTS SHOWN IN PAVED APPROACH ARE FOR ILLUSTRATIVE PURPOSES ONLY, JOINTS PLACED IN PAVED APPROACHES SHALL MATCH THE (C1) PAVEMENT TRANSVERSE MAINLINE PAVEMENT JOINT LOCATION.
(2) 6" - EXCEPT WHERE VARIED TO MEET EXISTING IMPROVEMENTS.
(3) 8" NRPCCP - FOR STREET, SIDEROAD, ALLEY OR COMMERCIAL APPROACHES. 7" NRPCCP - FOR PRIVATE APPROACHES.
(4) EXTEND WHERE REQUIRED TO MEET EXISTING PAVEMENT.
(5) VARY TO MEET EXISTING IMPROVEMENTS.

GENERAL NOTES:

WHERE PAVED APPROACH MEETS EXISTING PCC PAVEMENT OR SIDEWALK, PLACE ½" PREFORMED FIBER EXPANSION JOINT, CUT TO TEMPLATE, THROUGH NEW CONCRETE AND 1' FROM JUNCTION WITH EXISTING CONCRETE, OR ALONG INSIDE EDGE OF SIDEWALK. WHERE PAVED APPROACH MEETS EXISTING BITUMINOUS CONSTRUCTION, OMIT JOINT.

4 INCHES OF TYPE 1 OR 5 BASE SHALL BE PLACED AND COMPACTED BENEATH THE AREAL SURFACE OF PAVED APPROACHES.

SEE STANDARD PLAN 608.10 FOR CONCRETE CURB RAMPS.

SEE STANDARD PLAN 502.05 FOR JOINT DETAILS.

(SECTION F-F) ELEVATION OF CENTER OF PAVED APPROACH, AT A POINT 6' FROM EDGE OF NORMAL PAVEMENT SHALL NOT VARY MORE THAN 2" FROM ELEVATION OF MAINLINE PAVEMENT AT CENTERLINE OF PAVED APPROACH.

IF SIDEWALKS ARE NOT INCLUDED IN CONSTRUCTION OR PAVED APPROACH, PLACE GROUND COVER, AS SHOWN ON PLANS, BEHIND CURB THROUGH RADIUS. GROUND COVER SHALL CONFORM TO FINISHED GRADING FOR CURB RAMP.

HAND FINISHING PERMITTED ON PAVED APPROACH.

WHEN SIDEWALKS ARE PRESENT ADJACENT TO THE PAVED APPROACHES OF STREETS, SIDEROADS, ALLEYS OR COMMERCIAL ENTRANCES, THE SIDEWALK GRADE SHALL BE TRANSITIONED TO THE GRADE OF THE APPROACH BY WAY OF AN APPROPRIATE RAMP AS SHOWN ON THE PLANS. SEE 608.10 FOR RAMP DETAILS.

WHEN SIDEWALKS ARE PRESENT ADJACENT TO THE PAVED APPROACHES OF PRIVATE ENTRANCES, THE APPROACH GRADE SHALL BE TRANSITIONED TO THE GRADE OF THE SIDEWALK.

THE APPROACH GRADE THROUGH THE LIMITS OF A SIDEWALK SHALL NOT EXCEED 2%.

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

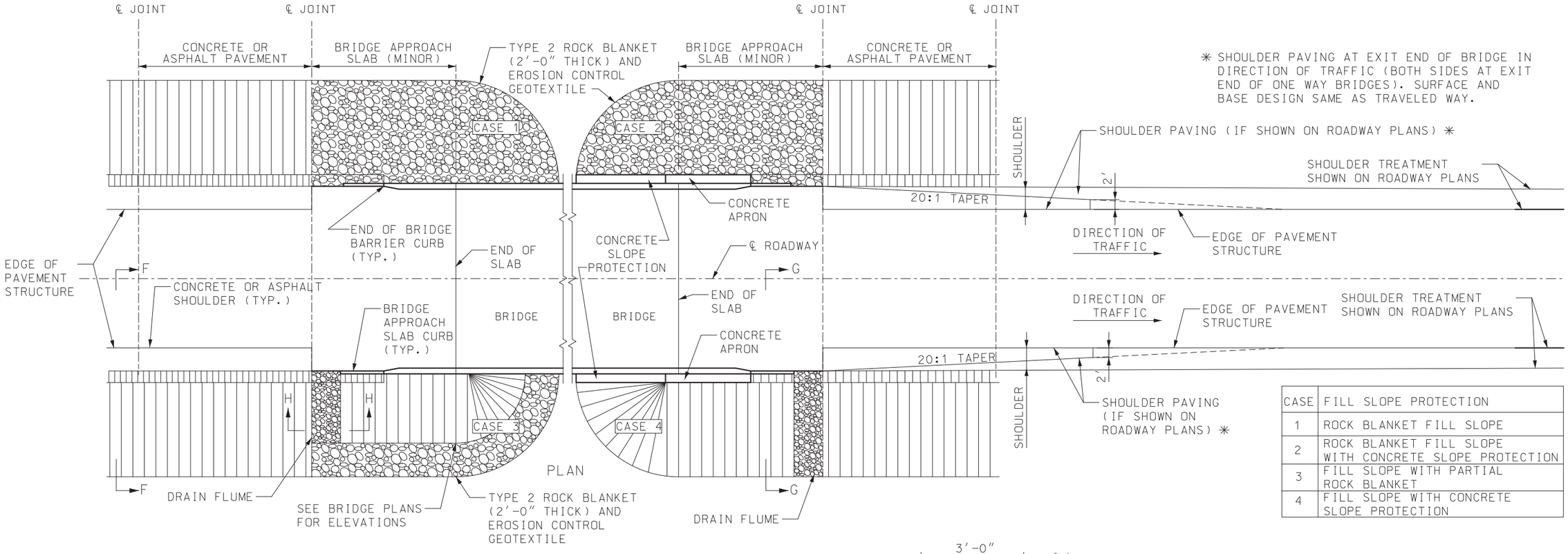
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

PAVED APPROACHES
ADJOINING CURB WITHOUT GUTTER SECTIONS

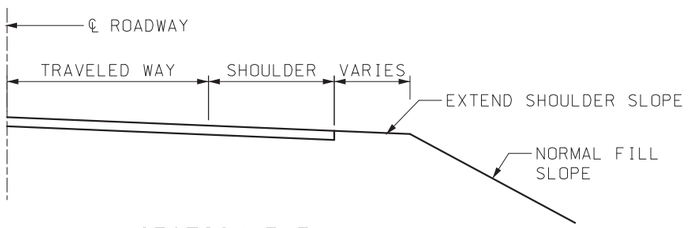
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

608.00L

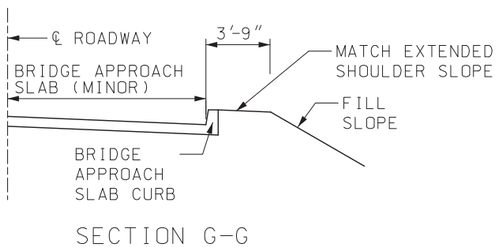
SHEET NO. 2 OF 2



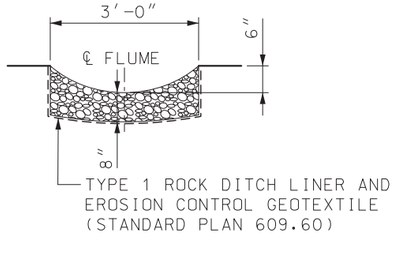
CASE	FILL SLOPE PROTECTION
1	ROCK BLANKET FILL SLOPE
2	ROCK BLANKET FILL SLOPE WITH CONCRETE SLOPE PROTECTION
3	FILL SLOPE WITH PARTIAL ROCK BLANKET
4	FILL SLOPE WITH CONCRETE SLOPE PROTECTION



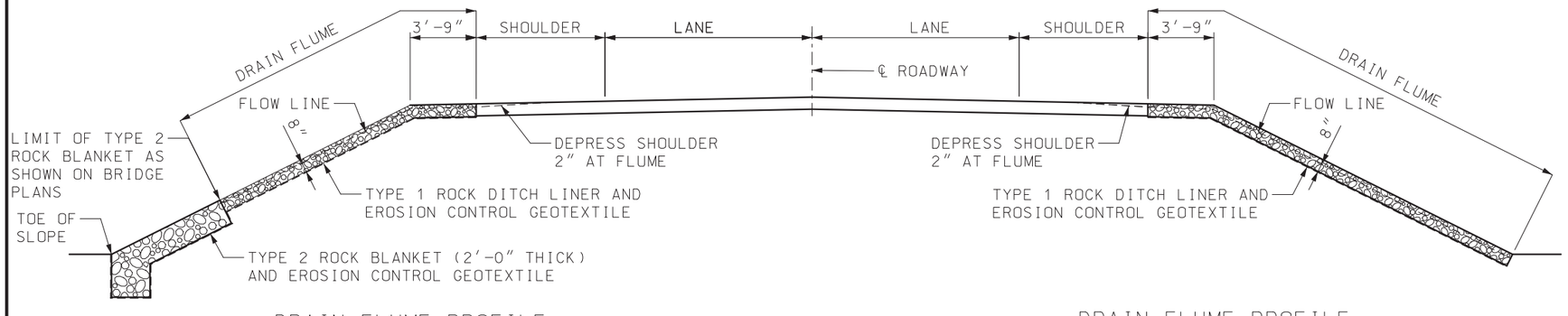
SECTION F-F



SECTION G-G



SECTION H-H



DRAIN FLUME PROFILE WITH PARTIAL ROCK BLANKET

DRAIN FLUME PROFILE WITHOUT ROCK BLANKET

GENERAL NOTES:

SEE STANDARD PLANS 606.00, 606.22, 606.23, 606.30, 606.50, 606.60, 606.70 AND 606.80 FOR DETAILS OF GUARDRAILS AND BRIDGE ANCHOR SECTIONS.

FOR DETAILS OF BRIDGE APPROACH SLAB (MINOR ROAD), SEE BRIDGE PLANS.

CONSTRUCT DRAIN FLUMES AND/OR FILL SLOPE PROTECTION WHEN SHOWN ON ROADWAY PLANS.

PAYMENT FOR DRAIN FLUMES, COMPLETE IN PLACE, INCLUDING EXCAVATION, WILL BE PAID FOR AS TYPE 1 ROCK DITCH LINER. GEOTEXTILE WILL BE PAID SEPARATELY.

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

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

DRAIN FLUME, SHOULDER PAVING AND FILL SLOPE AT BRIDGE ENDS

(MINOR AND LOW VOLUME ROUTES)

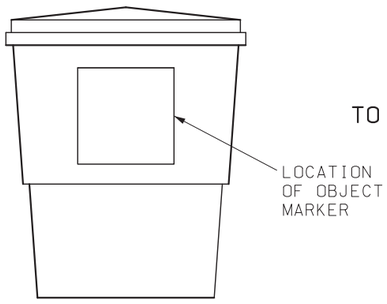
DATE EFFECTIVE: 10/1/2023
DATE PREPARED: 7/6/2023

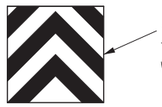
609.40U

SHEET NO. 3 OF 3

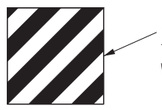
ATTENUATOR LAYOUT:

ALL SAND FILLED ATTENUATORS SHOULD MEET MANUFACTURER'S RECOMMENDATIONS FOR THE ARRAY AND SAND WEIGHT.



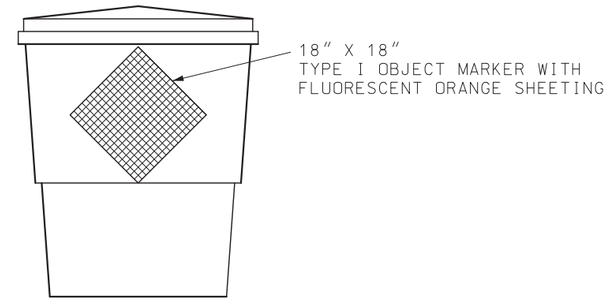


TRAFFIC PASSING
TO BOTH LEFT AND RIGHT



TRAFFIC PASSING TO LEFT
FLIP FOR TRAFFIC TO RIGHT

TYPE 3 OBJECT MARKER PLACEMENT FOR PERMANENT INSTALLATIONS



TYPE I OBJECT MARKER PLACEMENT FOR TEMPORARY INSTALLATIONS

GENERAL NOTES:

OBJECT MARKER SHALL BE PLACED ON THE LEAD MODULE FACING TRAFFIC.

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

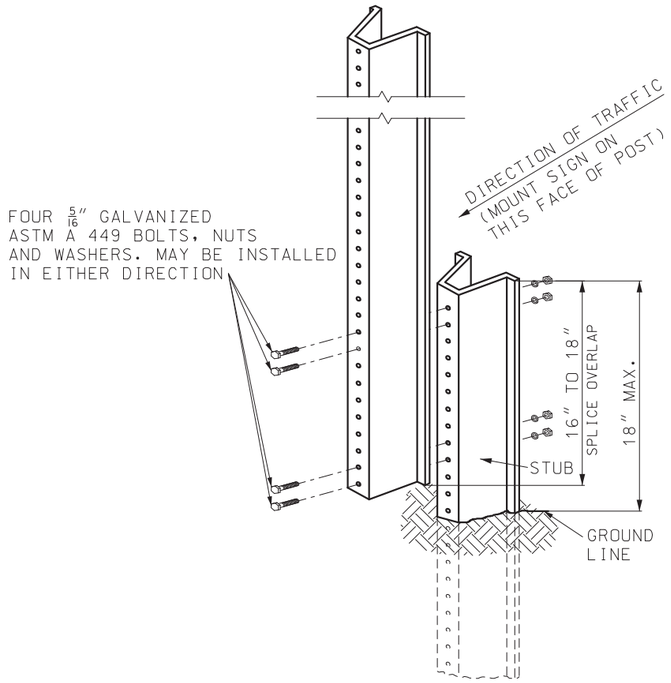
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SAND FILLED IMPACT ATTENUATORS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

612.20F

SHEET NO. 1 OF 1



U-CHANNEL POST DETAIL

USE OF SPLICE IS OPTIONAL.

SPLICE OVERLAP SHALL BE POSITION ENTIRELY BETWEEN GROUND LINE AND 18" ABOVE GROUND LINE.

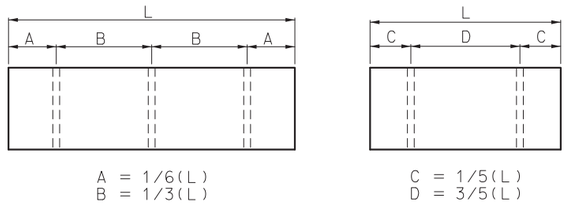
ONLY ONE SPLICE WILL BE ALLOWED PER POST.

POST TYPE

SIGN AREA (SQ.FT.)	U-CHANNEL	WOOD	PERFORATED SQUARE STEEL TUBING
≤ 10	1 - 3.0 LB./FT.*	1 - 4" X 4"*	1 - 2" 12 GA.*
> 10 ≤ 16	2 - 3.0 LB./FT.	2 - 4" X 4" 1 - 4" X 6"*	2 - 2" 12 GA. 1 - 2½" 12 GA.
> 16 ≤ 24	2 - 3.0 LB./FT.	2 - 4" X 6"	3 - 2" 12 GA.**
> 24 ≤ 32	3 - 3.0 LB./FT.	2 - 4" X 6"	N/A
> 30 ≤ 50	N/A	2 - 6" X 6"	N/A

* SIGNS GREATER THAN 4 FEET IN WIDTH, EXCEPT DIAMOND SHAPE SIGNS, REQUIRE TWO POSTS.

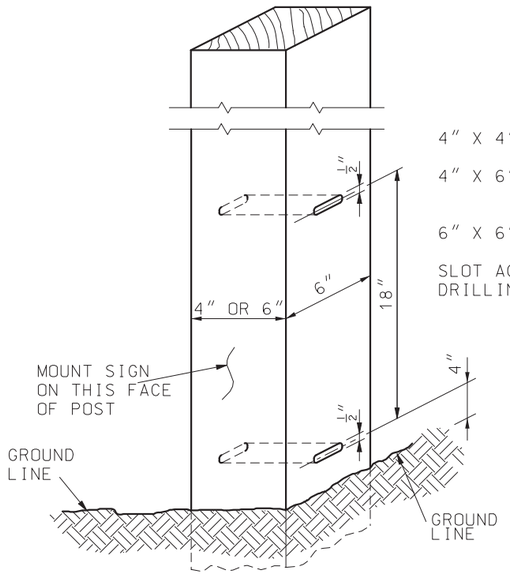
** REQUIRES SLIP BASE PER MANUFACTURER'S RECOMMENDATION.



A = 1/6(L)
B = 1/3(L)

C = 1/5(L)
D = 3/5(L)

POST SPACING



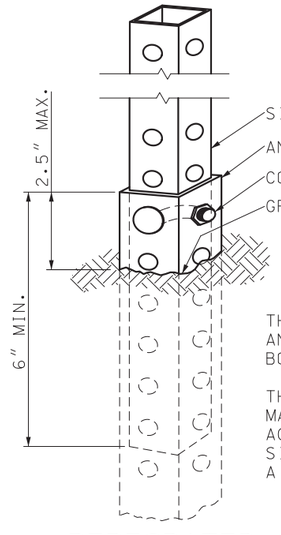
4" X 4" WOOD POST - NO SLOTS OR HOLES REQUIRED

4" X 6" WOOD POST - 1½" X ½" SLOT ON 6" SIDE OR 1½" DIA. HOLE ON 6" SIDE

6" X 6" WOOD POST - 2" X ½" SLOT OR 2" DIA. HOLE

SLOT ACROSS NEUTRAL AXIS FORMED BY SUCCESSIVE DRILLING WITH ½" BIT.

WOOD POST DETAIL



THE SIGN POST MAY BE ATTACHED TO THE ANCHOR WITH A CORNER BOLT OR STRAIGHT BOLT PER MANUFACTURER'S SPECIFICATION.

THE ANCHOR SHALL BE SIZED AS PER MANUFACTURER'S RECOMMENDATIONS TO ACCEPT THE POST SIZE SPECIFIED. THE SIGN ASSEMBLY SHALL BE MAINTAINED IN A PLUMB POSITION.

PERFORATED SQUARE STEEL TUBE POST DETAIL

GENERAL NOTES:

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET.

SIGN INSTALLATION DETAILS SHOWN SHALL APPLY TO ALL POSTS IN A MULTI-POST INSTALLATION.

AT THE ENGINEERS DISCRETION A FLUORESCENT PAINT SHALL BE APPLIED HEAVILY TO BOTH SIDES OF U-CHANNEL POST STUB FOR A LENGTH OF AT LEAST 6 INCHES BELOW THE TOP OF THE STUB.

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

STATE OF MISSOURI
TRAVIS D. KOESTNER
NUMBER PE-30042
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

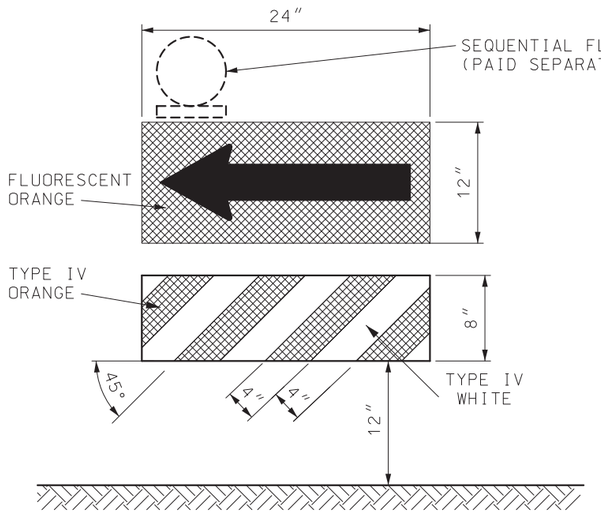
TEMPORARY TRAFFIC CONTROL DEVICES POST INSTALLATION DETAILS

DATE EFFECTIVE: 10/1/2023
DATE PREPARED: 7/6/2023

616.10BC

SHEET NO. 2 OF 9

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

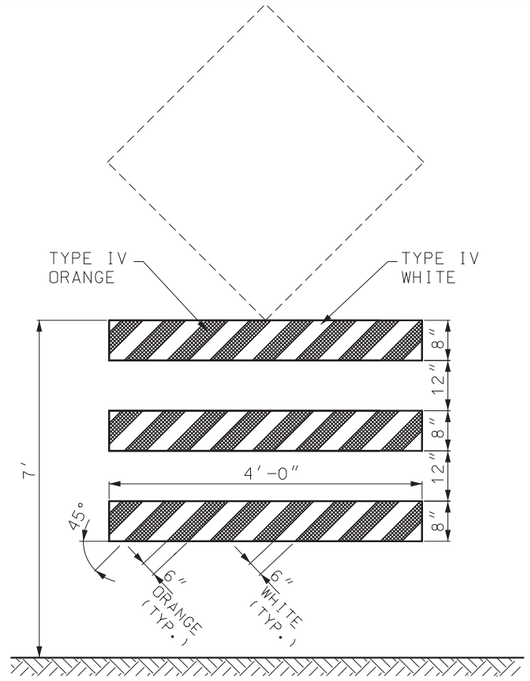


DIRECTION INDICATOR BARRICADE

VERTICAL DIMENSIONS DO NOT INCLUDE PROJECTIONS DESIGNED FOR EASE OF HANDLING.

DIRECTION INDICATOR BARRICADES SHALL NOT BE USED IN SHIFTING TAPERS UNLESS SHOWN ON THE PLANS.

THE PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.



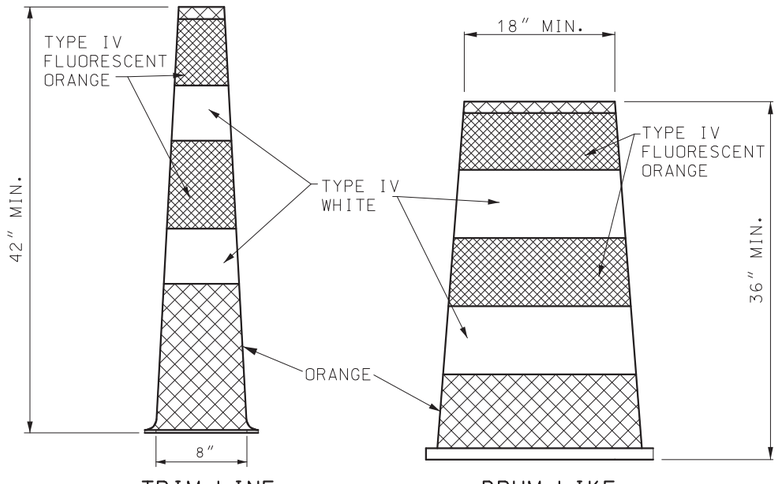
ADVANCE WARNING RAIL SYSTEM

MAXIMUM WEIGHT OF SIGN SHALL NOT EXCEED 25 LBS.

THE SIGN AND RAIL SYSTEM MAY BE MOUNTED AS TWO SEPARATE CRASHWORTHY DEVICES. THE RAIL SYSTEM SHALL BE LOCATED DIRECTLY IN FRONT OF THE SIGN WITH 7 TO 10 FEET SEPARATING THE TWO DEVICES.

WHERE MARKING IS NOT PROVIDED ON THE BACKSIDE, STRIPS OF 3″ WIDE TYPE IV ORANGE SHEETING MAY BE APPLIED TO THE ENDS OF EACH RAIL TO HELP DELINEATE THE DEVICE.

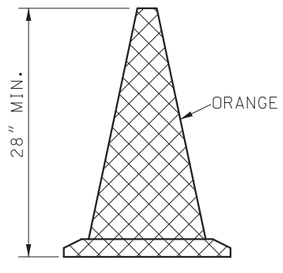
WHITE AND ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.4.



CHANNELIZERS

STRIPES ON TRIM-LINE CHANNELIZERS SHALL BE 6″ TO 8″.
STRIPES ON DRUM-LIKE CHANNELIZERS SHALL BE 4″ TO 6″.

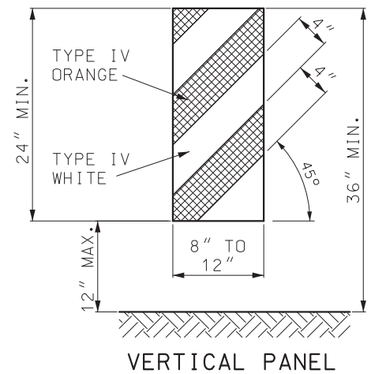
WHITE AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.3.



CONE

CONES SHALL MAINTAIN THEIR SHAPE UPON EXPOSURE TO NORMAL WORK CONDITIONS.

CONES SHALL BE USED DURING DAYLIGHT HOURS ONLY.



VERTICAL PANEL

VERTICAL PANELS SHALL BE SECURELY ATTACHED TO A SUPPORT THAT IS PORTABLE, CAPABLE OF REMAINING UPRIGHT AND ENTIRELY FREE STANDING.

GENERAL NOTES:

WHITE, ORANGE, AND FLUORESCENT ORANGE REFLECTIVE SHEETING SHALL BE IN ACCORDANCE WITH SEC 1042.2.7.

BALLAST FOR TRAFFIC CONTROL DEVICES SHALL CONFORM TO MANUFACTURERS' RECOMMENDATION FOR FIELD CONDITIONS WHEN APPLICABLE.

SEQUENTIAL FLASHING WARNING LIGHTS SHALL BE IN ACCORDANCE WITH SEC 1063.5.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DRUM-LIKE CHANNELIZERS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA WHERE NO RAMPS, INTERSECTIONS OR LIMITED LATERAL CLEARANCE EXISTS.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE DIRECTION INDICATOR BARRICADES IN LIEU OF TRIM-LINE CHANNELIZERS IN MERGING TAPERS.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE VERTICAL PANELS IN LIEU OF TRIM-LINE CHANNELIZERS TO PROVIDE LONGITUDINAL CHANNELIZATION WITHIN THE ACTIVITY AREA.

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY, AT NO ADDITIONAL COST, USE CONES IN LIEU OF TRIM-LINE CHANNELIZERS DURING DAYTIME OPERATIONS ON MINOR ROUTES.

PANEL AND RAIL MARKINGS FOR TRAFFIC DELINEATION SHALL SLOPE DOWNWARD TOWARD THE INTENDED DIRECTION OF TRAVEL. ILLUSTRATIONS SHOWN ARE FOR INSTANCES WHERE TRAFFIC MOVES TO THE LEFT, REVERSE CONFIGURATIONS SHALL BE USED FOR TRAFFIC MOVEMENTS TO THE RIGHT. MARKINGS SHALL ONLY BE APPLIED TO THE FRONT OF EACH RAIL OR PANEL, OR MAY BE APPLIED TO BOTH THE FRONT AND BACK PROVIDING THE MARKING ON THE BACK DOES NOT CONFLICT WITH INTENDED OPPOSING TRAFFIC MOVEMENT.

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

TEMPORARY TRAFFIC CONTROL DEVICES
CHANNELIZERS AND DIRECTION INDICATOR BARRICADE

DATE EFFECTIVE: 10/1/2023
DATE PREPARED: 7/14/2023

616.10BC

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR SYM. LEG. BRD.	COLOR BACK-GROUND	DESIGNATION (6)	DESCRIPTION
WARNING SIGNS							
W01-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL LEFT)
W01-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TURN (SYMBOL RIGHT)
W01-2L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL LEFT)
W01-2R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	CURVE (SYMBOL RIGHT)
W01-3L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL LEFT)
W01-3R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE TURN (SYMBOL RIGHT)
W01-4L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL LEFT)
W01-4R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	REVERSE CURVE (SYMBOL RIGHT)
W01-4bL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT) (2)
W01-4bR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT) (2)
W01-4cL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT) (2)
W01-4cR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT) (2)
W01-6	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE) (1)
W01-7	60X30	12.50	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE HEAD HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE)(1)
W01-8	18X24	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL)
W01-8a	30X36	7.50	ASTM 9 OR 11	BK	FL. OR	SHF	CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	STOP AHEAD (SYMBOL)
W03-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BE PREPARED TO STOP
W03-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SPEED LIMIT AHEAD
W04-1L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (SYMBOL FROM RIGHT)
W04-1aL	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (LEFT) (3)
W04-1aR	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	MERGE (RIGHT) (3)
W05-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP NARROWS (4)
W05-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE BRIDGE
W05-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NARROW LANES (3)
W06-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	NEXT XX MILES (PLAQUE)
W08-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BUMP
W08-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DIP
W08-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	PAVEMENT ENDS
W08-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SOFT SHOULDER
W08-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK CROSSING
W08-6c	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	TRUCK ENTRANCE (3)
W08-7a	36X36	9.00	ASTM 9 OR 11	BK	FL. OR	SHF	FRESH OIL / LOOSE GRAVEL (3)
W08-9	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW SHOULDER
W08-11	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	UNEVEN LANES
W08-12	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	NO CENTER LINE
W08-15	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	GROOVED PAVEMENT
W08-15P	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	MOTORCYCLE (PLAQUE)
W08-17L	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (SYMBOL LEFT)
W08-17R	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (SYMBOL RIGHT)
W08-17P	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER DROP-OFF (PLAQUE)
W10-1	42 RND.	9.62	ASTM 9 OR 11	BK	FL. YL	SHF	RAILROAD CROSSING
W012-1	24X24	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (SYMBOL)
W012-2x	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE (PLAQUE) (3)
W012-2a	84X24	14.00	ASTM 9 OR 11	BK	FL. OR	SHF	OVERHEAD LOW CLEARANCE (FEET AND INCHES) (3)
W012-4	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	LOW CLEARANCE XX FT XX IN XX MILES AHEAD (3)
W012-5	120X60	50.00	ASTM 9 OR 11	BK	FL. OR	SHF	WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD (3)
W013-1	30X30	6.25	ASTM 9 OR 11	BK	FL. OR	SHF	ADVISORY SPEED (PLAQUE)
W016-2P	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	XXX FEET (PLAQUE)
W016-3P	30X24	5.00	ASTM 9 OR 11	BK	FL. OR	SHF	X MILE (PLAQUE)
W020-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD/BRIDGE/RAMP WORK AHEAD (4)
W020-2	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR AHEAD
W020-3	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD CLOSED AHEAD
W020-4	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	ONE LANE ROAD AHEAD
W020-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED AHEAD (4)

(1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(2) REFER TO THE LATEST EDITION OF MUTCD PART VI BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA FOR SIGN DEPICTION. ARROW, BORDERS AND SPACING SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.

(5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.

(6) SHF AND SH DESIGNATIONS, REFER TO STD. 903.02 SHEET 1 OF 8.

GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA, UNLESS SPECIFIED OTHERWISE.

SIGN DIMENSIONS SHOWN ARE MINIMUM. NO ADDITIONAL PAYMENT WILL BE MADE IF CONTRACTORS USE LARGER SIGNS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR PLATES.

ALL PLAQUES SHALL HAVE A BORDER. PLATES SHALL NOT HAVE A BORDER.

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL DEVICES
WARNING SIGNS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

616.10BD

SIGN	SIZE (IN.)	AREA (SQ. FT.)	SHEETING	COLOR SYM. LEG. BRD.	COLOR BACK-GROUND	DESIGNATION (6)	DESCRIPTION
				WARNING SIGNS CONT.			
W020-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	2 RIGHT/CENTER/LEFT LANES CLOSED AHEAD (4)
W020-6a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/CENTER/LEFT LANE CLOSED (3)(4)
W020-7	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	FLAGGER (SYMBOL)
W021-5	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	SHOULDER WORK / SHOULDER WORK AHEAD (3)
W021-5a	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/LEFT SHOULDER CLOSED (4)
W021-5b	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	RIGHT/LEFT SHOULDER CLOSED AHEAD (4)
W022-1	48X48	16.00	ASTM 9 OR 11	BK	FL. OR	SHF	BLASTING ZONE AHEAD
W022-2	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50	ASTM 9 OR 11	BK	FL. OR	SHF	END BLASTING ZONE
G022-1	15X21	2.19	ASTM 9 OR 11	BK	FL. OR	SHF	WET PAINT (ARROW PIVOTS) (3)
				GUIDE SIGNS			
E05-1	36X48	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	GORE EXIT (3)
E05-2	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT OPEN
E05-2a	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	EXIT CLOSED
G020-1	60X24	10.00	ASTM 9 OR 11	BK	FL. OR	SHF	ROAD WORK NEXT XX MILES
G020-2	48X24	8.00	ASTM 9 OR 11	BK	FL. OR	SHF	END ROAD WORK
G020-4	36X18	4.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR FOLLOW ME - REAR VEHICLE MOUNT SIGN
G020-4a	42X30	8.75	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - STATE ROUTE SIGN
G020-4a	18X12	1.50	ASTM 9 OR 11	BK	FL. OR	SHF	PILOT CAR IN USE WAIT & FOLLOW - NON-STATE ROUTE SIGN
G020-5aP	36X24	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	WORK ZONE (PLAQUE) (3)(5)
M04-8a	24X18	3.00	ASTM 9 OR 11	BK	FL. OR	SHF	END DETOUR
M04-9L	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (LEFT)
M04-9R	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR (RIGHT)
M04-9P	48X12	4.00	ASTM 9 OR 11	BK	FL. OR	SHF	STREET NAME (PLAQUE)
M04-10L	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR ARROW (LEFT)
M04-10R	48X18	6.00	ASTM 9 OR 11	BK	FL. OR	SHF	DETOUR ARROW (RIGHT)
				REGULATORY SIGNS			
R1-1	48X48	13.25	ASTM 4	WH	RD	SH	STOP
R1-2	48 TRI.	6.93	ASTM 4	RD	WH	SH	YIELD
R1-2aP	36X36	9.00	ASTM 4	BK	WH	SH	TO ONCOMING TRAFFIC (PLAQUE)
R1-3P	30X12	2.50	ASTM 4	WH	RD	SH	ALL WAY (PLAQUE)
R2-1	36X48	12.00	ASTM 4	BK	WH	SH	SPEED LIMIT XX
R3-1	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00	ASTM 4	BK	WH	SH	NO TURNS
R3-4	48X48	16.00	ASTM 4	BK/RD	WH	SH	NO U-TURN (SYMBOL)
R3-7L	30X30	6.25	ASTM 4	BK	WH	SH	LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25	ASTM 4	BK	WH	SH	RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00	ASTM 4	BK	WH	SH	DO NOT PASS
R4-2	36X48	12.00	ASTM 4	BK	WH	SH	PASS WITH CARE
R4-7a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP RIGHT (HORIZONTAL ARROW)
R4-8a	36X48	12.00	ASTM 4	BK	WH	SH	KEEP LEFT (HORIZONTAL ARROW)
R5-1	30X30	6.25	ASTM 4	RD	WH	SH	DO NOT ENTER
R5-1a	36X24	6.00	ASTM 4	WH	RD	SH	WRONG WAY
R6-1L	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (LEFT)
R6-1R	54X18	6.75	ASTM 4	BK	WH	SH	ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (LEFT)
R6-2R	24X30	5.00	ASTM 4	BK	WH	SH	ONE WAY (RIGHT)
R9-9	24X12	2.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED
R9-11L	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD (LEFT ARROW) CROSS HERE
R9-11R	24X18	3.00	ASTM 4	BK	WH	SH	SIDEWALK CLOSED AHEAD (RIGHT ARROW) CROSS HERE
R10-6	24X36	6.00	ASTM 4	BK	WH	SH	STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	ASTM 4	BK	WH	SH	ROAD CLOSED
R11-3a	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50	ASTM 4	BK	WH	SH	ROAD CLOSED TO THRU TRAFFIC
CONST-3A	60X48	20.00	ASTM 4	BK	WH/FL.OR	SH	FINE SIGN (3)
CONST-3X	56X12	4.67	ASTM 4	BK	WH	SH	SPEEDING/PASSING (PLATE) (3)
				MISCELLANEOUS SIGNS			
CONST-5	48X36	12.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-5	96X48	32.00	ASTM 4	WH	BL	SH	POINT OF PRESENCE
CONST-7	72X36	18.00	ASTM 4	WH/BK	BL/FL.OR	SH	RATE OUR WORK ZONE
CONST-7	48X24	8.00	ASTM 4	WH/BK	BL/FL.OR	SH	RATE OUR WORK ZONE
CONST-8	48X36	12.00	ASTM 9 OR 11	BK	FL. OR	SHF	WORK ZONE NO PHONE ZONE

(1) SIGN DEPICTION, ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(2) REFER TO THE LATEST EDITION OF MUTCD PART VI BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA FOR SIGN DEPICTION. ARROW, BORDERS AND SPACING SHALL CONFORM TO THE GUIDELINES SET FORTH IN THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(3) ARROW, BORDERS AND SPACING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA.

(4) USE OF A SUPPLEMENTAL PLATE FOR LINE 1 IS ACCEPTABLE.

(5) PLAQUE AND APPLICABLE REGULATORY SIGN MAY BE MANUFACTURED AS ONE SIGN.

(6) SHF AND SH DESIGNATIONS, REFER TO STD. 903.02 SHEET 1 OF 8.

GENERAL NOTES:

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD HIGHWAY SIGNS" BY THE U.S. DEPARTMENT OF TRANSPORTATION - FHWA, UNLESS SPECIFIED OTHERWISE.

SIGN DIMENSIONS SHOWN ARE MINIMUM. NO ADDITIONAL PAYMENT WILL BE MADE IF CONTRACTORS USE LARGER SIGNS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR PLATES.

ALL PLAQUES SHALL HAVE A BORDER. PLATES SHALL NOT HAVE A BORDER.

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL DEVICES

WARNING, GUIDE AND REGULATORY SIGNS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

616.10BD

W020-1

(2)

W020-4

(7)

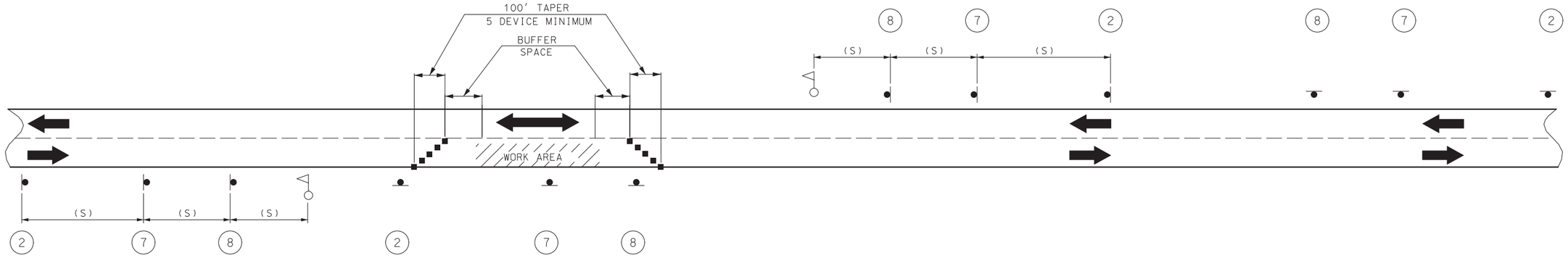
W020-7a

(8)

G020-4

(53)

SIGN 53, "PILOT CAR FOLLOW ME" SHALL BE THE CONTRACTOR'S RESPONSIBILITY WHEN IN USE DURING OPERATION.



SET 1	SET 2	SET 3	SET 4
ACTIVE	INACTIVE	ACTIVE	INACTIVE

NOTES:

DAYLIGHT FLAGGING OPERATIONS ONLY.

CHANNELIZING DEVICES LOCATED DOWNSTREAM OF THE ONE-LANE, TWO-WAY TAPER ARE OPTIONAL. THESE DEVICES SHOULD BE ELIMINATED WHEN THEIR USE WILL REDUCE THE USABLE LANE WIDTH, INCLUDING ANY ACCEPTABLE SHOULDERS, TO LESS THAN 10' OR WILL SIGNIFICANTLY AFFECT THE RESURFACING OPERATION.

SIGN SETS 1 AND 3 ARE ACTIVE AND (I.E., SIGNS FACE ONCOMING TRAFFIC) SIGN SETS 2 AND 4 ARE INACTIVE (I.E., SIGNS DO NOT FACE EITHER DIRECTION OF TRAFFIC) WHEN THE RESURFACING OPERATION IS LOCATED BETWEEN SIGN SETS 1 AND 3.

WHEN SIGN SETS 2 AND 4 ARE ACTIVE, SIGN SETS 1 AND 3 BECOME INACTIVE AND ARE ADVANCED TO BECOME SETS 2 AND 4 WITH SIGN LEGENDS TURNED AWAY FROM BOTH DIRECTIONS OF TRAFFIC. WHEN THE RESURFACING OPERATION ADVANCES TO BETWEEN SIGN SETS 2 AND 4, SIGN SETS 2 AND 4 BECOME ACTIVE (I.E., NEW SIGN SETS 1 AND 3) AND SIGN SETS 1 AND 3 ADVANCED IN THE DIRECTION OF THE OPERATION (I.E., NEW SIGN SETS 2 AND 4).

■ - CHANNELIZERS

- FLAGGER

SPEED	SIGN SPACING (FT) (1)	BUFFER SPACE
PERMANENT POSTED (MPH)	NON-DIVIDED HIGHWAYS (S)	LENGTH (FT)
0-35	200	280
40-45	350	400
50-55	500	560
60-70	1000	840

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

SPACING MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

NOT TO SCALE

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

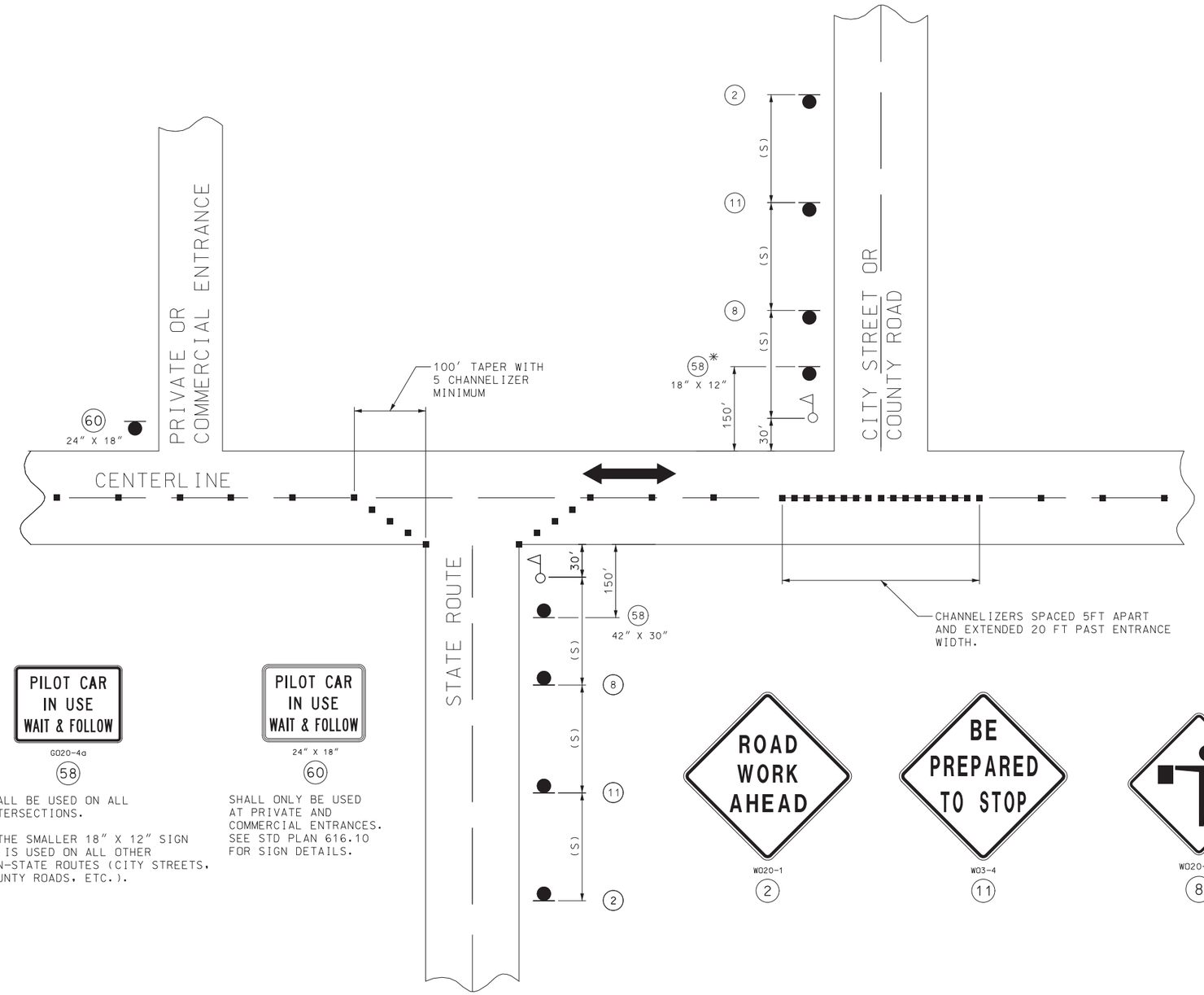
STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL PLANS

PAVEMENT TREATMENTS FOR TWO-LANE ROADWAYS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

616.20B



SPEED	SIGN SPACING (FT) (1)	CHANNELIZER SPACING (FT)
PERMANENT POSTED (MPH)	NON-DIVIDED HIGHWAYS (S)	BUFFER/ WORK AREA (TYP.)
0-35	200	40
40-45	350	80
50-55	500	80
60-70	1000	120

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

SPACING MAY BE ADJUSTED AS NECESSARY TO MEET FIELD CONDITIONS.

NOTES:
WARNING SIGNS SHALL BE ERECTED AT EACH INTERSECTION WITH ANOTHER STATE HIGHWAY WITHIN THE WORK ZONE.

ADDITIONAL WARNING SIGNS SHALL BE ERECTED AT OTHER INTERSECTIONS WITHIN THE WORK ZONE, AS DIRECTED BY THE ENGINEER.

■ - CHANNELIZERS (AS SPECIFIED)

- FLAGGER

NOT TO SCALE

G020-4a

58

SHALL BE USED ON ALL INTERSECTIONS.

* THE SMALLER 18" X 12" SIGN 58 IS USED ON ALL OTHER NON-STATE ROUTES (CITY STREETS, COUNTY ROADS, ETC.).

24" X 18"

60

SHALL ONLY BE USED AT PRIVATE AND COMMERCIAL ENTRANCES. SEE STD PLAN 616.10 FOR SIGN DETAILS.

W020-1

2

W03-4

11

W020-7a

8

SIDE ROADS ENTERING WORK ZONES

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL PLANS

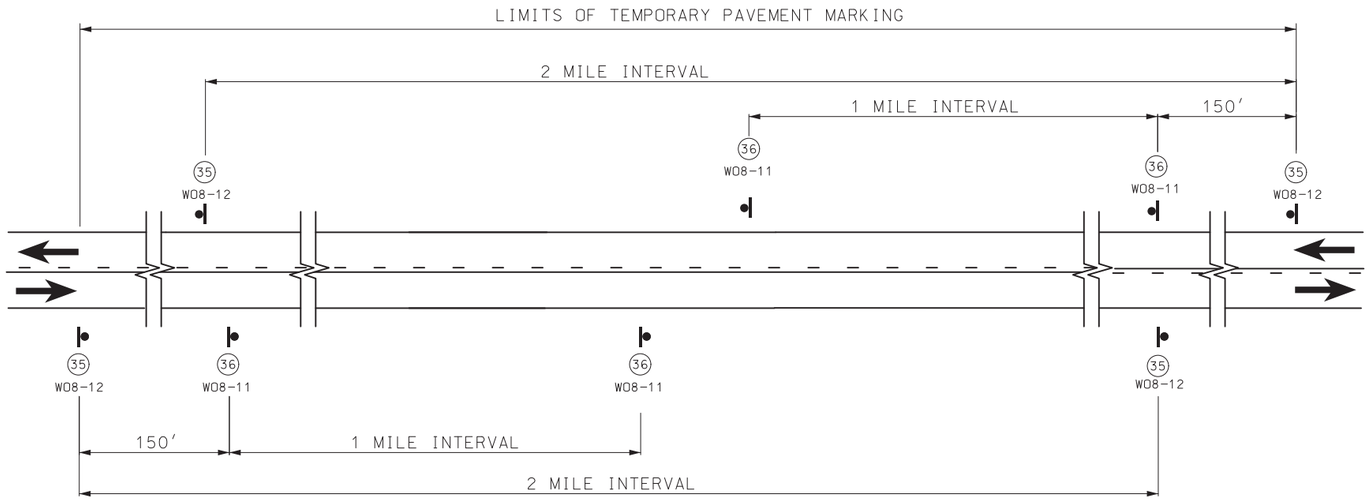
PAVEMENT TREATMENTS FOR TWO-LANE ROADWAYS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

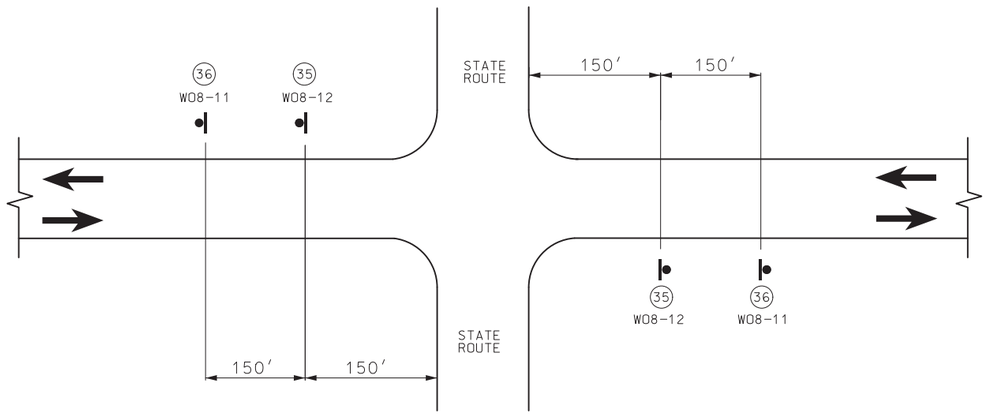
616.20B

SHEET NO. 3 OF 5

NOT TO SCALE



SIGN SPACING AND TEMPORARY STRIPING FOR MAINLINE



SIGN SPACING AT STATE ROUTE INTERSECTIONS
SHOWING TEMPORARY STRIPING FOR MAINLINE

W08-12
35

W08-11
36

NOTES:

SIGN (35) AND TEMPORARY RAISED PAVEMENT MARKING (SEE STANDARD PLAN 620.10) INSTALLED WHERE CENTERLINE STRIPING HAS BEEN COVERED OR REMOVED. SIGNS ARE TO REMAIN IN PLACE UNTIL THE PERMANENT CENTERLINE PAVEMENT MARKINGS ARE IN PLACE. SIGNS SHALL BE COVERED OR REMOVED WHEN PAVEMENT CENTERLINE MARKING HAS BEEN INSTALLED.

SIGN (35) IS PLACED AT APPROXIMATELY TWO-MILE INTERVALS AND AT STATE ROUTE JUNCTIONS. WHEN THE INSTALLATION AT A JUNCTION IS WITHIN ONE-EIGHTH MILE OF THE NORMAL MAINLINE SIGN (35) , THE LATTER MAY BE ELIMINATED.

ALL SIGNS SHALL BE POST MOUNTED AND IN ACCORDANCE WITH STANDARD PLAN 616.10 AND 903.03.

SEE STANDARD PLAN 620.10 FOR ALL TEMPORARY PAVEMENT MARKING.

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

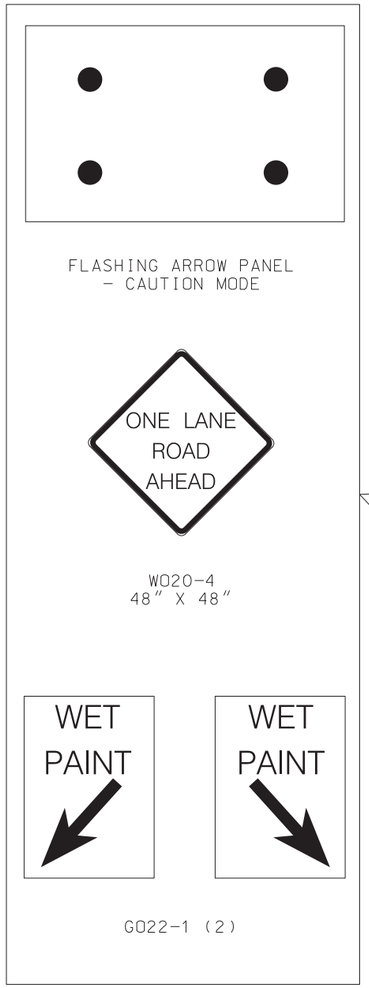
TEMPORARY TRAFFIC CONTROL PLANS

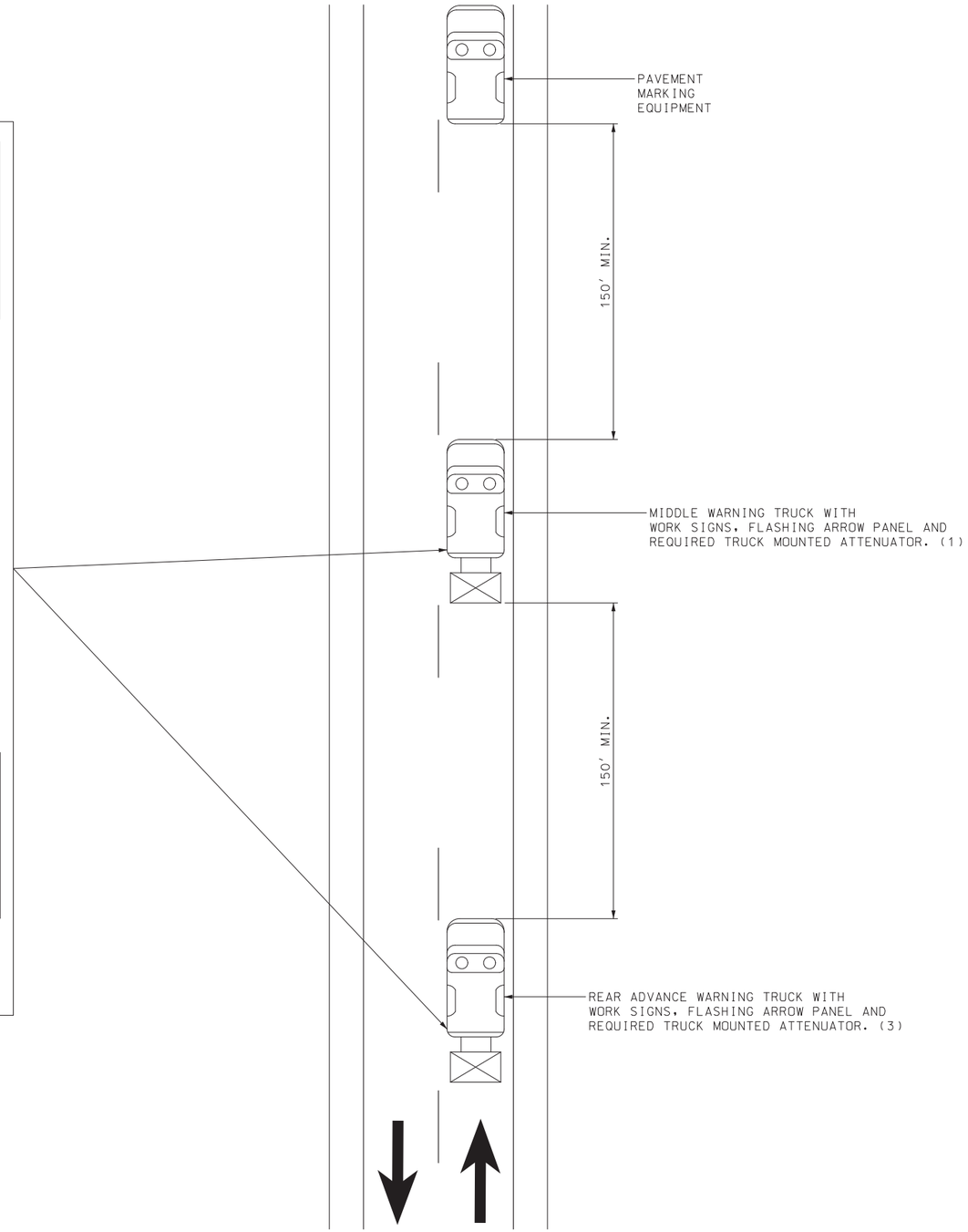
PAVEMENT TREATMENTS FOR TWO-LANE ROADWAYS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

616.20B

NOT TO SCALE





CENTERLINE/EDGELINE STRIPING ON TWO-LANE HIGHWAYS

NOTES:

UPON APPROVAL OF THE ENGINEER, THE CONTRACTOR MAY PROVIDE ADDITIONAL PROTECTIVE TRUCK 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, OSCILLATING, OR STROBE LIGHTS.

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

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

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TEMPORARY TRAFFIC CONTROL PLANS

PAVEMENT TREATMENTS FOR TWO-LANE ROADWAYS

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/10/2024

616.20B

SHEET NO. 5 OF 5

REGION 1

COOL SEASON GRASSES

LIME: 0 LBS ENM/AC FERTILIZER: 80N, 160P, 80K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
COOL SEASON		COOL SEASON	
TALL FESCUE	70 LBS/AC	ORCHARDGRASS	20 LBS/AC
KENTUCKY BLUEGRASS	20 LBS/AC	TIMOTHY	10 LBS/AC
PERENNIAL RYEGRASS	10 LBS/AC	RED FESCUE	20 LBS/AC
BUFFALO GRASS	15 PLS/AC	SMOOTH BROME	10 LBS/AC
RED TOP	4 LBS/AC		
LEGUME		LEGUME	
WHITE CLOVER	8 LBS/AC	RED CLOVER	5 LBS/AC
		ALSIKE CLOVER	4 LBS/AC
TOTAL SEED/ACRE	148		

WARM SEASON GRASSES

LIME: 0 LBS ENM/AC FERTILIZER: 40N, 80P, 40K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
WARM SEASON		WARM SEASON	
BUFFALO GRASS	15 PLS/AC	RED FESCUE	5 LBS/AC
BIG BLUESTEM	10 PLS/AC	PRAIRIE CORDGRASS	10 PLS/AC
LITTLE BLUESTEM	5 PLS/AC	PRAIRIE DROPSEED	2 PLS/AC
INDIAN GRASS	10 PLS/AC	RIVER OATS	10 PLS/AC
SIDE OATS GRAMA	5 PLS/AC		
SWITCH GRASS	3 PLS/AC		
RED TOP	2 PLS/AC		
PERENIAL RYEGRASS	10 PLS/AC		
LEGUME		LEGUME	
WHITE CLOVER	5 LBS/AC	RED CLOVER	5 LBS/AC
WILDFLOWER / POLLINATOR		WILDFLOWER	
LANCELEAF COREOPSIS	0.5 LBS/AC	GOLDEN ALEXANDERS	0.25 LBS/AC
BLACK EYED SUSAN	0.5 LBS/AC	SKY BLUE ASTER	0.25 LBS/AC
GRAY HEADED CONEFLOWER	1 LBS/AC	PRAIRIE BLAZING STAR	0.25 LBS/AC
PURPLE CONEFLOWER	2 LBS/AC		
NEW ENGLAND ASTER	0.25 LBS/AC		
COMMON MILKWEED	0.5 LBS/AC		
SWAMP MILKWEED	0.25 LBS/AC		
WHITE PRAIRIE CLOVER	0.25 LBS/AC		
PURPLE PRAIRIE CLOVER	0.25 LBS/AC		
PARTRIDGE PEA	0.5 LBS/AC		
TOTAL SEED/ACRE	92		

REGION 2

COOL SEASON GRASSES

LIME: 1000 LBS ENM/AC FERTILIZER: 80N, 80P, 80K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
COOL SEASON		COOL SEASON	
TALL FESCUE	70 LBS/AC	ORCHARDGRASS	20 LBS/AC
KENTUCKY BLUEGRASS	10 LBS/AC	TIMOTHY	10 LBS/AC
PERENNIAL RYEGRASS	10 LBS/AC	RED FESCUE	20 LBS/AC
BUFFALO GRASS	15 PLS/AC	SMOOTH BROME	10 LBS/AC
RED TOP	4 LBS/AC		
BERMUDA GRASS	10 LBS/AC		
LEGUME		LEGUME	
WHITE CLOVER	8 LBS/AC	RED CLOVER	5 LBS/AC
		ALSIKE CLOVER	4 LBS/AC
TOTAL SEED/ACRE	148		

WARM SEASON GRASSES

LIME: 600 LBS ENM/AC FERTILIZER: 40N, 40P, 40K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
WARM SEASON		WARM SEASON	
BUFFALO GRASS	15 PLS/AC	RED FESCUE	5 LBS/AC
BIG BLUESTEM	10 PLS/AC	PRAIRIE CORDGRASS	10 PLS/AC
LITTLE BLUESTEM	5 PLS/AC	PRAIRIE DROPSEED	2 PLS/AC
INDIAN GRASS	10 PLS/AC	RIVER OATS	10 PLS/AC
SIDE OATS GRAMA	5 PLS/AC		
SWITCH GRASS	3 PLS/AC		
RED TOP	2 PLS/AC		
PERENIAL RYEGRASS	10 PLS/AC		
LEGUME		LEGUME	
WHITE CLOVER	5 LBS/AC	RED CLOVER	5 LBS/AC
WILDFLOWER / POLLINATOR		WILDFLOWER	
LANCELEAF COREOPSIS	0.5 LBS/AC	GOLDEN ALEXANDERS	0.25 LBS/AC
BLACK EYED SUSAN	0.5 LBS/AC	SKY BLUE ASTER	0.25 LBS/AC
GRAY HEADED CONEFLOWER	1 LBS/AC	PRAIRIE BLAZING STAR	0.25 LBS/AC
PURPLE CONEFLOWER	2 LBS/AC		
NEW ENGLAND ASTER	0.25 LBS/AC		
COMMON MILKWEED	0.5 LBS/AC		
SWAMP MILKWEED	0.25 LBS/AC		
WHITE PRAIRIE CLOVER	0.25 LBS/AC		
PURPLE PRAIRIE CLOVER	0.25 LBS/AC		
PARTRIDGE PEA	0.5 LBS/AC		
TOTAL SEED/ACRE	92		

REGION 3

COOL SEASON GRASSES

LIME: 1500 LBS ENM/AC FERTILIZER: 80N, 240P, 80K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
COOL SEASON		COOL SEASON	
TALL FESCUE	70 LBS/AC	ORCHARDGRASS	20 LBS/AC
KENTUCKY BLUEGRASS	10 LBS/AC	TIMOTHY	10 LBS/AC
PERENNIAL RYEGRASS	10 LBS/AC	RED FESCUE	20 LBS/AC
BUFFALO GRASS	15 PLS/AC	SMOOTH BROME	10 LBS/AC
RED TOP	4 LBS/AC		
BERMUDA GRASS	10 LBS/AC		
LEGUME		LEGUME	
WHITE CLOVER	8 LBS/AC	RED CLOVER	5 LBS/AC
		ALSIKE CLOVER	4 LBS/AC
TOTAL SEED/ACRE	148		

WARM SEASON GRASSES

LIME: 1000 LBS ENM/AC FERTILIZER: 40N, 120P, 40K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
WARM SEASON		WARM SEASON	
BUFFALO GRASS	15 PLS/AC	RED FESCUE	5 LBS/AC
BIG BLUESTEM	10 PLS/AC	PRAIRIE CORDGRASS	10 PLS/AC
LITTLE BLUESTEM	5 PLS/AC	PRAIRIE DROPSEED	2 PLS/AC
INDIAN GRASS	10 PLS/AC	RIVER OATS	10 PLS/AC
SIDE OATS GRAMA	5 PLS/AC		
SWITCH GRASS	3 PLS/AC		
RED TOP	2 PLS/AC		
PERENIAL RYEGRASS	10 PLS/AC		
LEGUME		LEGUME	
WHITE CLOVER	5 LBS/AC	RED CLOVER	5 LBS/AC
WILDFLOWER / POLLINATOR		WILDFLOWER	
LANCELEAF COREOPSIS	0.5 LBS/AC	GOLDEN ALEXANDERS	0.25 LBS/AC
BLACK EYED SUSAN	0.5 LBS/AC	SKY BLUE ASTER	0.25 LBS/AC
GRAY HEADED CONEFLOWER	1 LBS/AC	PRAIRIE BLAZING STAR	0.25 LBS/AC
PURPLE CONEFLOWER	2 LBS/AC		
NEW ENGLAND ASTER	0.25 LBS/AC		
COMMON MILKWEED	0.5 LBS/AC		
SWAMP MILKWEED	0.25 LBS/AC		
WHITE PRAIRIE CLOVER	0.25 LBS/AC		
PURPLE PRAIRIE CLOVER	0.25 LBS/AC		
PARTRIDGE PEA	0.5 LBS/AC		
TOTAL SEED/ACRE	92		

REGION 4

COOL SEASON GRASSES

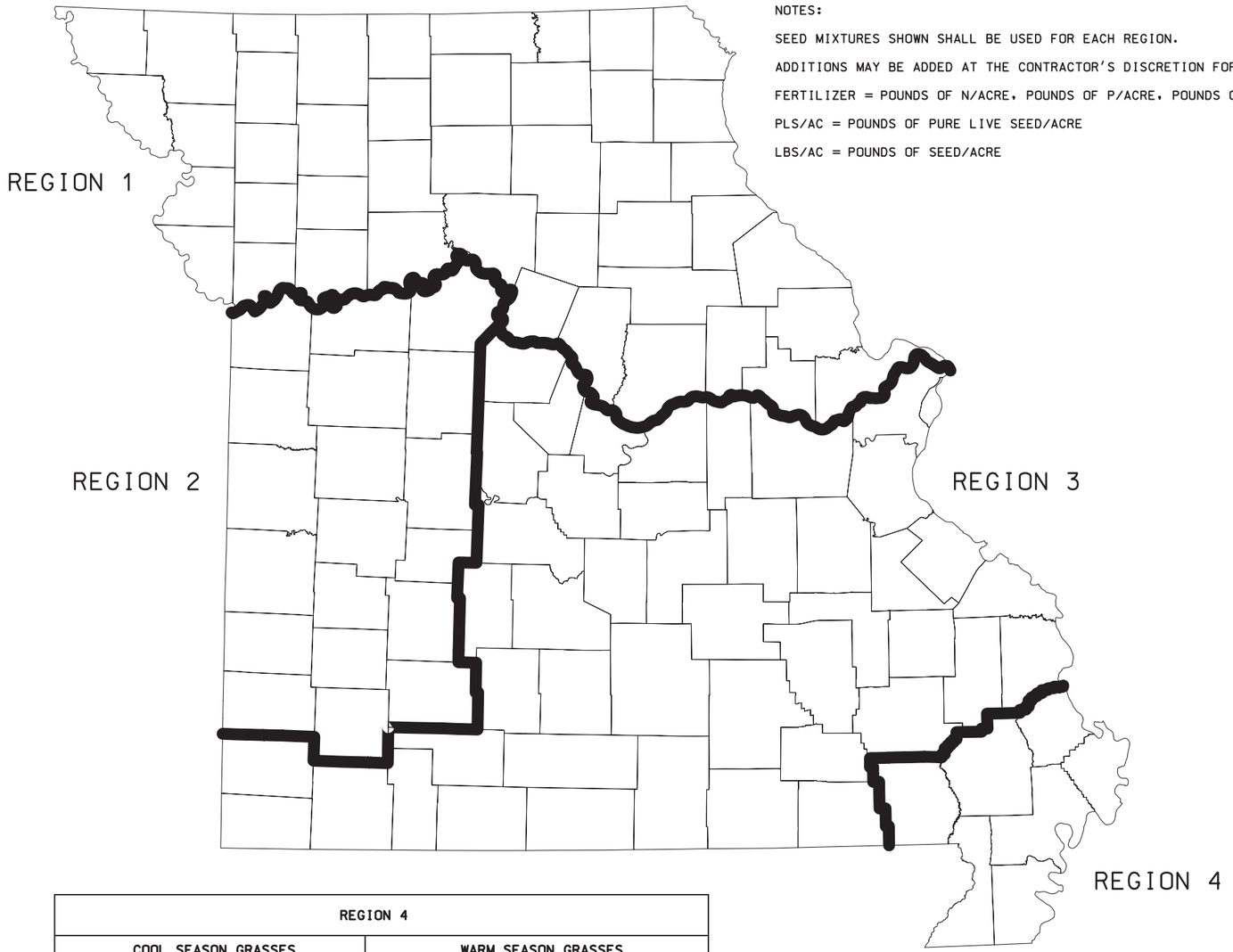
LIME 0 LBS ENM/AC FERTILIZER: 80N, 160P, 80K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
COOL SEASON		COOL SEASON	
TALL FESCUE	70 LBS/AC	ORCHARDGRASS	20 LBS/AC
KENTUCKY BLUEGRASS	10 LBS/AC	TIMOTHY	10 LBS/AC
PERENNIAL RYEGRASS	10 LBS/AC	RED FESCUE	20 LBS/AC
BUFFALO GRASS	15 PLS/AC	SMOOTH BROME	10 LBS/AC
RED TOP	4 LBS/AC		
BERMUDA GRASS	10 LBS/AC		
LEGUME		LEGUME	
WHITE CLOVER	8 LBS/AC	RED CLOVER	5 LBS/AC
		ALSIKE CLOVER	4 LBS/AC
TOTAL SEED/ACRE	148		

WARM SEASON GRASSES

LIME: 0 LBS ENM/AC FERTILIZER: 40N, 80P, 40K

SEED MIXTURE		ADDITIONS	
COVER CROP		COVER CROP	
ANNUAL RYEGRASS	5 LBS/AC	VIRGINIA RYE	5 LBS/AC
TEFF GRASS	4 LBS/AC	CANADA RYE	5 LBS/AC
GERMAN MILLET	2 LBS/AC	WHEAT GRAIN	10 LBS/AC
OATS	10 LBS/AC		
WARM SEASON		WARM SEASON	
BUFFALO GRASS	15 PLS/AC	RED FESCUE	5 LBS/AC
BIG BLUESTEM	10 PLS/AC	PRAIRIE CORDGRASS	10 PLS/AC
LITTLE BLUESTEM	5 PLS/AC	PRAIRIE DROPSEED	2 PLS/AC
INDIAN GRASS	10 PLS/AC	RIVER OATS	10 PLS/AC
SIDE OATS GRAMA	5 PLS/AC		
SWITCH GRASS	3 PLS/AC		
RED TOP	2 PLS/AC		
PERENIAL RYEGRASS	10 PLS/AC		
LEGUME		LEGUME	
WHITE CLOVER	5 LBS/AC	RED CLOVER	5 LBS/AC
WILDFLOWER / POLLINATOR		WILDFLOWER	
LANCELEAF COREOPSIS	0.5 LBS/AC	GOLDEN ALEXANDERS	0.25 LBS/AC
BLACK EYED SUSAN	0.5 LBS/AC	SKY BLUE ASTER	0.25 LBS/AC
GRAY HEADED CONEFLOWER	1 LBS/AC	PRAIRIE BLAZING STAR	0.25 LBS/AC
PURPLE CONEFLOWER	2 LBS/AC		
NEW ENGLAND ASTER	0.25 LBS/AC		
COMMON MILKWEED	0.5 LBS/AC		
SWAMP MILKWEED	0.25 LBS/AC		
WHITE PRAIRIE CLOVER	0.25 LBS/AC		
PURPLE PRAIRIE CLOVER	0.25 LBS/AC		
PARTRIDGE PEA	0.5 LBS/AC		
TOTAL SEED/ACRE	92		



NOTES:

SEED MIXTURES SHOWN SHALL BE USED FOR EACH REGION.

ADDITIONS MAY BE ADDED AT THE CONTRACTOR'S DISCRETION FOR NO DIRECT PAY.

FERTILIZER = POUNDS OF N/ACRE, POUNDS OF P/ACRE, POUNDS OF K/ACRE

PLS/AC = POUNDS OF PURE LIVE SEED/ACRE

LBS/AC = POUNDS OF SEED/ACRE

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

STATE OF MISSOURI
KENNETH L VOSS
NUMBER PE-2002016747
PROFESSIONAL ENGINEER

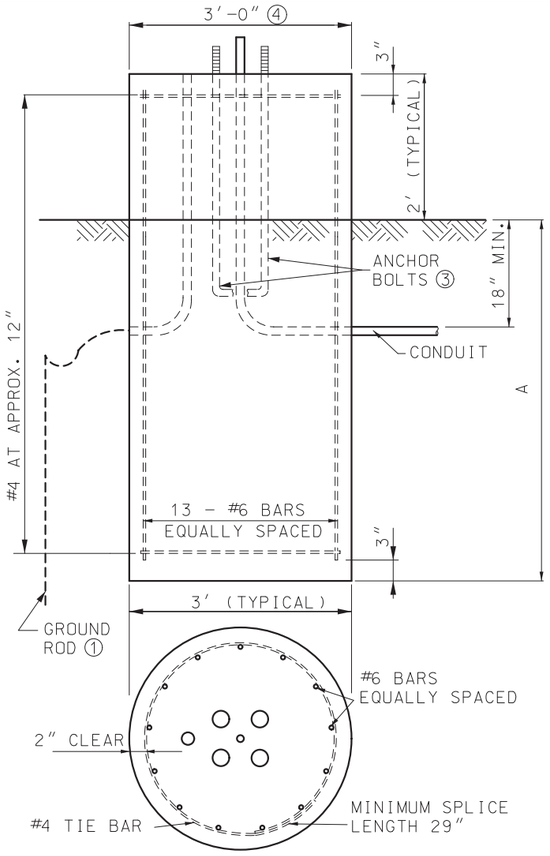
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

SEEDING

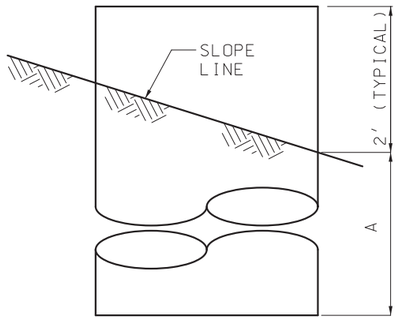
DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/16/2024

805.00A

SHEET NO. 1 OF 1

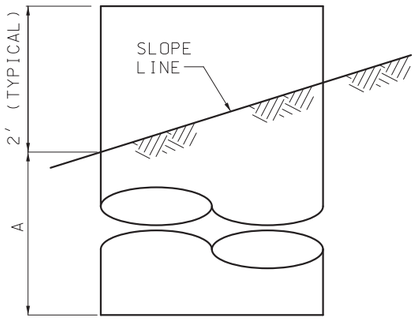


TYPE A (FLAT GROUND)



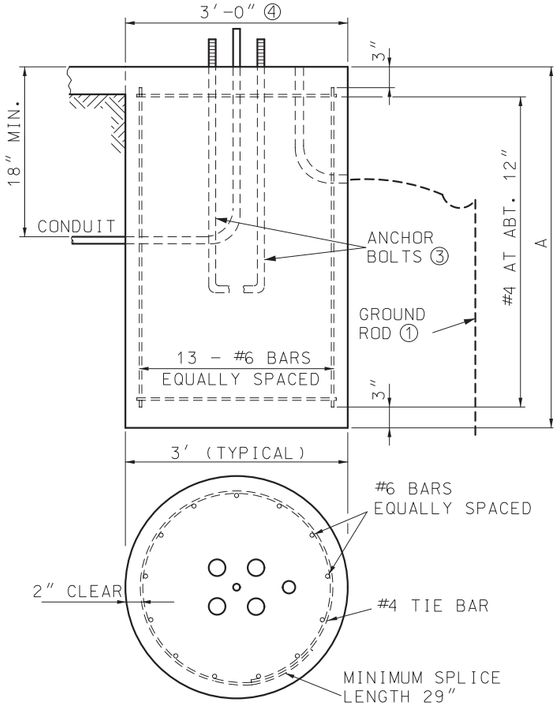
TYPE A (FILL)

(FOR ADDITIONAL DETAILS SEE TYPE A FLAT GROUND)

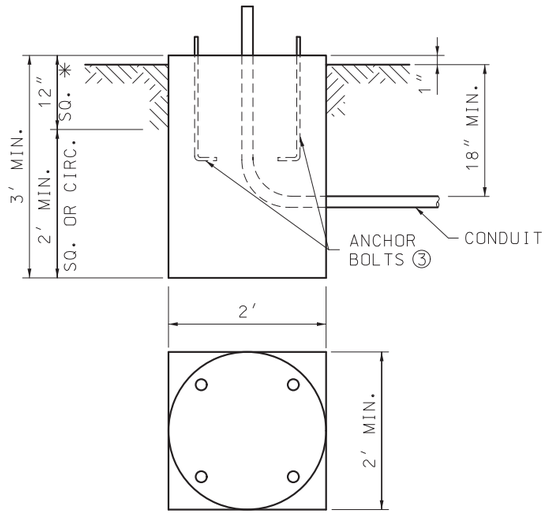


TYPE A (CUT)

(FOR ADDITIONAL DETAILS SEE TYPE A FLAT GROUND)



TYPE F



✳ SURFACE OF BASE TO BE CONSTRUCTED SQUARE FOR A DEPTH OF 12″.

TYPE C

POST BASES

POST BASES		
POST TYPE	ARM LENGTH (FEET) ⑤	BASE TYPE ⑥
C OR CL	15 – 25	A-9 OR F-9
C OR CL	30 – 35	A-9.5 OR F-9.5
C OR CL	40 – 55	A-10.5 OR F-10.5
B OR BL	15 – 25	A-10 OR F-10
B OR BL	30 – 35	A-11 OR F-11
B OR BL	40 – 55	A-12 OR F-12

STEEL AND CONCRETE REQUIREMENTS FOR POST BASES ⑨				
BASES		#6 STEEL BAR		CONC.
TYPE	A ⑦	LENGTH	WEIGHT LBS. ⑧	C.Y.
A-9	9′-0″	10′-6″	300	2.88
A-9.5	9′-6″	11′-0″	310	3.01
A-10	10′-0″	11′-6″	320	3.14
A-10.5	10′-6″	12′-0″	330	3.27
A-11	11′-0″	12′-6″	350	3.40
A-12	12′-0″	13′-6″	380	3.67
F-9	9′-0″	8′-6″	240	2.36
F-9.5	9′-6″	9′-0″	250	2.49
F-10	10′-0″	9′-6″	270	2.62
F-10.5	10′-6″	10′-0″	280	2.75
F-11	11′-0″	10′-6″	300	2.88
F-12	12′-0″	11′-6″	320	3.14
C✳				0.44

✳ SURFACE OF BASE TO BE CONSTRUCTED SQUARE FOR A DEPTH OF 12″.

BASE EMBEDMENT IN SOLID ROCK	
SOLID ROCK ENCOUNTER POINT	REQUIRED EMBEDMENT
AT SURFACE	4′-9″
AT ONE-FOURTH NORMAL DEPTH	4′-0″
AT ONE-HALF NORMAL DEPTH	3′-3″
AT THREE-FOURTHS NORMAL DEPTH	1′-3″

1. REQUIRED EMBEDMENT DEPTHS CAN BE INTERPOLATED BETWEEN ENCOUNTER POINTS FOR OTHER SOLID ROCK ENCOUNTER DEPTHS.
2. NORMAL LENGTHS FOR ANCHOR BOLTS AND REINFORCING STEEL WILL BE REQUIRED.
3. CORE DRILL HOLES FOR ANCHOR BOLTS AND REINFORCING STEEL IN SOLID ROCK SHALL BE PROVIDED. CORE DRILL HOLES SHALL BE TWICE THE DIAMETER OF THE ANCHOR BOLT AND REINFORCING STEEL DIAMETER AND TO WITHIN 3 INCHES OF THE NORMAL BASE DEPTH.
4. IF SOIL, SHALE, GRAVEL, FRACTURED ROCK, OR VOIDS ARE ENCOUNTERED DURING CORE DRILLING, THE ROCK SHALL BE REMOVED TO THE POINT OF ENCOUNTER.
5. ANCHOR BOLTS AND REINFORCING STEEL SHALL BE GROUTED IN THE CORE DRILL HOLES WITH NON-SHRINK GROUT HAVING A MINIMUM STRENGTH OF 9,000 POUNDS IN 24 HOURS.
6. STRAIGHT ANCHOR BOLTS OF THE LENGTH SHOWN IN THE ANCHOR BOLT TABLE UNDER THE COLUMN "BOLT LENGTH" ARE ADEQUATE FOR USE IN GROUTED CORE DRILLED HOLES.

① APPLICABLE ONLY WHERE CONTROLLER IS MOUNTED TO A SIGNAL POLE.

② BASE PLATE SHALL STAY WITHIN THE TOP OF THE POST BASE DIAMETER.

③ ANCHOR BOLT DIMENSIONS ARE SHOWN ON THE MANUFACTURER'S APPROVED DRAWINGS.

④ MAXIMUM BOLT CIRCLE DIAMETER IS 26″. BASE PLATE SHALL STAY WITHIN THE TOP OF THE POST BASE DIAMETER.

⑤ ARM LENGTH DETERMINED BY LENGTH OF LONGEST ARM FOR TYPE B & BL SIGNAL POSTS.

⑥ BASE TYPE A OR F DETERMINED BY LOCATION OF POST BASE.

⑦ SOIL DEPTH, NO ROCK.

⑧ WEIGHT INCLUDES #4 TIE BARS.

⑨ WHEN CONCRETE BASE IS LOCATED WITHIN 8″ CONCRETE DIVISIONAL ISLAND, EMBEDMENT LENGTH MAY BE REDUCED BY ½ DIAMETER OF THE DRILLED SHAFT.

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

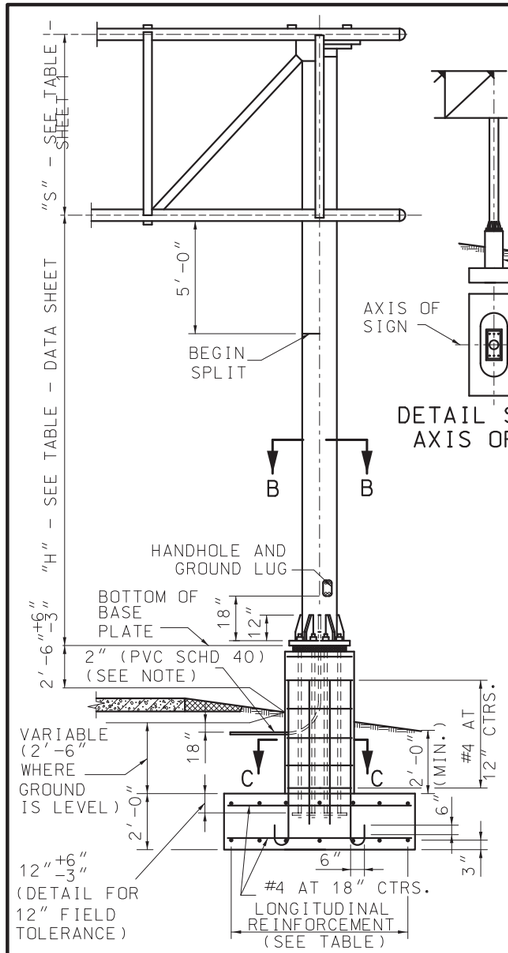
STATE OF MISSOURI
NICOLE A. KOLB HOOD
NUMBER PE-2001018754
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

TRAFFIC SIGNALS

POST BASES

DATE EFFECTIVE: 4/1/2024
DATE PREPARED: 1/8/2024

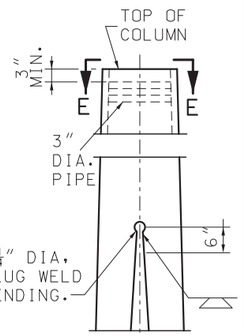
902.30P

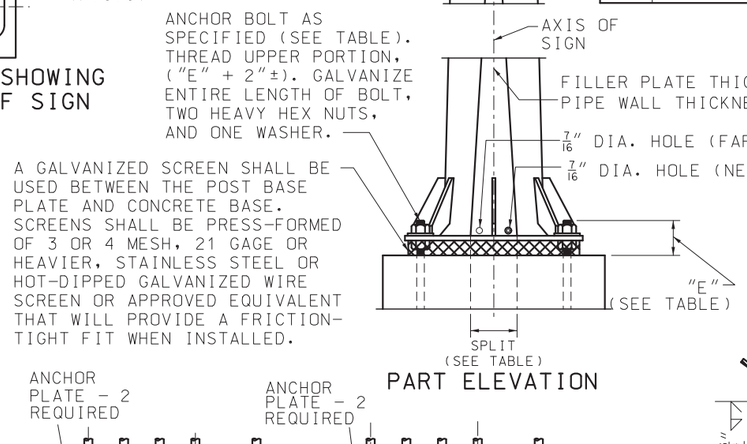


ELEVATION

NOTE:
THE 2" CONDUIT IN THE CONCRETE PEDESTAL SHALL BE PVC SCHEDULE 40 AND SHALL BE PLACED WITH A MINIMUM RADIUS BEND OF $9\frac{1}{2}$".

DETAIL SHOWING AXIS OF SIGN

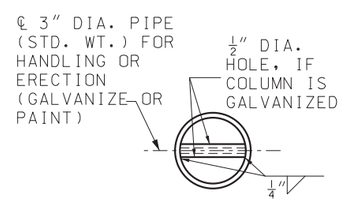




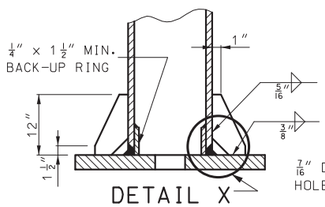
PART ELEVATION

POST TYPE	PIPE COLUMN	DIMENSION "E"	SPLIT	BASE PLATE SIZE*	ANCHOR BOLTS DIA.	PEDESTAL SIZE* a	PEDESTAL SIZE* b	FOOTING SIZE*	LONGITUDINAL FOOTING REINFORCEMENT TOP	LONGITUDINAL FOOTING REINFORCEMENT BOTTOM	CONCRETE C.Y.
I	12" STD. AT 65.42	8½"	6"	2'-6"x 23"x 1½"	6 AT 2¼"	4'-0"	2'-11"	7'-0"x 14'-6"	7-#5 BARS	7-#6 BARS	10.9
II	14" O.D. AT 72.09	8½"	9½"	3'-0"x 2'-0"x 1½"	6 AT 2¼"	4'-4"	3'-0"	8'-0"x 16'-0"	8-#5 BARS	9-#6 BARS	13.2
III	16" O.D. AT 82.77	8¾"	11½"	3'-4"x 2'-2"x 1¾"	6 AT 2¼"	4'-8"	3'-2"	8'-6"x 17'-6"	9-#5 BARS	9-#7 BARS	15.2
IV	18" O.D. AT 93.45	9½"	12½"	3'-7"x 2'-4"x 2"	6 AT 2½"	5'-1"	3'-4"	9'-6"x 19'-0"	10-#5 BARS	10-#8 BARS	18.1
V	20" O.D. AT 104.13	9½"	13"	3'-10"x 2'-9"x 2"	8 AT 2½"	5'-4"	3'-9"	10'-0"x 20'-0"	10-#5 BARS	10-#8 BARS	20.6
VI	24" O.D. AT 125.49	9½"	10½"	4'-0"x 3'-3"x 2"	8 AT 2½"	5'-6"	4'-3"	10'-6"x 21'-0"	11-#5 BARS	11-#8 BARS	23.3
VII	24" O.D. AT 125.49	9½"	13½"	4'-3"x 3'-3"x 2"	8 AT 2½"	5'-9"	4'-3"	11'-0"x 22'-0"	11-#5 BARS	11-#9 BARS	25.1

* BASE PLATES, PEDESTAL, AND FOOTINGS, LONGER SIDES SHALL BE NORMAL TO AXIS OF SIGN.

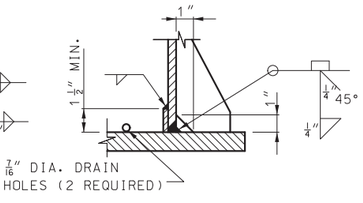


PART SECTION E-E



DETAIL X

PART SECTION A-A



DETAIL X

GENERAL NOTES:

A TAPERED TUBE OF EQUIVALENT SIZE AND THICKNESS MAY BE SUBSTITUTED FOR PIPE POST.

ALL STEEL PIPE COLUMNS SHALL BE EITHER GRADE "B" SEAMLESS STEEL PIPE OR GRADE "B" ELECTRIC RESISTANCE WELDED STEEL PIPE; ASTM SPECIFICATION A53. NO OBJECTIONABLE SEAMS WILL BE PERMITTED.

ALL STRUCTURES SHALL BE GROUNDED.

BURR THREADS ON ALL ANCHOR BOLTS.

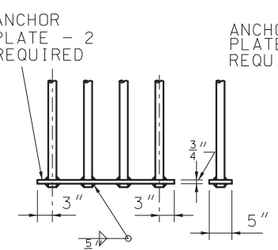
A HORIZONTAL WELDED SPLICE MAY BE FABRICATED IN THE COLUMN BETWEEN THE TOP OF PIPE AND 4'-0" BELOW THE BOTTOM CHORDS OF THE TRUSS WHEN DETAILED ON THE PIPE AND 4'-0" BELOW THE BOTTOM CHORDS OF THE TRUSS WHEN DETAILED ON THE SHOP DRAWINGS AND APPROVED BY THE ENGINEER.

GROUND LUGS SHALL BE LOCATED INSIDE COLUMN NEAR HAND HOLE.

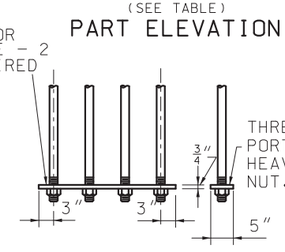
QUANTITIES FOR PEDESTAL, BASED ON NOMINAL HEIGHT OF 5'-0".

QUANTITIES FOR FOOTING, BASED ON NOMINAL DEPTH OF 2'-0".

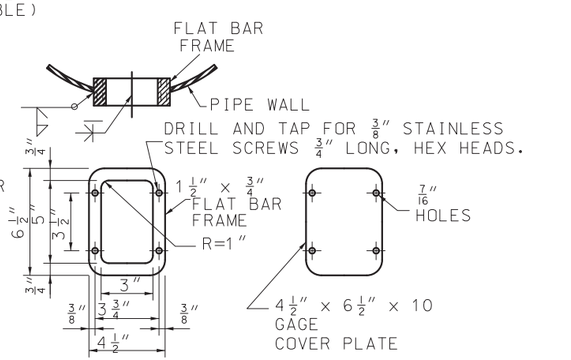
QUANTITIES SHOWN ARE FOR ONE COLUMN ONLY.



ANCHORAGE DETAIL A

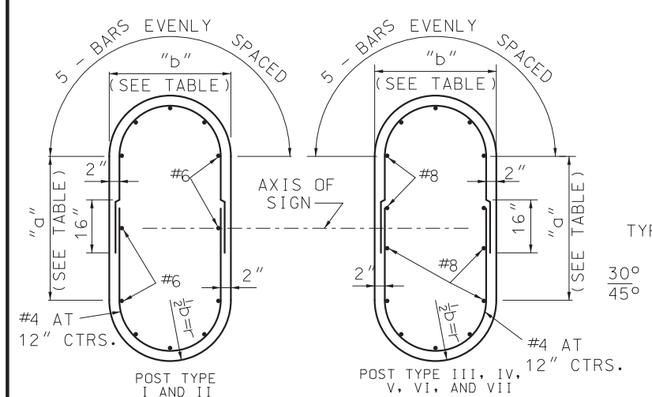


ANCHORAGE DETAIL B (OPTIONAL)

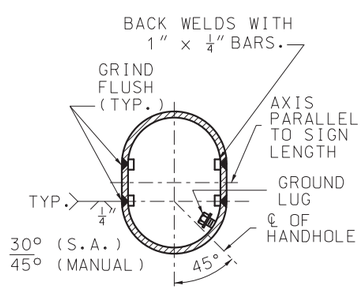


HANDHOLE AND COVER DETAIL

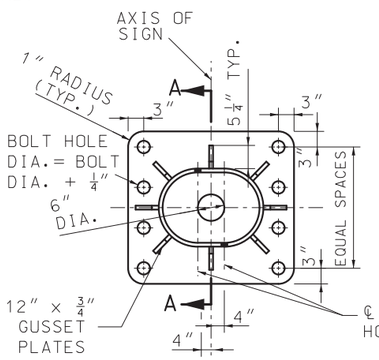
NOTE: HANDHOLE REQUIRED ONLY IN POWER COLUMN.



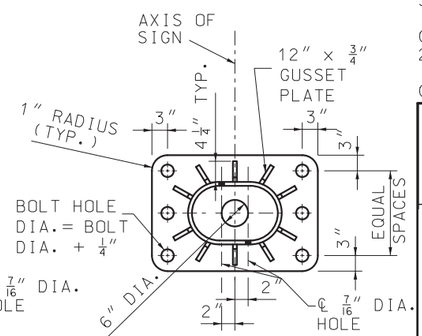
SECTION C-C
(TYPICAL SECTION SHOWING REINFORCING STEEL)
NOTE: FOR DETAILS OF ALTERNATE PEDESTAL, SEE SHEET NO. 5 OF 6.



SECTION B-B
(FOR SPLIT COLUMNS ONLY)



8 ANCHOR TYPE



6 ANCHOR TYPE

TYPICAL BASE PLATES

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

STATE OF MISSOURI
NICOLE A. KOLB HOOD
NUMBER PE-2001018754
PROFESSIONAL ENGINEER
THIS SHEET HAS BEEN SIGNED, SEALED AND DATED ELECTRONICALLY.

OVERHEAD SIGN TRUSSES

ALUMINUM

DATE EFFECTIVE: 10/1/2023
DATE PREPARED: 7/6/2023

903.10BE

SHEET NO. 4 OF 6

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