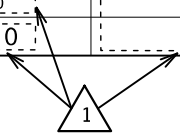


CONCRETE SIDEWALK (10 INCH THICK) & TYPE E CONCRETE TRAFFIC BARRIER													
PLAN SHEET No.	STATION	STATION	ROADWAY	LOCATION	LENGTH	WIDTH						REMARKS	
							CONCRETE SIDEWALK (10" THICK) (SY)	TYPE 5 AGG. FOR BASE (4" THICK) (SY)	CONCRETE TRAFFIC BARRIER TYPE E (LF)	TYPE E CONCRETE TRAFFIC BARRIER TRANSITION (LF)	CONCRETE SIDEWALK 4 " (SY)		
33	129+60	130+64	RTE 231	LT	104	6	69.33	69.3				SIDEWALK NEXT TO RETAINING WALL	
33	129+60	130+64	RTE 231	LT	104	3	34.67	34.7				BENEATH TYPE E BARRIER PLUS BUFFER SPACE	
33	129+60	130+64	RTE 231	LT					104.0				
33	129+40	129+60	RTE 231	LT	20	2		4.4		20.0	4.44	HEIGHT TRANSITION / CONCRETE & BASE BENEATH	
33	130+64	130+84	RTE 231	LT	20	2		4.4		20.0	4.44	HEIGHT TRANSITION / CONCRETE & BASE BENEATH	
SUBTOTALS							104.0	112.8	104.0	40.0	8.9		
PAY TOTALS							104.0	*	104.0	40.0	*	* SEE SIDEWALK & BASE QUANTITY TABLE FOR PAY TOTAL	



BUS PADS						
PLAN SHEET No.	STATION	STATION	ROADWAY	LOCATION	SIZE (FT X FT)	BUS PAD (EA)
5	45+61.2	45+68.2	RTE 231	RT	7 X 8	1
7	57+50.3	57+57.3	RTE 232	LT	7 X 8	1
14	26+27.6	26+34.6	RTE 231	RT	7 X 8	1
17	44+67.0	44+74.0	RTE 231	RT	7 X 7.5	1
18	46+93.0	47+00.0	RTE 231	LT	7 X 6	1
19	50+74.0	50+81.0	RTE 231	RT	7 X 7.8	1
20	57+21.0	57+28.0	RTE 231	LT	7 X 8	1
23	74+30.0	74+37.0	RTE 231	LT	7 X 8.4	1
PAY TOTAL						8
SEE SPECIAL SHEET & JSP						

SIDEWALK HANDRAILING WITH BALUSTERS					
PLAN SHEET No.	STATION	STATION	ROADWAY	LOCATION	HANDRAILING (LF)
7	54+47	54+77	RTE 231	LT	30.5
18	46+75	47+71	RTE 231	LT	95.5
24	82+33	82+96	RTE 231	RT	66.4
25	83+43	83+95	RTE 231	RT	52.0
25	84+38	84+96	RTE 231	RT	57.9
30	112+45	113+24	RTE 231	RT	80.0
30	113+74	113+91	RTE 231	RT	17.0
33	128+70	129+20	RTE 231	RT	50.0
35 - 36	139+72	143+27	RTE 231	LT	354.0
VARIES	VARIES	VARIES	RTE 231	RT & LT	165.0
SUBTOTAL					968.3
PAY TOTAL					968

TYPE B GUTTER					
PLAN SHEET No.	STATION	STATION	ROADWAY	LOCATION	TYPE B GUTTER (LF)
33	130+48	130+64	RTE 231	LT	18.4
SUBTOTAL					18.4
PAY TOTAL					18

MSE WALL SYSTEMS					
PLAN SHEET No.	STATION	STATION	ROADWAY	LOCATION	MSE WALL SYSTEMS (SF)
33	129+60.00	130+64.00	RTE 231	LT	674.5
SUBTOTAL					674.5
PAY TOTAL					675

ADJUSTING MANHOLES						
PLAN SHEET No.	ROADWAY	STATION	LOCATION	MSD STRUCTURE No.	ADJUSTING MANHOLE (EA)	BY OTHERS (EA)
7	RTE 231	54+63	39' LT	29H4-141D	1	
7	RTE 231	58+22	46' RT		1	
8	RTE 231	62+28	43' LT	29H4-069D	1	
18	RTE 231	50+02	49' RT	N/A	1	
21	RTE 231	63+18	45' LT	---	1	
21	RTE 231	63+19	48' LT	N/A		1
22	RTE 231	69+46	47' LT	N/A		1
22	RTE 231	69+47	44' LT	---	1	
33	RTE 231	126+87	64' RT	---	1	
33	RTE 231	128+34	50' RT	32H1-181S	1	
33	RTE 231	131+56	44' LT		1	
35	RTE 231	139+93	39' LT	N/A		1
PAY TOTAL					9	N/A
* ADJUST TO GRADE (ATG)						

CONCRETE SLOPE PROTECTION					
PLAN SHEET NO.	ROADWAY	BEGIN STA.	END STA.	LOCATION	CONCRETE SLOPE PROTECTION (S.Y.)
18	231	46+75	47+71	LT	33.7
30	231	112+37	113+30	RT	16.5
30	231	113+74	113+91	RT	1.8
33	231	130+48	130+65	LT	6.3
SUBTOTAL					58.3
PAY TOTAL					58

STATE OF MISSOURI

STUART ROBINSON MCNEIL

NUMBER PE-2006019687

PROFESSIONAL ENGINEER

07/31/2025 10:07:37 AM

STUART ROBINSON MCNEIL - CIVIL

MO-PE-2006019687

DATE PREPARED

7/31/2025

ROUTE 231

STATE MO

DISTRICT SL

SHEET NO. 3

COUNTY

ST. LOUIS

JOB NO.

J6S3632

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)

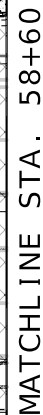
SUMMARY OF QUANTITIES

SHEET 5 OF 17

1

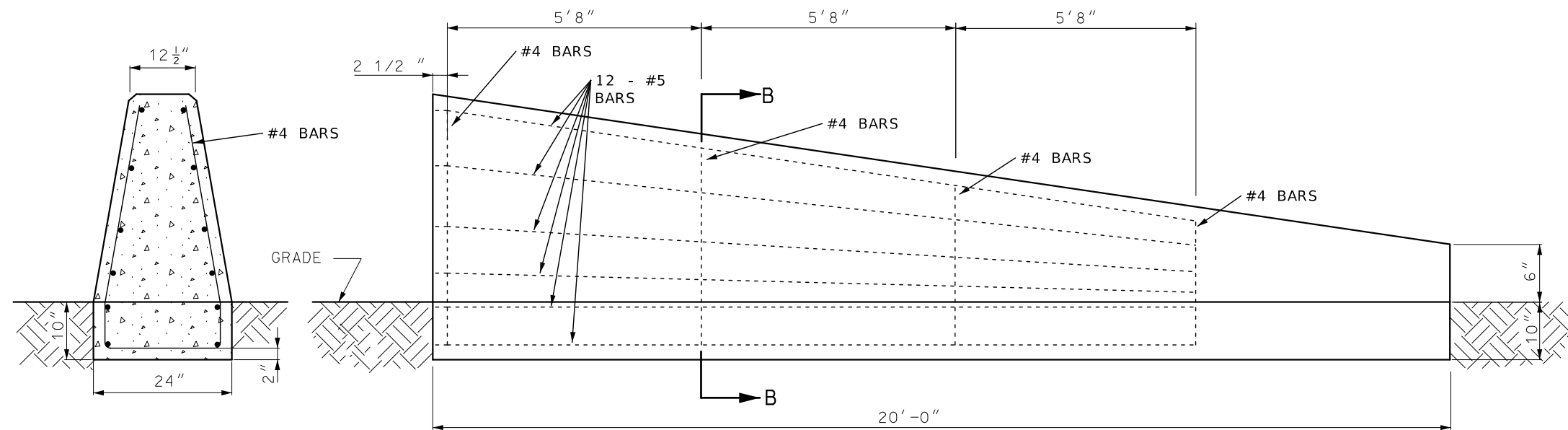
REVISED

SIGN									SIGN									ITEM		TOTAL		EFFECTIVE: 07-01-2024	
SIGN	SIZE	AREA	QTY	TOTAL	QTY	TOTAL	SIGN	DESCRIPTION	SIGN	SIZE	AREA	QTY	TOTAL	QTY	TOTAL	SIGN	DESCRIPTION	NUMBER	QTY	DESCRIPTION	DESCRIPTION		
IN.	SQ. FT.	EACH	SQ. FT.	EACH	SQ. FT.	NUM.	IN.	SQ. FT.	IN.	SQ. FT.	EACH	SQ. FT.	EACH	SQ. FT.	NUM.	IN.	SQ. FT.	NUMBER	QTY	DESCRIPTION	DESCRIPTION		
WARNING SIGNS									GUIDE SIGNS														
WO1-1L	48X48	16.00					TURN (SYMBOL LEFT)	E05-1	36X48	12.00						GORE EXIT	6122008		IMPACT ATTENUATOR 40 MPH (SAND BARRELS)				
WO1-1R	48X48	16.00					TURN (SYMBOL RIGHT)	E05-2	48X36	12.00						EXIT OPEN	6122009		IMPACT ATTENUATOR 45 MPH (SAND BARRELS)				
WO1-2L	48X48	16.00					CURVE (SYMBOL LEFT)	E05-2a	48X36	12.00						EXIT CLOSED	6122010		IMPACT ATTENUATOR 50 MPH (SAND BARRELS)				
WO1-2R	48X48	16.00					CURVE (SYMBOL RIGHT)	GO20-1	60X24	10.00						ROAD WORK NEXT XX MILES	6122012		IMPACT ATTENUATOR 55 MPH (SAND BARRELS)				
WO1-3L	48X48	16.00					REVERSE TURN (SYMBOL LEFT)	GO20-2	48X24	8.00						END ROAD WORK	6122014		IMPACT ATTENUATOR 60 MPH (SAND BARRELS)				
WO1-3R	48X48	16.00					REVERSE TURN (SYMBOL RIGHT)	GO20-4	36X18	4.50						PILOT CAR FOLLOW ME	6122017		IMPACT ATTENUATOR 65 MPH (SAND BARRELS)				
WO1-4L	48X48	16.00					REVERSE CURVE (SYMBOL LEFT)	GO20-4a	42X30	8.75						PILOT CAR IN USE WAIT & FOLLOW	6122019		IMPACT ATTENUATOR 70 MPH (SAND BARRELS)				
WO1-4R	48X48	16.00					REVERSE CURVE (SYMBOL RIGHT)	GO20-4a	18X12	1.50						PILOT CAR IN USE WAIT & FOLLOW	6122020		REPLACEMENT SAND BARREL				
WO1-4bL	48X48	16.00					DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT)	GO20-5aP	36X24	6.00	4	24.00				WORK ZONE (PLAQUE)	6122030		IMPACT ATTENUATOR (RELOCATION)				
WO1-4bR	48X48	16.00					DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT)	MO4-8a	24X18	3.00						END DETOUR	6123001		TRUCK MOUNTED ATTENUATOR (TMA)				
WO1-4cL	48X48	16.00					TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT)	MO4-9L	48X36	12.00						DETOUR (LEFT)	6161008	8	ADVANCED WARNING RAIL SYSTEM				
WO1-4cR	48X48	16.00					TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT)	MO4-9R	48X36	12.00						DETOUR (RIGHT)	6161012		BUOYS (BOATS KEEP OUT)				
WO1-6	60X30	12.50					HORIZONTAL ARROW (SYMBOL)	MO4-9P	48X12	4.00						STREET NAME (PLAQUE)	6161013		BUOYS (NO WAKE)				
WO1-6a	72X36	18.00					HORIZ. ARROW (SYMBOL ON PERMANENT BARRICADE)	MO4-10L	48X18	6.00						DETOUR ARROW (LEFT)	6161014		SPECIAL SIGN ASSEMBLY (BOATS KEEP OUT)				
WO1-7	60X30	12.50					DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)	MO4-10R	48X18	6.00						DETOUR ARROW (RIGHT)	6161025	250	CHANNELIZER (TRIM LINE)				
WO1-7a	72X36	18.00					DOUBLE HEAD HORIZ. ARROW (SYMBOL ON PERM. BARR.)	REGULATORY SIGNS									6161030	4	TYPE III MOVEABLE BARRICADE				
WO1-8	18X24	3.00					CHEVRON (SYMBOL)	R1-1	48X48	13.25						STOP	6161033	14	DIRECTION INDICATOR BARRICADE				
WO1-8a	30X36	7.50					CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)	R1-2	48TRI.	6.93						YIELD	6161040	2	FLASHING ARROW PANEL				
WO3-1	48X48	16.00					STOP AHEAD (SYMBOL)	R1-2a	36X36	9.00						TO ONCOMING TRAFFIC (PLAQUE)	6161047		TYPE III OBJECT MARKER				
WO3-2	48X48	16.00					YIELD AHEAD (SYMBOL)	R1-3P	30X12	2.50						ALL WAY (PLAQUE)	6161055		SEQUENTIAL FLASHING WARNING LIGHT				
WO3-3	48X48	16.00					SIGNAL AHEAD (SYMBOL)	R2-1	36X48	12.00	8	96.00				SPEED LIMIT XX	6161070		TUBULAR MARKER				
WO3-4	48X48	16.00					BE PREPARED TO STOP	R3-1	48X48	16.00						NO RIGHT TURN (SYMBOL)	6161095		RADAR SPEED ADVISORY SYSTEM				
WO3-5	48X48	16.00					SPEED LIMIT AHEAD	R3-2	48X48	16.00						NO LEFT TURN (SYMBOL)	6161096	** 2	CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED				
WO4-1L	48X48	16.00					MERGE (SYMBOL FROM LEFT)	R3-3	36X36	9.00						NO U-TURN (SYMBOL)			CHANGEABLE MESSAGE SIGN WITHOUT COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED				
WO4-1R	48X48	16.00					MERGE (SYMBOL FROM RIGHT)	R3-4	48X48	16.00						LEFT LANE MUST TURN LEFT	6161098A		CHANGEABLE MESSAGE SIGN WITH COMM. INTERFACE- CONTRACTOR FURNISHED/RETAINED				
WO4-1aL	48X48	16.00	2	32.00			MERGE (LEFT)	R3-7L	30X30	6.25	2	12.50				RIGHT LANE MUST TURN RIGHT	6161099		WORK ZONE TRAFFIC SIGNAL SYSTEM				
WO4-1aR	48X48	16.00					MERGE (RIGHT)	R4-1	36X48	12.00						DO NOT PASS	6162000A		TEMPORARY LONG-TERM RUMBLE STRIPS				
WO5-1	48X48	16.00	2	32.00			ROAD/BRIDGE/RAMP NARROWS	R4-2	36X48	12.00						PASS WITH CARE	6162002		TEMPORARY TRAFFIC BARRIER				
WO5-3	48X48	16.00					ONE LANE BRIDGE	R4-7a	36X48	12.00						KEEP RIGHT (HORIZONTAL ARROW)	6173600D	** 200'	CONTRACTOR FURNISHED/RETAINED				
WO5-5	48X48	16.00					NARROW LANES	R4-8a	36X48	12.00						KEEP LEFT (HORIZONTAL ARROW)			CONTRACTOR FURNISHED/COMMISSION RETAINED				
WO6-1	48X48	16.00					DIVIDED HIGHWAY (SYMBOL)	R5-1	30X30	6.25						DO NOT ENTER	6173602B		TEMP. TRAFFIC BARRIER				
WO6-2	48X48	16.00					DIVIDED HIGHWAY END (SYMBOL)	R5-1a	36X24	6.00						WRONG WAY	6174000A		CONTRACTOR FURNISHED/COMMISSION RETAINED				
WO6-3	48X48	16.00					TWO WAY TRAFFIC (SYMBOL)	R6-1L	54X18	6.75						ONE WAY ARROW (LEFT)	6175010A		TEMP. TRAFFIC BARRIER HEIGHT TRANSITION				
WO7-3a	30X24	5.00	2	10.00			NEXT XX MILES (PLAQUE)	R6-1R	54X18	6.75						ONE WAY ARROW (RIGHT)			RELOCATING TEMPORARY TRAFFIC BARRIER				
WO8-1	48X48	16.00					BUMP	R6-2L	24X30	5.00						ONE WAY (LEFT)			TEMPORARY TRAFFIC BARRIER				
WO8-2	48X48	16.00	28	448.00			DIP	R6-2R	24X30	5.00						ONE WAY (RIGHT)	6176000B		COMMISSION FURNISHED/RETAINED				
WO8-3	48X48	16.00					PAVEMENT ENDS	R9-9	24X12	2.00	2	4.00				SIDEWALK CLOSED			TEMP. TRAFFIC BARRIER HEIGHT TRANSITION				
WO8-4	48X48	16.00					SOFT SHOULDER	R9-11L	24X18	3.00	2	6.00				SIDEWALK CLOSED AHEAD, (ARROW LEFT) CROSS HERE			COMMISSION FURNISHED/RETAINED				
WO8-5	48X48	16.00					SLIPPERY WHEN WET (SYMBOL)	R9-11R	24X18	3.00	2	6.00				SIDEWALK CLOSED AHEAD, (ARROW RIGHT) CROSS HERE	6177000B		TEMPORARY RAISED PAVEMENT MARKER				
WO8-6	48X48	16.00					TRUCK CROSSING	R10-6	24X36	6.00						STOP HERE ON RED (45° ARROW)	6208064A		TEMPORARY TRAFFIC SIGNALS				
WO8-6c	48X48	16.00					TRUCK ENTRANCE	R11-2	48X30	10.00						ROAD CLOSED	9029400		TEMPORARY TRAFFIC SIGNALS AND LIGHTING				
WO8-7	36X36	9.00					LOOSE GRAVEL																
WO8-7a	36X36	9.00					FRESH OIL / LOOSE GRAVEL																
WO8-9	48X48	16.00					LOW SHOULDER																
WO8-11	48X48	16.00					UNEVEN LANES																
WO8-12	48X48	16.00					NO CENTER LINE																
WO8-15	48X48	16.00					GROOVED PAVEMENT																
WO8-15P	30X24	5.00					MOTORCYCLE (PLAQUE)																
WO8-17L	48X48	16.00					SHOULDER DROP-OFF (SYMBOL LEFT)																
WO8-17R	48X48	16.00					SHOULDER DROP-OFF (SYMBOL RIGHT)																
WO8-17P	30X24	5.00					SHOULDER DROP-OFF (PLAQUE)																
W10-1	42RND.	9.62					RAILROAD CROSSING																
WO12-1	24X24	4.00					DOUBLE DOWN ARROW (SYMBOL)																
WO12-2	48X48	16.00.																					



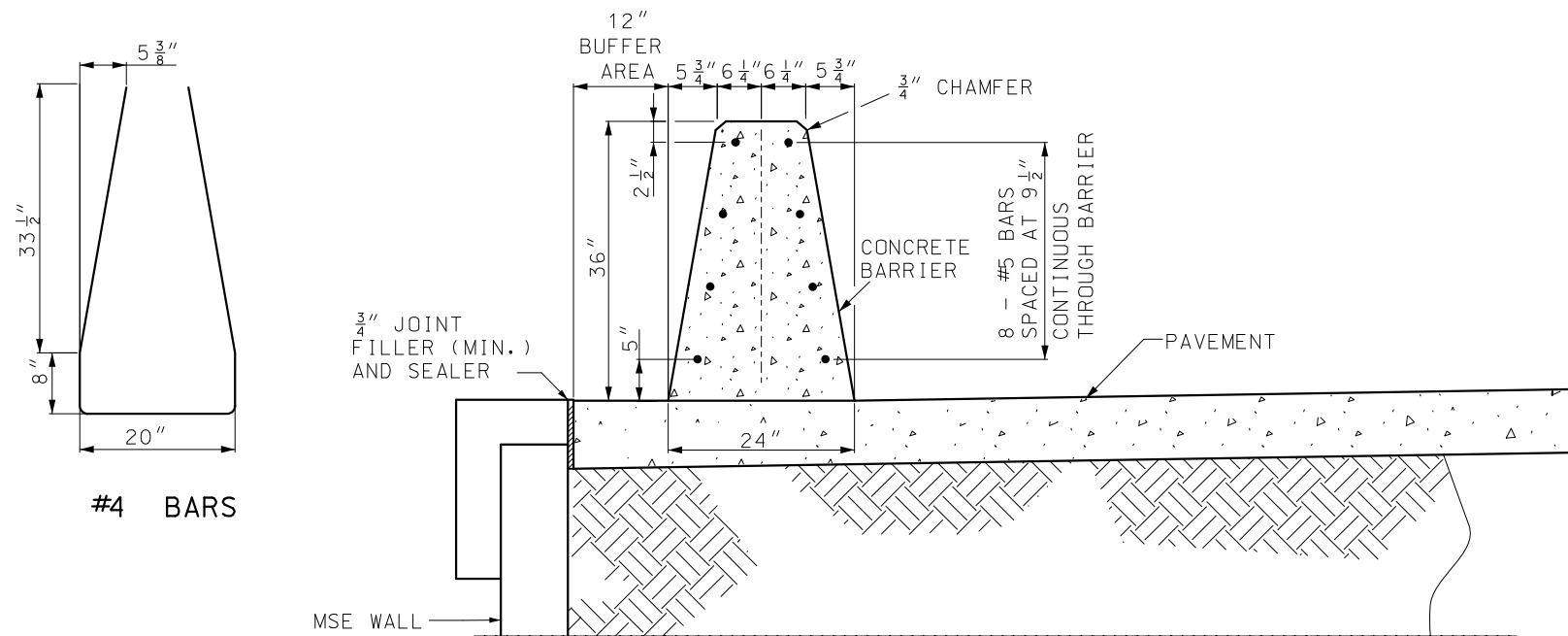
1. *Journal of the American Medical Association*, 2000; 283: 2689-2696.

PLAN SHEET



SECTION B-B

CONCRETE BARRIER TRANSITION ON GRADE



TYPICAL TYPE E BARRIER ON TOP OF MSE WALL

GENERAL NOTES:

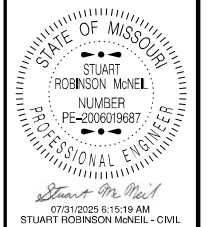
ALL REINFORCEMENT SHALL BE GRADE 60 EPOXY COATED.

MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS OTHERWISE SHOWN.

BAR SPLICES SHALL BE A MINIMUM OF 24 TIMES THE NOMINAL DIAMETER OF THE BAR.

PAVEMENT SURFACE DIFFERENTIAL SHALL NOT EXCEED 1 1/2".

FOR CONCRETE TRAFFIC BARRIER DELINEATION DETAILS, SEE STD PLAN 903.00.



DATE PREPARED
7/30/2025

ROUTE 231 STATE MO

DISTRICT SL SHEET NO. 100A

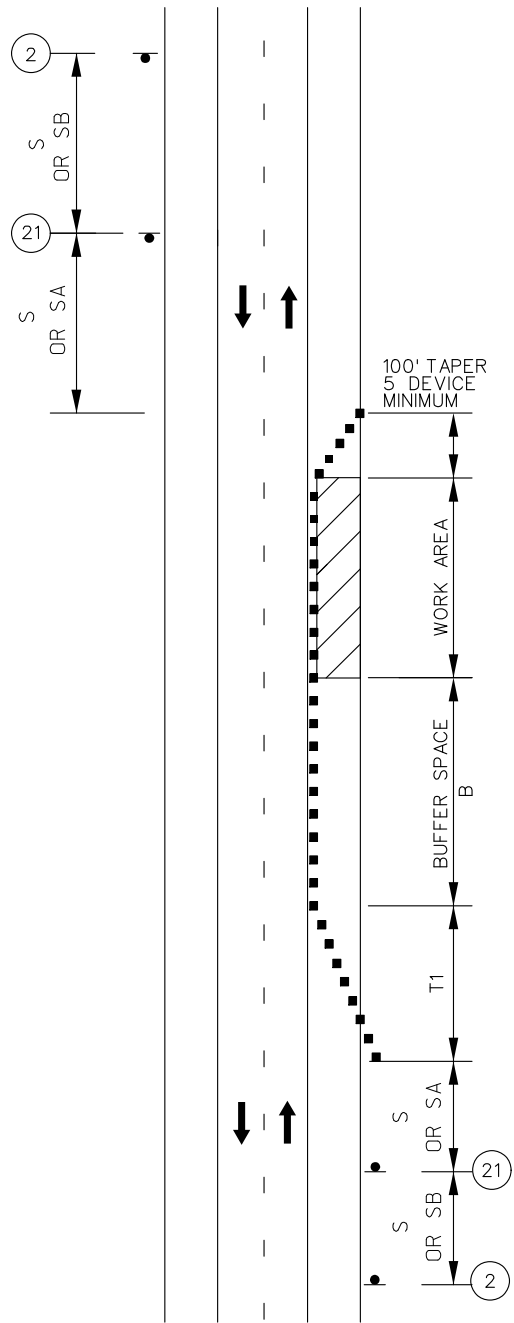
COUNTY ST. LOUIS

JOB NO. J6S3632

CONTRACT ID.

PROJECT NO.

BRIDGE NO.



WORK ON THE SHOULDER
ON DIVIDED AND UNDIVIDED
HIGHWAYS

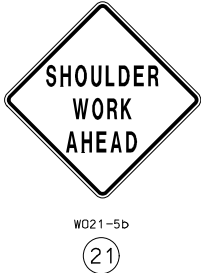
TRAFFIC CONTROL LEGEND

- SIGN (SINGLE SIDED)
- CHANNELIZER (TRIM-LINE)
- WORK AREA

SPEED	SIGN SPACING (ft.)		TAPER LENGTH (ft.)		OPTIONAL	CHANNELIZER SPACING (ft.)	
PERM. POSTED (MPH)	UN -DIVIDED (S)	DIVIDED (S)	SHOULDER (1) (T1)	LANE (2) (T2)	BUFFER LENGTH (ft) (B)	TAPERS	BUFFER/ WORK AREAS
0-35	200	200	70	245	280	35	40
40-45	350	500	150	540	400	40	80
50-55	500	1000	185	660	560	50	80
60-70	1000	SA-1000 SB-1500 SC-2640	235	840	840	60	120

1 Shoulder taper length based on 10 ft. (standard shoulder width) offset.

2. Lane taper length based on 12 ft. (standard lane width) offset.



NOTES:

- PROVIDE SIGNS ON LEFT AND RIGHT SIDES OF DIVIDED HIGHWAYS.
- ROAD WORK AHEAD SIGN NOT NEEDED IF SHOULDER WORK IS LOCATED WITHIN THE LIMITS OF AN ACTIVITY AREA WHERE ANOTHER ROAD WORK AHEAD SIGN IS ALREADY USED.
- SEE EPG 616.12 WORK ZONE SPEED LIMITS FOR SPEED LIMIT GUIDELINES.
- VEHICLE HAZARD WARNING SIGNALS SHALL NOT BE USED INSTEAD OF THE VEHICLE'S ROTATING LIGHTS 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.

TEMPORARY TRAFFIC BARRIERS, IF USED, SHALL COMPLY WITH THE PROVISIONS IN EPG 616.6.85 TEMPORARY TRAFFIC BARRIER

1 ADDED



DATE PREPARED
7/21/2025

ROUTE
231

DISTRICT
SL

STATE
MO

SHEET NO.
274

COUNTY
ST. LOUIS

JOB NO.
J6S3632

CONTRACT ID.

PROJECT NO.

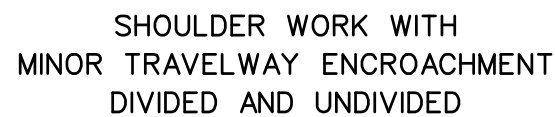
BRIDGE NO.

DESCRIPTION	DATE

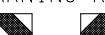
MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

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

TRAFFIC CONTROL SHEET
WORK ON THE SHOULDER



ADVANCE WARNING RAIL SYSTEM

	
LEFT SIDE OF ROAD	RIGHT SIDE OF ROAD

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

1 ADDED

TRAFFIC CONTROL SHEET
SHOULDER WORK WITH
MINOR ENCROACHMENT