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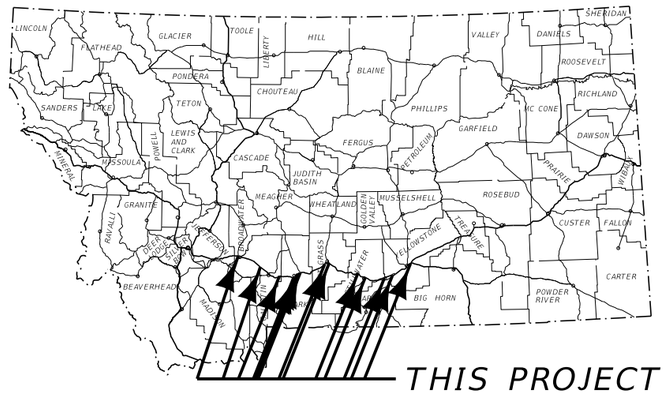
MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT CRSII-IM 90-5(85)274
ROADWAY & ROADSIDE SAFETY IMPROVEMENT
I-90 INCIDENT MANAGEMENT
BROADWATER, GALLATIN, PARK, SWEET GRASS, STILLWATER AND YELLOWSTONE COUNTIES

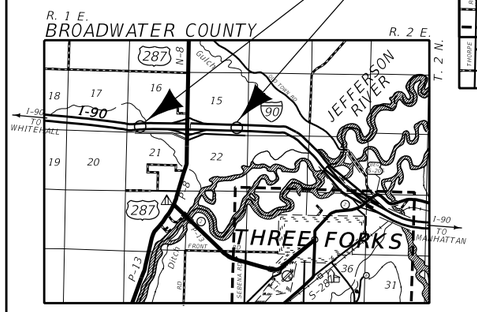
LENGTH N/A MILES

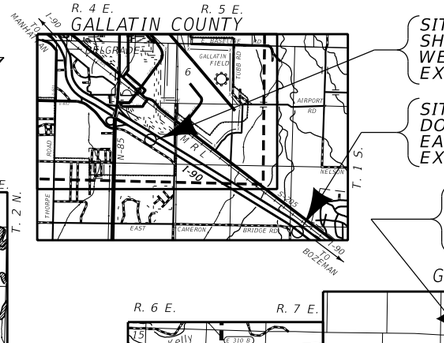
PROJECT DESIGN DATA

N/A



SITES 1 & 2
DOUBLE-SIDED MEDIAN VMS
WEST & EAST OF THREE FORKS
EXIT 274 INTERCHANGE

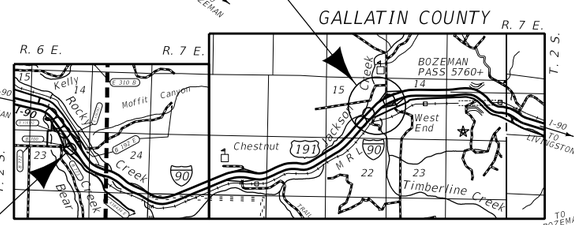




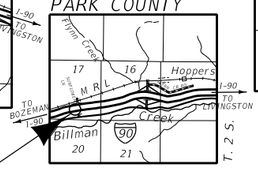
SITE 3
SHOULDER VMS EASTBOUND
WEST OF AIRWAY BLVD
EXIT 299 INTERCHANGE

SITE 4
DOUBLE-SIDED MEDIAN VMS
EAST OF AIRWAY BLVD
EXIT 299 INTERCHANGE

SITE 6
ROAD CLOSURE SYSTEM
JACKSON CREEK EXIT 320 INTERCHANGE



SITE 5
ROAD CLOSURE SYSTEM
BEAR CANYON EXIT 313 INTERCHANGE

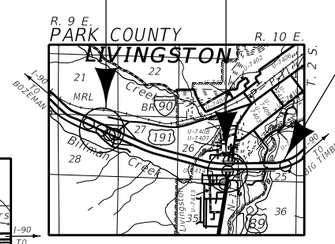


SITE 7
DOUBLE-SIDED MEDIAN VMS
WEST OF EXIT 324 INTERCHANGE

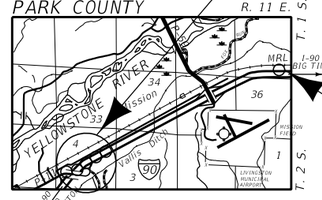
SITE 8
ROAD CLOSURE SYSTEM
LIVINGSTON EXIT 330 INTERCHANGE

SITE 9
ROAD CLOSURE SYSTEM
LIVINGSTON EXIT 333 INTERCHANGE

SITE 10
RWIS SITE
RP 334 EAST OF LIVINGSTON



SITE 11
ROAD CLOSURE SYSTEM
LIVINGSTON EXIT 337 INTERCHANGE

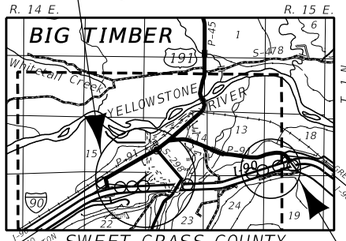


SITE 12
SHOULDER VMS WESTBOUND
EAST OF WHITE SULPHUR SPRINGS
EXIT 340 INTERCHANGE

BUTTE DISTRICT

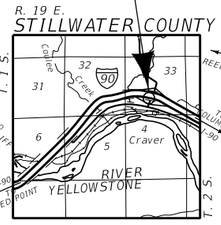
BILLINGS DISTRICT

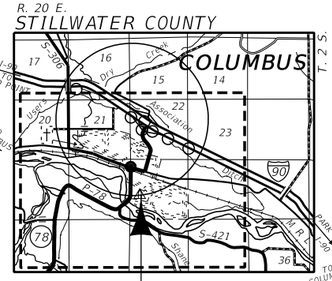
SITES 13 & 14
ROAD CLOSURE SYSTEM
BIG TIMBER EXIT 367 INTERCHANGE
DOUBLE-SIDED MEDIAN VMS
EAST OF BOULDER RIVER BRIDGE



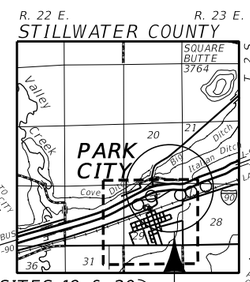
SITE 15
ROAD CLOSURE SYSTEM
BIG TIMBER EXIT 370 INTERCHANGE

SITE 16
ROAD CLOSURE SYSTEM
SPRINGTIME EXIT 400 INTERCHANGE



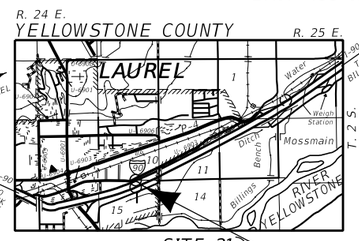


SITES 17 & 18
ROAD CLOSURE SYSTEM
COLUMBUS EXIT 408 INTERCHANGE
SHOULDER VMS EASTBOUND
WEST OF EXIT 408 INTERCHANGE



SITES 19 & 20
ROAD CLOSURE SYSTEM
PARK CITY EXIT 426
INTERCHANGE
PORTABLE VMS PAD WESTBOUND
EAST OF PARK CITY
EXIT 426 INTERCHANGE

SITE 22
SHOULDER VMS EASTBOUND
WEST OF JOHNSON LANE
EXIT 455 INTERCHANGE



SITE 21
SHOULDER VMS
EASTBOUND AND WESTBOUND
EAST OF LAUREL
EXIT 434 INTERCHANGE



SITE 23
SHOULDER VMS WESTBOUND
EAST OF JOHNSON LANE
EXIT 455 INTERCHANGE

DISTRICT 2

DISTRICT 5

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	
I.C.	
P. E.	IM 90-5(84)274

MONTANA
DEPARTMENT OF TRANSPORTATION

MALCOLM "MACK" LONG
DIRECTOR OF TRANSPORTATION

APPROVED BY:

HIGHWAYS
ENGINEER

DocuSigned by:
Damian Krings
1C71361CE866454...

7/30/2023
DATE

MONTANA
DAMIAN
KRINGS
12113PE
LICENSED
PROFESSIONAL ENGINEER

3	MONTANA Department of Transportation	C:\DGN\9856000rdtl001.dgn	DESIGNED BY	K. SHUCK	10/3/2022
2		12/21/2022	REVIEWED BY	K. SCHNIEBER	10/3/2022
		1:36:57 PM CPS - U337	CHECKED BY	J. FLEMING	10/3/2022

ROAD PLANS

UPN 9856000

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NOTES

UTILITIES

CALL THE UTILITIES UNDERGROUND LOCATION CENTER (811) OR OTHER NOTIFICATION SYSTEM FOR THE MARKING AND LOCATION OF ALL LINES AND SERVICES BEFORE EXCAVATING. ALL CLEARANCES OR DEPTHS PROVIDED FOR UTILITIES ARE FROM EXISTING GROUND LINE.

WETLANDS

WETLANDS MAY EXIST ADJACENT TO THE ROADWAY AND BEYOND THE PROJECT LIMITS. A WETLAND DELINEATION HAS NOT BEEN COMPLETED FOR THIS PROJECT. IMPACTS TO WETLAND AREAS ARE NOT ANTICIPATED IN ASSOCIATION WITH THE PROPOSED WORK. NO PERMITS HAVE BEEN OBTAINED. ANY ACTION IMPACTING WETLAND AREAS WITHOUT THE APPROPRIATE PERMITTING IS THE RESPONSIBILITY OF THE CONTRACTOR.

SUMMARY

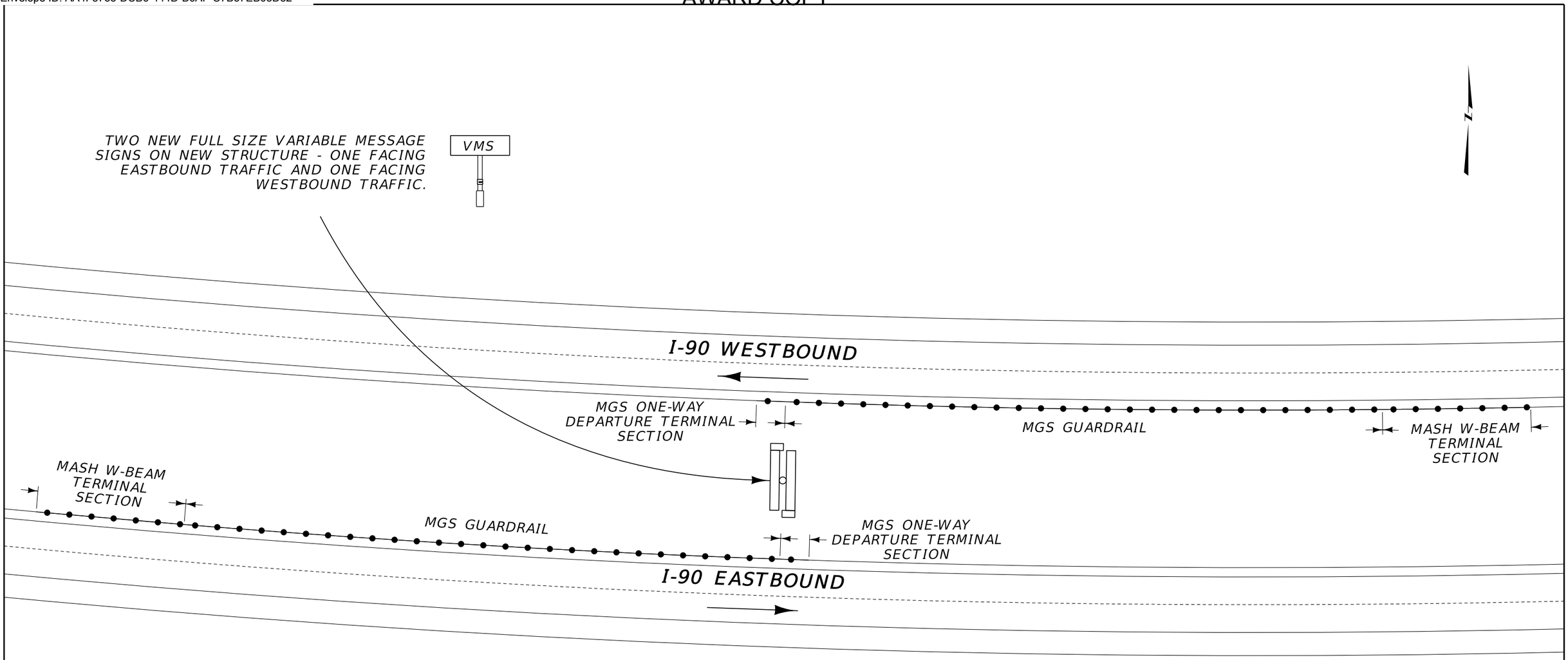
GUARDRAIL*

REFERENCE POST	linear feet				each						REMARKS
	REMOVE GUARDRAIL		MGS GUARDRAIL		MASH W-BEAM TERMINAL SECTION		MGS ONE-WAY DEPARTURE TERMINAL SECTION		BRIDGE APPROACH SECTION TYPE 1		
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
273.7			275.0		1		1				SITE 1 MEDIAN - EASTBOUND - LT
273.7				275.0		1		1			SITE 1 MEDIAN - WESTBOUND - RT
275.9			275.0		1		1				SITE 2 MEDIAN - EASTBOUND - LT
275.9				275.0		1		1			SITE 2 MEDIAN - WESTBOUND - RT
299.0				87.5		1		1			SITE 3 SHOULDER - EASTBOUND - RT
302.0			250.0		1		1				SITE 4 MEDIAN - EASTBOUND - LT
302.0				250.0		1		1			SITE 4 MEDIAN - WESTBOUND - RT
324.2			275.0		1		1				SITE 7 MEDIAN - EASTBOUND - LT
324.2				275.0		1		1			SITE 7 MEDIAN - WESTBOUND - RT
341.4			225.0		1		1				SITE 12 SHOULDER - WESTBOUND - LT
SUBTOTAL	~	~	1,300.0	1,162.5	5	5	5	5	~	~	BUTTE DISTRICT
369.0			187.5				1		1		SITE 14 MEDIAN - EASTBOUND - LT
369.0		50.0		325.0		1					SITE 14 MEDIAN - WESTBOUND - RT
407.6				225.0		1		1			SITE 17 SHOULDER - EASTBOUND - RT
435.0				125.0		1		1			SITE 21 SHOULDER - EASTBOUND - RT
435.0			125.0		1		1				SITE 21 SHOULDER - WESTBOUND - LT
454.2				125.0		1		1			SITE 22 SHOULDER - EASTBOUND - RT
455.8			125.0		1		1				SITE 23 SHOULDER - WESTBOUND - LT
SUBTOTAL	~	50.0	437.5	800.0	2	4	3	3	1	~	BILLINGS DISTRICT
SUBTOTAL	~	50.0	1,737.5	1,962.5	7	9	8	8	1	~	
TOTAL	50.0		3,700.0		16		16		1		

* SEE DETAIL FOR TYPICAL LAYOUT

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NOTE: SEE GUARDRAIL SUMMARY FRAME FOR SITE SPECIFIC LENGTHS AND BID ITEMS.

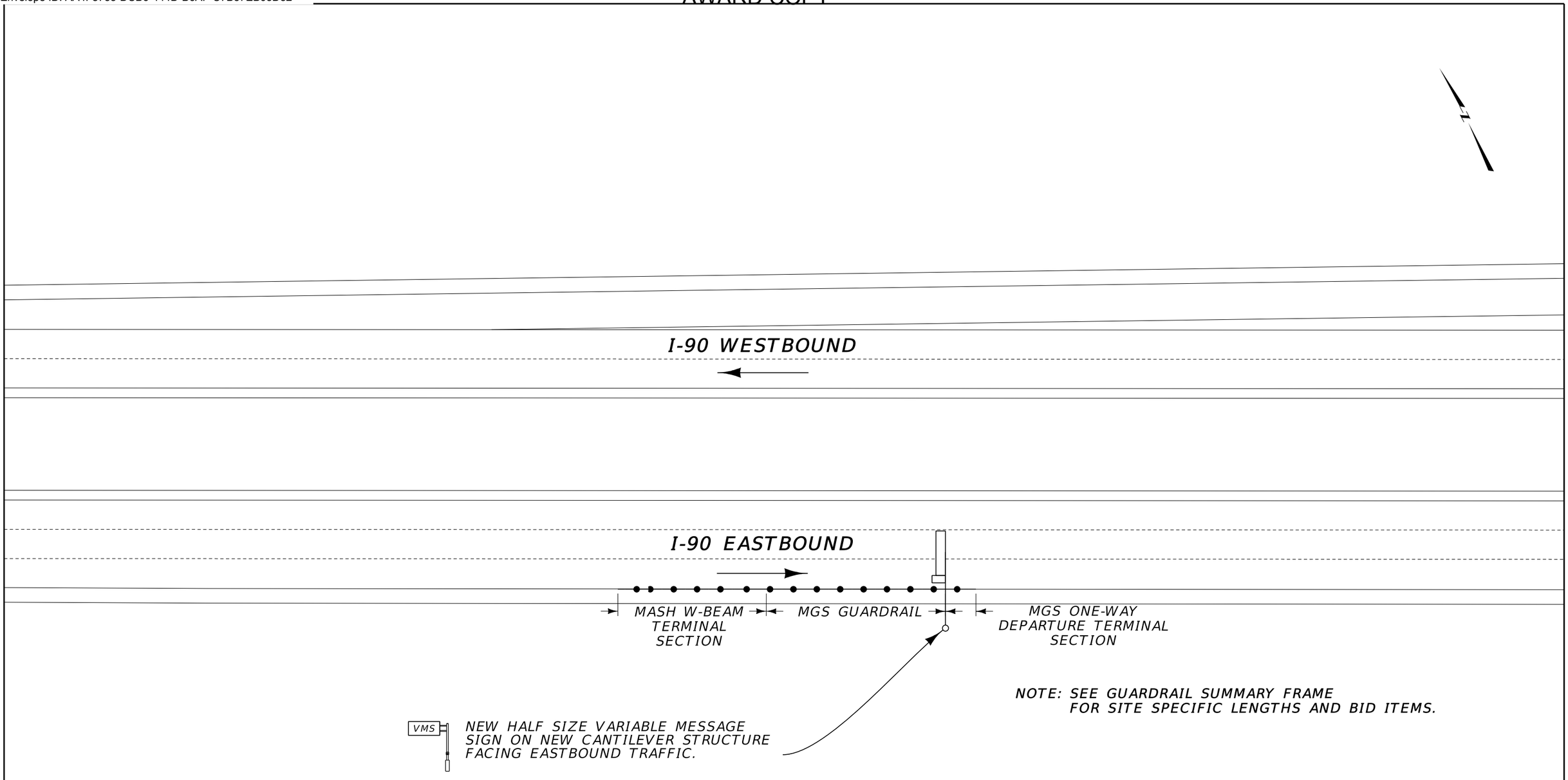
GUARDRAIL LAYOUT - MEDIAN OBSTACLE DETAIL

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9856000rddet001.dgn	DESIGNED BY K. SHUCK	10/3/2022	ROAD PLANS		I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
2		12/21/2022	REVIEWED BY K. SCHNIEBER	10/3/2022	SEE TITLE SHEET FOR COUNTIES		UPN 9856000	3
		1:37:17 PM CPS - U3373	CHECKED BY J. FLEMING	10/3/2022				

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NOTE: SEE GUARDRAIL SUMMARY FRAME FOR SITE SPECIFIC LENGTHS AND BID ITEMS.

GUARDRAIL LAYOUT - SHOULDER OBSTACLE DETAIL

NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000rddet001.dgn	DESIGNED BY K. SHUCK	10/3/2022	ROAD PLANS		I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
		12/21/2022	REVIEWED BY K. SCHNIEBER	10/3/2022				
		1:37:21 PM CPS - U3373	CHECKED BY J. FLEMING	10/3/2022	SEE TITLE SHEET FOR COUNTIES		UPN 9856000	4

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

SUMMARY
SIGNING & DELINEATION QUANTITIES

MATERIAL	TOTAL	UNIT
SIGNS-ALUM REFL SHEET XI	321.4	SQ. FOOT
SIGNS-ALUM SHEET INCR XI	1199.7	SQ. FOOT
POSTS-STEEL STRUCTURAL SIGN	11121	POUNDS
FRANG SIGN POST BKWY- W4X13	30	EACH
FRANG SIGN POST BKWY- W8X18	18	EACH

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SIGN LOCATION AND SPECIFICATIONS

REF. POST	DIRECTION	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS REMOVE	SIGNS RESET	GUIDE REMOVE	GUIDE RESET	REMARKS
SITE 5		EXIT 313	BEAR CANYON																									
312.735 RT	EB	G90-CLOSEDb	102 X 54	XI		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■					NEW
312.985 RT	EB	G90-CLOSEDa	120 X 66	XI		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■					NEW
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1 E.B. ON RAMP		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
SITE 6		EXIT 319	JACKSON CREEK																									
318.880 RT	EB	G90-CLOSEDb	102 X 54	XI		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■					NEW
319.130 RT	EB	G90-CLOSEDa	120 X 66	XI		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■					NEW
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1 E.B. ON RAMP		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
			GALLATIN - TOTALS											63.2	186.6						1958							
SITE 8		EXIT 330	LIVINGSTON WEST																									
330.229 RT	EB	G90-CLOSEDb	102 X 54	XI		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■					NEW
330.479 RT	EB	G90-CLOSEDa	120 X 66	XI		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■					NEW
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS

** = ENSURE SIGN IS CENTERED OVER LANE WHEN GATE ARM IS IN LOWERED POSITION

EB = EASTBOUND

WB = WESTBOUND

■ = FRANGIBLE SIGN POST BREAKAWAY DEVICE REQUIRED.

SEE ELECTRICAL PLANS FOR GATE AND FLASHER INFORMATION

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SIGN LOCATION AND SPECIFICATIONS

REF. POST	DIRECTION	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	FEET: TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	REMARKS
GATE 1 RT		R11-GATE	78 X 18	XI										9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1A RT		R11-GATE	78 X 18	XI										9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
SITE 8		US-10 W	LIVINGSTON WEST																										
2.223 LT		G90-WEST	102 X 48	XI		30-0		W4X13		X= 14-4 Y= 15-2		5-0	3-6		34.0 XI						385		■						NEW - I-90 WEST CLOSED WHEN FLASHING
2.258 LT		G90-EAST	102 X 48	XI		30-0		W4X13		X= 14-4 Y= 15-2		5-0	5-6		34.0 XI						385		■						NEW - I-90 EAST CLOSED WHEN FLASHING
SITE 9		EXIT 333	LIVINGSTON PARK ST.																										
52.926 OH		(2) G11-OH	180 X 24	XI											30.0 XI 30.0 XI														ADD TO OVERHEAD MAJOR SIGN PANEL SPACED 1" ABOVE
GATE 2 RT		M4-GATEl	72 X 24	XI		**									12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1 RT		M4-GATEl	72 X 24	XI		**									12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
53.195 LT		(2) G11-OH	180 X 24	XI											30.0 XI 30.0 XI														ADD TO OVERHEAD MAJOR SIGN PANEL SPACED 1" ABOVE
SITE 11		EXIT 337	LIVINGSTON EAST																										
GATE 2 RT		R11-GATEr	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
338.120 RT	WB	G90-CLOSEDa	120 X 66	XI		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■						NEW
338.370 RT	WB	G90-CLOSEDb	102 X 54	XI		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■						NEW
SITE 11 (CONT.)		EXIT 337	I-90BL																										
57.604 RT		G90-WEST	102 X 48	XI		30-0		W4X13		X= 14-4 Y= 15-2		5-0	3-6		34.0 XI						385		■						NEW - I-90 WEST CLOSED WHEN FLASHING
GATE 1 RT		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS

** = ENSURE SIGN IS CENTERED OVER LANE WHEN GATE ARM IS IN LOWERED POSITION

EB = EASTBOUND

WB = WESTBOUND

■ = FRANGIBLE SIGN POST BREAKAWAY DEVICE REQUIRED.

SEE ELECTRICAL PLANS FOR GATE AND FLASHER INFORMATION

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SIGN LOCATION AND SPECIFICATIONS

REF. POST	DIRECTION	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	REMARKS
GATE 1A RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
		P A R K - T O T A L S												82.8	432.6						3113							
SITE 13		EXIT 367	BIG TIMBER LOOP RD																									
GATE 1 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
0.075 LT		G90-WEST	102 X 48	XI		30-0		W4X13		X= 14-4 Y= 15-2		5-0	3-6		34.0 XI						385		■					NEW - I-90 WEST CLOSED WHEN FLASHING
GATE 1A LT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
SITE 13 (CONT.)		EXIT 367	I-90																									
GATE 2		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 3		M4-GATEr	72 X 24	XI		**									12.0 XI													LOCATION OF ROAD GATE ON ELECTRICAL PLANS
368.230 RT	WB	G90-CLOSEDa	120 X 66	XI	XI	30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■					NEW
368.480 RT	WB	G90-CLOSEDb	102 X 54	XI	XI	30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■					NEW
SITE 15		EXIT 370	BIG TIMBER EAST																									
369.955 RT	EB	G90-CLOSEDb	102 X 54	XI	XI	30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■					NEW
370.205 RT	EB	G90-CLOSEDa	120 X 66	XI	XI	30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■					NEW
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1 RT		R11-GATE	78 X 18	XI		**								9.8 XI														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
HWY 10 RT		G90-EAST	102 X 48	XI	XI	30-0		W4X13		X= 14-5 Y= 15-4					34.0 XI						385		■					NEW - LOCATION TO BE DETERMINED BY PROJECT MANAGER

** = ENSURE SIGN IS CENTERED OVER LANE WHEN GATE ARM IS IN LOWERED POSITION

EB = EASTBOUND

WB = WESTBOUND

■ = FRANGIBLE SIGN POST BREAKAWAY DEVICE REQUIRED.

SEE ELECTRICAL PLANS FOR GATE AND FLASHER INFORMATION

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SIGN LOCATION AND SPECIFICATIONS

REF. POST	DIRECTION	SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	SIGNS/GUIDE: REMOVE	SIGNS/GUIDE: RESET	REMARKS
GATE 1A LT		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
		S W E E T G R A S S - T O T A L S												70.8	266.6						2728								
SITE 16		EXIT 400	SPRINGTIME ROAD																										
SPRINGTIME RD RT		G90-WEST	102 X 48	XI	XI	30-0		W4X13		X= 14-5 Y= 15-4					34.0 XI						385		■						NEW - LOCATION TO BE DETERMINED BY PROJECT MANAGER
GATE 1 W.B. ON RAMP		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
SITE 18		EXIT 408	COLUMBUS																										
408.088 RT	EB	G90-CLOSEDb	102 X 54	XI	XI	30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■						NEW
408.338 RT	EB	G90-CLOSEDa	120 X 66	XI	XI	30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■						NEW
GATE 3 LT		M4-GATEr	72 X 24	XI		**								12.0 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2 RT		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1 W.B. ON RAMP		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 1A E.B. ON RAMP		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 2A RT		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 3A LT		M4-GATEr	72 X 24	XI		**								12.0 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS
409.473 RT	WB	G90-CLOSEDa	120 X 66	XI		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 XI						592		■						NEW
409.723 RT	WB	G90-CLOSEDb	102 X 54	XI		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 XI						387		■						NEW
SITE 19		EXIT 426	PARK CITY																										
GATE 1		R11-GATE	78 X 18	XI		**								9.8 XI															LOCATION OF ROAD GATE ON ELECTRICAL PLANS

** = ENSURE SIGN IS CENTERED OVER LANE WHEN GATE ARM IS IN LOWERED POSITION

EB = EASTBOUND

WB = WESTBOUND

■ = FRANGIBLE SIGN POST BREAKAWAY DEVICE REQUIRED.

SEE ELECTRICAL PLANS FOR GATE AND FLASHER INFORMATION

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AWARD COPY

SIGN LOCATION AND SPECIFICATIONS

WB = WESTBOUND

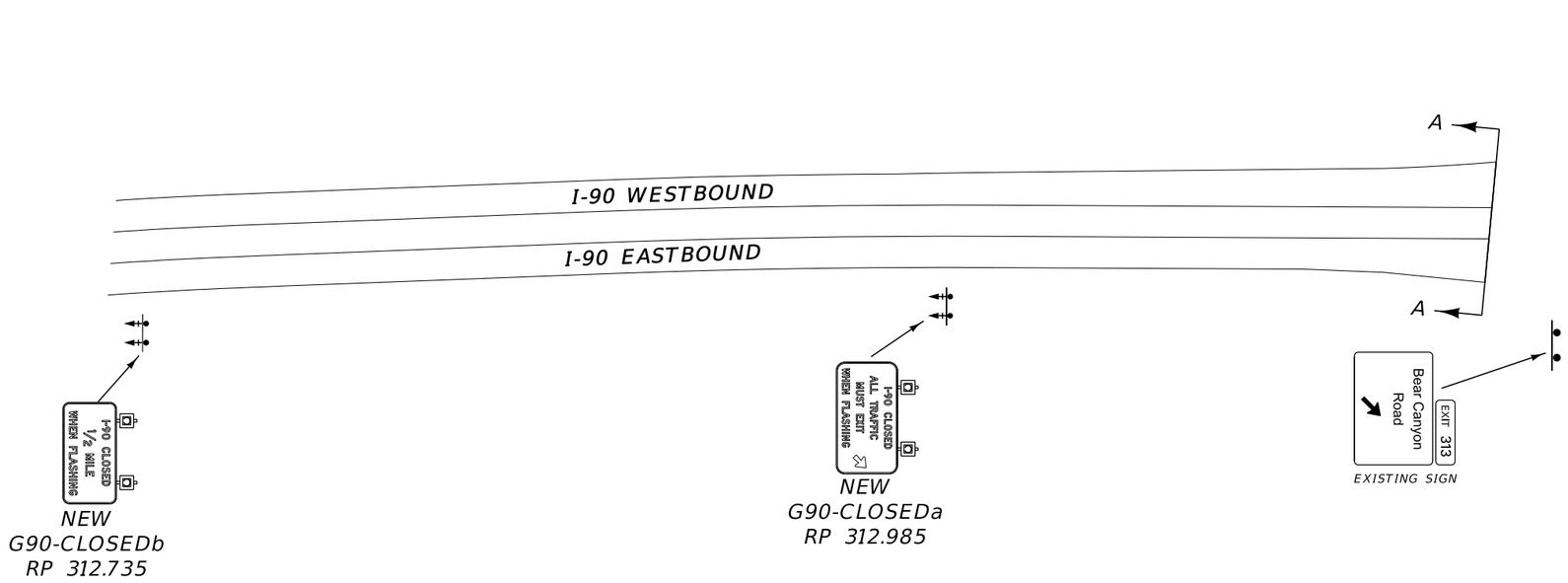
■ = FRANGIBLE SIGN POST BREAKAWAY DEVICE REQUIRED.

REF. POST		SIGN NO.	PANEL SIZE	REFL SHTG TYPE: BACK-GROUND	REFL SHTG TYPE: LEGEND	FEET: CLEARANCE	FEET: SIGN SUPPORT SPACING	TYPE OF SUPPORT	FEET: CANTILEVER	FEET: SUPPORT LENGTH (ESTIMATED)	FEET: SUPPORT LENGTH (INSTALLED)	FEET: MOUNTING HEIGHT	FEET: FOUNDATION DEPTH	SIGN PANEL (SQ. FT.): SHEET ALUMINUM	SIGN PANEL (SQ. FT.): ALUMINUM SHEET INCREMENT	SIGN PANEL (SQ. FT.): ALUMINUM SHEET OVERLAY	TIMBER POLE (LINEAR FT.): 4" TOP DIA.	TIMBER POLE (LINEAR FT.): 5" TOP DIA.	STEEL POST(LBS.): ROUND TUBULAR	STEEL POST(LBS.): SQUARE TUBULAR	STEEL POST(LBS.): STRUCTURAL STEEL	STEEL POST(LBS.): "U" POST	BREAKAWAY	SIGNS REMOVE	SIGNS RESET	GUIDE REMOVE	GUIDE RESET	REMARKS
GATE 2		R11-GATE	78 X 18	X1		**								9.8 X1														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
GATE 3		M4-GATEr	72 X 24	X1		**								12.0 X1														LOCATION OF ROAD GATE ON ELECTRICAL PLANS
427.195 RT	WB	G90-CLOSEDa	120 X 66	X1		30-0		W8X18		X= 15-11 Y= 17-0		5-0	5-6		55.0 X1						592		■					NEW
427.445 RT	WB	G90-CLOSEDb	102 X 54	X1		30-0		W4X13		X= 14-5 Y= 15-4		5-0	3-6		38.3 X1						387		■					NEW
			STILLWATER TOTALS											104.6 X1	313.9 X1						3322							
						GRAND TOTAL								321.4 X1	1199.7 X1						11121							

3	MONTANA Department of Transportation	C:\DGN\9856000sisum002.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		12/21/2022						
1		12:59:17 PM CPS - U6775	CHECK BY	NATHAN STYREN		STILLWATER COUNTY	UPN #9856000	S6

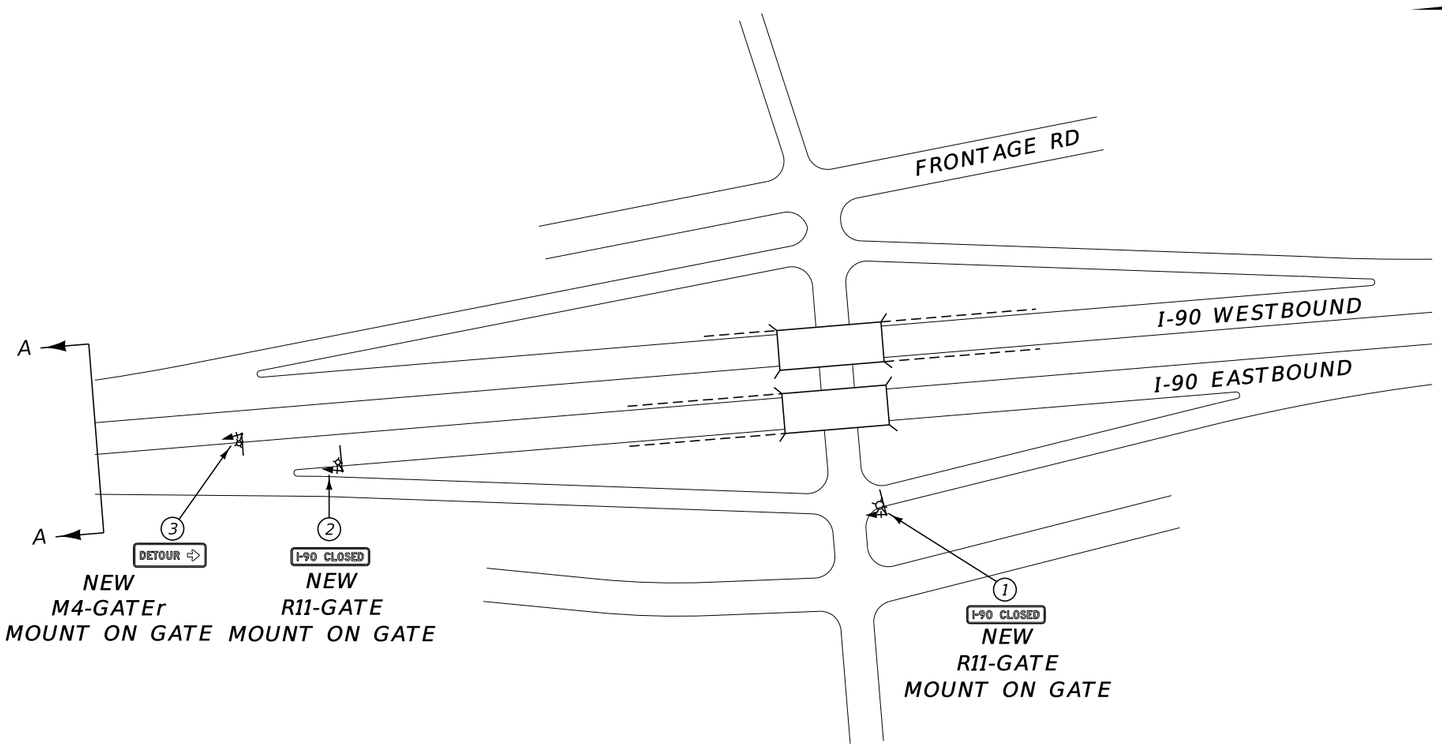
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ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

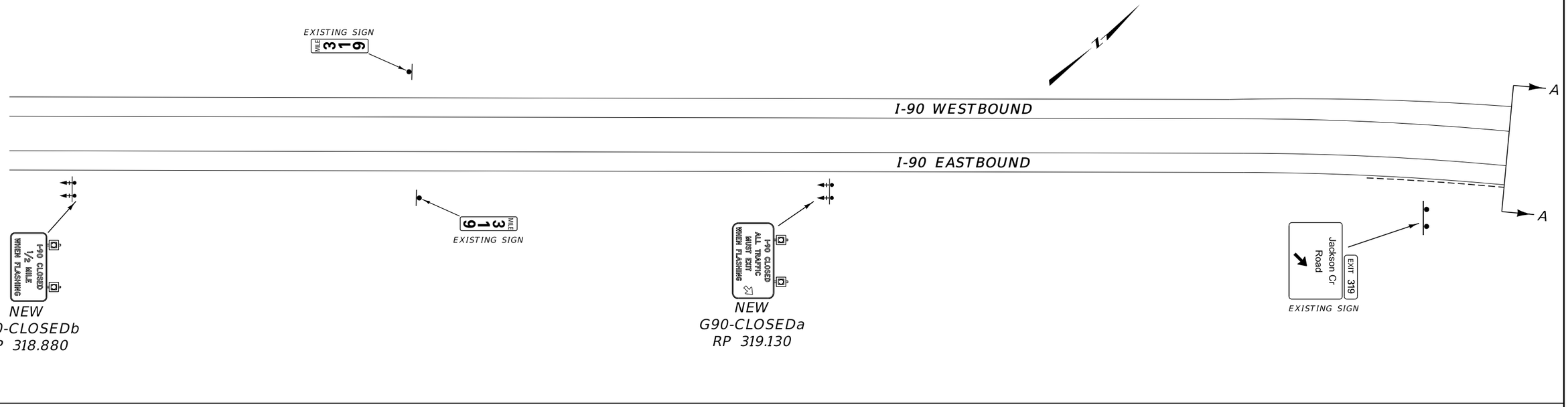


SITE 5
ROAD CLOSURE SYSTEM
EXIT 313 - BEAR CANYON
INTERCHANGE

3	MONTANA Department of Transportation	C:\DGN\9856000sipln001.dgn	DESIGN BY	LANDON SHOQUIST		I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		12/21/2022	CHECK BY	NATHAN STYREN			
1		12:59:28 PM CPS - U6775			SIGNING PLANS	UPN #9856000	S7
					GALLATIN COUNTY		

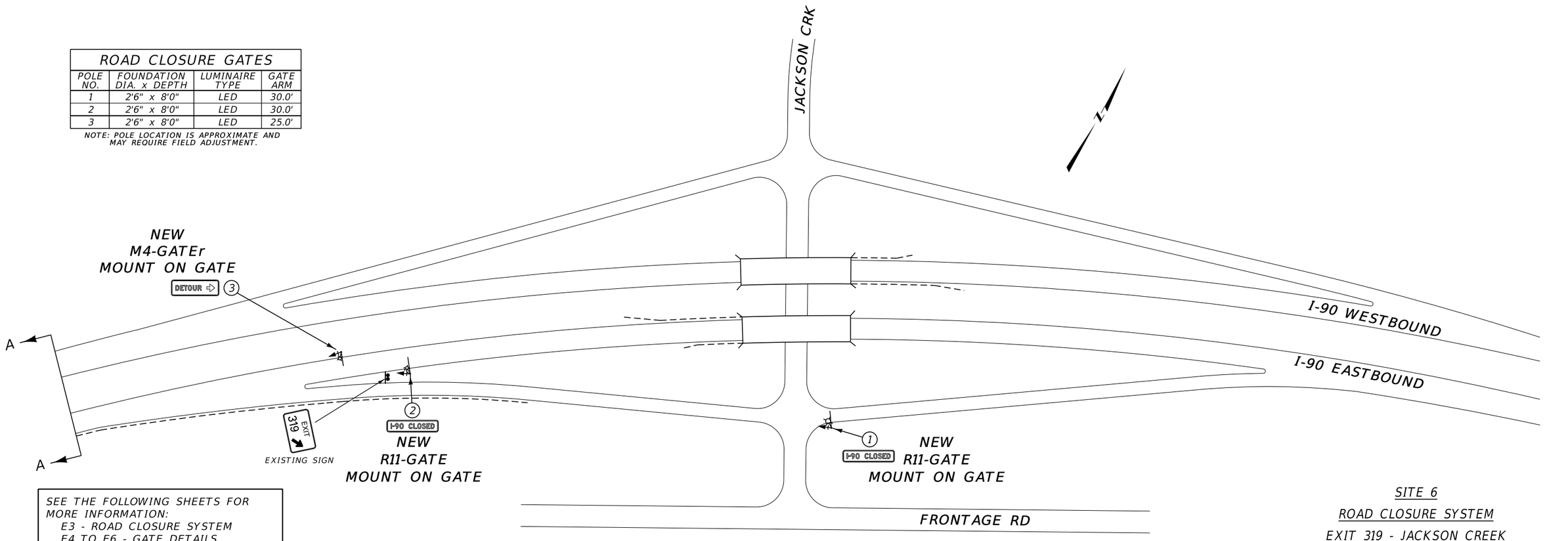
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AWARD COPY



ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.



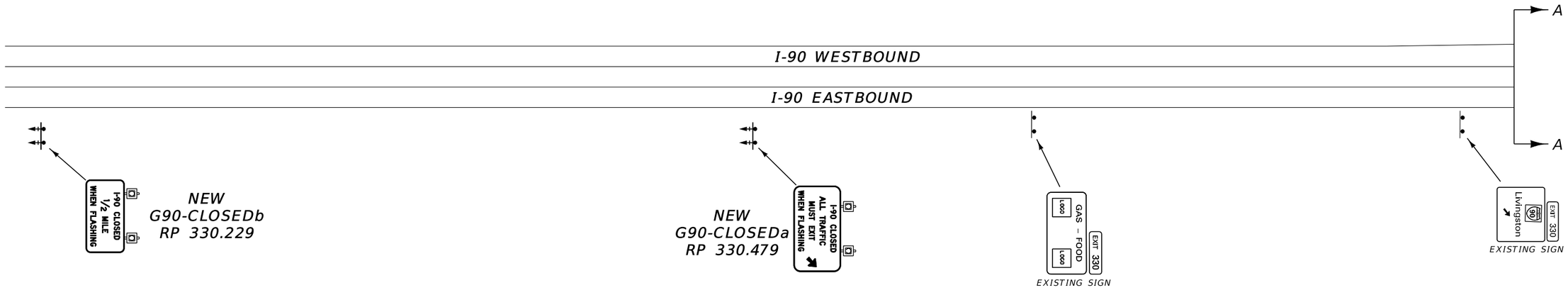
SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

SITE 6
ROAD CLOSURE SYSTEM
EXIT 319 - JACKSON CREEK INTERCHANGE

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9856000sipln001.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		12/21/2022						
1		12:59:31 PM CPS - U6775	CHECK BY	NATHAN STYREN		GALLATIN COUNTY	UPN #9856000	S8

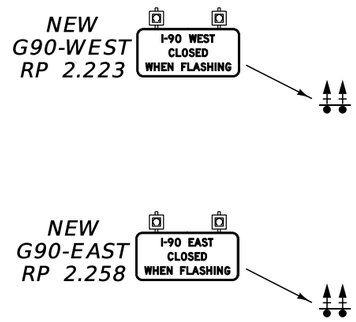
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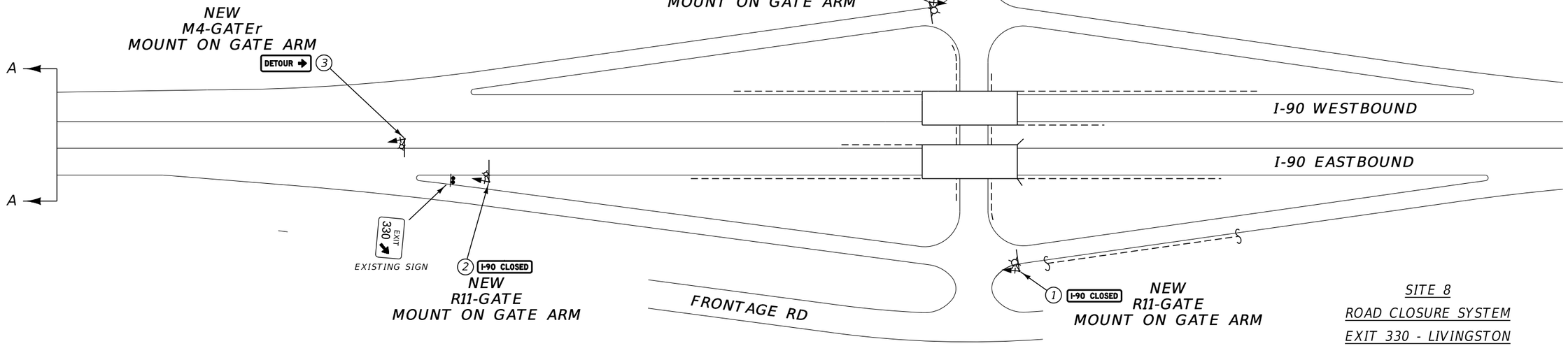
ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND	
ROAD CLOSURE GATE	



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN



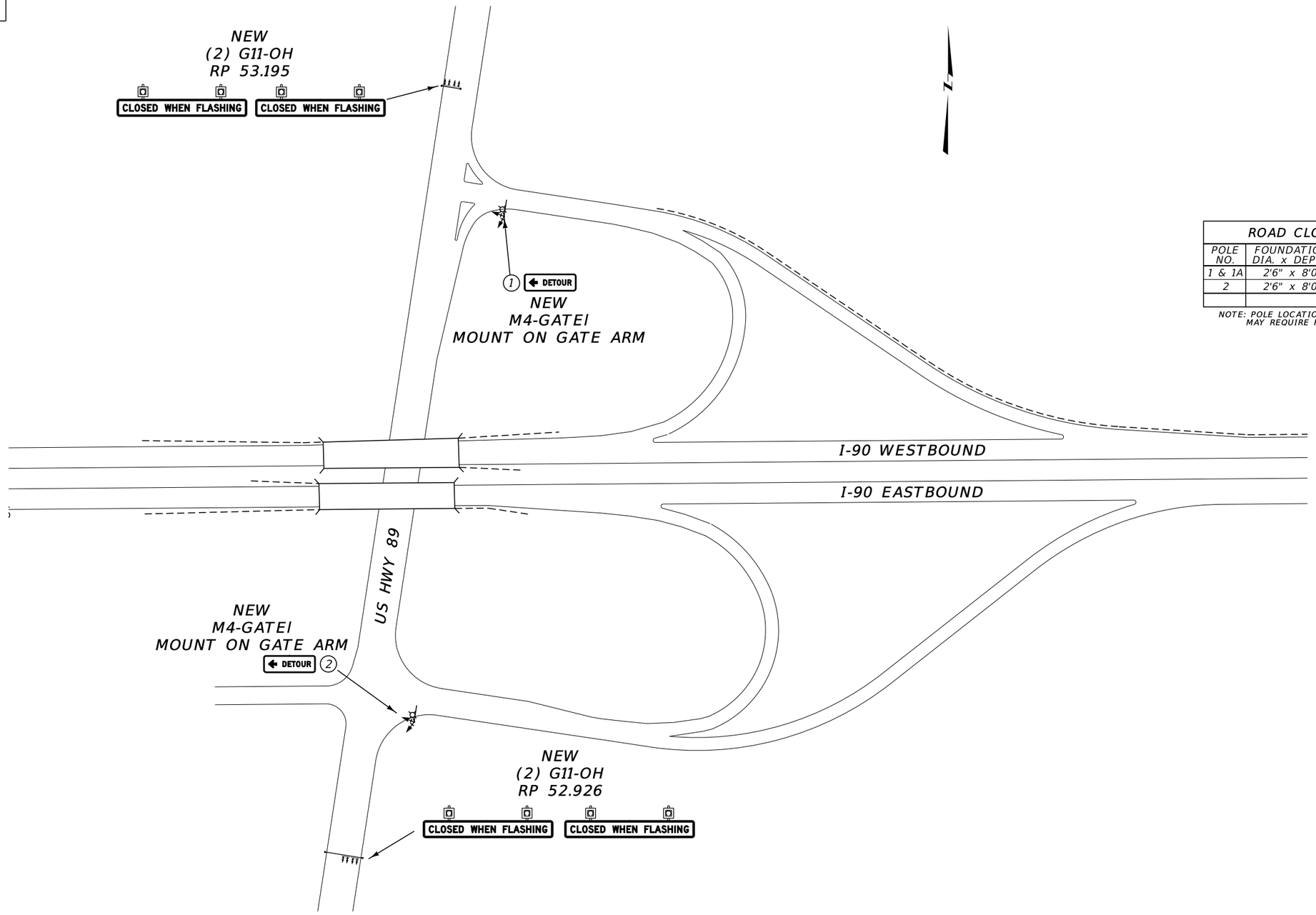
SITE 8
ROAD CLOSURE SYSTEM
EXIT 330 - LIVINGSTON
WEST INTERCHANGE

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9856000sipln002.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
2		12/21/2022	CHECK BY	NATHAN STYREN		PARK COUNTY	UPN #9856000	S9
		12:59:42 PM CPS – U677						

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ELECTRICAL LEGEND
ROAD CLOSURE GATE



ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

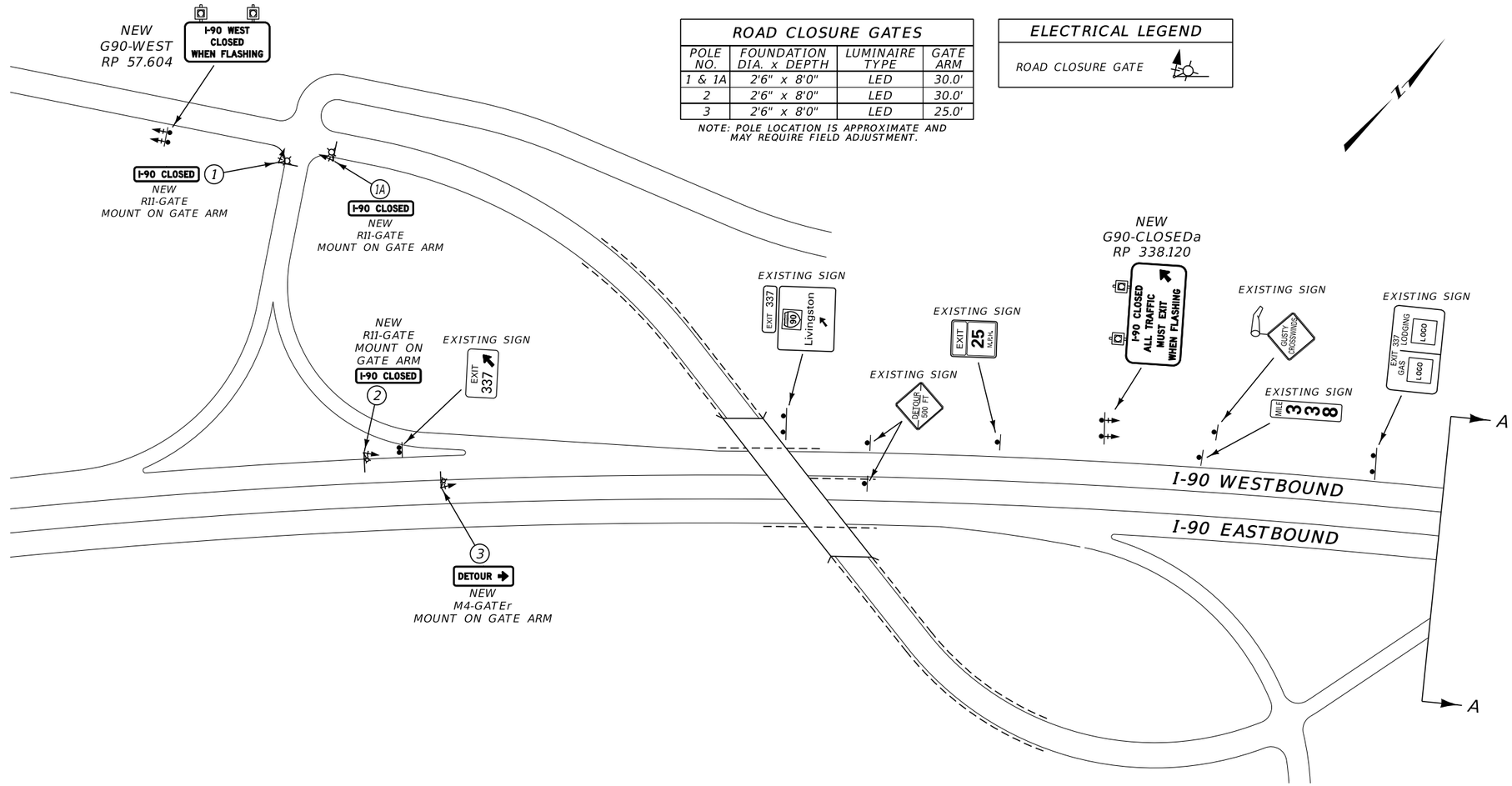
SITE 9
ROAD CLOSURE SYSTEM
EXIT 333 - LIVINGSTON
PARK ST. INTERCHANGE

NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln002.dgn 12/21/2022 12:59:46 PM CPS - U677	DESIGN BY CHECK BY	LANDON SHOQUIST NATHAN STYREN		SIGNING PLANS PARK COUNTY		I-90 INCIDENT MANAGEMENT UPN #9856000	CRSII-IM 90-5(85)274 S10

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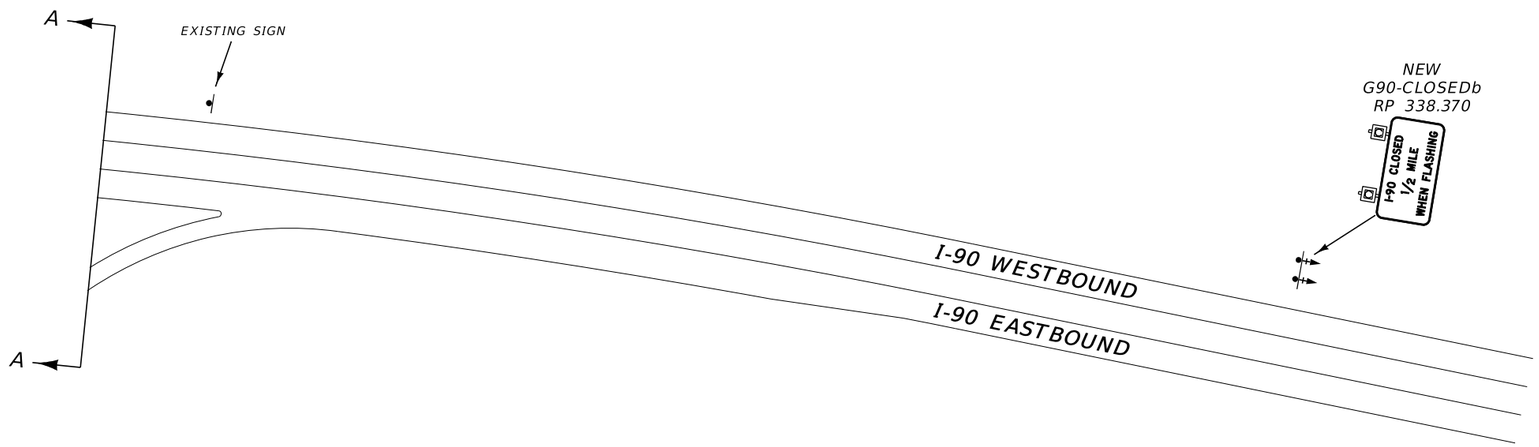
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ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND	
ROAD CLOSURE GATE	



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

SITE 11

ROAD CLOSURE SYSTEM

EXIT 337 - LIVINGSTON

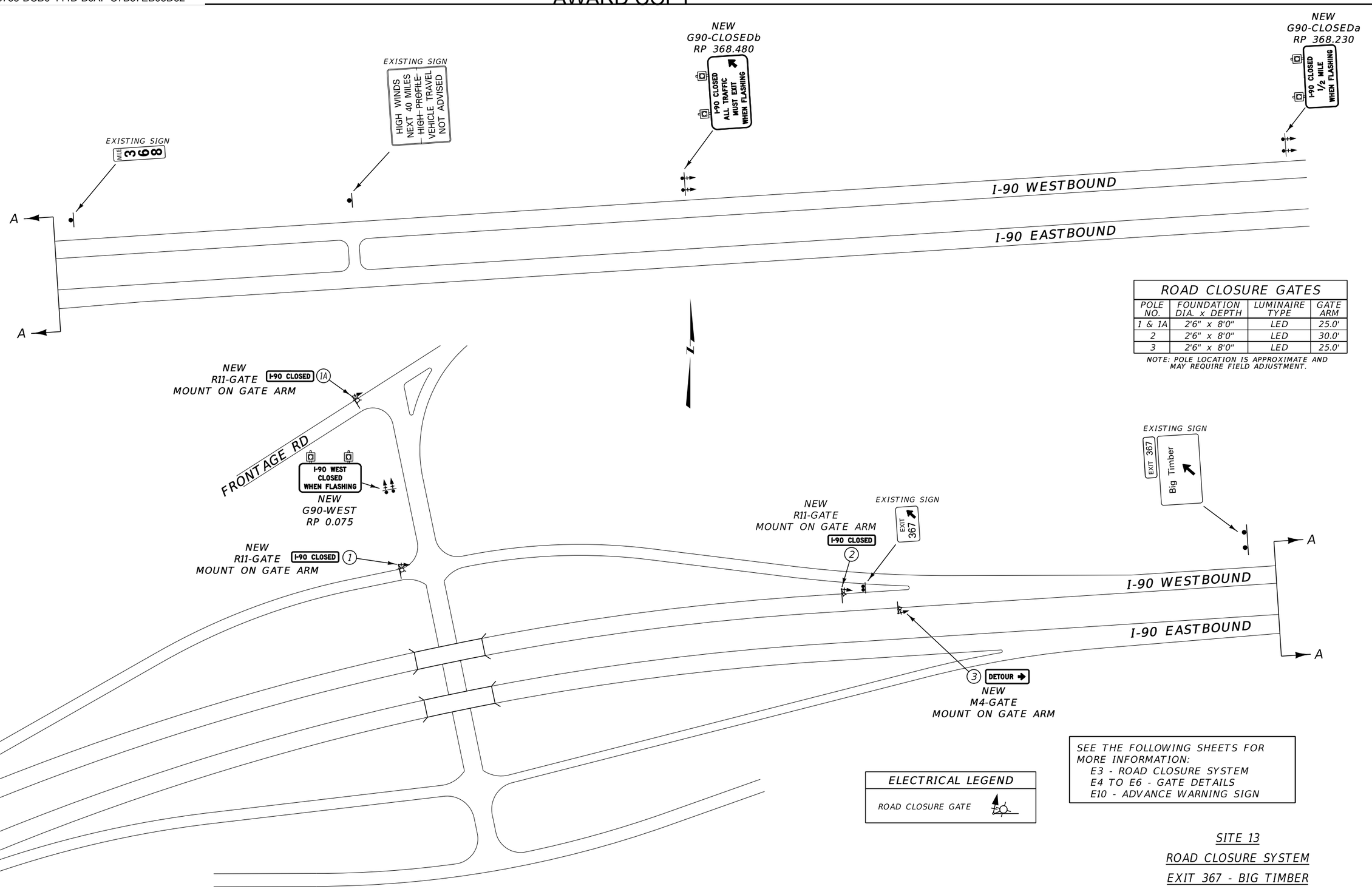
EAST INTERCHANGE

NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln003.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
		12/21/2022						
		12:59:55 PM CPS - U677	CHECK BY	NATHAN STYREN		PARK COUNTY	UPN #9856000	S11

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ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	25.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND

ROAD CLOSURE GATE

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

SITE 13

ROAD CLOSURE SYSTEM

EXIT 367 - BIG TIMBER

(WEST) INTERCHANGE

NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln004.dgn 12/21/2022 1:00:06 PM CPS - U677	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS		I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
			CHECK BY	NATHAN STYREN		SWEET GRASS COUNTY		UPN #9856000	S12

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EXISTING SIGN
MILE 370

I-90 WESTBOUND

I-90 EASTBOUND

A

A

MILE 370
EXISTING SIGN

I-90 CLOSED
1/2 MILE
WHEN FLASHING
NEW
G90-CLOSEDb
RP 369.955

I-90 CLOSED
ALL TRAFFIC
MUST EXIT
WHEN FLASHING
NEW
G90-CLOSEDa
RP 370.205

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
E3 - ROAD CLOSURE SYSTEM
E4 TO E6 - GATE DETAILS
E10 - ADVANCE WARNING SIGN

ELECTRICAL LEGEND

ROAD CLOSURE GATE

NEW
M4-GATEr
MOUNT ON GATE ARM
DETOUR
3

A

A

I-90 WESTBOUND

I-90 EASTBOUND

Big Timber
EXIT 370
EXISTING SIGN

EXIT 370
EXISTING SIGN

2
I-90 CLOSED
NEW
R11-GATE
MOUNT ON GATE

1
I-90 CLOSED
NEW
R11-GATE
MOUNT ON GATE ARM

I-90 EAST
CLOSED
WHEN FLASHING
NEW
G90-EAST
HWY 10

NEW
R11-GATE
MOUNT ON GATE
1A
I-90 CLOSED

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	25.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

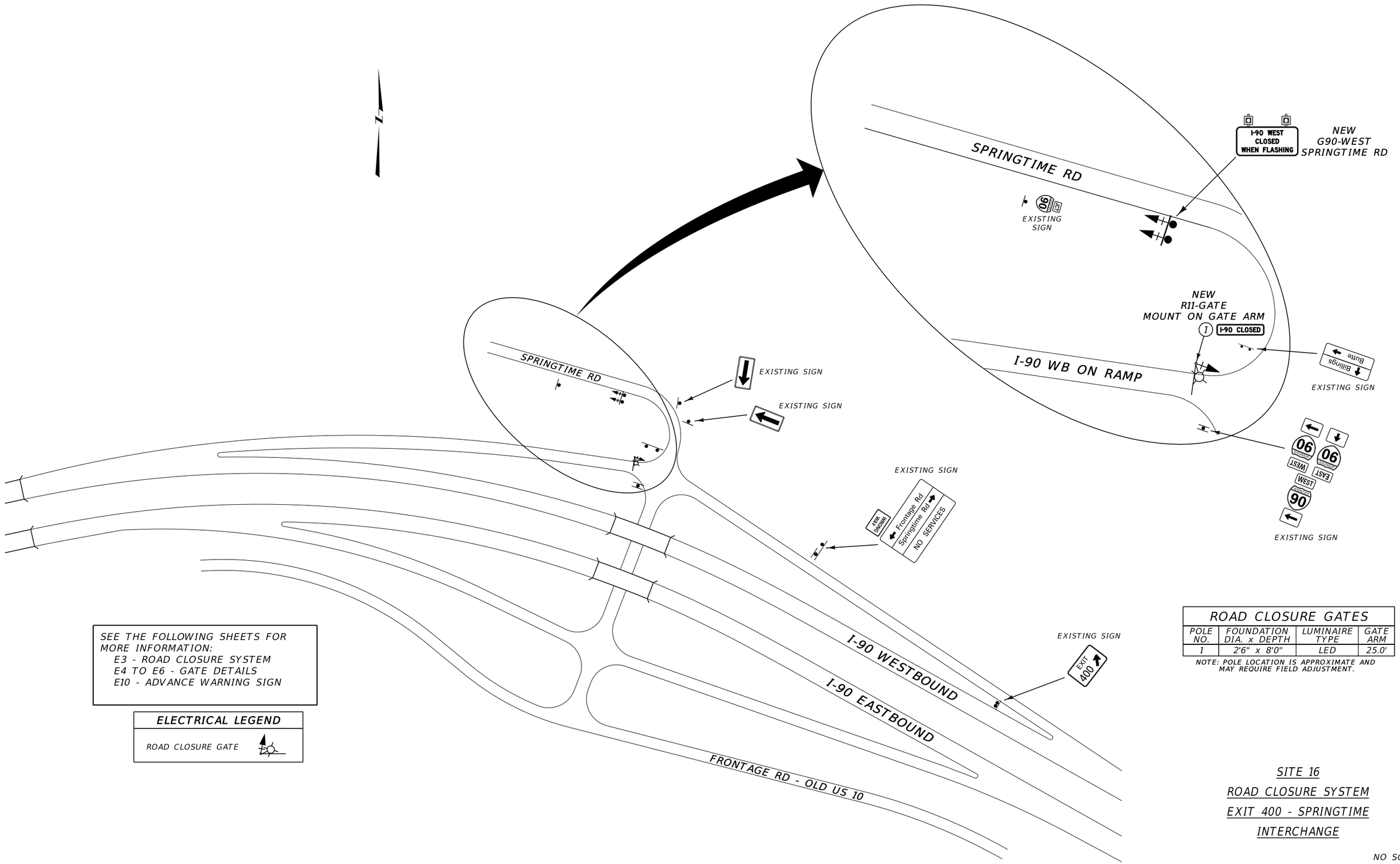
SITE 15
ROAD CLOSURE SYSTEM
EXIT 370 - BIG TIMBER
EAST INTERCHANGE

NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln005.dgn 12/21/2022 1:00:16 PM CPS - U677	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS SWEET GRASS COUNTY		I-90 INCIDENT MANAGEMENT UPN #9856000	CRSII-IM 90-5(85)274 S13
			CHECK BY	NATHAN STYREN					

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SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

ELECTRICAL LEGEND

ROAD CLOSURE GATE	

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

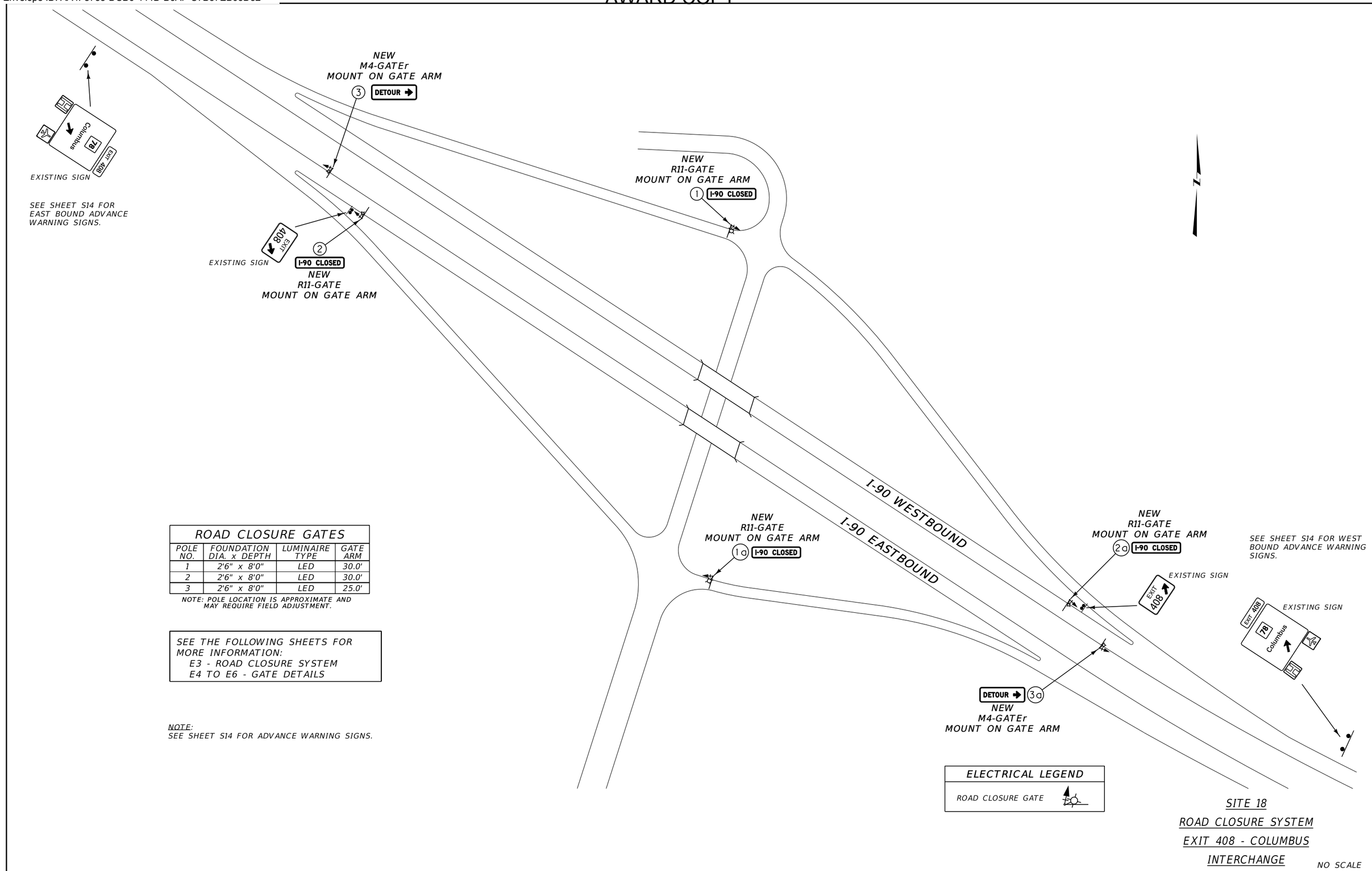
SITE 16
ROAD CLOSURE SYSTEM
EXIT 400 - SPRINGTIME INTERCHANGE

NO SCALE

2 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln005.dgn 12/21/2022 1:00:20 PM CPS - U677	DESIGN BY CHECK BY	LANDON SHOQUIST NATHAN STYREN	SIGNING PLANS STILLWATER COUNTY	I-90 INCIDENT MANAGEMENT UPN #9856000	CRSII-IM 90-5(85)274 S14

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ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS

NOTE:
SEE SHEET S14 FOR ADVANCE WARNING SIGNS.

ELECTRICAL LEGEND	
ROAD CLOSURE GATE	

SITE 18
ROAD CLOSURE SYSTEM
EXIT 408 - COLUMBUS
INTERCHANGE

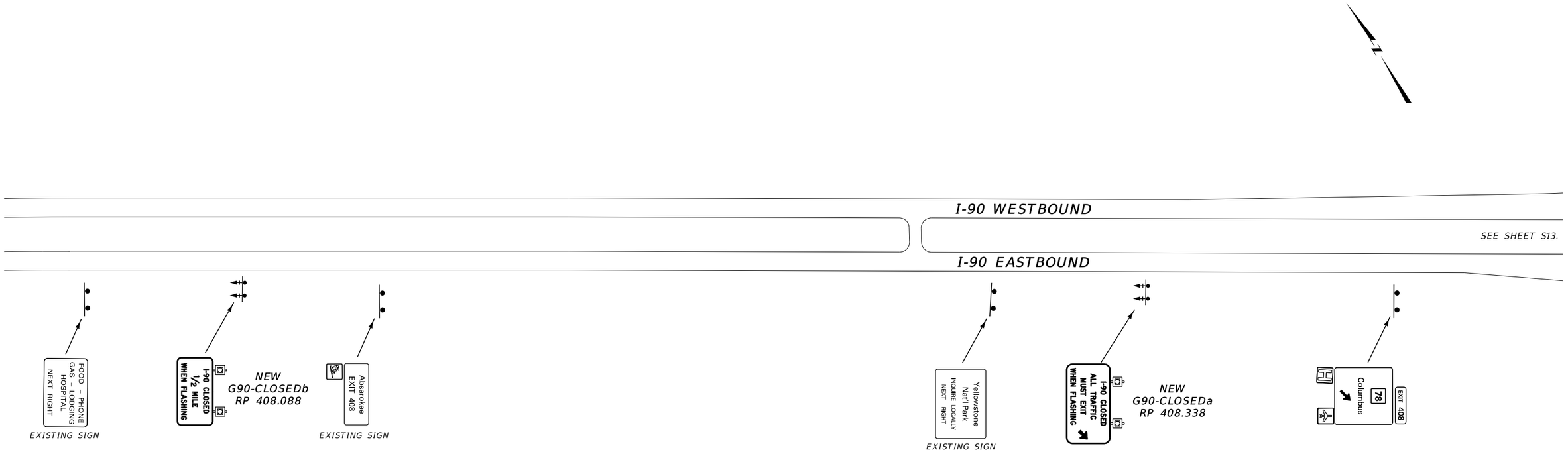
NO SCALE

3 / 1	MONTANA Department of Transportation	C:\DGN\9856000sipln006.dgn 12/21/2022 1:00:31 PM CPS - U677	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS		I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
			CHECK BY	NATHAN STYREN		STILLWATER COUNTY		UPN #9856000	S15

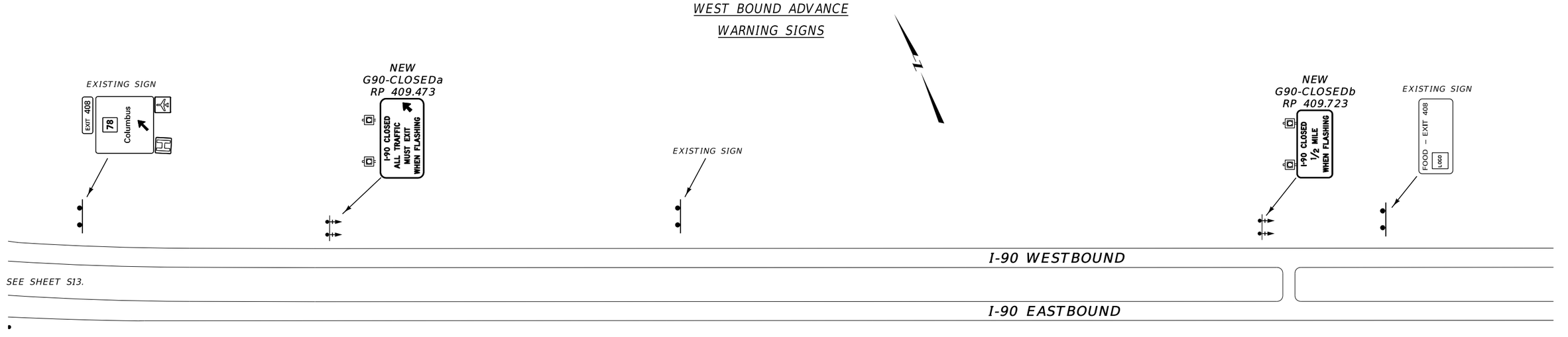
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AWARD COPY

EAST BOUND ADVANCE WARNING SIGNS



WEST BOUND ADVANCE WARNING SIGNS



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
E10 - ADVANCE WARNING SIGN

SITE 18 (CONTINUED) ROAD CLOSURE SYSTEM EXIT 408 - COLUMBUS INTERCHANGE

NO SCALE

2	MONTANA Department of Transportation	C:\DGN\9856000sipln006.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
1		12/21/2022	CHECK BY	NATHAN STYREN		STILLWATER COUNTY	UPN #9856000	S16
		1:00:34 PM CPS - U677S						

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

ROAD CLOSURE GATES			
POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND	
ROAD CLOSURE GATE	

NEW
R11-GATE
MOUNT ON GATE ARM
I-90 CLOSED
1

NEW
R11-GATE
MOUNT ON GATE ARM
I-90 CLOSED
2

EXISTING SIGN
EXIT 426

DETOUR
3

NEW
M4-GATEr
MOUNT ON GATE ARM

I-90 WESTBOUND

I-90 EASTBOUND

A

EXISTING SIGN
EXIT 426
Park City

EXISTING SIGN
MILE 427

A

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

NEW
G90-CLOSEDa
RP 427.195
I-90 CLOSED
ALL TRAFFIC
MUST EXIT
WHEN FLASHING

NEW
G90-CLOSEDb
RP 427.445
I-90 CLOSED
1/2 MILE
WHEN FLASHING

I-90 WESTBOUND

I-90 EASTBOUND

EXISTING SIGN
MILE 424

SITE 19
ROAD CLOSURE SYSTEM
EXIT 426 - PARK CITY
INTERCHANGE

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9856000sipln007.dgn	DESIGN BY	LANDON SHOQUIST		SIGNING PLANS	I-90 INCIDENT MANAGEMENT	CRSII-IM 90-5(85)274
2		12/21/2022	CHECK BY	NATHAN STYREN		STILLWATER COUNTY	UPN #9856000	SI7
		1:00:45 PM CPS - U677						

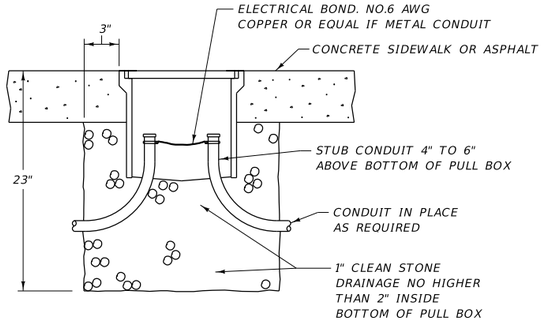
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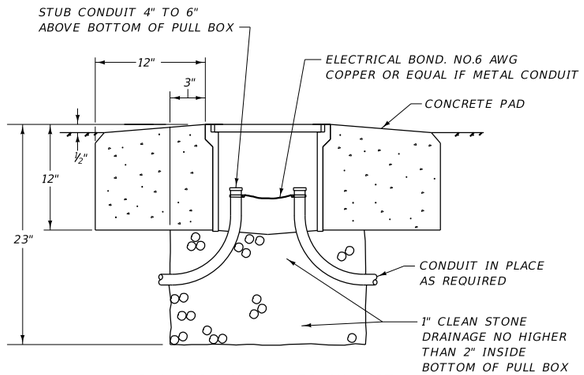
ELECTRICAL QUANTITY SUMMARY

ITEM NO.	MATERIAL	UNIT	TOTAL	1 VMS - RP 273.7 WEST OF EXIT 274 (ENNIS/HELENA)	2 VMS - RP 275.9 EAST OF EXIT 274 (ENNIS/HELENA)	3 VMS - RP 299.0 EAST OF BELGRADE INTERCHANGE	4 VMS - RP 302.0 EAST OF EAST BELGRADE INTERCHANGE	5 ROAD CLOSURE SYSTEM EXIT 313 BEAR CANYON INTERCHANGE	6 ROAD CLOSURE SYSTEM EXIT 319 JACKSON CREEK INTERCHANGE	7 VMS - RP 324.2 WEST OF EXIT 324 (RANCH ACCESS)	8 ROAD CLOSURE SYSTEM EXIT 330 LIVINGSTON WEST INTERCHANGE	9 ROAD CLOSURE SYSTEM EXIT 333 LIVINGSTON PARK ST. INTERCHANGE	10 RWIS SITE (EAST OF LIVINGSTON)	11 ROAD CLOSURE SYSTEM EXIT 337 LIVINGSTON EAST INTERCHANGE	12 VMS - RP 341.4 EAST OF WHITE SULPHUR SPRINGS INTERCHANGE EXIT 340	13 ROAD CLOSURE SYSTEM EXIT 367 BIG TIMBER WEST INTERCHANGE	14 VMS - RP 369.0 EAST OF BIG TIMBER WEST INTERCHANGE EXIT 367	15 ROAD CLOSURE SYSTEM EXIT 370 BIG TIMBER EAST INTERCHANGE	16 ROAD CLOSURE SYSTEM EXIT 400 SPRINGTIME INTERCHANGE	17 VMS - RP 407.6 WEST OF COLUMBUS INTERCHANGE EXIT 408	18 ROAD CLOSURE SYSTEM EXIT 408 COLUMBUS INTERCHANGE	19 ROAD CLOSURE SYSTEM EXIT 426 PARK CITY INTERCHANGE	20 CONCRETE PAD - RP 427.7 EAST OF EXIT 426 (FOR PORTABLE VMS)	21 VMS - RP 435.0 EAST OF LAUREL INTERCHANGE EXIT 434	22 VMS - RP 454.2 WEST OF JOHNSON LANE INTERCHANGE EXIT 455	23 VMS - RP 455.8 EAST OF JOHNSON LANE INTERCHANGE EXIT 455
551 020 030	CONCRETE - CLASS GENERAL	CU YD	3.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-
616 323 114	CONDUIT - STEEL 1 1/2 IN RIGID	LN FT	210.0	-	-	-	-	-	-	-	-	210.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
616 343 914	CONDUIT - PLASTIC 1 1/2 IN	LN FT	1,450.0	-	-	-	-	-	60.0	-	110.0	-	800.0	90.0	-	90.0	-	90.0	30.0	-	120.0	60.0	-	-	-	-
616 343 920	CONDUIT - PLASTIC 2 IN	LN FT	20,312.0	504.0	316.0	240.0	130.0	946.0	1,800.0	260.0	2,200.0	-	1050.0	2,160.0	280.0	1,900.0	356.0	2,600.0	500.0	90.0	2,900.0	1,700.0	-	200.0	100.0	80.0
616 783 007	PULL BOX - COMPOSITE TYPE 2	EACH	110	3	2	2	2	6	8	2	10	9	3	8	2	10	2	13	2	1	13	8	-	2	1	1
617 000 000	FOUNDATION - CONCRETE	CU YD	68.0	-	-	-	-	6.0	6.0	-	8.5	3.0	-	8.0	-	8.0	-	8.0	2.5	-	12.0	6.0	-	-	-	-
617 000 050	POLES - TREATED WOOD CLASS 4	LN FT	450.0	40.0	40.0	30.0	-	-	30.0	30.0	-	-	30.0	-	30.0	-	30.0	-	30.0	30.0	-	-	-	60.0	30.0	40.0
617 000 060	GATE - ROAD CLOSURE	EACH	34	-	-	-	-	3	3	-	4	2	-	4	-	4	-	4	1	-	6	3	-	-	-	-
617 033 214	CABLE - COPPER 3AWG14-600 V	LN FT	628.0	-	-	-	-	-	55.0	-	210.0	-	-	-	-	85.0	-	80.0	28.0	-	115.0	55.0	-	-	-	-
617 033 314	CABLE - COPPER 5AWG14-600 V	LN FT	21,760.0	-	-	-	-	1,820.0	2,490.0	-	3,600.0	2,950.0	-	-	-	2,050.0	-	3,400.0	490.0	-	3,260.0	1,700.0	-	-	-	-
617 123 104	CONDUCTOR - COPPER AWG4-600 V	LN FT	10,219.0	2208.0	1418.0	915.0	648.0	-	-	900.0	-	-	-	-	1,080.0	-	1540.0	-	-	270.0	-	-	-	650.0	340.0	250.0
617 123 108	CONDUCTOR - COPPER AWG8-600 V	LN FT	9,860.0	1602.0	976.0	680.0	462.0	-	-	700.0	-	-	2,400.0	-	800.0	-	1100.0	-	-	200.0	-	-	-	500.0	250.0	190.0
617 123 110	CONDUCTOR - COPPER AWG10-600 V	LN FT	48,258.0	536.0	326.0	225.0	154.0	3,306.0	5,410.0	200.0	6,500.0	1,840.0	-	-	270.0	5,700.0	366.0	7,900.0	1,440.0	70.0	8,700.0	5,000.0	-	170.0	85.0	60.0
617 303 300	HIGH EFFICACY LUMINAIRE LED	EACH	34	-	-	-	-	3	3	-	4	2	-	4	-	4	-	4	1	-	6	3	-	-	-	-
617 333 000	SERV ASSEMBLY-MODIFY	EACH	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
617 333 100	SERV ASSEMBLY	EACH	24	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	3	1	-	2	1	1
617 483 110	SIG-TRAF 1 COLOR-1 WAY 12	EACH	37	-	-	-	-	2	3	-	4	6	-	4	-	4	-	4	1	-	6	3	-	-	-	-
617 523 010	SOL SIG-TRAF 1 COLOR-1 WAY 12	EACH	48	-	-	-	-	4	4	-	8	-	-	6	-	6	-	6	2	-	8	4	-	-	-	-
617 673 200	SIG STANDARD TYPE 1-200	EACH	24	-	-	-	-	2	2	-	4	-	-	3	-	3	-	3	1	-	4	2	-	-	-	-
617 781 000	REMOVE AND SALVAGE MISC ELECTRICAL	LS	1.0	-	-	-	-	-	-	-	0.1	0.1	-	0.3	-	0.1	-	0.1	-	-	0.1	0.1	-	-	0.1	-
617 903 459	BLANKOUT SIGN	EACH	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
617 903 475	VARIABLE MESSAGE SIGN COLOR-HALF	EACH	5	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1
617 903 480	VARIABLE MESSAGE SIGN COLOR-FULL	EACH	12	2	2	-	2	-	-	2	-	-	-	-	1	-	2	-	-	1	-	-	-	-	-	-
619 010 510	OVERHEAD STRUCTURE/METAL	EACH	7	1	1	-	1	-	-	1	-	-	-	-	1	-	1	-	-	1	-	-	-	-	-	-
619 010 521	OVERHEAD STR/METAL - CANTILEVER	EACH	6	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	1	1

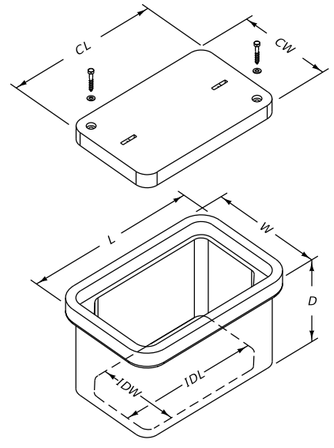
QUANTITY SUMMARY
NO SCALE



PULL BOX INSTALLED IN A SIDEWALK OR ASPHALT



PULL BOX INSTALLED IN DIRT



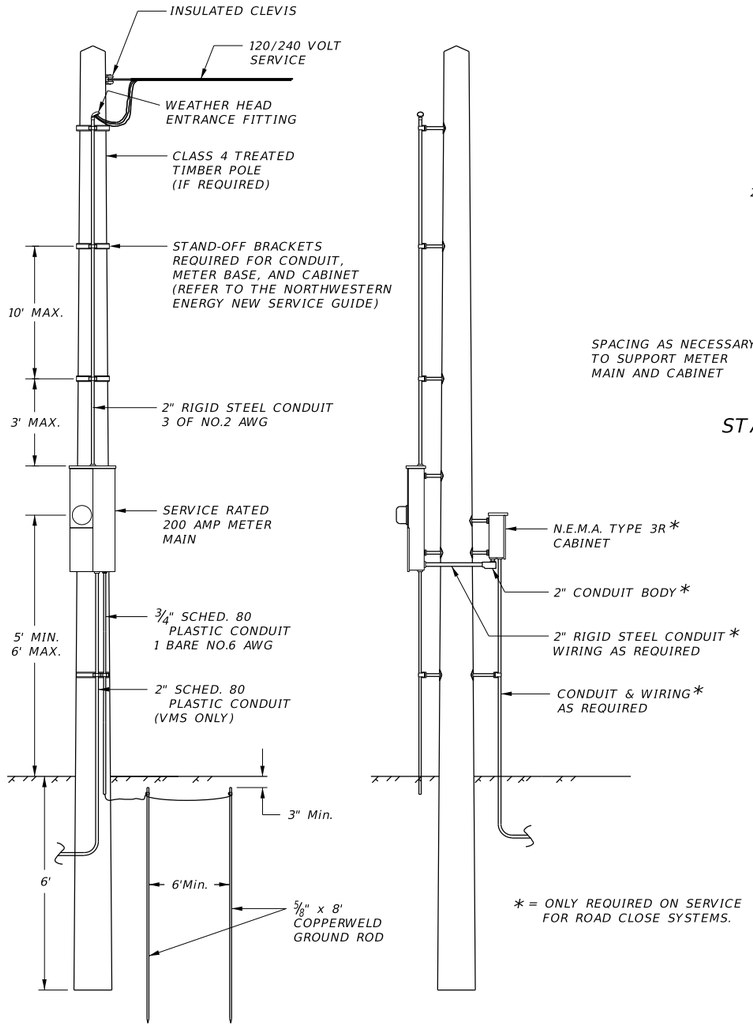
PULL BOX - COMPOSITE MINIMUM DIMENSIONS		
TYPE 1	TYPE 2	TYPE 3
L = 20"	L = 25"	L = 32"
W = 13"	W = 15"	W = 19"
D = 12"	D = 12"	D = 12"
I D L = 17"	I D L = 21"	I D L = 28"
I D W = 10"	I D W = 11"	I D W = 15"
C L = 18"	C L = 23"	C L = 30"
C W = 11"	C W = 13"	C W = 17"

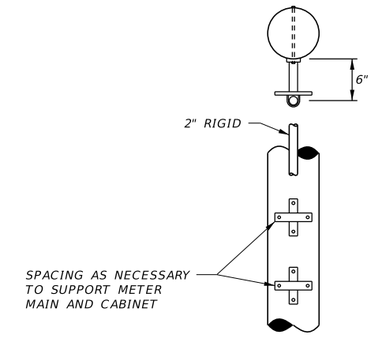
PULL BOX-COMPOSITE
TYPE 1,2 & 3
NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000eldet001.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT / IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000 / SHEET E1
		12:14:13 PM CPS - U2948	CHECKED BY				

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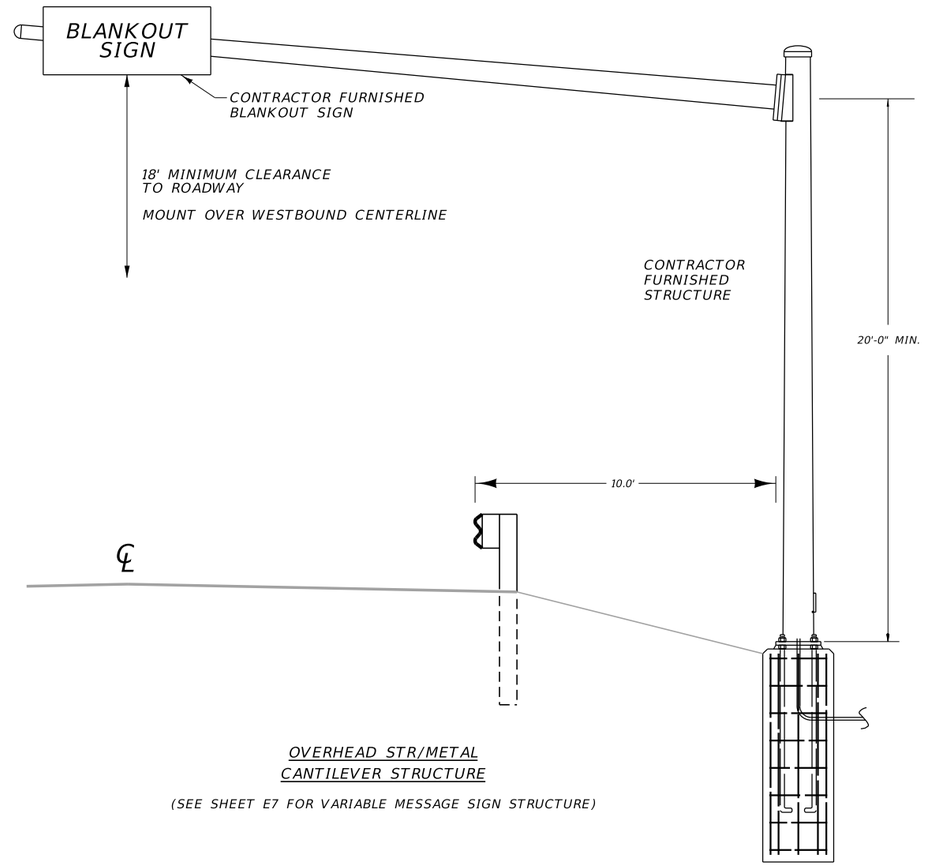


STAND-OFF BRACKETS

* = ONLY REQUIRED ON SERVICE FOR ROAD CLOSE SYSTEMS.

SERVICE ASSEMBLY DETAIL
WOOD POLE
NO SCALE

(SIGN STRUCTURE SHOWN IS FOR INFORMATION ONLY. CONTRACTOR TO DETERMINE FINAL DESIGN.)



OVERHEAD STR/METAL CANTILEVER STRUCTURE

(SEE SHEET E7 FOR VARIABLE MESSAGE SIGN STRUCTURE)

FOUNDATION DESIGN BY CONTRACTOR

NOTES

MOUNT ALL SIGNS LEVEL HORIZONTALLY ON THE SIGN STRUCTURE.

INCLUDE MOUNTING HARDWARE IN THE UNIT BID PRICE FOR THE SIGN STRUCTURES. THIS INCLUDES CONDUIT FOR INSTALLATION OF WIRING BETWEEN STRUCTURES AND SIGNS.

DESIGN, FABRICATE AND INSPECT STRUCTURE IN ACCORDANCE WITH THE 2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, LATEST INTERIMS.

DESIGN PARAMETERS:

DESIGN WIND: 700 MRI BASIC WIND SPEED (115 MPH WIND SPEED)

GUST FACTOR EFFECT: G = 1.14

HEIGHT AND EXPOSURE FACTOR: Kz
WHERE α = 9.5 AND Zg = 900 FT. FOR EXPOSURE C

DEFLECTION:
CANTILEVERED SIGN SUPPORTS: FREE END OF ARM MAXIMUM DEFLECTION = 8" HORIZONTAL SUPPORTS FOR SIGN BRIDGE STRUCTURES MAXIMUM DEFLECTION: 8"

DESIGN AREA: DESIGN AREA WITH RESPECT TO MAXIMUM WIND LOAD IS PERPENDICULAR TO THE STRUCTURE.

DESIGN WEIGHT: DEAD LOAD AND ICE

FATIGUE CATEGORY: 1

PROVIDE ANCHOR RODS CONFORMING TO ASTM F1554 OR EQUAL, THREAD AND GALVANIZE THE TOP END 12 INCHES MIN.

INCLUDE GALLOPING, TRUCK INDUCED GUSTS (USE POSTED SPEED LIMIT) AND NATURAL WIND GUSTS.

WELDING PROCEDURES, SYMBOLS, BASE METAL SPECIFICATIONS & GRADES MUST BE CALLED OUT PRIOR TO FABRICATION OR APPROVAL.

GALVANIZE POLES AND ARMS TO ASTM DESIGNATION : A123.

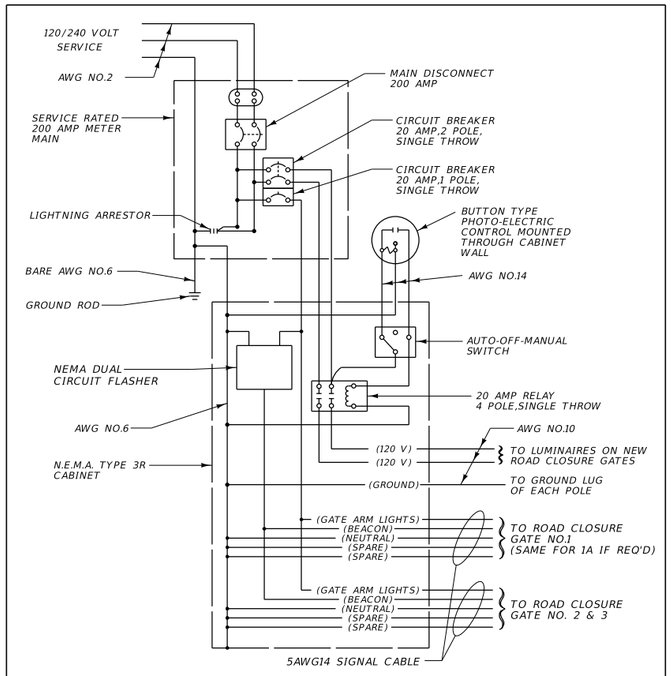
GALVANIZE ACCESSORIES TO ASTM DESIGNATION : A153.

CONTRACTOR TO DETERMINE FOUNDATION SIZE BASED ON R/W RESTRICTIONS, DESIGN LOADS AND SOILS DATA.

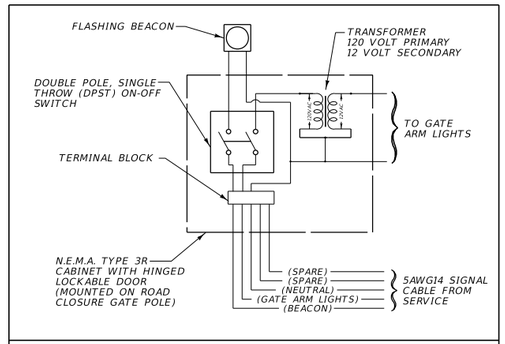
BLANKOUT SIGN
STRUCTURE
NO SCALE

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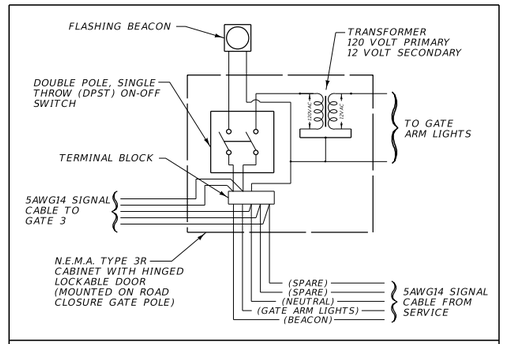
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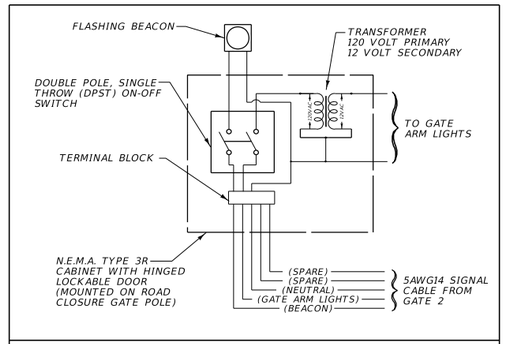
TYPICAL SERVICE WIRING DIAGRAM



WIRING DIAGRAM - ROAD CLOSURE GATE 1 & 1A



WIRING DIAGRAM - ROAD CLOSURE GATE 2

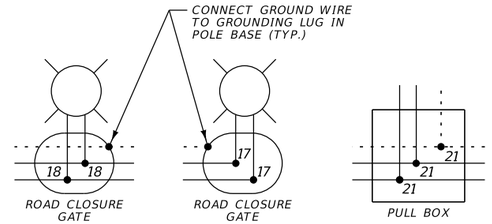


WIRING DIAGRAM - ROAD CLOSURE GATE 3

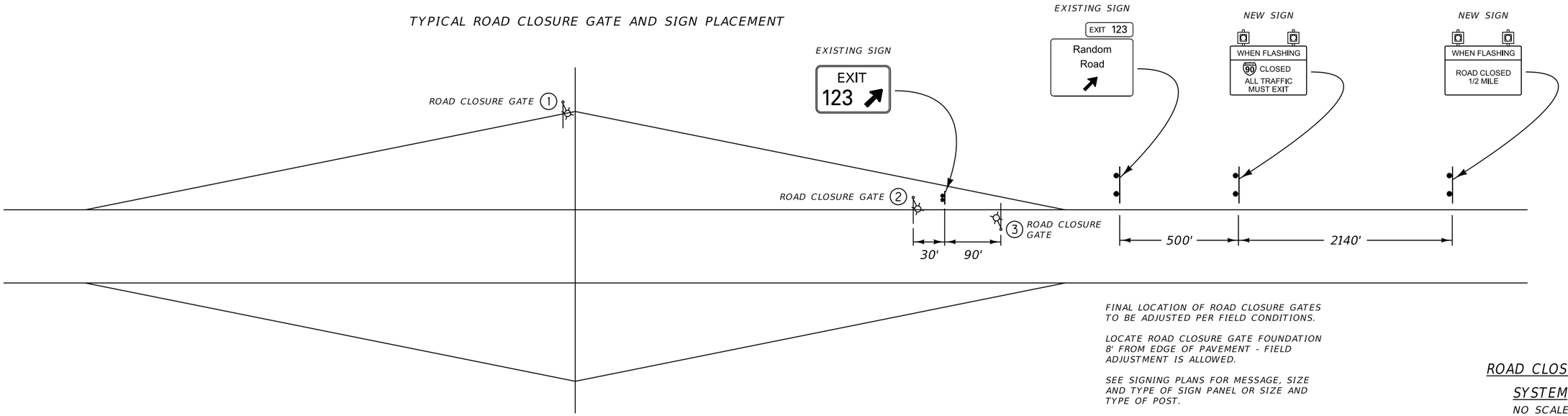
WATERTIGHT CONNECTORS

IDENTITY NO.	DESCRIPTIVE SYMBOL & WIRE SIZES	
17	10 — 10	TYPES 17 FUSED BREAKAWAY
18	10 — 10 10	TYPES 18 FUSED BREAKAWAY
21	VARIES — VARIES VARIES	TYPE 21 COPPER SPLIT BOLT - MAKE WATERTIGHT USING SELF ADHERING MASTIC

TYPICAL WATERTIGHT CONNECTOR APPLICATION



TYPICAL ROAD CLOSURE GATE AND SIGN PLACEMENT



FINAL LOCATION OF ROAD CLOSURE GATES TO BE ADJUSTED PER FIELD CONDITIONS.

LOCATE ROAD CLOSURE GATE FOUNDATION 8' FROM EDGE OF PAVEMENT - FIELD ADJUSTMENT IS ALLOWED.

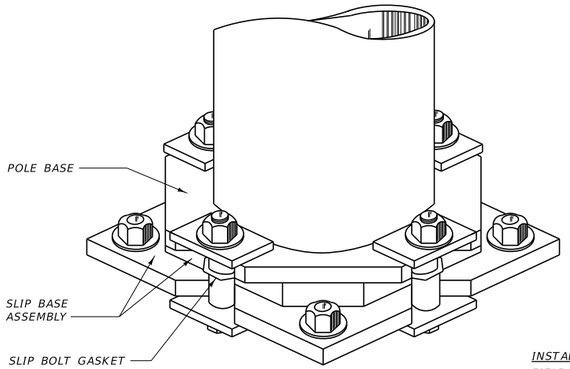
SEE SIGNING PLANS FOR MESSAGE, SIZE AND TYPE OF SIGN PANEL OR SIZE AND TYPE OF POST.

ROAD CLOSURE SYSTEM
NO SCALE

2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000eldet001.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT / IM 90-5(85)274
1		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000 / SHEET E3
		12:14:20 PM CPS - U2943	CHECKED BY				

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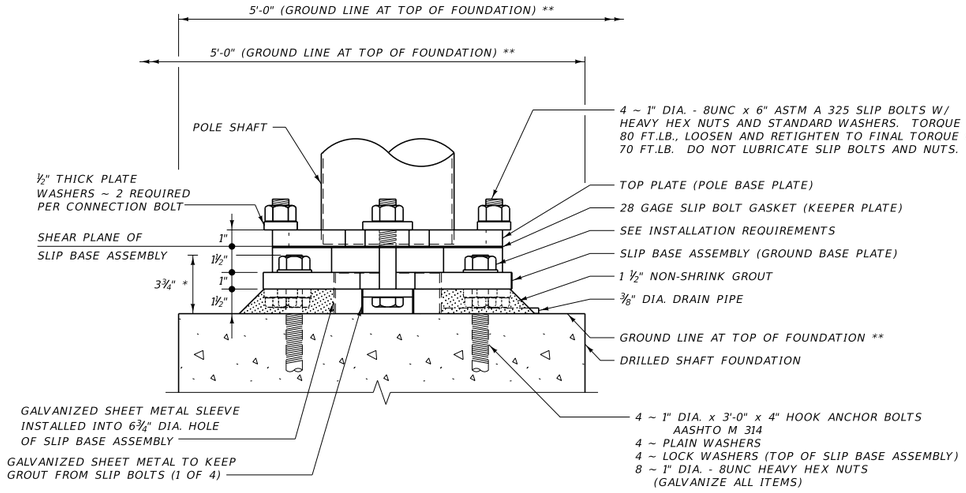
AWARD COPY



ISOMETRIC VIEW

INSTALLATION REQUIREMENTS FOR TOP NUTS OF ANCHOR BOLTS

FIELD LUBRICATE BEARING FACE AND THREADS OF TOP ANCHOR BOLT NUTS WITH A STICK WAX. TIGHTEN TOP NUTS TO SNUG-TIGHT. SNUG-TIGHT IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN THE GROUND BASE PLATE IS IN FIRM CONTACT WITH THE TOP AND BOTTOM NUTS, AND IS ATTAINED BY THE FULL EFFORT OF A MAN USING AN ORDINARY SPUD WRENCH. AFTER THE SNUG-TIGHT CONDITION IS ATTAINED, ROTATE THE TOP NUTS AN ADDITIONAL 45° (+20°,-0°).



FOUR BOLT SLIP BASE

* TOP OF ANCHOR BOLTS MUST BE BELOW SHEAR PLANE.

** IT IS CRITICAL THAT THE GROUND SURROUNDING THE CONCRETE FOUNDATION BE GRADED AND CONTOURED TO PREVENT VEHICLE UNDERCARRIAGE SNAGGING. ALL POINTS ON THE GROUND SURFACE ARE TO BE AT THE TOP OF THE FOUNDATION WITHIN ANY 5'-0" HORIZONTAL DISTANCE EXTENDING OVER THE SLIP BASE AS SHOWN, AND ALIGNING PERPENDICULAR TO THE ROADWAY CENTERLINE OR ON A RADIAL LINE FOR A CURVED ROADWAY.

NOTES:

CONFORM SLIP BOLT GASKET (KEEPER PLATE) TO ASTM A 653 GRADE 33 WITH COATING ASTM G 90.

CONFORM ALL PLATES TO ASTM A 709 (GRADE 36) OR AASHTO M 270.

GALVANIZE ALL STRUCTURAL STEEL AFTER FABRICATION ACCORDING TO ASTM A 123. ALL CONTACT AREAS OF STRUCTURAL STEEL ARE TO BE FREE OF GALVANIZING BEADS AND RUNS.

ELECTRO-PLATE ALL CONNECTING HARDWARE (HIGH STRENGTH BOLTS, HEAVY HEX NUTS AND STD. WASHERS) WITH CADMIUM IN ACCORDANCE WITH ASTM B 766 CLASS 12.

DO NOT ENCLOSE ANY SLIP BOLT HEADS OR WASHERS IN GROUT AND KEEP THEM COMPLETELY MECHANICALLY ACCESSIBLE, ALLOWING BOLTS TO BE FREELY PUSHED OUT DURING VEHICLE IMPACT.

ROAD CLOSURE GATE

SLIP BASE & FOUNDATION

NO SCALE

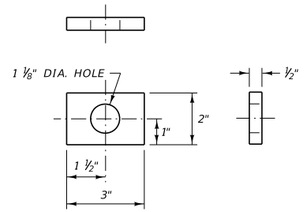
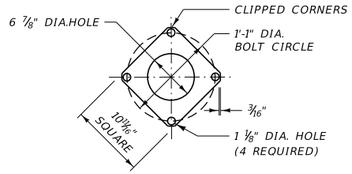
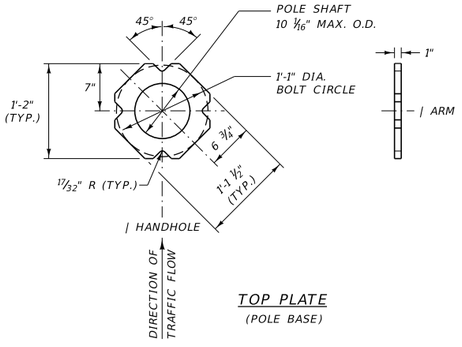


PLATE WASHER



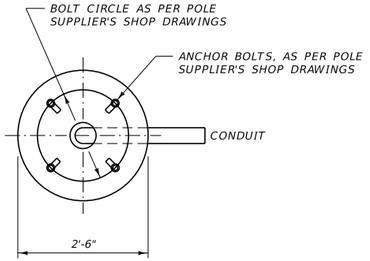
SLIP BOLT GASKET

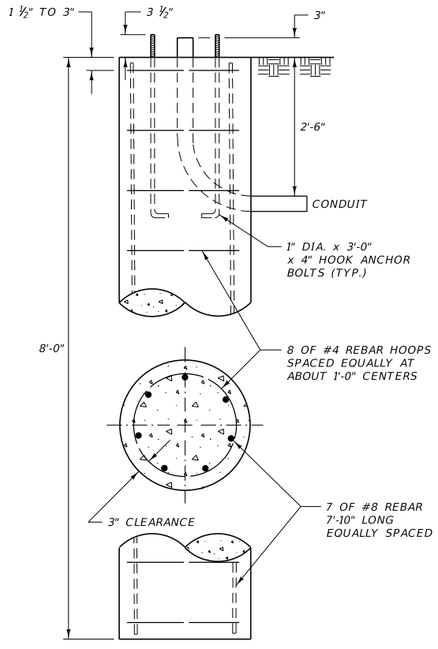
(KEEPER PLATE)



TOP PLATE

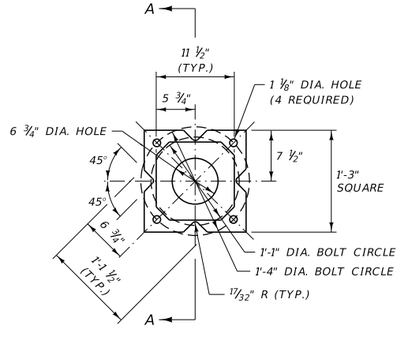
(POLE BASE)





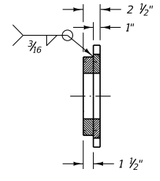
DRILLED SHAFT FOUNDATION

(LUMINAIRE POLE)



SLIP BASE ASSEMBLY

(GROUND BASE PLATE)



SECTION A-A

ROAD CLOSURE GATE

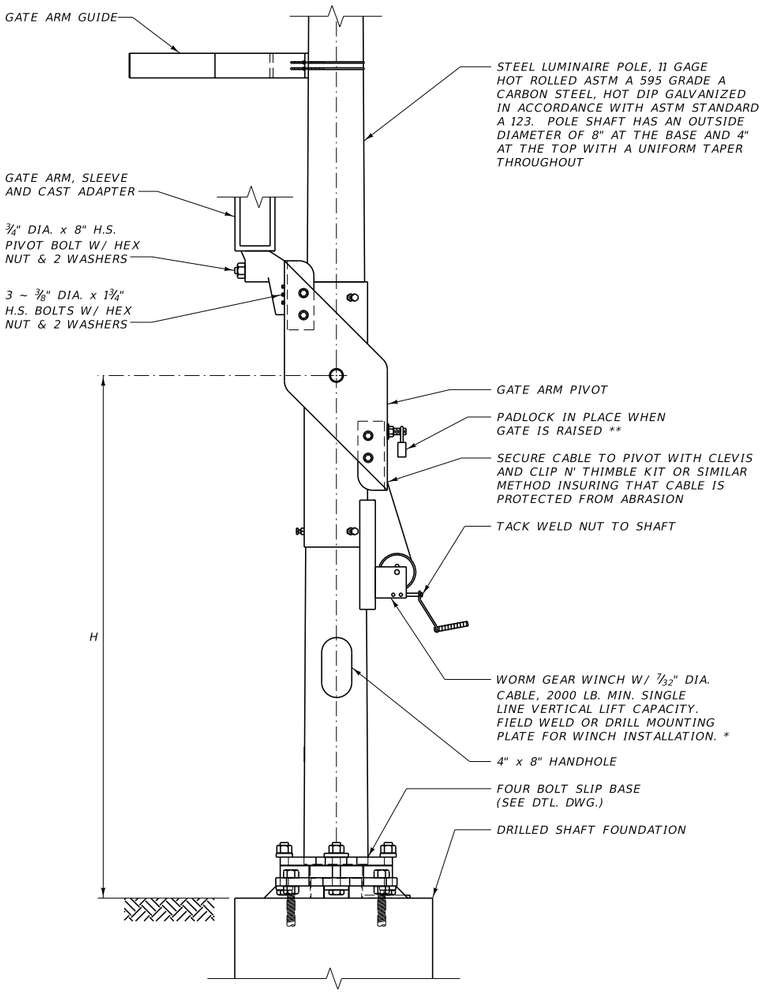
SLIP BASE & FOUNDATION

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000eldet002.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT / IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000 / SHEET E4
		12:14:32 PM CPS - U2948	CHECKED BY				

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ROAD CLOSURE GATE PIVOT ASSEMBLY

NOTES:

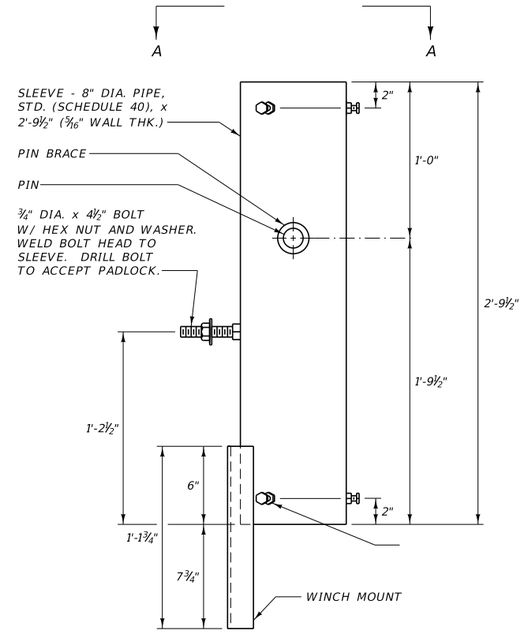
MOUNTING HEIGHT (H) WILL BE SHOWN IN THE PLANS OR SPECIFIED BY THE ENGINEER TO PROVIDE FOR THE PROPER HEIGHT OF THE GATE ABOVE THE ROADWAY.

ALL BOLTS DESIGNATED H.S. (HIGH STRENGTH) ARE TO CONFORM TO ASTM A 325. AFTER ROAD CLOSURE GATE ASSEMBLY, PAINT ALL EXPOSED BOLT THREADS OR DAMAGE TO THE GALVANIZING WITH TWO COATS OF ZINC RICH PAINT CONFORMING TO ASTM A 780.

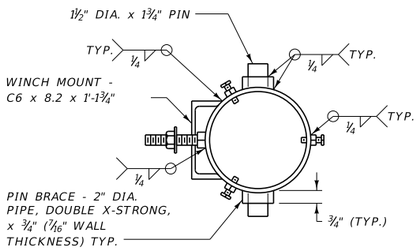
* SUPPLY WORM GEAR WINCH AND CABLE FROM DUTTON - LAINSON (STOCK NUMBER 4Z183), OR EQUIVALENT.

** WHEN THE GATE IS FULLY RAISED, PLACE THE NUT AND WASHER SNUGLY AGAINST THE OUTSIDE OF THE REAR CHANNEL AND PADLOCK IN PLACE. SUPPLY ONE HEAVY, WEATHERPROOF PADLOCK WITH 2 KEYS FOR EACH GATE ARM PIVOT. KEY PAIRED PIVOTS (DIVIDED HIGHWAY INSTALLATION) ALIKE.

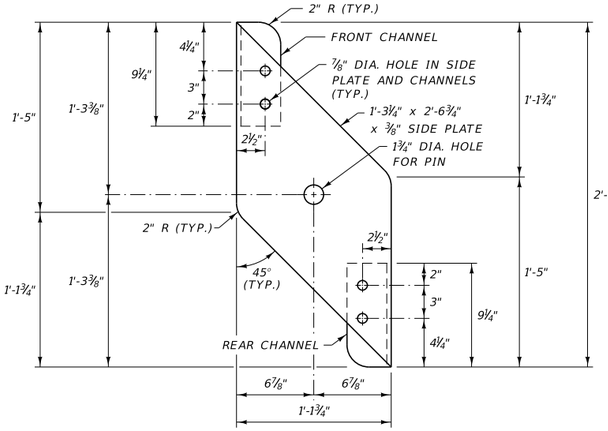
ROAD CLOSURE GATE PIVOT ASSEMBLY
NO SCALE



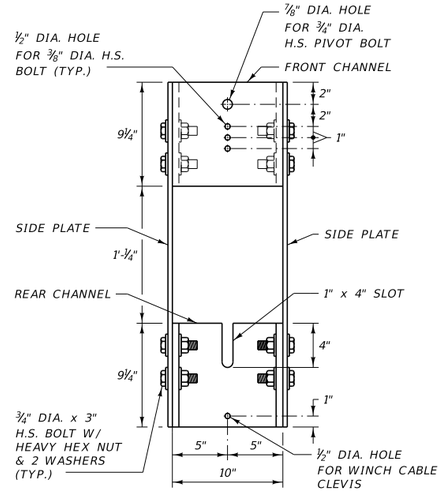
PIVOT SLEEVE



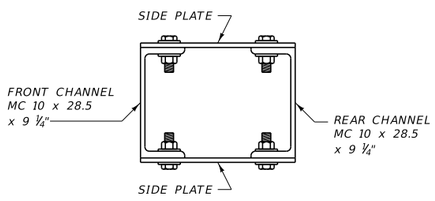
VIEW A-A



ELEVATION



END VIEW



PLAN

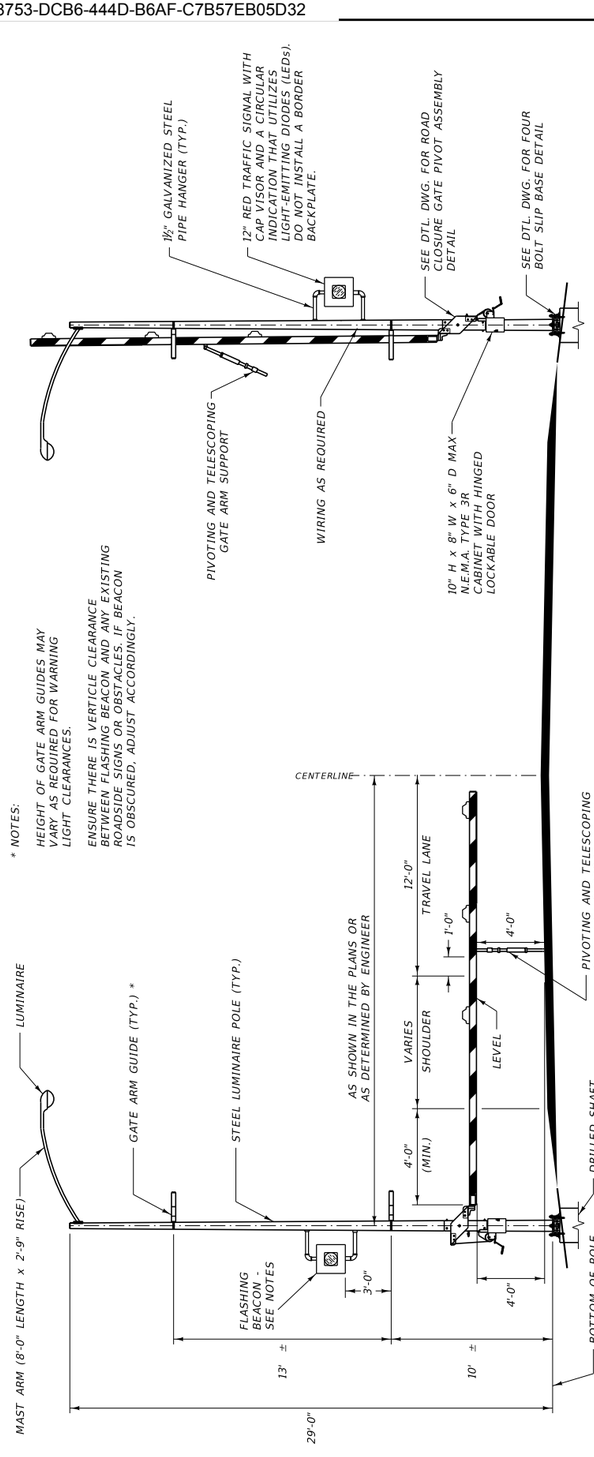
SIDE PLATE

ROAD CLOSURE GATE PIVOT ASSEMBLY
NO SCALE

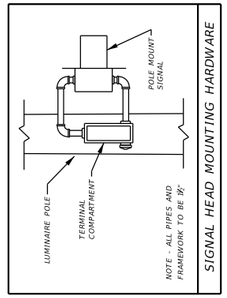
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		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000 / SHEET E5
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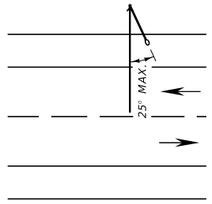
AWARD COPY



TYPICAL RAISED POSITION

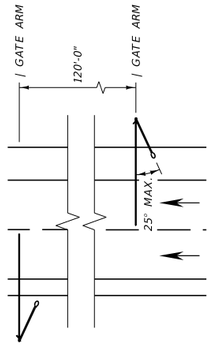


SIGNAL HEAD MOUNTING HARDWARE



TYPICAL TWO-WAY, TWO-LANE INSTALLATION
(1 GATE REQUIRED)

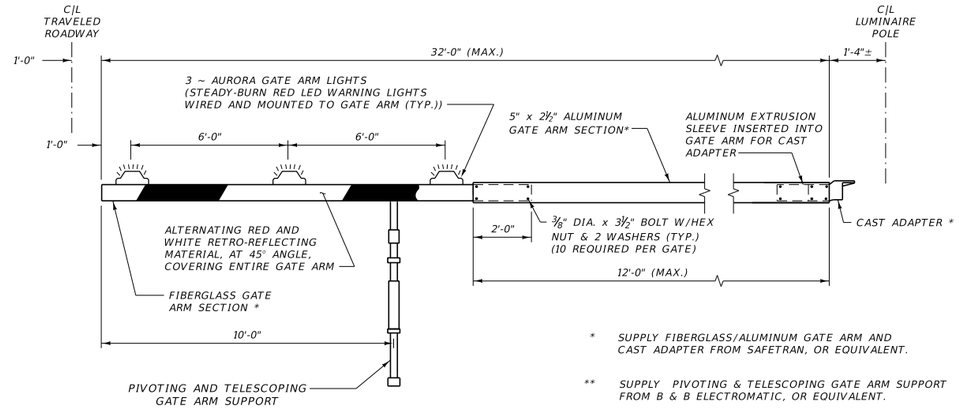
ELEVATION
DIVIDED HIGHWAY INSTALLATION SHOWN



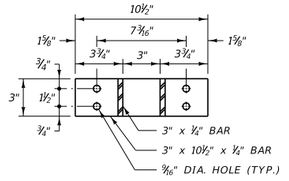
TYPICAL DIVIDED HIGHWAY INSTALLATION
(2 GATES REQUIRED)

TYPICAL LOWERED POSITION

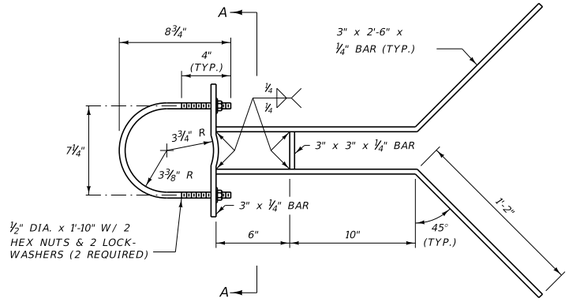
ROAD CLOSURE GATE
NO SCALE



GATE ARM



SECTION A-A
(U-BOLTS NOT SHOWN)



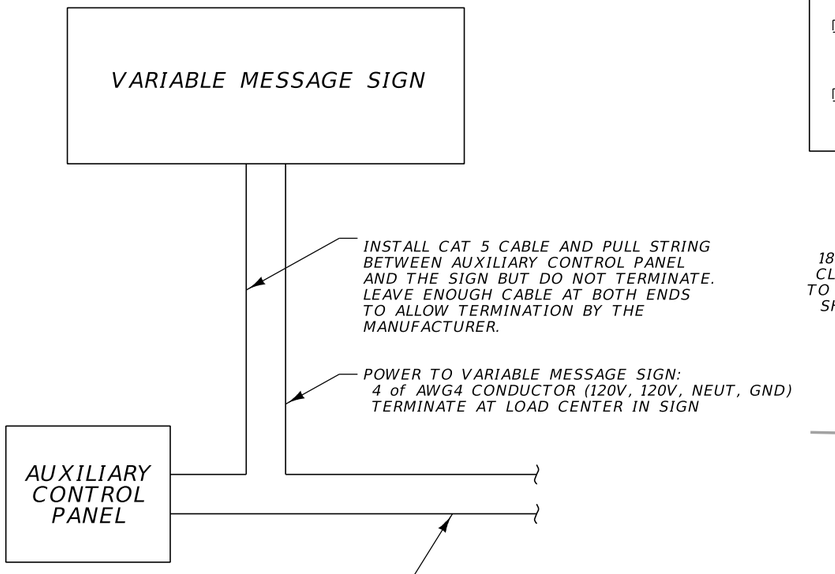
GATE ARM GUIDE

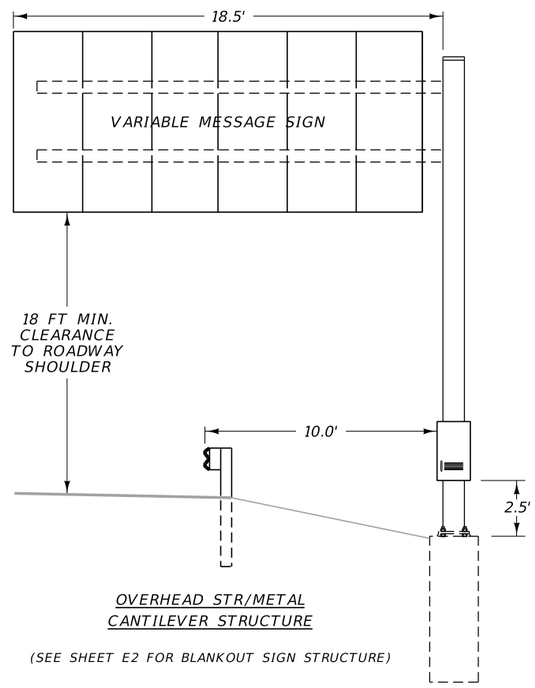
ROAD CLOSURE GATE
NO SCALE

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AWARD COPY

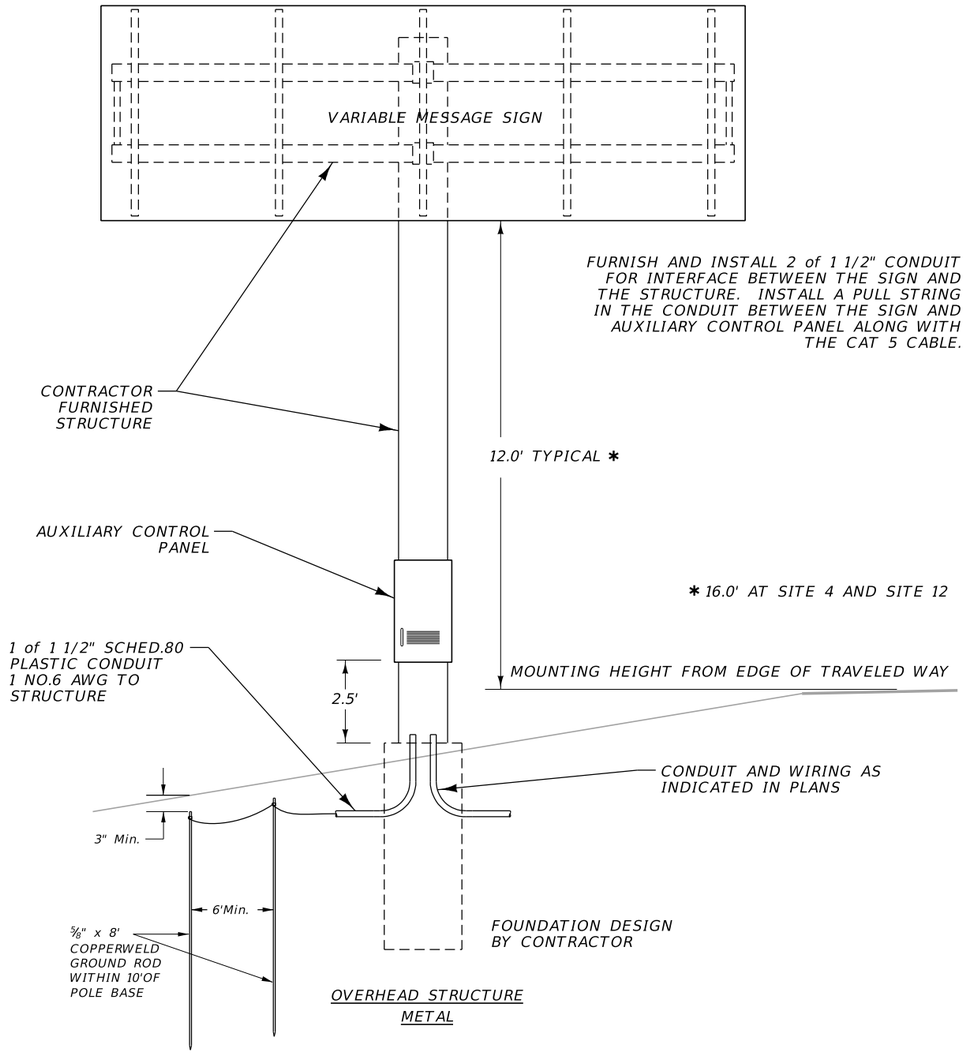
(SIGN STRUCTURE SHOWN IS FOR INFORMATION ONLY. CONTRACTOR TO DETERMINE FINAL DESIGN.)



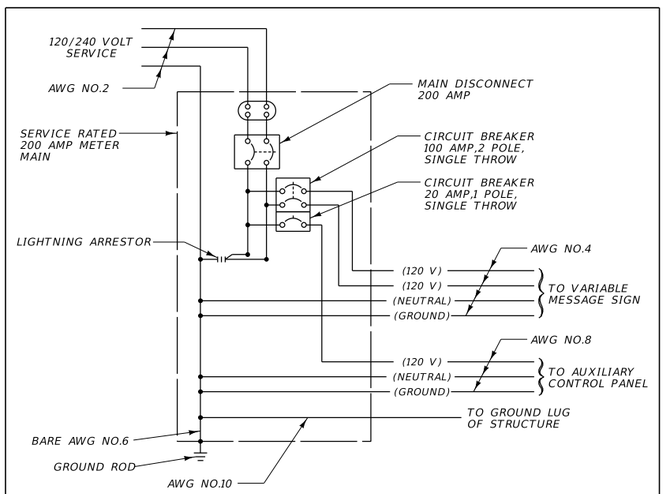


OVERHEAD STR/METAL CANTILEVER STRUCTURE

(SEE SHEET E2 FOR BLANKOUT SIGN STRUCTURE)



OVERHEAD STRUCTURE METAL



VMS SERVICE WIRING DIAGRAM

NOTES:

MOUNT ALL SIGNS LEVEL HORIZONTALLY ON THE SIGN STRUCTURE AND SKEW TOWARD TRAFFIC AS SHOWN.

INCLUDE MOUNTING HARDWARE IN THE BID PRICE FOR SIGN STRUCTURES. THIS INCLUDES CONDUIT FOR INSTALLATION OF WIRING BETWEEN STRUCTURES AND SIGNS.

DESIGN, FABRICATE AND INSPECT STRUCTURE IN ACCORDANCE WITH THE 2015 AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, LATEST INTERIMS.

DESIGN PARAMETERS:

DESIGN WIND: 700 MRI BASIC WIND SPEED (115 MPH WIND SPEED)

GUST FACTOR EFFECT: G = 1.14

HEIGHT AND EXPOSURE FACTOR: Kz
WHERE α = 9.5 AND Zg = 900 FT. FOR EXPOSURE C

DEFLECTION:
CANTILEVERED SIGN SUPPORTS: FREE END OF ARM MAXIMUM DEFLECTION = 8" HORIZONTAL SUPPORTS FOR SIGN BRIDGE STRUCTURES MAXIMUM DEFLECTION: 8"

DESIGN AREA: DESIGN AREA WITH RESPECT TO MAXIMUM WIND LOAD IS PERPENDICULAR TO THE STRUCTURE.

DESIGN WEIGHT: DEAD LOAD AND ICE

FATIGUE CATEGORY: 1

PROVIDE ANCHOR RODS CONFORMING TO ASTM F1554 OR EQUAL, THREAD AND GALVANIZE THE TOP END 12 INCHES MIN.

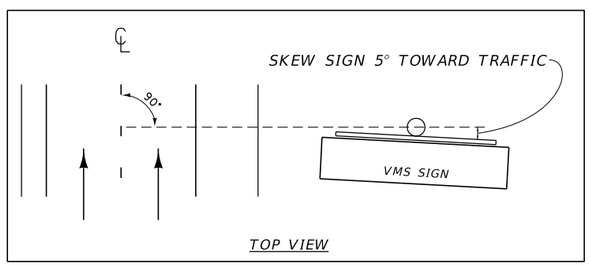
WELDING PROCEDURES, SYMBOLS, BASE METAL SPECIFICATIONS & GRADES MUST BE CALLED OUT PRIOR TO FABRICATION OR APPROVAL.

GALVANIZE POLES AND ARMS TO ASTM DESIGNATION : A123.

GALVANIZE ACCESSORIES TO ASTM DESIGNATION : A153.

CONTRACTOR TO DETERMINE FOUNDATION SIZE BASED ON R/W RESTRICTIONS, DESIGN LOADS AND SOILS DATA.

FOR CANTILEVER STRUCTURE - INCLUDE GALLOPING, TRUCK INDUCED GUSTS (USE POSTED SPEED LIMIT) AND NATURAL WIND GUSTS.



TOP VIEW

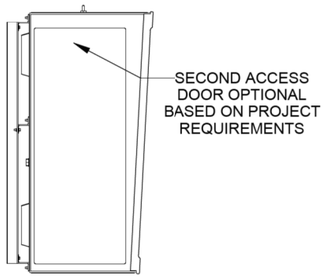
VARIABLE MESSAGE SIGN STRUCTURE

NO SCALE

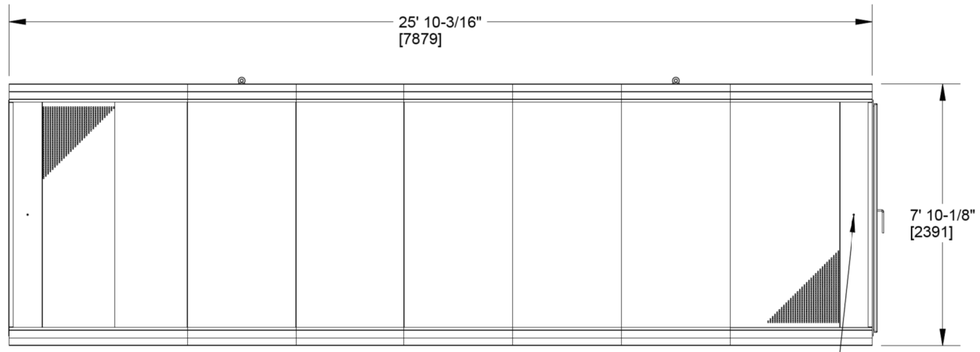
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2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000 / SHEET E7
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			REVISED BY	K. JOHNSON	6/13/2023		

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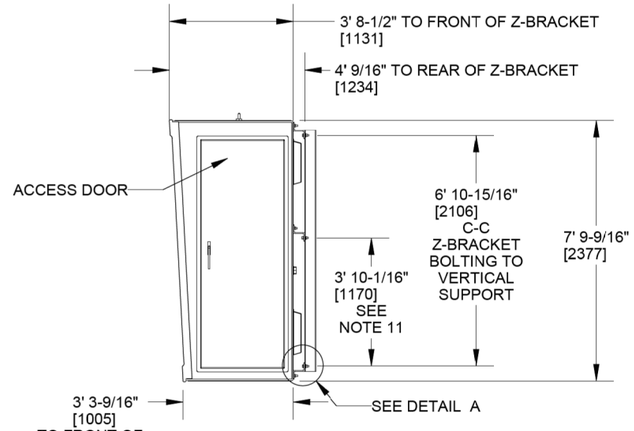
VERTICAL SUPPORT SPACING TABLE MOUNTING CALCULATIONS: SEE NOTE 11 IF THE VERTICAL SUPPORTS EXCEED THE STATED MAXIMUM SPACINGS THEN CONTACT DAKTRONICS ENGINEERING.	
MAX VERTICAL SPACING "A"	6'-6"
MAX END SPACING "B"	11"
MINIMUM # OF VERTICAL SUPPORTS REQUIRED	5



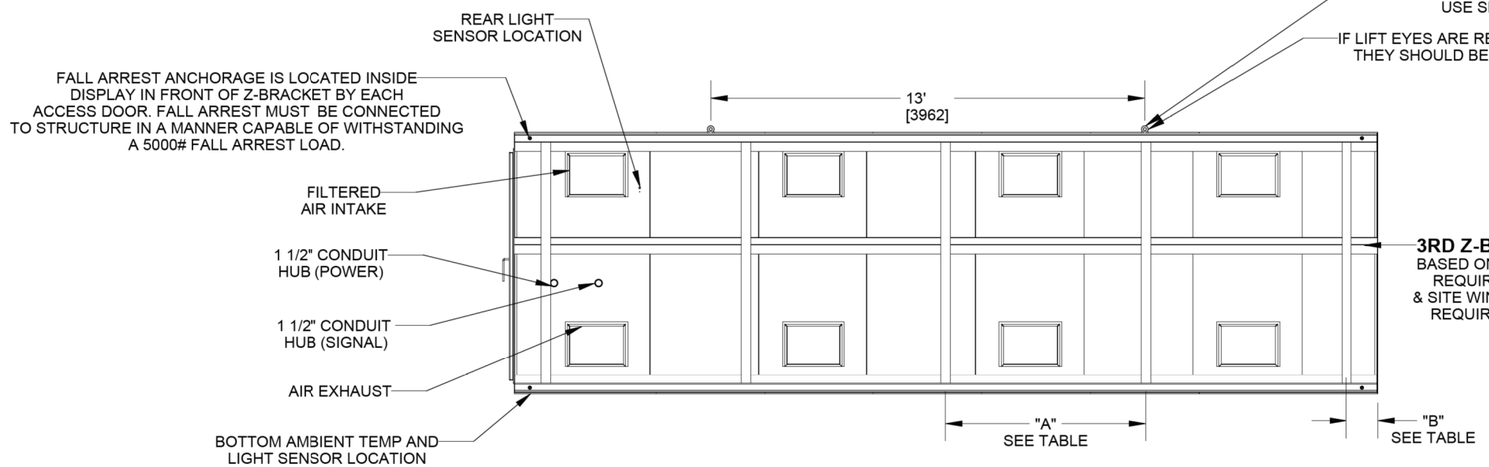
LEFT SIDE



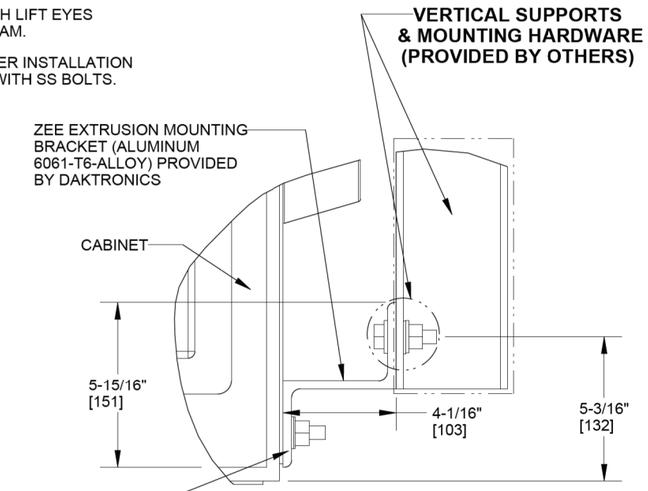
FRONT VIEW



RIGHT SIDE



REAR VIEW



DETAIL A
SCALE 1/5

NOTES:

1.) MATRIX SIZE 96 X 352 , 6" NOMINAL CHARACTER
2.) DISPLAY WILL BE A SINGLE FACE CONFIGURATION.
3.) SEE ILLUSTRATIONS FOR POWER AND SIGNAL CONDUIT ENTRANCES.
4.) ALL DIMENSIONS ARE IN FEET & INCHES [mm].
5.) FULL PROTECTIVE MASKED FACE PANEL.
6.) MAINTENANCE OF DISPLAY IS INTERNAL VIA WALK IN CABINET.
7.) ALL ALUMINUM CONSTRUCTION
8.) POSITIVE PRESSURE VENTILATION SYSTEM
9.) WEIGHT OF THE DISPLAY IS APPROXIMATELY 3500 LBS (1588 KG).
10.) VERTICAL SUPPORTS DESIGNED AND SUPPLIED BY OTHERS.
11.) MOUNTING CALCULATIONS DONE TO "AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION"

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REV	DATE:		BY:	
01	5-FEB-18	UPDATED AASHTO SPEC	LMS	

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THIRD ANGLE PROJECTION

PROJECT:	VANGUARD			
TITLE:	SHOP DRAWING, VF-20**-96X352-20-*, 5/8" HW			
DATE: 05-FEB-18	DIM UNITS: INCHES [MILLIMETERS]		SHEET	REV
SCALE: 1/50	DO NOT SCALE DRAWING		1 OF 1	01
DESIGN: DREITZ	JOB NO.	FUNC - TYPE - SIZE	3580628	
DRAWN: CKOLBEC	P2032	F - 10 - B		

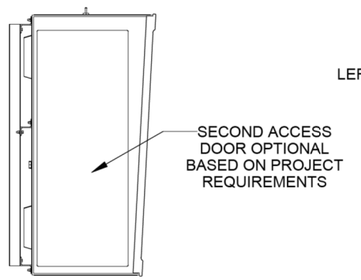
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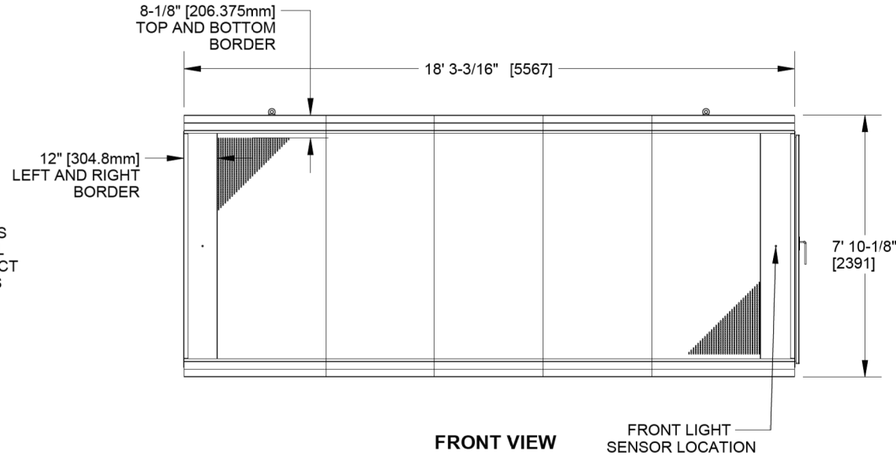
VERTICAL SUPPORT SPACING TABLE

MOUNTING CALCULATIONS: SEE NOTE 11
IF THE VERTICAL SUPPORTS EXCEED THE STATED MAXIMUM SPACINGS THEN CONTACT DAKTRONICS ENGINEERING.

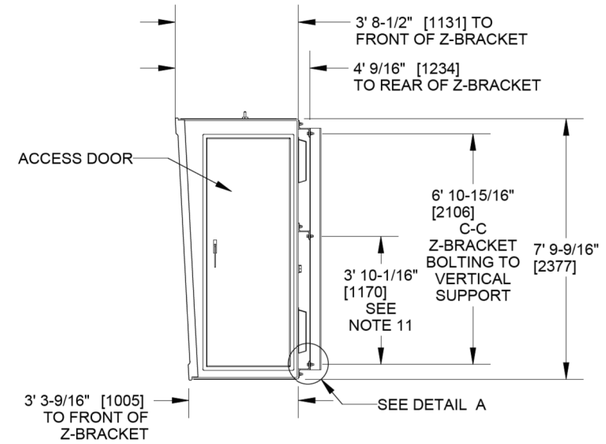
MAX VERTICAL SPACING "A"	6'-6"
MAX END SPACING "B"	11"
MINIMUM # OF VERTICAL SUPPORTS REQUIRED	4



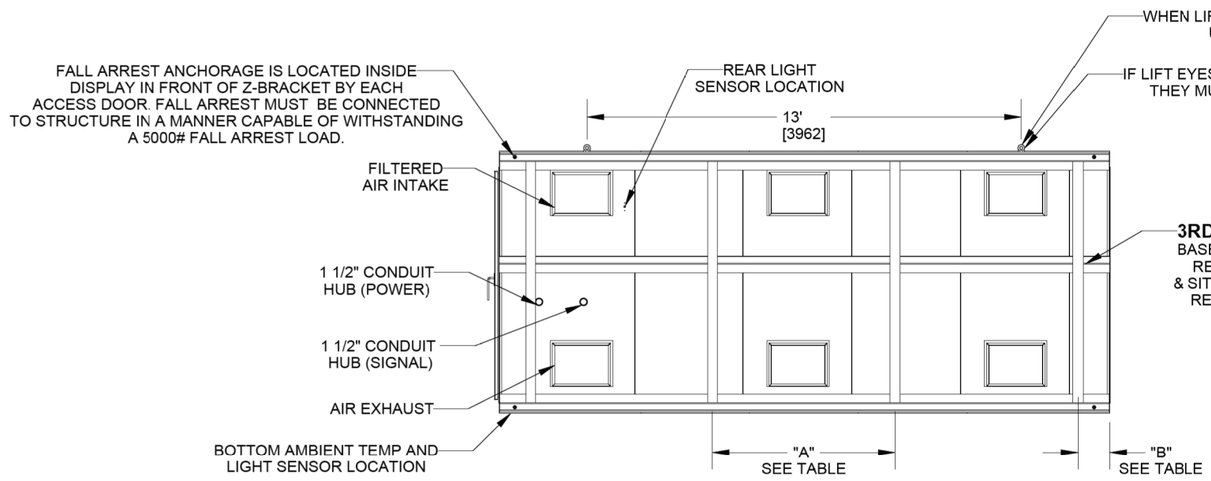
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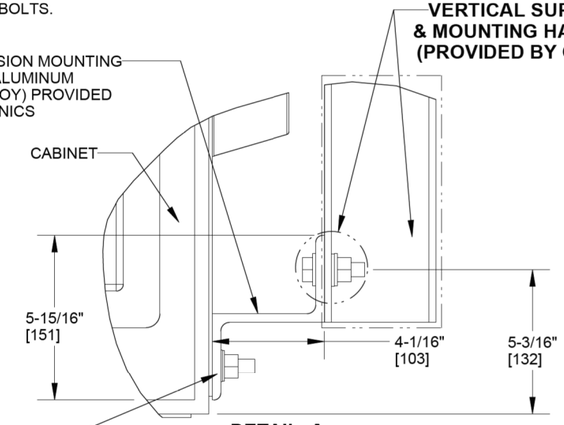
FRONT VIEW



RIGHT SIDE



REAR VIEW



DETAIL A
SCALE 1/5

Z-BRACKETS ARE BOLTED TO THE REAR OF THE DISPLAY BY DAKTRONICS. EACH Z-BRACKET IS ATTACHED TO THE CABINET USING ∅5/8" A325 MECHANICALLY GALVANIZED STRUCTURAL GRADE HARDWARE. FINAL REVIEW OF MOUNTING DETAILS ARE THE RESPONSIBILITY OF THE CUSTOMER AND THE CUSTOMER'S ENGINEERS. THE VERTICAL SUPPORTS MUST BE ATTACHED AS SHOWN WITHIN THE MAXIMUM SPACING REQUIREMENTS. STAINLESS STEEL HARDWARE AVAILABLE PER CONTRACT REQUIREMENTS.

NOTES

1)	MATRIX SIZE 96 X 240 , 6" NOMINAL CHARACTER.
2)	DISPLAY WILL BE A SINGLE FACE CONFIGURATION.
3)	SEE ILLUSTRATIONS FOR POWER AND SIGNAL CONDUIT ENTRANCES.
4)	ALL DIMENSIONS ARE IN FEET & INCHES [mm].
5)	FULL PROTECTIVE MASKED FACE PANEL.
6)	MAINTENANCE OF DISPLAY IS INTERNAL VIA WALK IN CABINET.
7)	ALL ALUMINUM CONSTRUCTION.
8)	POSITIVE PRESSURE VENTILATION SYSTEM.
9)	WEIGHT OF THE DISPLAY IS APPROXIMATELY 2600 LBS (1180 KG).
10)	VERTICAL SUPPORTS DESIGNED AND SUPPLIED BY OTHERS.
11)	ALL DESIGN AND MOUNTING CALCULATIONS CONFORM TO "AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION"
12)	DISPLAYS ARE NOT DESIGNED FOR GALLOPING LOAD REQUIREMENTS IN AASHTO SECTION 11.7. DISPLAYS MAY ONLY BE INSTALLED ON STRUCTURES THAT ARE NOT SUSCEPTIBLE TO GALLOPING OR PROPER MITIGATION DEVICES SHALL BE INSTALLED TO PREVENT GALLOPING ON SUSCEPTIBLE STRUCTURES SUCH AS MONOTUBE, CANTILEVERED STRUCTURES.

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REV:	DATE:	DESCRIPTION:	BY:	
03	05-MAY-2022	UPDATED NOTES SECTION TO INCLUDE ITEM 12 - EXCLUSION OF GALLOPING FROM DESIGN AND STRUCTURE INFORMATION	MMS	
02	13-JAN-2022	ADDED BORDER DIMENSIONS	MMS	
01	05-FEB-2018	UPDATED AASHTO SPEC	LMS	

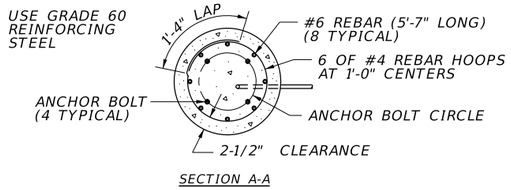
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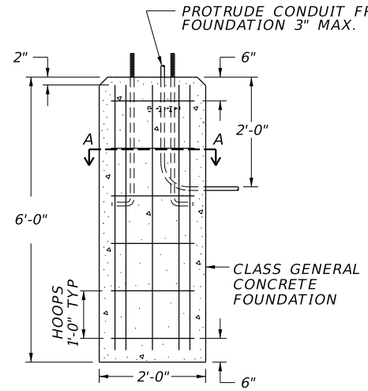
THIRD ANGLE PROJECTION

PROJECT:	VANGUARD			
TITLE:	SHOP DRAWING, VF-20**-96X240-20-*, 5/8" HW			
DATE:	05-MAY-22	DIM UNITS: INCHES [MILLIMETERS]	SHEET	REV
SCALE:	1/50	DO NOT SCALE DRAWING		03
DESIGN:	DREITZ	JOB NO.	FUNC - TYPE - SIZE	3580634
DRAWN:	CKOLBEC	P2032	F - 10 - B	

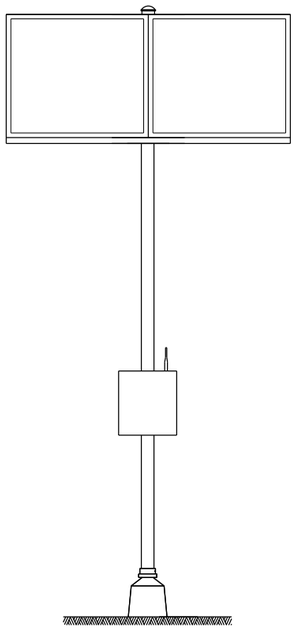
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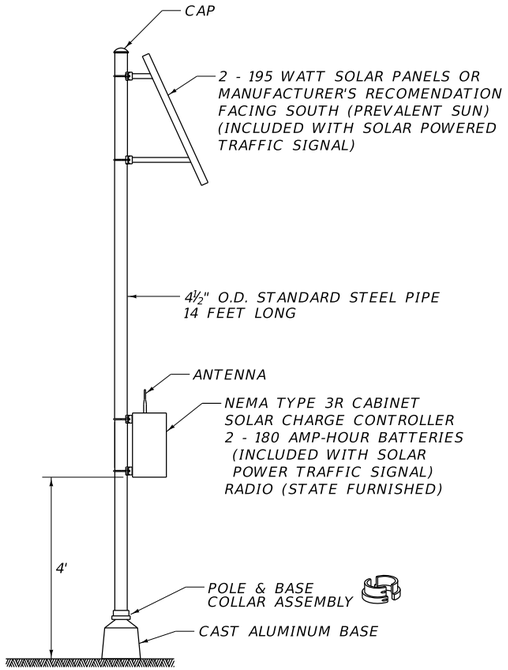




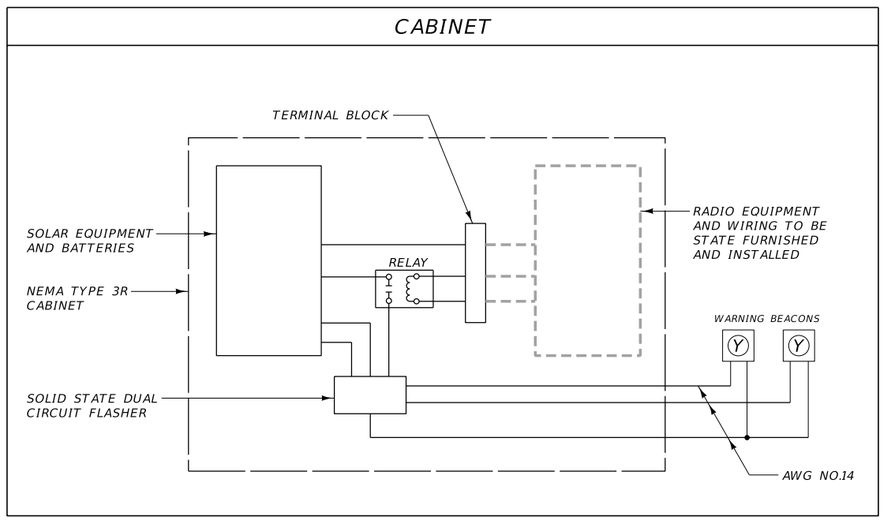
1-200 FOUNDATION



FRONT

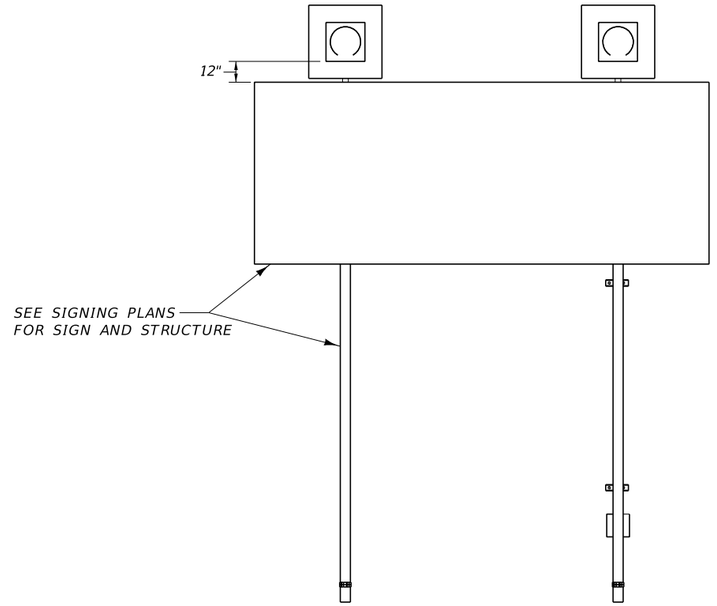


SIDE

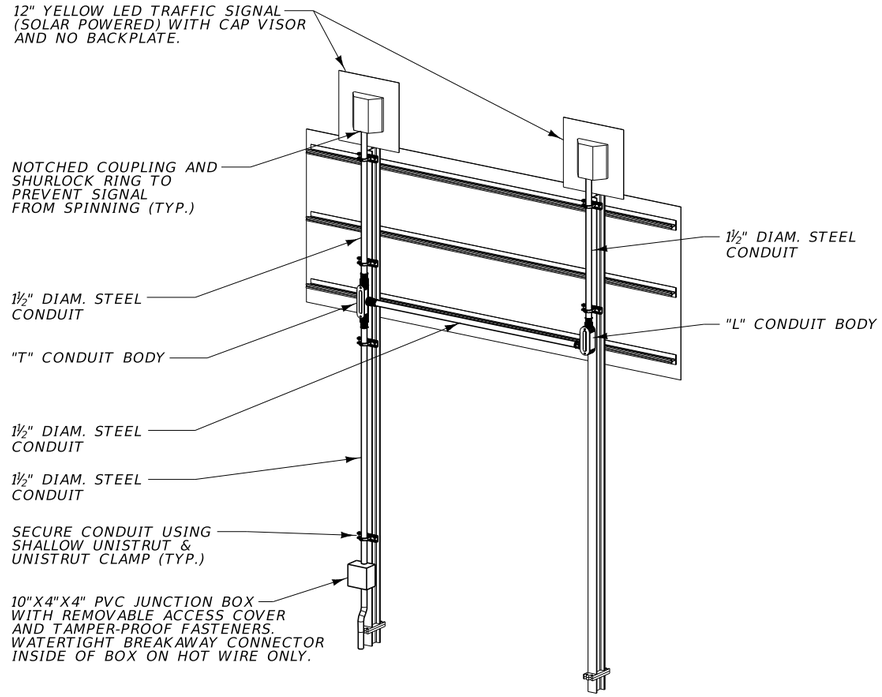


TYPE 1-200 SIGNAL STANDARD AND SOLAR SYSTEM FOR ADVANCE WARNING BEACON

NO SCALE



FRONT



REAR ISO

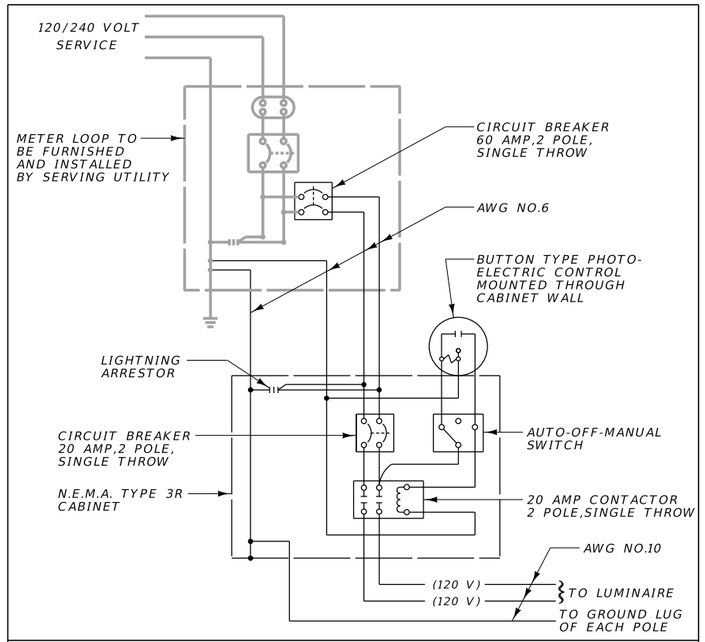
ADVANCE WARNING BEACON MOUNT

NO SCALE

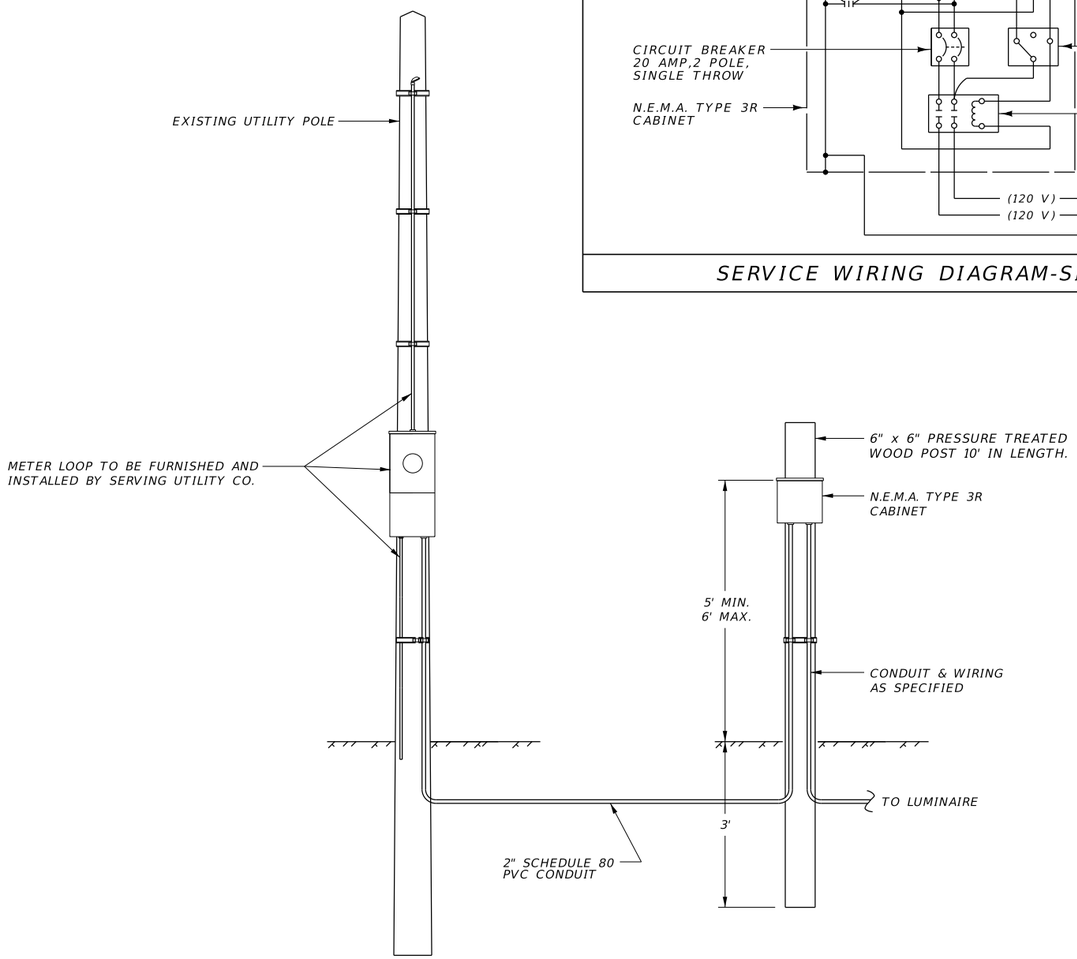
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000eldet004.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022		UPN 9856000	SHEET E10
		12:15:32 PM CPS - U2940	CHECKED BY					

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

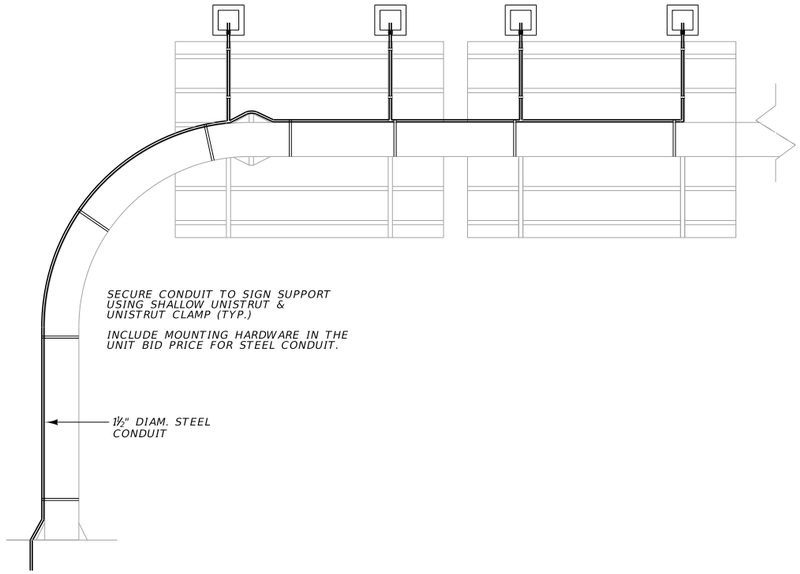
AWARD COPY

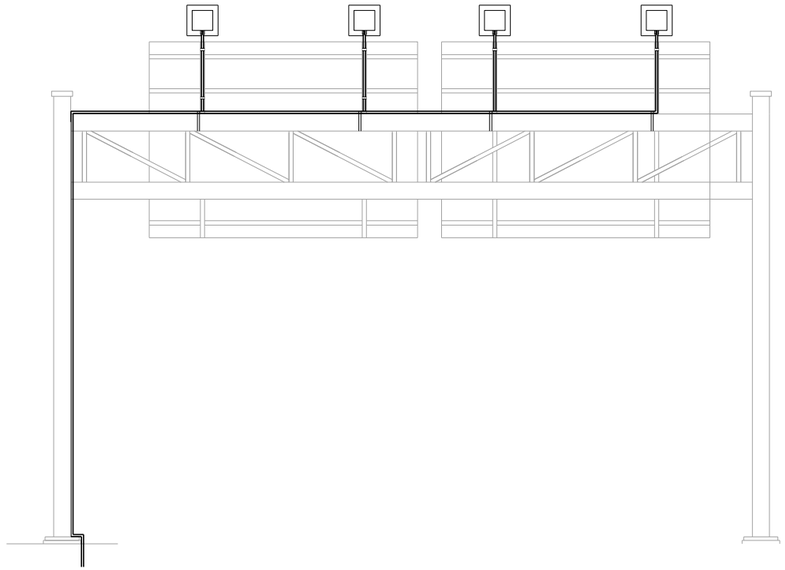


SERVICE WIRING DIAGRAM-SITE 5



UNDERGROUND SERVICE
ASSEMBLY DETAIL
NO SCALE



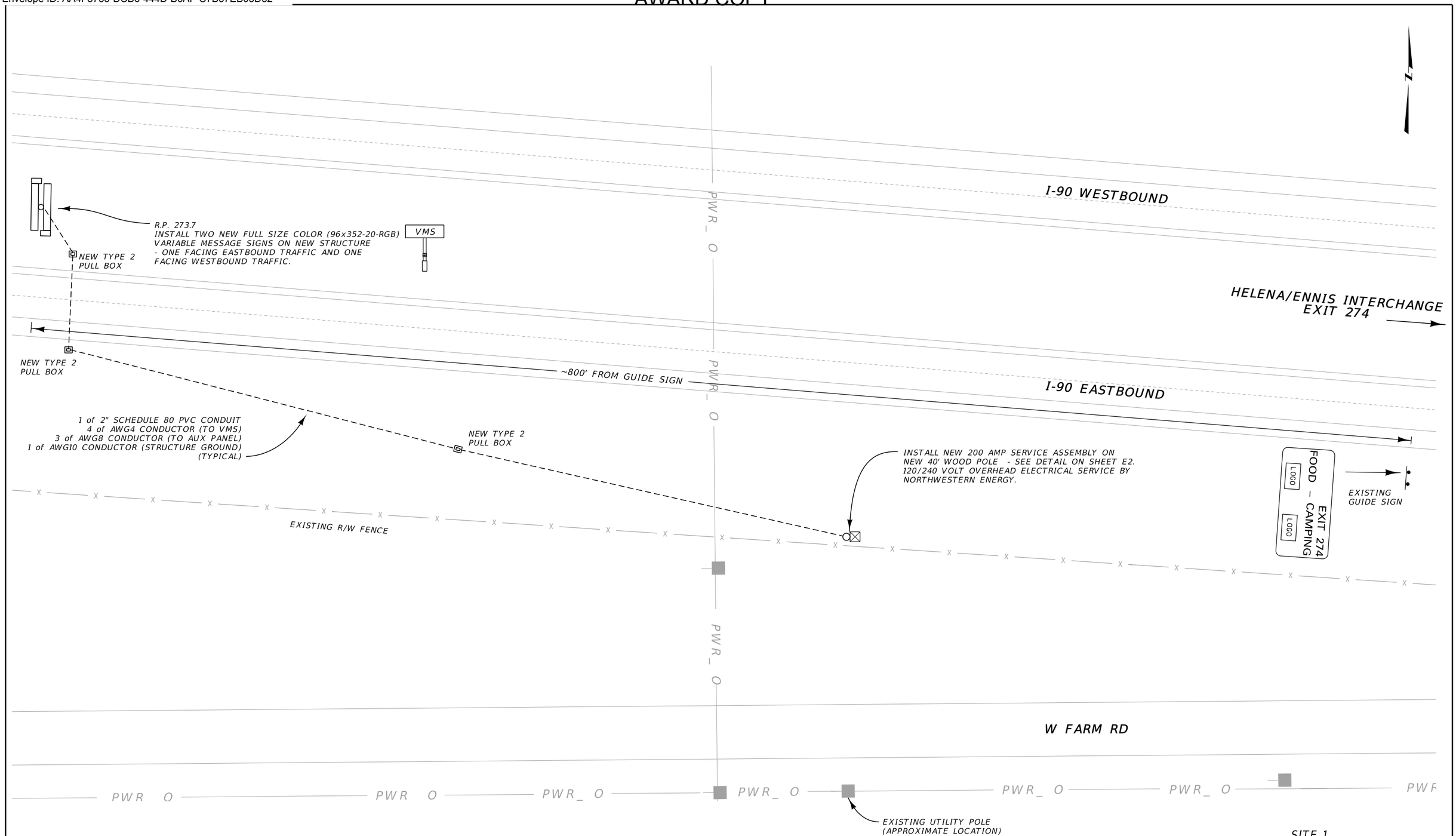


SIGN BRIDGE CONDUIT MOUNTING - PARK ST, LIVINGSTON

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000eldet004.dgn	DESIGNED BY	K. JOHNSON	6/16/2022	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
1		6/13/2023	REVIEWED BY				UPN 9856000	SHEET E11
		12:15:35 PM CPS - U2948	CHECKED BY					

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



SITE 1

VARIABLE MESSAGE SIGN - R.P. 273.7

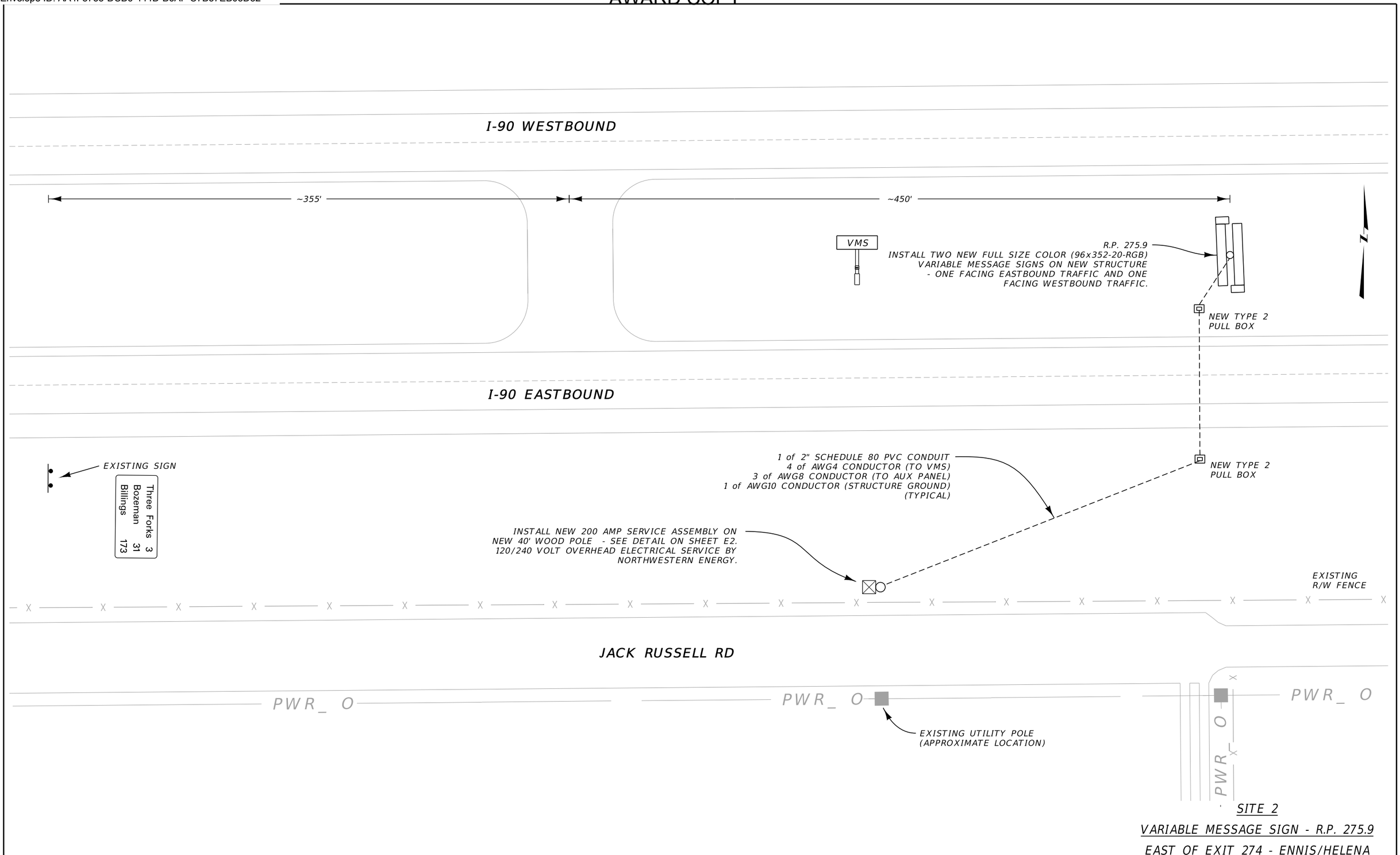
WEST OF EXIT 274 - ENNIS/HELENA

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln001.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:15:45 PM CPS - U2948	CHECKED BY			BROADWATER COUNTY	UPN 9856000	SHEET E12

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



SITE 2

VARIABLE MESSAGE SIGN - R.P. 275.9

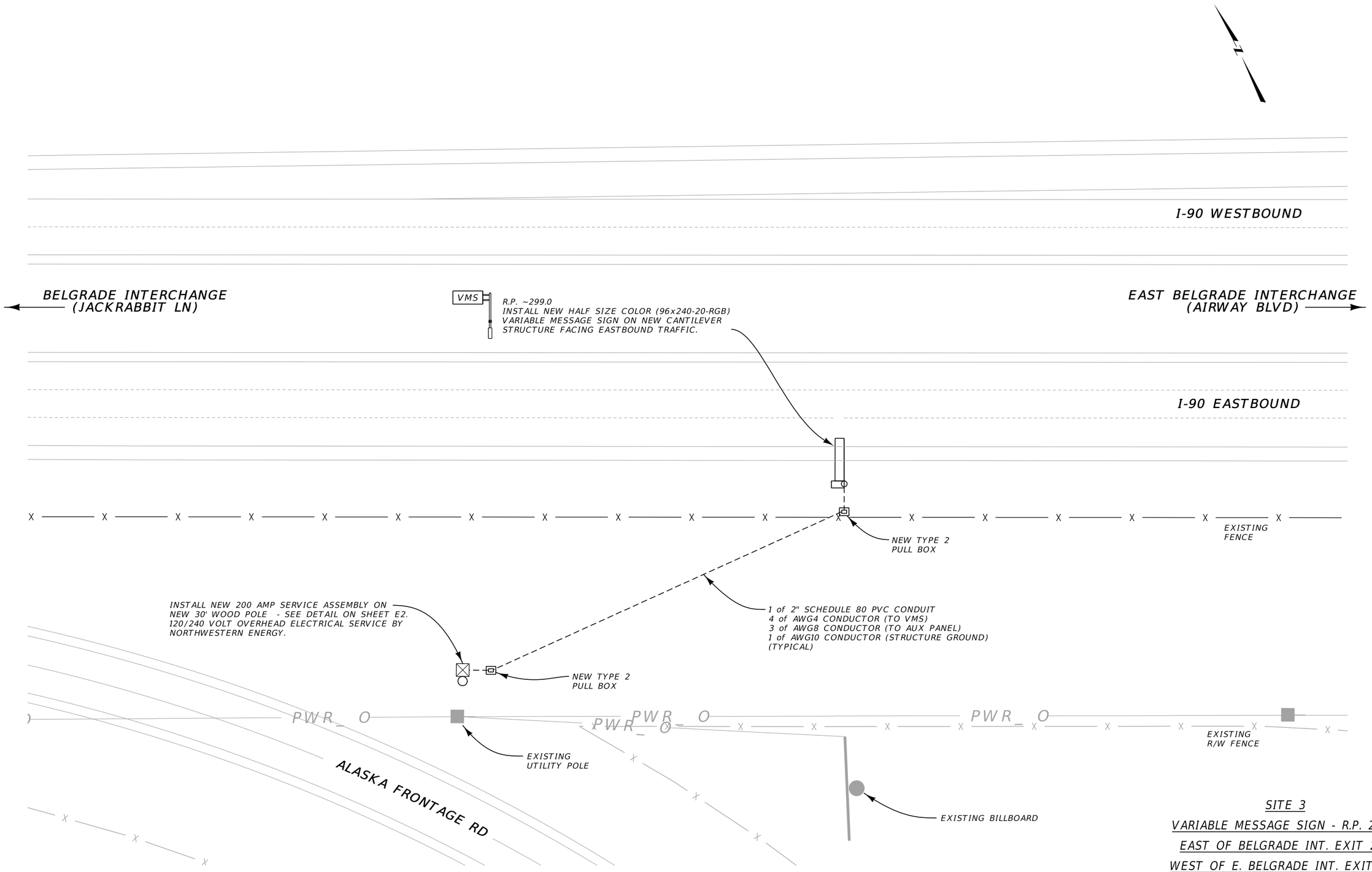
EAST OF EXIT 274 - ENNIS/HELENA

NO SCALE

2 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln003.dgn 6/13/2023 12:15:55 PM CPS - U2940	DESIGNED BY REVIEWED BY CHECKED BY	K. JOHNSON	3/15/2022	ELECTRICAL PLANS BROADWATER COUNTY		I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E13

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



SITE 3

VARIABLE MESSAGE SIGN - R.P. 299.0

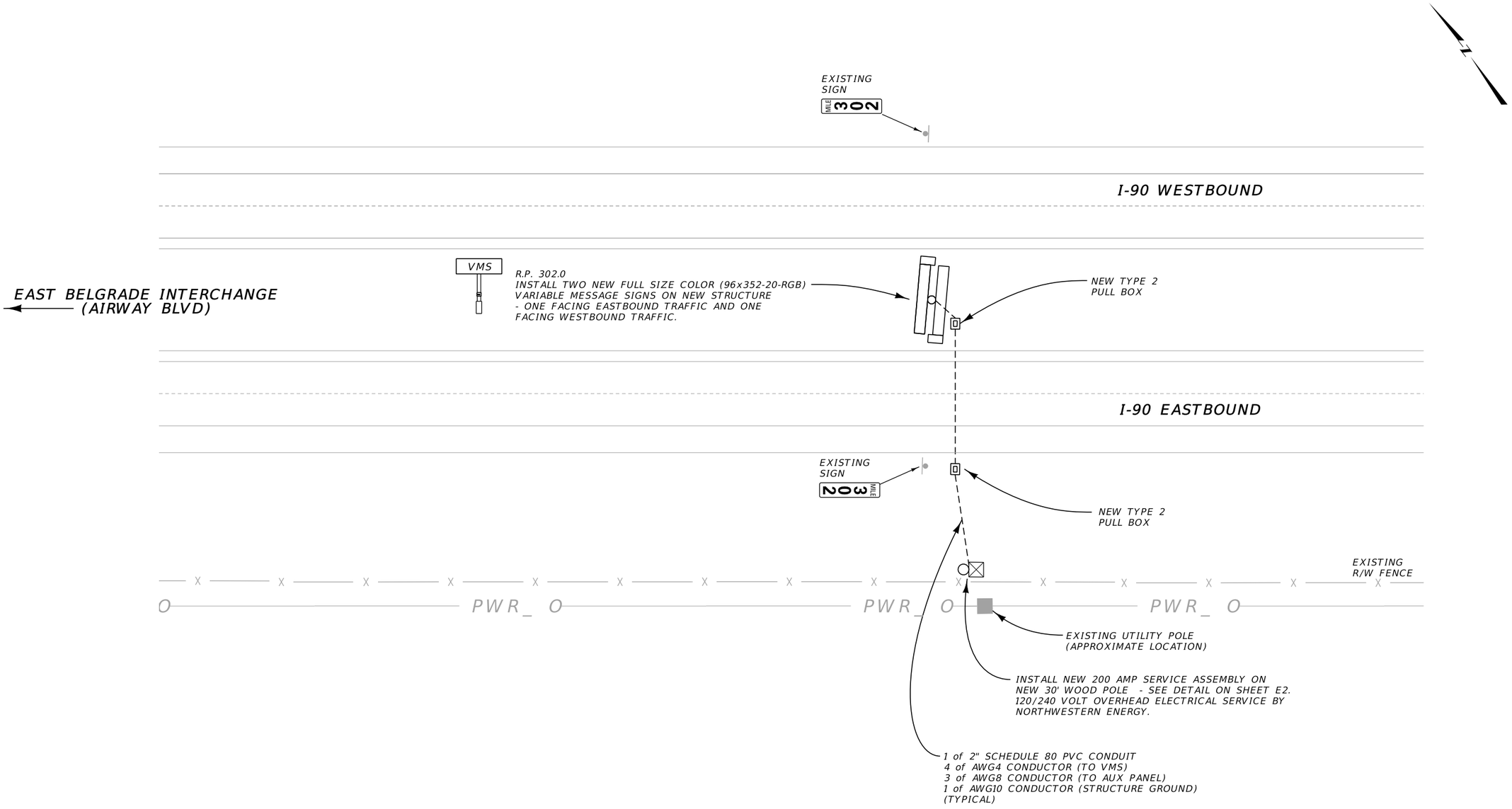
EAST OF BELGRADE INT. EXIT 298

WEST OF E. BELGRADE INT. EXIT 299

NO SCALE

2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln001.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
1		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:16:04 PM CPS - U2948	CHECKED BY			GALLATIN COUNTY	UPN 9856000	SHEET E14

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



SITE 4

VARIABLE MESSAGE SIGN - R.P. 302.0

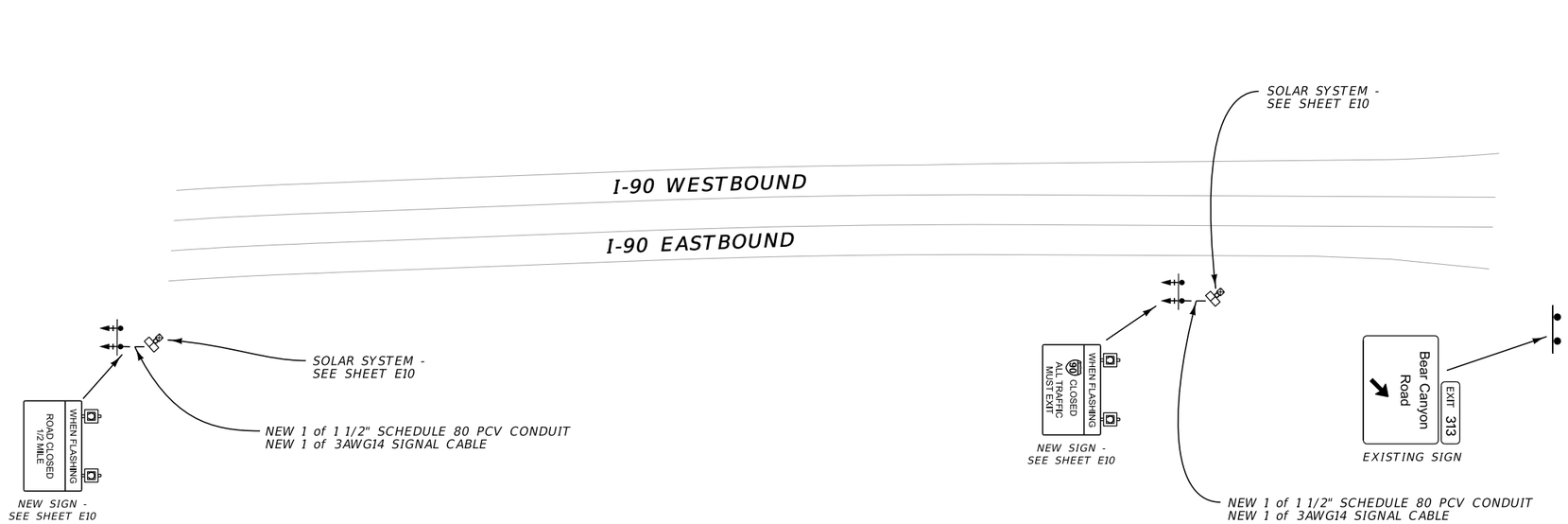
EAST OF EXIT 299 - AIRWAY BLVD

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln001.dgn 6/13/2023 12:16:07 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS GALLATIN COUNTY	I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E15

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AWARD COPY



CONDUIT & WIRE SCHEDULE

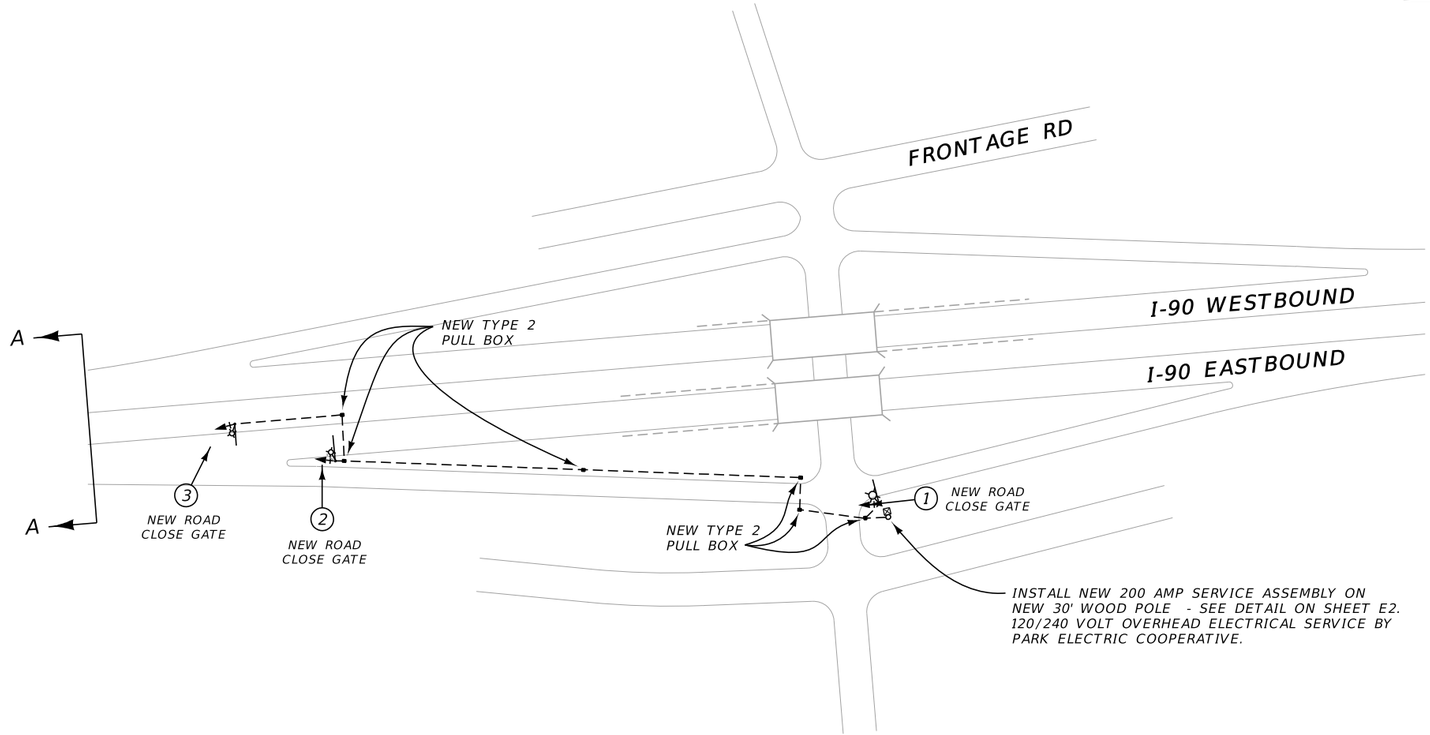
A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.



SITE 5
ROAD CLOSURE SYSTEM
EXIT 313 - BEAR CANYON
INTERCHANGE

2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln002.dgn	DESIGNED BY	K. JOHNSON	3/15/2022	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
1		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:16:16 PM CPS - U2948	CHECKED BY			GALLATIN COUNTY	UPN 9856000	SHEET E16

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY

EXISTING SIGN
MILE 319

I-90 WESTBOUND

I-90 EASTBOUND

SOLAR SYSTEM - SEE SHEET E10

SOLAR SYSTEM - SEE SHEET E10

NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE

MILE 319
EXISTING SIGN

ROAD CLOSED 1/2 MILE | WHEN FLASHING

NEW SIGN - SEE SHEET E10

60 CLOSED | ALL TRAFFIC MUST EXIT | WHEN FLASHING

NEW SIGN - SEE SHEET E10

Jackson Cr Road | EXIT 319

EXISTING SIGN

NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE

A

A

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

INSTALL NEW 200 AMP SERVICE ASSEMBLY ON NEW 30' WOOD POLE - SEE DETAIL ON SHEET E2. 120/240 VOLT OVERHEAD ELECTRICAL SERVICE BY NORTHWESTERN ENERGY.

JACKSON CRK

NEW TYPE 2 PULL BOX

NEW TYPE 2 PULL BOX

NEW TYPE 2 PULL BOX

NEW ROAD CLOSE GATE 3

NEW ROAD CLOSE GATE 2

NEW ROAD CLOSE GATE 1

EXIT 319

EXISTING SIGN

A

A

B

I-90 WESTBOUND

I-90 EASTBOUND

FRONTAGE RD

CONDUIT & WIRE SCHEDULE

A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

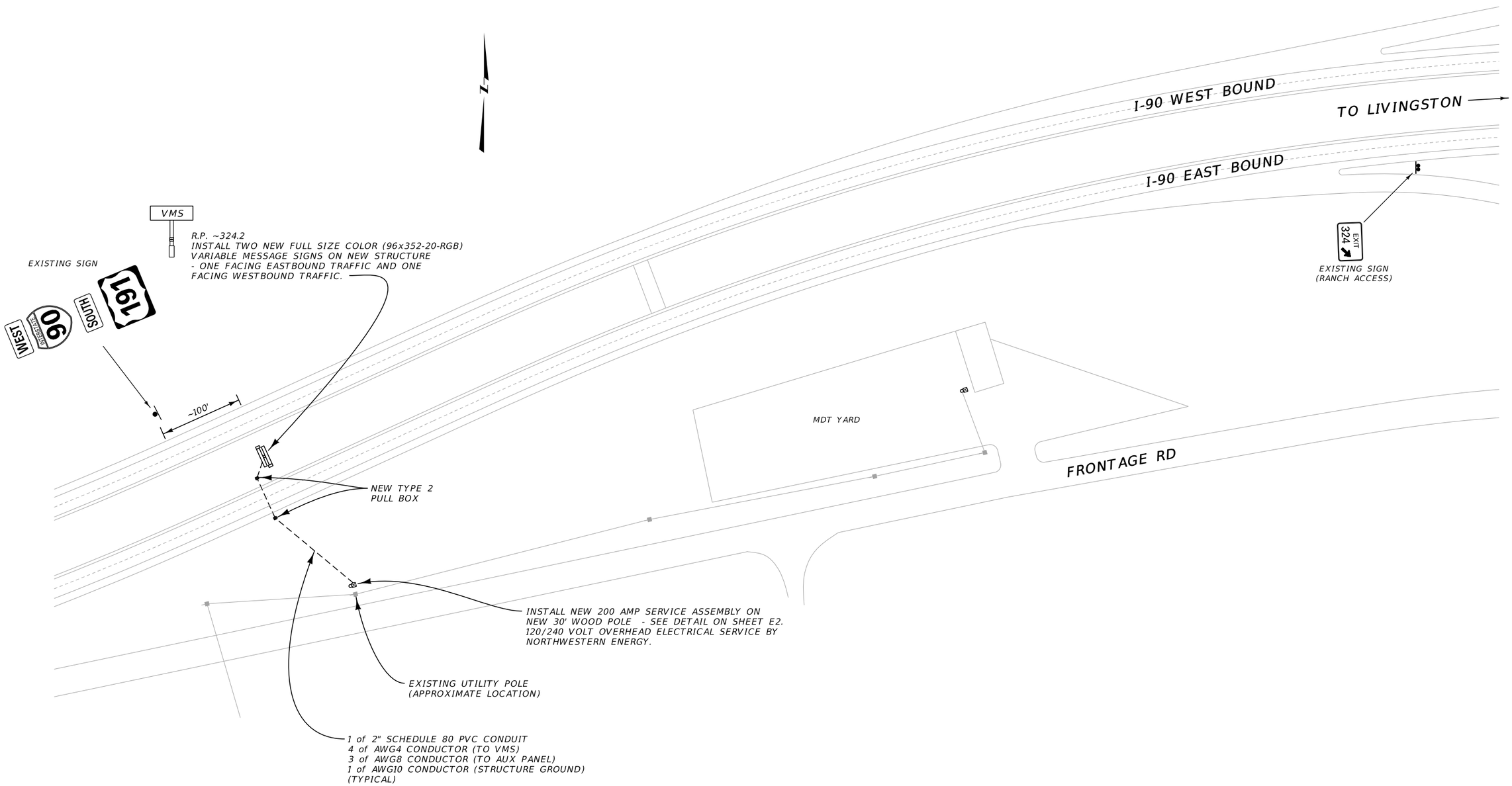
SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

SITE 6
ROAD CLOSURE SYSTEM
EXIT 319 - JACKSON CREEK INTERCHANGE

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln002.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:16:19 PM CPS – U2948	CHECKED BY			GALLATIN COUNTY	UPN 9856000	SHEET E17

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SITE 7

VARIABLE MESSAGE SIGN - R.P. 324.2

WEST OF EXIT 324 (RANCH ACCESS)

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln002.dgn 6/13/2023 12:16:23 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS PARK COUNTY		I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E18

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NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE

SOLAR SYSTEM - SEE SHEET E10

ROAD CLOSED 1/2 MILE
WHEN FLASHING

NEW SIGN - SEE SHEET E10

I-90 WESTBOUND

I-90 EASTBOUND

SOLAR SYSTEM - SEE SHEET E10

NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE

LOGO
GAS – FOOD
LOGO
EXT 330

EXISTING SIGN

WHEN FLASHING
90 CLOSED
ALL TRAFFIC MUST EXIT

NEW SIGN - SEE SHEET E10

A

A

Livingston
90
EXT 330

EXISTING SIGN

CONDUIT & WIRE SCHEDULE

A> NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B> NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

C> NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 3 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

NOTE:
REMOVE & SALVAGE EXISTING ROAD CLOSURE GATES (4 TOTAL) AND REMOVE FOUNDATIONS.

REMOVE & DISPOSE EXISTING WIRING THAT RUNS TO THE EXISTING GATES. WHERE WIRING TO EXISTING GATES IS RUN IN EXISTING LIGHTING CONDUIT, CUT AND TAPE THE GATE WIRING IN THE NEAREST LIGHT POLE BASE AND ABANDON THE WIRING AS-IS.

DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND

CONDUIT ---------
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

WHEN FLASHING
90 WEST
CLOSED

NEW SIGN - SEE SHEET E10

SOLAR SYSTEM - SEE SHEET E10
NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE

WHEN FLASHING
90 EAST
CLOSED

NEW SIGN - SEE SHEET E10

HWY 10 W

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
E2 - SERVICE ASSEMBLY DETAIL
E3 - ROAD CLOSURE SYSTEM
E4 TO E6 - GATE DETAILS
E10 - ADVANCE WARNING SIGN

C

REMOVE & SALVAGE EXISTING SERVICE ASSEMBLY. INSTALL NEW 200 AMP SERVICE ASSEMBLY ON EXISTING WOOD POLE - SEE DETAIL ON SHEET E2. CONTACT NORTHWESTERN ENERGY FOR DISCONNECT/RE-CONNECT.

PB1
PB2
PB3
PB4
PB5
PB6
PB7
PB8
PB9
PB10

NEW ROAD CLOSE GATE 1A
NEW ROAD CLOSE GATE 3
NEW ROAD CLOSE GATE 2
NEW ROAD CLOSE GATE 1

A
B
C

A

A

REMOVE & SALVAGE EXISTING ROAD CLOSURE GATES. ABANDON EXISTING CONDUIT IN PLACE. (SEE NOTE)

EXT 330
EXISTING SIGN

I-90 WESTBOUND

I-90 EASTBOUND

FRONTAGE RD

SITE 8
ROAD CLOSURE SYSTEM
EXIT 330 - LIVINGSTON
WEST INTERCHANGE

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln003.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	3/15/2022			
		12:16:32 PM CPS – U2948	CHECKED BY			PARK COUNTY	UPN 9856000	SHEET E19

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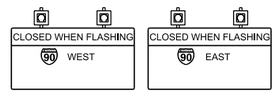
ELECTRICAL LEGEND

CONDUIT ---------

LUMINAIRE

ROAD CLOSURE GATE

PB# = TYPE 2 PULL BOX



CONDUIT & WIRE SCHEDULE

A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1.5" STEEL CONDUIT BANDED TO SIGN STRUCTURE
NEW 2 of 5AWG14 SIGNAL CABLE

C — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

D — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

E — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 3 of 5AWG SIGNAL CABLE
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

NOTE:
REMOVE & SALVAGE EXISTING ROAD CLOSURE GATES (2 TOTAL) AND REMOVE FOUNDATIONS.

REMOVE & DISPOSE EXISTING WIRING THAT RUNS TO THE EXISTING GATES. WHERE WIRING TO EXISTING GATES IS RUN IN EXISTING LIGHTING CONDUIT, CUT AND TAPE THE GATE WIRING IN THE NEAREST LIGHT POLE BASE AND ABANDON THE WIRING AS-IS.

DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

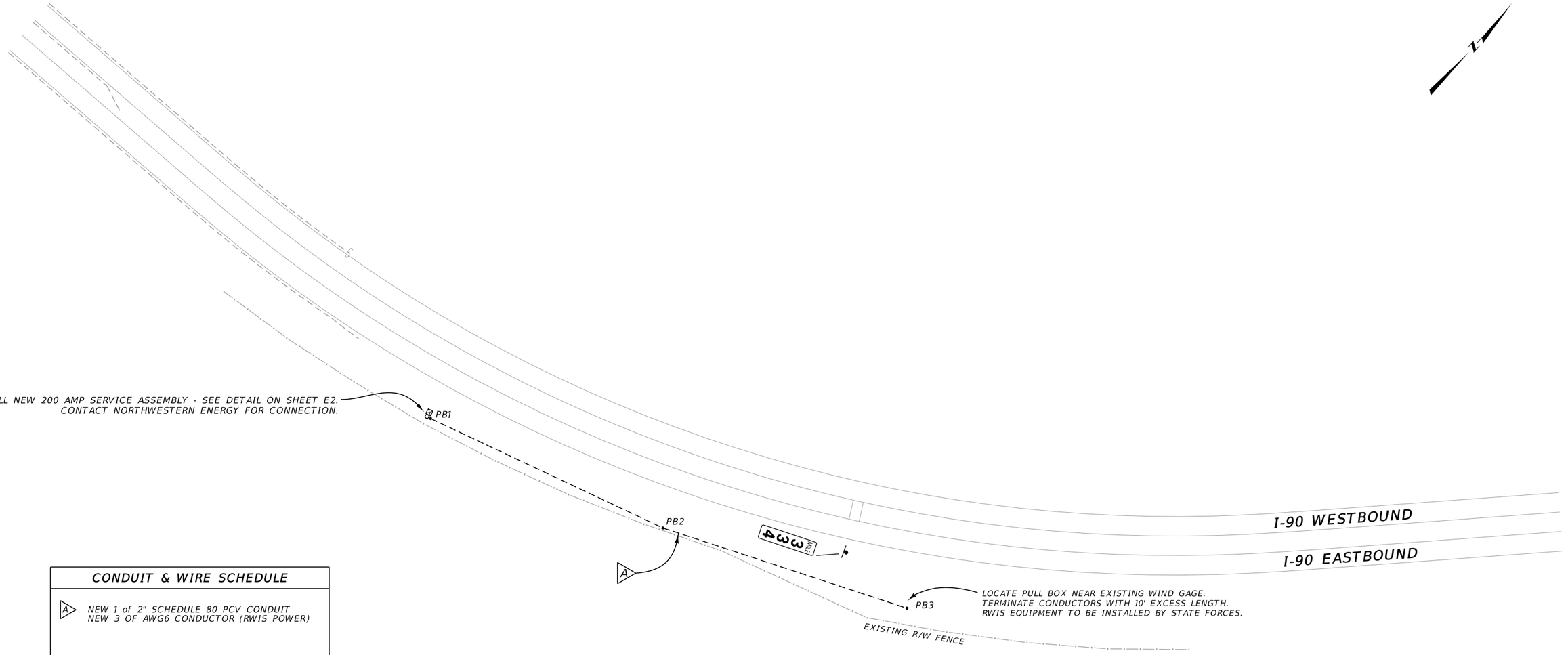
SITE 9
ROAD CLOSURE SYSTEM
EXIT 333 - LIVINGSTON
PARK ST. INTERCHANGE

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln003.dgn 6/13/2023 12:16:36 PM CPS - U2940	DESIGNED BY REVIEWED BY CHECKED BY	K. JOHNSON	3/15/2022	ELECTRICAL PLANS PARK COUNTY		I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E20

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CONDUIT & WIRE SCHEDULE	
A	NEW 1 of 2" SCHEDULE 80 PCV CONDUIT NEW 3 OF AWG6 CONDUCTOR (RWIS POWER)

ELECTRICAL LEGEND	
CONDUIT	--------
PB# = TYPE 2 PULL BOX	

SITE 10
RWIS SITE
R.P. 334 - EAST OF
LIVINGSTON

3 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln004.dgn 6/13/2023 12:16:45 PM CPS – U2948	DESIGNED BY REVIEWED BY CHECKED BY	K. JOHNSON	3/15/2022	ELECTRICAL PLANS PARK COUNTY	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274 UPN 9856000 SHEET E21

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY

CONDUIT & WIRE SCHEDULE

A
NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 2 of AWG10 CONDUCTOR (OVERHEAD SIGN)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B
NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

C
NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 2 of AWG10 CONDUCTOR (BLANKOUT SIGN)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

D
NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of AWG10 CONDUCTOR (OVERHEAD SIGN)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

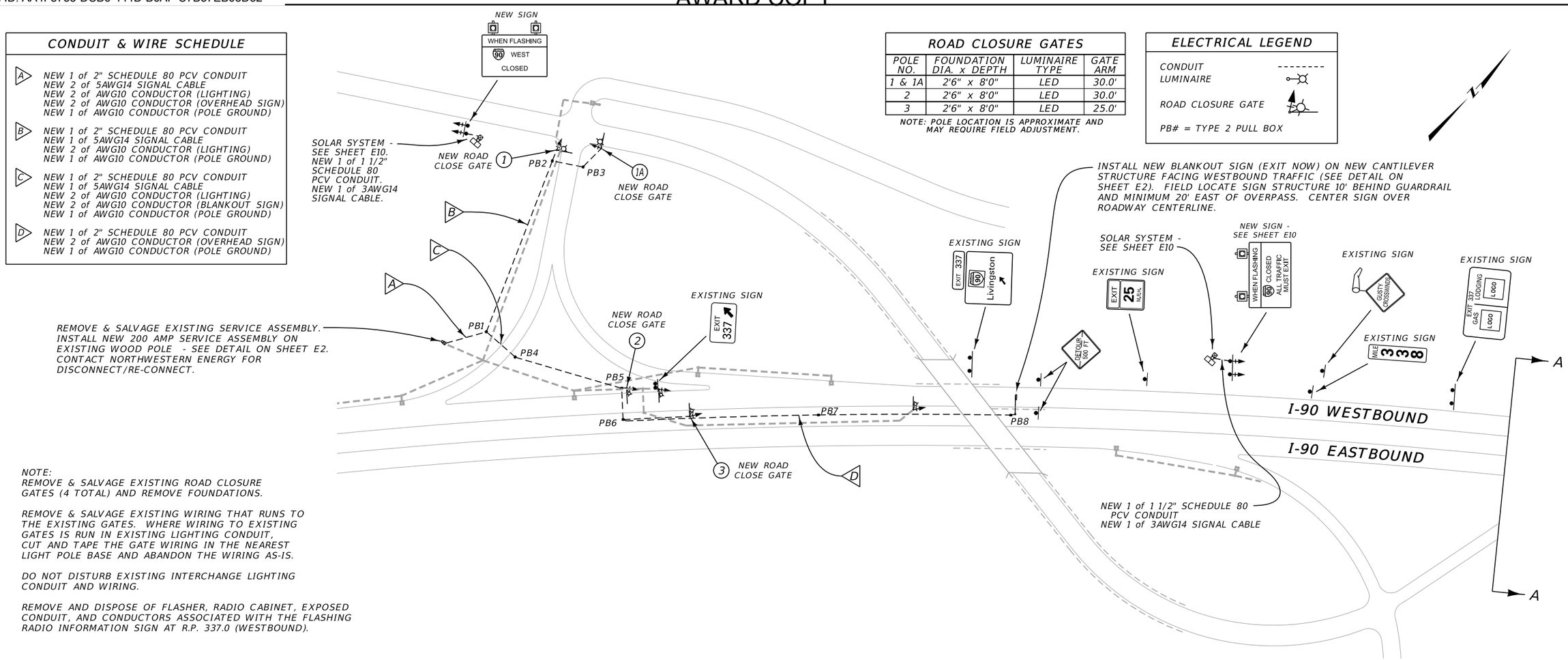
ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

ELECTRICAL LEGEND

CONDUIT
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

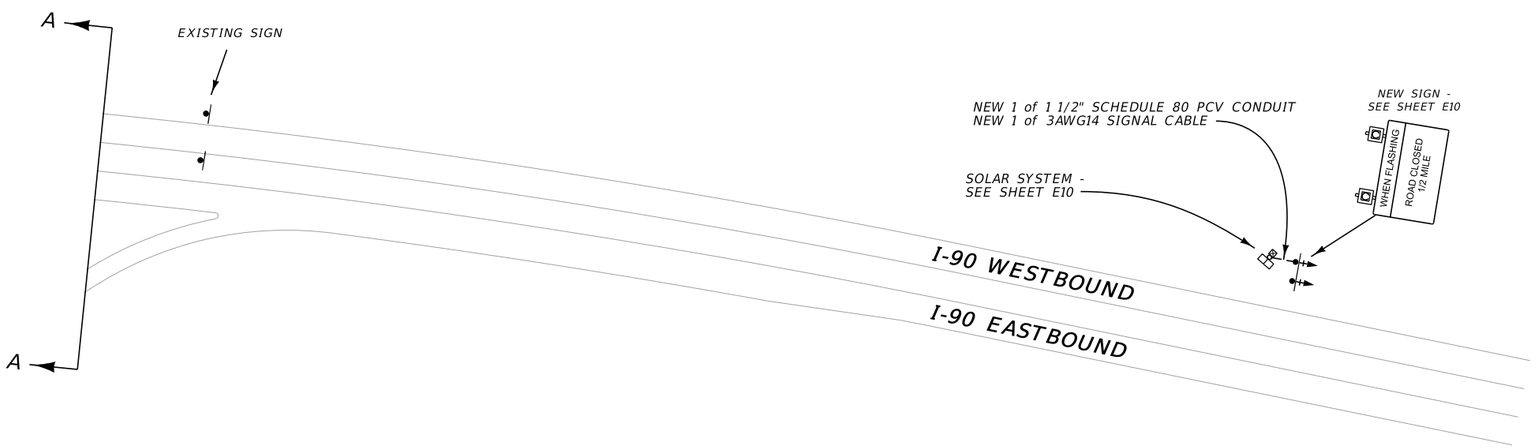


NOTE:
REMOVE & SALVAGE EXISTING ROAD CLOSURE GATES (4 TOTAL) AND REMOVE FOUNDATIONS.

REMOVE & SALVAGE EXISTING WIRING THAT RUNS TO THE EXISTING GATES. WHERE WIRING TO EXISTING GATES IS RUN IN EXISTING LIGHTING CONDUIT, CUT AND TAPE THE GATE WIRING IN THE NEAREST LIGHT POLE BASE AND ABANDON THE WIRING AS-IS.

DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

REMOVE AND DISPOSE OF FLASHER, RADIO CABINET, EXPOSED CONDUIT, AND CONDUCTORS ASSOCIATED WITH THE FLASHING RADIO INFORMATION SIGN AT R.P. 337.0 (WESTBOUND).



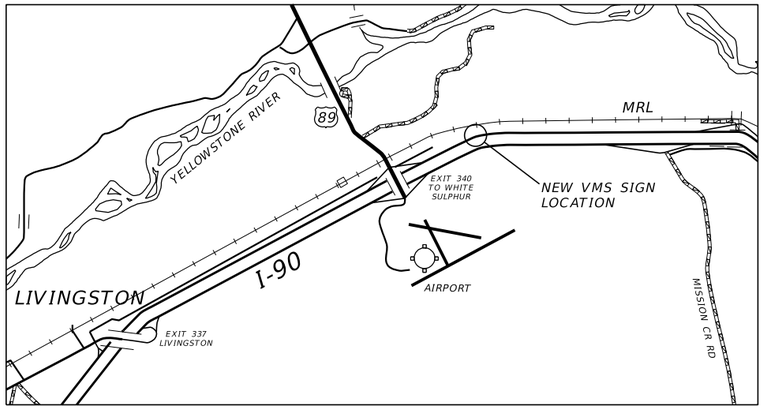
SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

SITE 11
ROAD CLOSURE SYSTEM
EXIT 337 - LIVINGSTON
EAST INTERCHANGE

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln004.dgn 6/13/2023 12:16:48 PM CPS – U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E. Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS PARK COUNTY		I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E22

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



N

VMS

EXISTING OVERHEAD UTILS
(APPROXIMATE LOCATION)

R.P. ~341.4
INSTALL NEW FULL SIZE COLOR (96x352-20-RGB)
VARIABLE MESSAGE SIGN ON NEW
STRUCTURE FACING WESTBOUND TRAFFIC.

FIELD LOCATE VMS SIGN BETWEEN
R/W FENCE AND EOP WITHIN
100' TO 150' OF OVERHEAD
UTILITY CROSSING.

EXISTING
R/W FENCE

EXISTING SIGN

EXIT 340
89 NORTH
White Sulphur
Springs
1 MILE

I-90 WESTBOUND

I-90 EASTBOUND

NEW TYPE 2
PULL BOX

EXISTING
R/W FENCE

1 of 2" SCHEDULE 80 PVC CONDUIT
4 of AWG4 CONDUCTOR (TO VMS)
3 of AWG8 CONDUCTOR (TO AUX PANEL)
1 of AWG10 CONDUCTOR (STRUCTURE GROUND)
(TYPICAL)

EXISTING UTILITY POLE
(APPROXIMATE LOCATION)

INSTALL NEW 200 AMP SERVICE ASSEMBLY ON
NEW 30' WOOD POLE - SEE DETAIL ON SHEET E2.
120/240 VOLT OVERHEAD ELECTRICAL SERVICE BY
NORTHWESTERN ENERGY.

SITE 12

VARIABLE MESSAGE SIGN - R.P. 341.4

EAST OF WHITE SULPHUR

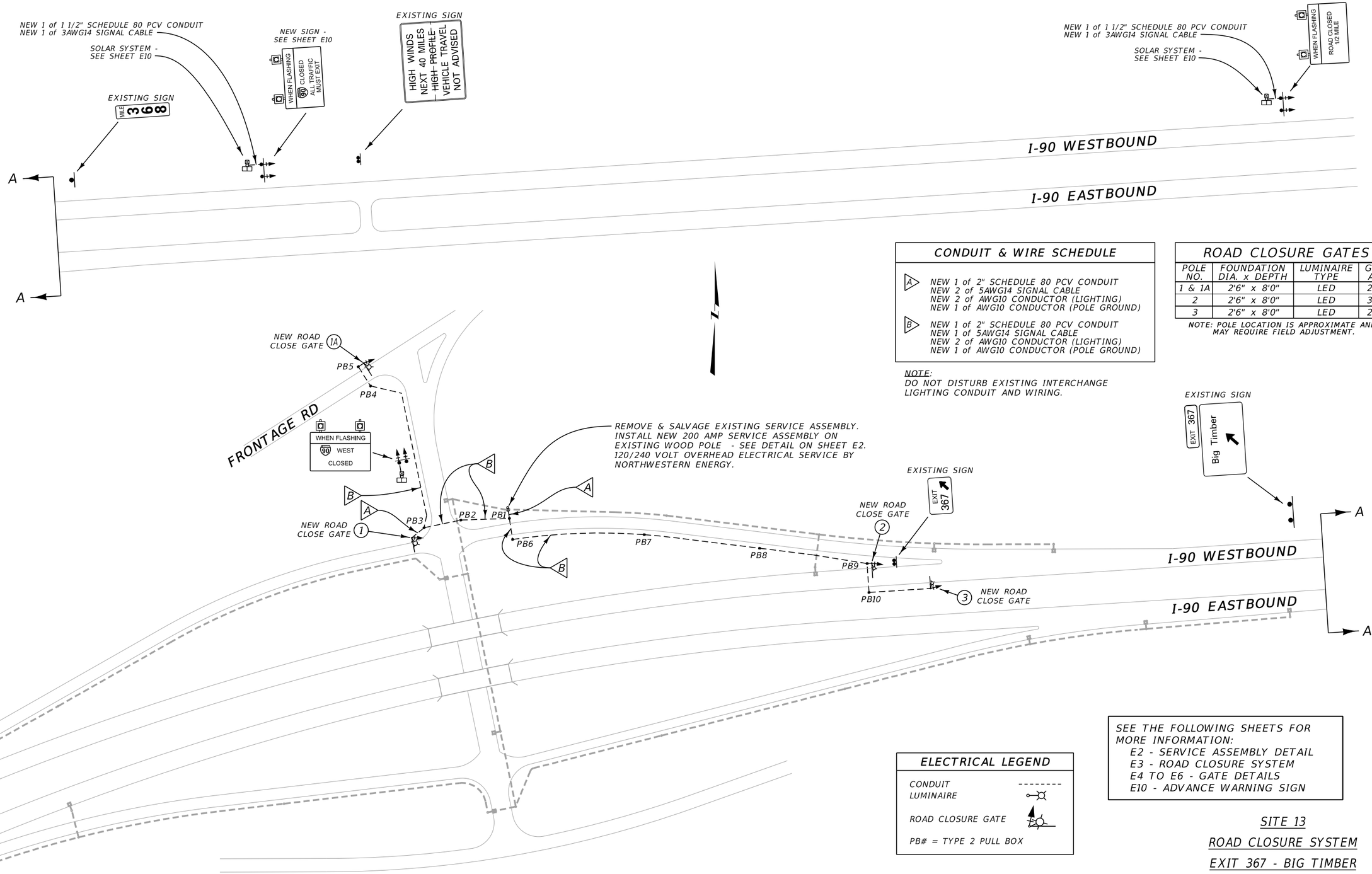
SPRINGS INTERCHANGE EXIT 340

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln005.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:16:57 PM CPS - U2948	CHECKED BY			PARK COUNTY	UPN 9856000	SHEET E23

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



CONDUIT & WIRE SCHEDULE

A	NEW 1 of 2" SCHEDULE 80 PCV CONDUIT NEW 2 of 5AWG14 SIGNAL CABLE NEW 2 of AWG10 CONDUCTOR (LIGHTING) NEW 1 of AWG10 CONDUCTOR (POLE GROUND)
B	NEW 1 of 2" SCHEDULE 80 PCV CONDUIT NEW 1 of 5AWG14 SIGNAL CABLE NEW 2 of AWG10 CONDUCTOR (LIGHTING) NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1 & 1A	2'6" x 8'0"	LED	25.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

NOTE:
DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

ELECTRICAL LEGEND

CONDUIT
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

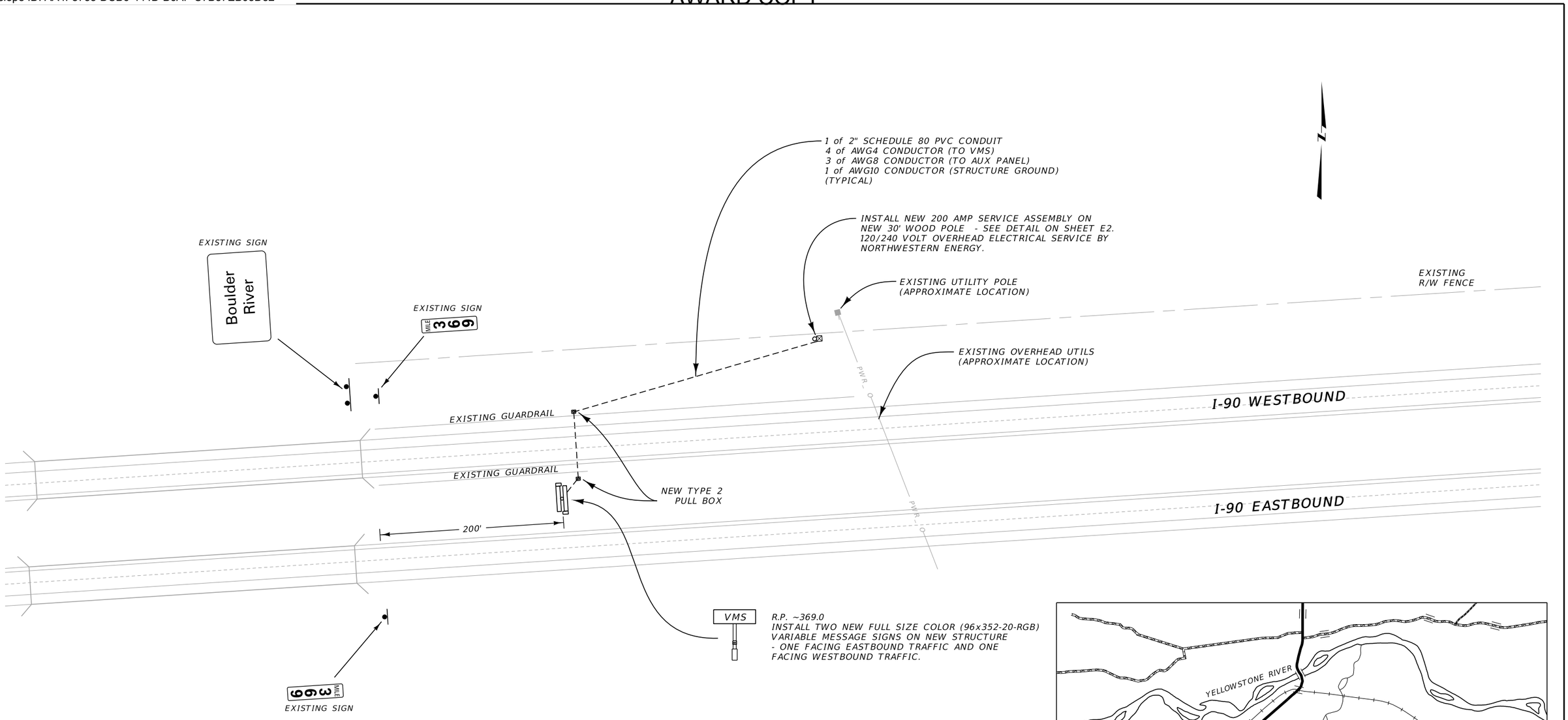
SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

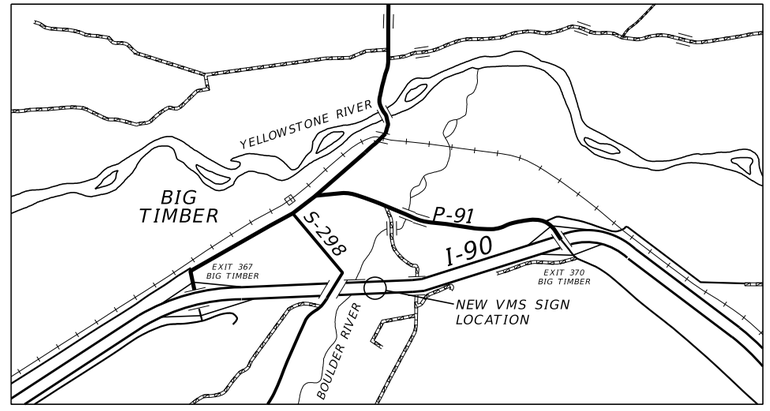
SITE 13
ROAD CLOSURE SYSTEM
EXIT 367 - BIG TIMBER
(WEST) INTERCHANGE

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln005.dgn 6/13/2023 12:17:01 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS SWEET GRASS COUNTY	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274 UPN 9856000 SHEET E24

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32





SITE 14

VARIABLE MESSAGE SIGN - R.P. 369.0

EAST OF BIG TIMBER WEST

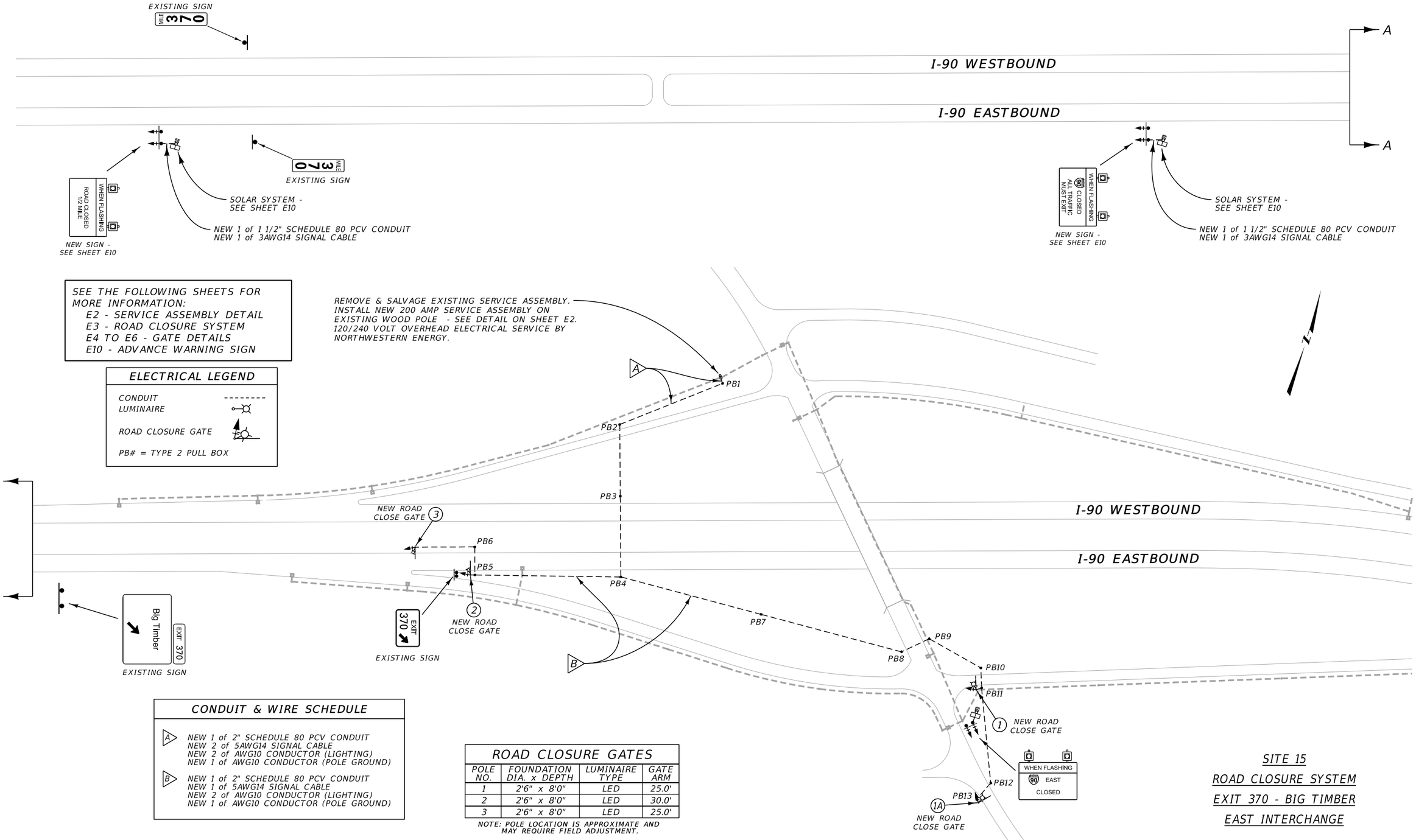
INTERCHANGE EXIT 367

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln006.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:17:10 PM CPS - U2948	CHECKED BY			SWEET GRASS COUNTY	UPN 9856000	SHEET E25

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

ELECTRICAL LEGEND

CONDUIT
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

REMOVE & SALVAGE EXISTING SERVICE ASSEMBLY. INSTALL NEW 200 AMP SERVICE ASSEMBLY ON EXISTING WOOD POLE - SEE DETAIL ON SHEET E2. 120/240 VOLT OVERHEAD ELECTRICAL SERVICE BY NORTHWESTERN ENERGY.

CONDUIT & WIRE SCHEDULE

A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	25.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

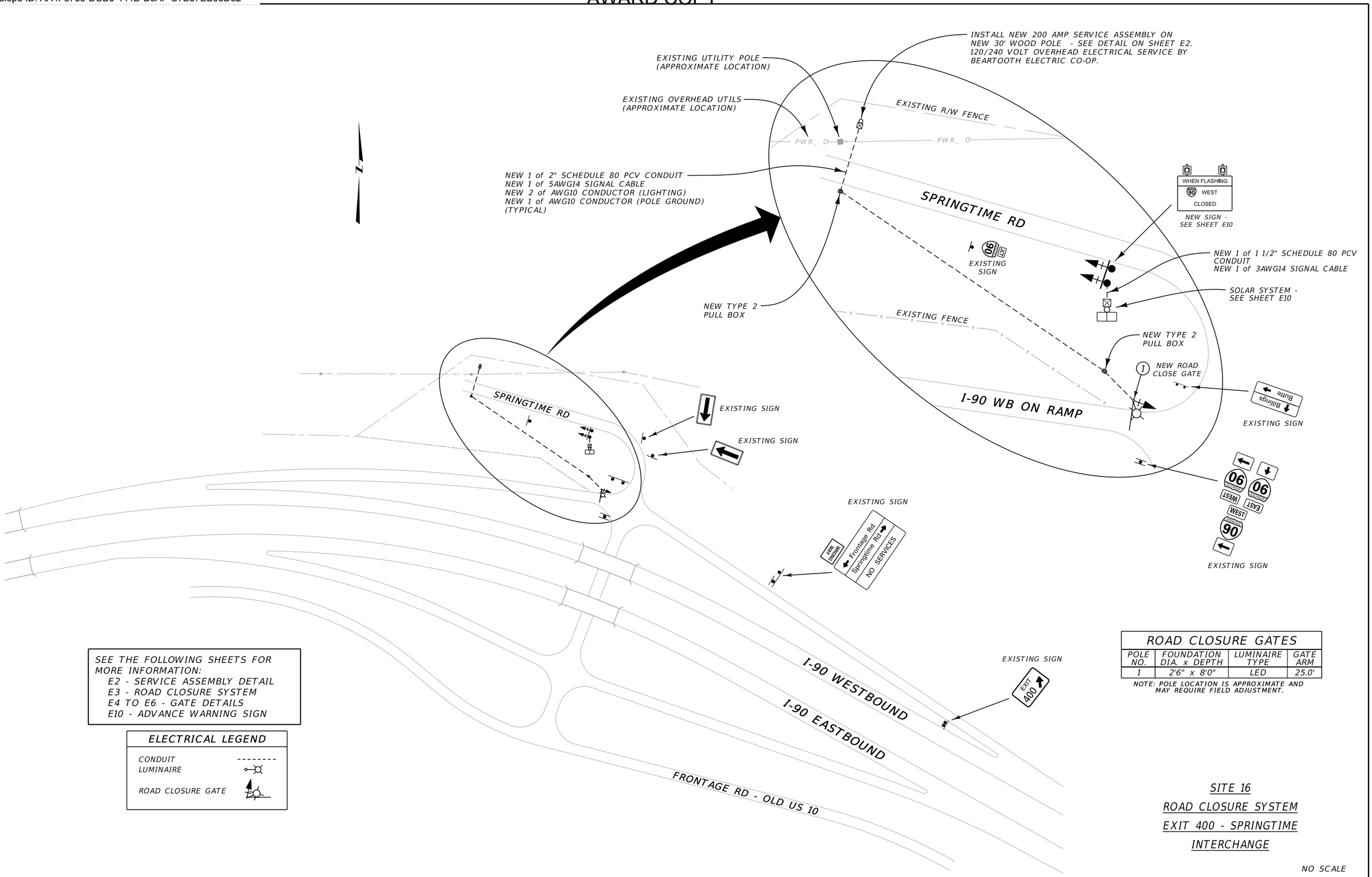
SITE 15
ROAD CLOSURE SYSTEM
EXIT 370 - BIG TIMBER EAST INTERCHANGE

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln006.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:17:13 PM CPS - U2948	CHECKED BY			SWEET GRASS COUNTY	UPN 9856000	SHEET E26

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS
- E10 - ADVANCE WARNING SIGN

ELECTRICAL LEGEND

CONDUIT	---------
LUMINAIRE	
ROAD CLOSURE GATE	

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	25.0'

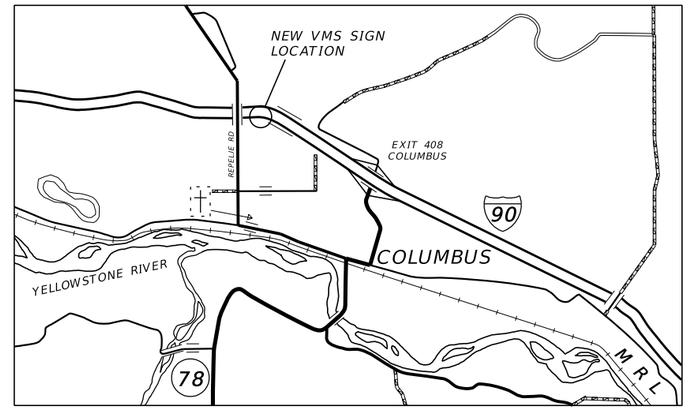
NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

SITE 16
ROAD CLOSURE SYSTEM
EXIT 400 - SPRINGTIME INTERCHANGE

NO SCALE

2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln006.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT / IM 90-5(85)274
1		6/13/2023 12:17:16 PM CPS - U2948	REVIEWED BY	K. JOHNSON	6/16/2022	SWEET GRASS COUNTY	UPN 9856000 / SHEET E27
			CHECKED BY				

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



SITE 17

VARIABLE MESSAGE SIGN - R.P. 407.6

WEST OF COLUMBUS

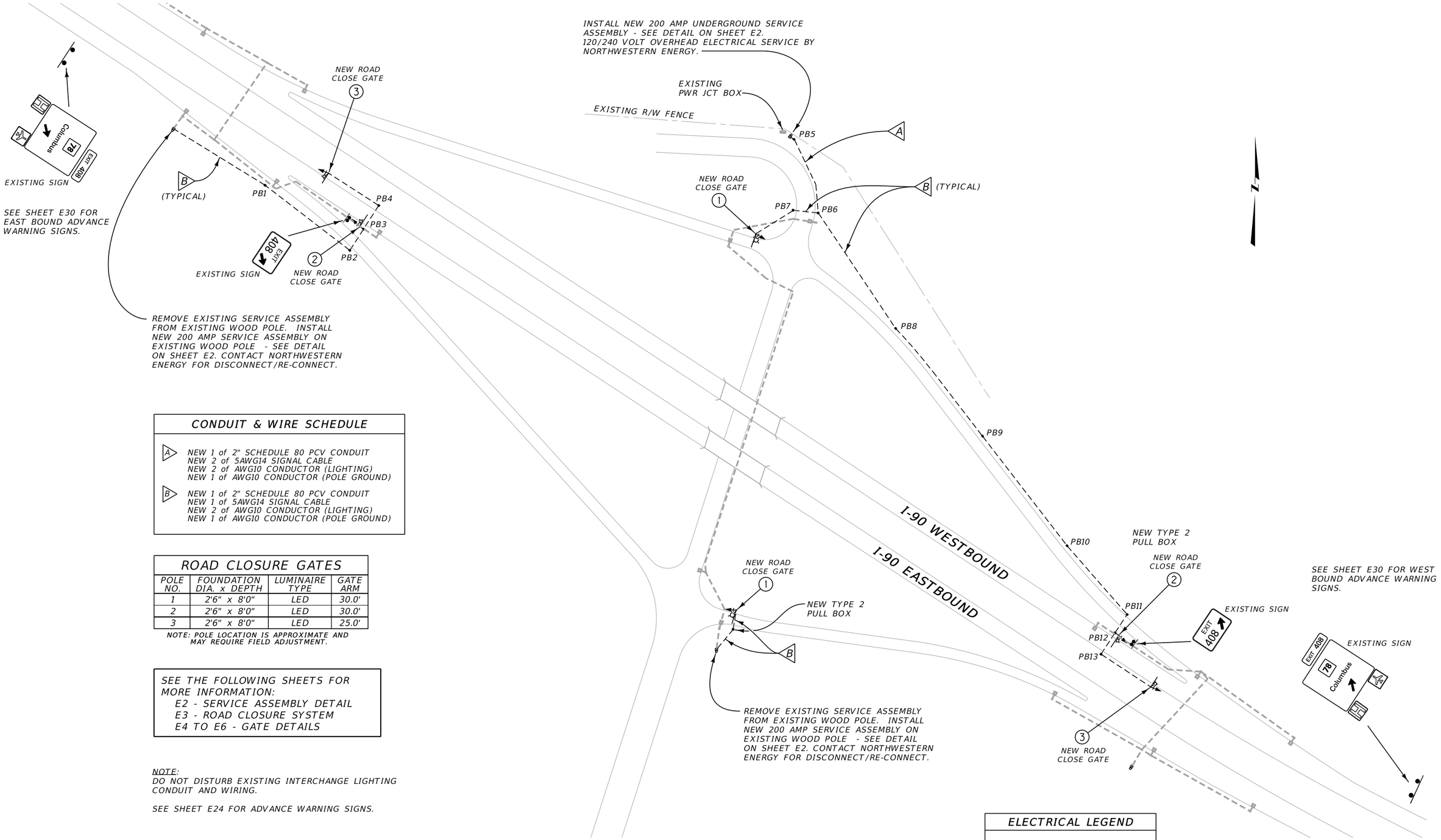
INTERCHANGE EXIT 408

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln007.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:17:26 PM CPS - U2948	CHECKED BY			STILLWATER COUNTY	UPN 9856000	SHEET E28

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



CONDUIT & WIRE SCHEDULE

A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
- E2 - SERVICE ASSEMBLY DETAIL
- E3 - ROAD CLOSURE SYSTEM
- E4 TO E6 - GATE DETAILS

NOTE:
DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

SEE SHEET E24 FOR ADVANCE WARNING SIGNS.

ELECTRICAL LEGEND

CONDUIT ---------
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

SITE 18
ROAD CLOSURE SYSTEM
EXIT 408 - COLUMBUS INTERCHANGE

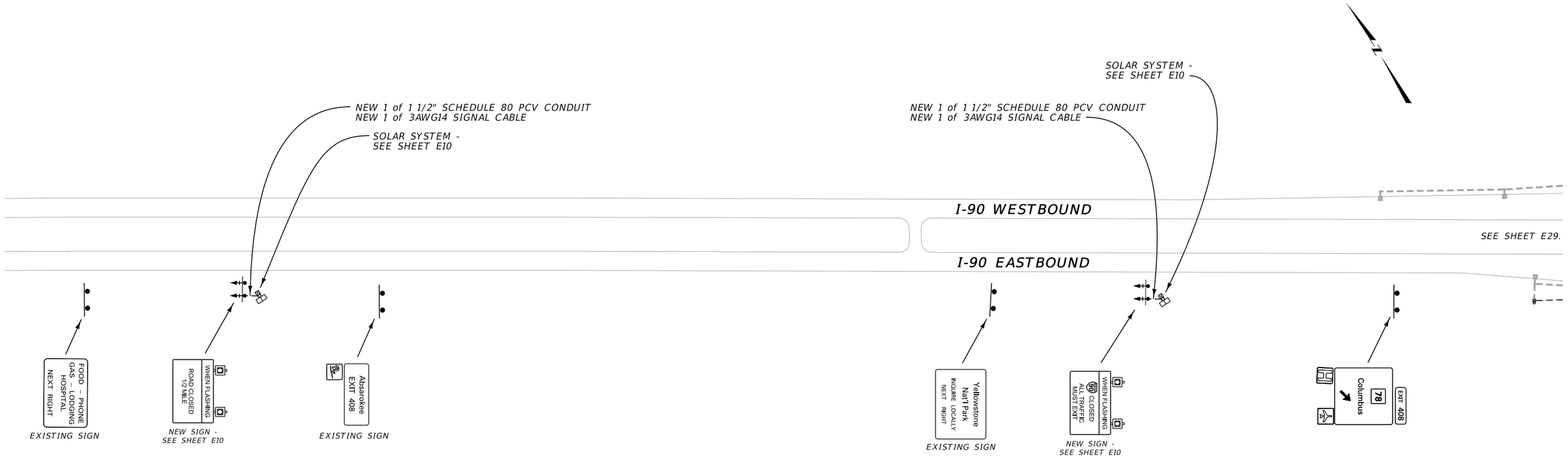
NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln007.dgn 6/13/2023 12:17:29 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS STILLWATER COUNTY	I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E29

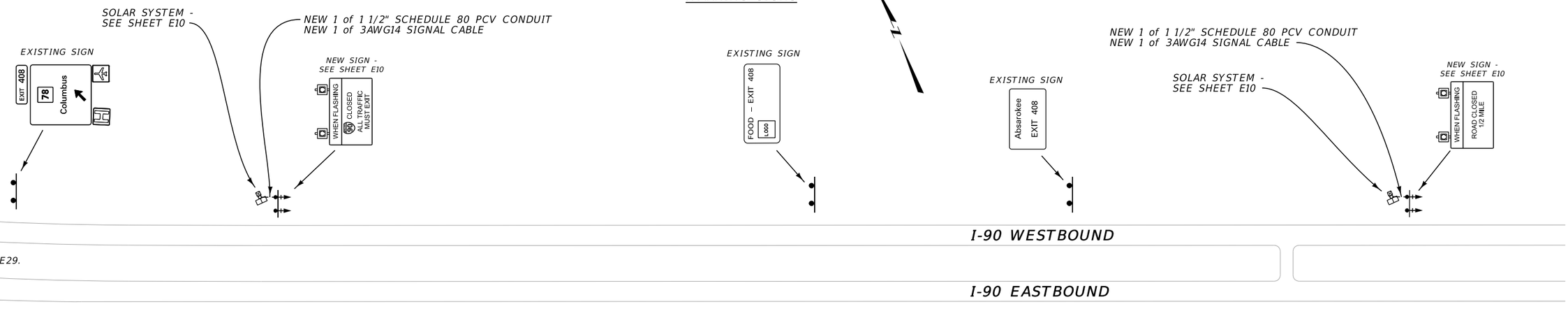
DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY

EAST BOUND ADVANCE WARNING SIGNS



WEST BOUND ADVANCE WARNING SIGNS



SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
E10 - ADVANCE WARNING SIGN

SITE 18 CONTINUED)
ROAD CLOSURE SYSTEM
EXIT 408 - COLUMBUS INTERCHANGE

NO SCALE

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY

REMOVE AND SALVAGE EXISTING SERVICE ASSEMBLY FROM EXISTING WOOD POLE. INSTALL NEW 200 AMP SERVICE ASSEMBLY ON EXISTING WOOD POLE - SEE DETAIL ON SHEET E2. CONTACT NORTHWESTERN ENERGY FOR DISCONNECT/RE-CONNECT.

ROAD CLOSURE GATES

POLE NO.	FOUNDATION DIA. x DEPTH	LUMINAIRE TYPE	GATE ARM
1	2'6" x 8'0"	LED	30.0'
2	2'6" x 8'0"	LED	30.0'
3	2'6" x 8'0"	LED	25.0'

NOTE: POLE LOCATION IS APPROXIMATE AND MAY REQUIRE FIELD ADJUSTMENT.

CONDUIT & WIRE SCHEDULE

A — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 2 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

B — NEW 1 of 2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 5AWG14 SIGNAL CABLE
NEW 2 of AWG10 CONDUCTOR (LIGHTING)
NEW 1 of AWG10 CONDUCTOR (POLE GROUND)

ELECTRICAL LEGEND

CONDUIT
LUMINAIRE
ROAD CLOSURE GATE
PB# = TYPE 2 PULL BOX

A
B (TYPICAL)
PB1
PB2
1 NEW ROAD CLOSE GATE
PB3
PB4
PB5
PB6
DO NOT DISTURB EXISTING CONDUIT AND WIRING (TYPICAL)
EXISTING SIGN
EXIT 426
NEW ROAD CLOSE GATE
2
PB7
PB8
3 NEW ROAD CLOSE GATE
I-90 WESTBOUND
I-90 EASTBOUND
A

EXISTING SIGN
EXIT 426
Park City
EXISTING SIGN
MILE 427
SOLAR SYSTEM - SEE SHEET E10
NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE
NEW SIGN - SEE SHEET E10
WHEN FLASHING
CLOSED
ALL TRAFFIC MUST EXIT
A
A
MILE 424
EXISTING SIGN

SEE THE FOLLOWING SHEETS FOR MORE INFORMATION:
E2 - SERVICE ASSEMBLY DETAIL
E3 - ROAD CLOSURE SYSTEM
E4 TO E6 - GATE DETAILS
E10 - ADVANCE WARNING SIGN

NOTE:
DO NOT DISTURB EXISTING INTERCHANGE LIGHTING CONDUIT AND WIRING.

NEW SIGN - SEE SHEET E10
WHEN FLASHING
ROAD CLOSED 1/2 MILE
NEW 1 of 1 1/2" SCHEDULE 80 PCV CONDUIT
NEW 1 of 3AWG14 SIGNAL CABLE
SOLAR SYSTEM - SEE SHEET E10

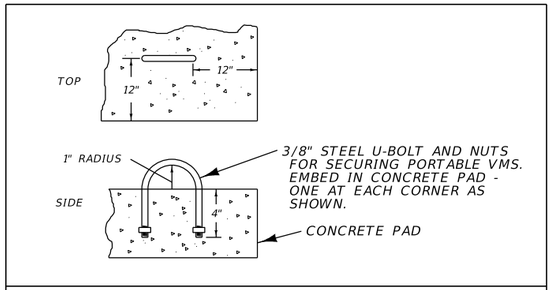
I-90 WESTBOUND
I-90 EASTBOUND

SITE 19
ROAD CLOSURE SYSTEM
EXIT 426 - PARK CITY
INTERCHANGE

NO SCALE

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln008.dgn 6/13/2023 12:17:41 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS STILLWATER COUNTY	I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E31

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



U-BOLT DETAIL

SITE 20

PORTABLE VARIABLE MESSAGE SIGN

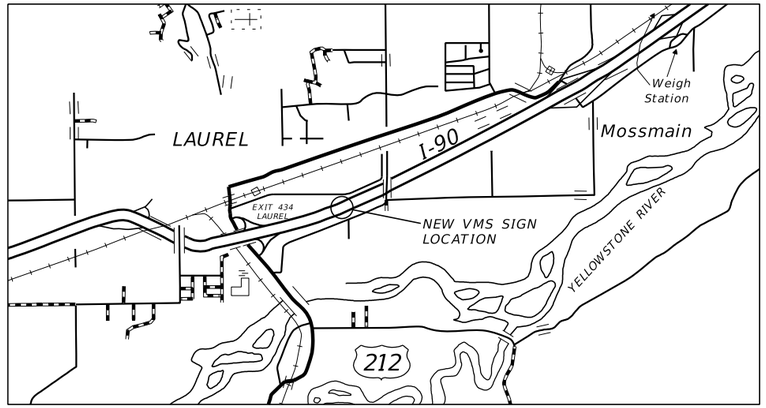
CONCRETE PAD - R.P. 427.7

EAST OF EXIT 426 (PARK CITY)

NO SCALE

2 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln008.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS		I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022				
		12:17:45 PM CPS - U294	CHECKED BY			STILLWATER COUNTY		UPN 9856000	SHEET E32

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



EXISTING SIGN

Yellowstone Nat'l Park NEXT RIGHT

EXISTING R/W FENCE

I-90 WESTBOUND

I-90 EASTBOUND

EXISTING R/W FENCE

1 of 2" SCHEDULE 80 PVC CONDUIT
4 of AWG4 CONDUCTOR (TO VMS)
3 of AWG8 CONDUCTOR (TO AUX PANEL)
1 of AWG10 CONDUCTOR (STRUCTURE GROUND)
(TYPICAL)

NEW TYPE 2 PULL BOX

EXISTING SIGN

LODGING – EXIT 434 LODGING

VMS

INSTALL NEW HALF SIZE COLOR VMS (96X240-20-RGB) VARIABLE MESSAGE SIGN ON NEW CANTILEVER STRUCTURE FACING EASTBOUND TRAFFIC.

FIELD LOCATE VMS SIGN BETWEEN R/W FENCE AND EOP WITHIN 100' TO 150' OF OVERHEAD UTILITY CROSSING.

EXISTING SIGN

345 MILES

INSTALL NEW HALF SIZE COLOR VMS (96X240-20-RGB) VARIABLE MESSAGE SIGN ON NEW CANTILEVER STRUCTURE FACING WESTBOUND TRAFFIC.

VMS

FIELD LOCATE VMS SIGN BETWEEN R/W FENCE AND EOP WITHIN 100' TO 150' OF OVERHEAD UTILITY CROSSING.

PWR

EXISTING OVERHEAD UTILITY CROSSING (APPROXIMATE LOCATION)

INSTALL NEW 200 AMP SERVICE ASSEMBLY ON NEW 30' WOOD POLE - SEE DETAIL ON SHEET E2. 120/240 VOLT OVERHEAD ELECTRICAL SERVICE BY NORTHWESTERN ENERGY.

NEW TYPE 2 PULL BOX

334 MILES

EXISTING SIGN

S Frontage Rd
Billings
Jct I–94
3
14
22

EXISTING SIGN

SITE 21

VARIABLE MESSAGE SIGN - R.P. 435.0

EAST OF LAUREL

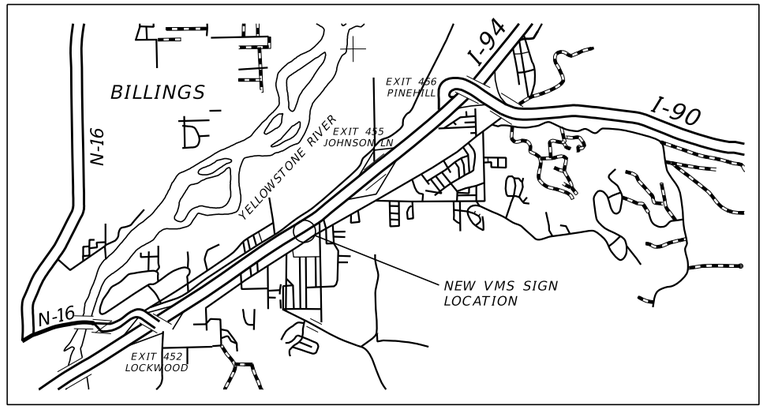
INTERCHANGE EXIT 434

NO SCALE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln009.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
2		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:17:56 PM CPS – U2948	CHECKED BY			YELLOWSTONE COUNTY	UPN 9856000	SHEET E33

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32

AWARD COPY



N

EXISTING SIGN

City Center
EXIT 450

I-90 WESTBOUND

I-90 EASTBOUND

EXISTING R/W FENCE

VMS

INSTALL NEW HALF SIZE COLOR VMS (96X240-20-RGB) VARIABLE MESSAGE SIGN ON NEW CANTILEVER STRUCTURE FACING EASTBOUND TRAFFIC.

EXISTING SIGN

EXIT 452
NORTH
87
89
Lockwood
Roundup
1 MILE

EXISTING FOUNDATIONS OF REMOVED SIGN

1 of 2" SCHEDULE 80 PVC CONDUIT
4 of AWG4 CONDUCTOR (TO VMS)
3 of AWG8 CONDUCTOR (TO AUX PANEL)
1 of AWG10 CONDUCTOR (STRUCTURE GROUND)
(TYPICAL)

NEW TYPE 2 PULL BOX

REMOVE AND SALVAGE EXISTING SERVICE ASSEMBLY AND EXISTING WOOD POLE. INSTALL NEW 200 AMP SERVICE ASSEMBLY ON NEW 30' WOOD POLE - SEE DETAIL ON SHEET E2. 120/240 VOLT OVERHEAD ELECTRICAL SERVICE BY NORTHWESTERN ENERGY.

EXISTING OVERHEAD UTILITY POLE (APPROXIMATE LOCATION)

EXISTING OVERHEAD UTILS (APPROXIMATE LOCATION)

PWR_O

PWR_O

PWR_O

PWR_O

PWR_O

SITE 22

VARIABLE MESSAGE SIGN - R.P. 454.2

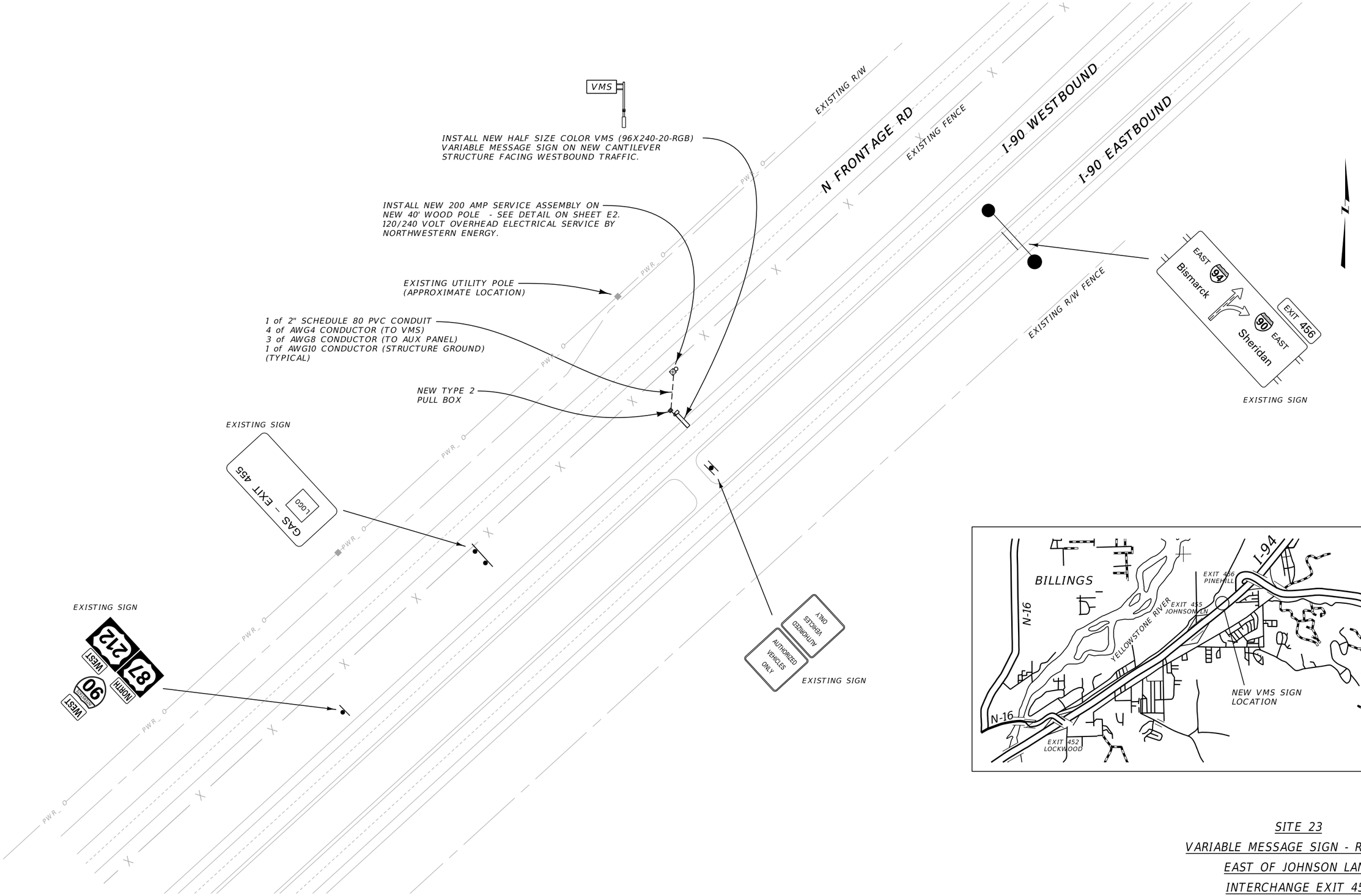
WEST OF JOHNSON LANE

INTERCHANGE EXIT 455

NO SCALE

3 / 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln009.dgn 6/13/2023 12:17:59 PM CPS - U2948	DESIGNED BY REVIEWED BY CHECKED BY	Dennis E.Schrock K. JOHNSON	March 2021 6/16/2022	ELECTRICAL PLANS YELLOWSTONE COUNTY		I-90 INCIDENT MANAGEMENT UPN 9856000	IM 90-5(85)274 SHEET E34

DocuSign Envelope ID: AA4F8753-DCB6-444D-B6AF-C7B57EB05D32



SITE 23

VARIABLE MESSAGE SIGN - R.P. 455.8

EAST OF JOHNSON LANE

INTERCHANGE EXIT 455

NO SCALE

2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9856000elpln009.dgn	DESIGNED BY	Dennis E.Schrock	March 2021	ELECTRICAL PLANS	I-90 INCIDENT MANAGEMENT	IM 90-5(85)274
1		6/13/2023	REVIEWED BY	K. JOHNSON	6/16/2022			
		12:18:02 PM CPS - U2948	CHECKED BY			YELLOWSTONE COUNTY	UPN 9856000	SHEET E35