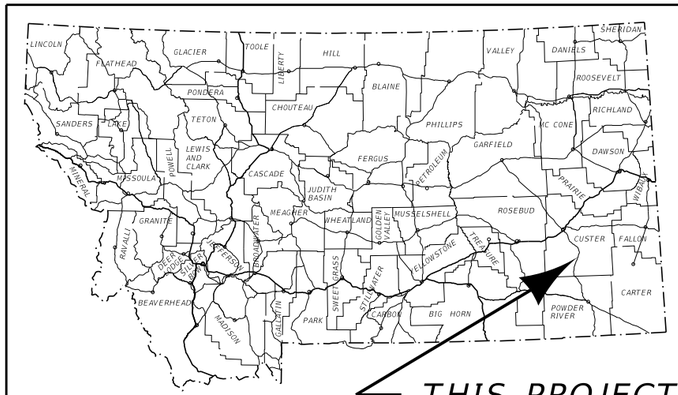
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MONTANA DEPARTMENT OF TRANSPORTATION

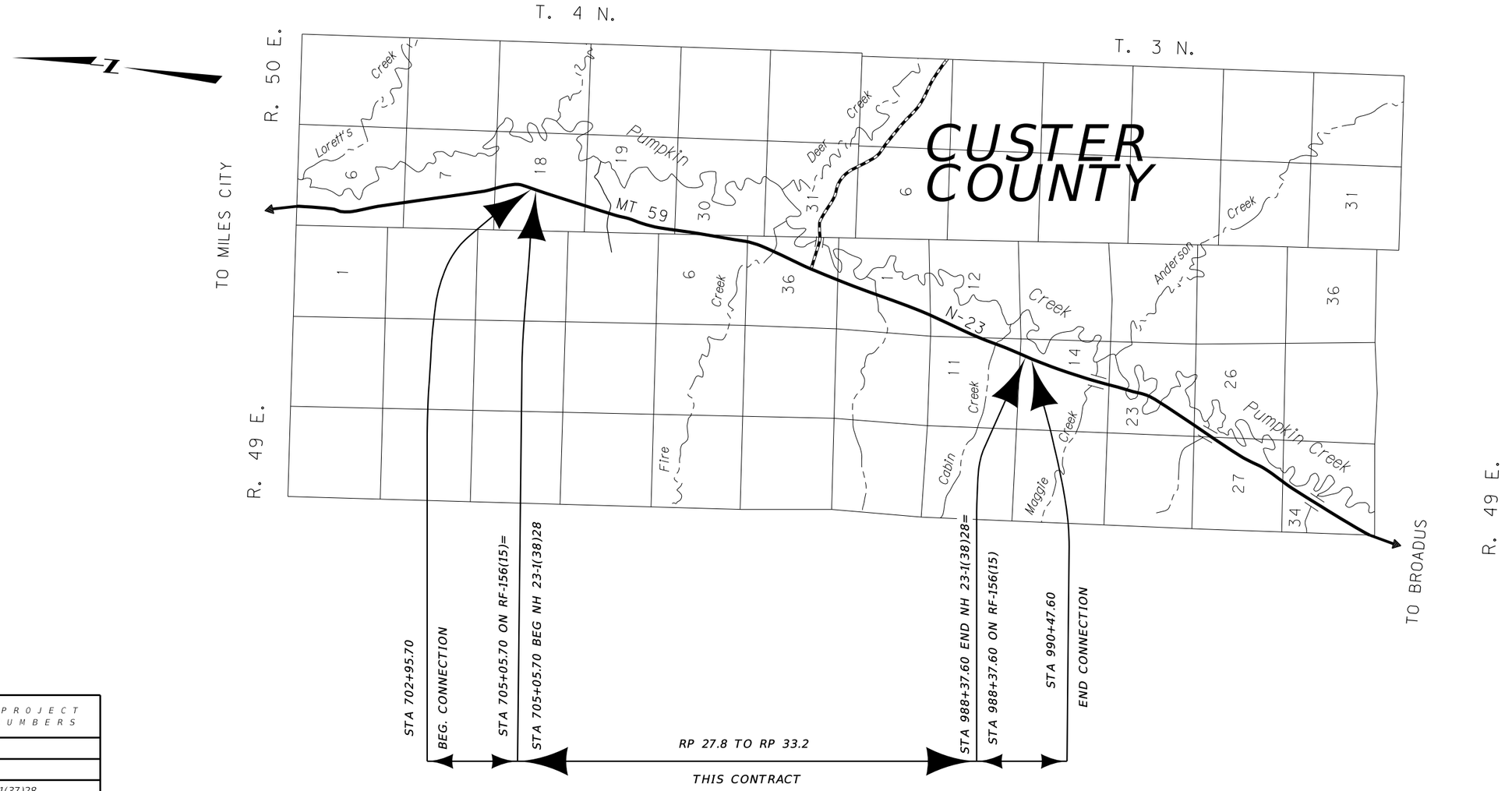
FEDERAL AID PROJECT NH 23-1(38)28
MIL, PLANT MIX, SEAL & COVER
SE OF MILES CITY - SOUTH
CUSTER COUNTY

PROJECT DESIGN DATA		
PRESENT	2019	A.D.T. = 760
LETTING	2021	A.D.T. = 780
DESIGN	2041	A.D.T. = 1000
		D.H.V. = 120
		TRUCKS = 22.8%
		V. = 70 MPH
		18 KIP ESAL'S = 100
		GROWTH RATE = 1.3%

LETTING DATE - _____

SURFACING SOURCES - CONTRACTOR FURNISHED

LENGTH 5.4 MILES



ASSOCIATED PROJECT AGREEMENT NUMBERS	
R / W	
I.C.	
P. E.	NH 23-1(37)28

3	MONTANA Department of Transportation	C:\DGN\9582000rdtl001.dgn	DESIGNED BY	A. DELAHUNT	9/1/2021	ROAD PLANS
2		2/16/2023	REVIEWED BY			
		8:52:06 AM CPS - U5487	CHECKED BY	J. FLEMING	8/31/2022	UPN 9582000

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ROAD PLANS

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SIGNING PLANS

SUMMARY	S1
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NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT	= 3700 LBS. PER CUBIC YARD
COMP. WEIGHT OF PL. MIX BIT. SURF.	= 3855 LBS. PER CUBIC YARD
ASPHALT CEMENT - GRADE S - 3/4" AGG.	= 4.8% OF PL.MIX BIT.SURF.
HYDRATED LIME	= 1.4% OF PL.MIX BIT.SURF.
BITUMINOUS MATERIAL	= 8.5 LBS. PER GAL.
EMULSIFIED ASPHALT - TACK (ALL OTHER SURFACES)	= 0.05 GAL. PER SQ.YARD (UNDILUTED)
EMULSIFIED ASPHALT - FOG SEAL (RUMBLE STRIPS)	= 0.10 GAL. PER SQ.YARD (UNDILUTED)
SEAL	= 0.42 GAL. PER SQ.YARD
COVER	= 25 LBS. PER SQ.YARD
LEVELING	=50 TONS PER MILE

AS-BUILTS

FOR HORIZONTAL ALIGNMENT AND STATIONING, REFER TO THE FOLLOWING "AS-BUILT" PROJECT(S):
- RF - 156(15) (RECONSTRUCT 1977)
- FAP 156 (CONSTRUCT 1930-1931)

COLD MILLING

THIS PROJECT IS EXPECTED TO PRODUCE APPROX. 9829 TONS OF MILLINGS. STOCKPILE COLD MILLINGS NOT USED ON THE PROJECT IN THE MILES CITY MAINTENANCE YARD. CONTACT TERRY OMLAND AT (406) 233-3623 2 WEEKS PRIOR TO ARRANGE FOR DELIVERY. ANY COSTS INCURRED ARE INCLUDED IN THE UNIT BID PRICE FOR COLD MILLING.

APPROACHES

PROVIDE THE FOLLOWING SURFACING:
- 0.20' PLANT MIX BITUMINOUS SURF.

PLANT MIX SURFACE ALL PUBLIC APPROACHES TO R/W.

QUANTITIES FOR ONE PUBLIC APPROACH:

AVERAGE LENGTH	= 110 linear feet
PLANT MIX BITUMINOUS SURF.	= 47.8 tons
ASPHALT CEMENT	= 2.29 tons

PLANT MIX SURFACE ALL PRIVATE APPROACHES TO R/W.

QUANTITIES FOR ONE PRIVATE APPROACH:

AVERAGE LENGTH	= 95 linear feet
PLANT MIX BITUMINOUS SURF.	= 41.8 tons
ASPHALT CEMENT	= 2.01 tons

TAPER MILL AND FEATHER PAVING ON ALL FF APP. W/A 12' WIDE PLANT MIX STRIP ADJACENT AND PARALLEL TO ROADWAY

QUANTITIES FOR ONE FARM FIELD APPROACH:

PLANT MIX BITUMINOUS SURF.	= 4.1 tons
ASPHALT CEMENT	= 0.20 tons

LINEAR DATA

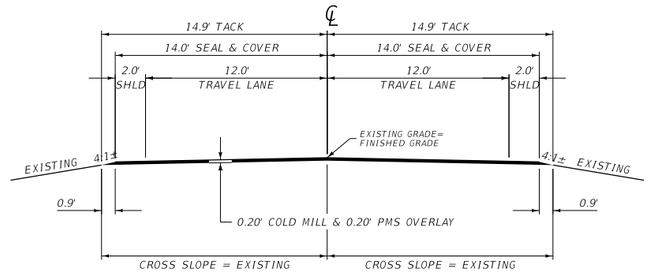
LENGTH OF ROADWAY	CUSTER COUNTY	2 LANE RURAL	28331.90 ft
TOTAL LENGTH OF	NH 23-1(38)28	2 LANE RURAL	28331.90 ft

AWARD COPY

TYPICAL SECTION NO. 1

MAINLINE COLD MILL & OVERLAY

		702+95.70	ONLY
702+95.70	TO	702+95.70	CONN. TO PTW TRANS TYP. NO. 1 TO TYP. NO. 2
		990+47.60	ONLY



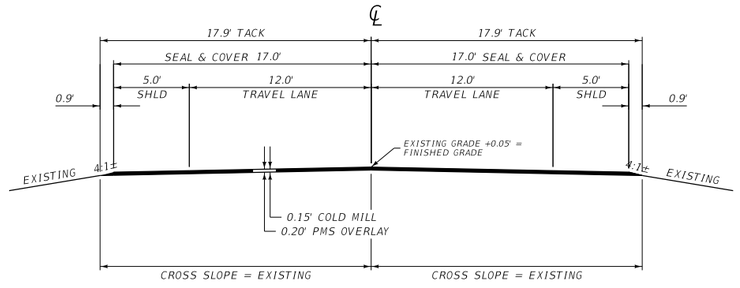
QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHALT TACK*
AREA square feet		5.78	square yards PER STATION		311	331
cubic yards PER STATION		21.4	tons PER STATION	1.98	0.56	
tons PER STATION		41.2	gals. PER STATION			17
square yards PER STATION	311					

*BASED ON 1 APPLICATION

TYPICAL SECTION NO. 2

MAINLINE COLD MILL & OVERLAY

702+95.70	TO	988+37.60	TYP. NO. 2
988+37.60	TO	990+47.60	CONN. TO PTW TRANS TYP. NO. 2 TO TYP. NO. 1



QUANTITIES						
UNIT	AGGREGATE		UNIT	BITUMINOUS MATERIAL		
	COVER	PLANT MIX		ASPHALT CEMENT	SEAL	EMULSIFIED ASPHLALT TACK*
AREA square feet		6.98	square yards PER STATION		378	398
cubic yards PER STATION		25.9	tons PER STATION	2.40	0.67	
tons PER STATION		49.9	gals. PER STATION			20
square yards PER STATION	378					

*BASED ON 1 APPLICATION

3	MONTANA Department of Transportation	C:\DGN\9582000rdtyp001.dgn	DESIGNED BY	A. DELAHUNT	9/1/2021	ROAD PLANS	SE OF MILES CITY - SOUTH / NH 23-1(38)28
2		2/16/2023	REVIEWED BY				
		8:52:19 AM CPS - U5487	CHECKED BY	J. FLEMING	8/31/2022	CUSTER COUNTY	UPN 9582000 / 3

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SUMMARY

SURFACING

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE 1	AGGREGATE tons PLANT MIX BIT. SURF. GR. S -3/4"	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - MISC	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG 70-28	BITUMINOUS MATERIAL tons EMULSIFIED ASPHALT CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	REMARKS
705+05.70	988+37.60	28,331.90	28,331.90			MAINLINE		107,095	14,138		680.0	189.8	5,666	TYP. NO. 2
						ADDITIONAL SURFACING		1,446	462	210	32.3	2.6	76	
TOTAL		28,331.90	28,331.90	0.00	0.00		207	108,541	14,600	210	712.2	192.4	5,742	

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE 1	AGGREGATE tons PLANT MIX BIT. SURF. GR. S -3/4"	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - MISC	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG 70-28	BITUMINOUS MATERIAL tons EMULSIFIED ASPHALT CHFRS-2P	BITUMINOUS MATERIAL gals. EMULSIFIED ASPHALT TACK	REMARKS
702+95.70	705+05.70	210.00	210.00			CONN. BEG.		723	96		4.6	1.3	38	TRANS TYP. NO. 1 TO TYP. NO. 2
988+37.60	990+47.60	210.00	210.00			CONN. END		723	96		4.6	1.3	38	TRANS TYP. NO. 2 TO TYP. NO. 1
						LEVELING			270		13.0			
						PUBLIC APPROACH(1)				48	2.3			
						PRIVATE APPROACH(2)				84	4.0			
						FARM FIELD APPROACH(19)				78	3.8			
SUBTOTAL		~	~	~	~		~	1,446	462	210	32.3	2.6	76	

COLD MILLING *

STATION FROM	STATION TO	sq. yards COLD MILLING 0.15 ft	sq. yards COLD MILLING 0.15 to 0.20 ft	REMARKS
702+95.70	705+05.70		758	BEG. CONN.
705+05.70	988+37.60	110,809		MAINLINE
988+37.60	990+47.60		758	END CONN.
SUBTOTAL		110,809	1,516	
TOTAL		112,325		

* SEE DETAILS

RUMBLE STRIPS

STATION FROM	STATION TO	miles RUMBLE STRIPS INTER-MITTENT	gals EMULSIFIED ASPHALT FOG SEAL #	REMARKS
705+05.70	988+37.60	10.8	1,257	MODIFIED RUMBLE STRIP
SUBTOTAL		10.8	1,257	
TOTAL		10.8	~	

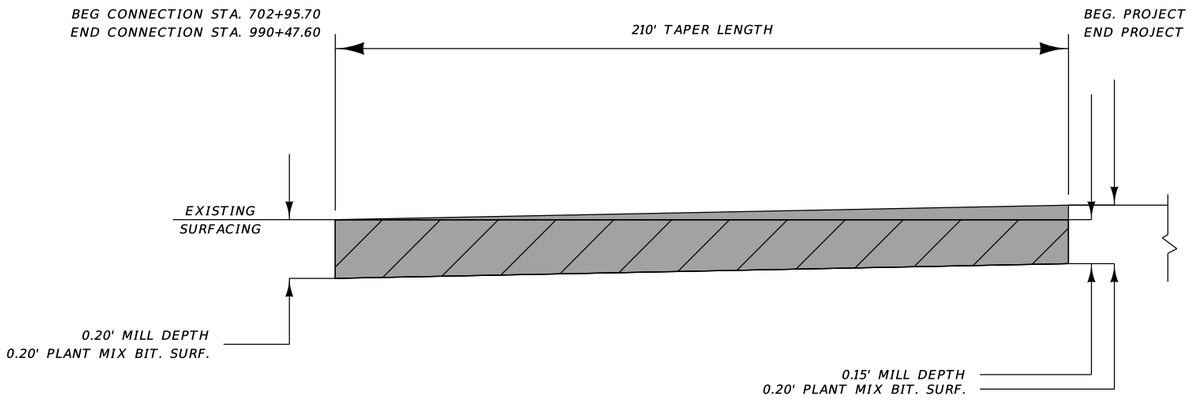
#FOR INFORMATION ONLY, INCLUDE IN THE COST OF RUMBLE STRIPS

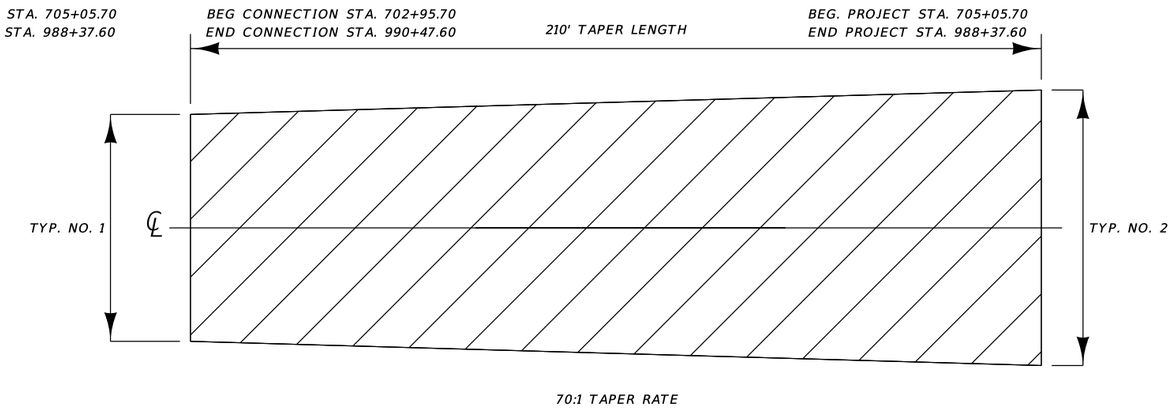
PAVEMENT MARKINGS

ITEM	UNIT	INTERIM APPLICATION #	FINAL APPLICATION	TOTAL
STRIPING -WHITE PAINT	gallon	392		392
STRIPING -YELLOW PAINT	gallon	66		66
STRIPING -WHITE EPOXY	gallon		261	261
STRIPING -YELLOW EPOXY	gallon		44	44
TEMPORARY STRIPING	lin foot			56,664
FINAL SWEEP AND BROOM	course mile			5.4

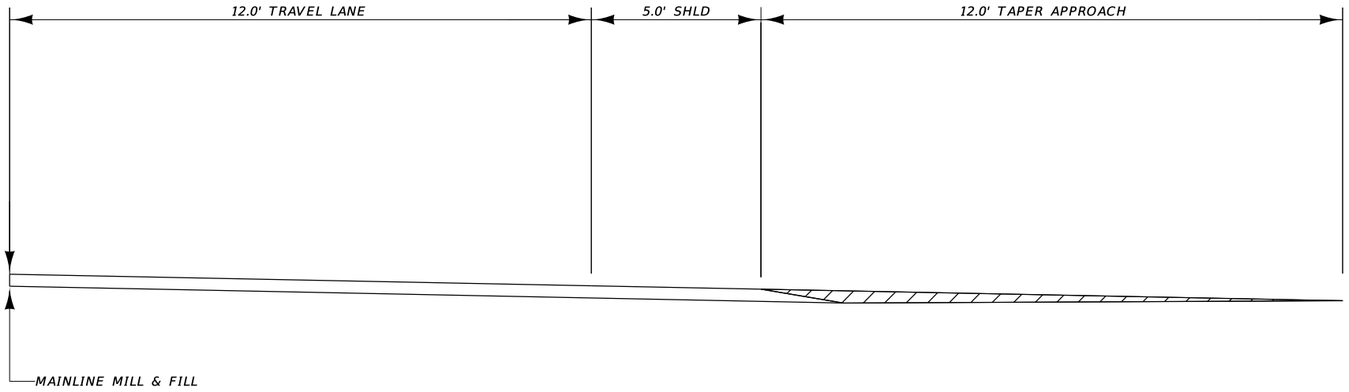
#BASED ON 2 APPLICATIONS.

DETAIL





CONNECTION TAPER MILL DETAIL



APPROACH MILL DETAIL

DETAIL

CONNECTION TAPER MILL
APPROACH MILL DETAIL

NO SCALE

3	MONTANA Department of Transportation	C:\DGN\9582000rddet001.dgn	DESIGNED BY	A. DELAHUNT	9/1/2021	ROAD PLANS	SE OF MILES CITY - SOUTH	NH 23-1(38)28
2		2/16/2023	REVIEWED BY					
		8:52:41 AM CPS - U5487	CHECKED BY	J. FLEMING	8/31/2022	CUSTER COUNTY	UPN 9582000	5

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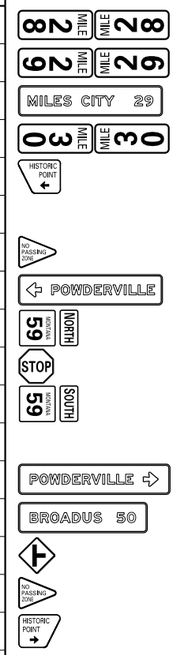
SUMMARY
SIGNING & DELINEATION QUANTITIES

MATERIAL	TOTAL	UNIT
SIGNS-SHEET ALUMINUM-REFLECTIVE SHEETING(IV)		SQ. FOOT
SIGNS-SHEET ALUMINUM-REFLECTIVE SHEETING(XI)	76.9	SQ. FOOT
SIGNS-ALUMINUM SHEET INCREMENT SHEETING (IV)		SQ. FOOT
SIGNS-ALUMINUM SHEET INCREMENT SHEETING (XI)	73.0	SQ. FOOT
OVERLAY-SHEET ALUMINUM		SQ. FOOT
POSTS-STEEL "U"	120	POUNDS
POLES-TREATED WOOD-4" DIA.	122	LINEAR FT.
POLES-TREATED WOOD-5" DIA.	140	LINEAR FT.
POLES-TREATED TIMBER-CLASS 4		LINEAR FT.
POLES-TREATED TIMBER-CLASS 3		LINEAR FT.
POSTS-TUBULAR STEEL (ROUND)		POUNDS
POSTS-TUBULAR STEEL (SQUARE PERFORATED)		POUNDS
POSTS-STRUCTURAL STEEL		POUNDS
OVERHEAD STRUCTURE-METAL-CANTILEVER		EACH
OVERHEAD STRUCTURE-METAL-BRIDGE		EACH
HIGHWAY TRAFFIC STRIPING-WHITE		GAL.(S)
HIGHWAY TRAFFIC STRIPING-YELLOW		GAL.(S)
WORDS & SYMBOLS		GAL.(S)
DELINEATOR-DESIGN A	150	EACH
DELINEATOR-DESIGN B		EACH
DELINEATOR-DESIGN C		EACH
DELINEATOR-DESIGN D	2	EACH
DELINEATOR-DESIGN E		EACH
DELINEATOR-DESIGN F		EACH
DELINEATOR-DESIGN G		EACH
DELINEATOR-DESIGN H		EACH
REMOVE SIGNS	14	EACH
REMOVE SIGNS-GUIDE	4	EACH
RESET SIGNS		EACH
RESET SIGNS-GUIDE		EACH
FRANGIBLE SIGN POST BREAKAWAY DEVICE-		EACH
FRANGIBLE SIGN POST BREAKAWAY DEVICE-		EACH
SQUARE TUBULAR SLIPBASE BREAKAWAY DEVICE-3"		EACH

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SIGN LOCATION AND SPECIFICATIONS

REF. POST	RAMP NO.	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	BREAK AWAY	SIGNS REMOVE	SIGNS RESET	GUIDE REMOVE	GUIDE RESET	REMARKS
28.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 28
29.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 29
29.409 LT		G23-29A	114 X 24	XI	XI	20-0	5-8	5" DIA POLE		X= 17-6 Y= 18-6		7-0	3-6		19.0 XI		18 18							X		1			REPLACE
30.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 30
30.230 RT		D7-4L	48X36X30	XI	XI	10-0		5" DIA POLE		14-6		5-0	3-6	9.8 XI			16						X	1					REPLACE
30.305 LT		W14-3	36X48X48	XI		10-0		4" DIA POLE		13-9		5-0	3-0	5.5 XI			14							1			FY		REPLACE
30.445 RT		G23-30A	114 X 24	XI	XI	20-0	5-8	5" DIA POLE		X= 17-6 Y= 17-6		7-0	3-6		19.0 XI		18 18							X		1			REPLACE
30.460 LT		M3-1 M1-5(59)	24 X 12 24 X 24	XI XI		10-0		4" DIA POLE		13-10		5-0	3-0	6.0 XI			14							1					REPLACE
30.495 LT		R1-1	30 X 30	XI	XI	6-0		4" DIA POLE		12-4		5-0	3-0	5.2 XI			14							1					REPLACE
30.520 RT		M3-3 M1-5(59)	24 X 12 24 X 24	XI XI		10-0		4" DIA POLE		13-10		5-0	3-0	6.0 XI			14							1					REPLACE
30.545 LT		G23-30B	114 X 24	XI	XI	20-0	5-8	5" DIA POLE		X= 17-6 Y= 17-6		7-0	3-6		19.0 XI		18 18							X		1			REPLACE
30.594 RT		G23-30C	96 X 24	XI	XI	20-0	4-10	4" DIA POLE		X= 17-0 Y= 17-0		7-0	3-0		16.0 XI		18 18									1			REPLACE
30.649 LT		W2-2R W16-8	30 X 30 REMOVE	XI -		10-0		4" DIA POLE		14-4		5-0	3-0	6.3 XI			16							1					REPLACE W2-2R REMOVE W16-8
30.769 RT		W14-3	36X48X48	XI		10-0		4" DIA POLE		13-9		5-0	3-0	5.5 XI			14							1			FY		REPLACE
30.789 LT		D7-4R	48X36X30	XI	XI	10-0		5" DIA POLE		14-6		5-0	3-6	9.8 XI				16					X	1					REPLACE
31.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 31
32.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 32
33.000 RT		D10-2 D10-2	10 X 27 10 X 27	XI XI	XI XI	4-0		2# STL U POST		10-0		4-0	3-0	1.9 XI 1.9 XI								20		1					MILE 33
TOTALS														76.9 XI	73.0 XI		122	140				120		14	4			



MOUNTING HEIGHT REQUIREMENTS:
MOUNTING HEIGHTS SHOWN REFER TO THE BOTTOM OF THE MAJOR PANEL. SEE DETAILED DRAWINGS 619-00 & 619-08.

DELINEATION TABLE		
⊣	DESIGN "A"	150
⊣|	DESIGN "B"	___
⊢	DESIGN "C"	___
|⊢|	DESIGN "D"	2
⊣|||	DESIGN "E"	___
⊢	DESIGN "F"	___
⊣<	DESIGN "G"	___
⊣▷	DESIGN "H"	___
⊣×	DESIGN "J"	___
×⊣|	DESIGN "BJ"	___
×⊣<	DESIGN "GJ"	___
	REMOVE DELINEATORS	___

TYPE XI
FY =FLUORESCENT YELLOW SHEETING REQUIRED.

X = STANDARD BREAKAWAY DEVICE:
-FOR WOOD POST SEE DETAILED DRAWING 619-20.
-FOR STRUCTURAL STEEL SEE DETAILED DRAWING 619-13.

3 2 1	MDT MONTANA DEPARTMENT OF TRANSPORTATION	C:\DGN\9582000sisum001.dgn 9/19/2022 10:12:42 AM CPS - U1376	NATHAN STYREN NICK THOLT	SIGNING PLANS CUSTER COUNTY	SE OF MILES CITY - SOUTH	NH 23-1(38)28 UPN #9582000 S2