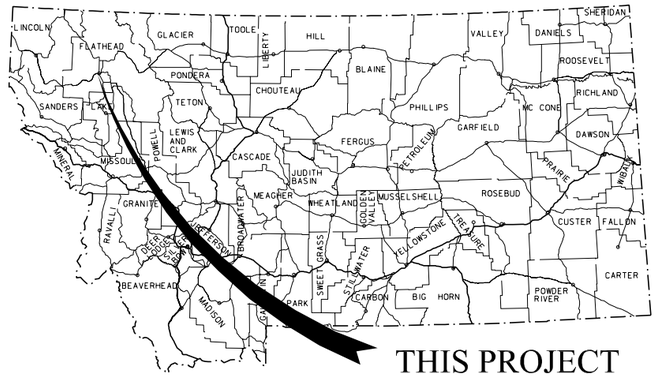
FOR MDT INTERNAL DISTRIBUTION ONLY

07/18/2008
Highways & Engineering Division

MONTANA DEPARTMENT OF TRANSPORTATION



DESIGN DATA

PRESENT 2003 A.D.T. = 210
LETTING 2004 A.D.T. = 230
DESIGN 2024 A.D.T. = 280
D.H.V. = 80
TRUCKS = 6.9%
V. = 25 mph
18 KIP ESAL'S = 65.6 DAILY
GROWTH RATE = 1.0% ANNUALLY
(2)

FEDERAL AID PROJECT STPS 503-1(4)4

(Construction Project Number (7))

GRADE, GRAVEL, PL. MIX SURF. & STRUCTURE

FOYS CANYON ROAD (A LIMITED ACCESS FACILITY) (3)

FLATHEAD COUNTY

LETTING DATE - _____

CSF = 0.99925993 (RP 3.9 TO 7.6)
(8)

LENGTH 3.6 MILES

SCALES
VERTICAL: 1" = 10'
HORIZONTAL: 1" = 100'
CROSS SECTION - HORIZONTAL & VERTICAL: 1" = 10'
REDUCED PRINTS ONE-HALF ORIGINAL SCALE
ALL SCALES ARE APPROXIMATE

SURFACING SOURCES -
CONTRACTOR FURNISHED

Reminders:

(1) *Do not use this block for "AS BUILT" projects. Use for projects that are tied for letting or projects constructed in stages or units. Leave blank or "Mask" display if not needed.*

(2) *Design data usually is not shown for pavement preservation projects unless grade "S" plant mix is used. For projects having two or more road segments with different design data, prepare seperate design data blocks for each segment.*

(3) *Only shown for Limited Access Facilities.*

(4) *Use the professional seal of the engineer in responsible charge (i.e. Highways Engineer, Bridge Engineer, Traffic & Safety Engineer, Consultant, etc.).*

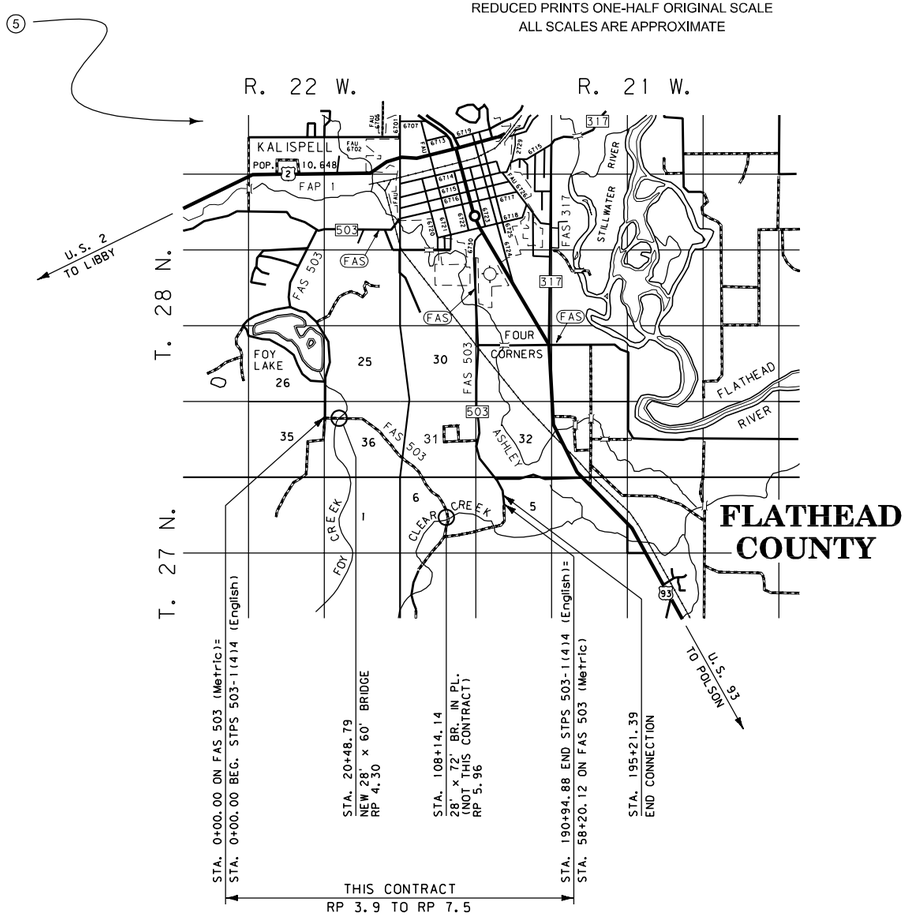
(5) *Copy portion of county map needed from \Astro\Maps.*

(6) *Items applicable to Consultant Projects Only.*

(7) *Consult with The Fiscal Programming Section for appropriate Project and Agreement Numbers (also available on OPX2 Project Management System).*

(8) *When multiple combination scale factors exist on a project, list each one of them, along with their respective RP range.*

(5)



(6)

Consultant Name

BY _____
DATE _____

(4) MONTANA CONSULTANT SEAL XXXXPE PROFESSIONAL ENGINEER

MONTANA
DEPARTMENT OF TRANSPORTATION

RECEIVED :

BY _____ _____
CONSULTANT DESIGN ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

_____ _____
DIVISION ADMINISTRATOR DATE

Consultant Company Logo (Typ.) (6)

PLANS PREPARED BY

Consultant Name, Address, and Phone Number (6)

RELATED PROJECTS

(1)

ASSOCIATED PROJECT AGREEMENT NUMBERS (7)

R / W & I.C.	STPS 503-1(5)4
P. E.	STPS 503-1(3)4

MONTANA
DEPARTMENT OF TRANSPORTATION

APPROVED :

_____ 20 ____

JIM LYNCH
DIRECTOR OF TRANSPORTATION

BY _____

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

_____ _____
DIVISION ADMINISTRATOR DATE

FIG. 4.4 B

3	MDT serving you with pride	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdttle01.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS
2			7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*	
1			7:35:38 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	UPN COUNTER NAME 345678

MONTANA ROAD DESIGN MANUAL
SAMPLE PLAN SHEET (U.S. Customary Units)

TABLE OF CONTENTS

Reminder:

① *For GPS (State Plane coordinates) Projects, just "Control Diagram". See Fig. 4.4 F for more information.*

FIG. 4.4 C

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdttle02.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*				
1		7:35:42 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME (S)		CSF = 0.9999999 UPN NUMBER 12345678	SHEET 999 OF 999

NOTES

BASIS OF PLAN QUANTITIES

(QUANTITIES FOR ESTIMATING PURPOSES ONLY)

COMP. AGGREGATE WEIGHT =	3700	LBS. PER CUBIC YARD	(5)
COMP. WEIGHT OF PL. MIX BIT. SURF. =	3855	LBS. PER CUBIC YARD	
ASPHALT CEMENT =	6.0	% OF PL. MIX BIT. SURF.	(1)
ASPHALT CEMENT - GRADE S - 3/4" AGG. =	5.4	% OF PL. MIX BIT. SURF.	(2)
ASPHALT CEMENT - GRADE S - 1/2" AGG. =	5.8	% OF PL. MIX BIT. SURF.	(2)
HYDRATED LIME =	1.4	% OF PL. MIX BIT. SURF.	
ASPHALT CEMENT =	3.0	% OF RECYCLED PL. MIX (50% RAP)	(4)
HYDRATED LIME =	1.4	% OF RECYCLED PL. MIX BIT. SURF.	(4)
BITUMINOUS MATERIAL =	8.5	LBS. PER GAL.	
DUST PALLIATIVE =	10.8	LBS. PER GAL.	
AGGREGATE TREATMENT			
DUST PALLIATIVE =	0.3	GAL. PER SQ. YARD	
AGG TACK =	0.05	GAL. PER SQ. YARD (UNDILUTED)	
TACK =	0.025	GAL. PER SQ. YARD (UNDILUTED)	
SEAL =	0.40	GAL. PER SQ. YARD	
COVER =	25	LBS. PER SQ. YARD	
CURING SEAL =	0.2	GAL. PER SQ. YARD	(3)
CTB =	3620	LBS. PER CU. YARD	(3)
FLY ASH =	1.0	% OF CTB-DRY WT.	(3)
PORTLAND CEMENT =	4.0	% OF CTB-DRY WT.	(3)
BLOTTER =	1.7	LBS. PER SQ. FOOT	(3)

Basis of Plan Quantities Reminders:

(1) *All grades except grade S*

(2) *Show for appropriate aggregate size*

(3) *Applicable to projects with cement treated base (CTB)*

(4) *Applicable to projects with recycled asphalt pavemet (RAP)*

(5) *When project will use Yellowstone River Aggregate, Comp. Agg. weight = 4000 pounds per cubic yard and Pl. Mix Bit. Surf. weight = 4167 pounds per cubic yard*

APPROACHES

CONSTRUCT APPROACHES TO A 24' FINISHED TOP ON A 34' SUBGRADE UNLESS NOTED OTHERWISE IN THE PLANS.

PROVIDE THE FOLLOWING SURFACING:
0.20' PLANT MIX BITUMINOUS SURF.
0.60' CRUSHED AGGREGATE COURSE

PLANT MIX SURFACE ALL PUBLIC AND PUBLIC APPROACHES TO R/W.

QUANTITIES FOR ONE PUBLIC APPROACH:

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
CRUSHED AGGREGATE COURSE	=	cubic yards
ASPHALT CEMENT	=	tons
DUST PALLIATIVE	=	tons
AGG. TACK	=	gallons

PLANT MIX SURFACE ALL PRIVATE APPROACHES TO R/W.

QUANTITIES FOR ONE PRIVATE APPROACH:

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
CRUSHED AGGREGATE COURSE	=	cubic yards
ASPHALT CEMENT	=	tons

GRAVEL SURFACE ALL FARM FIELD APPROACHES TO R/W WITH A 12' WIDE PLANT MIX STRIP ADJACENT AND PARALLEL TO THE ROADWAY.

QUANTITIES FOR ONE FARM FIELD APPROACH:

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
CRUSHED AGGREGATE COURSE	=	cubic yards
ASPHALT CEMENT	=	tons

QUANTITIES FOR ONE FARM FIELD APPROACH: (1)
40' FINISHED TOP ON A 50' SUBGRADE

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
CRUSHED AGGREGATE COURSE	=	cubic yards
ASPHALT CEMENT	=	tons

Approaches Reminder:

(1) *For approaches with widths differing from standard.*

APPROACHES (2)

OVERLAY ALL PUBLIC APPROACHES TO R/W.

QUANTITIES FOR ONE EXISTING PUBLIC APPROACH:

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
ASPHALT CEMENT	=	tons
TACK	=	gallons

PLACE A 3' WIDE PLANT MIX STRIP ADJACENT AND PARALLEL TO ROADWAY ON ALL PRIVATE AND FARM FIELD APPROACHES.

QUANTITIES FOR ONE EXISTING PRIVATE OR FARM FIELD APPROACH:

PLANT MIX BITUMINOUS SURF.	=	tons
ASPHALT CEMENT	=	tons
TACK	=	gallons

Approaches Reminder:

(2) *For overlay projects*

COMBINATION SCALE FACTOR

ALL COORDINATES ARE STATE PLANE U.S. CUSTOMARY (SEE CONTROL DIAGRAM). CSF FROM THE BEGINNING OF PROJECT TO RP 10.0 IS 0.99945558. CSF FROM RP 10.0 TO THE END OF PROJECT IS 0.99948387.

WETLANDS

ONLY WETLANDS WITHIN THE PROJECT LIMITS HAVE BEEN DELINEATED. WETLANDS MAY EXIST BEYOND THE PROJECT LIMITS AND ANY ACTION AFFECTING SUCH WETLANDS IS THE RESPONSIBILITY OF THE CONTRACTOR.

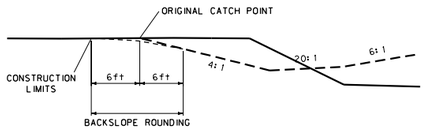
DELINEATED WETLAND AREAS

IMPACTED WETLANDS

BACKSLOPE ROUNDING

BACKSLOPE ROUNDING IS NOT MEASURED FOR PAYMENT. INCLUDE THE COST OF BACKSLOPE ROUNDING IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION.

BACKSLOPE ROUNDING DETAIL



PUBLIC LAND SURVEY MONUMENTS

ALL MONUMENTS TO BE REMOVED AND RELOCATED OR RESET BY STATE FORCES.

MISC. TO BE MOVED OR REMOVED BY OTHERS

ALL PRIVATELY OWNED SIGNS TO BE REMOVED BY OWNER.
ALL STATE-OWNED SIGNS TO BE MOVED BY STATE FORCES.

MAILBOXES & MAILBOX TURNOUTS

MAILBOX TURNOUTS WILL BE CONSTRUCTED AT LOCATIONS SHOWN IN THE PLANS OR AS STAKED BY THE ENGINEER.

PROVIDE THE FOLLOWING SURFACING:
MAINLINE linear feet PLANT MIX BITUMINOUS SURF.
MAINLINE linear feet CRUSHED AGGREGATE COURSE

QUANTITIES FOR ONE MAILBOX TURNOUT (FOR ESTIMATING PURPOSES ONLY):

AVERAGE LENGTH	=	linear feet
PLANT MIX BITUMINOUS SURF.	=	tons
CRUSHED AGGREGATE COURSE	=	cubic yards
ASPHALT CEMENT	=	tons
TACK	=	gallons

REMOVE ALL MAILBOXES AND REPLACE. PROVIDE TEMPORARY MAILBOXES. INCLUDE THE COST OF REMOVAL AND TEMPORARY MAILBOXES IN THE COST OF OTHER ITEMS.

TEMPORARY EROSION AND SEDIMENT CONTROL

(1) REFER TO SECTION 208 OF THE MDT DETAILED DRAWINGS FOR EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES.

(2) IF SITUATIONS ARE OBSERVED DURING CONSTRUCTION THAT MAY POTENTIALLY IMPACT WATER QUALITY, INCLUDING WETLAND AREAS, UTILIZE BEST MANAGEMENT PRACTICES (BMP) AND/OR TEMPORARY EROSION CONTROL MEASURES AS NECESSARY TO PROTECT THE RESOURCE.

REFER TO SECTION 208 OF THE MDT DETAILED DRAWINGS FOR EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES.

INSTALL TEMPORARY EROSION CONTROL MEASURES AS DEEMED NECESSARY BY THE ENGINEER. PAYMENT TO BE DETERMINED USING THE EROSION AND SEDIMENT CONTROL RATE SCHEDULE AND PAID UNDER MISCELLANEOUS WORK.

Temporary Erosion and Sediment Control Reminders:

(1) *Typical note when erosion control plans are provided.*

(2) *Typical note when erosion control plans are not provided (i.e. pavement preservation projects).*

LIMITED ACCESS CONTROL

THIS PROJECT IS A LIMITED ACCESS CONTROL FACILITY. OBTAIN APPROVAL FROM THE CHIEF OF THE RIGHT-OF-WAY BUREAU PRIOR TO ADDING, DELETING OR RELOCATING ANY APPROACHES.

SOILS INFORMATION

THE SOILS INFORMATION ON THE PLAN AND PROFILE SHEETS IS A BRIEF SUMMARY OF THE SOILS CLASSES. TO OBTAIN THE COMPLETE SOILS INFORMATION CONTACT THE MDT GEOTECHNICAL SECTION AT (406) 444-6281.

DO NOT DISTURB

WATER VALVE 35' RIGHT OF STA. 4+30
PROPERTY PINS LEFT OF CENTERLINE FROM STA. 2+80 TO 43+61.

CONSTRUCTION NOTES

USE EXTREME CAUTION WHEN WORKING AROUND TRANSMISSION LINE POLES LOCATED LEFT OF THE FOLLOWING STATIONS:

43+00	97+95	241+29
55+97	138+91	240+32

WARP THE FILL SLOPES AROUND POWER POLES TO BE LEFT IN PLACE FROM STATION 135+00 TO 295+76 RIGHT.

FUTURE TOP WIDTH

THE FINISHED TOP WIDTH HAS BEEN INCREASED BY 2.8' TO ACCOMODATE FUTURE SURFACING.

UTILITIES

CALL THE UTILITIES UNDERGROUND LOCATION CENTER (1-800-424-5555) 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 THE EXISTING GROUND LINE.

CLEARING AND GRUBBING

CLEAR AND GRUB TO CONSTRUCTION LIMITS. INCLUDE THE COST OF CLEARING AND GRUBBING IN THE UNIT PRICE BID FOR UNCLASSIFIED EXCAVATION. (1)

Clearing and Grubbing Reminder:

(1) *If project is an embankment in place project, change note to "EMBANKMENT-IN-PLACE".*

(1) APPROACHES (FOR INFORMATION ONLY)

STATION	TYPE	linear feet WIDTH	linear feet RADIUS LEFT	linear feet RADIUS RIGHT	linear feet LENGTH, C.L. TO R/W	EXISTING SURFACE	PROPOSED SURFACE	tons PLANT MIX SURF.	cubic yards CRUSHED AGG. COURSE	REMARKS
28+26	PUBLIC	24	25	25		GRAVEL	USE AS IS	~	~	RT. - COUNTY ROAD
34+99	FARM FIELD	24	25	25	85	GRAVEL	PAVED 12' APRON	8	52	RT. - REBUILD APPROACH
39+71	PRIVATE	24	25	25	85	GRAVEL	PAVE TO R/W	31	52	RT.
44+20	PRIVATE	70	25	25	65	GRAVEL	PAVED 12' APRON	15	93	RT.
46+17	PUBLIC	24	25	25	70	GRAVEL	PAVE TO R/W	25	42	LT.- PHILLIPS AVENUE
48+73	PRIVATE	24	25	25	40	GRAVEL	PAVE 12' APRON INCL. VALLEY GUTTER #	8	21	LT.
50+37	PRIVATE	50	25	25	60		PAVE TO R/W	42	73	RT. - NEW APPROACH
54+57	PUBLIC	24	25	25	45	PAVED	PAVE TO R/W	15	~	LT. - JOYLAND ROAD (FAS 237)
61+26	PRIVATE	24	25	25	35	PAVED	PAVED 12' APRON	8	~	RT.
67+03	PUBLIC	24	25	25	45	GRAVEL	PAVE TO R/W INCL. VALLEY GUTTER #	15	24	LT. - ALLEY
76+31	PUBLIC	40	25	50	50	GRAVEL	PAVE TO R/W	23	46	LT. - EATON STREET
80+54	PUBLIC	80	*	*	40	PAVED	PAVE - SEE DETAIL	46	~	RT. - HURON STREET & 4TH AVENUE
86+77	PUBLIC	52	50	50	30	GRAVEL	PAVE TO RADIUS INCL. VALLEY GUTTER #	32	10	RT. - IDAHO STREET & 3RD AVENUE
93+63	PUBLIC	24	~	~	30	PAVED	USE AS IS - SEE DETAIL	~	~	RT. - CORCORAN STREET
								(2)	(2)	

* MATCH EXISTING CURB
\# SEE DETAIL

Approaches Frame Reminders:

(1) *This frame is applicable for urban projects.*

(2) *Show total surfacing quantities for each type of approach in additional surfacing frame. Do not include notes for average approach quantities if this frame is used.*

SKEW DIAGRAM

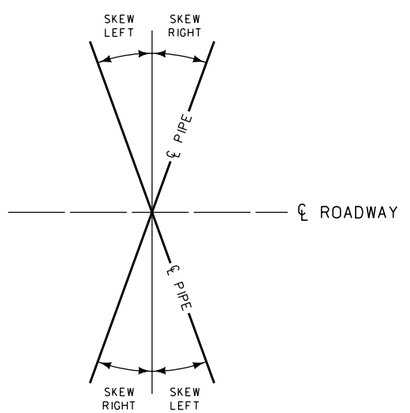


FIG. 4.4 D

3	MONTANA DEPARTMENT OF TRANSPORTATION (serving you with pride)	c:\dgn\rmanrdttle03.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION: CSF = 0.9999999 / UPN NUMBER 12345678
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			PROJECT NO.
1		7:35:47 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		SHEET 999 OF 999

07/18/2008
Highways & Engineering
Division

LINEAR AND LEVEL DATA

CENTERLINE COORDINATE TABLE				
STATION	DESCRIPTION	N OR Y COORDINATE	E OR X COORDINATE	REMARKS
496+56.79	POT	30,060.7634	31,311.6190	BEG. PROJECT
532+60.70	PC	29,639.2195	32,325.9760	
538+55.31	PI	29,569.6670	32,493.3696	
544+45.67	PT	29,535.9649	32,671.4191	
582+45.64	TS	29,320.5904	33,809.4419	
584+45.64	SC	29,309.7782	33,869.4335	
588+62.14	PI	29,285.6480	33,994.0746	
592+72.28	CS	29,296.5438	34,120.5615	
594+72.28	ST	29,300.9906	34,181.3573	
625+64.01	PC	29,377.9330	35,120.5705	
629+92.32	PI	29,388.5917	35,250.6790	
634+19.03	PT	29,379.7885	35,380.9262	
690+56.00	POT	29,263.8895	37,095.6955	END PROJECT

BENCH MARKS			
STATION	LOCATION	DESCRIPTION	ELEVATION
MAINLINE			
0+00.00	60.0 ft LT.	PROJECT POST	3,322.98
9+84.25	98.4 ft LT.	IRON PIN	3,399.07
19+68.50	90.4 ft LT.	IRON PIN	3,448.14
24+73.49	158.0 ft LT.	SPIKE IN POWER POLE	3,594.63
32+92.16	824.7 ft RT.	USCGS BRASS CAP C-81	3,530.51
42+65.09	105.3 ft LT.	IRON PIN	3,344.42
49+21.26	97.6 ft LT.	IRON PIN	3,361.10
COUNTY ROAD			
0+98.43	51.3 ft RT.	IRON PIN	3,344.25
8+20.21	63.9 ft RT.	IRON PIN	3,352.76
16+40.42	54.7 ft RT.	IRON PIN	3,315.12

BEARING SOURCE

(1) BEARINGS SHOWN ON THESE PLANS WERE COMPUTED FROM AS-BUILTS PROJECT FHP 51-2(1). FROM PT STA. 3576+81.56 TO TS STA. 3661+81.82 THE BEARING IS S 00° 50'00" W.

(2) BEARINGS SHOWN ON THESE PLANS WERE COMPUTED FROM SOLAR OBSERVATION. FROM CONTROL POINT 53B TO CONTROL POINT 53A THE BEARING IS S 23° 50'00" W.

(3) THE BEARING SOURCE IS NAD 83-1992.

(4)

LEVEL DATUM SOURCE

(1)(2) U.S.C. & G.S. BENCH MARK
BRASS CAP STAMPED "4405 BUTTE"
1000.0' LT. OF STA. 412+64.99
ELEVATION 4,407.51'

(1) IRON PIN
100' RT. OF STA. 0+00.00
ASSUMED ELEVATION 3,280.84'

(1)(2) LEVEL DATUM IS BASED ON A U.S.C. & G.S. BENCH MARK WHICH IS LOCATED ABOUT 3.4 mi SOUTHWEST ALONG NORTHERN PACIFIC RAILWAY FROM THE STATION AT BILLINGS, 7.0' WEST OF 3RD POLE SOUTHWEST OF RP 3, 38.0' SOUTHEAST OF SOUTHEAST RAIL, 242.0' NORTHEAST OF CENTERLINE OF A ROAD CROSSING, 77.0' NORTHWEST OF CENTERLINE OF U.S. HIGHWAY 10 & 12, 2.0' NORTHWEST OF A WHITE WOODEN WITNESS POST. ABOUT 3' BELOW LEVEL OF TRACKS & ABOUT LEVEL WITH HWY., ON TOP OF 5/8" COPPER WEIGHTED ROD DRIVEN TO A DEPTH OF 3.0' AND IS ENCASED IN A 6" TILE WHICH PROJECTS 6", A DISK, STAMPED "G 483 1957" ELEV. = 3,168.99'. (1981 ADJUSTED)

(3) LEVEL DATUM SOURCE IS NAVD 88

Reminders:

(1) For projects utilizing conventional survey

(2) For projects utilizing control traverse

(3) For projects utilizing global positioning system (GPS)

(4) Bearing source may be either NAD 83-1992 or NAD 83-1999. List the one applicable to the project.

(5) When the work on one set of lanes extends a greater distance then the other lanes, the linear data for each set of lanes should be shown separatley in the linear data.

LENGTH OF ROADWAY		2 LANE RURAL	38,043.24 ft
LENGTH OF BRIDGE		2 LANE RURAL	316.08 ft
TOTAL LENGTH OF	NH-BR 5-1(5)7	2 LANE RURAL	38,359.32 ft
LENGTH OF ROADWAY	IN ROOSEVELT COUNTY	2 LANE RURAL	1,781.56 ft
LENGTH OF BRIDGE	IN ROOSEVELT COUNTY	2 LANE RURAL	475.13 ft
LENGTH OF ROADWAY	IN RICHLAND COUNTY	2 LANE RURAL	1,685.83 ft
LENGTH OF BRIDGE	IN RICHLAND COUNTY	2 LANE RURAL	475.13 ft
TOTAL LENGTH OF	STPS 262-1(5)3	2 LANE RURAL	4,417.65 ft
LENGTH OF ROADWAY	4 LANE URBAN		14,762.37 ft
LENGTH OF ROADWAY	4 LANE RURAL		657.68 ft
LENGTH OF ROADWAY	2 LANE RURAL		855.51 ft
TOTAL LENGTH OF	URBAN ROADWAY		14,762.37 ft
TOTAL LENGTH OF	RURAL ROADWAY		1,513.19 ft
TOTAL LENGTH OF	4 LANE ROADWAY		15,420.05 ft
TOTAL LENGTH OF	2 LANE ROADWAY		855.51 ft
TOTAL LENGTH OF	STPP-STPU 29-4(7)84		16,275.56 ft
LENGTH OF ROADWAY	4 LANE URBAN		6,379.13 ft
LENGTH OF ROADWAY	4 LANE RURAL		56,677.72 ft
LENGTH OF ROADWAY	URBAN (NOT THIS CONTRACT)		606.17 ft
LENGTH OF BRIDGE	RURAL		78.02 ft
TOTAL LENGTH OF	URBAN		6,985.30 ft
TOTAL LENGTH OF	RURAL		56,755.74 ft
TOTAL LENGTH OF	IR 15-5(83)270		63,741.04 ft
	WESTBOUND		
LENGTH OF ROADWAY		RURAL	31,196.10 ft
LENGTH OF ROADWAY		RURAL	316.70 ft
TOTAL LENGTH OF IM	90-7(86)354	RURAL	31,512.8 ft
(5)	EASTBOUND		
LENGTH OF ROADWAY		RURAL	31,213.62 ft
LENGTH OF ROADWAY		RURAL	317.22 ft
TOTAL LENGTH OF IM	90-7(86)354	RURAL	31,530.84 ft

FIG. 4.4 E

① CONTROL TRAVERSE ABSTRACT

POINT NAME/NUMBER	N OR Y COORDINATE	E OR X COORDINATE	POINT ELEVATION	LOCATION AND DESCRIPTION
445-A	10,000.0000	10 000.0000	3,194.90	2" ALUMINUM CAP & 5/8" REBAR MARKED 445A 3,930.0 ft SW OF HOGANS SLOUGH CROSSING I-90, ON THE CENTERLINE OF THE MEDIAN AT STA. 530+00.00
445-B	11,092.0449	11,581.0351	3,188.34	2" ALUMINUM CAP & 5/8" REBAR MARKED 445B 2,009.2 ft SW OF HOGANS SLOUGH CROSSING I-90 ON THE CENTERLINE OF THE MEDIAN AT STA.549+20.80
445-C	11,682.8018	12,694.1381	3,185.94	2" ALUMINUM CAP & 5/8" REBAR MARKED 445C 781.0 ft SW OF HOGANS SLOUGH CROSSING SOUTH FRONTAGE RD. AND 28.0 ft SOUTH OF THE CENTERLINE OF SOUTH FRONTAGE RD. ON THE SHOULDER SLOPE
445-W	12,745.2549	12,451.6181	3,184.64	NAIL SET IN CENTERLINE OF PAVEMENT ON OVERLAND AVE. 1,185.0 ft SW OF PEACHTREE RD. ON OVERLAND AVE.
445-X	13,978.0860	14,168.0089	3,177.73	2" ALUMINUM CAP & 5/8" REBAR MARKED 445X 690.0 ft SOUTH OF KING AVE. ON OVERLAND AVE. IN THE MEDIAN ISLAND NEAR THE QUALITY INN
445-Y	15,020.0499	14,028.0879	3,179.44	NAIL SET IN NORTH PARKING LANE OF HENESTA DR. PAVEMENT 200.0 ft WEST OF 20TH ST. WEST
445-Z	14,725.2539	14,477.4751	3,176.35	2" ALUMINUM CAP & 5/8" REBAR MARKED 445Z 430.0 ft WEST OF THE INTERSECTION OF KING AVE. AND CARBON ST. AT THE END OF ACCESS ROAD, NEAR UTILITY POLE
446-W	14,715.9259	16,164.0341	3,171.08	2" ALUMINUM CAP & 5/8" REBAR MARKED 446W 560.0 ft EAST OF THE INTERSECTION OF KING AVE. AND S 18TH ST. WEST AND 30.0 ft SOUTH OF THE CENTERLINE OF KING AVE.
446-X	15,401.6230	17,744.3907	3,168.69	2" ALUMINUM CAP & 5/8" REBAR MARKED 446X 60.0 ft WEST OF THE INTERSECTION OF LAUREL RD. AND PARKWAY LN. ON THE MEDIAN ISLAND
446-Y	14,799.6184	18,237.4810	3,168.16	NAIL SET IN LARGE MEDIAN ISLAND 70.0 ft NE OF THE INTERSECTION OF PARKWAY LN. AND KING AVE. EAST
446-Z	14,096.2848	19,487.6775	3,160.33	2" ALUMINUM CAP & 5/8" REBAR MARKED 446Z 1,380.0 ft EAST OF THE INTERSECTION OF PARKWAY LN. AND SOUTHGATE DR. AND 40.0 ft SOUTH OF THE CENTERLINE OF SOUTHGATE DR.
446-D	12,806.2707	19,486.3009	3,160.92	2" ALUMINUM CAP & 5/8" REBAR MARKED 446D 2,780.0 ft EAST OF THE INTERSECTION OF MULLOWNEY LN. AND MIDLAND RD. AND 20.0 ft NORTH OF THE CENTERLINE OF MIDLAND RD.
446-C	12,730.9911	18,640.4222	3,164.37	2" ALUMINUM CAP & 5/8" REBAR MARKED 446C 1,940.0 ft EAST OF THE INTERSECTION OF MULLOWNEY LN. AND MIDLAND RD. AND 50.0 ft SOUTH OF THE CENTERLINE OF MIDLAND RD.
446-B	11,494.4662	17,831.8471	3,168.26	2" ALUMINUM CAP & 5/8" REBAR MARKED 446B 35.0 ft SE OF THE SE CORNER OF THE ROADWAY INN MOTEL PARKING LOT & 110.0 ft SE OF THE MOST EASTERLY LIGHT POLE ON THE SOUTH EDGE OF THE PARKING LOT
446-A	10,641.9560	16,869.8340	3,169.94	LAG BOLT SET IN CENTERLINE OF PAVEMENT ON MULLOWNEY LN. 355.0 ft SOUTH OF THE INTERSECTION OF MULLOWNEY LN. AND HOLIDAY AVE.
445-D	10,781.9803	14,247.7247	3,179.46	2" ALUMINUM CAP & 5/8" REBAR MARKED 445D 240.0 ft SOUTH OF THE INTERSECTION OF MULLOWNEY LN. AND HOLIDAY AVE. AND 2,626.0 ft WEST OF THE CENTERLINE OF MULLOWNEY LN.
445-V	11,708.4551	10,528.8379	3,193.58	2" ALUMINUM CAP & 5/8" REBAR MARKED 445V NORTH OF GABEL RD. AND ADJACENT TO HOGANS SLOUGH

NOTE - VERTICAL CONTROL ESTABLISHED FROM CONTROL TRAVERSE POINTS.

Reminders:

For GPS (State Plane Coordinates)

① *Revise heading to read Control Abstract.*

② *Revise heading to read Control Diagram.*

③ *Include note.*

④ *Do not connect points with lines.*

⑤ *When multiple combination scale factors exist on a project, list each one of them, along with their respective RP range.*

⑥ *Control may be based on NAD 83-1992 or NAD 83-1999. List the one applicable to the project.*

⑤ CSF = 0.99926508 (RP 445.0 TO RP 446.0)
CSF = 0.99930844 (RP 446.1 TO RP 447.0)

② CONTROL TRAVERSE DIAGRAM

SCALE: 1" = 600'

NOTE:
③ THIS PROJECT WAS SURVEYED UTILIZING THE GLOBAL POSITIONING SYSTEM (GPS). ALL COORDINATES ARE U.S. CUSTOMARY STATE PLANE NAD 83-1992. ALL SURVEY ⑥ AND STAKING REQUIRES THE USE OF A COMBINATION SCALE FACTOR (CSF).
⑤ THE CSF FOR THIS PROJECT IS 0.99925993. ALL DIMENSIONS ON THE PLANS ARE GRID DIMENSIONS AND MUST BE DIVIDED BY THE CSF TO ARRIVE AT GROUND DIMENSIONS.

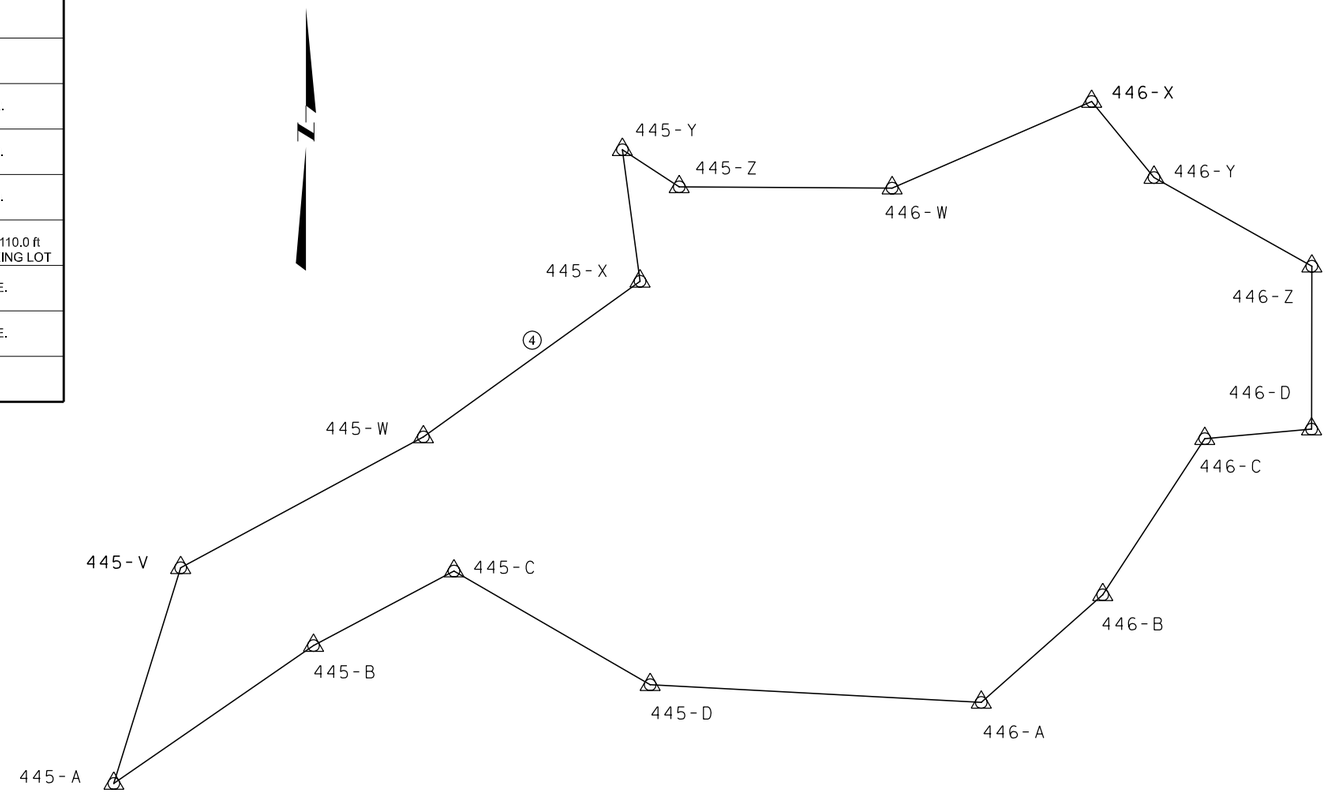
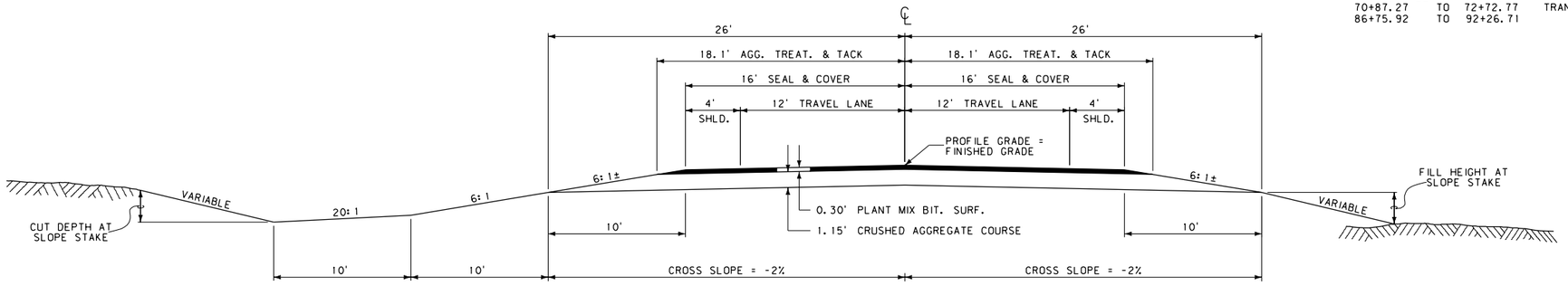


FIG. 4.4 F

(Reconstruct Project Tangent Typical Section Example)

TYPICAL SECTION NO. 1

32+04.49 TO 36+12.60
36+12.60 TO 38+51.10 TRANS. TYP. NO. 1 TO TYP. NO. 2
48+96.92 TO 59+89.04 BE
61+09.38 BE TO 70+87.27
70+87.27 TO 72+72.77 TRANS. TYP. NO. 1 TO TYP. NO. 2
86+75.92 TO 92+26.71



SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 10

QUANTITIES									
UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			AGG. TREAT.	
	COVER	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	TACK	DUST PALLIATIVE	AGG. TACK
AREA square feet		10.23	50.72	square yards PER STATION		356	402	402	402
cubic yards PER STATION		37.9	187.9	tons PER STATION	4.39	0.61		0.65	
tons PER STATION		73.1		gallons PER STATION			10		20
square yards PER STATION	356								

BACK SLOPES ✱	
0'-5'	5:1
5'-10'	4:1
10'-15'	3:1
15'-20'	2:1
OVER 20'	1.5:1

✱ SEE CROSS SECTIONS FOR DEVIATIONS

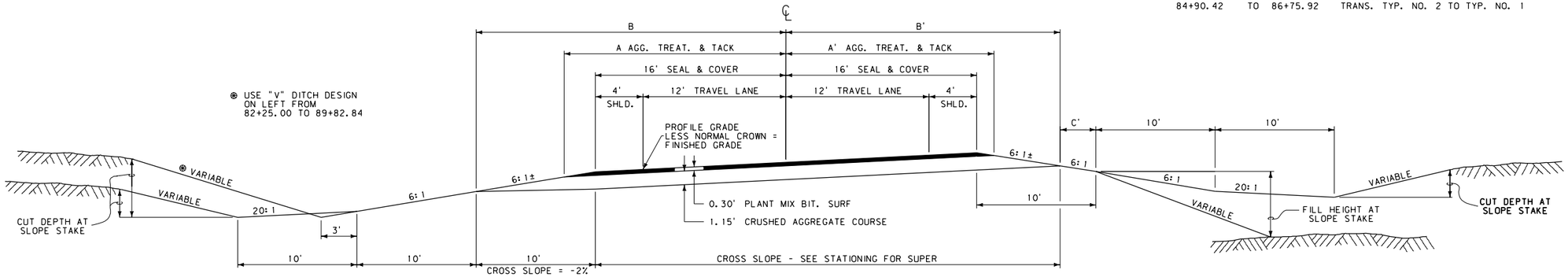
FILL SLOPES ✱	
0'-10'	6:1
10'-20'	4:1
20'-30'	3:1
OVER 30'	2:1

✱ SEE CROSS SECTIONS FOR DEVIATIONS

(Reconstruct Project Superelevated Typical Section Example)

TYPICAL SECTION NO. 2

38+51.10 TO 46+58.42 (7% LT.)
46+58.42 TO 48+96.92 TRANS. TYP. NO. 2 TO TYP. NO. 1
72+72.77 TO 84+90.46 (5% RT.)
84+90.42 TO 86+75.92 TRANS. TYP. NO. 2 TO TYP. NO. 1



FOR QUANTITIES SEE TYPICAL NO. 1

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 10

SUPER %	WIDTHS (ft)				
	A	B	A'	B'	C'
5%	18.6	26	17.4	23	3
7%	19.2	26	17.2	22	4

REVERSE DIMENSIONS FOR CURVES RT.

FIG. 4.4 G

3	MDT serving you with pride	c:\dgn\rmanrdtype01.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*
2	MONTANA DEPARTMENT OF TRANSPORTATION	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*
1		7:36:01 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME (S)	

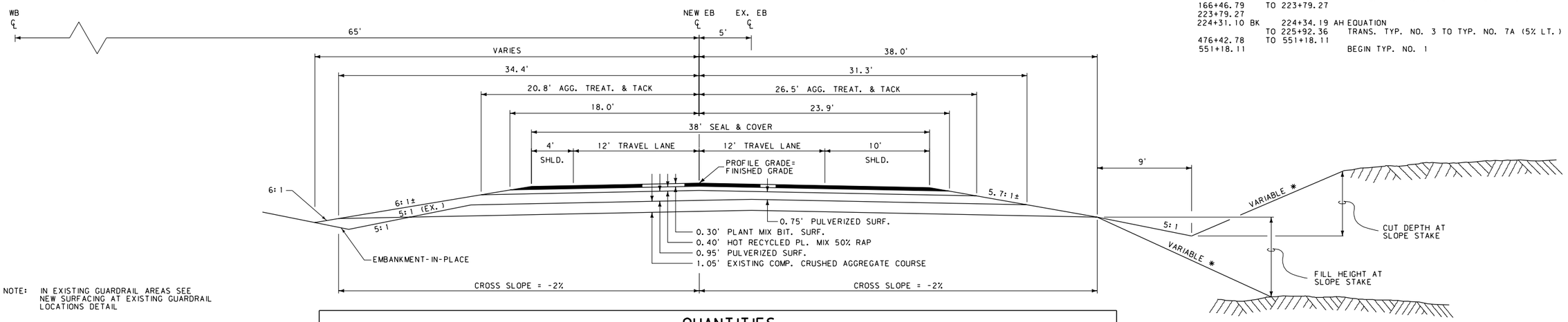
PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

07/18/2008
Highways & Engineering
Division

(Cold Mill, Pulverize R.A.P. Project Typical Section Example)

TYPICAL SECTION NO. 3

137+69.69 TO 145+78.90
145+78.90 TO 147+88.90 TRANS. TYP. NO. 3 TO TYP. NO. 7 (5% RT.)
166+46.79 TO 223+79.27
223+79.27
224+31.10 BK 224+34.19 AH EQUATION
TO 225+92.36 TRANS. TYP. NO. 3 TO TYP. NO. 7A (5% LT.)
476+42.78 TO 551+18.11
551+18.11 BEGIN TYP. NO. 1



NOTE: IN EXISTING GUARDRAIL AREAS SEE NEW SURFACING AT EXISTING GUARDRAIL LOCATIONS DETAIL

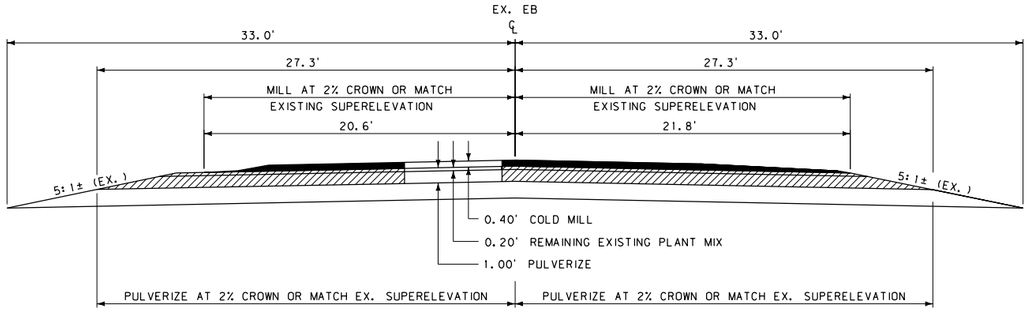
* NOTE: EXISTING CUT AND FILL SLOPES

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 20

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL				AGG. TREAT.		COLD MILLING
	COVER	PLANT MIX	RECYCLED PL. MIX 50% RAP		ASPHALT CEMENT	ASPHALT CEMENT 50% RAP	SEAL	TACK	DUST PALLIATIVE	AGG. TACK	
AREA square feet		11.99	17.84	square yards PER STATION			422	1577	526	526	471
cubic yards PER STATION		44.4	66.1	tons PER STATION	4.96	3.82	0.72		0.85		
tons PER STATION		85.6	127.4	gallons PER STATION				39		26	
square yards PER STATION	422										

COLD MILL/PULVERIZE DETAIL – TYPICAL SECTION NO. 3, NO. 7, NO. 7A



EXISTING GUARDRAIL AREA

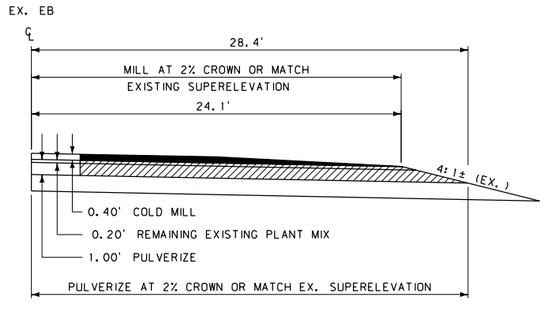


FIG. 4.4 H-1

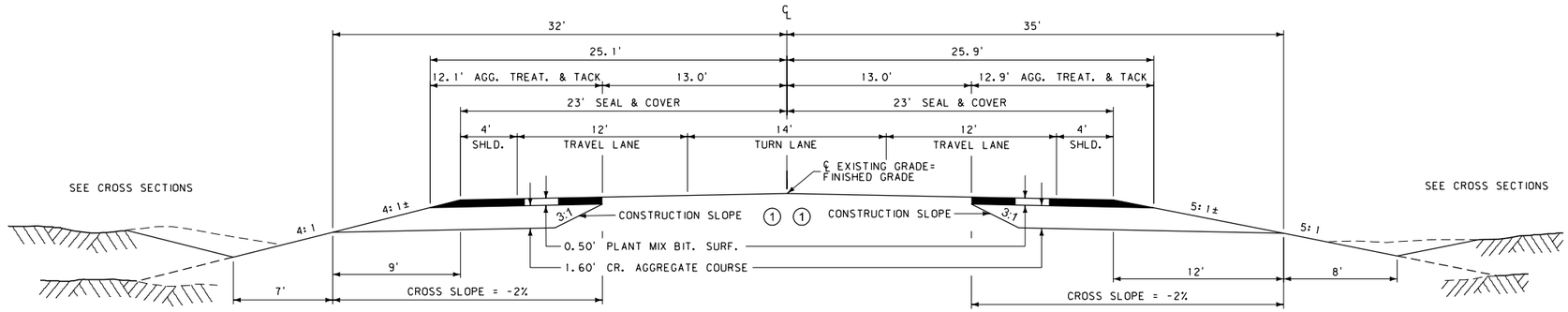
3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdtype02.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*				
1		7:36:06 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999 UPN NUMBER 12345678	SHEET 999 OF 999

07/18/2008
Highways & Engineering Division

(Notch & Widening Project Typical Section Example)

TYPICAL SECTION NO. 1

1966+10.89 TO 1993+86.48
1993+86.48 TO 1998+16.27 TRANSITION TYP. 1 TO EXISTING 28' ROADWAY



Reminder:

(1) *When notching & widening an existing Roadway Typical, it is impractical to achieve an exact vertical faced notch. Provide a 3:1 construction slope as shown from the bottom of the plant mix surfacing to the top of the subgrade. Draw the 3:1 slope on the cross sections as well. Quantities are calculated using this construction slope. Consult the district construction personnel to confirm that the use of a 3:1 construction slope is appropriate.*

QUANTITIES

UNIT	AGGREGATE			UNIT	BITUMINOUS MATERIAL			AGG. TREAT.	
	COVER	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	SEAL	TACK	DUST PALLIATIVE	AGG. TACK
AREA square feet		11.25	44.63	square yards PER STATION		511	278	278	278
cubic yards PER STATION		41.7	165.3	tons PER STATION	4.82	0.87		0.45	
tons PER STATION		80.4		gallons PER STATION			7		14
square yards PER STATION	511								

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 20

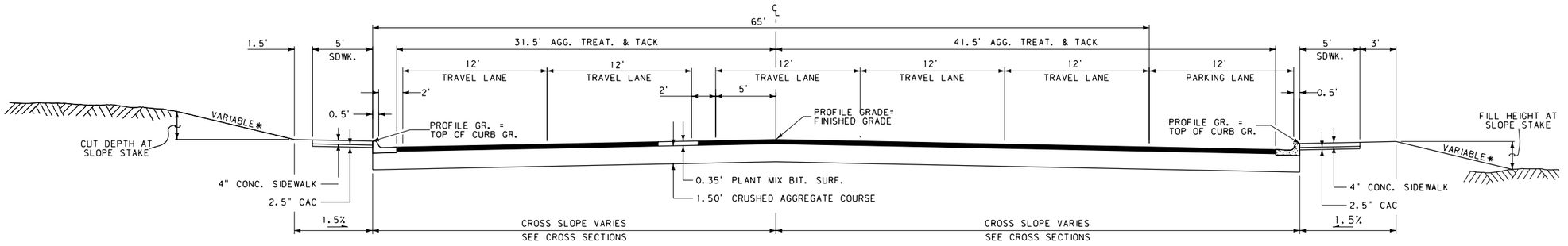
FIG. 4.4 H-2

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdtype05.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*					
1		7:36:11 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

(Urban Reconstruct Project Typical Section Example)

TYPICAL SECTION NO. 1

5+83.60 TO 6+75.00
6+75.00 TO 8+22.64 TRANS. TYP. NO. 1 TO TYP. NO. 2



* CONSTRUCT CUT AND FILL SLOPES AS FLAT AS PRACTICAL (SEE CROSS SECTIONS)

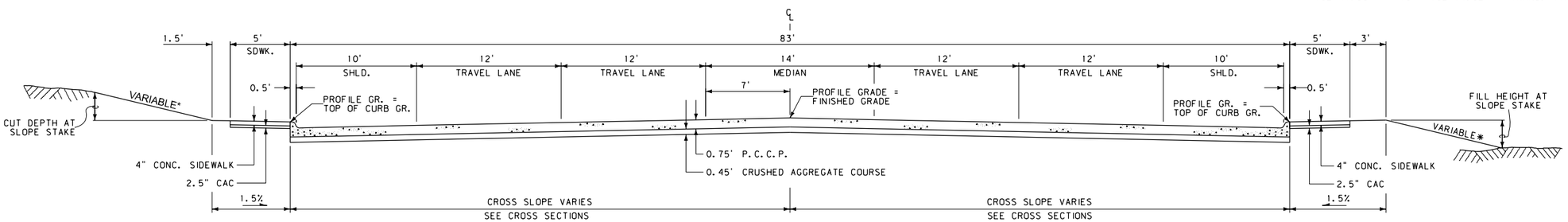
QUANTITIES							
UNIT	AGGREGATE		UNIT	BIT. MATERIAL		AGG. TREAT.	
	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	TACK	DUST PALLIATIVE	AGG. TACK
AREA square feet	25.55	114.90	square yards PER STATION		811	811	811
cubic yards PER STATION	94.6	425.6	tons PER STATION	10.94		1.31	
tons PER STATION	182.3		gallons PER STATION		20		41

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 5

(Urban P.C.C.P. Project Typical Section Example)

TYPICAL SECTION NO. 2

16+40.42 TO 36+35.60
36+35.60 TO 36+67.59 TRANS. TYP. NO. 2 TO TYP. NO. 3
40+19.91 TO 102+41.99
102+41.99 TO 102+74.02 TRANS. TYP. NO. 2 TO TYP. NO. 3



* CONSTRUCT CUT AND FILL SLOPES AS FLAT AS PRACTICAL (SEE CROSS SECTIONS)

QUANTITIES		
UNIT	AGGREGATE	P. C. C. P.
	CR. AGG. COURSE	0.75'
AREA square feet	37.35	
cubic yards PER STATION	138.3	
square yards PER STATION		922.2

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 15

FIG. 4.4.1

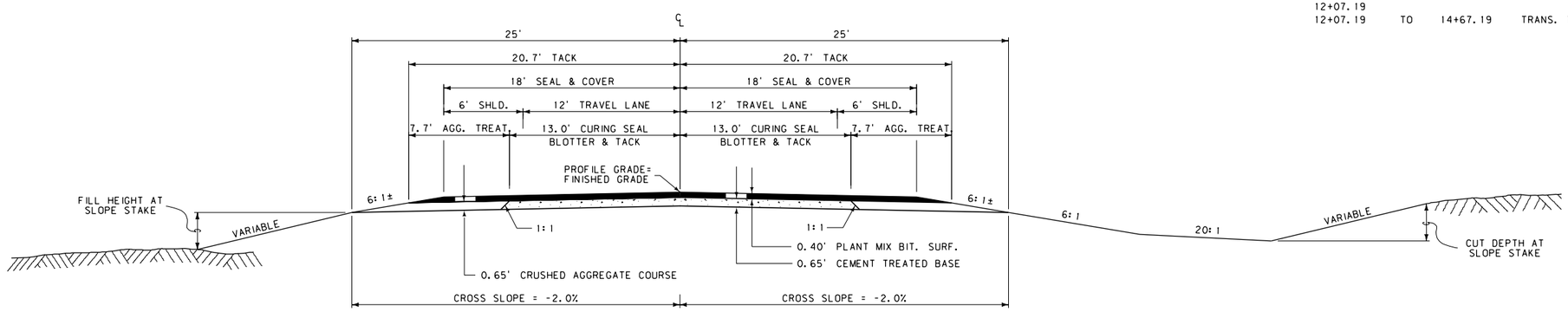
07/18/2008
Highways & Engineering Division

(Reconstruct with C.T.B. Project Typical Section Example)

TYPICAL SECTION NO. 1

AMSTERDAM RD.

8+77.19 TO 12+07.19 TRANS. P.T.W. TO TYP. NO. 1
12+07.19
12+07.19 TO 14+67.19 TRANS. TYP. NO. 1 TO TYP. NO. 2



QUANTITIES

UNIT	AGGREGATE					UNIT	BITUMINOUS MATERIAL				CEMENT	AGG. TREAT.	
	COVER	PLANT MIX	CR. AGG. COURSE	CEMENT TR. BASE	BLOTTER MATERIAL		ASPHALT CEMENT	SEAL	TACK	CURING SEAL	PORTLAND CEMENT	DUST PALLIATIVE	AGG. TACK
AREA square feet		15.48	12.38	17.32		square yards PER STATION		400	749	289		171	171
cubic yards PER STATION		57.3	45.9	64.2		tons PER STATION	6.63	0.68		0.25	5.81	0.28	
tons PER STATION		110.5	84.8	*116.1	2.2	gallons PER STATION			19				9
square yards PER STATION	400												

* FOR INFORMATION ONLY

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 10

FILL SLOPES *	
0 - 10'	6:1
10 - 20'	4:1
20 - 30'	3:1
OVER 30'	2:1

* SEE CROSS SECTIONS FOR DEVIATIONS

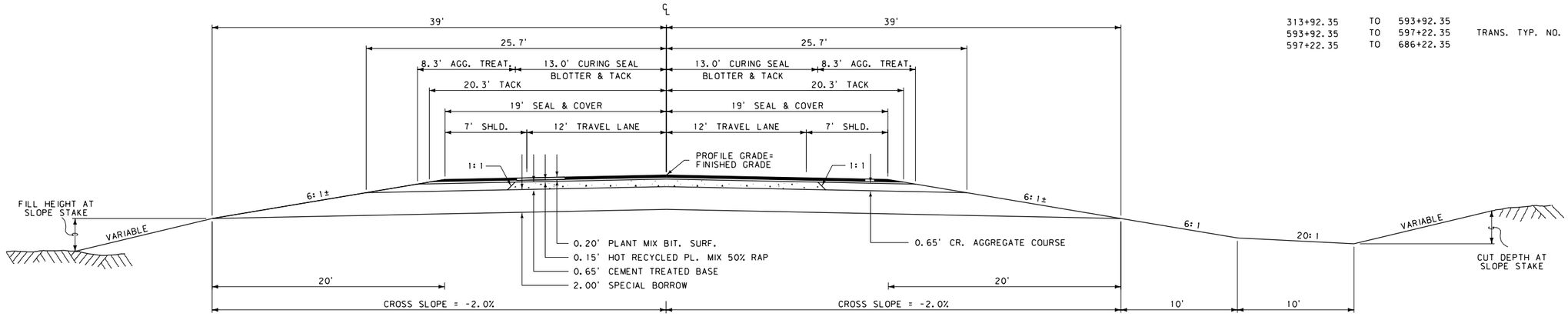
BACK SLOPES	
0 - 5'	5:1
5 - 10'	4:1
10 - 15'	3:1
15 - 20'	2:1
OVER 20'	1.5:1

* SEE CROSS SECTIONS FOR DEVIATIONS

(Reconstruct with C.T.B. & R.A.P. Project Typical Section Example)

TYPICAL SECTION NO. 2

313+92.35 TO 593+92.35
593+92.35 TO 597+22.35 TRANS. TYP. NO. 2 TO NO. 3
597+22.35 TO 686+22.35



QUANTITIES

UNIT	AGGREGATE							UNIT	BITUMINOUS MATERIAL					CEMENT		AGG. TREAT.	
	COVER	PLANT MIX	RECYCLED PL. MIX	CR. AGG. COURSE	SPECIAL BORROW	CEMENT TR. BASE	BLOTTER MATERIAL		ASPHALT CEMENT	RECYCLED A.C.	SEAL	TACK	CURING SEAL	PORTLAND CEMENT	FLY ASH	DUST PALLIATIVE	AGG. TACK
AREA square feet		7.86	6.24	13.23	129.40	17.32		square yards PER STATION			422	740	289			184	184
cubic yards PER STATION		29.1	23.1	49.0	479.3	64.2		tons PER STATION	3.37	1.34	0.72		0.25	4.64	1.16	0.30	
tons PER STATION		56.1	44.5			*116.1	2.2	gallons PER STATION				19					9
square yards PER STATION	422																

* FOR INFORMATION ONLY

SURFACING SECTION DESIGN BASED ON THE TOP 2 FEET OF SUBGRADE HAVING AN R-VALUE OF 5

FIG. 4.4 J

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdtype04.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		
1		7:36:21 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

FOR MDT INTERNAL DISTRIBUTION ONLY

07/18/2008
Highways & Engineering
Division

SUMMARY

⑤ GRADING * *(For Uncl. Exc. Projects with Borrow)*

STATION ①	cubic yards UNCL. EXC. ⑥	UNCL. BORROW	EMB.+ ②	ROADBED COMPAC-TION ③	REMARKS
8+14.14					
	4,515		4,515		
20+73					
	2,859		2,859		
25+89					
	151,404		151,404		
92+42					
	178,420		178,420		
150+36					
	173,169		173,169		
196+06					
	25,990		25,990		
221+72		④			
	182,713	86,415	269,128		
287+48.36					
TOTAL	719,070	86,415	# 805,485	840,571	

* SEE MASS DIAGRAM FOR DISTRIBUTION OF GRADING QUANTITIES
# FOR INFORMATION ONLY

Grading Frame Reminders:

① *Balance points are rounded to nearest foot.*

② *Volumes are adjusted by shrink factor. THIS IS NOT A BID ITEM. Include footnote for clarity.*

③ *Add this column on projects where roadbed compaction has been requested as a bid item. Show only the project total.*

④ *Borrow or excess is shown in last balance. (Typically)*

⑤ *All quantities shown in grading frame will be reflected in the mass diagram.*

⑥ *If excavation is adjusted for rock, both actual and adjusted excavation columns must be shown, actual exc. for pay quantities, adj. exc. to determine borrow/excess volumes. (See chapter 5.)*

⑤ GRADING * *(For Uncl. Exc. Projects with Excess Excavation)*

STATION ①	cubic yards UNCL. EXC. ⑥	EXCESS EXC.	EMB.+ ②	REMARKS
8+14.14				
	4,515		4,515	
20+73				
	2,859		2,859	
25+89				
	151,404		151,404	
92+42				
	178,420		178,420	
150+36				
	173,169		173,169	
196+06				
	25,990		25,990	
221+72		④		
	269,128	86,415	182,713	
287+48.36				
TOTAL	805,485	# 86,415	# 719,070	

* SEE MASS DIAGRAM FOR DISTRIBUTION OF GRADING QUANTITIES
# FOR INFORMATION ONLY

ADDITIONAL GRADING *(For Uncl. Exc. Projects)*

STATION ② FROM	STATION ② TO	cubic yards ① INCL. IN ROADWAY UNCL. EXC. ③	INCL. IN ROADWAY EMB.+ ④	ADD. UNCL. EXC. ⑤	REMARKS
7+15.72	8+15.72	20	210		CONN. TO P.T.W.
8+15.72	287+48.36		⑨ 28,780		TOPSOIL REPLACEMENT + 35%
11+32			175		PUBLIC APP. RT.
41+57				20	OUTLET DT. LT.
50+20			560		FARM FIELD APP. LT.
56+56				25	INLET & OUTLET DITCHES
56+66			⑥ 20		DITCH BLOCK LT.
66+60	101+05		⑦ 8,005		SUBEXCAVATION REPLACEMENT
76+69.95	77+69.95		270		MAILBOX TURNOUT RT.
77+07		105	250		PRIVATE APP. RT.
135+33	140+33		⑦ 1,910		DIGOUT REPLACEMENT
187+34	192+24			110	IRRIGATION DITCH RELOCATION RT.
188+65	199+80		⑦ 4,330		MUCK EXCAVATION REPLACEMENT
199+15.35	202+15.35		1,590		MCS SCALE SITE
250+82				20	INLET DT. RT.
250+82	254+27			145	GRADE TO DRAIN LT.
255+91	262+51	⑩ 2,615			SUBEXCAVATION
266+08	278+88		1,190		GUARDRAIL EMBANKMENT WIDENING LT.
287+48.36	288+48.36	85	145		CONN. TO P.T.W.
SUBTOTAL		~	~	⑧ 320	

Additional Grading Frame Reminders:

① *Round to nearest 5 cubic yards, use 5 cubic yards as a minimum.*

② *Quantities are added to mainline earthwork volumes. This is a listing of the entries in the run as added quantities.*

③ *Material is usable for embankment construction.*

④ *Volumes are adjusted by shrink factor. THIS IS NOT A BID ITEM.*

⑤ *Material is unusable for embankment construction.*

⑥ *All embankment quantities should be added to mainline quantities.*

⑦ *Uncl. exc. material is acceptable as replacement material- special borrow is not required. (In this example.)*

⑧ *Add add. exc. to the mainline uncl, exc. for project total on estimate. This quantity is not reflected in the mass diagram.*

⑨ *Topsoil replacement quantities are adjusted by project shrink factor. Only the project total is shown.*

⑩ *Material is usable for embankment construction. (In this example.)*

SUBEXCAVATION * *(For Uncl. Exc. Projects)*

STATION FROM	STATION TO	cubic yards UNCL. EXC.	SPECIAL BORROW ② ⑤	REMARKS
137+01	147+64	6,259	6,780	
255+91	262+47	# 2,615 ④		
TOTAL ③ ①		6,259	6,780	

* SEE DETAIL SHEET
# INCLUDED IN ROADWAY QUANTITIES

Subexcavation Frame Reminders:

① *Add subexcavation quantities to uncl. exc. for project total on estimate.*

② *Volumes are not adjusted by shrink factor.*

③ *If subexc. material is unusable for embankment construction, show quantity in this frame only. (Do not show on mass diagram.)*

④ *If subexc. material may be used in roadway embankments, show quantity in add. grading frame in the "included in roadway" column and "#" the quantity shown in subexc. frame with note stating "included in roadway quantities".*

⑤ *Include a special provision for in-place measurement needed for special borrow.*

SURFACING

STATION FROM	STATION TO	linear feet GROSS	NET	+	-	FOR	square yards RECYCLE ASPHALT PAVEMENT	gals RECYCLE AGENT	REMARKS
387+13.91									
421+13.91	423+22.83				210.00	BRIDGE			
516+07.32	518+37.27				230.00	BRIDGE			
	706+65.94	31,952.03	31,512.03				82,712	16,796	WESTBOUND DRIVING LANES ONLY
387+13.91									
421+13.91	423+22.83				210.00	BRIDGE			
516+07.32	518+37.27				230.00	BRIDGE			
	706+65.94	31,952.03	31,512.03				82,712	16,796	EASTBOUND DRIVING LANES ONLY
TOTAL		63,904.06	63,024.06	~	880.00		165,424	33,592	

FIG. 4.4 K-1

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdsume01.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION / PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			CSF = 0.9999999 / UPN NUMBER 12345678
1		7:36:26 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		SHEET 999 OF 999

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07/18/2008
Highways & Engineering Division

SUMMARY

SURFACING *(Overlay Project Example)*

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. GRADE S NV - (3)	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (2)	BITUMINOUS MATERIAL tons SEAL CRS-2P	BITUMINOUS MATERIAL gals TACK SS-1	REMARKS
752+17.72													
758+89.67	760+12.67				123.00	BRIDGE							
777+82.94	777+53.64			29.30		EQUATION							
	777+53.64	2,535.92	2,442.22					19,586	1,986	107.2	33.3	544	TYP. SEC. NO. 1
SUBTOTAL		2,535.92	2,442.22	29.30	123.00		~	19,586	1,986	107.2	33.3	544	NORTH BOUND
752+07.58													
758+77.13	760+00.13				123.00	BRIDGE							
777+70.60	777+53.64			16.96		EQUATION							
	777+53.64	2,546.06	2,440.02					19,568	1,967	106.2	33.3	536	TYP. SEC. NO. 2
SUBTOTAL		2,546.06	2,440.02	16.96	123.00		~	19,568	1,967	106.2	33.3	536	SOUTH BOUND
777+53.64													
788+86.19	788+87.99				1.80	EQUATION							
837+47.77	837+53.67				5.91	EQUATION							
	846+72.74	6,919.10	6,911.39					52,908	5,303	286.4	89.9	1,448	TYP. SEC. NO. 3
SUBTOTAL		6,919.10	6,911.39	~	7.71		~	52,908	5,303	286.4	89.9	1,448	NORTH BOUND & SOUTH BOUND
TOTAL		9,460.09	9,352.51	23.13	130.71		130	92,062	9,256	499.8	156.5	△ 2,528	

△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

Surfacing Frame Reminders:

(1) *Determine cover type and insert in heading. Use Type I for all rural areas. Use Type II in areas where higher ADT and turning movements are a concern. Determine proper usage during Plan-in-Hand.*

(2) *Provide appropriate asphalt cement grading, i.e. PG 64-28. Use appropriate percentage of asphalt cement based on aggregate size. (See chapter 5.)*

(3) *Provide appropriate pl. mix. aggregate size; either 1/2" or 3/4".*

SUBEXCAVATION * *(For Emb.-in-Place Projects)*

STATION FROM	STATION TO	cubic yards (1) EMB. IN PLACE	cubic yards (1) SPECIAL BORROW (3)	REMARKS
137+01	147+64	4,951	5,472	
TOTAL (2)		# 4,951	5,472	

* SEE DETAIL SHEET
\# INCLUDED IN GRADING FRAME

Subexcavation Frame Reminders:

(1) *Volumes are not adjusted by shrink factor.*

(2) *Place quantity in grading frame as a line item and "#" the quantity shown in subexc. frame with note stating "included in grading frame."*

(3) *Include a special provision stating in-place measurement of special borrow.*

GRADING *(For Emb.-In-Place Projects)*

STATION (1) FROM	STATION (1) TO	cubic yards EXC. (2)	cubic yards EMB. (3) IN PLACE	REMARKS
8+14.14	287+48.36	1,246	6,270	
			(4) 2,616	DISPOSAL OF UNSUITABLE MATERIAL
			(5) 1,635	TOPSOIL REPLACEMENT
		210	9,240	ADDITIONAL GRADING
			4,951	SUBEXCAVATION
TOTAL		# 1,456	(6) 24,712	

\# FOR INFORMATION ONLY

Grading Frame Reminders:

(1) *Show project total only - no balances will be designated.*

(2) *Excavation is not a bid item - material is available for embankment construction. Include footnote for clarity.*

(3) *Volumes are not adjusted by a shrink factor.*

(4) *Disposal of unsuitable roadway excavation is measured and paid as Emb.-in-Place (Poor material not accounted for in subexcavation or other quantities).*

(5) *Topsoil replacement volumes are not adjusted by shrink factor.*

(6) *See section 5.2.7 of Rd. Design Manual and explanation of 25,000 cubic yards limit.*

ADDITIONAL GRADING *(For Emb.-in-Place Projects)*

STATION FROM	STATION TO	cubic yards (6) INCL. IN GRAD. FRAME EXC. (1)	cubic yards (6) INCL. IN GRAD. FRAME (2) EMB. IN PLACE	cubic yards (6) ADD. EMB. IN (3) PLACE #	REMARKS
7+15.72	8+15.72	20	155		CONN. TO P.T.W.
11+32			130		PUBLIC APP. RT.
41+57				20	OUTLET DT. LT.
50+20			420		FARM FIELD APP. LT.
56+56				25	INLET & OUTLET DITCHES
56+66			20		DITCH BLOCK LT.
66+60	101+05		(4) 2,660		SUBEXCAVATION REPLACEMENT
76+69.95	77+69.95		195		MAILBOX TURNOUT RT.
77+07		105	185		PRIVATE APP. RT.
135+33	140+33		(4) 1,415		DIGOUT REPLACEMENT
187+34	192+24			110	IRRIGATION DITCH RELOCATION RT.
188+65	199+80		(4) 1,895		MUCK EXCAVATION REPLACEMENT
199+15.35	202+15.35		1,175		MCS SCALE SITE
250+82				20	INLET DT. RT.
250+82	254+27			145	GRADE TO DRAIN LT.
266+08	278+88		885		GUARDRAIL EMBANKMENT WIDENING LT.
287+48.36	288+46.36	85	105		CONN. TO P.T.W.
SUBTOTAL		(5) 210	(5) 9,240	(7) 320	

(3) # EXCAVATION QUANTITIES-MATERIAL UNSUITABLE FOR ROADWAY EMBANKMENTS

Additional Grading Frame Reminders:

(1) *Excavation is not a bid item - material is available for embankment construction.*

(2) *Volumes are not adjusted by shrink factor.*

(3) *Material is unusable for embankment construction.*

(4) *Excavated material obtained from roadway template or uncl. borrow source is acceptable as replacement material - special borrow is not required. (In this example.)*

(5) *Subtotals are shown in grading frame to be added to mainline quantities, with remark "Additional Grading."*

(6) *Round to nearest 5 cubic yards, use 5 cubic yards as a minimum.*

(7) *Add additional Emb.-in-Place to the mainline Emb.-in-Place for the project total on estimate. This quantity is not used to determine amount of borrow required.*

FIG. 4.4 K-2

07/18/2008
Highways & Engineering Division

SUMMARY

SURFACING

(Overlay Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE S - (4)	AGGREGATE tons HOT RECYCLE P.M.S. 50% RAP	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards SHOULDER GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons HOT RECYCLE A.C. PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL gals TACK SS-1	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
2178+95.22																			
2328+98.82	0+00.00			232,898.82		PROJECT EQUATION													
	160+07.91	-201,887.30	31,011.52					108,527	10,648	15,327			575.0	459.8	184.5	6,423			TYP. NO. 1
						ADDITIONAL SURFACING		2,137	239	85	1,139	20	13.0	2.6	3.6	34	0.6	17	
SUBTOTAL		-201,887.30	31,011.52	232,898.82	~		368	110,664	10,887	15,412	1,139	20	587.9	462.4	188.1	6,457	0.6	17	CUSTER COUNTY
160+07.91	479+36.55	31,928.64	31,928.64					111,737	10,964	15,781			592.1	473.4	190.0	6,613			TYP. NO. 1
479+36.55																			
479+75.92	480+00.00				24.08	EQUATION													
	480+00.00	63.45	39.37					141	13	19			0.7	0.6	0.2	8			TRANS. TYP. NO. 1 TO TYP. NO. 2
480+00.00	526+39.99	4,639.99	4,639.99					14,208	1,401	2,028		184	75.7	60.8	24.2	852			TYP. NO. 2
526+39.99	532+03.51	563.52	563.52					1,684	172	252			9.3	7.6	2.9	106			TYP. NO. 3
532+03.51	533+08.50	104.99	104.99					335	37	55			2.0	1.7	0.6	23			TRANS. TYP. NO. 3 TO EX. B.E.
						ADDITIONAL SURFACING		512	269	651	2,952	366	14.6	19.5	0.9	82	5.4	164	
SUBTOTAL		37,300.59	37,276.51	~	24.08		443	128,617	12,856	18,786	2,952	550	694.3	563.6	218.8	7,684	5.4	164	FALLON COUNTY
TOTAL		-164,586.71	68,288.03	232,898.82	24.08		811	239,281	23,743	34,198	4,091	570	1,282.2	1,026.0	406.9	△ 14,141	6.0	181	

△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

(Overlay Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE S - (4)	AGGREGATE tons HOT RECYCLE P.M.S. 50% RAP	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards SHOULDER GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons HOT RECYCLE A.C. PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL gals TACK SS-1	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
664+04.46	664+39.27					CONNECTION		1,148	11				0.6		2.0	3			
733+95.44	736+65.13					MAILBOX TURNOUT		493	9	11		13	0.5	0.3	0.8	5			RT.
761+00.17	763+69.86					MAILBOX TURNOUT		493	9	11		7	0.5	0.3	0.8	5			LT.
11+90.00	12+55.65					CULVERT REPLACEMENT				63	184			1.9		8	0.6	17	0.35' HOT RECYCLE PMS ON 1.45' CAC
12+22.81						STOCKPASS			6		3		0.3						
						2 - PUBLIC APPROACHES			46				2.5			13			
						2 - PRIVATE APPROACHES		(1)	53		94		2.9		(1)				
						16 - FARM FIELD APPROACHES			106		858		5.7						
SUBTOTAL		~	~	~	~		~	2,134	240	85	1,139	20	13.0	2.5	3.6	34	0.6	17	CUSTER COUNTY
352+09.43	352+89.32					CULVERT REPLACEMENT				77	225			2.3		10	0.6	17	0.35' HOT RECYCLE PMS ON 1.45' CAC
389+62.71	389+96.67					CULVERT REPLACEMENT				33	95			1.0		4	0.3	10	0.35' HOT RECYCLE PMS ON 1.45' CAC
400+18.48	401+45.61					CULVERT REPLACEMENT				122	358			3.7		16	1.0	30	0.35' HOT RECYCLE PMS ON 1.45' CAC
412+26.48	412+67.00					CULVERT REPLACEMENT				39	114			1.2		5	0.3	10	0.35' HOT RECYCLE PMS ON 1.45' CAC
475+72.18	480+19.69					TRUCK TURNOUT		512	44	60		98	2.4	1.8	0.9	25			LT.
504+67.36	505+69.39					CULVERT REPLACEMENT				93	220			2.8		11	0.7	20	0.40' HOT RECYCLE PMS ON 1.40' CAC
529+52.76	533+08.50					DIGOUT REPLACEMENT				228	893			6.8			2.5	77	
						2 - PUBLIC APPROACHES			42				2.3			12			
						2 - PRIVATE APPROACHES		(1)	57		102		3.1		(1)				
						19 - FARM FIELD APPROACHES			126		944		6.8						
						GUARDRAIL WIDENING						268							
SUBTOTAL		~	~	~	~		~	512	269	652	2,951	336	14.6	19.6	0.9	△ 83	5.4	164	FALLON COUNTY

△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

Surfacing Frame and Additional Surfacing Frame Reminders:

(1) *Discuss the need to apply seal and cover to approaches, turnouts, etc., during the Plan-in-Hand.*

(2) *Determine cover type and insert into heading. Use Type I for all rural areas. Use Type II in urban areas where higher ADT and turning movements are a concern. Determine proper usage during the Plan-in-Hand.*

(3) *Provide appropriate asphalt cement grading, i.e. PG 64-28. Use appropriate percentage of asphalt cement, based on aggregate size and %RAP. (See chapter 5.)*

(4) *Provide appropriate pl. mix aggregate size; either 1/2" or 3/4".*

FIG. 4.4 K-3

SUMMARY

SURFACING

(Reconstruction Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE D #	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards SPECIAL BORROW (4)	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL gals TACK SS-1	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
37+71.60	45+43.88	772.28	772.28					2,928	800	827	3,702		48.0	5.0	90	5.7	172	TYPICAL SECTION NO. 2
45+43.88	49+94.50	450.62	450.62					1,807	484	497	2,160		29.0	3.1	54	3.4	104	TYPICAL SECTION NO. 4
49+94.50	51+87.96	193.44			193.44	BRIDGE												
51+87.96	52+82.94	94.98	94.98					380	101	105	455		6.1	0.6	11	0.8	22	TYPICAL SECTION NO. 4
						ADDITIONAL SURFACING		1,280	528	789			31.7	2.2	47	2.4	74	
TOTAL		1,511.32	1,317.88	~	193.44		* 27	6,395	1,913	2,218	6,317	131	* 114.8	10.9	△ 202	* 12.3	* 372	

\# GRADE D COMMERCIAL
* FOR INFORMATION ONLY, INCLUDE IN COST OF GRADE D COMMERCIAL PL. MIX SURFACING
△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

(Reconstruction Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE D #	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards SPECIAL BORROW	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL gals TACK SS-1	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
34+76.32	37+71.60	295.28	295.28			CONNECTION TO P.T.W.		939	262	279			15.7	1.6	30	1.9	57	TRANS. TYP. NO. 1 TO TYP. NO. 2
	37+71					MAILBOX TURNOUT RT.			17	25			1.0		1			
						3 - PRIVATE APPROACHES		(1)	84	152			5.0	(1)				
						3 - FARM/FIELD APPROACHES			21	148			1.3					
						GUARDRAIL WIDENING			55	109			3.3		7			
						RADIUS CONN. WITH HWY 200		341	89	77			5.3	0.6	9	0.6	17	
SUBTOTAL		~	~	~	~		~	1,280	528	790	~	~	* 31.6	2.2	△ 47	* 2.5	* 74	

\# GRADE D COMMERCIAL
* FOR INFORMATION ONLY, INCLUDE IN COST OF GRADE D COMMERCIAL PL. MIX SURFACING
△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

Surfacing Frame and Additional Surfacing Frame Reminders:

(1) *Discuss the need to apply seal and cover to approaches, turnouts, etc., during the Plan-in-Hand.*

(2) *Determine cover type and insert into heading. Use Type I for all rural areas. Use Type II in areas where higher ADT and turning movements are a concern. Determine proper usage during the Plan-in-Hand.*

(3) *Provide appropriate asphalt cement grading, i.e. PG 64-28.*

(4) *Include special borrow in surfacing frame when quantities are shown on the typical section.*

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdsume04.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION: CSF = 0.9999999; UPN NUMBER 12345678 — PROJECT NO. SHEET 999 OF 999
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			
1		7:36:40 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		

SUMMARY

SURFACING

(Reconstruct with CTB Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - (4)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE C	AGGREGATE tons BLOTTER SAND SURF. GRADE 4	AGGREGATE cubic yards CEMENT TREATED BASE	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL tons CURING SEAL CRS-2	BITUMINOUS MATERIAL gals TACK SS-1	CEMENT tons PORTLAND CEMENT	CEMENT tons FLY ASH	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
71+52.23	77+41.90	589.67	589.67					3,826	722		29	1,471			39.0	6.5	3.2	202	106.5	26.6			TYPICAL NO. 1
77+41.90	80+25.36	283.46	283.46					1,622	312		12	640			16.8	2.8	1.4	87	46.3	11.6			TRANS. TYP. NO. 1 TO TYP. NO. 3
80+25.36	102+60.37	2,235.01	2,235.01					11,406	2,179		87	4,503			117.7	19.4	9.7	608	326.0	81.5			TYPICAL NO. 3
102+60.37	104+72.97	212.60	212.60					1,194	225		9	463			12.2	2.0	1.0	63	33.5	8.4			TRANS. TYP. NO. 3 TO TYP. NO. 4
104+72.97	119+39.14	1,466.17	1,466.17					8,792	1,673		66	3,424			90.3	14.9	7.4	468	247.9	62.0			TYPICAL NO. 4
119+39.14	120+84.38	145.24	145.24					942	183		7	326	65		9.9	1.6	0.8	49	23.6	5.9	0.2	7	TRANS. TYP. NO. 4 TO TYP NO. 5
120+84.38	154+19.95	3,335.57	3,335.57					23,590	4,616		146	7,173	3,033		249.3	40.1	16.2	1,174	519.3	129.8	9.8	298	TYPICAL NO. 5
154+19.95	159+02.23	482.28	482.28					3,077	597		19	902	438		32.2	5.2	2.0	150	65.3	16.3	1.4	43	TRANS. TYP. NO. 5 TO TYP. NO. 6
159+02.23	167+29.00	826.77	826.77					4,009	801		22	1,116	752		43.3	6.8	2.5	195	80.8	20.2	2.4	74	TRANS. TYP. NO. 6 TO TYP. NO. 7
167+29.00																							
567+63.45	568+68.45				105.00	NEW STRUCTURE																	
	579+39.63	41,210.63	41,210.63					173,820	34,706		912	45,573	37,380		1,874.1	295.5	100.9	8,275	3,299.5	824.9	121.6	3,674	TYPICAL NO. 7
						ADDITIONAL SURFACING			1,910	115			5,023		103.2						14.3	89	
TOTAL		50,787.40	50,787.40	~	105.00		671	232,278	47,924	115	1,309	65,591	46,691	9,456	2,588.0	394.8	145.1	△ 11,271	4,748.7	1,187.2	149.7	4,185	

△ FOR INFORMATION ONLY - BASED ON ONE APPLICATION

ADDITIONAL SURFACING (INCLUDED IN SURFACING FRAME)

(Reconstruct with CTB Project Example)

STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	tons HYDRATED LIME	AGGREGATE sq. yards COVER TYPE (2)	AGGREGATE tons PLANT MIX BIT. SURF. GR. S - (4)	AGGREGATE tons PLANT MIX BIT. SURF. GRADE C	AGGREGATE tons BLOTTER SAND SURF. GRADE 4	AGGREGATE cubic yards CEMENT TREATED BASE	AGGREGATE cubic yards CRUSHED AGG. COURSE	AGGREGATE cubic yards TRAFFIC GRAVEL	BITUMINOUS MATERIAL tons ASPHALT CEMENT PG (3)	BITUMINOUS MATERIAL tons SEAL CRS- 2P	BITUMINOUS MATERIAL tons CURING SEAL CRS-2	BITUMINOUS MATERIAL gals TACK SS-1	CEMENT tons PORTLAND CEMENT	CEMENT tons FLY ASH	AGG. TREATMENT tons DUST PALLIATIVE	AGG. TREATMENT gals AGG. TACK SS-1	REMARKS
42+00.00	82+18.50					PEDESTRIAN WALKWAY				115			198										
						GUARDRAIL WIDENING			131				254		7.1									
						MAILBOX TURNOUTS (2)			13				24		0.7									
						14 - PUBLIC APP. - 24' WIDE		(1)	446				814		24.1	(1)					9.1	57	
						8 - PUBLIC APP. - 40' WIDE			368				646		19.8						5.2	32	
						30 - PRIVATE APPROACHES			774				1,389		41.8								
						26 - FARM FIELD APPROACHES			177				1,694		9.6								
424+54.00						STOCKPASS			1				4		0.1								
SUBTOTAL		~	~	~	~		~	~	1,910	115	~	~	5,023	~	103.2	~	~	~	~	~	14.3	89	

Surfacing Frame and Additional Surfacing Frame Reminders:

(1) *Discuss the need to apply seal and cover to approaches, turnouts, etc., during the Plan-In-Hand.*

(2) *Determine cover type and insert into heading. Use Type I for all rural areas. Use Type II in areas where higher ADT and turning movements are a concern. Determine proper usage during the Plan-In-Hand.*

(3) *Provide appropriate asphalt cement grading, i.e. PG 64-28. Use appropriate percentage of asphalt cement based on aggregate size. (See chapter 5.)*

(4) *Provide appropriate pl. mix aggregate size; either 1/2" or 3/4".*

FIG. 4.4 K-5

07/18/2008
Highways & Engineering Division

SUMMARY

① BITUMINOUS PAVEMENT REMOVAL

STATION		square yards	REMARKS
FROM	TO	BIT. PAVEMENT REMOVAL	
138+10.00	139+10.00	301	CONNECTION TO P.T.W.
146+08.26	147+08.26	301	BRIDGE END
148+47.70	149+47.70	301	BRIDGE END
226+08.92		215	CONNECTION TO HWY 300 LEFT
226+08.92		215	CONNECTION TO HWY 300 RIGHT
421+02.95	422+02.95	301	CONNECTION TO P.T.W.
TOTAL		1,634	

Bituminous Pavement Removal Frame Reminder:

① *Provide detail for width and depth of pavement removal.*

① COLD MILLING *

STATION		square yards	REMARKS
FROM	TO	COLD MILLING *	
9+70.00	10+70.00	344	CONNECTION TO P.T.W.
94+51.00	95+51.00	344	BRIDGE APPROACH
95+51.00	96+10.06	207	BRIDGE DECK
96+10.06	97+10.06	344	BRIDGE APPROACH
SUBTOTAL		1,239	STPP FUNDING
95+44.80	96+44.80	344	CONNECTION TO P.T.W.
SUBTOTAL		344	URBAN FUNDING
TOTAL		1,583	

* SEE DETAILS

Cold Milling Frame Reminder:

① *Provide detail for width and depth of cold milling.*

CLEARING & GRUBBING ①

STATION		acres	REMARKS
FROM	TO	CLEARING AND GRUBBING	
0+00	164+04	3.5	RIGHT SIDE ONLY
0+00	262+47	5.7	LEFT SIDE ONLY
393+70	590+55	9.6	LEFT AND RIGHT
TOTAL		18.8	

Clearing and Grubbing Frame Reminder:

① *Discuss the use of this bid item at Plan-in-Hand.*

CONCRETE LINED DITCH *

STATION		linear feet	cubic yards			square yards	REMARKS
FROM	TO	CONCRETE LINED DITCH	SPECIAL BACKFILL	DRAIN AGG.	BANK PROTEC-TION TYPE 4	GEO-MEMBRANE LIGHT	
231+22	231+35	13.0	2				DIVISION BOX
231+35	233+42	207.0	18	3.9			
233+42							INLET HEADWALL
233+68							OUTLET HEADWALL
233+68	235+55	187.0	16	3.5			
235+55							CUTOFF WALL
230+63	231+22	59.0	5		7.1	24	
235+55	235+88	33.0	3		12.8	33	
233+22	233+68	46.0	4	0.7			
TOTAL		545.0	48	8.1	19.9	57	

* SEE DETAIL SHEET

CATTLE GUARD

STATION	each				REMARKS
	CATTLE GUARD			RESET CATTLE GUARD	
	10 feet	12 feet	24 feet		
12+67				1	LEFT - RESET ON R/W LINE (24') ①
44+26		1			LEFT
75+40			1		RIGHT
117+10	1				RIGHT
145+58				1	RIGHT - RESET AT STA. 144+83 (24') ①
TOTAL	1	1	1	2	

Cattle Guard Frame Reminder:

① *Show reset cattle guard size in remarks section.*

CONCRETE DRAINAGE CHUTES

STATION	cubic yards	REMARKS
	CLASS ① CONCRETE	
12+45	4.6	LEFT
48+90	3.7	LEFT
80+53	4.2	RIGHT
TOTAL	12.5	

Concrete Drainage Chute Frame Reminder:

① *Obtain concrete class from hydraulics section.*

CHANNEL RESTORATION & FISH PASSAGE *

STATION		square yards		cubic yards						lump sum	each		REMARKS
		GEOTEXTILE PERM. EROS. CNTRL. __ SURVIVABILITY CLASS __ ③	COCONUT BLANKET	CLASS "AC" CONCRETE	CRUSHED AGG. COURSE	RANDOM RIPRAP CL. 2	SPECIAL BACKFILL	STREAM-BED MATERIAL	CHANNEL EXC.	WILLOW CUTTINGS	BOULDER CLUSTERS	ROCK WEIRS	
FROM	TO												
194+71.37		783		28.4	16	261.2	242	112	39		8		
224+77.28		446		23.8	14	133.0	229	47	46		8		
237+52								72					FISH PASSAGE
326+10.08		470		18.4	12	140.3	163	171	118		7		
343+89	345+04		1,473					713	Δ 1,118	1		5	CHANNEL CHANGE LT. & FISH PASSAGE
TOTAL		1,699	1,473	70.6	① 42	534.5	634	1,115	203	1	23	5	

* SEE DETAIL SHEET
Δ INCLUDED IN ROADWAY QUANTITIES ②

Channel Restoration and Fish Passage Frame Reminders:

① *Add this quantity to quantity from surfacing frame and total for cost estimate.*

② *Confirm this quantity is shown in the additional grading frame for payment.*

③ *Consult with Geotechnical Section to determine Survivability and Class of Erosion Control Geotextile, based on subgrade conditions.*

FIG. 4.4 K-6

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdsume06.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)
2		7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE		
1		7:36:49 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

SUMMARY

① CULVERTS (INCLUDED IN CULVERT SUMMARY RECAP)

STATION ②	BASIC BID ITEMS: CULVERT PIPE in	linear feet: LENGTH OF PIPE	linear feet: RELAY CULVERT	linear feet:	linear feet: REMOVE CULVERT	cubic yards: CULVERT EXC. **	cubic yards: FOUND-ATION MATERIAL	cubic yards: BEDDING MATERIAL	cubic yards: CLASS "DD" CONCRETE	cubic yards: CULVERT RIPRAP CLASS 1	square yards: GEOTEX-TILE #	PIPE OPTIONS in: CONCRETE STEEL - 2 2/3 x 1/2 CORR. ALUMINUM - 2 2/3 x 1/2 CORR.	PIPE OPTIONS in: CLASS OR THK.	COATING * ⑥	END SECTIONS ③: LEFT	END SECTIONS ③: RIGHT	cubic yards: FOUND-ATION MATERIAL	cubic yards: BEDDING MATERIAL	cubic yards: CLASS "DD" CONCRETE	cubic yards: RANDOM RIPRAP CLASS 1	square yards: GEOTEX-TILE #	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
98+43	24	108				70						24 RCP 24 CSP 24 CAP	CL.2 0.109 0.060	NONE YES NONE	FETS FETS FETS	FETS FETS FETS						4.9			DRAIN
126+41	36	132				100						36 RCP 42 CSP	CL.2 0.109	NONE YES	FETS FETS	FETS FETS						6.6	5° RT.		DRAIN
139+90	58 1/2 x 36 ④	96				5						58 1/2 x 36 RCPA 60 x 46 CSPA ⊕	CL.3 0.138	NONE YES	FETS 2:1 BEVEL	FETS 2:1 BEVEL		72	4.6	9.0		3.3			DRAIN
141+17	18	50				5						18 RCP 18 CSP 18 CAP	CL.2 0.079 0.060	NONE NONE NONE	FETS FETS FETS	FETS FETS FETS						1.6			APP. LT.
175+30	42	96				15						42 RCP 57 x 38 CSPA	CL.2 0.109	NONE YES	FETS 2:1 BEVEL	FETS 2:1 BEVEL						3.3			DRAIN
201+05	96	4 x 116				1160		534	21.2	46.0		96 CSP ⊕	0.109	YES	2:1 ◪	2:1 ◪		534	21.4	46.0		4.6			DRAIN 4 PIPES
202+99	36	98				40						36 CSP	0.109	YES	FETS	FETS						3.9			DRAIN
203+94	18	50				5						18 RCP 18 CSP 18 CAP	CL.2 0.079 0.060	NONE NONE NONE	FETS FETS FETS	FETS FETS FETS						2.0			APP. LT.
301+51	18 IRR.	142			71.9	100						18 CSP IRR.	0.079	YES	SQ.	SQ.						4.9	10° LT.	18 x 71.9 CSP IRR.	IRR.
303+97	112 x 75 IRR.	96				255		115	7.1	13.8		112 x 75 CSPA IRR. ⊕	0.079	YES	SQ.	2:1 BEVEL		115	7.1	13.8		4.9			IRR. SEE DETAIL FOR INLET
307+19	24 IRR.	102				5						24 RCP IRR. 24 CSP IRR.	CL.2 0.079	NONE YES	FETS FETS	FETS FETS						4.9			IRR.
310+43	73 x 45 IRR.	2 x 102				280		156	9.8	24.7		73 x 45 RCPA IRR. 81 x 59 CSPA IRR. ⊕	CL.3 0.079	NONE YES	FETS 2:1 BEVEL	FETS 2:1 BEVEL		156 187	9.8 8.9	24.7 18.4		5.9			IRR. DOUBLE PIPE
310+70					64.0	40																		24 x 64.0 CSP	
312+07	24	52				5						24 RCP	CL.2	NONE	FETS	FETS						9.8		24 x 95.1 RCP	DRAIN LENG. 12 FT LT. & 40 FT RT.
315+29	24	30				5						24 CSP	0.079	NONE	RACET	RACET						1.6		24 x 100.1 RCP	APP. RT. LENG. 18 FT LT. & 12 FT RT.
323+65	18	6	6		6.6	5						18 RCP	CL.2	NONE	~	FETS						4.6		18 x 98.4 RCP	DRAIN RELAY FETS LT. NEW FETS RT.
331+14	18	28	46		45.9	60						18 RCP	CL.2	NONE	~	~						4.6		18 x 45.9 RCP	APP. LT. RELAY & LENGTHEN
350+00	18 SIPHON	100				50						18 CSP SIPHON	0.079	YES	Δ	Δ						5.9			SIPHON
351+97	18 SIPHON	122				60						18 RCP SIPHON 18 CSP SIPHON	CL.2 0.079	NONE YES	Δ Δ	Δ Δ						4.9			SIPHON
360+01	144 ⑤	124				240	133	220	10.9	23.0	205	144 SSPP	0.109	YES	2:1 ◪	2:1 ◪	133	220	10.9	23.0	205	12.1			DRAIN
TOTAL	~	~	52		188.4	~	133	1,097	53.6	116.5	205	~	~	~	~	~	~	~	~	~	~	~	~	~	~

STABILIZATION
* SEE STANDARD SPEC. SECT. 709.04 ⑥
** FOR INFORMATION ONLY
◪ STEP BEVEL
Δ SEE SIPHON DETAIL SHEET
⊕ 3" x 1" CORR.

Culverts Frame Reminders:

① *This frame used when culvert material type is optional - culvert summary recap must accompany this frame.*

② *Pipe location rounded to nearest foot*

③ *List new end sections only - end sections included in length of new pipe for payment.*

④ *Arch pipes listed as span X rise*

⑤ *SSPP diameters in inches. SSPPA sizes in feet and inches.*

⑥ *Coating specifications could include 709.04, 709.05, or 709.12 in accordance with recommendations from the Materials Bureau and Hydraulics Section.*

FIG. 4.4 K-7

SUMMARY

① CULVERTS

STATION ②	linear feet: RCP CLASS 2 18"	RCP CLASS 2 24"	RCP CLASS 2 36"	RCP CLASS 2 48"	RCP CLASS 3 24"	RCP CLASS 4 24"	RCP IRRIGATION CLASS 2 18"	RCP IRRIGATION CLASS 2 24"	CSP - 2 2/3" x 1/2" CORR. 0.064 THK. 18"	CSP - 2 2/3" x 1/2" CORR. 0.138 THK. 72"	CSP - 2 2/3" x 1/2" CORR. 0.168 THK. 84"	COATING * ④	END SECTIONS ③ LEFT	END SECTIONS ③ RIGHT	linear feet: RELAY CULVERT	linear feet: CLEAN CULVERT	linear feet: REMOVE CULVERT	cubic yards: CULVERT EXC. **	cubic yards: BEDDING MATERIAL	cubic yards: CLASS "DD" CONCRETE	cubic yards: RANDOM RIPRAP CLASS 1	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
13+65		6										NONE	~	FETS	6	52	6.6	5				4.6		24 x 60.0 RCP	RELAY FETS LT.
51+84		52										NONE	FETS	FETS				5				9.8		24 x 80.1 RCP	LENGTHEN 12' LT. & 40' RT.
63+78					42							NONE	~	FETS	4		4.9	5				14.1		24 x 74.1 RCP	RELAY 4' RT. LENGTHEN 40' LT.
79+69	28											NONE	~	~	46		45.9	25				4.6		24 x 45.9 RCP	APP. LT.
90+06												NONE	~	~			30.2	25						15 x 30.2 RCP	APP. LT.
111+71				32								NONE	FETS	FETS				5				7.5		48 x 100.1 RCP	LENGTHEN 14' LT. & 18' RT.
125+33			16									NONE	~	~	16	46	16.4	5				3.6		36 x 62.0 RCP	RELAY FETS LENGTHEN 8' LT. & RT.
133+53						22						NONE	SQ.	~				5				34.1		24 x 91.9 RCP	LENGTHEN 22' LT.
148+23		36										NONE	RACET	RACET		30		20				1.6		24 x 45.9 RCP	APP. RT. LENG. 16' LT. & 20' RT.
155+25										∓ 20		YES	2: 1 BEVEL	2: 1 BEVEL				5	9	4.7	13.1	10.2	11° RT.	72 x 84.0 CSP	LENGTHEN 10' LT. & RT.
166+47									18			NONE	FETS	FETS		59	3.3	5				4.9		18 x 58.1 CSP	REMOVE 4' LT. LENG. 6' LT. & 12' RT.
174+64											∓ 16	YES	1.5: 1 BEVEL	~				5	5	4.7	11.8	9.5		84 x 78.1 CSP	LENGTHEN 16' LT.
197+90	42											NONE	FETS	FETS				5				8.9		18 x 42.0 RCP	APP. LT. LENGTHEN 22' LT. & RT.
213+42												NONE	~	~			38.1	15						15 x 38.1 RCP	APP. RT.
234+25							40					NONE	FETS	FETS				5				7.9		18 x 71.9 RCP IRR.	LENGTHEN 20' LT. & RT.
236+52								22				NONE	~	FETS				5				8.2		24 x 91.9 RCP IRR.	LENGTHEN 22' RT.
TOTAL	70	94	16	32	42	22	40	22	18	20	16	~	~	~	72	187	145.4	~	14	9.4	24.9	~	~	~	

∓ 3" X 1" CORRUGUTAION
* SEE STANDARD SPEC. SEC. 709.04 ④
** FOR INFORMATION ONLY

Culverts Frame Reminders:

① *Use this frame when culvert material type for mainline and approach pipes is non-optional. Culvert summary recap is not used with this frame.*

② *Pipe location rounded to nearest foot.*

③ *List new end sections only - end sections include length of new pipe for payment.*

④ *Coating specifications could include 709.04, 709.05, or 709.12 in accordance with recommendations from the Materials Bureau and Hydraulics Section.*

① APPROACH PIPE (INCLUDED IN CULVERT SUMMARY RECAP)

STATION ②	BASIC BID ITEMS: CULVERT PIPE in	linear feet: LENGTH OF PIPE	linear feet: REMOVE CULVERT	linear feet: RELAY CULVERT	linear feet: CLEAN CULVERT	cubic yards: CULVERT EXC. **	PIPE OPTIONS in: CONCRETE - CLASS 2	PIPE OPTIONS in: STEEL - 2 2/3 x 1/2 CORR. 0.064 THK.	PIPE OPTIONS in: ALUMINUM - 2 2/3 x 1/2 CORR. 0.060 THK.	PIPE OPTIONS in: CORRUGATED POLYETHYLENE PIPE	END SECTIONS ③ LEFT	END SECTIONS ③ RIGHT	linear feet: HEIGHT OF COVER	SKEW ANGLE	CULVERT IN PL. in x ft	REMARKS
10+20	18	70				15	18	~	~	~	RACET	RACET	1.3			RT.
44+55	18	70				5	18	18	18	18	RACET	RACET	1.6			RT.
62+01	24	78				5	24	* 24	24	24	FETS	FETS	2.0			LT.
79+43	18	106				20	18	⑤ * 18	18	18	FETS	FETS	3.9			LT.
106+79	18	76				5	18	18	18	18	FETS	FETS	1.6	15° LT.		RT.
116+63	18	78				5	18	18	18	18	FETS	FETS	1.6			RT.
179+69	18	28	45.9	46		60	18	~	~	~	~	~	4.6		18 x 45.9 RCP	LT. - LENGTHEN 12' LT. & 16' RT.
190+06	18	96	29.9			65	18	18	18	18	FETS	FETS	3.9		15 x 29.9 RCP	LT.
225+33	18	30	6.6	6		5	~	18	~	~	FETS	~	5.9		18 x 67.9 CSP	RT. - RELAY FETS RT. LENG. 18' LT. & 12' RT.
228+84			64.0			50	~	~	~	~					18 x 64.0 RCP	LT.
248+23	18	16	13.1	12		5	18	~	~	~	~	~	2.6		18 x 66.9 RCP	LT. - RELAY FETS LENGTHEN 8' LT. & RT.
248+23	18 IRR.	84				15	18 IRR.	18 IRR.	~	~	FETS	FETS	2.6			RT. - IRR.
250+13	28 1/2x18 ④	72				25	28 1/2x18 CL. 3	* 28x20	28x20 0.075	~	~	~				LT.
266+44					72										18 x 70.5 CSP	LT.
TOTAL	~	~	159.5	64	72	~	~	~	~	~	~	~	~	~	~	

*COAT PIPE PER STANDARD SPEC. SEC. 709.04 ⑤
** FOR INFORMATION ONLY

Approach Pipe Frame Reminders:

① *Use this frame only when plastic pipe is a recommended option for approach pipe, otherwise combine with culvert summary. Culvert summary recap must accompany this frame.*

② *Pipe location rounded to nearest foot.*

③ *List new end section only - end section included in length of new pipe for payment.*

④ *Arch pipes listed as span x rise.*

⑤ *When coating is required on an approach pipe, add a footnote specifying the coating specifications as shown here. Coating specifications could include 709.04, 709.05, or 709.12 in accordance with recommendations from the Materials Bureau and Hydraulics Section.*

FIG. 4.4 K-8

SUMMARY

① CULVERT SUMMARY RECAP

BASIC BID ②	linear feet				cubic yards					square yards
	NEW PIPE (TOTAL)	RELAY CULVERT	CLEAN CULVERT	REMOVE CULVERT	FOUND-ATION MATERIAL	BEDDING MATERIAL	CLASS "DD" CONCRETE	RANDOM RIPRAP CLASS 1		GEOTEXTILE STABILIZATION
18"	526									
18" IRR.	84									
18" SIPHON	122									
18" RCP CL. 2	148									
18" CSP x 0.064" THK.	30									
18" CSP IRR. x 0.079" THK.	142									
18" CSP SIPHON x 0.079" THK.	100									
24"	186									
24" IRR.	102									
24" RCP CL. 2	52									
24" CSP x 0.079" THK.	30									
28.50" x 18.00"	72									
36"	132									
36" CSP x 0.109" THK.	98									
42"	96									
58.50" x 36.00"	96									
73.00" x 45.00" IRR.	204									
96" CSP x 0.109" THK.	464									
112" x 75" CSPA IRR. x 0.079" THK.	96									
144" SSPP x 0.109" THK.	124									
TOTAL	③ ~	116	72	347.9	133	1,097	53.6	116.5		205

Culvert Summary Recap Frame Reminders:

① *Used in conjunction with Optional Culvert (see Fig. 4.4 K-7) and Optional Approach Pipe (see Fig. 4.4 K-8) Summaries.*

② *For pipes with optional material types, list pipes by diameter, Irr., or Siphon only. For pipes with only one material type specified, also list the material type and class or thickness. Separate out the optional and non-optional pipes, even if they are the same size.*

③ *Enter project totals only.*

CURB

STATION FROM	STATION TO	linear feet: CONCRETE CURB AND GUTTER LEFT	CONCRETE CURB AND GUTTER RIGHT	linear feet: REMOVE ① CURB AND GUTTER LEFT	REMOVE ① CURB AND GUTTER RIGHT	sq. yards: CONCRETE VALLEY GUTTER LEFT	CONCRETE VALLEY GUTTER RIGHT	linear feet: BITUMINOUS CURB ② LEFT	BITUMINOUS CURB ② RIGHT	REMARKS
36+09.00	37+04.00								95.0	INCLUDES 2 - 25' RADII
37+04.00	43+04.00	677.8								INCLUDES 2 - 20' RADII
37+04.00	42+98.60		656.5							
42+98.60	43+52.60						18.0			
SUBTOTAL		677.8	656.5				18.0		95.0	NH FUNDING
43+52.60	49+48.20	646.7								INCLUDES 2 - 15' RADII
43+41.20	49+48.20		669.0							INCLUDES 2 - 20' RADII
44+30.80	48+81.90			498.7						
44+72.40	48+96.00				447.5					
SUBTOTAL		646.7	669.0	498.7	447.5					CMAQ FUNDING
TOTAL		2,650.0		946.2		18.0		95.0		

Curb Frame Reminders:

① *If curb removal is included in reconstruction cross section, curb removal is included with street excavation quantity. Otherwise, include removal in cost of new curb and gutter, show removal here as a bid item if no new curb and gutter .*

② *When existing bituminous curb will be removed, handle the same way as curb and gutter removal.*

① DUCTILE IRON FITTINGS

DESCRIPTION	25% CITY FUNDS QUANTITY	25% CITY FUNDS WEIGHT (lb)	100% CITY FUNDS QUANTITY	100% CITY FUNDS WEIGHT (lb)
8" PLUG			2	101
8" x 8" x 6" TEE			2	348
10" PLUG			1	64
10" x 10" x 6" TEE	1	249	1	249
10" x 10" x 8" TEE			1	260
10" x 10" x 10" TEE			1	311
10" x 6" REDUCER	2	115		
10" 90° BEND	1	190		
18" x 20" INCREASER/REDUCER	2	1,019		
20" x 20" x 6" TEE			2	1,451
20" x 20" x 8" TEE			1	734
20" x 20" x 10" TEE	2	1,508		
20" 90° BEND	1	679		
TOTAL (INCLUDED IN WATER LINE FRAME)	~	3,760	~	3,518

Ductile Iron Fittings Frame Reminder:

① *Use this frame if there are a variety of different fittings to reduce the size of the Water Line frame. If a small number of fitting types is needed, or if plastic fittings are used, columns can be added to the Water Line frame instead.*

① CULVERTS - ALTERNATE A1

STATION ④	linear feet: DOUBLE CELL RCB * 11' x 11'	END SECTIONS LEFT	END SECTIONS RIGHT	cubic yards: ## CULVERT EXCAVATION	FOUNDATION MATERIAL	BEDDING MATERIAL	SPECIAL BACKFILL	CLASS "DD" CONCRETE	RANDOM RIPRAP CLASS 1	square yards: GEOTEXTILE STABILIZATION	linear feet: HEIGHT OF COVER	SKEW ANGLE	REMARKS
43+73	110	2:1 SLOPE	2:1 SLOPE	715	243	141	556	12.2	25.0	445	5.9		S00566004+0.0001 DRAIN ③
TOTAL	110	~	~	715	243	141	556	12.2	25.0	445	~	~	

* SEE DETAIL
QUANTITY SHOWN FOR INFORMATIONAL PURPOSES ONLY. CULVERT EXCAVATION IS INCLUDED IN THE UNIT BID PRICE FOR NEW PIPE.

① CULVERTS - ALTERNATE A2

STATION ④	linear feet: SSPPA - 6" x 2" CORR. 0.109" THK. 14' -5" x 10'- 0"	*# COATING	END SECTIONS LEFT	END SECTIONS RIGHT	cubic yards: ## CULVERT EXCAVATION	FOUNDATION MATERIAL	BEDDING MATERIAL	SPECIAL BACKFILL	CLASS "DD" CONCRETE	RANDOM RIPRAP CLASS 1	* FLOWABLE FILL	square yards: GEOTEXTILE STABILIZATION	linear feet: HEIGHT OF COVER	SKEW ANGLE	REMARKS
41+73	2 at 104	YES	2:1 BEVEL	2:1 BEVEL	765	298	442	955	19.0	34.4	186.6	460	6.9		S00566004+0.0001 DRAIN ③
TOTAL	208	~	~	~	765	298	442	955	19.0	34.4	186.6	460	~	~	

*# SEE STANDARD SPEC. 709.04
* SEE DETAIL
QUANTITY SHOWN FOR INFORMATIONAL PURPOSES ONLY. CULVERT EXCAVATION IS INCLUDED IN THE UNIT BID PRICE FOR NEW PIPE.

Culverts-Alternate Frame Reminders:

① *When reinforced concrete box (RCB) is an alternate (optional) bid item, then use these alternate frames. Use the non-optional or optional culvert frame for any non-alternate RCB call-out.*

② *The use of alternate bid items/frames should be discussed and agreed to at the Plan-In-Hand.*

③ *If a culvert is replacing an existing bridge, add NBI number in remarks.*

④ *Pipe location rounded to nearest foot.*

DETOUR *

STATION FROM	STATION TO	lump sum CONST., MAINTAIN & REMOVE DETOUR ① ②	REMARKS
40+84.65	47+90.03	0.16	CULVERT REPLACEMENT
141+65.03	161+42.29	0.44	DRY CREEK
252+01.18	270+19.16	③ 0.40	HAY CREEK
TOTAL		1	

* SEE DETAIL SHEET

Detour Frame Reminders:

① *Depending on specifics of project, this item may be revised to Construct & Maintain, Maintain, Maintain & Remove, or Remove.*

② *Provide quantities to construct on detail sheet.*

③ *If practical, prorate lump sum for each detour based on length.*

FIG. 4.4 K-9

SUMMARY

EMBANKMENT PROTECTORS

STATION		linear feet				cubic yards	REMARKS
		EMBANKMENT PROTECTOR* 12"		BITUMINOUS CURB		BANK PROTEC-TION	
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	TYPE 3	
456+21		50				1.6	25° ELBOW (1)
456+21	456+81.70			60.7			
SUBTOTAL		50		60.7			
TOTAL		50		60.7		1.6	

* CULVERT EXC. INCLUDED IN COST OF EMB. PROTECTOR

Embankment Protectors Frame Reminder:

(1) *Specify degree of bend on elbow.*

GABIONS *

STATION		cubic yards		REMARKS
FROM	TO	GABIONS	SPECIAL (1) BORROW	
50+85.00	52+41.00	52	136	RIGHT, SEE DETAIL
63+98.00	65+55.00	52	110	RIGHT, SEE DETAIL
136+15.00	136+93.00	26	60	RIGHT, SEE DETAIL
224+08.00	225+64.00	52	149	RIGHT, SEE DETAIL
455+84.00		31	~	RIGHT, SEE GABION SILL DETAIL
532+48.00	534+82.00	78	110	LEFT, SEE DETAIL
543+31.00	547+24.00	131	258	LEFT, SEE DETAIL
562+66.00	572+08.00	314	849	LEFT, SEE DETAIL
575+79.00	578+94.00	105	269	LEFT, SEE DETAIL
602+03.00	603+59.00	52	124	LEFT, SEE DETAIL
676+51.00	676+90.00	13	22	RIGHT, SEE DETAIL
686+02.00	689+17.00	105	186	RIGHT, SEE DETAIL
714+90.00	715+68.00	26	44	RIGHT, SEE DETAIL
723+43.00	724+99.00	52	102	RIGHT, SEE DETAIL
TOTAL		1,089	2,419	

* SEE DETAILS

Gabions Frame Reminder:

(1) *Use Special Borrow for base material. Include a special provision stating the measurement of Special Borrow for payment is the final in-place volume. Provide material specifications for the special borrow.*

EQUIPMENT

STATION		hours		REMARKS
		MOTOR GRADER	DOZER	
FROM	TO			
568+23	607+50	11		RIGHT SIDE OF ROAD ONLY
738+08	770+89		8	LEFT AND RIGHT SIDE OF ROAD
TOTAL		11	8	

EDGE DRAIN *

STATION		linear feet		REMARKS
		EDGE DRAIN	CORR. PLASTIC PIPE 6"	
FROM	TO			
107+45	120+57	1,312.0	180	DAYLIGHT TO DITCH AHEAD W.B.
109+91	123+03	1,312.0	42	DAYLIGHT TO DITCH AHEAD E.B.
219+49	222+61	312.0	42	DAYLIGHT TO MEDIAN BACK E.B.
220+48	222+61	213.0	24	DAYLIGHT TO DITCH BACK W.B.
TOTAL		3,149	288	

* SEE DETAIL SHEET

FINISH GRADE CONTROL

STATION		course foot	REMARKS
		FINISH GRADE CONTROL (1)	
FROM	TO		
0+00.00	312+33.60	31,250	SUBGRADE MAINLINE
0+00.00	312+33.60	31,250	BASE COURSE MAINLINE
106+31.56	184+95.73	7,900	SUBGRADE CLIMBING LANE
106+31.56	184+95.73	7,900	BASE COURSE CLIMBING LANE
239+99.34		550	SUBGRADE INTERSECTING ROAD
239+99.34		550	BASE COURSE INTERSECTING ROAD
TOTAL		79,400	

Finish Grade Control Frame Reminder:

(1) *Round up to the nearest 50' increment.*

DIGOUT EXCAVATION * (4)

STATION		cubic yards		square yards	REMARKS
		DIGOUT EXC. (1)	SPECIAL BORROW (2) (3)	GEOTEXTILE STABILIZATION	
FROM	TO				
651+25	656+17	2,407	1,564	1,794	
835+96	839+90	2,166	1,407		
329+72	333+03.02	4,238	2,753		
336+97.02	340+22	3,597	2,337		
TOTAL		12,408	8,061	1,794	

* SEE DETAIL SHEET

Digout Excavation Frame Reminders:

(1) (2) Measured and paid the same for both Uncl. Exc. and Emb.-in-Pl. projects.

(2) Volumes are not adjusted by shrink factor.

(3) Include a special provision stating the measurement of Special Borrow for payment is the final in-place volume. Provide material specifications for the special borrow.

(4) Do not use digout excavation on new construction/reconstruction projects. For these projects, removal of unsuitable material is paid for as either unclassified excavation or muck excavation.

FENCING

STATION		linear feet					each			linear feet		REMARKS
		FARM FENCE				TEMP. FENCE	FARM FENCE PANEL		DEADMAN	FARM GATE		
FROM	TO	TYPE F2W-32WW	TYPE F3M-39WW	TYPE F4M	TYPE F5W		SINGLE	DOUBLE		TYPE G2	TYPE G3	
0+00.00	99+90.20			9,990.2			12	6				LEFT - TIE TO EXISTING FENCE
99+90.20	100+06.20									16		LEFT
100+06.20	156+82.70				5,676.5		8	1				LEFT - WING TO PIPE
156+82.70	294+02.20				13,719.5		17	4				LEFT - WING TO PIPE
294+02.20	377+82.40	8,380.2					21	5				LEFT
377+82.40	377+98.40										16	LEFT
377+98.40	383+73.20	574.8					2					LEFT - TIE TO EXISTING FENCE
0+00.00	89+02.20		8,902.2				30					RIGHT - TIE TO EXISTING FENCE
89+02.20	89+18.20									16		RIGHT
89+18.20	156+82.60			6,764.4			8	3				RIGHT - WING TO PIPE
156+82.60	214+18.50			5,735.9			10	1				RIGHT - WING TO PIPE
214+18.50	245+85.50			3,167.0			5					RIGHT
245+85.50	246+25.50									40		RIGHT
246+25.50	383+73.50	13,748.0					34	8				RIGHT - TIE TO EXISTING FENCE
TOTAL		22,703.0	8,902.2	25,657.5	19,396.0	5,757.9	147	28	70	72	16	

FIG. 4.4 K-10

FOR MDT INTERNAL DISTRIBUTION ONLY

07/18/2008
Highways & Engineering Division

SUMMARY

GUARDRAIL

STATION		linear feet										each (6)														REMARKS (8)
		(1) REMOVE GUARDRAIL		(2) (9) METAL GUARDRAIL		(3) BOX BEAM GUARDRAIL		(4) CABLE GUARDRAIL		(5) INTERSECTING ROADWAY TERMINAL SECTION		OPTIONAL TERMINAL SECTION		ONE-WAY DEPARTURE TERMINAL SECTION		OPTIONAL BOX BEAM TERMINAL SECTION		BOX BEAM ONE-WAY DEPARTURE TERMINAL SECTION		CABLE GUARDRAIL TERMINAL SECTION		(7) BRIDGE APPROACH SECTION TYPE 1		(7) BOX BEAM BRIDGE APPROACH SECTION TYPE 1		
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	
NEW RAIL																										
477+51.80	479+64.30				137.5								1										1			
478+34.51	479+47.01			37.5								1										1				
480+86.71	482+99.21			137.5								1										1				
480+04.10	482+16.60				137.5								1										1			
577+19.00	588+31.50				1,012.5								2													
586+79.99	591+92.49			450.0								1		1												
604+32.41	630+94.91				2,600.0								1		1											
642+42.49	681+42.49			3,800.0								2														
689+11.19	695+47.69				562.5						62.5		1													24.0 ft RADIUS
706+36.48	713+61.48				662.5								1		1											
798+89.99	801+80.18						234.0										1		1							
835+81.17	838+60.38						180.0										1								1	
836+71.23	838+60.44					90.0										1								1		NEW BOX BEAM - DUE TO DRIFTING
1049+55.87	1099+35.87							4,928.0												6						NEW CABLE RAIL - DUE TO DRIFTING (3 RUNS)
REMOVE RAIL																										
478+26.80	479+64.30		137.5																							W-BEAM RAIL IN PLACE
478+22.01	479+47.01	125.0																								W-BEAM RAIL IN PLACE
481+61.71	482+99.21	137.5																								W-BEAM RAIL IN PLACE
480+91.60	482+16.60		125.0																							W-BEAM RAIL IN PLACE
534+61.94	542+61.94		800.0																							CABLE RAIL IN PLACE
577+40.49	587+48.49		1,008.0																							CABLE RAIL IN PLACE
587+29.99	591+13.99	384.0																								CABLE RAIL IN PLACE
837+03.02	837+90.52	87.5																								W-BEAM RAIL IN PLACE
1049+55.87	1098+55.87	4,900.0																								W-BEAM RAIL IN PLACE
SUBTOTAL		5,634.0	2,070.5	4,425.0	5,112.5	90.0	414.0	4,928.0			62.5	5	7	1	2	1	2		1	6		2	2	1	1	
TOTAL		7,704.5		9,537.5		504.0		4,928.0		62.5		12		3		3		1		6		4		2		

Guardrail Frame Reminders:

(1) Remove guardrail measured to the nearest 0.1 ft.

(2) See Fig. 5.4L for computing w-beam guardrail quantities.

(3) See Fig. 5.4N for computing box beam guardrail quantities.

(4) See Fig 5.4M for computing cable guardrail quantities.

(5) *See Fig 5.4O for computing I.R.T. section quantities. When the approach is not perpendicular to mainline, provide a detail showing the I.R.T. section general layout.*

(6) *Length not included in length of guardrail, but included for station range.*

(7) *Check bridge plans to ensure bridge approach section type matches bridge rail type and bridge end stations.*

(8) *Note the radius for Intersecting Roadway Terminal Sections. Note the number of runs of cable guardrail.*

(9) *If 2.0 ft widening behind rail is unattainable, include a column for "Metal Guardrail 7.0 ft Posts." (see Dtl. Dwg. 606-11A & 606-11B) If stiffened guardrail is required (see Dtl. Dwg. 606-07), include a column for "Stiffened Guardrail Sections." If raise guardrail or reset guardrail is needed, add these columns using the same rounding criteria as for Remove Guardrail.*

CONCRETE BARRIER RAIL

(4) STATION		each							REMARKS
		REMOVE CONCRETE BARRIER RAIL (3)	CONCRETE BARRIER RAIL	TALL CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL TRANS.	CONCRETE BARRIER RAIL (2) TERMINAL SECTION	REMOVE IMPACT ATTEN-UATOR	IMPACT ATTEN-UATOR 6 BAY (1)	
FROM	TO								
334+98.23	335+20.31							1	E.B. SH. RT.
335+20.31	347+20.31		120						E.B. SH. RT.
347+20.31	347+30.31					1			E.B. SH. RT.
368+00.36	368+80.36	8							W.B. SH. RT. (TAPERED END SECT.)
368+00.36	368+10.36					1			W.B. SH. RT.
368+80.36	378+60.36	98							FROM W.B. SH. RT. TO MED. C/L
368+10.36	378+60.36		105						FROM W.B. SH. RT. TO MED. C/L
378+60.36	413+00.36	344							MED. C/L
378+60.36	386+00.36		74						MED. C/L
386+00.36	386+10.36				1				MED. C/L
386+10.36	399+60.36			135					MED. C/L
399+60.36	399+70.36				1				MED. C/L
399+70.36	414+70.36		150						MED. C/L
413+03.31	413+25.39						1		MED. C/L
414+70.36	414+92.44							1	MED. C/L
TOTAL		450	449	135	2	2	1	2	

Concrete Barrier Rail Frame Reminders:

(1) *Impact attenuator may be shown in the guardrail frame when used in combination with metal guardrail.*

(2) *Only use as a one-way departure terminal.*

(3) *Existing concrete barrier rail not meeting the current NCHRP 350 crash-tested design, as shown in the Detailed Drawings, designated to be removed, should be replaced with new concrete barrier rail. Exceptions to this rule should be discussed at Plan-in-Hand.*

(4) *Stations should be in 10.0 ft increments for Concrete Barrier Rail and in the applicable increment for the size of Impact Attenuators selected.*

CONCRETE BARRIER RAIL

(4) STATION		each							REMARKS
		REMOVE CONCRETE BARRIER RAIL (3)	CONCRETE BARRIER RAIL	TALL CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL TRANS.	RESET CONCRETE BARRIER RAIL (3)	RESET IMPACT ATTEN-UATOR	IMPACT ATTEN-UATOR 6 BAY (1)	
FROM	TO								
TEMPORARY LOCATION									
220+60.89	220+82.97							1	MED. - 8.0 ft RT.
220+82.97	252+02.97		312						MED. TO B.E. - 8.0 ft RT.
222+33.10	252+03.10	297							MED. TO B.E. (INCL. TAPERED END SECT.)
254+05.05	302+35.05	483							MED. FROM B.E. (INCL. TAPERED END SECT.)
254+05.05	268+55.05		145						MED. FROM B.E. - 8.0 ft RT.
268+55.05	268+65.05				1				MED. - 8.0 ft RT.
268+65.05	289+15.05			205					MED. - 8.0 ft RT.
289+15.05	289+25.05				1				MED. - 8.0 ft RT.
289+25.05	300+65.05		114						MED. - 8.0 ft RT.
300+65.05	300+87.13							1	MED. - 8.0 ft RT.
FINAL LOCATION									
220+60.89	220+82.97						1		MED. C/L
220+82.97	252+02.97					312			MED. C/L TO B.E.
254+05.05	268+55.05					145			MED. C/L FROM B.E.
268+55.05	268+65.05					1			MED. C/L (TRANSITION RAIL)
268+65.05	289+15.05					205			MED. C/L (TALL RAIL)
289+15.05	289+25.05					1			MED. C/L (TRANSITION RAIL)
289+25.05	300+65.05					114			MED. C/L
300+65.05	300+87.13						1		MED. C/L
TOTAL		780	571	205	2	778	2	2	

FIG. 4.4 K-11

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdsume11.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		
1		7:37:14 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

SUMMARY

MAILBOXES

STATION	each MAIL-BOXES	REMARKS
1342+56	2	LEFT
1388+49	7	LEFT
TOTAL	9	

① MANHOLES IN PLACE *

STATION	each ADJUST MANHOLE LEFT	each ADJUST MANHOLE RIGHT	REMARKS
2+23.0	1		2' LEFT
13+16.2	1		2' LEFT
29+56.9		1	3' RIGHT
144+52.0	1		2' LEFT
199+81.9		1	3' RIGHT
SUBTOTAL	3	2	
TOTAL	5		

* FUNDING - 75% STATE, 25% CITY

Manholes In Place Frame Reminder:

① *See Utility Agreement for funding splits.*

MEDIAN CROSSOVER *

STATION FROM	STATION TO	lump sum CONST., MAINTAIN & REMOVE CROSS-OVER ① ②	REMARKS
89+00	96+05	0.5	DOUBLE CROSSOVER
226+80	233+85	③ 0.5	DOUBLE CROSSOVER
TOTAL		1	

* SEE DETAIL SHEET

Median Crossover Frame Reminders:

① Depending on specifics of project, this item may be revised to Construct & Maintain, Maintain, Maintain & Remove, or Remove.

② Provide quantities to construct on detail sheet.

③ When crossover characteristics are significantly different, prorate the lump sum for each crossover to more closely represent the amount of work required to construct them.

TEMPORARY GUARDRAIL

STATION FROM	STATION TO	linear feet TEMPORARY METAL GUARDRAIL LEFT	linear feet TEMPORARY METAL GUARDRAIL RIGHT	each TEMPORARY CONCRETE BARRIER RAIL	each TEMPORARY BRIDGE APPROACH SECTION TYPE 1 LEFT	each TEMPORARY BRIDGE APPROACH SECTION TYPE 1 RIGHT	each TEMPORARY OPTIONAL TERMINAL SECTION LEFT	each TEMPORARY OPTIONAL TERMINAL SECTION RIGHT	each TEMPORARY IMPACT ATTENUATOR	REMARKS
6+92.05	8+82.05			19					1	E.B. MOSSMAIN INTCH. - 6 BAY ATTEN.
15+92.45	17+02.45			11					1	E.B. CANAL - 6 BAY ATTEN.
51+22.85	53+52.85			23					1	E.B. COUNTY RD. SEPARATION - 6 BAY
89+00.00										NEW MEDIAN CROSSOVER
91+15.80	92+40.80		75.0					1		E.B. SHILOH OVERPASS
91+25.00	92+50.00	75.0					1			E.B. SHILOH OVERPASS
93+40.30	97+52.80	337.5			1		1			E.B. CANYON CREEK
93+40.30	97+52.80		337.5			1		1		E.B. CANYON CREEK
135+12.22	136+72.22			16					1	E.B. HOGANS SLOUGH - 4 BAY ATTEN.
7+13.00	9+03.00			19					1	W.B. MOSSMAIN INTCH. - 6 BAY ATTEN.
16+28.00	17+38.00			11					1	W.B. CANAL - 6 BAY ATTEN.
51+61.00	53+91.00			23					1	W.B. COUNTY RD. SEPARATION - 6 BAY
90+32.21	91+57.21	75.0					1			W.B. SHILOH
90+42.71	91+67.71		75.0					1		W.B. SHILOH
91+67.94	95+80.44	337.5			1		1			W.B. CANYON CREEK
91+67.94	95+80.44		337.5			1		1		W.B. CANYON CREEK
135+31.00	136+91.00			16					1	W.B. HOGANS SLOUGH - 4 BAY ATTEN.
SUBTOTAL		825.0	825.0		2	2	4	4		
TOTAL		1,650.0		138	4		8		8	

IRRIGATION STRUCTURES

STATION FROM	STATION TO	cubic yards CLASS "DD" CONC.	cubic yards RANDOM RIPRAP CL. 1	sq. yards GEOTEXTILE PERM. EROS. CNTRL. SURVIVABILITY CLASS __ ①	each CANAL GATE 1' - 6"	each HEAD GATE 1' - 6"	each TRASH GUARD	each CHECK	each TURNOUT	each REMOVE IRRIGATION STRUC-TURE	REMARKS
38+62		5.0	7.3	46							CANAL CHECK 100' RT. - SEE DETAIL
46+92	49+71								1		IRR. DT. 100' LT.
51+22										1	TURNOUT 72' LT.
51+94		2.6	5.2	11			2				TRANSITIONS LT. & RT. *
56+96						1					LT.
57+42					1						RT.
65+26								1			LT. - SEE DETAIL
TOTAL		7.6	12.5	57	1	1	2	1	1	1	

* 2' - 0" CONC. INLET & OUTLET TRANS. (B = D + 1'-0")

Irrigation Structures Frame Reminder:

① *Consult with Geotechnical Section to determine Survivability and Class of Erosion Control Geotextile, based on subgrade conditions.*

MEDIAN CONCRETE CURB

STATION FROM	STATION TO	linear feet MEDIAN CONCRETE CURB TYPE A	linear feet REMOVE MEDIAN CURB	sq. yards CONCRETE 4"	① REMARKS
16+02.94	16+34.96	147.3		86.2	ISLAND LEFT
18+13.34	22+83.75	945.9		286.8	MEDIAN - INCL. RADII & TAPERS
29+88.67	35+45.07		1,116.1		MEDIAN - INCL. RADII
72+31.26	82+69.09	2,080.7			MEDIAN - INCL. RADII
TOTAL		3,173.9	1,116.1	373.0	

Median Concrete Curb Frame Reminder:

① *Reinforcing steel, expansion joint material, excavation, back fill, aggregate base, and disposal of surplus material are included in the cost of concrete.*

② *If median curb removal is included in reconstruction cross section, curb removal is included with street excavation quantity or New Meidan Curb. Otherwise, include removal in cost of new median curb , show removal here as a bid item if no new median curb .*

FIG. 4.4 K-12

07/18/2008
Highways & Engineering Division

SUMMARY

MEDIAN INLETS

STATION	each			REMARKS
	MEDIAN INLET		ADJUST MEDIAN INLET	
	TYPE 2			
49+00.00			1	
54+93.00			1	
58+30.50	1			CENTER IN MED. & CONNECT TO W.B. CULV.
69+99.00			1	
116+58.80			1	
96+71.90			1	
TOTAL	1		5	

MISCELLANEOUS ITEMS

STATION		lump sum	cubic yards	REMARKS
FROM	TO			
32+15.00	49+21.00		1,740	CONTAMINATED SOIL REMOVAL - STORM SEWER TRENCH
127+62		1		RESET HISTORICAL MARKER RT.
301+87		1		REVISE ROAD WEATHER INFORMATION SITE

MUCK EXCAVATION *

STATION		cubic yards		REMARKS
		MUCK EXC. (1)	SPECIAL BORROW (2)(3)	
FROM	TO			
49+21	82+02	16,676	20,927	
TOTAL		16,676	20,927	

* SEE DETAIL SHEET

Muck Excavation Frame Reminders:

(1) (2) *Measured and paid for on both Uncl. Exc. and Emb.-in-Place projects.*

(2) *Volumes are not adjusted by shrink factor.*

(3) *Include a special provision stating the measurement of special borrow for payment is the final in-place volume.*

OBLITERATE ROADWAY

STATION		stations	REMARKS
		OBLIT-ERATE ROADWAY	
FROM	TO		
0+00	72+00	72	LEFT
184+00	213+00	29	RIGHT
305+00	333+00	28	RIGHT
TOTAL		129	

PAVEMENT MARKINGS

ITEM	UNIT	INTERIM * APPLICA-TION	FINAL APPLICA-TION	TOTAL
STRIPING - WHITE PAINT	gallon	252		252
STRIPING - YELLOW PAINT	gallon	107		107
WORDS & SYMBOLS - WHITE PAINT	gallon	1		1
STRIPING - 4" YELLOW PLASTIC	foot		564	564
STRIPING - 24" WHITE PLASTIC	foot		43	43
WORDS AND SYMBOLS - WHITE PLASTIC	sq. foot		68.9	68.9
TEMPORARY PAVEMENT MARKINGS (1)	mile			21.9
STRIPING - 4" WHITE EPOXY	gallon		258	258
STRIPING - 4" YELLOW EPOXY	gallon		111	111

* BASED ON 2 APPLICATIONS (DOES NOT APPLY TO S&C PROJECT)

Pavement Markings Frame Reminder:

(1) *Temporary pavement markings quantities estimated by road designer; all other pavement marking quantities provided by Traffic and Safety Bureau.*

PLANT MIX LINED DITCH *

STATION		linear feet	tons		REMARKS
		PL. MIX LINED DITCH (1)	PL. MIX SURF, GR. B (2)	ASPHALT CEMENT PG 64-28 (2)	
FROM	TO				
6+30	14+07	777.0	46	2.8	
TOTAL		777.0	# 46	# 2.8	

* SEE DETAIL SHEET
# FOR INFORMATION ONLY

Plant Mix Lined Ditch Frame Reminder:

(1) *A detail must be provided to show width and depth of plant mix.*

(2) *If there is other plant mix surfacing on the project, specify the same type as in the surfacing frame.*

PULVERIZATION

STATION		square yards	REMARKS
		PAVEMENT PULVERIZATION	
FROM	TO		
137+69.69	247+45.51	66,759	FULL WIDTH - TYP. NO. 3
247+45.51	456+40.09	201,723	FULL WIDTH - TYP. NO. 3
456+40.09	551+18.11	57,723	FULL WIDTH - TYP. NO. 3
TOTAL		326,205	

(1) RANDOM RIPRAP

STATION		cubic yards		square yards		REMARKS
		RANDOM RIPRAP		GEOTEXTILE PERM. EROS. CNTRL. __ SURVIVABILITY CLASS __ (2)	RIPRAP REVEGE-TATION	
FROM	TO	CL. 2	CL. 3			
189+73	191+73	442.5		667	534	RIVER BANK EMBANKMENT PROTECTION
200+98	202+95	433.6		600	480	RIVER BANK EMBANKMENT PROTECTION
305+97.77			760.2	995		BRIDGE END
309+04.33			665.2	785		BRIDGE END
454+40	456+03	303.4		433	347	RIVER BANK EMBANKMENT PROTECTION
TOTAL		1,179.5	1,425.4	3,480	1,361	

Random Riprap Frame Reminder:

(1) *Excavation is included in the cost of riprap.*

(2) *Consult with Geotechnical Section to determine Survivability and Class of Erosion Control Geotextile, based on subgrade conditions.*

REMOVE STRUCTURE

STATION	lump sum	REMARKS
	REMOVE STRUC-TURE (1)	
3685+14	0.23	22.0'x46.0' WOOD STR. (P00001229+00271) (2)
3805+77	0.11	20.0'x24.0' CONCRETE BOX
3910+76	0.18	20.0'x40.0' STEEL BRIDGE
4200+30	0.29	22.0'x60.0' WOOD STRUCTURE
4305+28	0.19	24.0'x36.0' STEEL BRIDGE
TOTAL	1	

Remove Structure Frame Reminders:

(1) *Prorate lump sum for each structure based on square feet of bridge deck.*

(2) *If bridge is replaced with another structure (bridge or culvert), add NBI number in Remarks.*

FIG. 4.4 K-13

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdsume13.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*				
1		7:37:23 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME (S)		CSF = 0.9999999 UPN NUMBER 12345678	SHEET 999 OF 999

SUMMARY

① BRIDGE END BACKFILL

STATION		cubic yards	square yards	REMARKS
FROM	TO	BRIDGE END BACKFILL ② ③	GEOTEXTILE STABILIZATION	
282+50.00	287+50.00	5,900		BRIDGE END BENT#1
292+10.00	297+10.00	5,900		BRIDGE END BENT#2
TOTAL		11,800		

Bridge End Backfill Frame Reminders:

① *Use this frame when bridge end backfill has been specified in conjunction with Geotech recommendation.*

② *Volumes are not adjusted by the shrink factor.*

③ *Include a special provision stating the measurement for payment is the final in-place volume.*

REVEGETATION

STATION		lump sum	cubic yards	acres			REMARKS
FROM	TO	REVEGE-TATION	TOPSOIL SALVAGING & PLACING *	SEED *	FERTI-LIZER *	CONDITION SEEDBED *	
36+09	37+40	1	48	0.10	0.10	0.10	INCLUDES CONN. TO P.T.W.
TOTAL		1	~	~	~	~	

* FOR INFORMATION ONLY

① ROAD LEVELER OPERATIONS

STATION		hours	REMARKS
FROM	TO	ROAD LEVELER OPER-ATIONS	
4872+80	5841+73	292	
TOTAL		292	

Road Leveler Operations Frame Reminder:

① *For dressing CTS riding course. Do not include Finish Grade Control for CTS.*

RUMBLE STRIPS

STATION		miles		gals	REMARKS
		① RUMBLE STRIPS		FOG SEAL SS-1 *	
FROM	TO	CONTIN-UOUS	INTER-MITTENT		
758+93.90	1092+07.71	6.3		320	E.B. LT.
758+93.90	1092+07.71		6.0	304	E.B. RT.
758+93.90	1092+07.71		6.0	304	W.B. LT.
758+93.90	1092+07.71	6.3		320	W.B. RT.
SUBTOTAL		12.6	12.0	1,248	
TOTAL		24.6		~	

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

Rumble Strips Frame Reminder:

① *Deduct gaps for bridges, approaches, or ramps from length of rumble strip.*

RIPRAP REVEGETATION

STATION	square yards	REMARKS
	RIPRAP REVEGE-TATION	
114+68.83	312	LT. & RT.
115+52.43	464	LT. & RT.
TOTAL	776	

SIDEWALK

STATION		square yards								linear feet	REMARKS
		① CONCRETE SIDEWALK				TRUNCATED DOMES		② REMOVE SIDEWALK			
		4"		6"						WIDTH	
FROM	TO	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT		
118+38.02	121+83.27	158.7		85.8		2.2				5.0	INCL. 1-30' R, 1-20' R & EXTENSION
118+38.09	121+83.27		184.8		34.4		2.2			5.0	INCL. 1-30' R, 1-20' R
123+35.96	126+14.30	163.9		56.9		2.2				5.0	INCL. 2-20' R & EXTENSIONS
123+35.96	126+14.30		123.7		53.6		2.2			5.0	INCL. 2-20' R
127+15.22	131+10.24							201.9			
127+04.40	131+41.40								235.6		
SUBTOTAL		322.6	308.5	142.7	88.0	4.4	4.4	201.9	235.6		
TOTAL		631.1		230.7		8.8		437.5		~	

Sidewalk Frame Reminders:

① *Reinforcing steel, expansion joint material, excavation, backfill, aggregate base,* and disposal of surplus material are included in cost of sidewalk.

② If sidewalk removal is included in reconstruction cross section, sidewalk removal is included with street excavation quantity. Otherwise *include removal in cost of new sidewalk. show removal here as a bid item if no new sidewalk*

SPECIAL BORROW ③

STATION		cubic yards	REMARKS
		SPECIAL BORROW ② ①	
FROM	TO		
8+14.14	287+48.36	104,236	
TOTAL		104,236	

Special Borrow Frame Reminders:

① *Volumes are not adjusted by the shrink factor.*

② *Include a special provision stating the measurement for payment is the final in-place volume.*

③ *When special borrow has been specified in conjunction with the typical section, show the special borrow in the surfacing summary frame and not here.*

FIG. 4.4 K-14

SUMMARY

STOCKPASS

STATION	linear feet		cubic yards					square yards	tons	cubic yards	linear feet			REMARKS
	CSP - 3" x 1" CORR. 0.08 THK.		CULVERT EXC. **	FOUND-ATION MATERIAL	BEDDING MATERIAL	CLASS "DD" CONCRETE	CULVERT RIPRAP	GEOTEXTILE STABILIZATION	PLANT MIX BIT. SURF.	CR. AGG. COURSE	HEIGHT OF COVER	END SECTIONS	COATING *	
	96"						CLASS 1		INCL. IN ADD. SURF.					
65+62	90		545	324	99	7.5	16.1	861	6	6	5.9	2:1 ⊕	YES	STOCKPASS & DRAIN
TOTAL	90		~	324	99	7.5	16.1	861	~	~	~	~	~	

* SEE STANDARD SPEC. 709.04
⊕ STEP BEVEL
** FOR INFORMATION ONLY

①STORM DRAIN *

STATION		linear feet					cubic yards		each									linear feet	REMARKS
		RCP IRRIGATION CLASS 3				PVC SDR-35	BEDDING MATERIAL	TRENCH EXC. **	REMOVE DROP INLET	RESET DROP INLET	DROP INLET TYPE 3		MANHOLE			COMB. TY. 3 MH., TY. IV D.I.		SLOTTED DRAIN	
FROM	TO	12"		24"		12"					LEFT	RIGHT		TYPE 3 48"	TYPE 3 60"	48"		12"	
90+84.0	91+70.0			83.7			33	65											NEW STORM DRAIN LEFT
90+84.0		80.4						40		1		1		1					STORM DRAIN LATERAL
91+70.0						80.4		40			1	1		1					STORM DRAIN LATERAL
91+70.0	96+49.9			477.4			183	190											NEW STORM DRAIN LEFT
96+49.9		80.4						40			1	1			1				STORM DRAIN LATERAL
96+49.9	98+36.0			184.1			78	145	1										NEW STORM DRAIN LEFT
98+36.0	101+54.2			302.2			144												
101+54.2		39.4						20								1			NEW STORM DRAIN LEFT
101+54.2	101+70.6						7	5										16.4	STORM DRAIN LATERAL
																			NEW STORM DRAIN LEFT
SUBTOTAL											2	3							
TOTAL		200.2		1,047.4		80.4	445	~	1	1	5			2	1	1		16.4	

* FUNDING - 50% STATE, 50% CITY
** FOR INFORMATION ONLY

Storm Drain Reminder:

① *See Storm Drain agreement for funding splits.*

TOPSOIL & SEEDING ④

STATION		cubic yards	acres						square yards	REMARKS
		TOPSOIL SALVAGING & PLACING	③ SEED			FERTILIZER		CONDITION SEEDBED ①	SOD	
FROM	TO		NO. 1			NO. 1				
16+48.62	28+10.47	292						0.6	2,668	LT. & RT. SIDE
28+10.47	31+69.85	548	1.0			1.0		1.0		LT. SIDE ONLY
28+10.47	33+14.70	82						0.2	756	RT. SIDE ONLY
32+25.43	34+07.35	10							100	LT. SIDE ONLY
38+05.77	43+63.52	190	0.2			0.2		0.2		RT. SIDE ONLY
40+68.86	43+63.52	124	0.2			0.2		0.2		LT. SIDE ONLY
TOTAL		1,246	1.4			1.4		2.2	3,524	

TOPSOIL & SEEDING ④

STATION		cubic yards	acres							REMARKS
		TOPSOIL SALVAGING & PLACING	③ SEED			FERTILIZER		CONDITION SEEDBED ①	MULCH ②	
FROM	TO		NO. 1	NO. 2	NO. 3	NO. 1	NO. 2			
8+14.14	32+80.84	1,024	1.2		0.7	1.2		1.9		INCLUDES CONNECTION TO P.T.W.
32+80.84	65+61.68	3,174	3.5	1.2	1.2	3.5	1.2	4.7	1.2	
65+61.68	98+42.52	4,697	6.7	1.0	1.2	6.7	1.0	7.9	1.0	INCLUDES GRADE TO DRAIN AREA LEFT
98+42.52	131+23.36	2,715	4.0		1.2	4.0		6.2		
131+23.36	164+04.20	3,320	4.9		1.2	4.9		6.1		
164+04.20	196+85.04	2,454	3.0	0.5	1.2	3.0	0.5	4.2	0.5	
196+85.04	229+65.88	1,623	1.7		1.2	1.7		2.9		
229+65.88	262+46.72	4,064	4.4	2.0	1.2	4.4	2.0	5.6	2.0	
262+46.72	287+48.36	3,159	5.2		0.7	5.2		5.9		INCLUDES CONNECTION TO P.T.W.
TOTAL		26,230	34.6	4.7	9.8	34.6	4.7	45.4	4.7	

Topsoil & Seeding Frame Reminders:

① Area of condition seedbed = Area 1 plus Area 3 plus sod.

② Area of mulch = Area 2.

③ Include areas up to the R/W limits except for area steeper than 1.5:1.

④ See Dtl. Dwg. No. 610-00 for proper placement of Topsoil and Seeding.

FIG. 4.4 K-15

SUMMARY

UNDERDRAIN

STATION		linear feet		square yards	cubic yards		REMARKS
		CORR. PERF. PLASTIC PIPE	CORR. PLASTIC PIPE	GEOTEXTILE STABILIZATION	TRENCH EXC.*	FILTER MATERIAL	
FROM	TO	6"	4"				
184+71.1	198+37.6	1,360		1,442	210	210	
186+68.0	199+73.8	1,306		1,379	195	195	RIGHT
198+37.6	199+34.4	96		100	15	15	LEFT - CONNECTION TO 4" PIPE
199+73.8	203+47.8	510		509	80	80	RIGHT - CONNECTION TO 4" PIPE
199+34.4	200+33.1		98				LEFT - CONNECTION TO DROP INLET
203+47.8	203+95.0		48				RIGHT - CONNECTION TO MANHOLE
TOTAL		3,272	146	3,340	~	500	

* FOR INFORMATION ONLY

(1) WATER VALVE BOXES *

STATION		each				REMARKS
		ADJUST WATER VALVE BOX		RESET WATER VALVE BOX		
		LEFT	RIGHT	LEFT	RIGHT	
40+12.8		1				15.7 ft LEFT
47+77.9		1				15.1 ft LEFT
58+71.7				1		32.8 ft LEFT - RESET 16.4 ft LEFT
63+17.9					1	19.0 ft RIGHT - RESET 16.4 ft RIGHT
SUBTOTAL		2		1	1	
TOTAL		2		2		

* FUNDING - 75% STATE, 25% CITY

Water Valve Boxes Frame Reminder:

(1) *See Utility Agreement for funding splits.*

WETLAND SITE *

STATION		lump sum	REMARKS
		WETLAND MITIGATION SITE	
FROM	TO		
560+04	566+60	1	RT.
TOTAL		1	

* SEE DETAIL

(1) WATER LINE

STATION		each		linear feet				lbs	each					linear feet		each						cubic yards	REMARKS
		WATER SERVICE WITH CORPORATION STOP		PVC WATER PIPE				DUCTILE IRON FITTINGS	GATE VALVE *					STEEL CASING	SPECIAL INST. OF PIPE	CONNECTION		DIS - CONNECT EXISTING MAIN	PLUG LINE	FIRE HYDRANT Δ	FLOWABLE FILL		
				CL. 150			CL. 200							0.35 THK.									
FROM	TO	1"		6"	8"	10"	18"		6"	8"	10"	18"	20"	36"		6"	20"	#					
938+71		1																					
939+11		1																					
941+60	946+19	9																					
SUBTOTAL		11																					FUNDING - 100% STATE
936+12.20	960+69.55						2,559														2,021		
936+12.20												1											INCL. TAPPING TEE
940+68.24														49	49								UNDER RAILROAD
941+20.73											1		1										
941+20.73	960+69.55					2,041															621		
941+43.70																2		2					
941+53.54											1		1										
960+69.55											1		1			1	1		1				
SUBTOTAL						2,041	2,559	3,759			3	1	3	49	49	3	1	~	1		2,642		FUNDING - 75% STATE 25% CITY
940+28.87						66			1											1			
941+37.14				16		49					1									1			
941+61.95						10														1			
944+88.19				52	72					2	2		1							2			
SUBTOTAL				68	72	125		3,519	1	2	3		1							5			FUNDING - 100% CITY
TOTAL		11		68	72	2,166	2,559	7,278	1	2	6	1	4	49	49	3	1	~	1	5	2,642		

* INCL. VALVE BOX
Δ INCL. AUXILIARY GATE VALVES AND 1 TAPPING TEE
INCLUDED IN COST OF OTHER ITEMS

Water Line Frame Reminder:

(1) *See Utility Agreement for funding splits. Trench excavation is included in cost of water pipe.*

FIG. 4.4 K-16

FOR MDT INTERNAL DISTRIBUTION ONLY

07/18/2008
Highways & Engineering Division

HYDRAULIC DATA SUMMARY *

STATION	STREAM NAME (IF NAMED)	⚠1 SIZE / TYPE STRUCTURE ① ⑴A ④	DESIGN FLOOD			BASE FLOOD (1%)		OVERTOPPING FLOOD ② ③			REMARKS (FLOOD OF RECORD, Qp(max), ETC.) ⑤
			MAGNITUDE (ft^3/s)	FREQUENCY (%)	H.W. ELEV. (ft)	MAGNITUDE (ft^3/s)	H.W. ELEV. (ft)	MAGNITUDE (ft^3/s)	APPROX. FREQUENCY (%)	H.W. ELEV. (ft)	
368+60		30" CSP	~	~	~	~	~	~	~	~	PM NO. 10
407+81		30" CSP	~	~	~	~	~	~	~	~	PM NO. 10
447+17.03	Porcupine Creek	115' - 3 Span Bridge	5,103	1	2,056.4	5,103	2,056.4	8,663	0.2	2,060.8	
491+63	Porcupine Creek Overflow	130' - 3 Span Bridge	3,655	1	2,054.4	3,655	2,054.4	6,205	0.2	2,056.5	
520+05		42" S x 29" R CSPA	39	2	2,075.2	71	2,076.8	49	1.8	2,076.8	
583+53		Dbl. 14' S x 4' R RCB	968	2	2,059.9	1,303	2,061.0	1,081	1.6	2,060.7	
620+31	Ivy Coulee	Dbl. 120" CSP	1,794	2	2,054.3	2,433	2,056.0	1,928	1.8	2,055.4	
655+28		Dbl. 60" S x 46" R CSPA	251	2	2,060.3	328	2,060.5	251	2.0	2,060.4	
674+28	Milk River Coulee	Dbl. 14' S x 10' R RCB	2,567	2	2,058.5	3,489	2,059.4	2,627	1.9	2,058.7	
683+89		36" CSP	~	~	~	~	~	~	~	~	PM NO. 10
708+27		30" CSP	~	~	~	~	~	~	~	~	PM NO. 10
835+14		Dbl. 10' S x 4' R RCB	692	2	2,100.3	932	2,100.7	699	1.9	2,100.4	
857+41		30" CSP	~	~	~	~	~	~	~	~	PM NO. 10
871+03		Dbl. 12' S x 5' R RCB	1,342	2	2,107.6	1,812	2,107.9	664	8.0	2,107.0	Overflows to Station 835+14
879+40		30" CSP	~	~	~	~	~	~	~	~	PM NO. 10

Hydraulic Data Summary Reminder:

⚠1 *CSP will normally be shown in this column when pipe options are shown in the plans. If only one option is shown, that will be the material referenced in this column.*

NOTES:

* H.W. ELEVATIONS SHOWN ARE BASED UPON PEAK FLOW ANALYSIS UNLESS NOTED IN REMARKS COLUMN.

① STRUCTURE SIZE OR TYPE AND RELATED HYDRAULIC DATA MAY NOT REFLECT CHANGES MADE DUE TO R/W OR OTHER CONSIDERATIONS (I.E., STOCKPASS ADDED, STRUCTURE SIZE OR TYPE CHANGED, ROAD GRADE CHANGED DURING CONSTRUCTION, ETC.)

⑴A BRIDGE LENGTH SHOWN EQUALS THE WATER SURFACE WIDTH IN THE OPENING AT THE DESIGN H.W. ELEVATION MEASURED NORMAL TO FLOW.

② OVERTOPPING IS DEFINED AS FLOW OVER THE ROAD, FLOW THROUGH A SIGNIFICANT RELIEF STRUCTURE, OR FLOW OVER THE BASIN DIVIDE, WHICHEVER IS LOWER.

③ FOR THOSE CROSSINGS NOTED BY Qp(max) IN THE REMARKS COLUMN, OVERTOPPING DOES NOT OCCUR AND THE FLOOD MAGNITUDE LISTED CORRESPONDS TO THE FLOOD OF SECTION 650.115(a)(1)(ii) OF FEDERAL-AID POLICY GUIDE; SUBCHAPTER G, PART 650, SUBPART A (Dec. 1991)
THE FLOOD SPECIFIED IS SUBJECT TO STATE-OF-THE-ART CAPABILITY TO ESTIMATE THE EXCEEDANCE PROBABILITY.
(PIPES 0.5%; BRIDGE 0.2%)

④ HIGHWATER ELEVATIONS MAY VARY SLIGHTLY DEPENDING UPON THE PIPE OPTION SELECTED.

⑤ PROCEDURE MEMORANDUM NO.10, HYDRAULICS MANUAL CHAPTER 9 APPENDIX H.

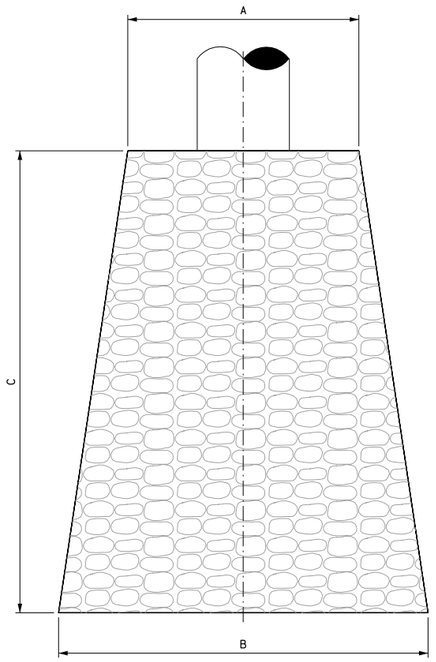
EXCEEDANCE PROBABILITIES

25 YEAR	4% CHANCE
50 YEAR	2% CHANCE
100 YEAR	1% CHANCE
200 YEAR	0.5% CHANCE
500 YEAR	0.2% CHANCE

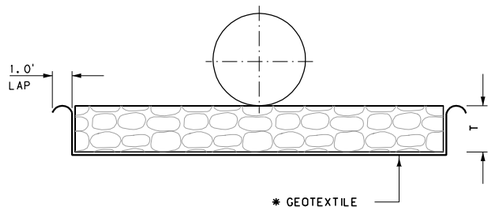
Nashua E. & W.
Valley Co.
NH 1-9(25)555

FIG. 4.4 L

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrdhdse01.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION: CSF = 0.9999999 / UPN NUMBER 12345678
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			PROJECT NO.
1		7:37:42 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		SHEET 999 OF 999



PLAN VIEW



ELEVATION VIEW

MIN. T FOR
STREAM BANK EROSION BLANKET

CLASS 1 RIPRAP = 1.3 FT
CLASS 2 RIPRAP = 2.6 FT
CLASS 3 RIPRAP = 3.0 FT

OUTLET RIPRAP APRON								
STATION	PIPE SIZE/TYPE	DIMENSIONS (FT)				RIPRAP APRON (yd³)	* GEOTEXTILE (yd²) PERM. EROS. CNTRL. ___ SURVIVABILITY CLASS ___ ①	REMARKS
		A	B	C	T			
42+49	84" DRAIN	8.9	15.4	20.7	1.3	12.2	38.2	
115+12	DBL. 132" SSPP	23.6	33.5	32.8	1.3	45.5	122.5	

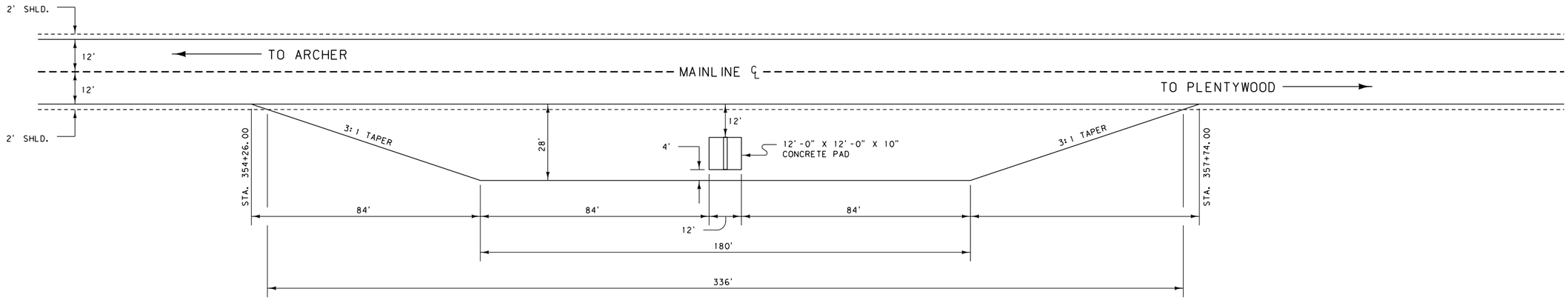
Outlet Riprap Apron Reminders:

① *Consult with Geotechnical Section to determine Survivability and Class of Erosion Control Geotextile, based on subgrade conditions.*

Richland Co. Line-North

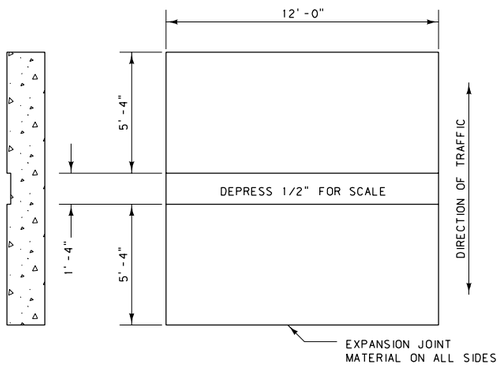
Outlet Riprap Apron Detail
Richland Co.
STPS 261-2(4)28
Not To Scale

FIG. 4.4 M-1



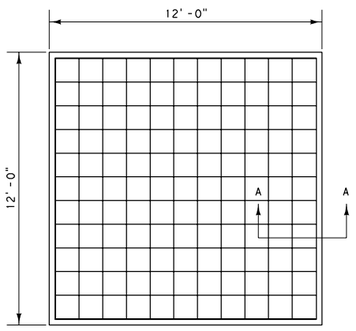
PAD DETAIL

NOT TO SCALE

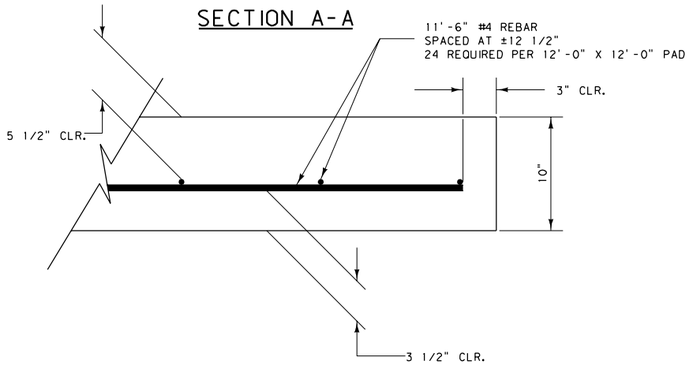


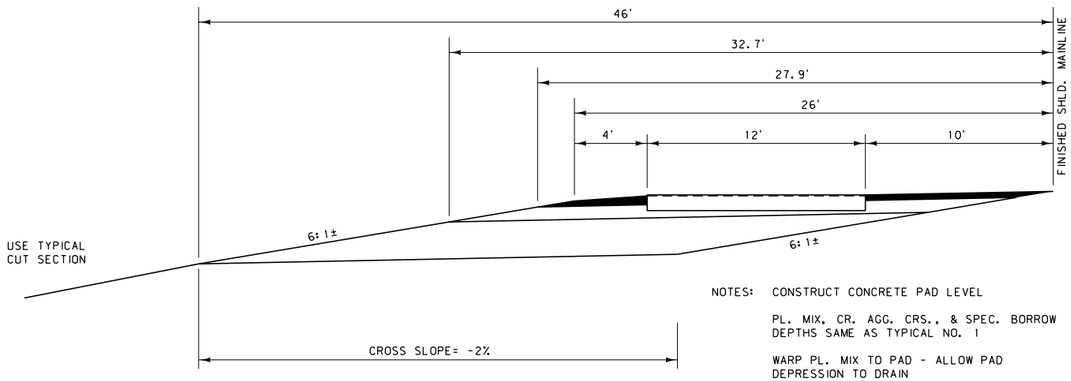
REINFORCING STEEL PLAN

NOT TO SCALE



SECTION A-A





NOTES: CONSTRUCT CONCRETE PAD LEVEL

PL. MIX, CR. AGG. CRS., & SPEC. BORROW DEPTHS SAME AS TYPICAL NO. 1

WARP PL. MIX TO PAD - ALLOW PAD DEPRESSION TO DRAIN

PAD QUANTITIES	
CLASS "AD" CONCRETE	4.4 cy
GR. 60 REINF. STEEL	184 lbs*
EXPANSION JOINT MATERIAL	48 ft*

* INCLUDED IN UNIT PRICE BID FOR CONCRETE

DETAIL
M.C.S. SCALE SITE
TYPE "B"
STA. 356+00.00

NO SCALE

FIG. 4.4 M-2

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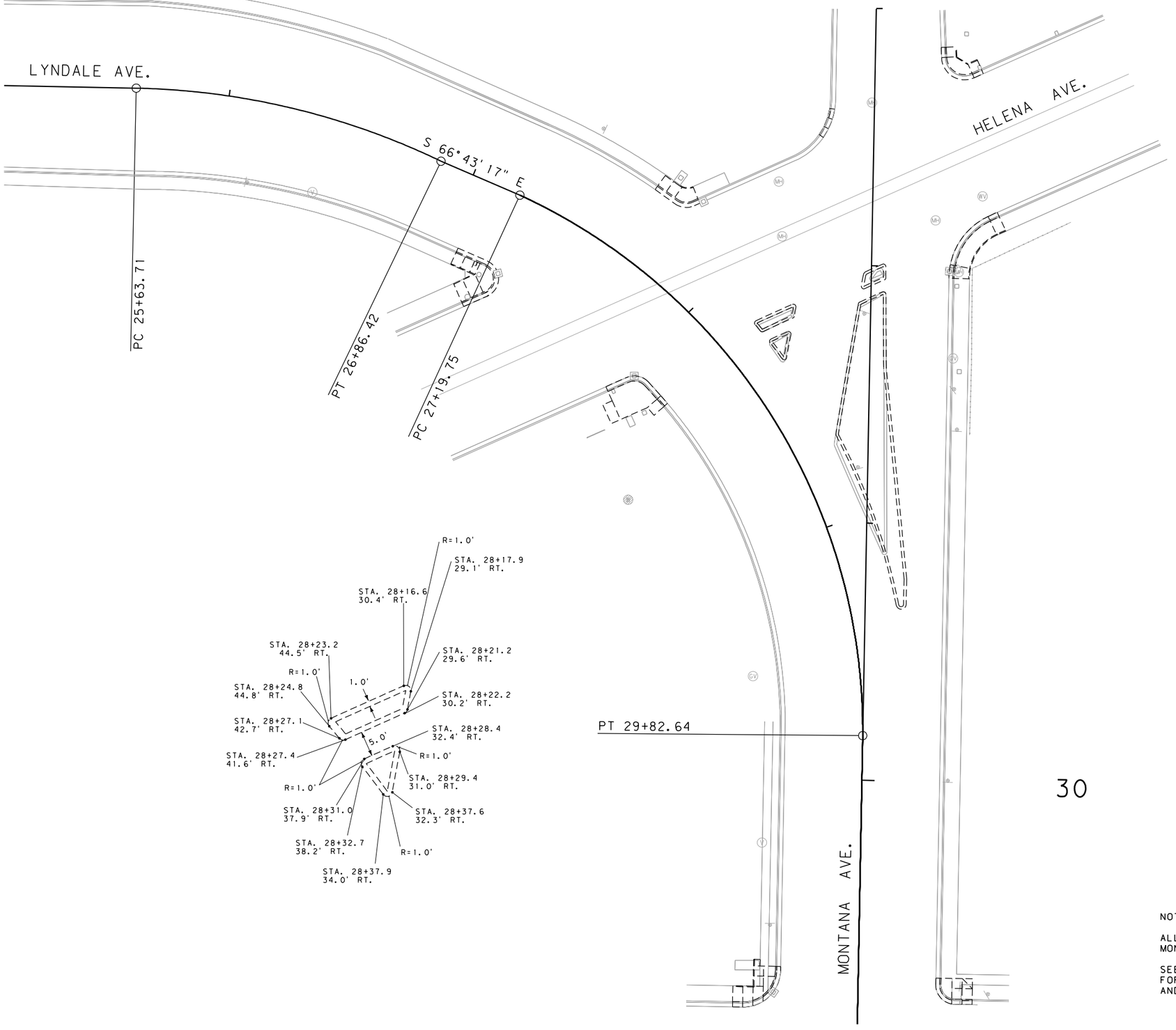

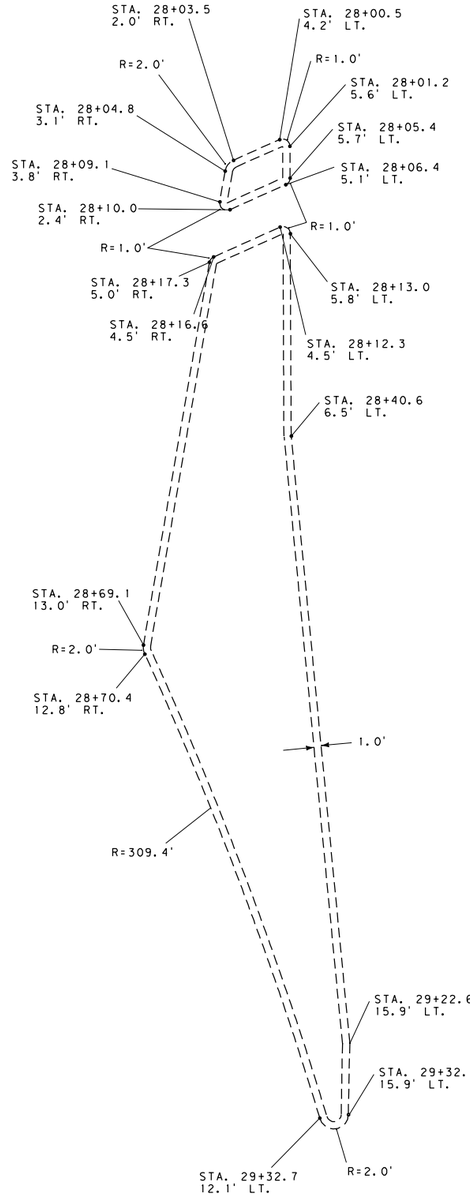

NOTE:

ALL STATIONS AND OFFSETS ARE FROM MONTANA AVE. CENTERLINE.

SEE INTERSECTION CURB RAMP DETAILS FOR EACH CORNER'S SPECIFIC DESIGN AND LAYOUT INFORMATION.

INTERSECTION MEDIAN CURB GEOMETRICS DETAIL

NO SCALE

FIG. 4.4 M-3

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete03.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*			
1		7:37:56 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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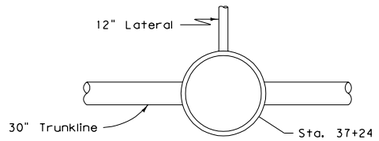
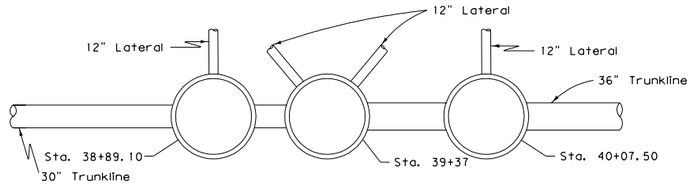
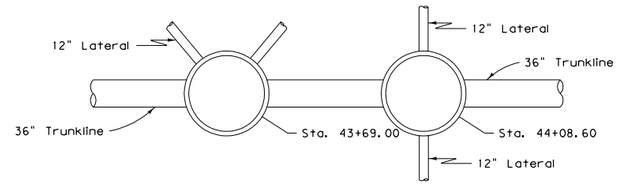


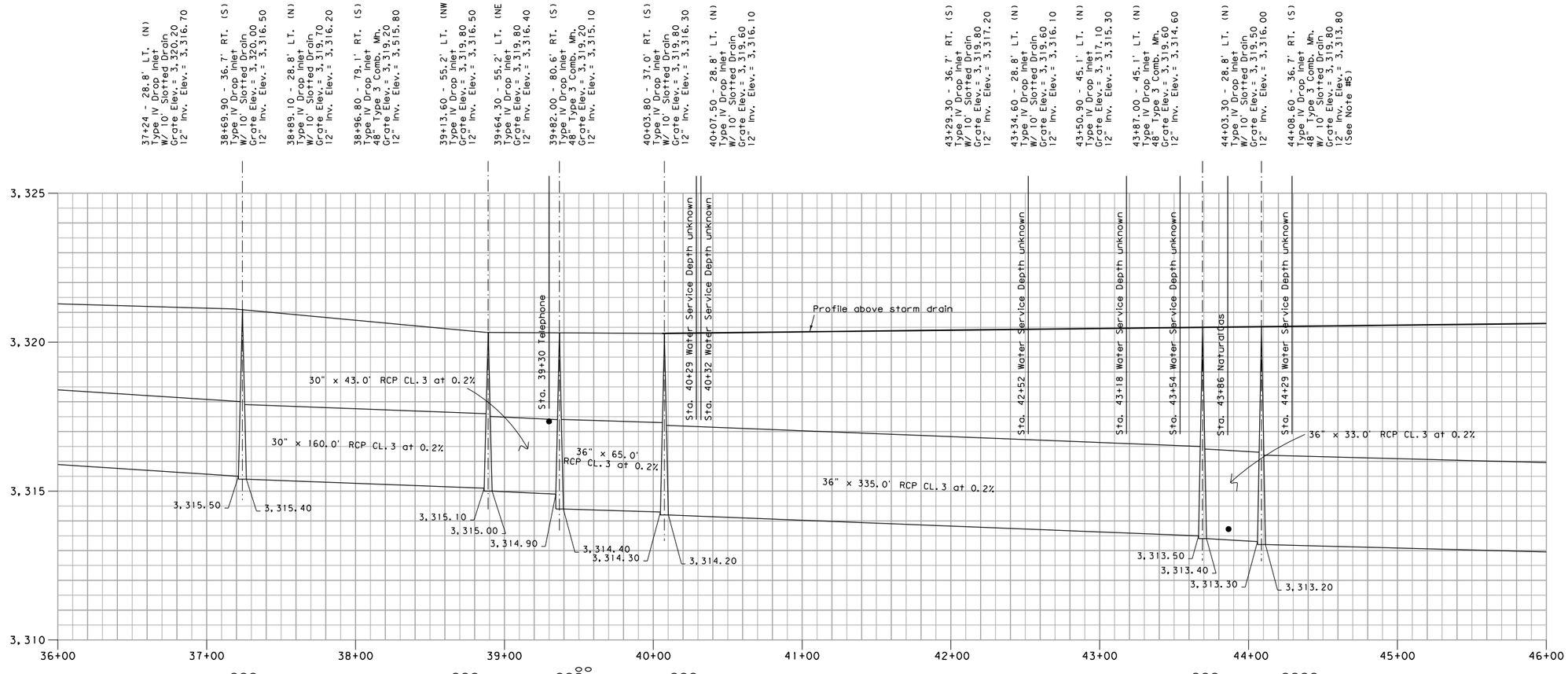
PLAN VIEW
No Scale



PLAN VIEW
No Scale



PLAN VIEW
No Scale



CENTRAL AVE. W.
STORM DRAIN PROFILE
3RD AVE. TO 9TH ST.

Scale: 1" = 2' Vertical
1" = 40' Horizontal

FIG. 4.4 M-4

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete04.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*		
1		7:38:00 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999 / UPN NUMBER 12345678	SHEET 999 OF 999

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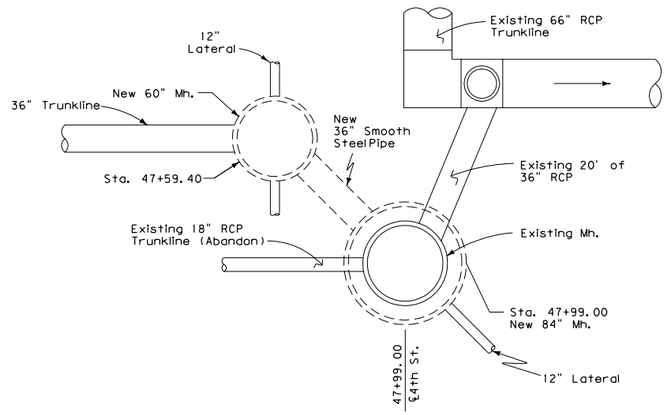
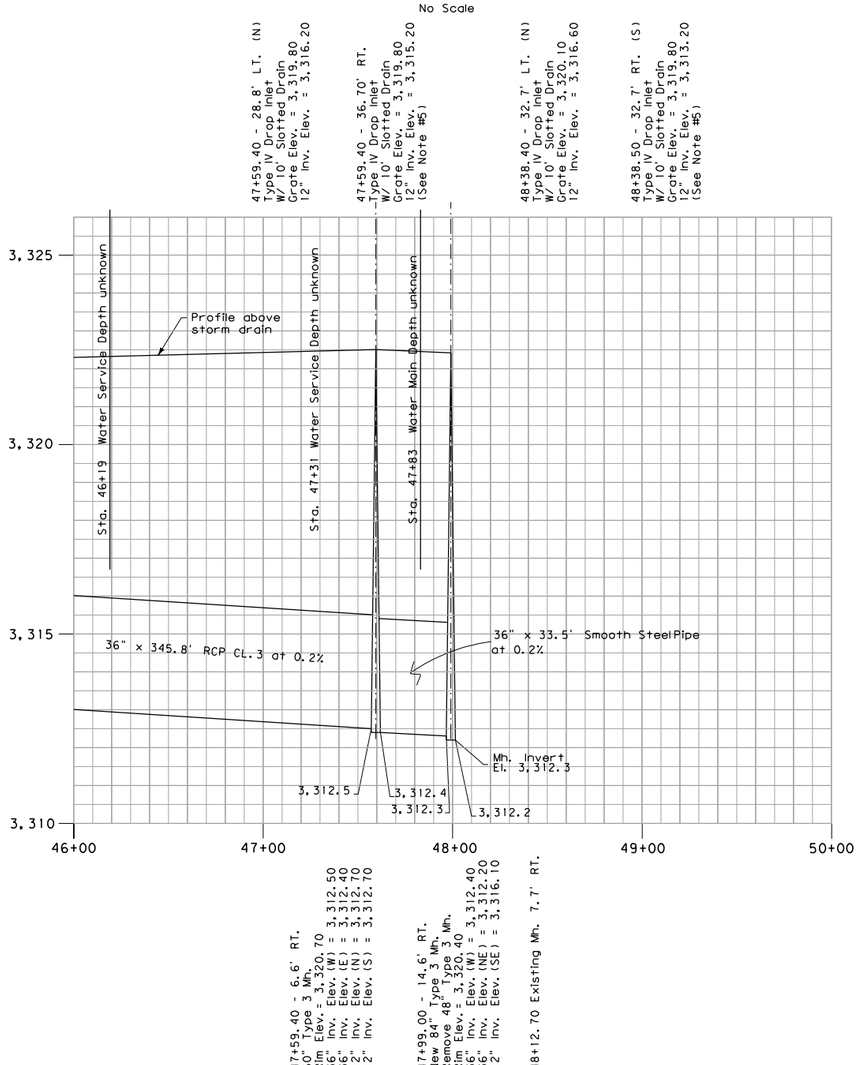
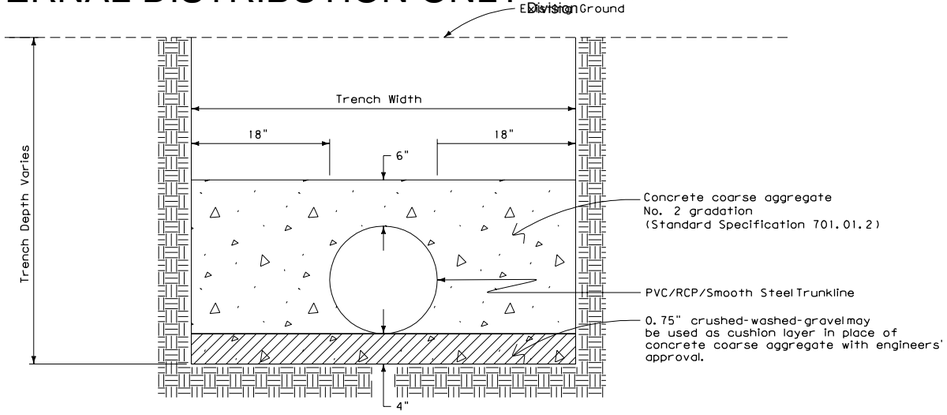


PLAN VIEW
No Scale





TRUNKLINE / LATERAL BEDDING DETAIL ①②
No Scale

Notes:

1. See Detailed Drawing No. 604-04 & 604-06 for MDT Type IV Drop Inlet.
2. Minimum slope on 12" RCP lateral lines from inlets to manholes shall be 0.75% min.
3. Use irrigation class RCP for the trunkline.
4. Use 12" irrigation class RCP for laterals.
5. At Sta. 44+08.60 RT. to 47+59.40 RT., Use AWWA C200 Steel water pipe with a thickness of 0.5". (See Standard Specifications 709.01.2). All welding will be done in accordance to Standard Specifications 556.03.10.
6. Maximum cushion layer thickness shall be 4". Keep cushion layer moist until backfill begins.

Mh. Station	① Edge to Edge Length	② Center To Center Length
26+82.90		
	183.2'	188.1'
28+71		
	168.2'	176.1'
30+47.10		
	43.8'	48.7'
30+95.80		
	190.3'	195.2'
32+91		
	181.2'	186.1'
34+77.10		
	242.0'	246.9'
37+24		
	160.2'	165.1'
38+89.10		
	42.7'	47.9'
39+37		
	65.3'	70.5'
40+07.50		
	355.3'	361.5'
43+69.00		
	33.4'	39.6'
44+08.60		
	③ 345.9'	③ 350.8'
47+59.40		
	33.7'	39.6'
47+99.00		

① Inside edge to inside edge of manhole used for slope.

② Center to center of manhole - bid length.

③ AWWA C200 Steel water pipe with a thickness of 0.5". (See Standard Specifications 709.01.2). All welding will be done in accordance to Standard Specifications 556.03.10.

Storm Drain Reminders:

① *RCP will normally be specified for laterals.*
② *Bedding is generally not required for laterals unless specified by hydraulics.*

CENTRAL AVE. W.
STORM DRAIN PROFILE
3RD AVE. TO 9TH ST.

Scale: 1" = 2' Vertical
1" = 40' Horizontal

FIG. 4.4 M-5

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete05.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*
1		7:38:05 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME (S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

FOR MDT INTERNAL DISTRIBUTION ONLY

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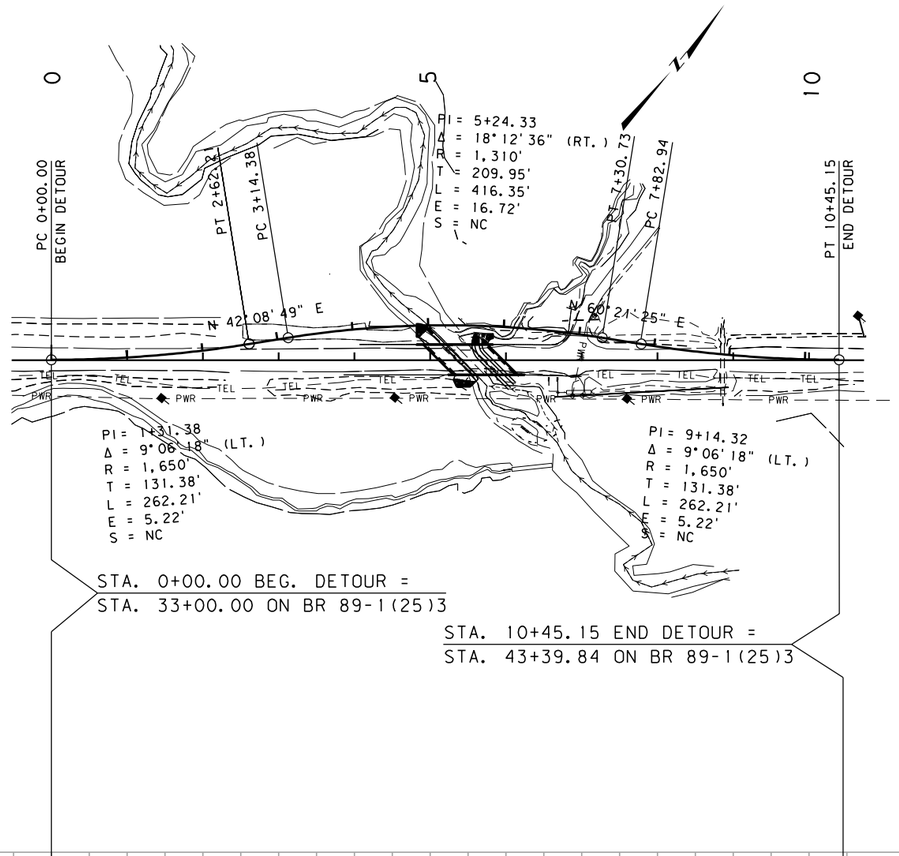
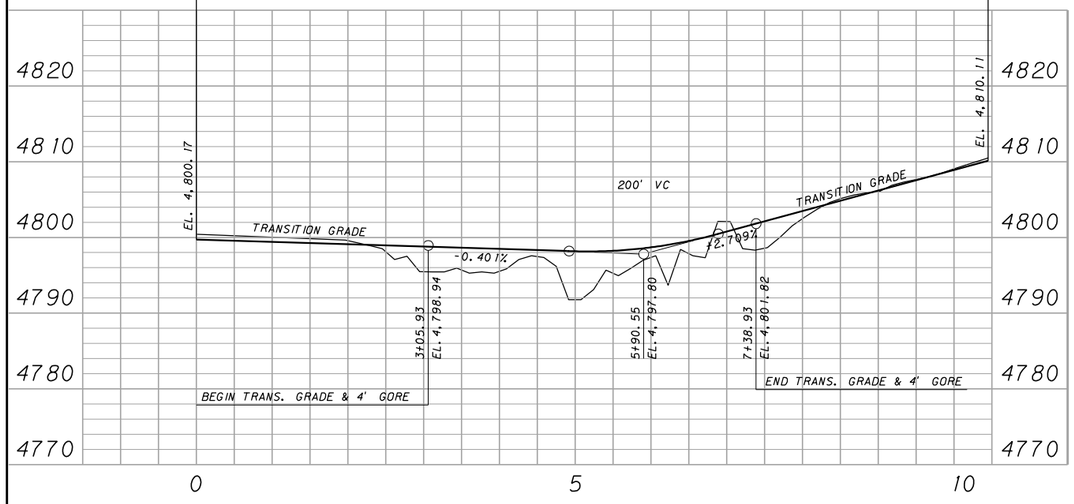
⊙ FOR INFORMATIONAL PURPOSES ONLY

DETOUR DESIGN SPEED = 35 mph





⊙ DETOUR GRADING

STATION FROM	STATION TO	cubic yards EXC.	cubic yards EMB. +	cubic yards BORROW	square yards GEOTEXTILE STABILIZATION	REMARKS
0+00.00	4+63.00		2,366	2,366	388	
5+28.00	10+45.15		2,087	2,087	529	
TOTAL		~	4,453	4,453	917	

30% SHRINKAGE

⊙ PAVEMENT MARKINGS

ITEM	UNIT	TOTAL
WHITE PAINT	gallon	13
YELLOW PAINT	gallon	13

⊙ DETOUR SURFACING

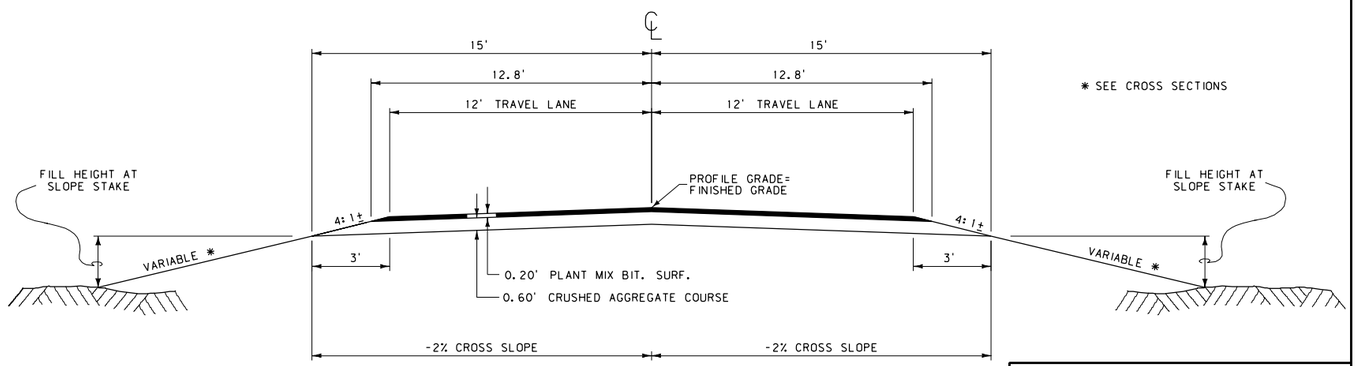
STATION FROM	STATION TO	linear feet GROSS	linear feet NET	linear feet +	linear feet -	FOR	AGGREGATE tons PLANT MIX BIT. SURF. GRADE C	AGGREGATE cubic yards CRUSHED AGG. COURSE	REMARKS
0+00.00				~	~				
4+63.00	5+28.00				65.00	BRIDGER CREEK X-ING DETOUR			TEMP. BRIDGE *
	10+45.15	1,045.15	980.15				336	634	DETOUR TYPICAL SECTION
							67		20% CONTINGENCY TO PATCH DET.
TOTAL		1,045.15	980.15	~	~		403	634	

* INCLUDED IN LUMP SUM FOR DETOUR

⊙ DETOUR METAL GUARDRAIL

STATION FROM	STATION TO	linear feet METAL GUARDRAIL LEFT	linear feet METAL GUARDRAIL RIGHT	linear feet INTERSECTION ROADWAY TRANSITION 24.0' RADIUS LEFT	linear feet INTERSECTION ROADWAY TRANSITION 24.0' RADIUS RIGHT	each BRIDGE APPROACH SECTION TYPE 2 LEFT	each BRIDGE APPROACH SECTION TYPE 2 RIGHT	each OPTIONAL TERMINAL SECTION LEFT	each OPTIONAL TERMINAL SECTION RIGHT	REMARKS
3+25.50	4+63.00		62.5				1		1	
3+88.00	4+63.00					1		1		
5+28.00	6+77.00	100.0		62.5		1				
5+28.00	6+03.00						1		1	
SUBTOTAL						2	2	1	2	
TOTAL		162.5		62.5		4		3		

DETOUR TYPICAL SECTION



0+00.00	TO 3+05.93	MATCH CROSS SLOPE OF MAINLINE
3+05.93	TO 4+05.93	TRANSITION FROM MAINLINE CROSS SLOPE TO N.C.
4+05.93	TO 6+38.93	
6+38.93	TO 7+38.93	TRANSITION FROM N.C. TO MAINLINE CROSS SLOPE
7+38.93	TO 10+45.15	MATCH CROSS SLOPE OF MAINLINE

DETOUR DETAIL

NO SCALE

FIG. 4.4 M-6

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete06.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION
2	serving you with pride	7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE			CSF = 0.9999999 / UPN NUMBER 12345678
1		7:38:10 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)		PROJECT NO. / SHEET 999 OF 999

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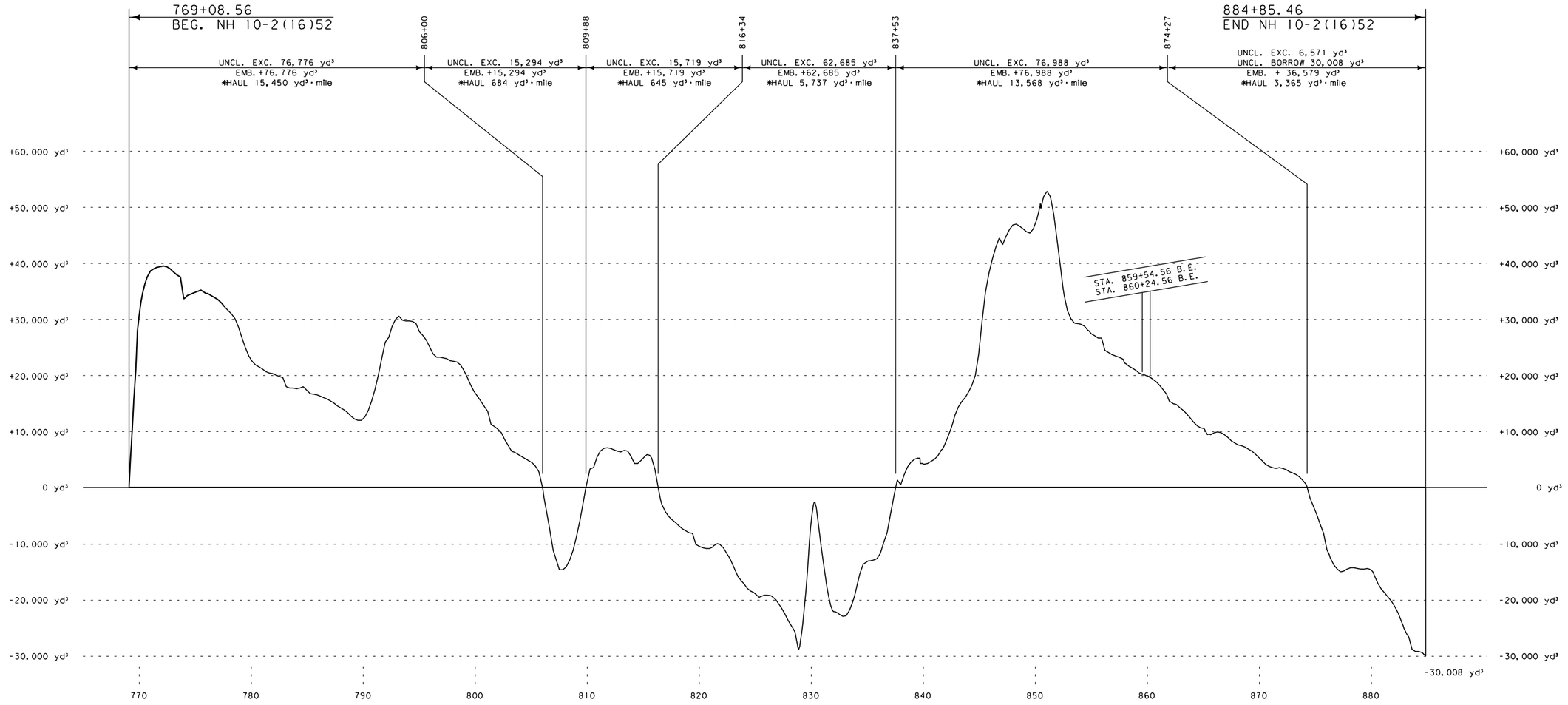
MASS DIAGRAM



* HAUL SHOWN FOR INFORMATIONAL PURPOSES ONLY

SCALE: (1)

HORIZONTAL - 1" = 500'
VERTICAL - 1" = 10,000 yd³ (2)
SHRINK FACTOR 35%

(1) *Produce scales in multiples of:*

1" = 10 units
1" = 20 units
1" = 30 units
1" = 40 units
1" = 50 units

(2) *To calculate scale of drawing:*

A.) Select scale that measures 10 units between grid lines.
B.) Divide value shown for one grid by 10 = value of one unit.
C.) Multiply value of one unit by scale selected.
D.) Divide by 2 (for half-size sheet) = scale of drawing (for full-size sheet).

Ex. - Horizontal scale of this drawing

A.) Select 1" = 10 units on scale - 10 = 1,000' shown
B.) 1,000' divided by 10 = 100'
C.) 100' mulitplyed by 10 = 1,000'
D.) 1,000' divided by 2 = 500'
Scale 1" = 500' (for full-size sheet)

Ex. - Vertical scale of this drawing

A.) Select 1" = 20 units on scale - 10 = 10,000 yd³ shown
B.) 10,000 yd³ divided by 10 = 1,000 yd³
C.) 1,000 yd³ mulitplyed by 20 = 20,000 yd³
D.) 20,000 yd³ divided by 2 = 10,000 yd³
Scale 1" = 10,000 yd³ (for full-size sheet)

FIG. 4.4 M-7

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrddete07.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*			
1		7:38:14 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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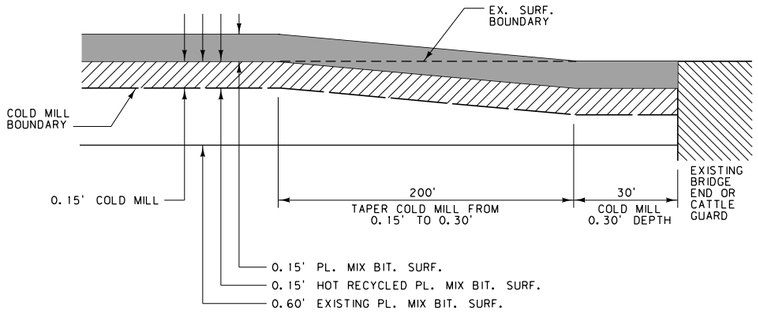
BRIDGE ENDS & CATTLE GUARDS

HOT RECYCLED PL. MIX BIT. SURF.

PL. MIX BIT. SURF.

FROM	TO
32+32.45	34+02.45 B.E.
40+12.73 B.E.	42+42.73



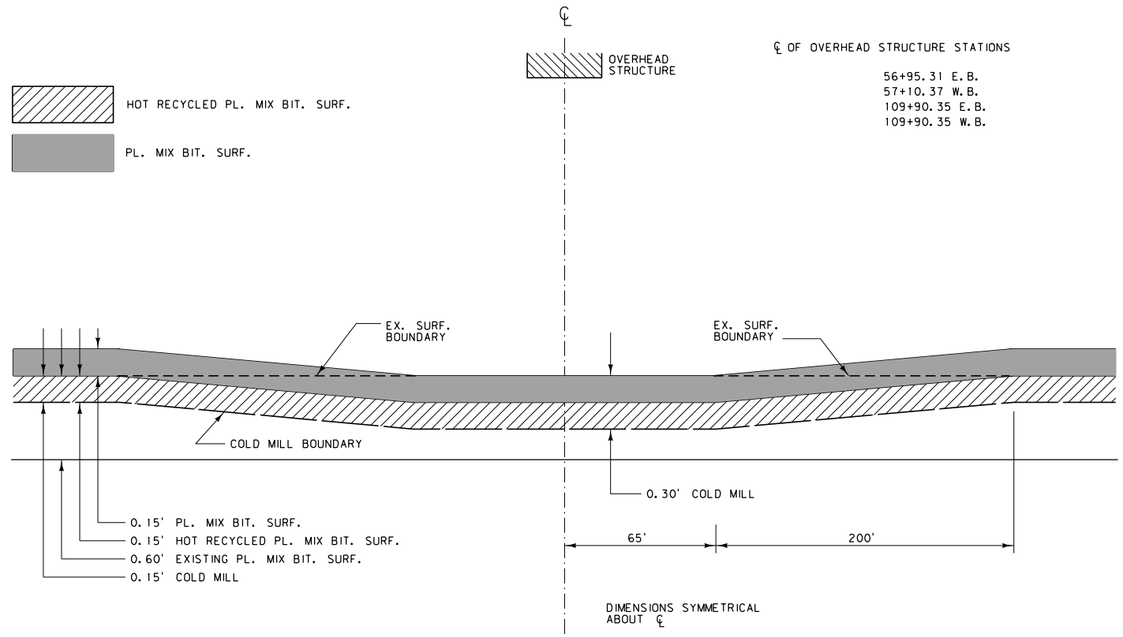
OVERHEAD STRUCTURES

HOT RECYCLED PL. MIX BIT. SURF.

PL. MIX BIT. SURF.

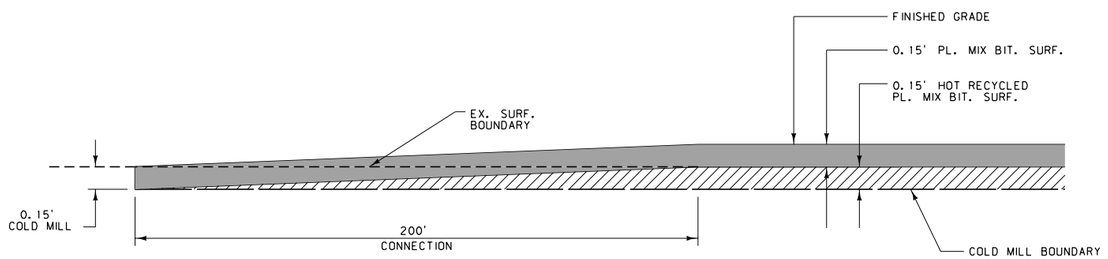
℄ OF OVERHEAD STRUCTURE STATIONS

56+95.31 E.B.
57+10.37 W.B.
109+90.35 E.B.
109+90.35 W.B.



CONNECTIONS

263+56.23 TO 265+56.23 BEG. PROJ. CONNECTION
567+00.00 TO 569+00.00 END PROJ. CONNECTION

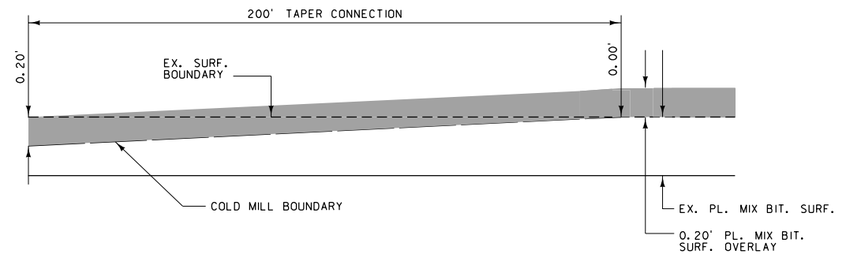


HOT RECYCLED PL. MIX BIT. SURF.

PL. MIX BIT. SURF.

CONNECTIONS

7+34.94 TO 9+34.94 BEG. PROJ. CONNECTION
116+68.77 TO 118+68.77 END PROJ. CONNECTION



(Typical Rural Project Examples)

COLD MILLING DETAILS

NO SCALE

FIG. 4.4 M-8

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete08.dgn	DESIGNED BY		ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY					
1		7:38:19 AM CPS - U1861	CHECKED BY		COUNTY NAME(S)		CSF = 0.9999999 UPN NUMBER 12345678	SHEET 999 OF 999

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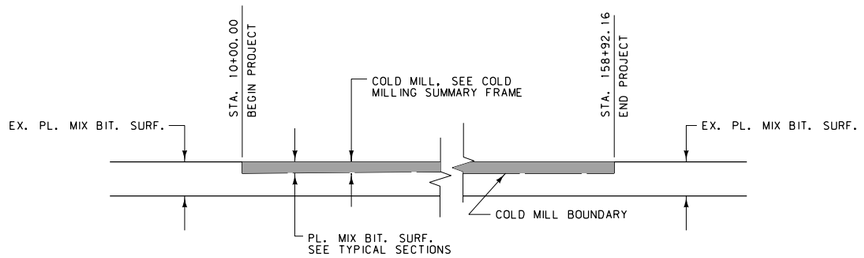
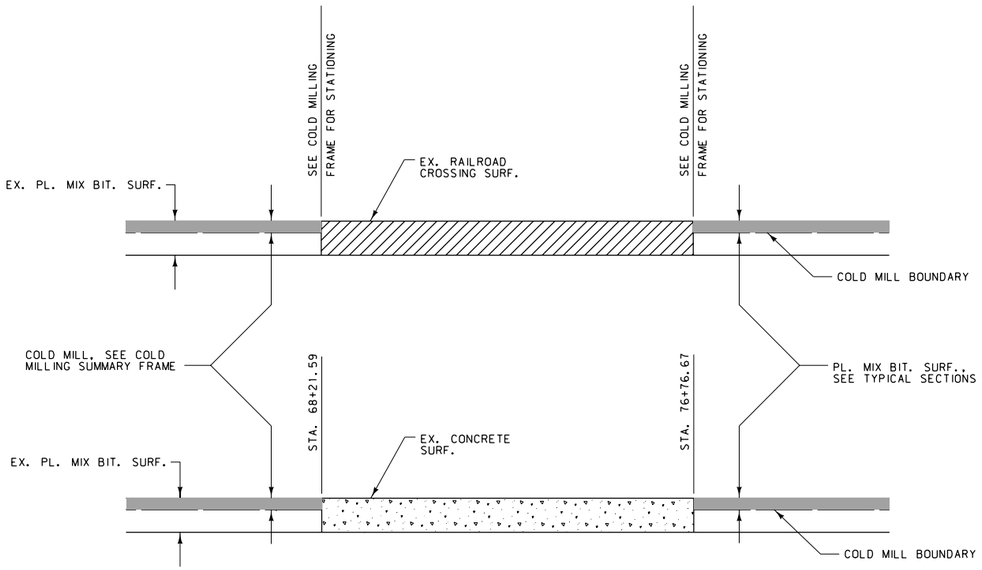
MAINLINE COLD MILLING DETAILS



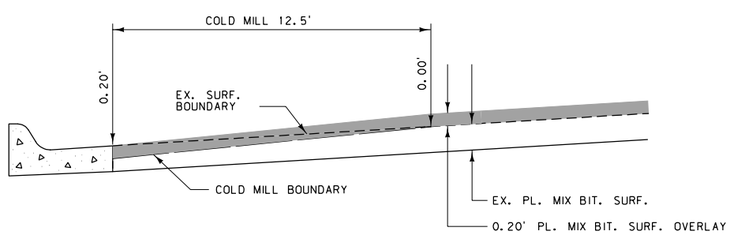


CURB & GUTTER SHOULDER COLD MILLING DETAIL

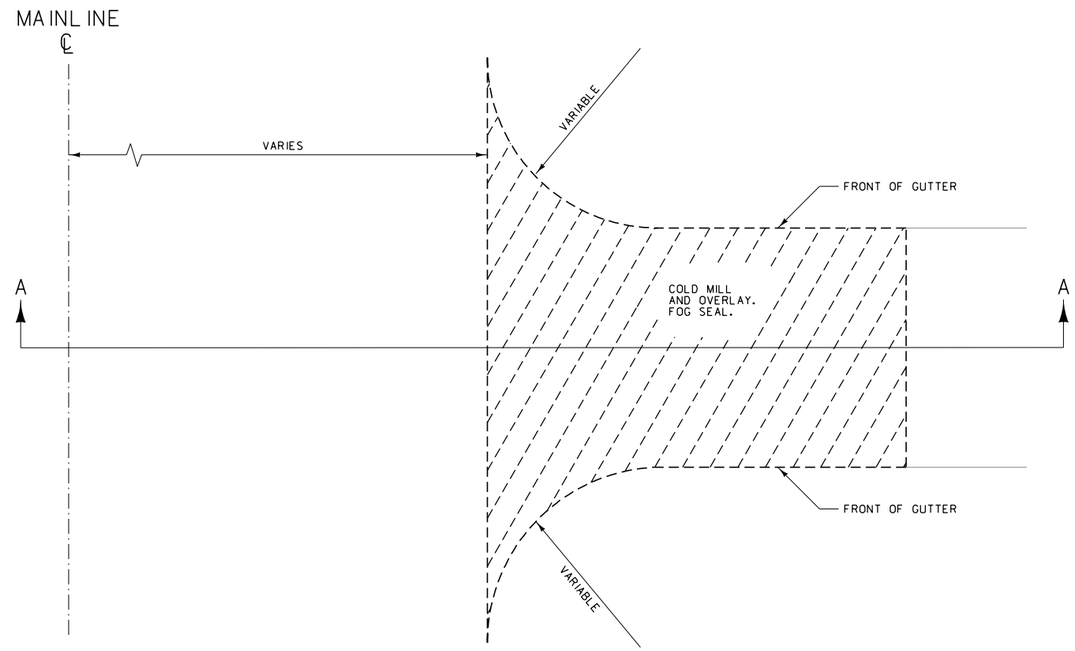
HUNGRY HORSE: 122+66.99 TO 182+75.00 LT.
136+81.00 TO 182+75.00 RT.

CORAM: 306+29.99 TO 336+95.01 LT. & RT.

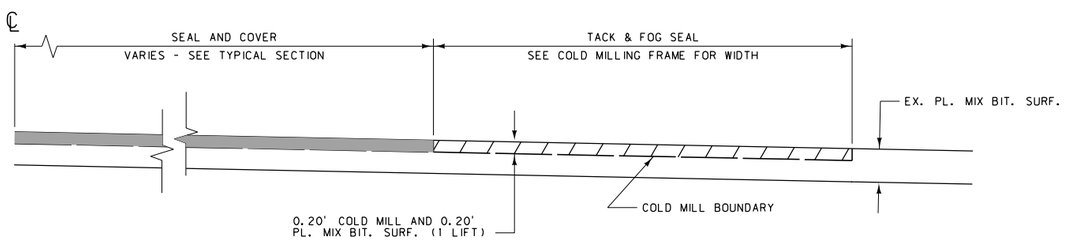
W. GLACIER: 675+00.00 TO 688+49.21 BK. =
2+52.89 AH. TO 6+19.32 RT. & LT.



STREET INTERSECTION COLD MILLING AND SURFACING DETAIL



SECTION A-A



(Typical Urban Project Examples)

COLD MILLING DETAILS

NO SCALE

FIG. 4.4 M-9

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete09.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*			
1		7:38:24 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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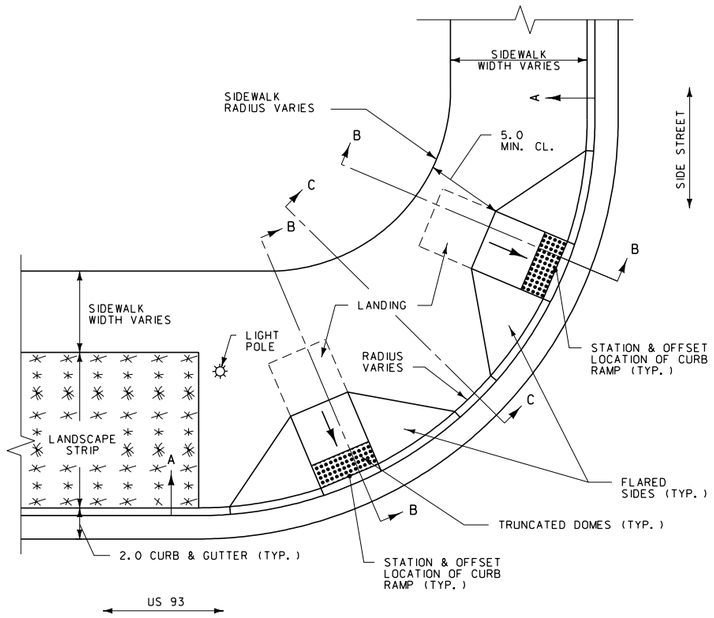
Division

DIAGONAL PERPENDICULAR CURB RAMP DETAILS

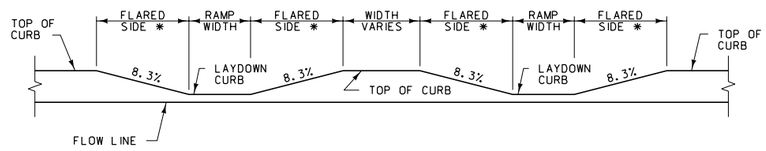
US 93



PLAN

NEW CONSTRUCTION REQUIREMENTS:

1. THE MINIMUM LENGTH OF THE LANDING IS 5'.
2. THE DESIRABLE SLOPE FOR THE CURB RAMP IS 5% (1:20) OR FLATTER. THE MAXIMUM CURB RAMP SLOPE IS 8.3% (1:12).
3. THE DESIRABLE CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 1.5% (1:66.7). THE MAXIMUM CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 2% (1:50).
4. THE DESIRABLE SLOPE OF THE FLARED SIDE OF THE CURB RAMP IS 8.3% (1:12) OR FLATTER. THE MAXIMUM FLARED SIDE SLOPE IS 10% (1:10).
5. PROVIDE TRUNCATED DOMES ON THE BOTTOM 2' OF EACH RAMP AS SHOWN SEE DTL. DWG. NO. 608-40 FOR TRUNCATED DOMES DETAILS.
6. FOR ADDITIONAL DETAILS, SEE DTL. DWG. NO. 608-25, 608-35, AND 609-05.

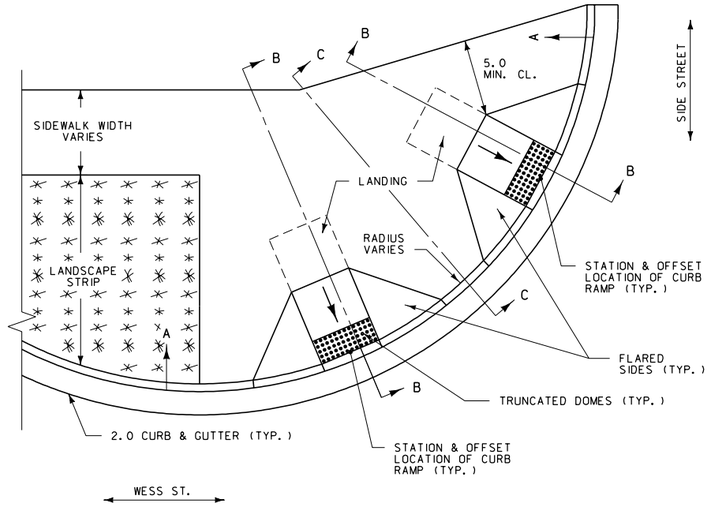


* ADJUST FLARED SIDE LENGTH AS NEEDED TO MAINTAIN DESIRABLE SLOPES

SECTION A-A

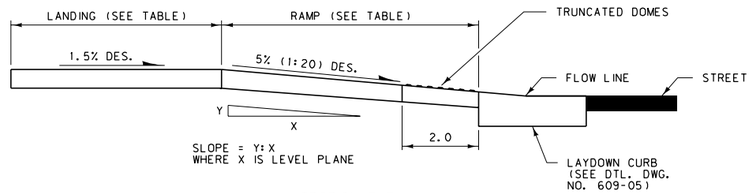
DIAGONAL PERPENDICULAR CURB RAMP DETAILS

WESS ST.



PLAN

STATION US 93	OFFSET (FT)	RAMP AND TRUNCATED DOME WIDTH (FT)	RAMP LENGTH (FT)	RAMP DESIGN SLOPE (%)	LANDING LENGTH (FT)
288+55.00	21.9 RT.	5.0	10.2	5.0	5.0
288+65.20	22.5 LT.	5.0	10.2	5.0	5.0
288+71.50	38.3 RT.	5.0	6.9	7.5	5.0
288+80.50	38.1 LT.	5.0	6.9	7.5	5.0
294+27.40	22.7 LT.	5.0	8.5	6.0	5.0
294+27.40	22.7 RT.	5.0	8.5	6.0	5.0
294+42.70	34.7 LT.	8.0	6.2	8.3	5.0
294+42.70	34.7 RT.	5.0	6.2	8.3	5.0
294+81.20	34.7 LT.	8.0	6.2	8.3	5.0
294+81.20	34.7 RT.	5.0	6.2	8.3	5.0
294+96.40	22.7 LT.	5.0	7.9	6.5	5.0
294+96.40	22.7 RT.	5.0	7.9	6.5	5.0
298+07.10	22.7 LT.	5.0	7.9	6.5	5.0
298+07.10	22.7 RT.	5.0	7.2	7.0	5.0
298+22.20	34.7 LT.	5.0	8.5	6.0	5.0
298+22.20	34.7 RT.	5.0	7.2	7.0	5.0

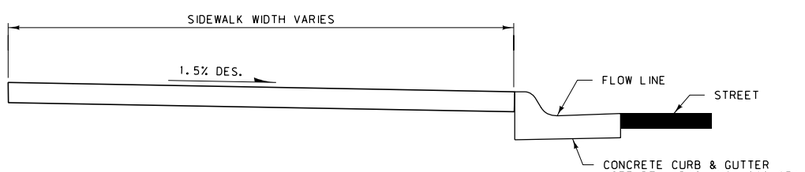


SECTION B-B

STATION WESS ST.	OFFSET (FT)	RAMP AND TRUNCATED DOME WIDTH (FT)	RAMP LENGTH (FT)	RAMP DESIGN SLOPE (%)	LANDING LENGTH (FT)
0+10.00	15.3 LT.	5.0	10.2	5.0	5.0
0+10.90	15.5 RT.	5.0	10.2	5.0	5.0
0+25.30	29.1 LT.	5.0	7.2	7.0	5.0
0+26.20	29.7 RT.	5.0	7.2	7.0	5.0
2+11.90	16.5 LT.	5.0	7.9	6.5	5.0
2+11.90	16.5 RT.	5.0	7.9	6.5	5.0
2+24.40	28.5 LT.	8.0	6.9	7.5	5.0
2+24.40	28.5 RT.	5.0	6.9	7.5	5.0
2+58.50	28.5 LT.	8.0	7.2	7.0	5.0
2+71.00	16.5 LT.	5.0	8.5	6.0	5.0

NOTES:

1. ALL DIMENSIONS ARE FEET (FT) UNLESS OTHERWISE NOTED.
2. SEE SIDEWALK SUMMARY FRAME FOR WIDTHS OF SIDEWALK.
3. SEE PLAN & PROFILE SHEETS AND GEOMETRIC DETAILS FOR RADII OF CURB & GUTTER AND SIDEWALK.



SECTION C-C

(Typical New Construction Example)

DIAGONAL PERPENDICULAR CURB RAMP DETAILS

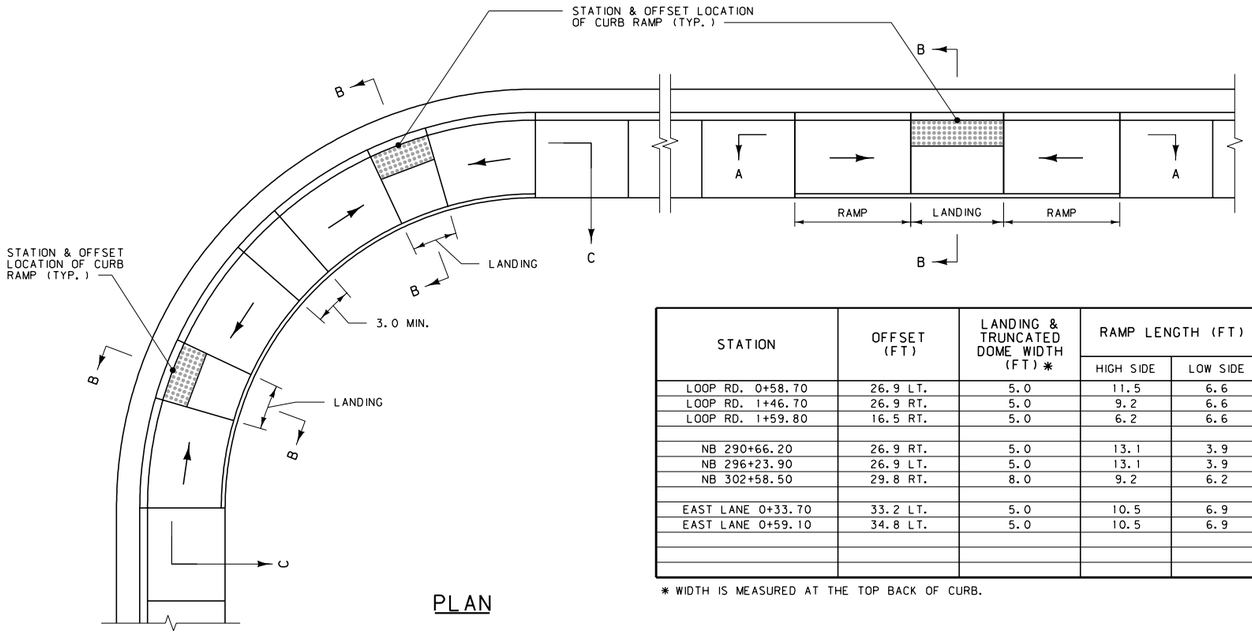
NO SCALE

FIG. 4.4 M-10A

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete10.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*			
1		7:38:29 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

07/18/2008
Highways & Engineering Division

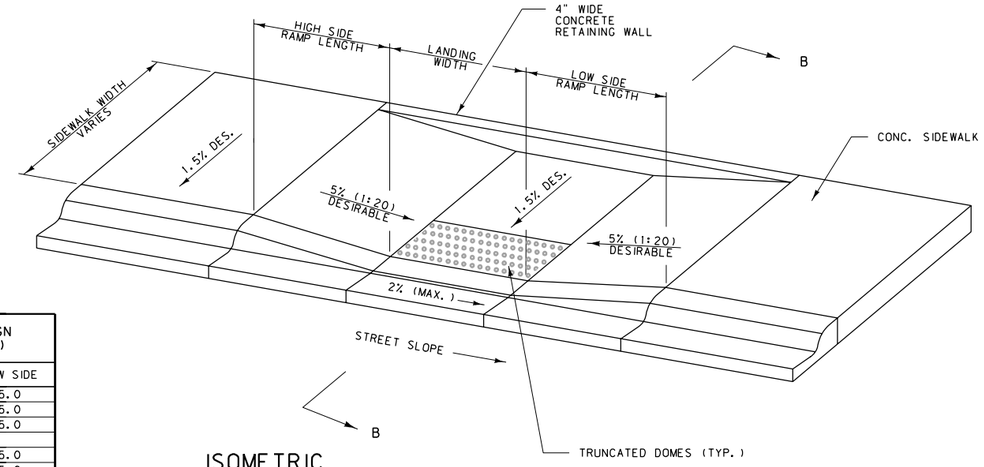
PARALLEL CURB RAMP DETAILS



PLAN

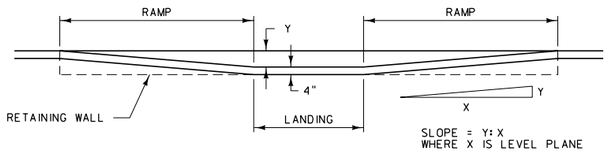
STATION	OFFSET (FT)	LANDING & TRUNCATED DOME WIDTH (FT) *	RAMP LENGTH (FT)		RAMP DESIGN SLOPE (%)	
			HIGH SIDE	LOW SIDE	HIGH SIDE	LOW SIDE
LOOP RD. 0+58.70	26.9 LT.	5.0	11.5	6.6	5.0	5.0
LOOP RD. 1+46.70	26.9 RT.	5.0	9.2	6.6	6.5	5.0
LOOP RD. 1+59.80	16.5 RT.	5.0	6.2	6.6	8.3	5.0
NB 290+66.20	26.9 RT.	5.0	13.1	3.9	8.3	5.0
NB 296+23.90	26.9 LT.	5.0	13.1	3.9	8.3	5.0
NB 302+58.50	29.8 RT.	8.0	9.2	6.2	6.5	5.0
EAST LANE 0+33.70	33.2 LT.	5.0	10.5	6.9	5.0	5.0
EAST LANE 0+59.10	34.8 LT.	5.0	10.5	6.9	5.0	5.0

* WIDTH IS MEASURED AT THE TOP BACK OF CURB.

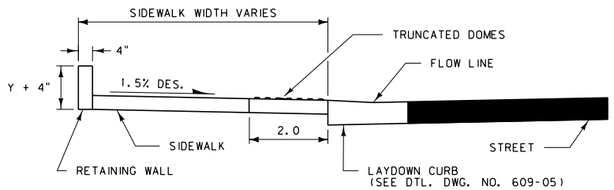


ISOMETRIC

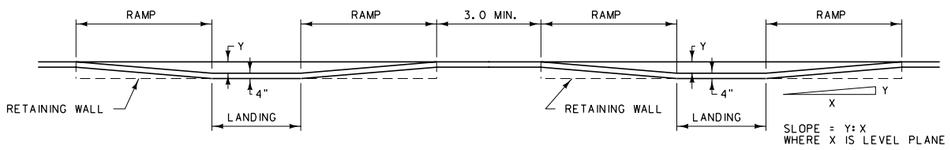
STREET SLOPE	RAMP LENGTH (FT)			
	AT 8.3% SLOPE		AT 5% SLOPE	
	LOW SIDE	HIGH SIDE	LOW SIDE	HIGH SIDE
0.00 %	5.0	5.0	8.3	8.3
1.00 %	4.5	5.7	6.9	10.4
2.00 %	4.0	6.6	6.0	13.9
3.00 %	3.5	8.3	4.9	22.1
4.00 %	3.0	10.9	4.1	~
5.00 %	2.6	14.9	3.4	~



SECTION A-A



SECTION B-B



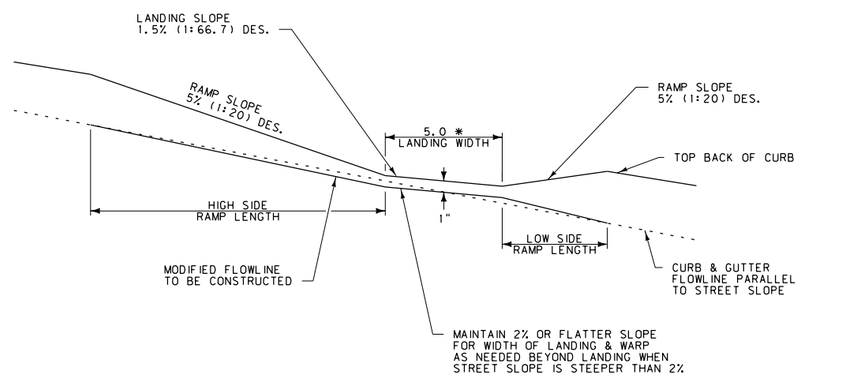
SECTION C-C

NEW CONSTRUCTION REQUIREMENTS:

1. THE MINIMUM WIDTH OF THE LANDING IS 5'.
2. THE DESIRABLE SLOPE FOR THE CURB RAMP IS 5% (1:20) OR FLATTER. THE MAXIMUM CURB RAMP SLOPE IS 8.3% (1:12).
3. THE DESIRABLE CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 1.5% (1:66.7). THE MAXIMUM CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 2% (1:50).
4. PROVIDE TRUNCATED DOMES ON THE BOTTOM 2' OF EACH LANDING AS SHOWN. SEE DTL. DWG. NO. 608-40 FOR TRUNCATED DOMES DETAILS.
5. FOR ADDITIONAL DETAILS, SEE DTL. DWG. NO. 608-30 AND 609-05.

NOTES:

1. ALL DIMENSIONS ARE FEET (FT) UNLESS OTHERWISE NOTED.
2. SEE SIDEWALK SUMMARY FRAME FOR WIDTHS OF SIDEWALK.
3. SEE PLAN & PROFILE SHEETS FOR RADII OF CURB & GUTTER.
4. THE COST OF THE RETAINING WALL IS INCLUDED IN THE UNIT PRICE BID FOR CONCRETE SIDEWALK.



PROFILE

* RAMP LENGTHS ARE FIGURED ASSUMING A 5.0' LANDING WIDTH AT THE TOP BACK OF CURB. WHEN WIDTHS OTHER THAN THIS ARE USED, MAKE THE NECESSARY ADJUSTMENTS TO THE RAMP LENGTHS TO ACHEIVE THE DESIRED SLOPES.

(Typical New Construction Example)

PARALLEL CURB RAMP DETAILS

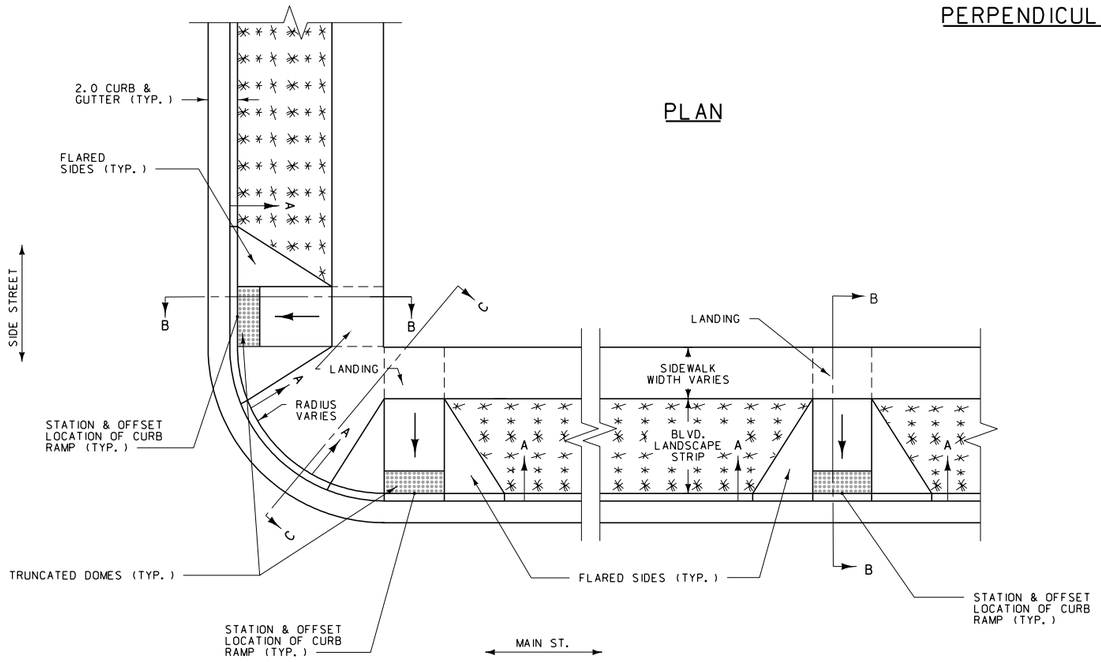
NO SCALE

FIG. 4.4 M-10B

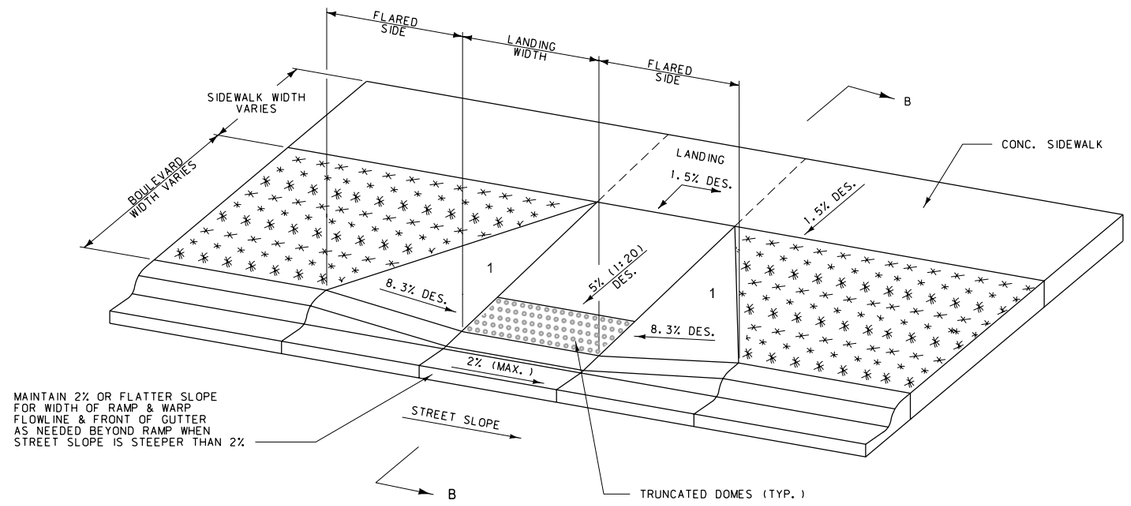
3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete10.dgn	DESIGNED BY	DESIGNER NAME	DATE			
2		7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE			
1		7:38:31 AM CPS-U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION: CSF = 0.9999999 / UPN NUMBER 12345678 — PROJECT NO.: SHEET 999 OF 999

PERPENDICULAR CURB RAMP DETAILS

PLAN

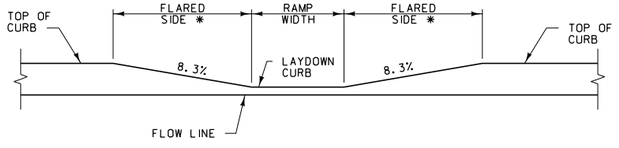


ISOMETRIC



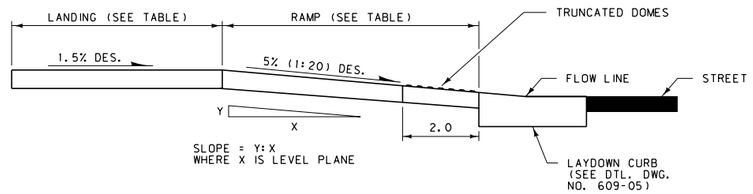
Reminder:

1 *Flared sides can be constructed using concrete or boulevard material.*

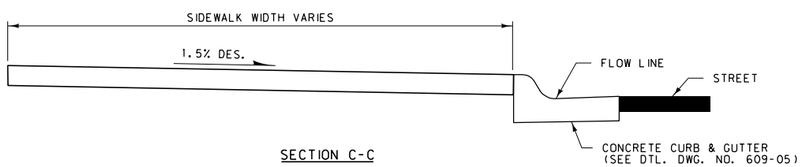


* ADJUST FLARED SIDE LENGTH AS NEEDED TO MAINTAIN DESIRABLE SLOPES

SECTION A-A



SECTION B-B



SECTION C-C

STATION MAIN ST.	OFFSET (FT)	RAMP AND TRUNCATED DOME WIDTH (FT)	RAMP LENGTH AND BLVD WIDTH (FT)	RAMP SLOPES (%)	LANDING LENGTH (FT)
88+55.00	37.4 LT.	5.0	6.0	8.3	7.0
88+65.20	37.4 RT.	5.0	6.0	8.3	7.0
88+72.30	20.2 LT.	5.0	8.0	6.5	5.0
88+82.50	20.2 RT.	5.0	8.0	6.5	5.0
94+27.40	20.2 LT.	5.0	8.0	6.5	5.0
94+27.40	20.2 RT.	5.0	8.0	6.5	5.0
94+44.70	37.4 LT.	8.0	6.0	8.3	7.0
94+44.70	37.4 RT.	5.0	6.0	8.3	7.0
94+79.10	37.4 LT.	8.0	6.0	8.3	7.0
94+79.10	37.4 RT.	5.0	6.0	8.3	7.0
94+96.40	20.2 LT.	5.0	8.0	6.5	5.0
94+96.40	20.2 RT.	5.0	8.0	6.5	5.0
98+07.10	20.2 LT.	5.0	8.0	6.5	5.0
98+14.60	20.2 RT.	5.0	8.0	6.5	5.0
98+24.40	37.4 LT.	5.0	6.0	8.3	5.0
98+31.90	37.4 RT.	5.0	6.0	8.3	5.0

NEW CONSTRUCTION REQUIREMENTS:

1. THE MINIMUM LENGTH OF THE LANDING IS 5'.
2. THE DESIRABLE SLOPE FOR THE CURB RAMP IS 5% (1:20) OR FLATTER. THE MAXIMUM CURB RAMP SLOPE IS 8.3% (1:12).
3. THE DESIRABLE CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 1.5% (1:66.7). THE MAXIMUM CROSS SLOPE OF THE SIDEWALK, RAMP, OR LANDING IS 2% (1:50).
4. THE DESIRABLE SLOPE OF THE FLARED SIDE OF THE CURB RAMP IS 8.3% (1:12) OF FLATTER. THE MAXIMUM FLARED SIDE SLOPE IS 10% (1:10).
5. PROVIDE TRUNCATED DOMES ON THE BOTTOM 2' OF EACH RAMP AS SHOWN. SEE DTL. DWG. NO. 608-40 FOR TRUNCATED DOMES DETAILS.
6. FOR ADDITIONAL DETAILS, SEE DTL. DWG. NO. 608-25, 608-35, AND 609-05.

NOTES:

1. ALL DIMENSIONS ARE FEET (FT) UNLESS OTHERWISE NOTED.
2. SEE SIDEWALK SUMMARY FRAME FOR WIDTHS OF SIDEWALK.
3. SEE PLAN & PROFILE SHEETS AND GEOMETRIC DETAILS FOR RADII OF CURB & GUTTER.

(Typical New Construction Example)

PERPENDICULAR CURB RAMP DETAILS

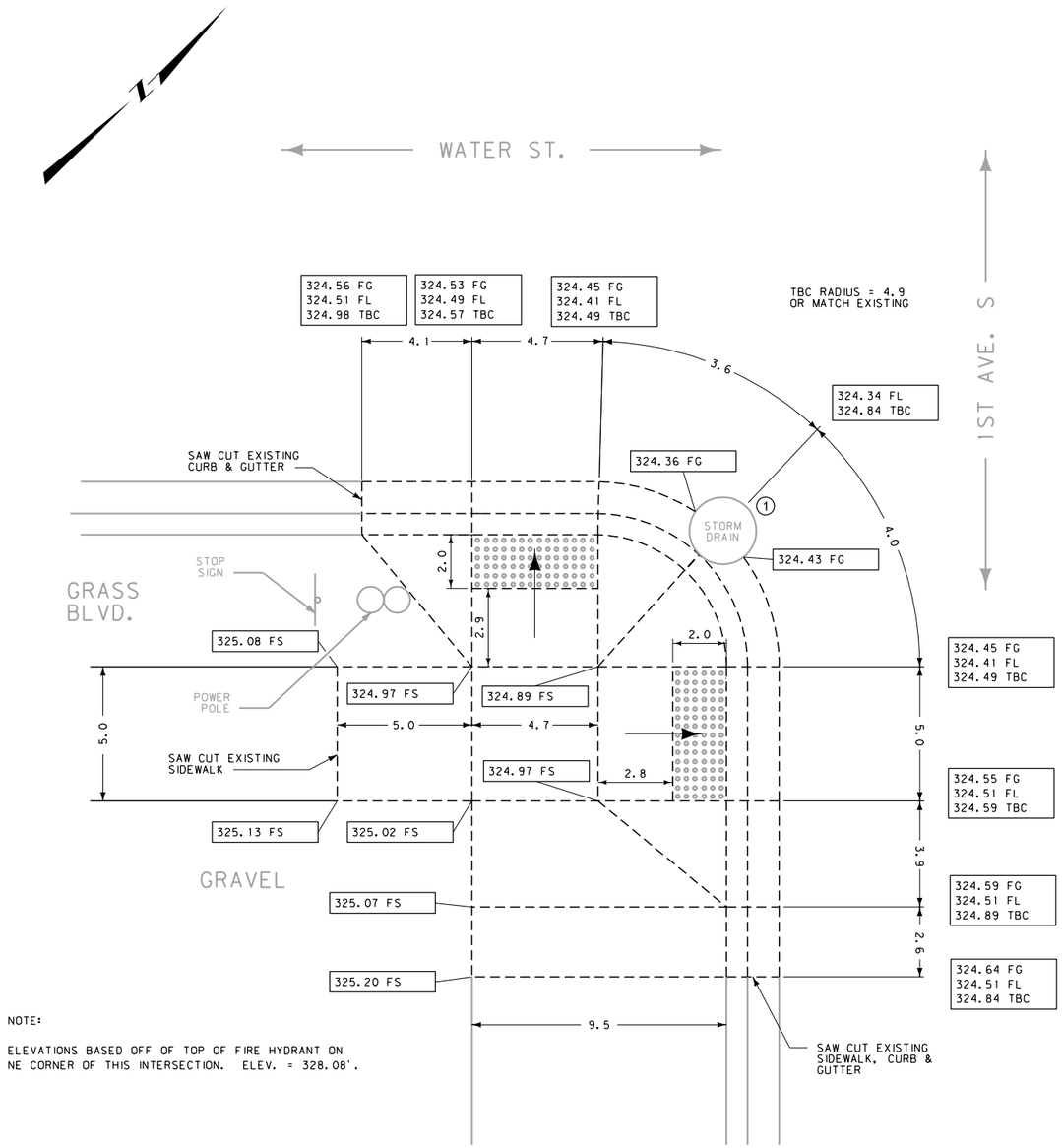
NO SCALE

FIG. 4.4 M-10C

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete10.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*		*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			CSF = 0.9999999 / UPN NUMBER 12345678	SHEET 999 OF 999
1		7:38:33 AM CPS-U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)			

07/18/2008
Highways & Engineering Division

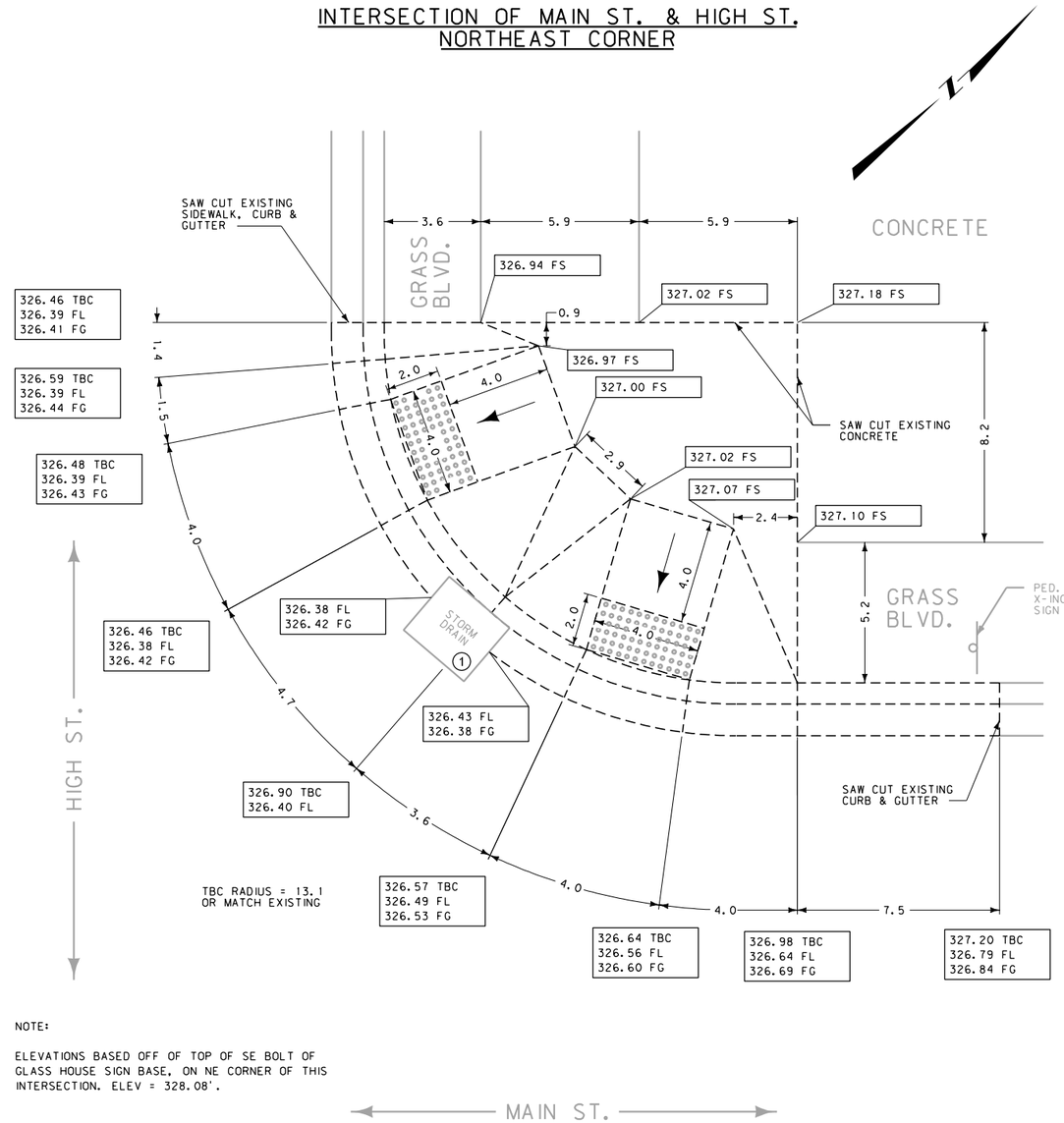
INTERSECTION OF 1ST AVE. S & WATER ST.
SOUTHWEST CORNER



NOTE:

ELEVATIONS BASED OFF OF TOP OF FIRE HYDRANT ON NE CORNER OF THIS INTERSECTION. ELEV. = 328.08'.

INTERSECTION OF MAIN ST. & HIGH ST.
NORTHEAST CORNER



NOTE:

ELEVATIONS BASED OFF OF TOP OF SE BOLT OF GLASS HOUSE SIGN BASE, ON NE CORNER OF THIS INTERSECTION. ELEV = 328.08'.

LEGEND

FS = FINISHED SURFACE ELEV.
TBC = TOP BACK OF CURB ELEV.
FL = FLOW LINE ELEV.
TRW = TOP OF RETAINING WALL ELEV.
FG = FRONT OF GUTTER ELEV.

TRUNCATED DOMES

PROVIDE TRUNCATED DOMES ON THE BOTTOM 2' OF EACH RAMP AS SHOWN. SEE DTL. DWG. NO. 608-40 FOR TRUNCATED DOMES DETAILS.

NOTES:

ALL DIMENSIONS AND ELEVATIONS ARE LINEAR FEET UNLESS OTHERWISE NOTED.

ALL CURB AND GUTTER DIMENSIONS ARE ALONG TBC.

CONTRACTOR VERIFY ELEVATIONS IN THE FIELD PRIOR TO CONSTRUCTION.

MATCH EXISTING ELEVATIONS AT ALL JOINTS BETWEEN NEW AND EXISTING CONCRETE. ELEVATIONS SHOWN AT MATCH LINE LOCATIONS ARE APPROXIMATE.

SEE DETAILED DRAWINGS FOR STANDARD SIDEWALK, CURB & GUTTER AND RETAINING WALL DETAILS.

Curb Ramp Detail Reminder:

(1) *Curb ramps must be designed such that there is not a conflict with existing drainage structures (i.e. storm drains, curb inlets, etc.).*

(Typical Alteration to Existing Facility Example)

CURB RAMP DETAILS

NO SCALE

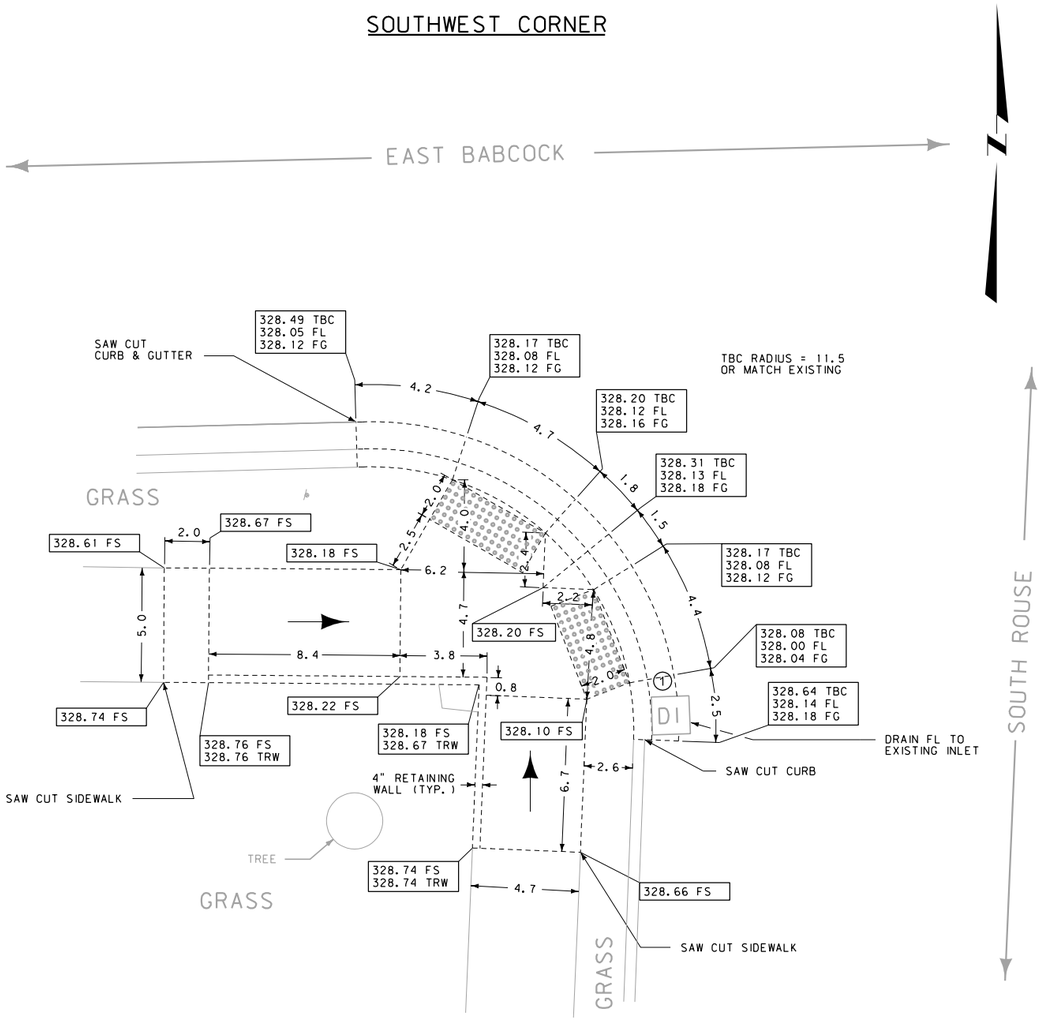
FIG. 4.4 M-11

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete11.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*	COUNTY NAME(S)	*SAMPLE PLAN SHEET (U.S. Customary Units)*
1		7:38:37 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*		

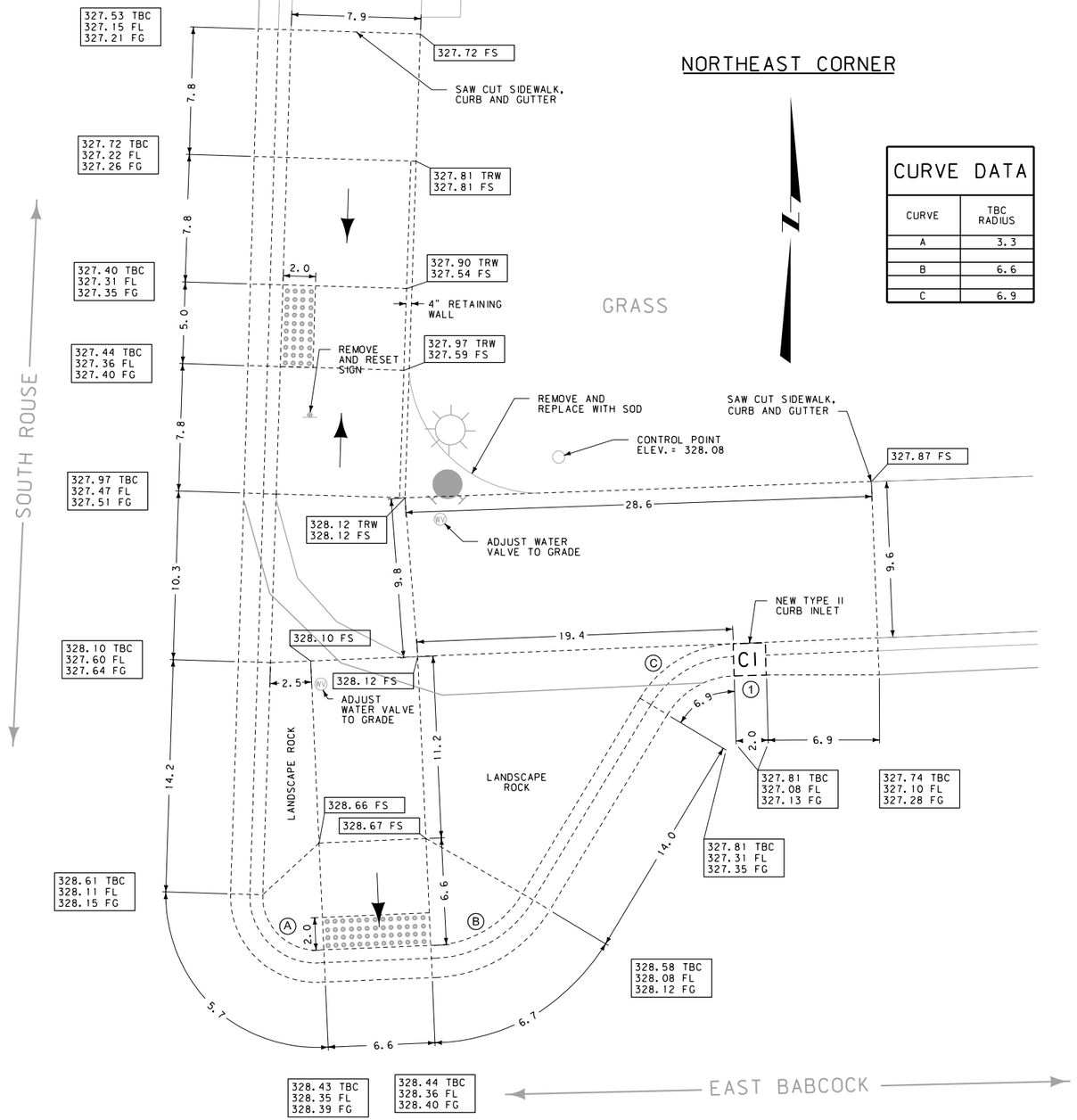
PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

07/18/2008
Highways & Engineering Division

SOUTHWEST CORNER



NORTHEAST CORNER



CURVE DATA

CURVE	TBC RADIUS
A	3.3
B	6.6
C	6.9

LEGEND

FS = FINISHED SURFACE ELEV.
TBC = TOP BACK OF CURB ELEV.
FL = FLOW LINE ELEV.
TRW = TOP OF RETAINING WALL ELEV.
FG = FRONT OF GUTTER ELEV.

TRUNCATED DOMES

PROVIDE TRUNCATED DOMES ON THE BOTTOM 2' OF EACH RAMP AS SHOWN. SEE DTL. DWG. NO. 608-40 FOR TRUNCATED DOMES DETAILS.

NOTES:

ALL DIMENSIONS AND ELEVATIONS ARE LINEAR FEET UNLESS OTHERWISE NOTED.

ELEVATIONS BASED OFF OF ALUMINUM CAP LOCATED NORTHEAST CORNER OF THIS INTERSECTION. ELEV. = 328.08'.

MATCH EXISTING ELEVATIONS AT ALL JOINTS BETWEEN NEW AND EXISTING CONCRETE. ELEVATIONS SHOWN AT MATCH LINE LOACTIONS ARE APPROXIMATE.

SEE DETAILED DRAWINGS FOR STANDARD SIDEWALK, CURB & GUTTER AND RETAINING WALL DETAILS.

ALL CURB AND GUTTER DIMENSIONS ARE ALONG TBC.

CONTRACTOR VERIFY ELEVATIONS IN THE FIELD PRIOR TO CONSTRUCTION.

Curb Ramp Detail Reminder:

(1) Curb ramps must be designed such that there is not a conflict with existing drainage structures (i.e. storm drains, curb inlets, etc.).

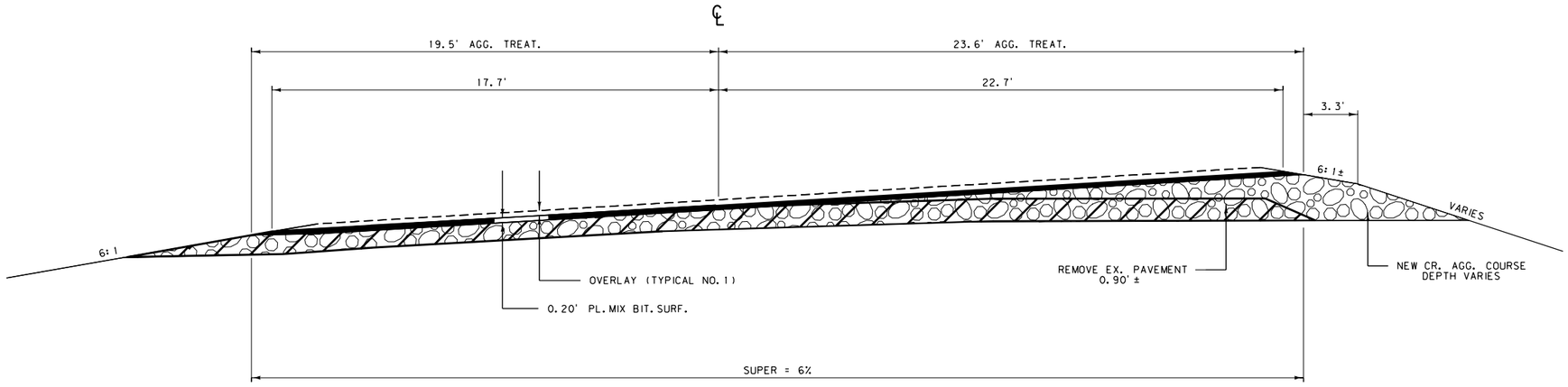
(Typical Alteration to Existing Facility Example)

INTERSECTION OF E. BABCOCK & S. ROUSE CURB RAMP DETAILS

NO SCALE

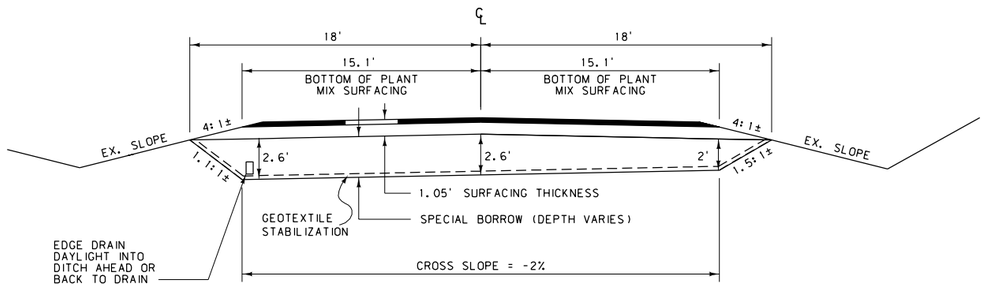
FIG. 4.4 M-12

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrddete12.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*			CSF = 0.9999999 / UPN NUMBER 12345678	SHEET 999 OF 999
1		7:38:42 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)			

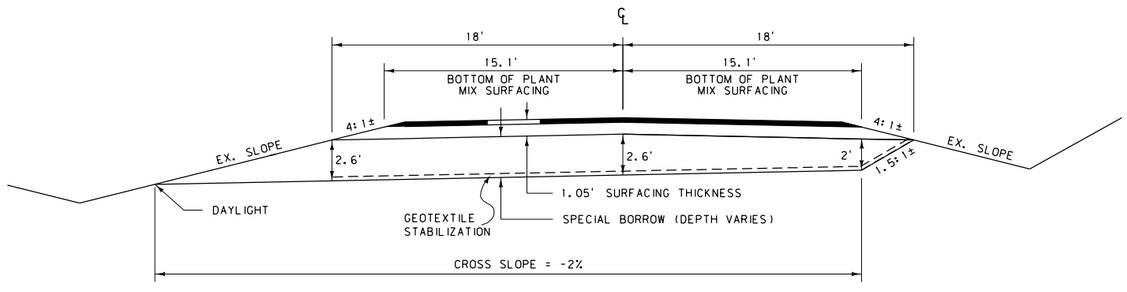


QUANTITIES*						
UNIT	AGGREGATE		UNIT	BIT. MATERIAL	AGG. TREAT.	
	PLANT MIX	CR. AGG. COURSE		ASPHALT CEMENT	DUST PALLIATIVE	AGGREGATE TACK
AREA square feet	8.35	57.69	square yards PER STATION		479	479
cubic yards PER STATION	30.9	213.7	tons PER STATION	3.58	0.78	
tons PER STATION	59.6		gallons PER STATION			24.0

*OVERLAY QUANTITIES NOT INCLUDED. SEE TYPICAL NO. 1 FOR OVERLAY QUANTITIES



123+00.00 TO 134+48.00
311+65.00 TO 316+55.00
409+60.00 TO 414+20.00



134+48.00 TO 145+95.00
294+40.00 TO 311+65.00

RE-SUPER CURVE
STA. 15+81.94
TO STA. 39+59.43 E.B.

NO SCALE

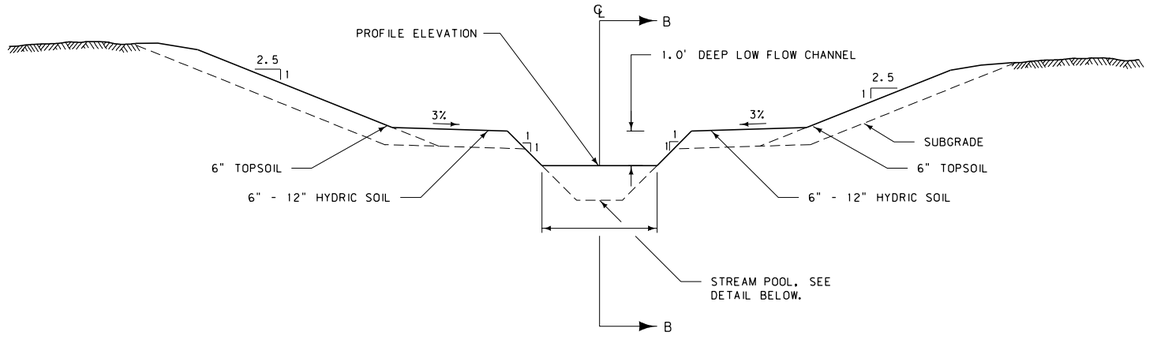
DIGOUT DETAILS

NO SCALE

FIG 4.4 M-13

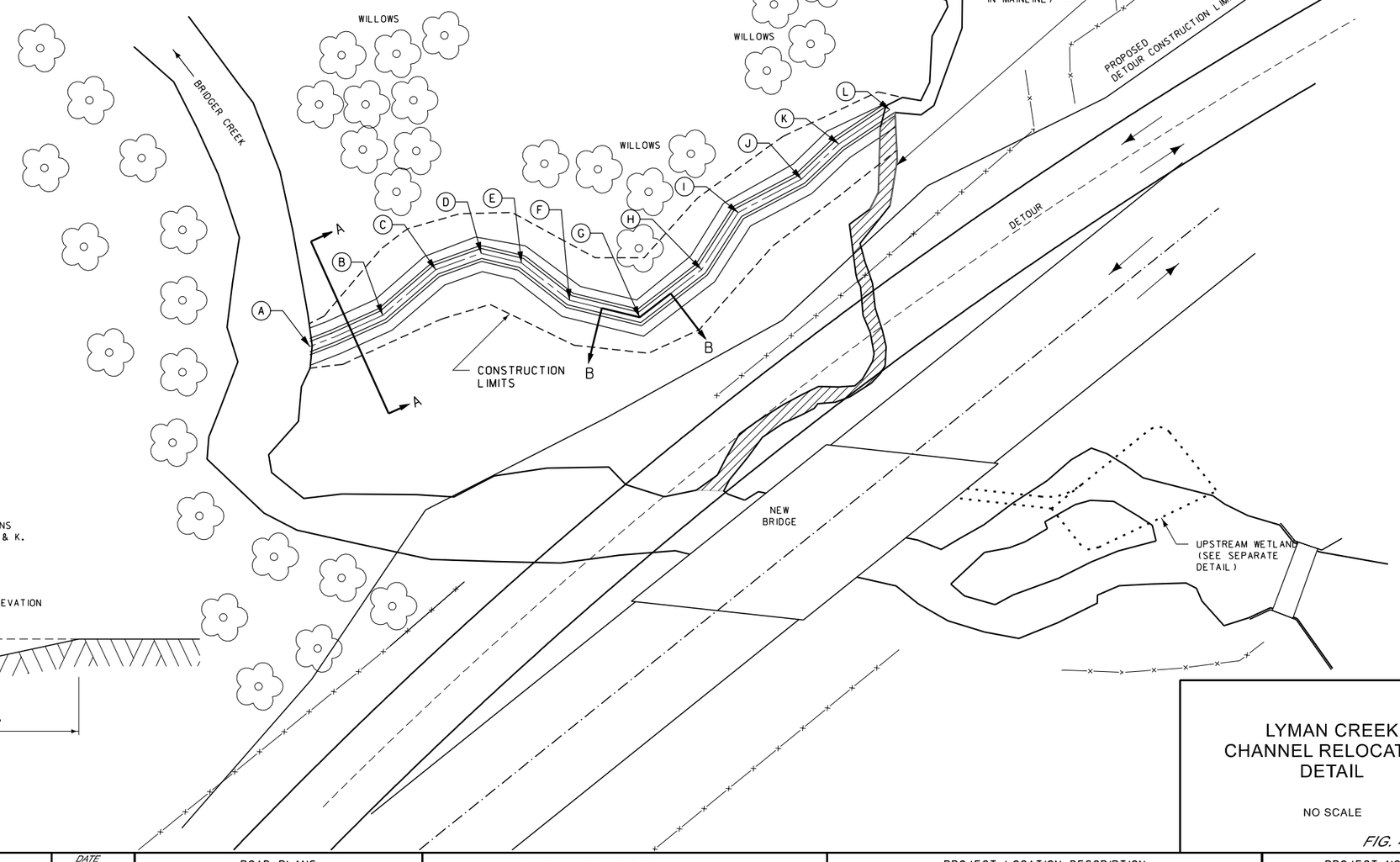
3	MDT serving you with pride	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete13.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2			7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE			CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999
1			7:38:47 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)				

CHANNEL RELOCATION
TYPICAL SECTION
SECTION A - A



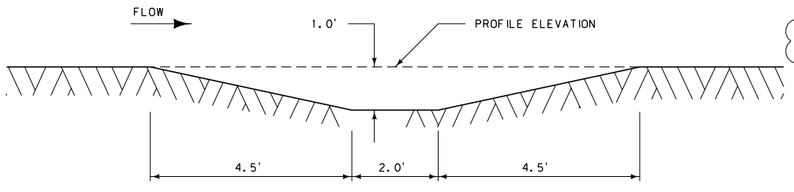
CHANNEL CENTERLINE COORDINATE TABLE			
POINT	PROFILE ELEVATION	N OR Y COORDINATE	E OR X COORDINATE
A	4,790.16	534,658.14	1,585,591.08
B	4,790.85	534,668.77	1,585,615.75
C	4,791.47	534,684.19	1,585,633.73
D	4,791.90	534,689.73	1,585,649.15
E	4,792.26	534,686.52	1,585,662.76
F	4,792.78	534,673.82	1,585,679.10
G	4,793.41	534,668.08	1,585,702.82
H	4,794.09	534,684.19	1,585,723.79
I	4,794.69	534,703.54	1,585,736.25
J	4,795.31	534,714.86	1,585,757.64
K	4,795.77	534,726.84	1,585,770.34
L	4,796.29	534,738.39	1,585,787.60

LYMAN CREEK CHANNEL RELOCATION
LENGTH - REMOVED = 166.0'
LENGTH - NEW = 237.9'
EXISTING SLOPE = 2.6%
NEW SLOPE = 2.6%



STREAM POOL DETAIL
SECTION B - B

CONSTRUCT POOL TO APPROXIMATE DIMENSIONS
SHOWN BELOW AT POINTS B, C, D, E, F, G, H, I, J, & K.



LYMAN CREEK CHANNEL RELOCATION DETAIL

NO SCALE

FIG. 4.4 M-14

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrddete14.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION		PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE					
1		7:38:51 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME (S)		CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

FOR MDT INTERNAL DISTRIBUTION ONLY

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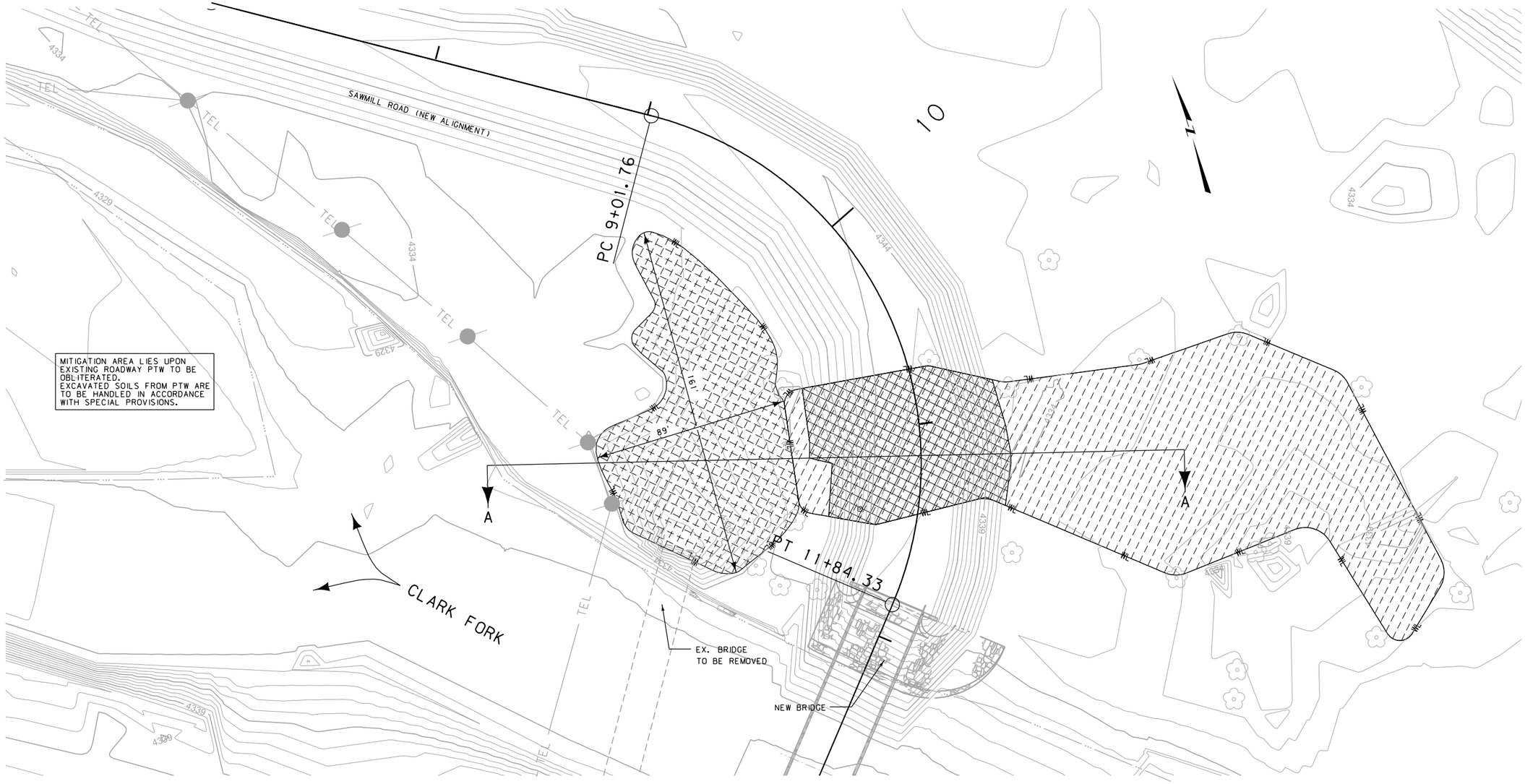


CLARK FORK ON SAWMILL ROAD

MITIGATED WETLANDS

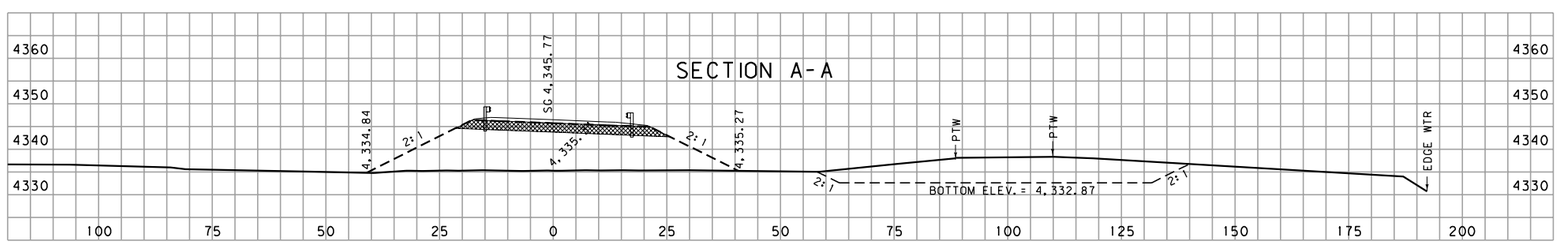
AREA = 0.210 acres

IMPACTED WETLANDS

AREA = 0.124 acres

WETLANDS

AREA = 0.507 acres



CONTOUR INTERVAL = 1.0'

WETLAND MITIGATION
POWELL COUNTY BRIDGES
CLARK FK/SAWMILL RD
DETAIL

NO SCALE

FIG 4.4 M-15

3	MONTANA DEPARTMENT OF TRANSPORTATION serving you with pride	c:\dgn\rmanrddete15.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)*	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*				
1		7:38:57 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME(S)		CSF = 0.9999999 UPN NUMBER 12345678	SHEET 999 OF 999

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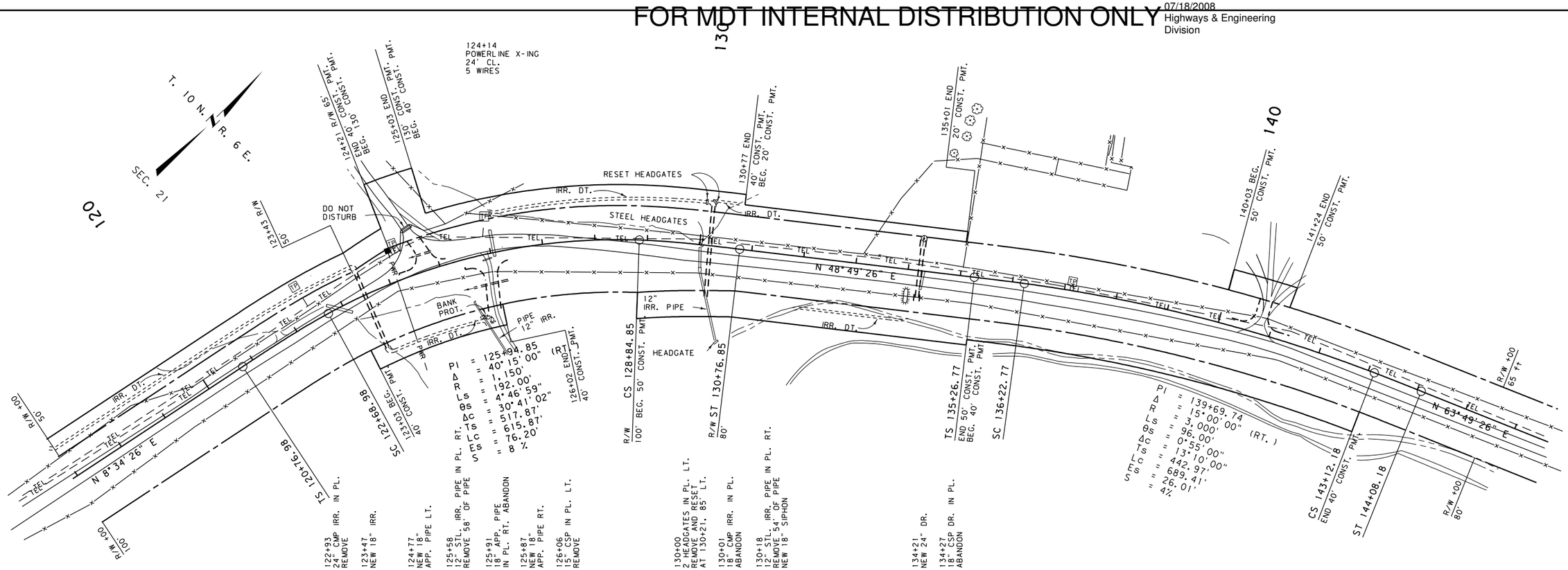

FIG 4.4 N-1

3	MDT serving you with pride	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdplpe01.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)
2			7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE		
1			7:39:01 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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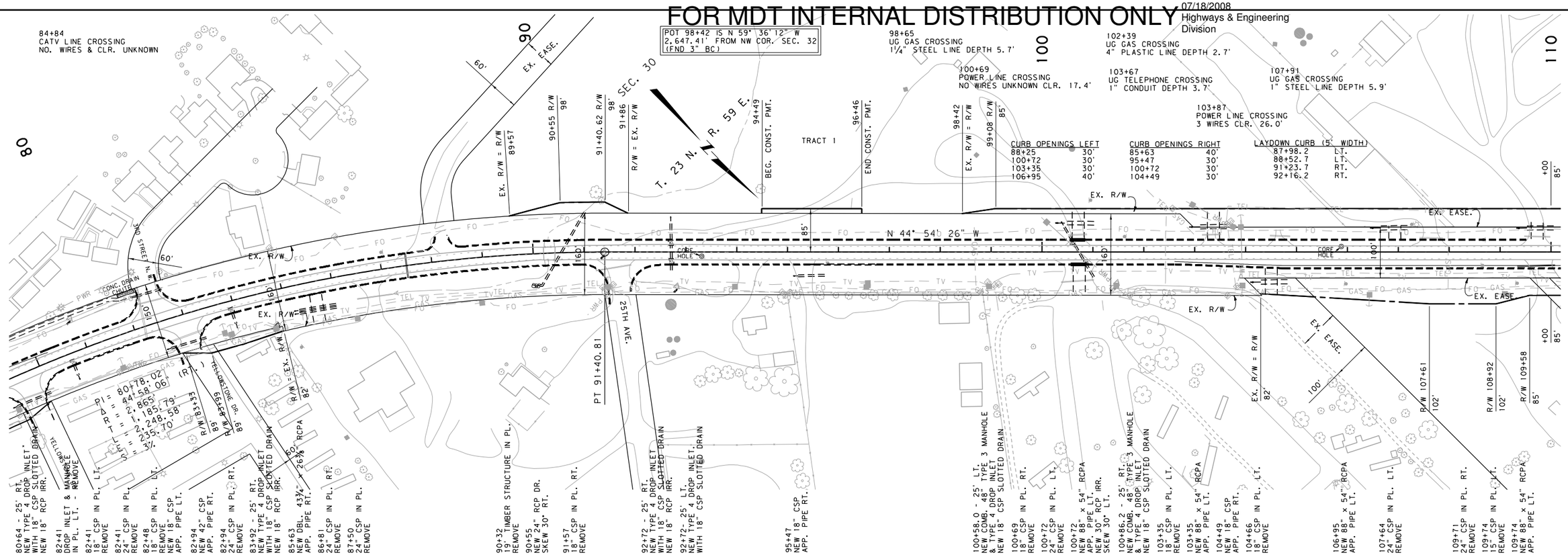

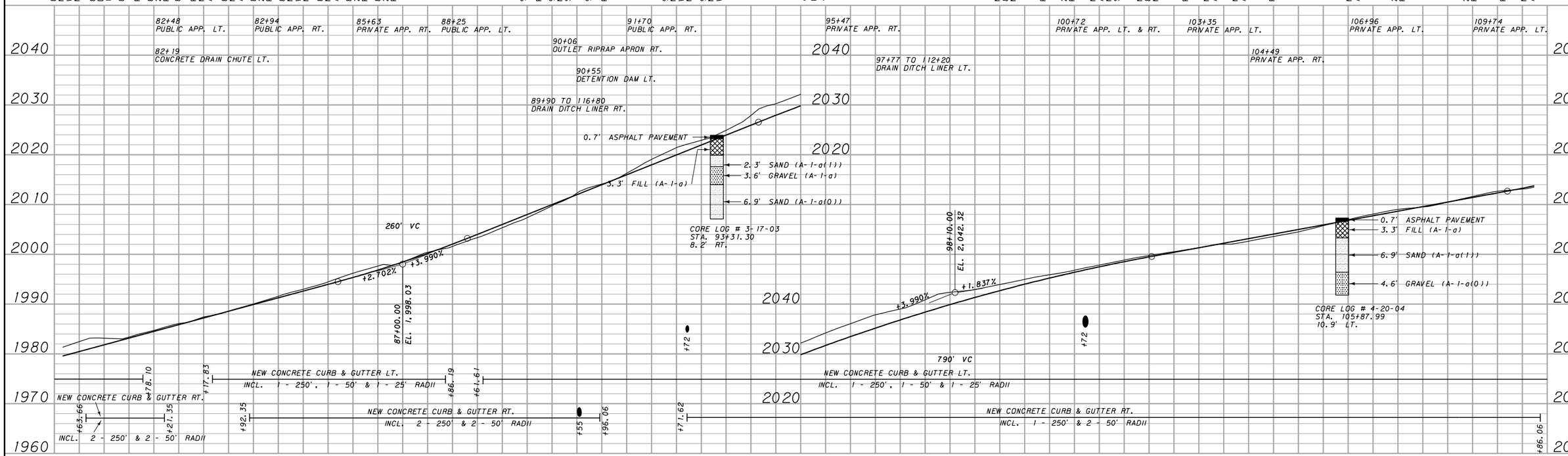

FIG. 4.4 N-2

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdplpe04.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)
2		7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE		
1		7:39:06 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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CURB OPENINGS LEFT

177+21.5	13.1'
178+08.4	13.1'
178+60.9	19.7'
180+85.6	13.1'
181+51.2 (JOINT)	29.5'
182+98.9 (JOINT)	32.8'
184+28.5 (JOINT)	29.5'
185+46.6	13.1'
186+20.4	13.1'
188+73.0	13.1'

CURB OPENINGS RIGHT

180+18.4, 49.9 RT-	7.2'
181+03.7	29.5'
181+61.1	13.1'
182+16.9	13.1'
182+54.6	13.1'
183+44.8	13.1'
183+84.2	13.1'
184+36.7	13.1'
185+31.8	13.1'
185+72.8	29.5'

CURB RAMPS

176+55.8 LT.	176+67.3 LT.
176+55.8 RT.	176+67.3 RT.
179+60.3 LT.	179+71.8 LT.
179+60.3 RT.	179+71.8 RT.
180+21.7 LT.	180+33.1 LT.
180+21.7 RT.	180+33.1 RT.
187+20.5 LT.	187+32.0 LT.
187+20.1 RT.	187+32.0 RT.
187+81.5 LT.	187+93.3 LT.
187+81.5 RT.	187+93.3 RT.

ABANDON WELLS

175+62 LT.
180+91 RT.
181+53 LT.
182+32 RT.

UTILITY CROSSINGS

176+39.8	8" SAN. X-ING CL. - 4.9' DEEP
176+56.5	6" WATERLINE X-ING CL. - 5.6' DEEP
176+14.8	POWER X-ING CL. - 19.4' CLEAR
179+57.0	TEL X-ING CL. - 2.6' DEEP
180+05.6	6" WATERLINE X-ING CL. 5.2' DEEP
180+11.5	2" NG. X-ING CL. - 2.6' DEEP
187+33.6	POWER X-ING CL. - 30.2' CLEAR
187+36.5	TEL X-ING CL. 2.6' DEEP
187+41.5	2" NG. X-ING CL. - 2.6' DEEP
187+46.4	6" WATERLINE X-ING CL. - 5.6' DEEP
187+56.6	POWER X-ING CL. - 21.0' CLEAR

N 56° 05' 12" W
N 56° 05' 13" W
N 34° 41' 32" E
N 33° 54' 48" E
POT 176+52.92 = 0° 46' 44"
175
180
185
WOODARD AVENUE
WILLOW STREET
CHURCH STREET
SCHOOL STREET
ORIGINAL TOWN OF ABSAROKEE BLOCK 6
ORIGINAL TOWN OF ABSAROKEE BLOCK 7
FIRST ADDITION TO THE CITY OF ABSAROKEE SCHOOL BLOCK BLOCK 8
RELOCATED LOT 7A C/S 261468
RELOCATED LOT 8A C/S 261468
EX. R/W
60'
18" STM
24" CMP
B-1 CORE HOLE
DH 27 CORE HOLE
DH 26 CORE HOLE
B-2 CORE HOLE
176+77.13 25' R
179+50.52 25' R
180+43.04 25' R
187+10.50 25' R
188+03.02 25' R
179+96.78 (MAIN) = 32+80.84 (SCHOOL)
187+56.76 (MAIN) = 32+80.84 (CHURCH)
188+58.27 CONST. PMT.
BEG. 7' CONST.
T. 4 S., R. 18 E., SEC. -

STA. 176+52.92
BEG. STPP 78-2(20)33

PLANTER/BENCH

179+39.67 LT. 179+39.67 RT.
180+53.87 LT. 180+53.87 RT.
186+99.67 LT. 186+99.67 RT.
188+13.88 LT. 188+13.88 RT.

RETAINING WALL

178+77 TO 178+97, LT.
181+66 TO 181+76, LT.
184+45 TO 184+55, LT.
186+19 TO 187+14, RT.

ADJUST MANHOLE IN PLACE

176+39.4 - 35.4' LT.

CONTAMINATED SOIL REMOVAL

180+45 RT.

TREE GRATES

187+66 TO 197+51, LT. & RT.

Reminder:

Grey scale of survey elements may be used on a case by case basis to improve readability of notes & design features. Do not use as a general rule on all projects.

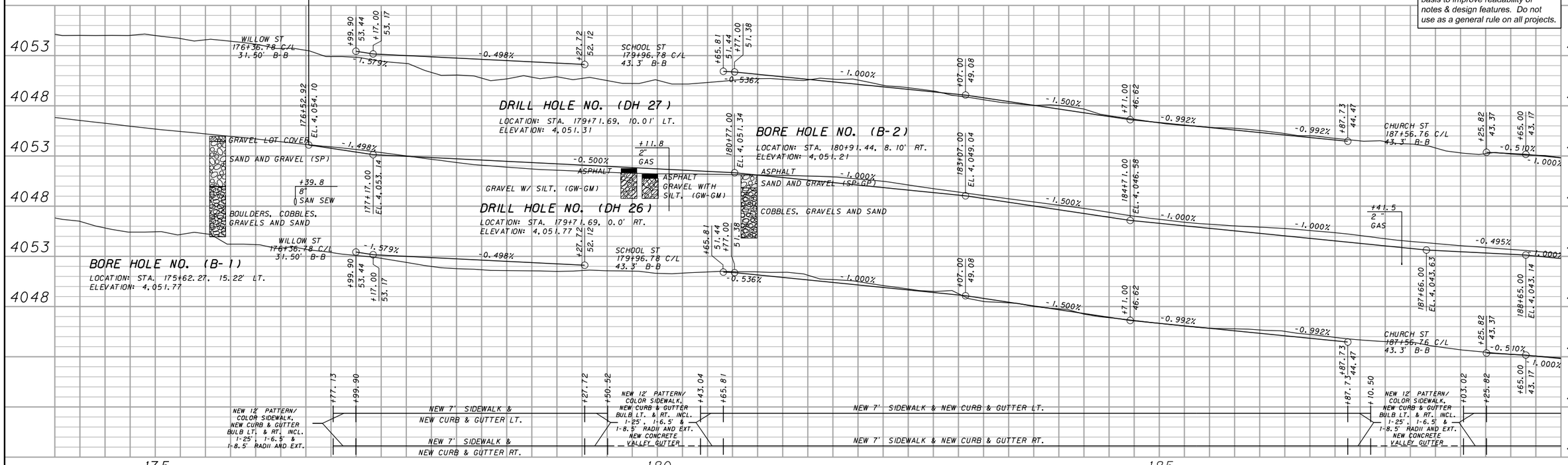

FIG. 4.4 O

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdplpe02.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*	COUNTY NAME (S)	*SAMPLE PLAN SHEET (U.S. Customary Units)*
1		7:39:11 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*		

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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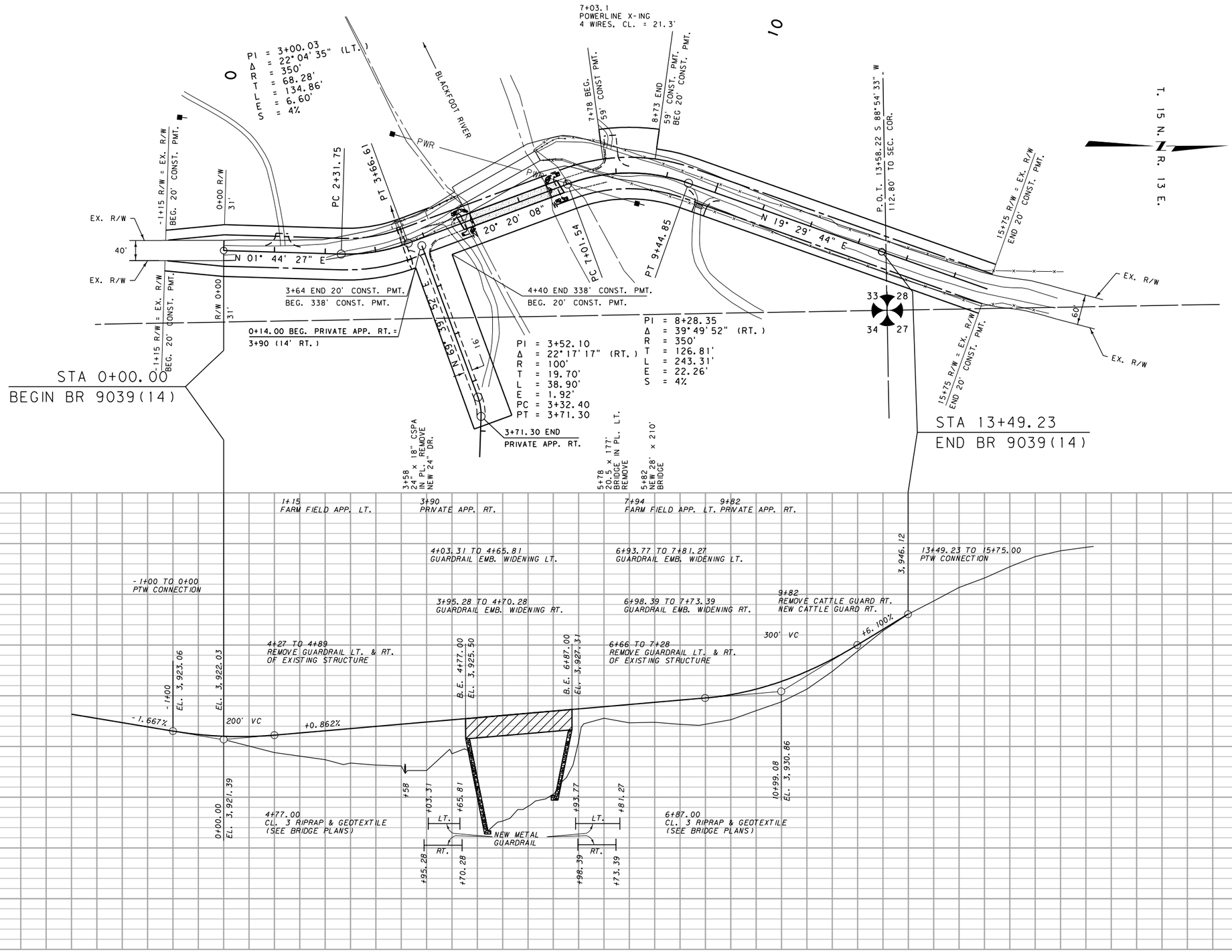

FIG. 4.4 P

3	MDT serving you with pride — MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdplpe03.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2		7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE			CSF = 0.9999999 / UPN NUMBER 12345678	SHEET 999 OF 999
1		7:39:16 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME(S)			

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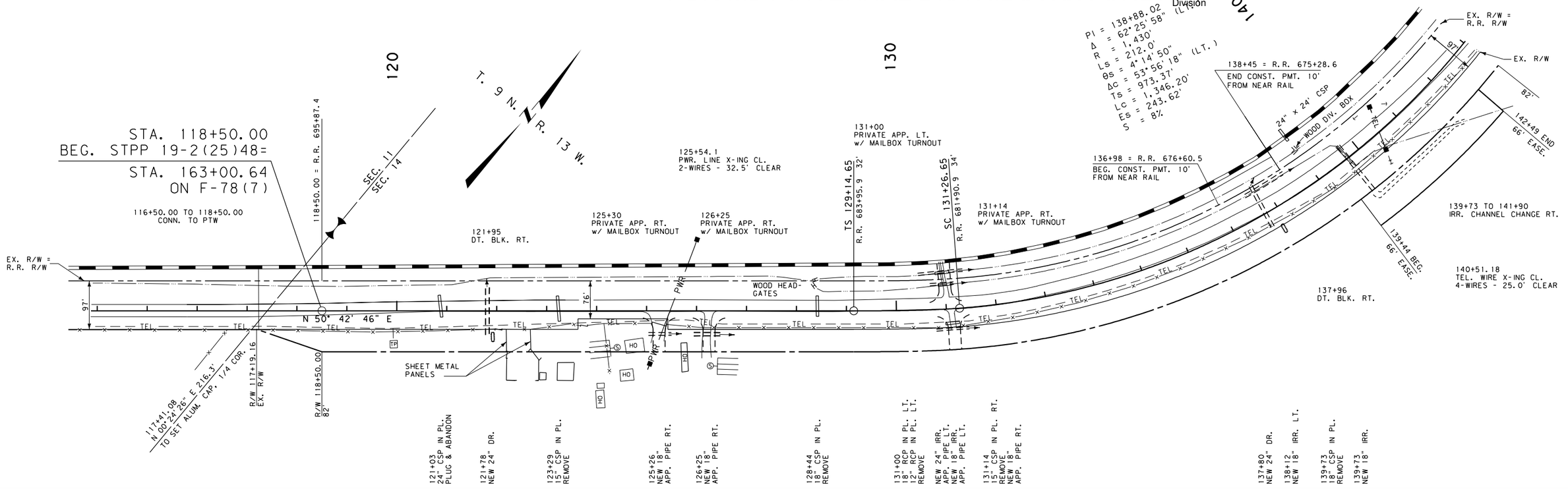

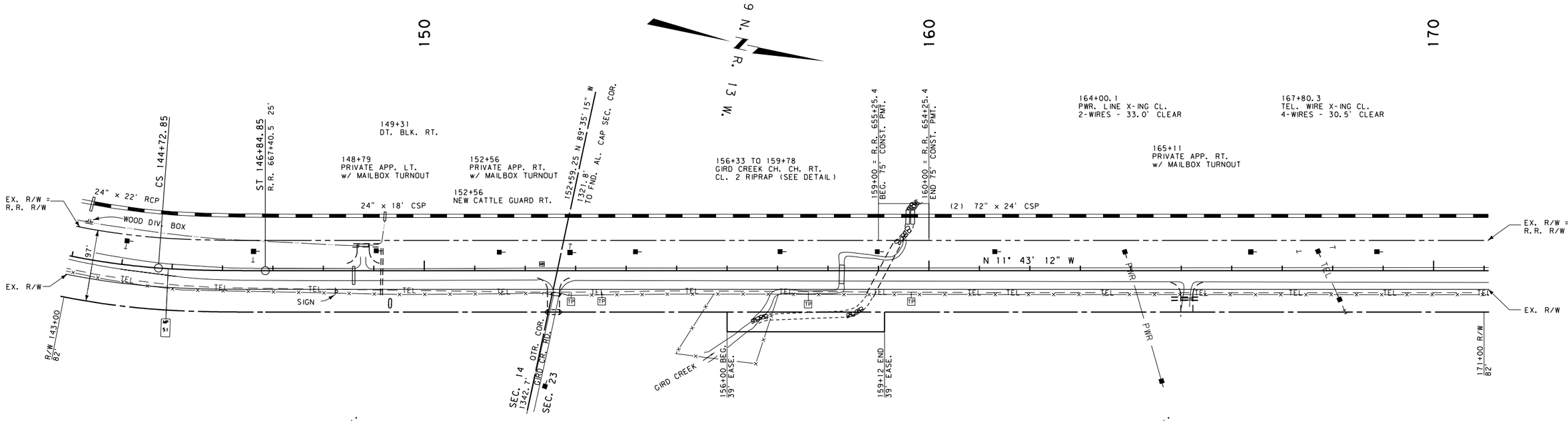

FIG. 4.4 Q

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdpln01.dgn	DESIGNED BY	*DESIGNER NAME*	*DATE*	ROAD PLANS	*MONTANA ROAD DESIGN MANUAL*
2	serving you with pride	7/18/2008	REVIEWED BY	*SUPERVISOR NAME*	*DATE*		*SAMPLE PLAN SHEET (U.S. Customary Units)*
1		7:39:21 AM CPS - U1861	CHECKED BY	*CHECKER NAME*	*DATE*	COUNTY NAME (S)	

PROJECT LOCATION DESCRIPTION		PROJECT NO.
CSF = 0.9999999	UPN NUMBER 12345678	SHEET 999 OF 999

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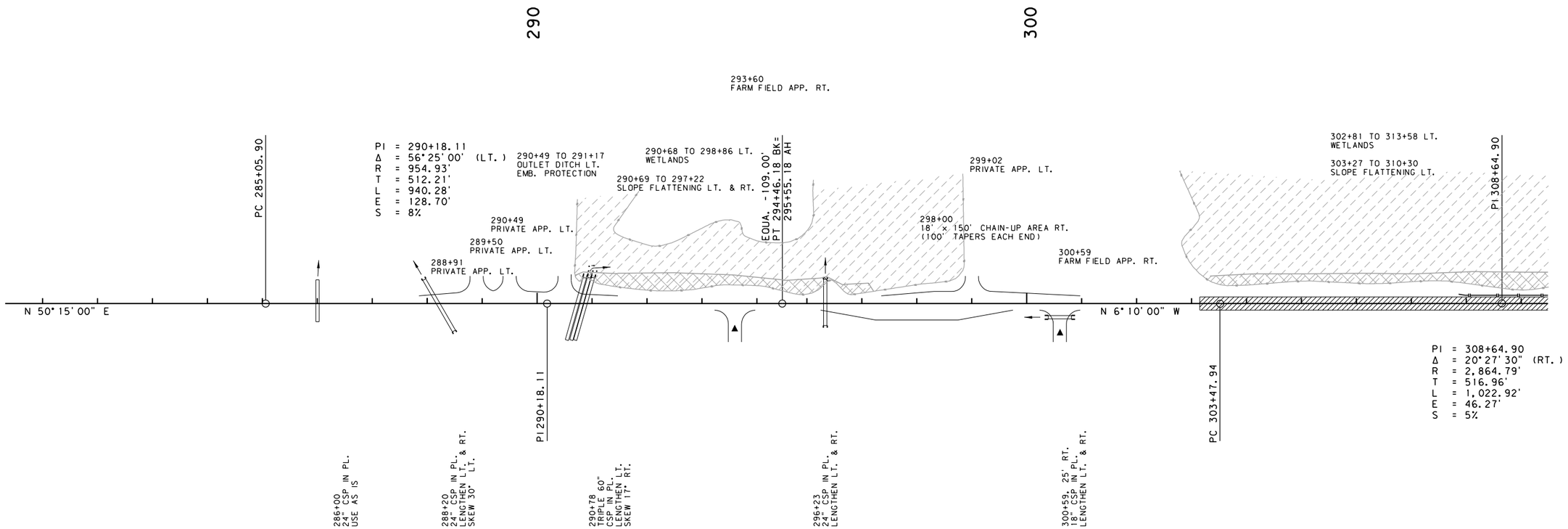

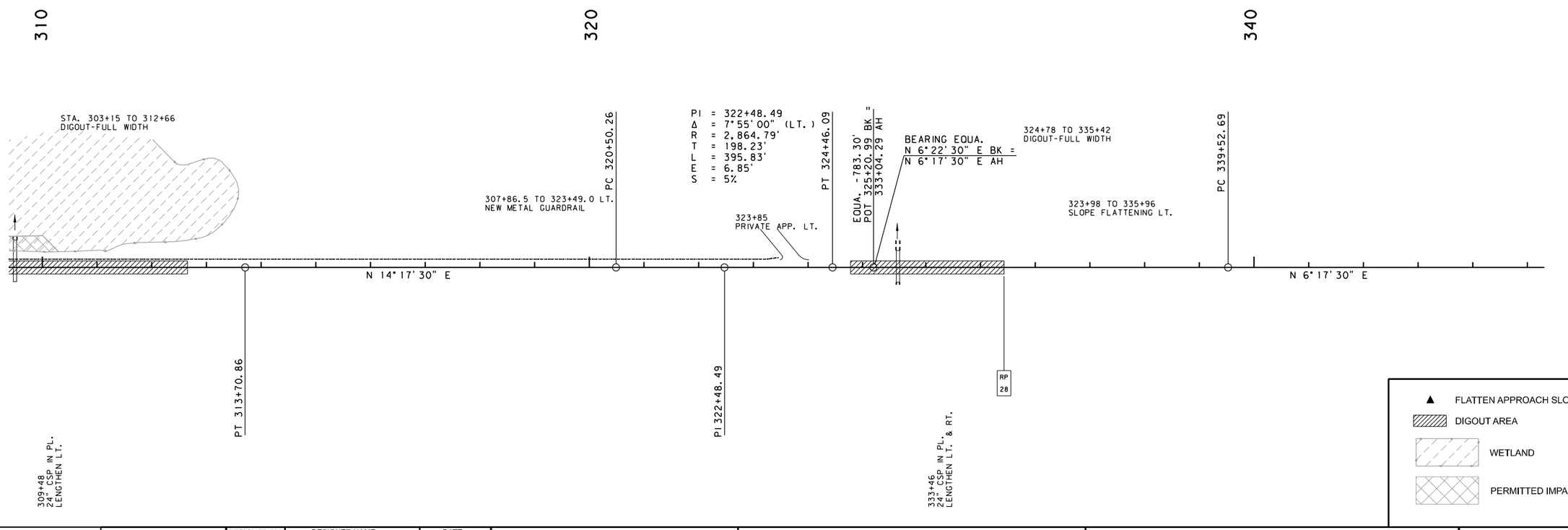

FIG. 4.4 R

3	MONTANA DEPARTMENT OF TRANSPORTATION	c:\dgn\rmanrdpln02.dgn	DESIGNED BY	DESIGNER NAME	DATE	ROAD PLANS	MONTANA ROAD DESIGN MANUAL SAMPLE PLAN SHEET (U.S. Customary Units)	PROJECT LOCATION DESCRIPTION	PROJECT NO.
2	serving you with pride	7/18/2008	REVIEWED BY	SUPERVISOR NAME	DATE				
1		7:39:26 AM CPS - U1861	CHECKED BY	CHECKER NAME	DATE	COUNTY NAME (S)		CSF = 0.9999999 / UPN NUMBER 12345678	SHEET 999 OF 999