PLANS

NOT

TO

SCALE

INDEX OF SHEETS

1929 Recon.

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MONT.	169		1	13

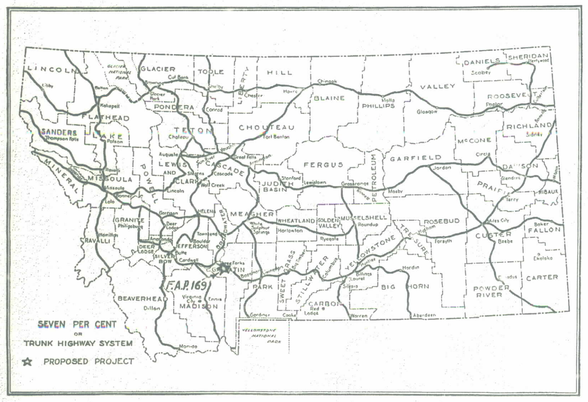
PLANS COMPLETED AUG. 13, 1929

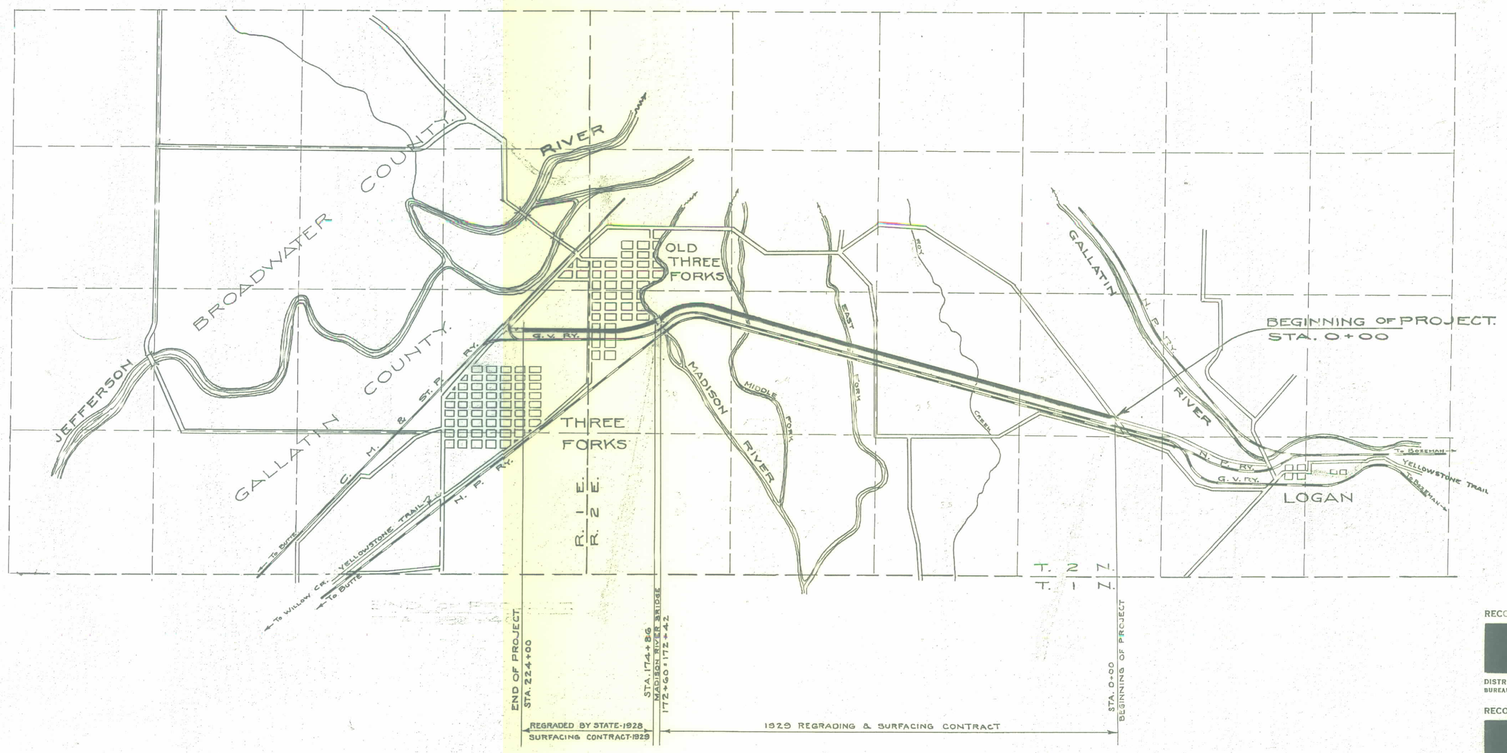
STATE OF MONTANA
STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED
FEDERAL AID PROJECT NO. 169
THREE FORKS-CARPENTER ROAD
GALLATIN COUNTY
LENGTH 4.244 MILES

SCALES

HORIZONTAL: 1 Inch=100 Feet
VERTICAL: 1 Inch= 10 Feet
CROSS SECTIONS-HOR. & VERT.: 1 Inch= 10 Feet





CONVENTIONAL SIGNS

State and National Line
County Line
City, Village or Borough Line
Township Line
Section Line
Reservation Line
Fence Line
Guard Rail
Unfenced Property
Right of Way Line
" " " " Fenced
Traveled Way
Railroads
Retaining Walls
Base or Survey Line
Levee
Culverts (IRRIGATION / DRAINAGE)
Drop Inlet
Trolley Pole
Power Pole
Telephone or Telegraph Pole
Marsh
Ditch
Rip Rap
Bridge
Proposed New Culvert (Profile)

RECOMMENDED FOR APPROVAL

DISTRICT ENGINEER, DISTRICT No. 1
BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL

DEPUTY CHIEF ENGINEER
BUREAU OF PUBLIC ROADS

APPROVED

STATE HIGHWAY ENGINEER

APPROVED

CHIEF ENGINEER
BUREAU OF PUBLIC ROADS

F-169

PRINTED ON "PERMIT" TRACING CLOTH

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MONT.	169-Rec.		2	13

SUMMARY

LENGTH

	0+00 to 172+60	172+60 to 224+00	TOTAL
LENGTH OF ROADWAY	16940.0 FT.= 3.208 MILES	4,907.1 FT. = 0.930 MILES	21,847.1 FT. = 4.138 MILES
LENGTH OF NON PARTICIPATING BRIDGES	0.0 FT.= 0.000 MILES	NONE	NONE
LENGTH OF PARTICIPATING BRIDGES	320.0 FT.= 0.061 MILES	244 FT. = 0.045 MILES	564 FT. = 0.106 MILES
TOTAL LENGTH OF PROJECT	17,260. FT= 3.269 MILES	5,151.1 FT. = 0.975 MILES	22,411.1 FT. = 4.244 MILES

-NOTES-

GRADE:- SEE TYPICAL SECTION FOR RELATION OF SUB GRADE TO PROFILE GRADE.

EMBANKMENT:- EMBANKMENT QUANTITIES SHOWN ON PLANS INCLUDE SHRINKAGE.

SHRINKAGE:- A VARIABLE SHRINKAGE FACTOR WAS USED AS FOLLOWS 00 TO 100 CU.YDS. STA. 20% 100 TO 200 CU.YDS. PER. STA. 15% 200 TO 500 CU.YDS. PER. STA. 10% OVER 500 CU.YDS. PER. STA. 5%

OVERHAUL:- FREE HAUL 500 FEET.

BORROW:- BORROW PITS OR SOURCE OF BORROW WILL BE DESIGNATED BY THE ENGINEER.

GUARD RAIL:- STANDARD GUARD RAIL WILL BE ERECTED ON ALL DANGEROUS CURVES AND FILLS AS DESIGNATED BY THE ENGINEER.

SUPER ELEVATION:- ALL CURVES OF 3° OR OVER WILL BE SUPER ELEVATED.

GRADING

STATION	CUBIC YARDS				OVER HAUL STA. YDS.
	UNCL.	ROCK	BORROW	EMBANK	
0+00					
10+00			2218	2218	
20+00			1060	1060	
30+00			2389	2389	
40+00			2070	2070	
50+00			2646	2646	
60+00			2395	2395	
70+00			3116	3116	
80+00			3320	3320	
90+00			4793	4793	
100+00			2868	2868	
110+00			1735	1735	
120+00			4544	4544	
130+00			3918	3918	
140+00			1877	1877	
150+00			3556	3556	
160+00			5291	5291	15000*
170+00			6837	6837	
172+60			806	806	
TOTAL			55439	55,439	15000

* O.H. on Borrow from Ch.Ch.

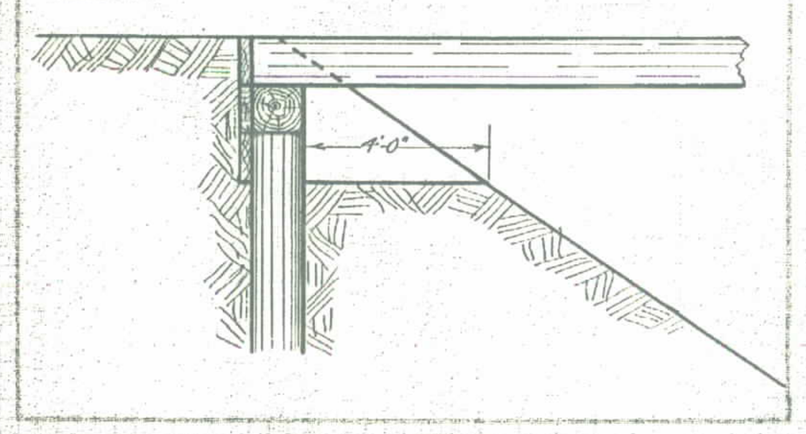
HAND LAID RIP RAP

STATION	CUBIC YARD	REMARKS
107+00	50	Dyke
141+50	50	"
TOTAL	100	

GUARD RAIL

Sta. 159+00 to 172+60
1360' Lt. and Rt. to be replaced

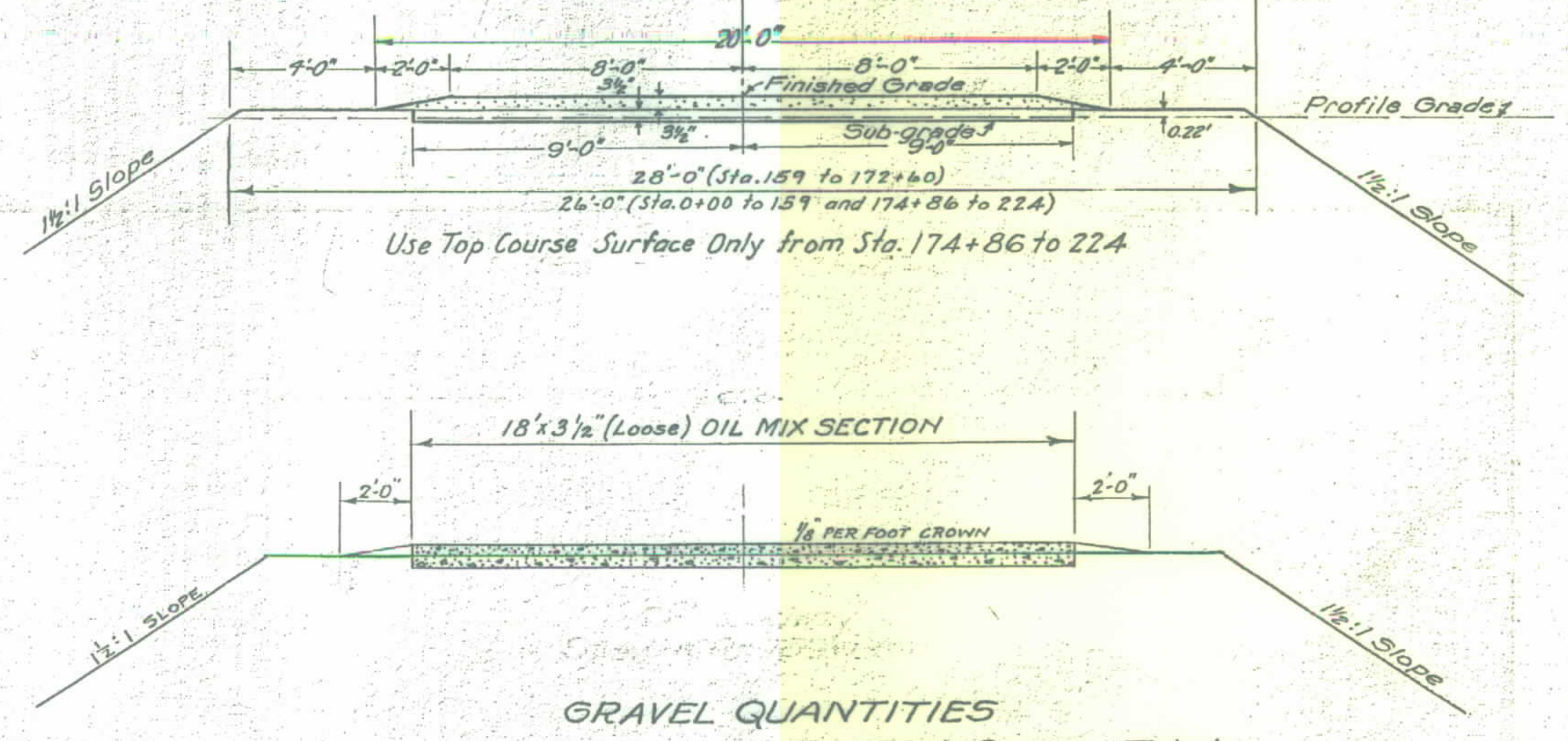
BERM ON END OF FILL AT BRIDGE ENDS



SURFACING

STATION		LENGTH IN FEET		ADDITIONS & DEDUCTION					GRAVEL		
FROM	TO	GROSS	NET	FROM	TO	ADD	DED.	FOR	TOP COURSE	BASE COURSE	TYPE
0+00	172+60	17,260	16940						3294	3294	
				66+40	67+20		80	Bridge	17		
				106+16	106+96		80	Bridge	17		
				140+40	141+40		100	Bridge	22		
				156+70	157+30		60	Bridge	13		
		Road Approaches							70	70	
174+86	224+00		4,907.1						1,092		
TOTAL		17,260.0	21,847.1				320		4,525	3364	

TYPICAL SECTIONS



Use Top Course Surface Only from Sta. 174+86 to 224

GRAVEL QUANTITIES

	Each Course	Total
Area in Sq.Ft.	5.25	10.5
Cu.Yds. per Sta.	19.444	38.89
Cu.Yds. per Mile	1026.64	2053.3

NOTE:
A 10' berm will be left between toe of fills and edge of borrow pits.

CULVERTS

STATION	LIN. FT. CULV. PIPE 15"	18"	24"	30"	36"	STRUCT. EXC. CU. YDS.	CONC. CULVERTS SIZE	CL."A"	STEEL	STD.	REMARKS
2+47.2											Use 24"x34' Siphon M-8-b in place. Irr.
18+82.6											Use 30"x40' Siphon M-8-b in place. Irr.
30+17											Use 24"x28' Siphon M-8-b in place. Irr.
39+57							2'x3'x10'	4.66	220	C-3	2'x3'x30' Conc. Box C-3 in place. Remove Hdwls. Leng. Box 5' Each end. Embed pipes in New C-3 Hdwls. Drain.
39+57					80	30				C-3	
49+50					72	16					Double Drain.
** 51+60			8			8					24"x28' Siphon in place. Remove M-8-b. Relay pipe. Lengthen. Irrig.
55+42		10				3					18"x28' C.M.P. M-6 in place. Remove Hdwls. Leng. 5' Each end. Drain.
* 75+44		12				10					18"x30' C.M.P. M-6 in place. Remove Hdwls. Leng. 6' Each end. Drain.
86+09						50	6'x6'x30'	33.18	1674	C-4	Remove 24"x28' C.M.P. in place. Drain.
107+95			16			4					24"x28' C.M.P. M-6 in place. Remove Hdwls. Leng. 8' Each end. Drain.
122+00						50	6'x6'x30'	33.18	1674	C-4	Drain.
138+00			8			4					24"x30' C.M.P. M-6 in place. Remove Hdwls. Leng. 4' Each end. Irrig.
167+10			18			10					24"x50' C.M.P. M-6 in place. Remove Hdwls. Leng. 10' on Rt. & 8' on Left. Drain
TOTAL		22	50		152	185		71.02	3568		

* Relay 18"x30' C.M.P.
** Relay 24"x28' C.M.P.

CLEARING & GRUBBING

Lump Sum

BRIDGES

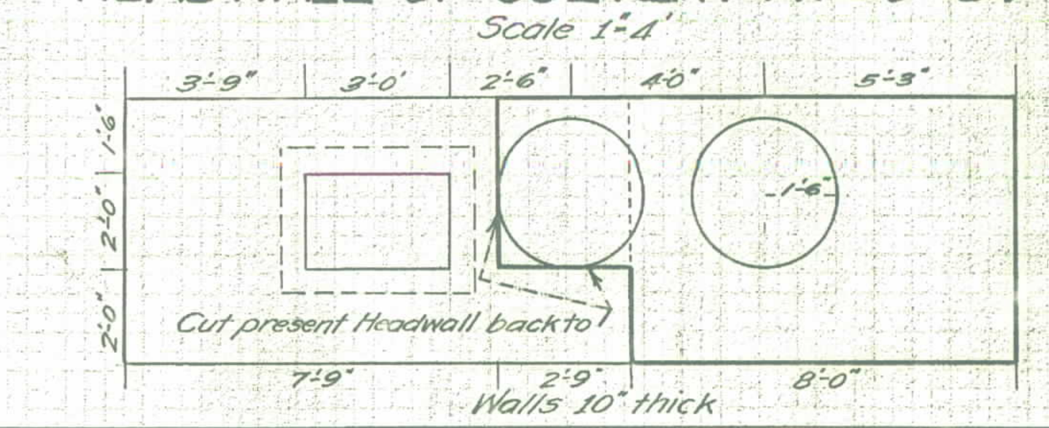
STATION	POUNDS REINFORCING STEEL	CU.YDS. CLASS A CONCRETE	LIN. FT. 2⅜" Ø W.I. PIPE RAILING	LIN. FT. FOUND. PILING	CU.YDS. FOUND EXCAV.	CU.YDS. CHANNEL & ROADWY EXCAV.	NOTES
66+80	20 000	225	444	900	279	617	New 4-20' Span Conc. Br.
106+56	8 800	87	168	360	105	267	3-16' Spans in place - Lengthen with 2-16' spans - west end.
140+70	15 000	164	333	540	195	836	2-20' Spans in Place - Lengthen with 3-20' spans - East end.
157+00	15 700	174	333	720	241	310	New 3-20' Span Conc. Br.
TOTALS	59 500	650	1278	2520	820	2030	

ADDITIONAL EXCAVATION

Channel Change	Sta. 66+25	-- 1244 C.Y.
Channel Change	Sta. 140+80	-- 5555 C.Y.
Total to be used as Borrow		6799 C.Y.

HEADWALL OF CULVERT AT 39+57

Scale 1"=4'



F-169

Logan
Northern Pacific Ry.
CARPENTER
Gallatin Gateway
Gallatin Valley Branch
C. M. St. P. & P. Ry.
Irrigation Ditch
Apparently Not in Use
Sta. Sign
Yellowstone Trail
Bozeman
N. 76°04' W.
Irrigation Ditch
Existing R/W.
Proposed Ditch Change
STA. 0+00 BEGINNING OF F.A.P. 169 RECONST.
Co. Road
Trident
Alfalfa Field
Wm A. Carpenter Logan, Mont.
SEC. 27
T. 2N. R. 2E.
Borrow 2218 Cu. Yds. — Emb + 2218 Cu. Yds.
Borrow 1060 Cu. Yds. — Emb + 1060 Cu. Yds.
Borrow 2389 Cu. Yds. — Emb + 2389 Cu. Yds.
-0.33 %
-0.26 %
B.M. Sta. 0+00 Nail in G.N. Stub 49 L Elev. 1993.31
Sta. 2+47.2
Sta. 18+82.6
B.M. Sta. 29+75 Nail in Tel. pole 57 L Elev. 1990.98
Northern Pacific Ry.
SEC. 27
SEC. 28
Water Hole
C. M. St. P. & P. Ry.
N. 76°04' W.
Water Hole
Ditch
B. S. ADAMS % ADAMS REALTY CO. THREE FORKS, MONT.
T. 2N. R. 2E.
Sta. 49+50 New Double 36"+36" Pipes. Drain
Borrow 2070 Cu. Yds. Emb + 2070 Cu. Yds.
Borrow 2646 Cu. Yds. Emb + 2646 Cu. Yds.
Borrow 2395 Cu. Yds. Emb + 2395 Cu. Yds.
-0.26 %
-0.06 %
-0.08 %
B.M. Sta. 43+16 Nail in fence post 30 R. Elev. 1985.52
B.M. Sta. 47+30 Nail in Tel. pole 57 L Elev. 1986.81
30+17
39+57
49+50
51+60
55+42
F-169


MONT. 169-Rec. 4 13
Northern Pacific Ry.
7-16' Spans Bridge
C.M.St.P.&P. Ry.
Existing Right of Way
Double 3'x3' Wood Box
Water Hole
N. 76° 04' W.
Proposed Channel Change 1244 Cu. Yds.
Sta. 66+85 Double 5'x6' Conc. Box in place. To be removed by Bridge Contractor
New Conc. Bridge 4-20' Spans
Roy Creek
B.S. ADAMS THREE FORKS, MONT.
K.W. HALE WILLOW CREEK, MONT.
SEC. 28
T. 2 N. R. 2 E.
Sta. 75+42 18"x30' C.M.P. No. 16 in place. Remove Hdwls. Lengthen 6' each end. Drain. Relay.
K.W. HALE
Sta. 86+09 24"x28' C.M.P. No. 14 in place. Remove. New 3'x3' Conc. Box. Drain
Borrow 3116 Cu. Yds. Embt 3116 Cu. Yds.
Borrow 3320 Cu. Yds. Embt 3320 Cu. Yds.
Borrow 4793 Cu. Yds. Embt 4793 Cu. Yds.
-0.08%
0.144%
B.M. Sta. 60+10 Nail in Tele. pole Elev. 1983.03
B.M. Sta. 75+79 Nail in Tele. pole Elev. 1983.87
Northern Pacific Ry.
Road
Radison Valley Road
C.M.St.P.&P. Ry.
6-16' Spans Bridge
Rip Rap
Dike Washed Out Feb. 1929 To be Restored
Existing R/W
N. 76° 04' W.
105+00 - 115+00 Small Trees and brush
K.W. HALE WILLOW CREEK, MONT.
SEC. 28
SEC. 29
T. 2 N. R. 2 E.
Sta. 106+16 3-16' Spans Bridge in place 20' Conc. Sta. 106+66 Add 1-16' Span to West End.
S. Fork Madison River
107+95 24"x28' C.M.P. in place. Remove Hdwls. Lengthen each end. Drain.
Borrow 2868 Cu. Yds. Embt 2868 Cu. Yds.
Borrow 1795 Cu. Yds. Embt 1795 Cu. Yds.
Embt includes 330 Cu. Yds. for restoring Dike.
Borrow 4544 Cu. Yds. Embt 4544 Cu. Yds.
-0.144%
-0.192
0.00%
-0.15%
B.M. Sta. 91+15 Nail in Tele. pole 57L Elev. 1982.8
50 C.Y. Hand laid Rip Rap
107+95
PLAN
PROFILE
F-169

Northern Pacific Ry.
C.M.St.P.&P. Ry.
Existing R/W
N. 76°04'W.
Present Right of Way line
N. 72°35'W.
N. 75°55'W.
Δ = 3°20'L
D = 2°00'
T = 83.4
L = 166.7
92' Pile Bridge
7-16' Spans Bridge
Rip Rap
Dike Washed Out Feb. 1929
To be Restored
Sta. 122+00
New 6'x 6' 30' Conc. Box C.4 Drain
K.W. HALE
WILLOW CREEK, MONT.
T. 2 N. R. 2 E.
P.C. 133+12.9
P.T. 134+87.1
P.I. 134+00
P.C. 138+13.9
P.I. 138+97.3
P.T. 139+80.6
Δ = 3°29'R.
D = 2°00'
T = 87.1
L = 174.2
Prop. Channel Change 5555 C.Y.
Middle Fork Madison River
K.W. HALE
SEC. 29
SEC. 30
Borrow 3918 Cu. Yds. Emb.+ 3918 Cu. Yds.
Borrow 1877 Cu. Yds. Emb.+ 1877 Cu. Yds.
Emb.+ includes 200 Cu. Yds. for road approaches, Sta. 133
Borrow 3556 Cu. Yds. Emb.+ 3556 Cu. Yds.
Emb.+ includes 300 Cu. Yds. for restoring dike, Sta. 141+40
-0.15 %
-0.302 %
0.00 %
+0.04 %
1980
1970
120
125
130
135
140
145
150
K.W. HALE
WILLOW CREEK, MONT.
Δ = 48°48'L
D = 5°00'
T = 519.8
L = 976.0
Northern Pacific Ry.
C.M.St.P.&P. Ry.
N. 76°55'W.
Existing R/W
R/W to be Acquired
New Concrete Bridge 3-20' Spans
P.C. 159+14.7
P.I. 164+34.5
Existing Guard Rail to be Replaced
SEC. 30
T. 2 N. R. 2 E.
N.P. Ry.
C.M.St.P.&P. Ry.
160' Span Steel Bridge
154' Span Wooden Bridge, 45' App.
190' Span Steel Bridge 2-23' App's.
Butte
Three Forks
Yellowstone Trail
Existing Guard Rail
To be replaced
S.55°17'W. 1929 Recon.
S.55°27'W. Orig. F.A.P. 169
MADISON RIVER
STA. 172+60 = 172+42
END OF 1929 REGRADING
Borrow 5291 Cu. Yds. Emb.+ 5291 Cu. Yds.
O.H. 15000 Sta. Yds. (on Borrow from Ch. Ch.)
Borrow 6837 Cu. Yds. Emb.+ 6837 Cu. Yds.
Bor. 806 Cu. Yds.
Emb.+ 806 Cu. Yds.
1360' Guard Rail Rt. & Lt. to be removed and rebuilt
+0.04 %
0.00 %
+0.25 %
EQUATION 172+60 = 172+42
Wash Out of Feb. 1929
STA. 172+60 END OF 1929 REGRADING
150
155
160
165
170
175
180
F-169