

UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF PUBLIC ROADS

District No. 1

FINAL REPORT OF LOCATION SURVEY (1929-1930)

of the

TRANSMOUNTAIN HIGHWAY, EAST SIDE

ROUTE NO. 1

GLACIER NATIONAL PARK

STATE OF MONTANA

By A. V. Emery
Assistant Highway Engineer

This route, on the east slope of the Rocky Mountain Range, follows the north side of the Reynolds Creek drainage basin and close to the north shore of St. Mary's Lake. A section of the United States Geological Survey Glacier Park topographic map is attached to this report.

When constructed, this road will connect the West Side Transmountain Highway, Route No. 1, now completed to the summit line at Logan Pass, with the Blackfeet Highway approximately 30 miles north of Glacier Park Station and ten miles south of the east terminus of the Babb-Mary Glacier road, which in turn is twelve miles south of the International Boundary.

During the summer months, June to the middle of October, tourist traffic from the East over the Yellowstone Trail; from Canada over the Blackfeet Highway; and from the West over several routes, could follow this east and west road through the center of Glacier National Park. A route map is attached to this report.

As well as on the West Side Transmountain Highway, there are already very fine hotel chalet accommodations on this route, one being located at Going to the Sun, a much favored resort. This is located on a point projecting into St. Mary's Lake about ten miles west of the Blackfeet Highway and nine miles east of Logan Pass.



No. 19175. Looking east over St. Mary's Lake toward Going to the Sun Chalet. Line is approximately $1/4$ mile left of foreground. Sun Camp spur line joins main line in a draw at arrow.

St. Mary's Chalets are located at the east end of St. Mary's Lake and about one mile west of the Blackfeet Highway.

Two gasoline-powered boats afford the present transportation over St. Mary's Lake between the two above points.

It is commonly known that the scenery along the Transmountain Highway route is of the world's best.

The first ninety stations of the survey are through steep country. Both the preliminary and location lines on this stretch were run in 1930. With an eighteen-man party, the work was begun at Logan Pass, Station 0, on July 21, and by August 4 the line and topography were completed to Sta. 110 and the party moved from the Logan Pass camp to a point on Reynolds Creek opposite Sta. 275. The survey was completed from this camp. The photographs following will give some idea of the terrain covered in the first ninety stations. With the exception of the tunnel, on a minus 4%, Sta. 60+95 to Sta. 65, and the Piegan Creek loop, Sta. 145 to Sta. 153, on a minus 1.97%, the grade was kept between a minus six and a minus five per cent to Sta. 340, or where the line was nearing the creek bottom.



Nos. 19091, 19092, & 19095. From Logan Pass at extreme left to the mouth of Piegan Creek Canyon, two miles. Line of survey in black with tunnel shown dotted.



No. 19096. Sta. 66+50 east. Bench cutting just below tunnel. Three-hundred and fifty feet of one-inch hemp rope necessary when taking cross sections here. Going to the Sun Mountain in the Background.



No. 19093. Proposed east portal of tunnel,
Sta. 66+50 west. Stake in foreground and
brush cutting at top indicates center line.

Between Station 90 and Sun Camp, Sta. 445, the preliminary line and topography were run in the fall of 1929, which with the existing 1927 line east of Sun Camp greatly aided in speeding the location line from Piegan Creek canyon to the end of the existing grade at Sta. 533. The party finished the line to the latter point on September 6, 1930, which completed the survey.

With the exception of the first mile below Piegan Creek crossing, Station 148, varying from $1\frac{1}{2}$ to $1\frac{1}{4}$ to one in slope, the hillside on the remainder of the line is fairly flat, being broken occasionally by short stretches at rock points. The grade line below Station 340 on the main line is broken. A minus 7% is used on the Sun Camp Spur, Station 429 to Station 443, but good alignment maintained.



No. 19174. Looking up the canyon and away from line from Piegan Creek crossing at Station 148.



No. 19716. Looking east along cliffs,
Sta. 518 to Sta. 523. End of survey
and existing road is at Sta. 533.

The principal structures on the line are the 10'x 10' concrete box culvert recommended for Piegan Creek crossing, Sta. 148, and the arch bridge at Baring Creek, Sta. 398.

From Logan Pass to Piegan Creek crossing, three miles, the line is practically above the timber line. Stretches of dwarf spruce and alder brush form most of the cover. With the exception of the last 1/2 mile of line which is open, the remaining 7-1/2 miles including Sun Camp Spur is timbered--spruce trees running from ten to thirty inches in diameter at the butt and from 25 to 75 feet in height with medium underbrush.

Form 500-B showing costs on the East Side Transmountain Highway survey and plans, beginning 1925 to November 20, 1930, and Engineer's Estimates of the proposed construction are also attached to this report.

The line was divided into two sections for contracts-- Project 1-D2, Logan Pass, Sta. 0+00 to Sta. 302, or 5.720 miles; and Project 1-D1, El. Sta. 302 to the end of the existing road, Sta. 522+92.6, including Sun Camp Spur, or 4.478 miles.

A. V. EMERY
Assistant Highway Engineer

(copy)

ENGINEER'S ESTIMATE
For
PROPOSED F.Y. 1932 CONSTRUCTION

Project: Transmountain Hwy. Grading
Section: 1-DL, EL
County: Glacier
State: Montana

National Park: Glacier
Made by: A.V. Emery & J.A. Elliott
Date: February 17, 1931
Rev. May 7, 1931

Item No.	Item	Quantity	Unit Price	Amount
1	Clearing (Additional)	4 Acres	\$250.00	\$1,000.00
2	Grubbing	27 "	250.00	6,750.00
3	Excav., Unclassified	154,000 Cu. Yds.	.90	138,600.00
4	" Type B	30,000 " "	1.40	42,000.00
6	" Structure	1,500 " "	2.00	3,000.00
8	" Cushion Borrow	4,000 " "	.40	1,600.00
9	Overhaul	127,000 Sta. Yds.	.05	6,350.00
11	Finishing Earth Graded Road	4.478 Miles	750.00	3,358.50
24	Cushion Haul	3,000 1/2 Mi. Yd.	.20	600.00
38	Class A Concrete	169 Cu. Yds.	40.00	6,760.00
39	Class B Concrete	39 " "	30.00	1,170.00
43	Reinforcing Steel	22,000 Lbs.	.07	1,540.00
45	Masonry, Baring Cr. Br.	750 Cu. Yds.	24.00	18,000.00
47	" Culvert Headwalls	25 " "	17.00	425.00
48	" Retaining Walls	1,000 " "	17.00	17,000.00
53	18" Corr. Galv. Metal Pipe	1,550 Lin. Ft.	3.00	4,650.00
54	24" " " "	126 " "	4.00	504.00
55	30" " " "	568 " "	5.00	2,840.00
67	Hand-laid rock embankment	500 Cu. Yds.	2.50	1,250.00
71	Stone Guard Rail, Type 2	140 " "	25.00	3,500.00
74	Trail	400 Lin. Ft.	.40	160.00
75	Isolated Curb Stones	560 Lin. Ft.	3.00	1,680.00
76	Iron Hitch Rail	220 " "	1.00	220.00
77	Boulder Guard Rail	25 Cu. Yds.	3.00	75.00
78	Arch Ring Stones	90 Sq. Yds.	40.00	3,600.00
79	Waterproofing	290 " "	3.00	870.00
Estimated Cost of Construction -				\$267,502.50
Engineering - 10%				26,750.25
Contingencies - 5%				13,375.12
Total Cost				\$307,627.87

Estimated Cost of Future Surfacing 35,000.00
" " " Bit. " 45,000.00
Cost to Complete - \$387,627.87

Station 302 to Station 522+92.6
Length 4.478 Mi.
18' Roadway (1929 F. H. Std.)
Type 100
Cost Per Mile: \$68,697.59

(copy)

ENGINEER'S ESTIMATE
for
PROPOSED FISCAL YEAR 1932 CONSTRUCTION

Project: Transmountain Hwy. Grading
Section: 1-D2
County: Glacier
State: Montana

National Park: Glacier
Made by: Elliott & Emery
Date: Feb. 18, 1931
Revised Apr. 4, 1931
" May 26, 1931

Item No.	Item	Quantity	Unit Price	Amount
1	Clearing (Additional)	4 Acres	250.00	1,000.00
2	Grubbing	30 "	250.00	7,500.00
3	Unclass. Excavation	334,000 C.Y.	.80	267,200.00
4	" " Type B	16,000 "	1.00	16,000.00
6	" " for Structures	1,000 "	2.00	2,000.00
8	" " Cush. Borrow	4,000 "	.40	1,600.00
9	Overhaul	266,000 Sta.Y.	.05	13,300.00
11	Finishing Earth Graded Road	5.720 Miles	750.00	4,290.00
24	Cushion Haul	5,000 1/2 M.Y.	.20	1,000.00
25	Tunnel Complete	405 L.F.	80.00	32,400.00
40	Class A Concrete	465 C.Y.	40.00	18,600.00
45	Reinforcing Steel	49,000 Lbs.	.10	4,900.00
47	Masonry Headwalls	350 C.Y.	17.00	5,950.00
48	Masonry Retaining Walls	600 C.Y.	17.00	10,200.00
49	18" Extra Str. Reinf. Conc. Pipe	436 L.F.	5.00	2,180.00
51	30" " " " " "	130 L.F.	12.00	1,560.00
53	18" Corr. Galv. Metal Pipe	2,760 L.F.	3.25	8,970.00
54	24" " " " " "	714 L.F.	4.50	3,213.00
55	30" " " " " "	496 L.F.	5.50	2,728.00
56	36" " " " " "	160 L.F.	7.00	1,120.00
67	Hand-laid Rock Embankment	250 C.Y.	2.50	625.00
74	Trail	19,000 L.F.	.50	9,500.00
75	Masonry Guard Rail	500 C.Y.	25.00	12,500.00
76	Log Type Protection Rail	2,500 L.F.	.75	1,875.00
77	Logan Pass Parking Area Grading			
As Extra Work, Estimated Cost				20,000.00
Estimated Cost of Const. -				\$450,211.00
Engineering - 10%				45,021.10
Contingencies - 5%				22,510.55
Total Cost				\$517,742.65

Sta. 0+00 to Sta. 302+00
Length: 5.720 Miles
Width: 18' F. H. Std. 1929
Cost Per Mile: \$90,514.45
Type: 100.

Est. Cost of Future Surf.	\$ 45,000.00
" " " "Bit. "	57,000.00
Cost to Complete	\$619,742.65

(cop.)

Report No.
Form 500-BU. S. BUREAU OF PUBLIC ROADS
District No. 1.Date Nov. 20, 1930PROJECT: Transmountain,
East Side L.S.

No. 1-D-288

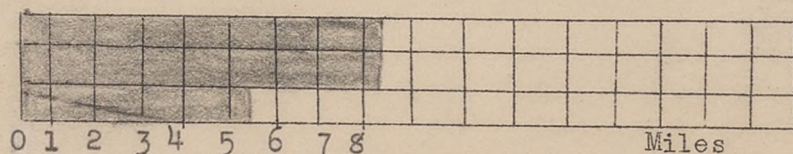
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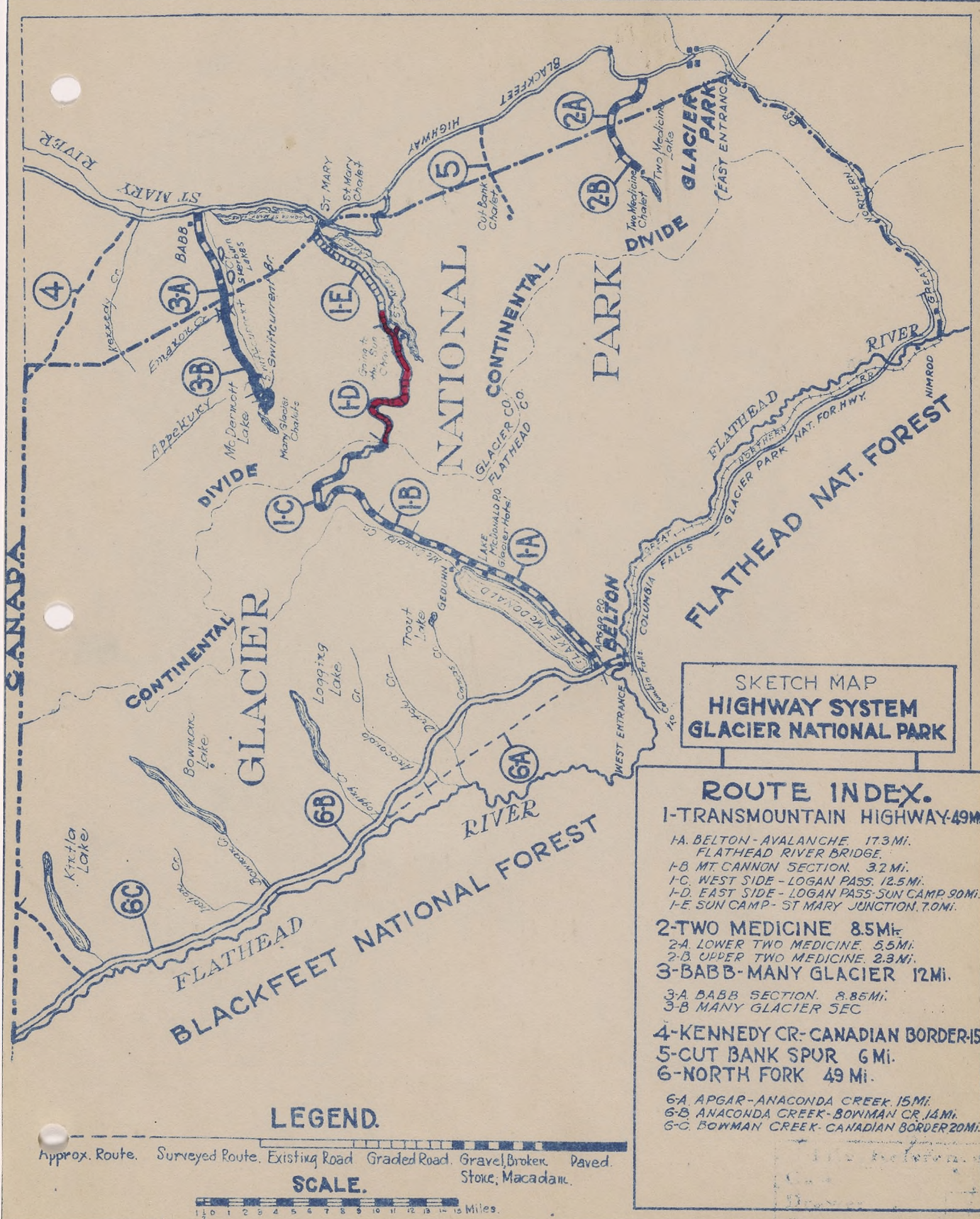
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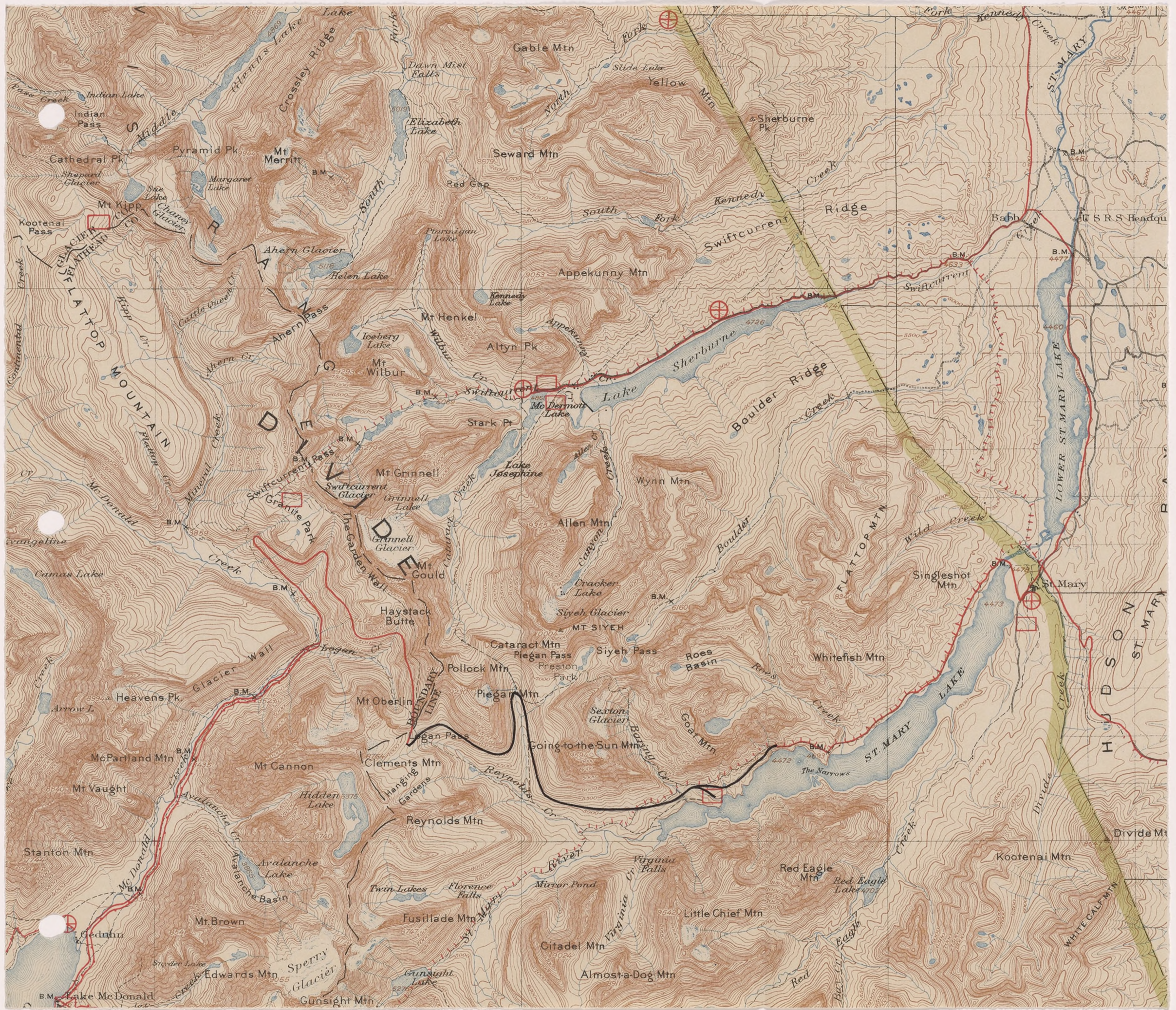
	A	B	Subsistence			E	F	G	H	I	GRAND TOTAL
				Charged to							
				C	D						
	Travel	Survey	Total	Survey	Plans	Total Survey A/ B/ C	Field Plans	Office Plans	Bridge Plans	Total Plans D/F/G/H	E/ I
Total as per previous report (7/31/30)	833.41	8443.25	1664.83	1664.83 xxxx	xxxxx	10941.49 xxxx	690.97	1796.26		2487.23 xxxx	13428.72
Other Liabilities	984.00	2403.43	1765.68	1339.81 xxxx	425.87 xxxx	4727.24 xxxx	560.16	158.82		1144.85 xxxxx	5872.09
Total cost to Date	1817.41	10846.68	3430.51	3004.64	425.87	15668.73	1251.13	1955.08		3632.08	19300.81
No. of Miles Complete to date (Approx)	xxxx	8.2	xxxx	xxxx	xxxx	8.2	8.2	5.34	xxxx	6.37	xxxx
Cost per Mile to date	xxxx	1322.77	xxxx	xxxx	xxxx	1910.83	152.57	365.85	xxxx	570.36	2353.76
Total Probable Cost	1817.41	10252.05	3430.51	3004.64	425.87	15074.10	1251.13	2405.37	700.00	4782.37	20451.10
Probable Cost Per Mile	221.64	1322.77	418.35	366.42	51.94	1910.83	152.57	293.34	85.37	583.22	2494.05
Per cent Complete	xxxx	100	xxxx	xxxx	xxxx	100	100	81		76	94

No. of Man days of subsistence furnished
in camp to date 888
Est. final cost of subs. per man per day 1.80
Number of men in party 19
Date field work began 7/21/30
Date field work finished 9/6/30
Date plans finished _____
Graph of Progress: Current Month - Red. Previous work - Black

REMARKS:

Signature J. B. ReherAssoc. Hwy. Engr.
(Title)Stencil
#514





December 22, 1932

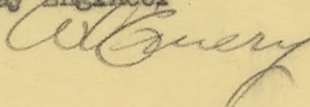
Memorandum to District Engineer.

Referring to letter from Dr. Hewes dated November 30, 1932, the difference in length of 8.2 miles noted in Location Survey Report 1929 - 1930 Transmountain Highway, East Side Project, Form 500-B by Mr. Reher and the two Construction projects 1-D2 and 1-D1, E1 - 5.720 and 4.478 miles respectively, is due to the survey mileage including only that from Logan Pass to Sun Camp Wye when it should have included that part to the end of the old grade and Sun Camp Spur.

The costs as shown in the report also includes expense incurred prior to 1929 by Mr. Peters in 1925 and by Mr. Emery in 1927 and 1928, the same as included in the D. O. Ledger.

To arrive at a correct report for the seasons 1929 and 1930 or the date of the report it would seem that a special 500-B should be made up which I can do immediately if desired. This would not include costs prior to 1929 and after 1930. The present 500-B report includes costs prior to 1929 and after 1930 or to date - end of Old Grade to the Blackfeet Highway.

A. V. Emery
Ass't Highway Engineer



January 16, 1933

Memorandum to District Engineer.

Referring to letter from Dr. Hewes dated November 30, 1932 and following my memorandum of December 22, 1932 I am herewith submitting Form 500-B dated January 15, 1933 which includes all costs, mileage and other required data, beginning the Season 1925, to date on Transmountain Highway, East Side L. S. Project 1-D (288), Logan Pass to Blackfeet Highway.

Although this report is for use with the final report - Location Survey (1929-1930) it will serve as information on unit costs. A note on the Form explains as to the total combined data used.

A. V. Emery
Ass't Highway Engineer

