Mr. Hugh A. Stoddart, Division Engineer, Juneau April 13, 1953

H. A. Alderton, District Engineer, Seward

Copper River Highway - Eyak River Bridge

Attached please find copy of Mr. Smith's April 9, 1953 memorandum giving the results of recent sounding operations at the Eyak River bridge site. The print of the proposed layout sent with your March 10, 1953 memo is herewith returned.

Mr. Smith was not able to determine the composition of the hard strata at the west end of the bridge. However, it is noted that the elevations of the strata show a quite uniform slope which would be indicative of ledge rock.

Attachments

cc: Mr. Smith

HAA:hrl

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. H. A. Alderton, District Engineer, Seward DATE: April 9, 1953

FROM : James H. Smith, Resident Engineer, Cordova

SUBJECT: Copper River Highway- Eyak River Bridge

Reference is made to Mr. Stoddart's Memorandum of March 10, 1953 to Mr. A. K. Neeley regarding additional soundings on Eyak River Bridge site.

The required soundings were completed yesterday, after considerable delay due to shell ice in the river and the time required to assemble personnel and the best available equipment.

The tests were made from a 12' by 12' raft built on the job from discarded bridge timbers. The raft was anchored above the present bridge by a 300' rope attached to a tree and had a breast line runing longitudinally along the center line of the proposed bridge and passing through two eye-bolts in the downstream corners of the raft. With these ropes the raft could be freely moved to any desired position and moored firmly. On the raft was mounted a fire pump unit belonging to the Bureau of Public Roads, and a two-speed hand operated winch. A 12" by 48" opening was provided in the center of the raft through which the tests were made. The 1-3/4" discharge pipe of the pump was connected by reducers to 3/4" steel pipe in Approx. 5 foot lengths and the discharge stream was again reduced and discharged through the center of a job designed tool steel driving point in a $\frac{1}{2}$" stream. Pressure generated was sufficient to throw the water stream a distance of 60 feet when held horizontally. Hand driving bars were of $1\frac{1}{4}$" metal pipe with pointed drill steel point and driving head.

A summation of the test results follows:

Bent No. 1: In addition to the requested soundings marked 1 & 3 on the attached print, four additional soundings were made as indicated. Test No. 1 could only be jetted to a depth of six inches below the lake bottom (Elev. 05.2) and the steel driving point could only be driven an additional 9 inches. Test No. 3 was jetted to Approx. 1 foot below bottom and the point driven an additional foot. Four intermediate soundings roughly checked the character and slope indicated by tests 1 & 3.Two other additional tests were also made at Approx. 30' and 50' left of centerline, the 30' test showing four feet of mud and sand above hard strata. The 50' test only showed 3 feet of soft materialnabove the hard strata.

Bent No. 2: (bottom Elev. 03.6)

Test No. 2 was jetted only 8 inches through mud before refusal and the hand bar could only be driven an additional 4 inches for a total penetration of 12 inches. Test No. 4 was jetted to 16 inch penetration and the bar driven an additional 8 inches. Two intermediate tests checked with tests 2 & 4.

(Continued)

Bent No. 3: (Bottom Elev. 03.4)

Test No. 5 could be jetted only to a depth of 12 inches, and the bar driven 18 inches deeper for a total penetration of 2.5 feet. Two additional tests were made as indicated by C & D on the print. C was jetted to 12 inches and bar driven 14 inches. D jetted to Approx. 18 inches and bar driven 16 to 18 inches additional.

Bent No. 4: (Bottom Elev. 02.3)

Tests 6 and E were jetted to 22 and 26 inches respectively and the bar driven an additional 12 to 14 inches.

Tests F, G and H located approx. in line with skewed piling in old bridge as indicated on plan were jetted to 48 inches, 12 inches, and 38 inches respectively below streambed elev. of Approx. 01.3.

Test No. 7: (Bottom Elevation 03.8)

Test No. 7 was jetted through 1½ feet of mud and 4½ feet of sand to a firm base.

Test J at approx. center of Bent No. 9 with bottom elevation of 07.8 was jetted through 8 feet of mud and sand and seven feet of sand and gravel to a total penetration below streambed of 15 feet. Sand and gravel seemed to be getting progressively harder and denser as depth progressed.

Test No. 8:

Test no. 8 could not be made at exact location shown in red on plan due to frozen ground at surface. At water edge (Elev. 09.8) approx. 20 feet back from Bent No. 10 a test was jetted through 2 feet of mud, six feet of fine sand and 8 feet of sand and gravel to a total penetration below 8 of 17.8 feet.

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The composition of the hard strata at the West end of the proposed bridge could not be determined by available means. It could consist either of ledge rock or of broken rock blasted into the lake during construction of the cut immediately to the west of the present bridge. Also no decided break was apparent, the hard strata seeming to slope down more or less uniformly at least as far as Bent No. 5 of the proposed bridge.