

PRELIMINARY
BASIC ENVIRONMENTAL DATA

RAINBOW CREEK
BRIDGE

REFERENCE MILE 471 MACKENZIE HIGHWAY

DEPARTMENT OF PUBLIC WORKS
EDMONTON, CANADA



January , 1973



F. F. SLANEY & COMPANY LIMITED
Vancouver, Canada

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**BASIC ENVIRONMENTAL DATA
RAINBOW CREEK BRIDGE
REFERENCE MILE 471**

**MACKENZIE HIGHWAY
NORTHWEST TERRITORIES**

**DEPARTMENT OF PUBLIC WORKS
EDMONTON, CANADA**

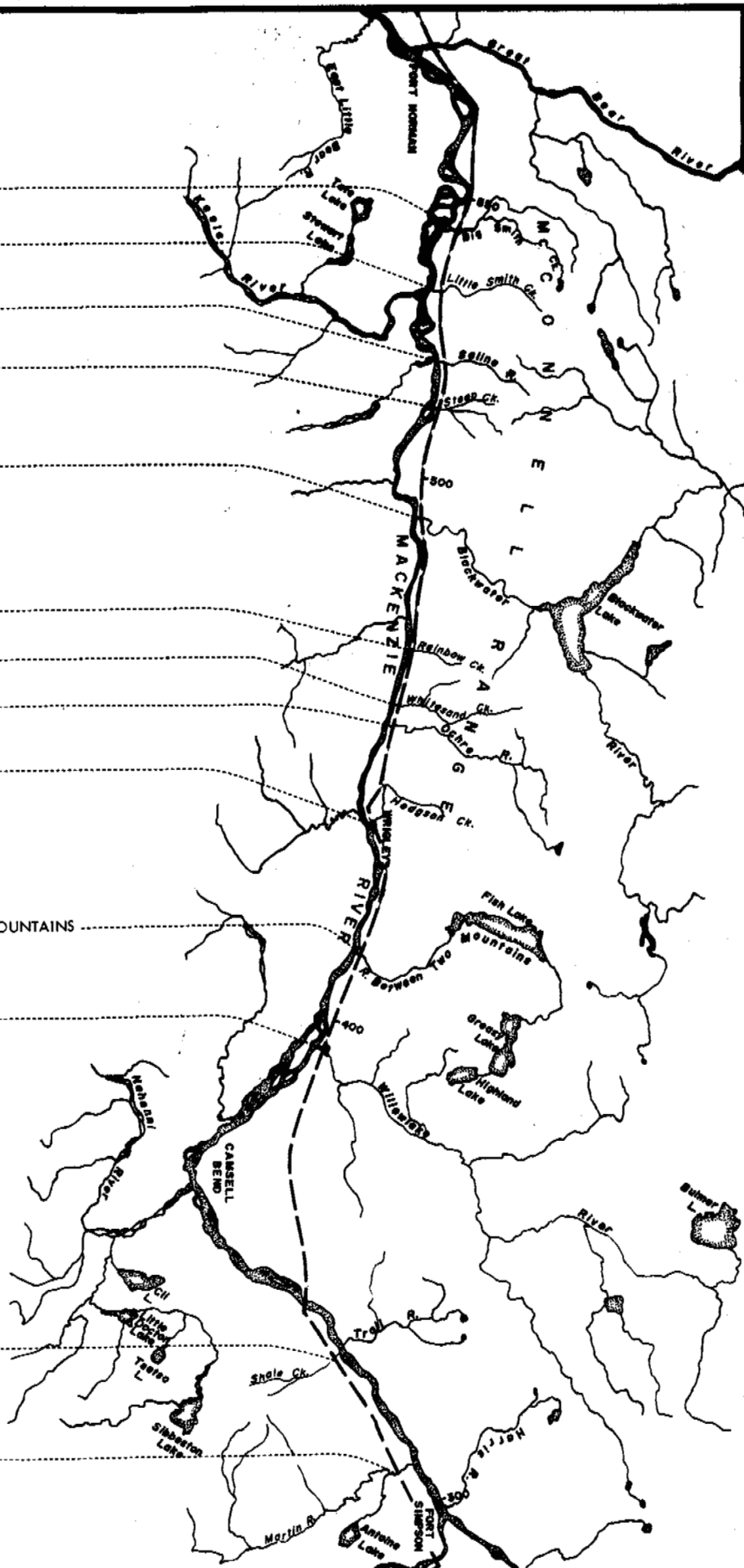
JANUARY 1973

**F.F. SLANEY & COMPANY LIMITED
VANCOUVER, CANADA**

BRIDGE SITES

KEY MAP
BRIDGES
MACKENZIE HIGHWAY
MILE 300 TO 550

BIG SMITH CREEK
LITTLE SMITH CREEK
SALINE RIVER
STEEP CREEK
BLACKWATER RIVER
RAINBOW CREEK
WHITESAND CREEK
OCHRE RIVER
HODGSON CREEK
RIVER BETWEEN TWO MOUNTAINS
WILLOWLAKE RIVER
SHALE CREEK
MARTIN RIVER



SCALE
0 10 20
MILES

MACKENZIE HIGHWAY
RAINBOW CREEK BRIDGE
REFERENCE MILE 471

DIVERT RUNOFF
TO MACKENZIE

RECOMMEND REVIEW
OF DIKE STRUCTURES

RIPRAP REQUIRED



PART 1

BASIC ENVIRONMENTAL DATA

1.1 SURFICIAL GEOLOGY

The bridge site is flanked by abandoned alluvial terraces which appear to be stable.

Channel is straight ~ no unusual erosion is expected.

The fill for both bridge design alternates encroaches upon an active alluvial channel, and design allows minimum room for free passage of log debris. A single span would be more harmonious with expected conditions.

1.2 SOILS

Bridge and approach fills are mostly on the active alluvium near the mouth of the creek.

1.3 VEGETATION

The proposed bridge should not interfere with vegetation. The fill on the south shore would encroach on a stand of 40 foot tall spruce and aspen.

1.4 WILDLIFE

No interference with wildlife is anticipated.

1.5 FISH

The encroachment of the approach fills on the stream bed appears excessive; stream velocities under the bridge should be calculated to ensure that barriers to fish are not developed.

Precautions should be taken to prevent siltation from runoff erosion along the grade. Runoff should be diverted directly into the Mackenzie River to minimize impairment of the stream environment.

Stream mouths are of particular importance to fish; grayling fry in particular use these areas for rearing, and would be adversely affected by increased stream velocities or siltation. No specific information has been collected on the fish of Rainbow Creek.

1.6 ARCHAEOLOGY

The chance of locating an archaeological site in this area and particularly on the south shore is high and the area should be checked as soon as possible.

1.7 LANDSCAPE - RECREATION

This bridge is particularly well suited from the aspect of recreation and landscape. This crossing provides one of the few chances for the traveller to drop down to the edge of the Mackenzie. The approach fills should be modified to facilitate easy access onto the alluvial fan.

1.8 AESTHETICS

Aesthetically this low bridge and fill does not lend itself to much improvement. The single pier bridge is the more attractive alternative.

1.9 SOCIO-ECONOMIC

This bridge site could become a base for mineral exploration crews and provision should be made for this eventuality.

1.10 CONSTRUCTION

Winter construction is advocated for this structure.

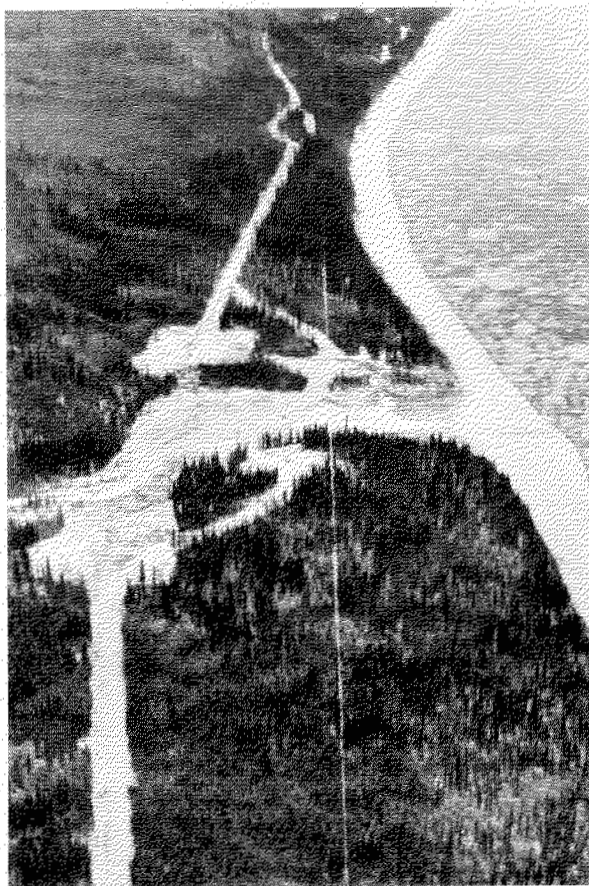
PART 2

ASSESSMENT

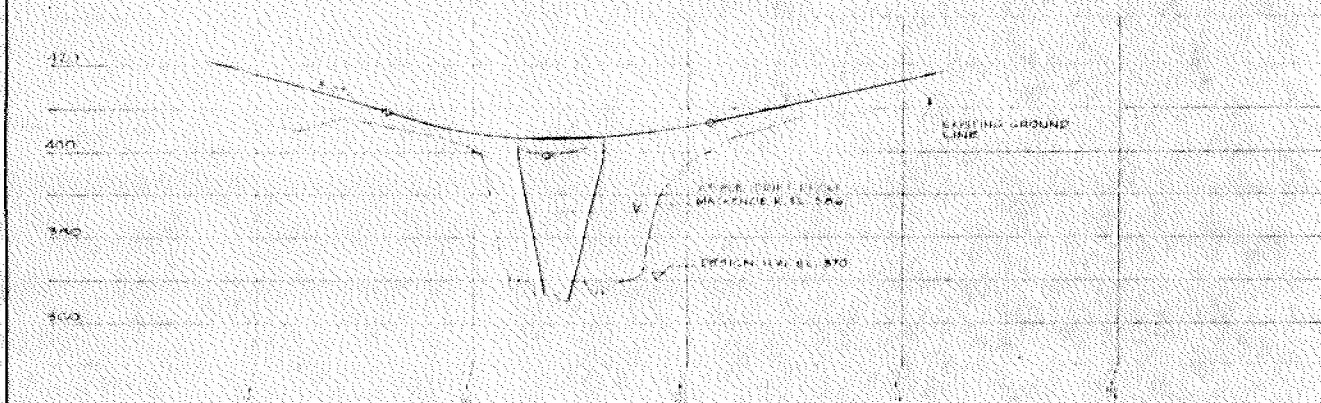
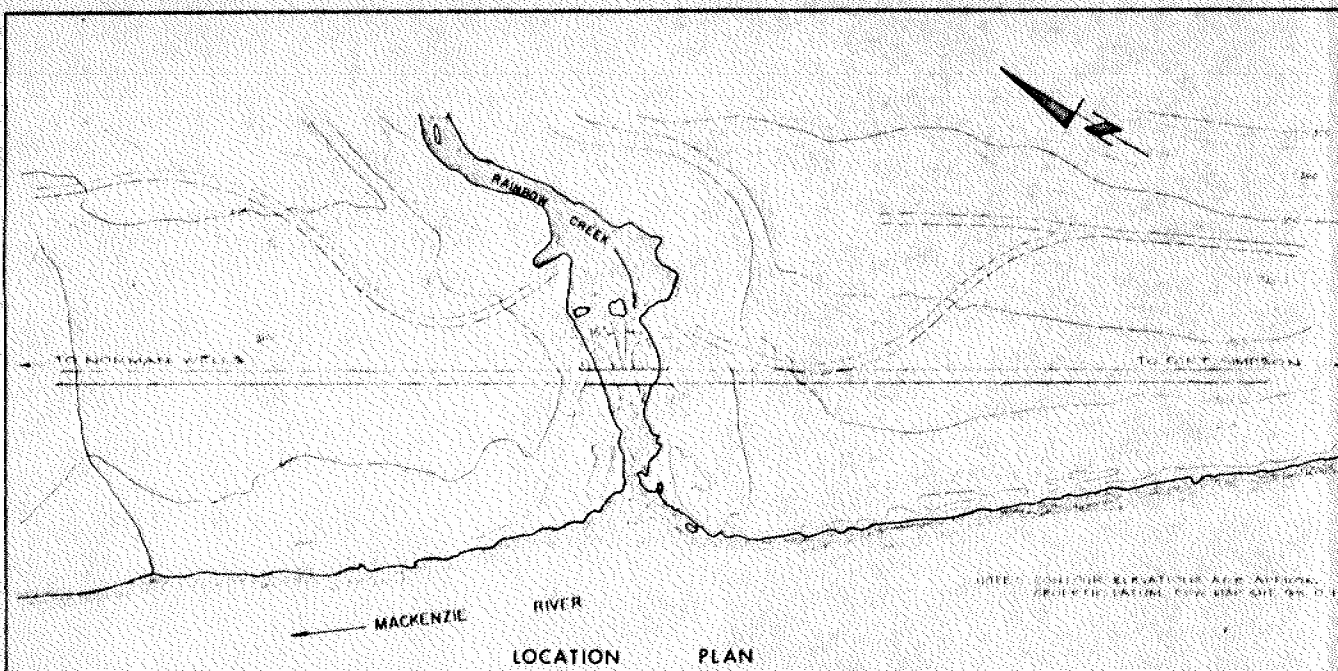
This crossing provides an interesting change of scene for the motorist, but may present some adverse effects on fish if water velocities under the structure become a barrier to migration at high water levels. Some disruption of potential rearing habitat at the creek mouth by the fills is also possible.



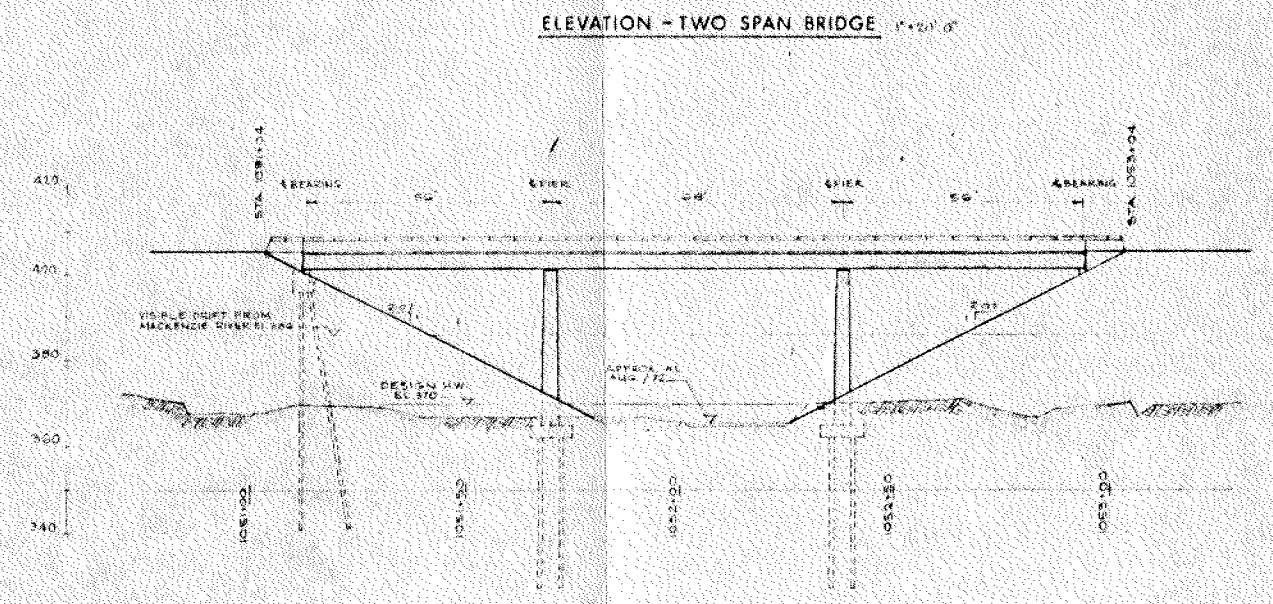
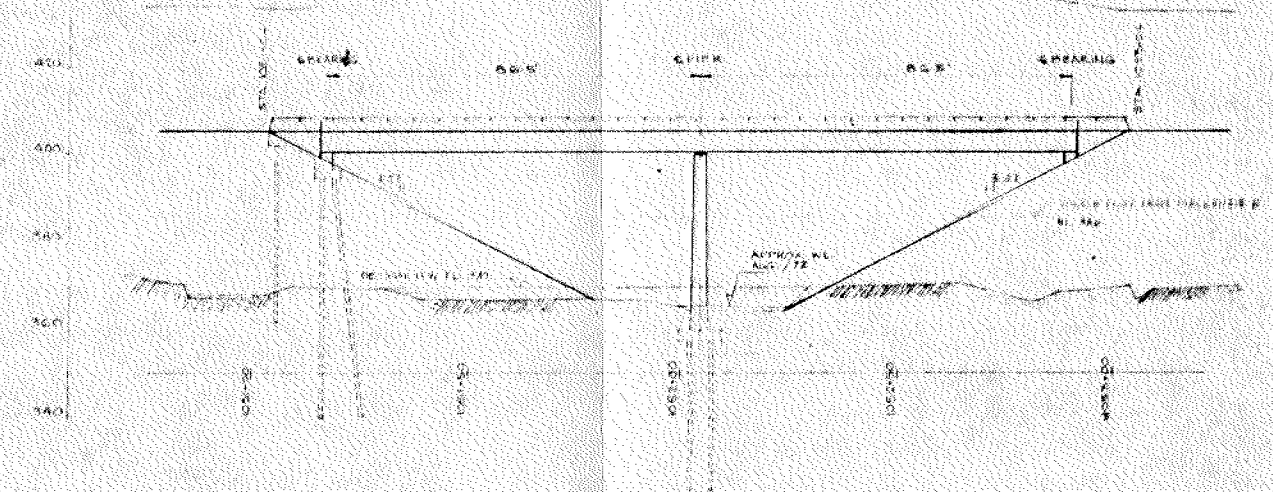
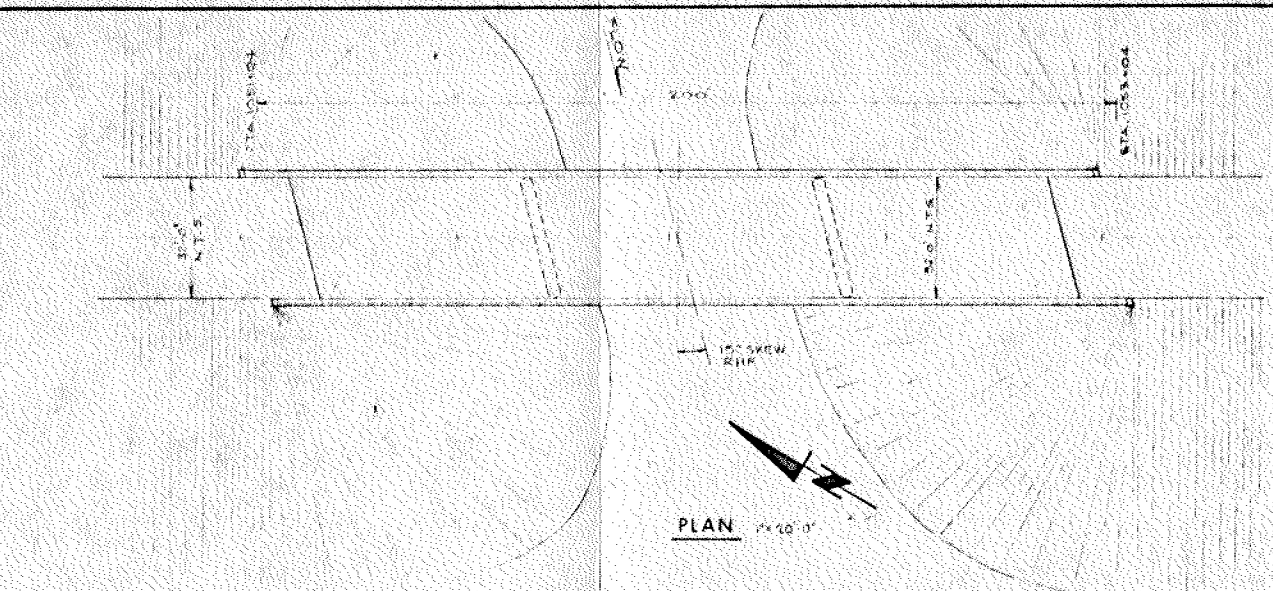
26.10.72. Rainbow Creek bridge crossing. Located on abandoned alluvial terrace. Both bridge design alternates encroach upon active channel and allow little room for movement of log debris. A single span would be more harmonious with physical conditions.



26.10.72. Rainbow Creek. Note location centerline in this photo. If the crossing has to be moved upstream against toe of scarp or onto scarp it will probably create siltation from unstable slopes. Existing cleared areas should be revegetated at the earliest possible date to minimize siltation from runoff; the stream is probably utilized by grayling and other species as spawning and rearing habitat. Vegetation is black and white spruce with some aspen. Soils are peaty gleysols and regosols.



- GENERAL NOTES:**
1. LOCATION OF BRIDGE & ROAD DESIGN DATA AS PER ROUTE PLAN & DRAWING.
 2. DESIGN STANDARDS:
 - A. GRADES: ROAD GRADES TO BE DETERMINED BY FIELD SURVEY.
 - B. LIVE LOAD: 10,000 LBS. SINGLE TRUCK LOAD, 20,000 LBS. DOUBLE TRUCK LOAD.
 - C. SIMULTANEOUS TRUCK LOADS: AS PER CANADIAN SPECIFICATION.
 - D. ALLOWABLE STRESS: PER CANADIAN SPECIFICATION.
 3. OTHER AND SPECIFICATIONS:
 - A. 100' HIGHWAY BRIDGE SPECIFICATION.
 - B. 100' HIGHWAY BRIDGE SPECIFICATION.



DEC 1 1972

		Stanley Associates Engineering Ltd. CONSULTING ENGINEERS	
		CANADA DEPARTMENT OF PUBLIC WORKS WESTERN REGION	
MACKENZIE HIGHWAY RAINBOW CREEK - MILE 472		PROPOSED BRIDGE CROSSING	
NO. 1 DATE DESCRIPTION REVISIONS	BY APPROVED CHECKED AS NOTED	DRAWN BY D.C. & B.F. 450-7-1-1	CHECKED BY DATE NOVEMBER 1972 SHEET NO. 1 OF 8

DRAWING NO. 650-7-1-P1