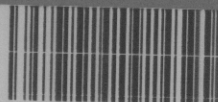


**PRELIMINARY**  
**BASIC ENVIRONMENTAL DATA**  
**RIVER BETWEEN TWO MOUNTAINS**  
**BRIDGE**

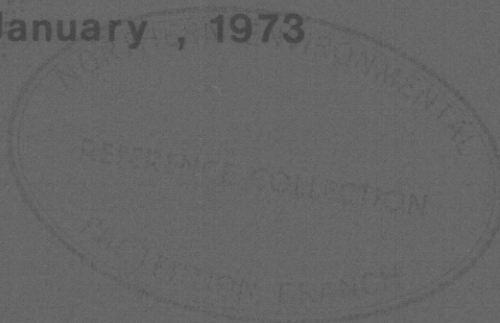
**REFERENCE MILE 411 MACKENZIE HIGHWAY**

**DEPARTMENT OF PUBLIC WORKS**  
**EDMONTON, CANADA**



D003283

January , 1973



**F. F. SLANEY & COMPANY LIMITED**  
**Vancouver, Canada**

# **PRELIMINARY**

BASIC ENVIRONMENTAL DATA  
RIVER BETWEEN TWO MOUNTAINS BRIDGE  
REFERENCE MILE 411

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

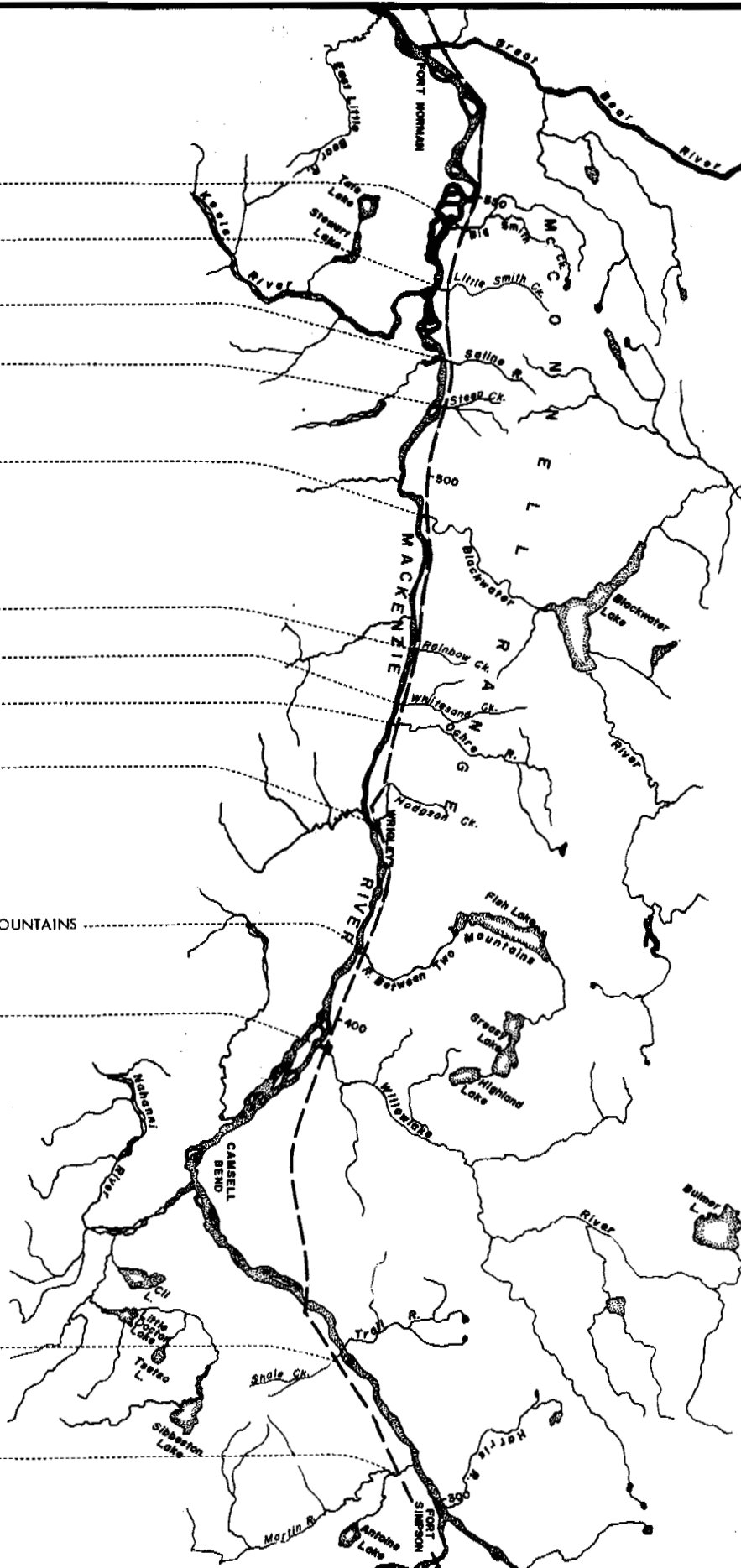
HODGSON CREEK

RIVER BETWEEN TWO MOUNTAINS

WILLOWLAKE RIVER

SHALE CREEK

MARTIN RIVER



SCALE  
0 10 20  
MILES

## **PART 1**

### **BASIC ENVIRONMENTAL DATA**

#### **1.1 SURFICIAL GEOLOGY**

The bridge site is in middle of a broadly curved thalweg which abuts abandoned alluvial terraces. Stream behaviour data is insufficient for final analysis but no unusual erosion is expected. Extensive riprap will be required.

The crossing area contains extreme, high and moderate impact units. The braided alluvial channel contains sand and gravel and is subject to flooding. The south scarp of the valley is colluvial and old terrace, a moderate impact unit. The route on the north side traverses extreme impact colluvial slopes subject to solifluction flows and fluvial erosion.

#### **1.2 SOILS**

No particular difficulties with soil are envisaged. Provisions to provide top soil to facilitate revegetating approach fills should be planned.

#### **1.3 VEGETATION**

The forest stands are 20 to 40 foot tall mixed spruce, pine, larch, aspen and birch of no particular significance. The few clumps of spruce on the north side of the river which have survived construction of the C.N.T. line and winter road should be preserved if possible.

#### **1.4 WILDLIFE**

Wildlife habitat at this crossing site consists mostly of immature mixed forest with a 100 foot wide strip of riparian habitat along the river bank.

A trapline follows the C.N.T. line and crosses the river in this vicinity. Construction may interfere with trapping activities unless special precautions are taken.

### 1.5 FISH

High water levels for River Between Two Mountains and the Mackenzie River are shown on the design profile, presumably determined by observation of visible stream drift at those elevations. When these elevations are located on the site plan, it becomes apparent that the road will cut off a major part of the floodway with fills. No evidence is presented to indicate what changes in stream velocities would be incurred.

The River Between Two Mountains was surveyed in 1971 by the Fisheries Service; in the lower 25 miles, they found an estimated 845,000 square yards of potential spawning gravel. Substrate consists of gravels and large boulders; the river is fast flowing with frequent rapids and many pools.

Fish populations include pike, whitefish, walleye and grayling. Migration periods for these species are from late May to mid July, and from mid August to late November. Eggs are in the stream bed for most of these species from mid June to late July and for whitefish from mid October to the following May. Aquatic insects sampled included caddis larvae, and nymphs of stoneflies and mayflies.

### 1.6 ARCHAEOLOGY

A reasonable potential for uncovering an archaeological site occurs at the bridge site. This river is an access to fishing and trapping areas east of the

Franklin Mountains. The site should be surveyed for archaeological material during initial clearing operations.

#### 1.7 LANDSCAPE - RECREATION

The site is badly scarred from previous developments and the bridge will provide an opportunity for the scars created by the winter road to heal.

Again, travellers will tend to stop on the fill near the bridge abutments and provision for them to do so should be considered.

#### 1.8 AESTHETICS

The proposed bridge design which is standard for four crossings would have no particular aesthetic impact either as a point of interest or a clash with the environs.

Since this structure is to be repeated four times perhaps some additional flair could be designed into the unit and certainly a longer span would be advantageous to remove pier as far as possible from the active stream channel.

#### 1.9 SOCIO-ECONOMIC

No particular significance identified.

#### 1.10 CONSTRUCTION

Again winter construction is advocated except that if pier could be moved out of the active stream. Summer and fall construction should also be feasible.

## PART 2

### ASSESSMENT

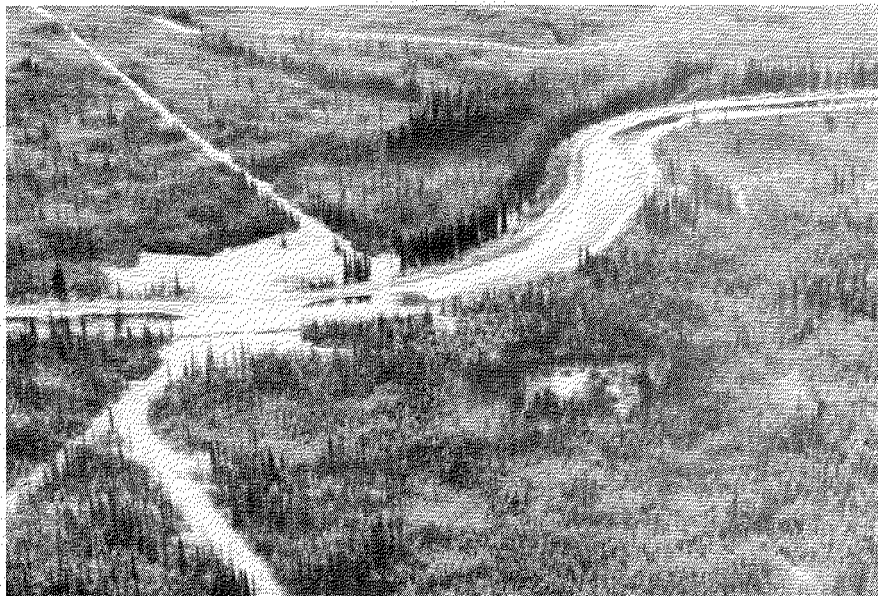
Hydrological calculations of the stream channel with the proposed approach fills should be presented before the design is formalized. Otherwise no particular areas of concern are apparent.



29.10.72. River Between Two Mountains. Erosion hazard from slumping indicated by arrow, but not relevant to bridge site. No subsequent drainage or erosion problems at bridge site.



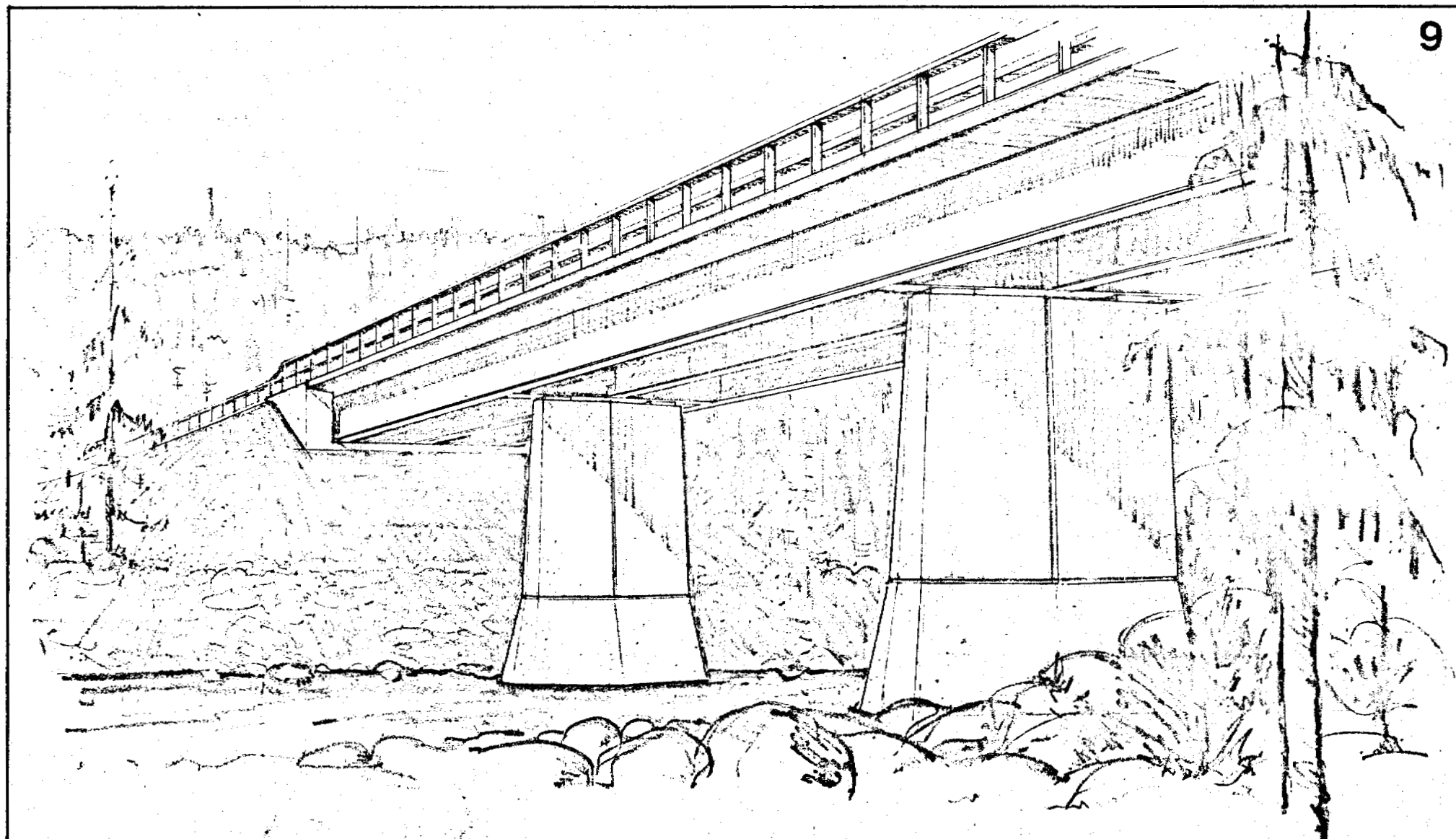
26.10.72. Looking South. Bridge site and road centerline. Parts of existing roadways at the crossing could be developed as rest stops and parking areas. Site is flanked by abandoned alluvial terraces ideal for camp site or other recreational development.



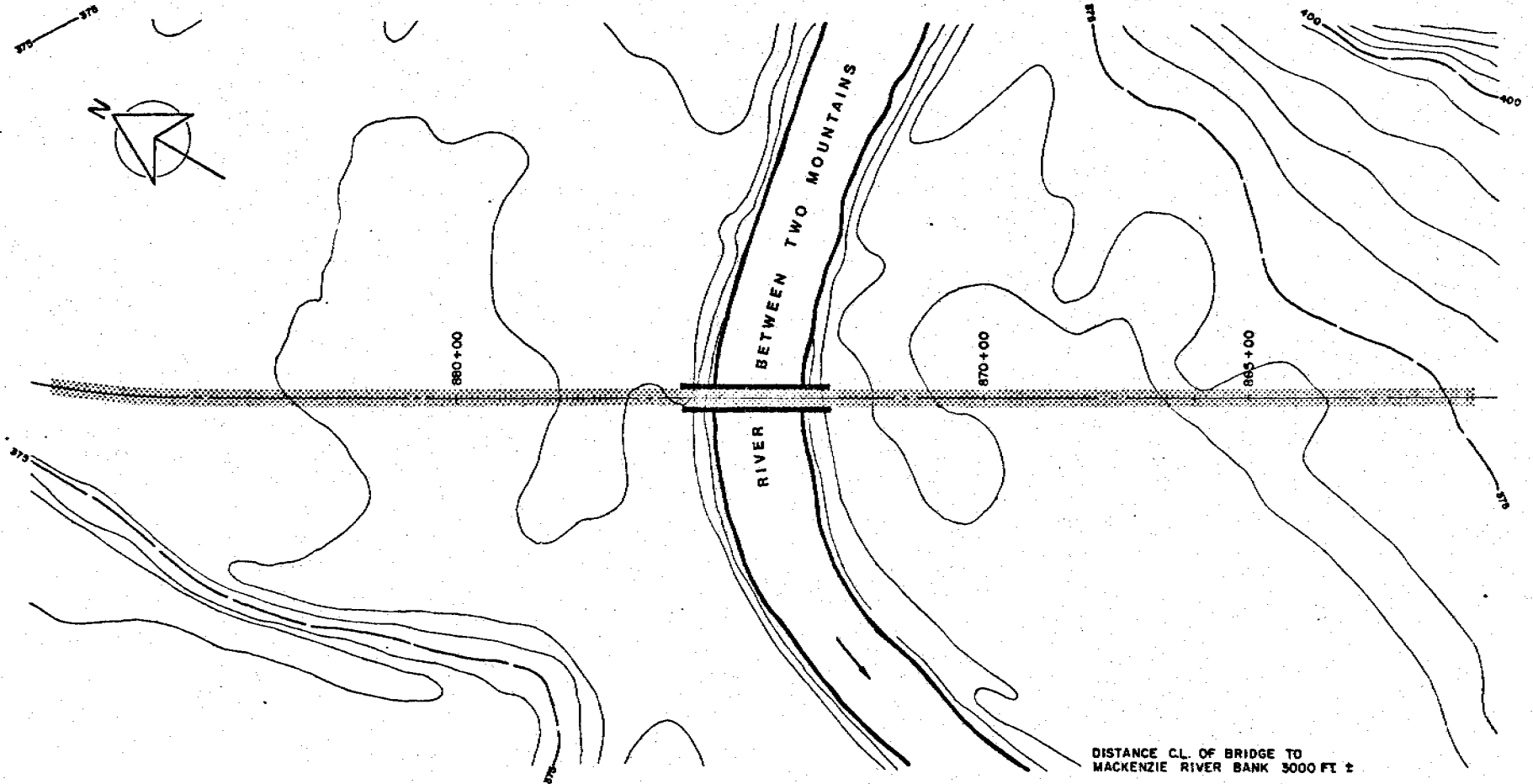
26.10.72. Vegetation is black spruce, aspen, larch and white spruce. Soils are peaty gleysols. Site is in middle of a broadly curved thalweg. No unusual fluvial erosion is expected.





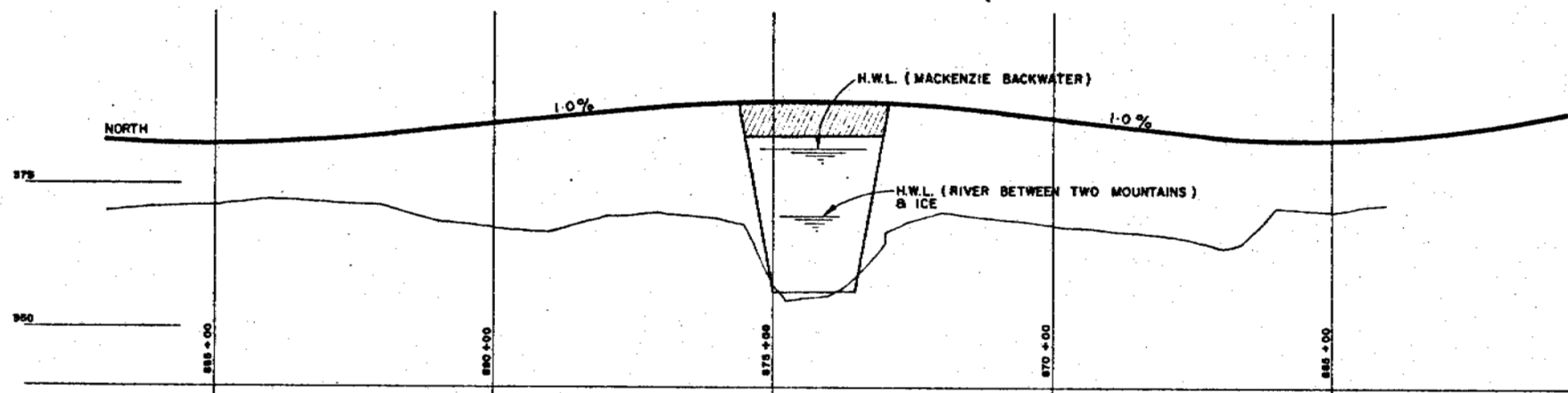


RIVER BETWEEN TWO MOUNTAINS  
HODGSON CREEK  
OCHRE RIVER  
WHITESAND CREEK



**SITE PLAN**  
1" = 200'

DISTANCE C.L. OF BRIDGE TO  
MACKENZIE RIVER BANK 3000 FT ±



**PROFILE**

VERT. 1" = 20'  
HORIZ. 1" = 200'

**NOTE:**

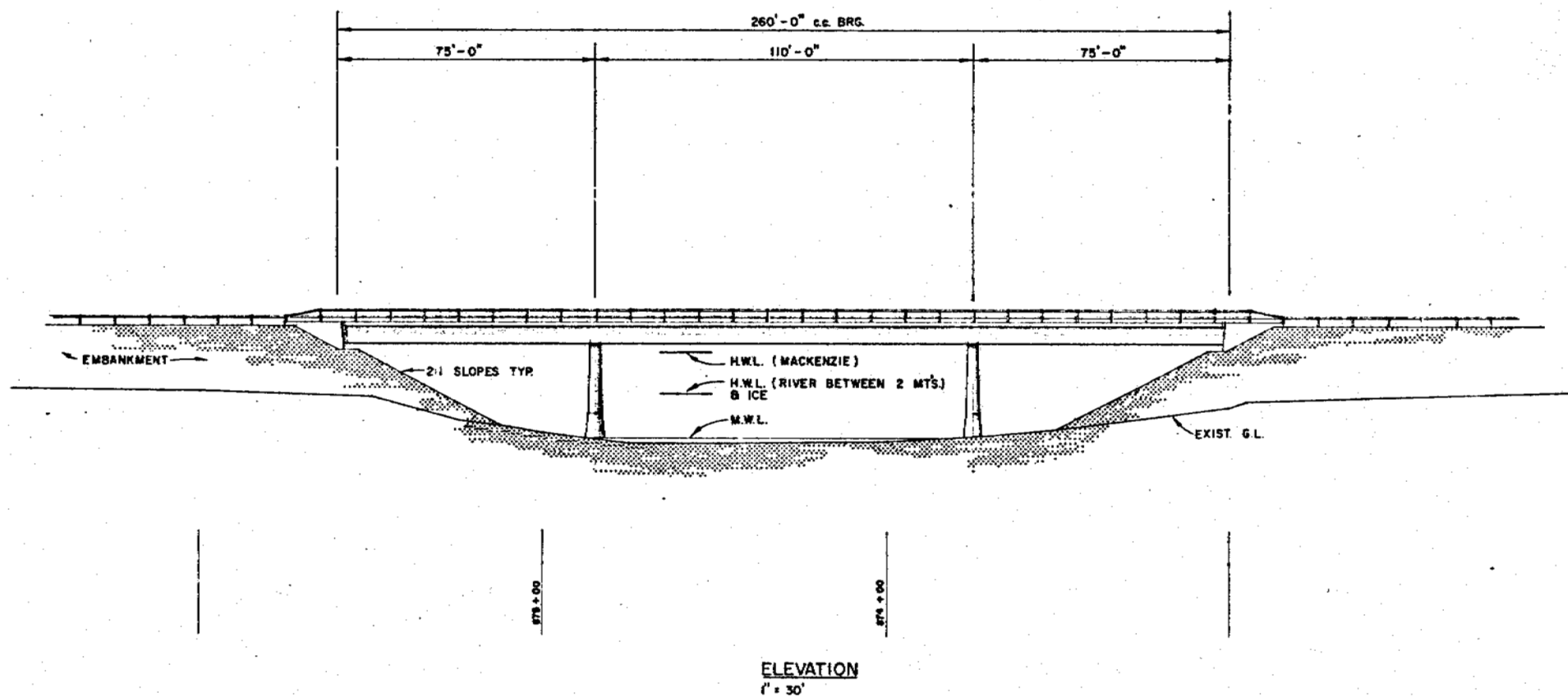
ELEVATIONS ARE TO GEODETIC DATUM  
CHAINAGES REFER TO FIELD SURVEY.

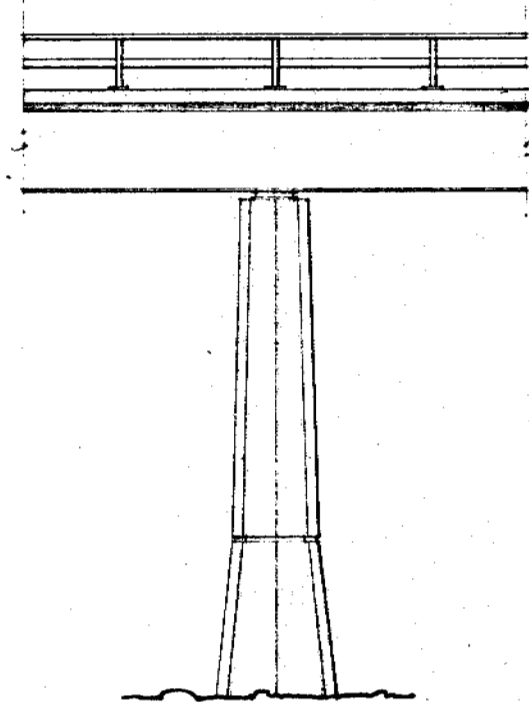
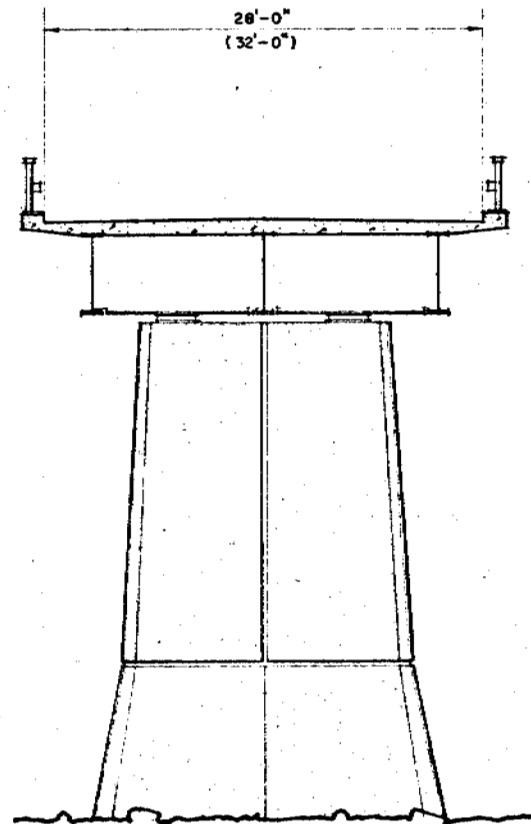
MACKENZIE HIGHWAY

RIVER  
BETWEEN TWO MOUNTAINS



Reid, Crowther & Partners Limited  
CONSULTING ENGINEERS & PLANNERS  
VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO





SCALE:  $\frac{1}{8}" = 1'$

TYPICAL SECTION  
&  
PIER

MACKENZIE HIGHWAY