

**PRELIMINARY
BASIC ENVIRONMENTAL DATA**

**BLACKWATER RIVER
BRIDGE**

REFERENCE MILE 492 MACKENZIE HIGHWAY

**DEPARTMENT OF PUBLIC WORKS
EDMONTON, CANADA**



January , 197



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

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**BASIC ENVIRONMENTAL DATA
BLACKWATER RIVER BRIDGE
REFERENCE MILE 492**

**MACKENZIE HIGHWAY
NORTHWEST TERRITORIES**

**DEPARTMENT OF PUBLIC WORKS
EDMONTON, CANADA**

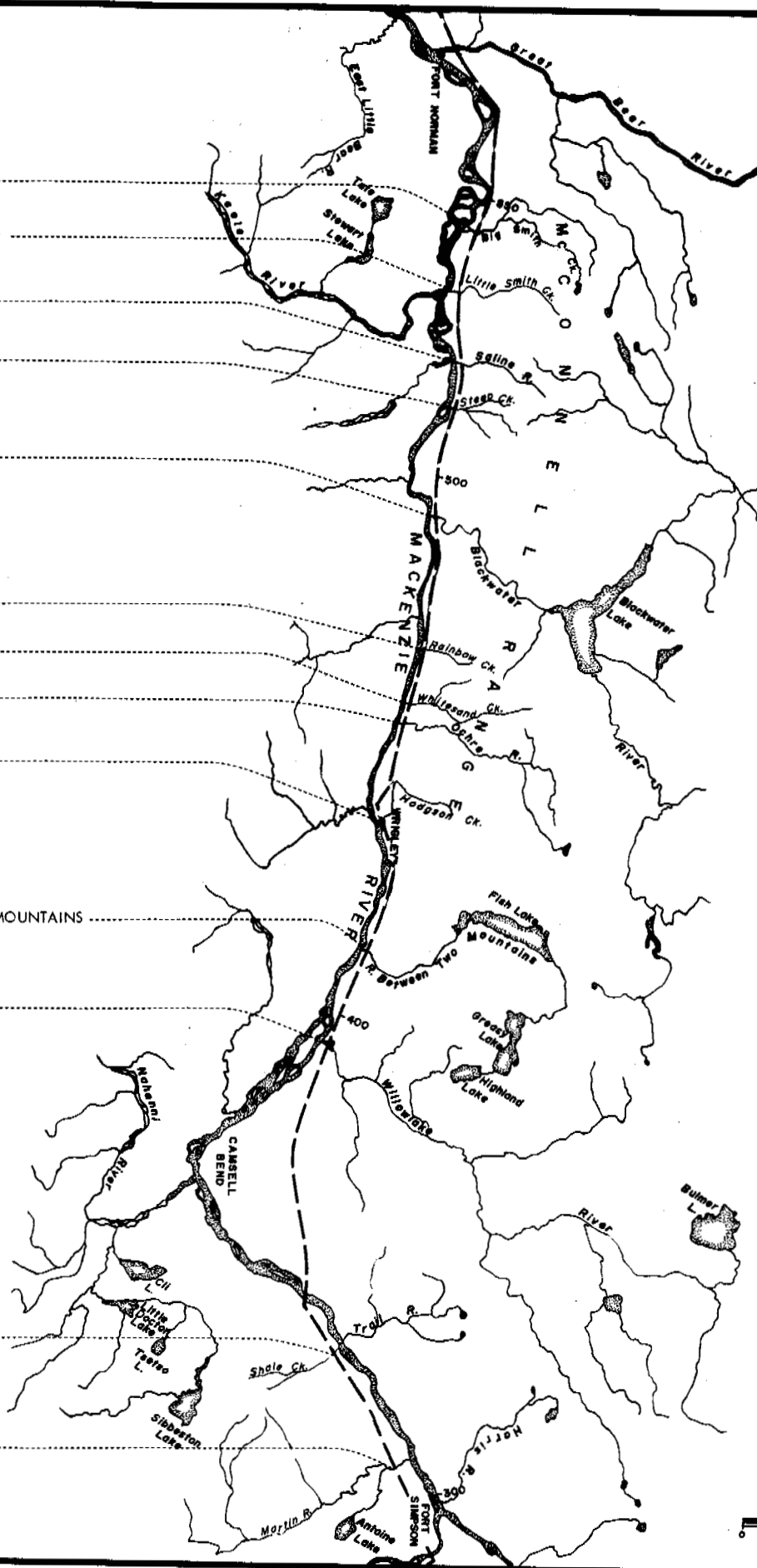
JANUARY, 1973

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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
BLACKWATER RIVER BRIDGE
REFERENCE MILE 492

PROPOSED EXCAVATION

BLACKWATER



PART 1

BASIC ENVIRONMENTAL DATA

1.1 SURFICIAL GEOLOGY

Extensive fill on alluvial terrace will considerably alter present terrain.

The channel cuts through abandoned alluvial terraces which are susceptible only to abnormal flooding. No unusual bank erosion is expected.

Proposed removal of active alluvium should be carefully analyzed.

1.2 SOILS

Soils are stable brunisols. No particular problems of erosion are anticipated.

The extended approach fills will require special stabilization treatments.

1.3 VEGETATION

Impact of bridge construction on vegetation should be minimal if construction procedures are properly controlled. The forests form an attractive complex on the low terrace of the Blackwater River. Stands of white spruce, black spruce, aspen and birch are present.

The public will gravitate out to the extensive gravel bars and therefore the fringe of riparian vegetation along the banks should be carefully preserved to maintain a natural appearance.

1.4 WILDLIFE

The Blackwater Valley is flat and wide at the proposed crossing. A survey camp is established near the bridge site. No further impact on wildlife is anticipated by constructing the bridge.

1.5 FISH

Several features of the proposed Blackwater River bridge may, when combined, lead to undesirable consequences to the aquatic environment. The excavation indicated along the large gravel bar will cause siltation during and after construction. The hydrologic effects of constructing the proposed fill are not explained. Roughly half the width of the existing stream bed will be covered with the approach fill. Stream velocities under the bridge at high water levels of the Blackwater should be calculated to ensure that no velocity barriers to fish are created. The effects of the bridge and fills on ice jams and backwaters from the Mackenzie should also be investigated. Extension of the bridge length should be considered.

In the lower 50 miles of the Blackwater River, potential spawning gravel has been estimated at 1,903,000 square yards. Fisheries Service personnel described it as "cold, clear and fast with intermittent rocky and sandy gravel areas. Pools and long stretches of deep water are common along its length". Aquatic insects at the bridge site include mayfly and stonefly nymphs, and caddisfly larvae. Fish species captured include grayling and longnose sucker. Both these species migrate upstream in June to mid July; spawning takes place in mid June, eggs remain in gravel until late July.

1.6 ARCHAEOLOGY

Archaeological surveys of Blackwater River showed fairly heavy prehistoric and historic utilization.

This potentially high impact area requires particularly careful surveillance during the clearing operation and throughout the construction. The location of associated construction camps and storage areas should be considered in context with archaeological potentials.

1.7 LANDSCAPE - RECREATION

The location of the proposed bridge is an impressive recreational area.

The site provides access to Franklin Mountains, Blackwater Lake and excellent fishing potential from extensive river bars.

The low terrace is subject to periodic flooding and is therefore not particularly well suited for development. The site should be maintained in as natural state as possible.

1.8 AESTHETICS

The proposed bridge structure and massive approach fills appear ponderous and unattractive to viewers from the vantage point of the river banks. Longer spans and an extended structure would resolve some of the aesthetic shortcomings.

1.9 SOCIO-ECONOMIC

The surrounding area has high potential for recreational service and mineral exploration developments. Such facilities should be anticipated to minimize use conflicts.

Traditional river valley trails should be re-routed to allow unrestricted passage by foot or snow vehicle.

1.10 CONSTRUCTION

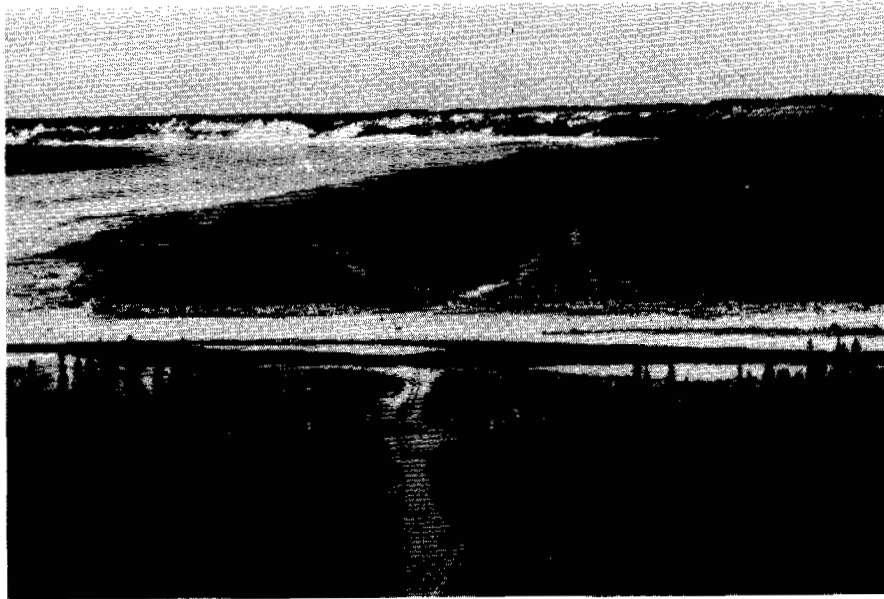
The construction of bridge footings should be scheduled for the winter months.

Camp supplies and construction materials should be stored on the highest possible ground to avoid flooding problems from back-up water from the Mackenzie River. Fuel caches on the flood plain are a particular concern.

PART 2

ASSESSMENT

The proposed Blackwater Bridge is a massive structure. The Blackwater River is an important fish stream and recreational site. The chance of adverse impact on the environment is a concern. Re-evaluation of proposed plans is recommended.

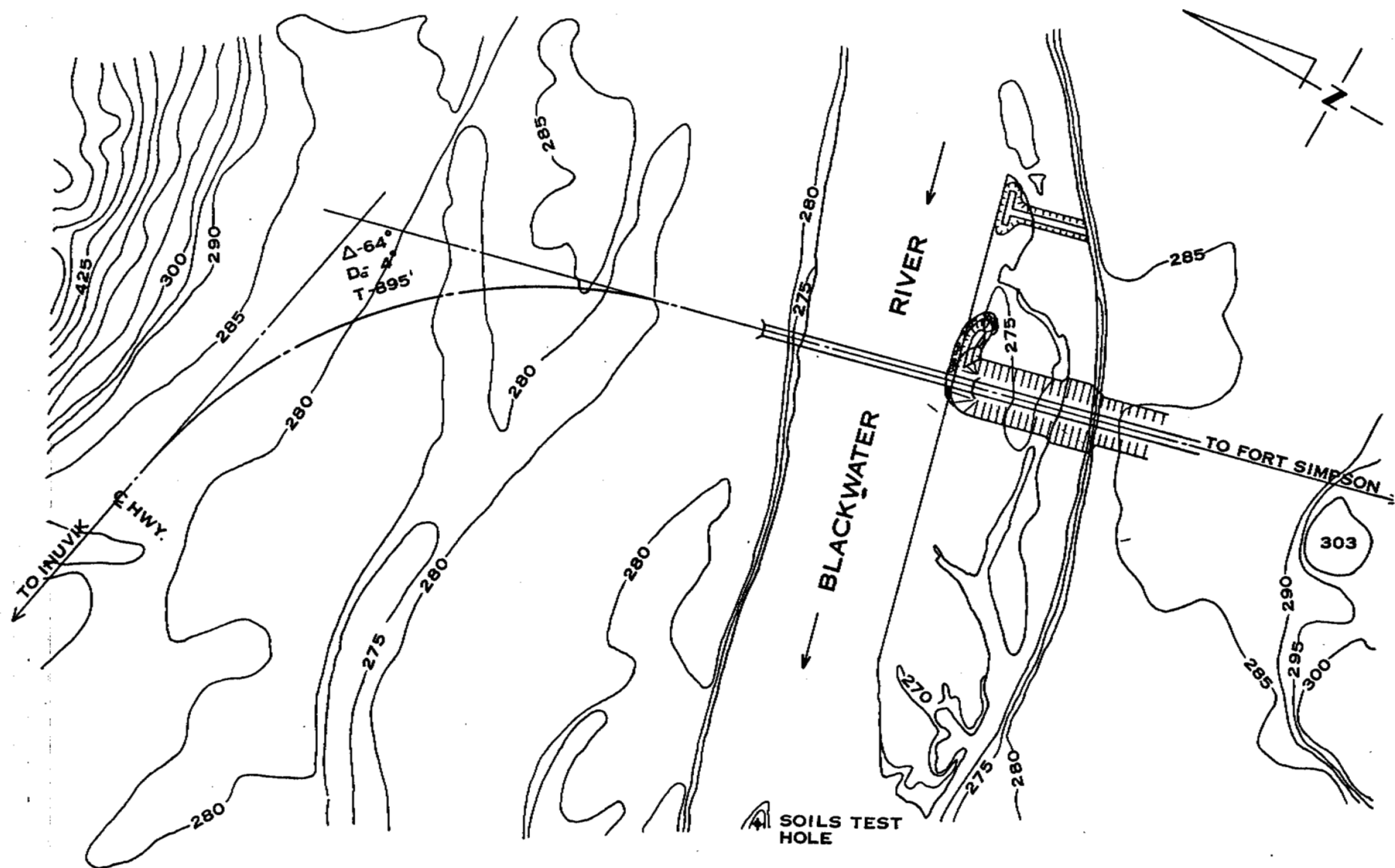


29.10.72. Blackwater River looking north. Extensive fill and erosion protection structure will considerably modify existing terrain. Bridge site plans also recommend removal of active alluvium which should be reconsidered.

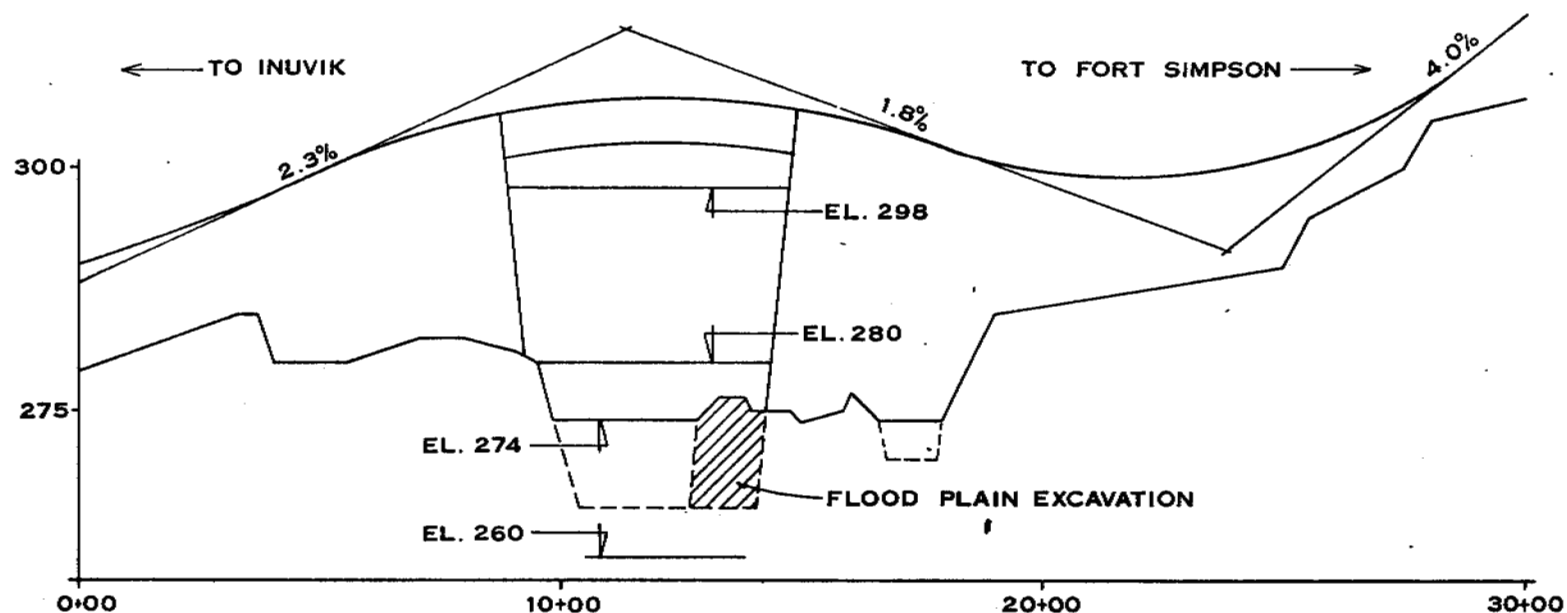


16.9.72. View through cutline to Blackwater River. This photo on low alluvial terrace which may be subject to rare flood. Bridge design submitted may be revised after more study. Vegetation is white spruce, black spruce and aspen.





SITE PLAN
FIG. 1



NOTE

1. EL. 260-ANTICIPATED POSSIBLE STREAM BED LOWERING.
2. EL. 265-APPROXIMATE STREAM BED ON SEPT./72.
3. EL. 274-WATER LINE JUNE/72.
4. EL. 280-DESIGN HIGH WATER AT THE BLACKWATER RIVER FLOOD STAGE.
5. EL. 298-POSSIBLE HIGH WATER DUE TO MACKENZIE RIVER ICE JAM.
6. EL. 278-DESIGN ICE SHALL BE 4'-0" THICK.
7. GRADE LINE HAS BEEN SET TO ALLOW 8'-0" FROM GRADE TO HIGH WATER.

PROFILE
FIG. 2

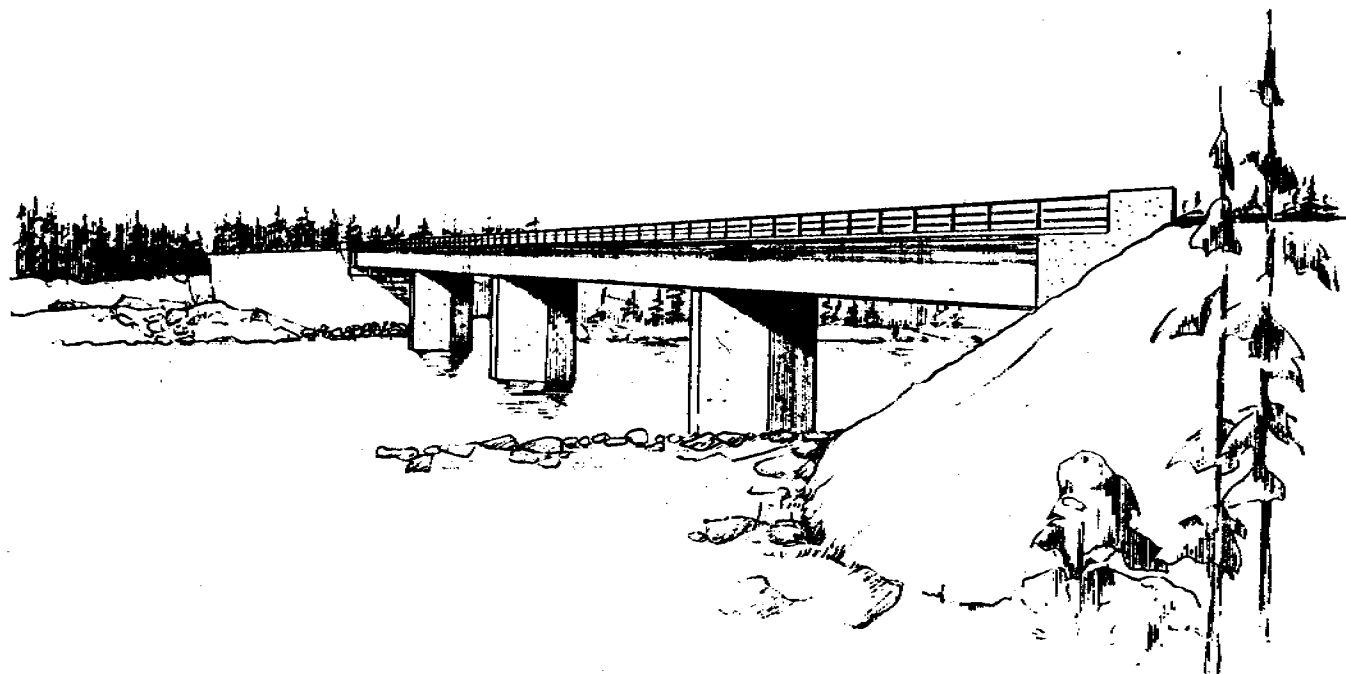
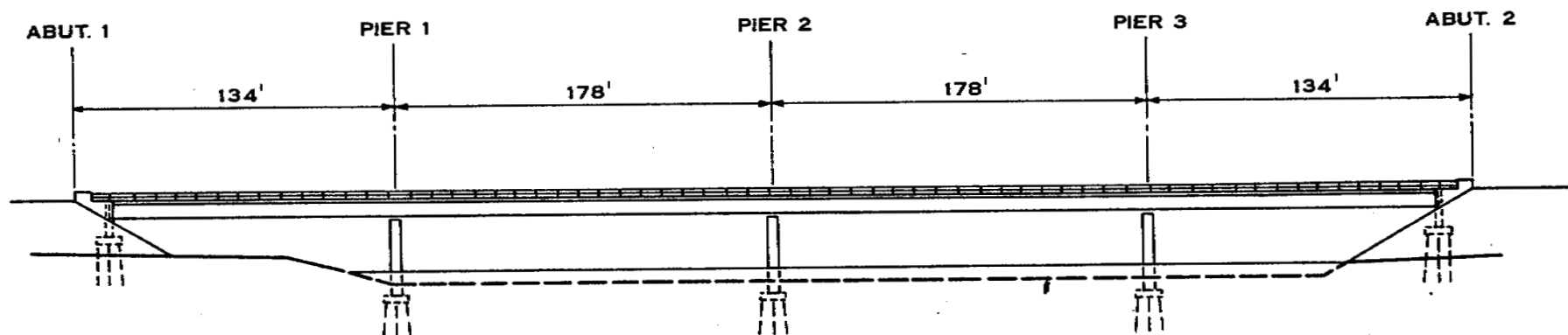


FIGURE 5



4 SPAN - CONTINUOUS GIRDER
FIG. 6