

This is a black and white aerial photograph showing a wide river meandering through a valley. The river occupies the central portion of the frame, with several small islands and sandbars visible within its channels. On the left bank, there is a thick, dark forest that extends towards the foreground. The right bank also features forested areas, though with some lighter-colored patches that could be fields or marshes. In the far background, a large, rounded mountain peak rises above the horizon, its slopes appearing relatively smooth. The sky is filled with soft, diffused clouds, creating a calm atmosphere. The overall perspective is from a high vantage point, looking down on the landscape.



D003870

mi 35.5-38.5, mi 41.4-63.8, mi 63.8-67.1

15-11-78- T2



MEMORANDUM

NOTE DE SERVICE

TO
A
Mr. G. D. Reid
Director, Transportation Program
Design and Construction
P.W.C., Ottawa

FROM
DE
Manager
Highways Program
Western Region

SUBJECT
OBJET
LIARD HIGHWAY, N.W.T.
PRELIMINARY CONTRACT PACKAGES
MILE 35.5 - 38.5, MILE 41.4 - 63.8 & MILE 63.8 - 67.1

SECURITY CLASSIFICATION - DE SÉCURITÉ
OUR FILE - N/RÉFÉRENCE 6220-A1-A
YOUR FILE - V/RÉFÉRENCE
DATE November 7, 1978

On November 3, 1978 plans, mass diagrams and updated geotechnical information were forwarded to you, for the above sections on the Liard Highway.

Enclosed are now 6 copies each of the Unit Price Tables, Special Requirements, plans showing borrow areas and a plan of the access road to the Liard River at Mile 61.6.


General Requirements and standard specifications are the same as used on previous contracts on the Liard and Mackenzie Highways, except that a specification for signing, culvert markers and deliniators has been added.

Note that there will be special ditch treatments at Miles 48, 49, 50, 52, 59 and 65. This has not been shown on the plans you received.

Four copies of the materials submitted should be forwarded to the Department of Indian and Northern Affairs in Ottawa for review.

The distribution of the Preliminary Tender Packages is shown on the attached distribution list.

Yours truly,

Fol 
F. E. Kimball
Manager
Highways Program

FEK/11

Enclosure

Attach.

Mr. A. Redshaw
Regional Manager
Water Resources Division
Department of Indian and
Northern Affairs
P.O. Box 1500
Yellowknife, N.W.T.
X1A 2R3
(2 copies specs, 1 sepia plans)

Mr. J. Ganske
Regional Manager
Land Resources Division
Department of Indian and
Northern Affairs
P.O. Box 1500
Yellowknife, N.W.T.
X1A 2R3
(3 copies specs)

Mr. G. McKinnon, Chairman
Regional Transportation Committee
Department of Fisheries and Environment
501 University Crescent
Winnipeg, Manitoba
(6 copies plans and specs)

Mr. J. Bentley, Chief
Highways Division
Department of Public Works
Government of the Northwest Territories
Yellowknife, N.W.T.
X1A 2L9
(1 copy plans and specs)

Mr. F. Janz
Head, Field Engineering Services
Department of Indian and
Northern Affairs
Room 220, 9925 - 109 Street
Edmonton, Alberta
T5K 2J8
(2 copies plans and specs)

Mr. C. H. Yurchak, Edmonton
(1 copy plans and specs)

Mr. K. Barnett, Edmonton
(1 copy plans and specs)

Mr. E. Viddal, Edmonton
(1 copy plans and specs)

1.1.1 Description

The work consists of clearing, grading, culvert installations and placing traffic gravel on approximately 3.0 miles of the Liard Highway in the Northwest Territories.

1.1.2 Location

Mile 0 of the Liard Highway is at its junction with the Mackenzie Highway, approximately 38 miles southeasterly from the Town of Fort Simpson, N.W.T. From the junction with the Mackenzie Highway, the Liard Highway routing runs in a southwesterly direction to the Northwest Territory - British Columbia boundary, a distance of approximately 158 miles. The Mackenzie Highway mileage at its junction with the Liard Highway is 258.4 with Mile 0 being at the Alberta - Northwest Territories boundary.

1.1.3 Project Access and Services

The northern limit of the project at Mile 35.5 is accessible by all weather road from settled parts in Alberta and southern communities in the N.W.T. by way of the Mackenzie Highway and previously completed construction on the Liard Highway from Mile 0 to Mile 35.5. Road access to Fort Simpson, N.W.T. is subject to closure of the Liard River Ferry Crossing during spring breakup and freeze-up in the fall. The Contractor is hereby advised that there is a temporary Bailey Bridge Crossing of the Birch River at Mile 32.4. A maximum loading of 40 tonnes (metric) and a maximum speed of 10 kilometres per hour will be enforced for this structure.

The Fort Simpson airport has a paved runway and is located adjacent to the Mackenzie Highway about 29 miles northwesterly from Mile 0 on the Liard Highway and is accessible by road except during the closure of the Liard River Ferry Crossing. There is regular scheduled commercial air service to the Fort Simpson airport. There is also an airstrip adjacent to the Liard Highway at Mile 21.2 which was previously used by others during construction of the highway.

1.1.3 Project Access and
Services (cont'd)

The Town of Fort Simpson is serviced by barge traffic on the Mackenzie River during the navigation season. There is also a barge landing on the Liard River previously constructed by others adjacent to approximately Mile 21.2 on the Liard Highway with an access road to the highway.

The above information on project access and services is for the Contractors guidance only and it will be his responsibility to fully investigate the access and services available in the area and to make himself familiar with the conditions of their use.

1.1.4 Scheduling

Work on the project shall commence no later than March 15, 1979.

Installation of the structural plate corrugated steel pipe culvert at Mile 36.1 and access to the section of the project that will be under construction in the summer of 1979 shall be completed prior to spring break up in 1979.

All work on the project shall be completed by July 31, 1980.

Installation of culverts and other work in flowing streams will not be permitted during the period May 1 to June 15. The Contractors attention is also directed to Article 1.1.7 with regard to conditions governing excavations and/or the construction of embankments during the period November 15 to May 15.

1.1.5 Clearing

Right-of-way clearing operations over the entire length of this project will be completed by others by March 1, 1979.

Clearing operations under this contract will consist of any required widenings to the clearing previously carried out, clearing of borrow pits, haul road right-of-ways, and disposal areas.

1.1.6 Interceptor/Offtake
Ditches

The Contractor is advised that interceptor/offtake ditches will be constructed on the project by others during the 1978/79 winter months. This work will be completed by March 1, 1979.

1.1.7 Roadway and
Borrow
Excavation

All roadway and borrow excavations shall be carried out in accordance with Division 9, Section 2(a) of the Specifications.

Notwithstanding Article 9.4.3.1.(i) of the Specifications the use of frozen materials will not be permitted in the construction of embankments except where specifically approved by the Engineer. Excavations 6 feet deep or less will not be permitted during the period from November 15 to May 15. Excavations deeper than 6 feet will be permitted during this period providing that the Engineer is satisfied that the frozen materials encountered are placed in embankments where the stability will later not be adversely affected and that the work is carried out in a manner to prevent freezing of thawed materials in the excavations prior to their removal.

Should the Contractor elect to work in excavations deeper than 6 feet during the winter months, the snow and ice shall be removed from the areas being excavated, as well as within the limits of the embankment. The embankment shall also be kept free of snow and ice during the placement of material. To prevent materials in the excavation from freezing, the Contractor shall operate work 24 hours a day.

Removal of frozen material that cannot be placed in the embankment will be considered incidental to the work and will not be measured separately for payment.

The removal of snow and ice specified above shall be considered incidental to the grading operations and will not be measured separately for payment.

Generally, all right-of-way excavations within each balanced section shall be completed prior to excavation of borrow. However, the Engineer may approve excavation of borrow material for initial roadway access prior to right-of-way excavation.

1.1.8 Compaction

Compaction equipment supplied on the work shall meet the requirements of Division 9, Section 4 of the Specification.

The Contractor shall supply one sheeps-foot compaction unit and one vibratory drum compaction unit, Type A.

The self-powered hand-operated vibratory plate unit is intended for use on culvert installations. The Contractor shall be responsible for determining the number of units required based on his proposed culvert installation operations.

1.1.9 Culvert Materials

All culvert and ancilliary materials required for the work will be provided by Public Works Canada in a stockpile near Mile 21.2 on the Liard Highway. The Contractor shall be responsible for delivery of the materials from the stockpile sites designated above to the individual installation sites.

1.1.10 Structural Plate
Corrugated Steel
Pipe Culverts

The construction of a temporary access across streams shall be considered incidental to the work of culvert installation, and will not be measured separately for payment.

1.1.11 Rip-Rap

Materials for stone rip-rap shall be sorted and gathered from roadway and borrow excavations on the project or from any other sources of large stone readily available and designated by the Engineer.

1.1.12 Traffic Gravel

Pit run gravel shall be placed on all roadway surfaces completed under this contract. The gravel will be taken from a stockpile in the vicinity of Mile 34 on the Liard Highway. This stockpile will be constructed by others during the winter of 1978/79.

Notwithstanding Division 9, Section 8, Articles 9.8.4.2 and 9.8.4.3, the quantity of pit run gravel and haul of pit run gravel will be measured in cubic yards and cubic yard miles.

1.1.13 Granular
Backfill

Granular backfill for structural plate corrugated steel pipe culverts will be obtained from the pit run gravel stockpile in the vicinity of Mile 34.

Measurement for payment for granular backfill and haul of granular backfill will be in accordance with Division 1, Section 1, Article 1.1.12.

1.1.14 Engineer's Camp

Public Works Canada will provide to the Contractor the following trailer units for the purpose of providing an Engineer's camp in accordance with Division 9, Section 14 of the Specifications.

- 1 Office trailer, 10 feet x 40 feet
- 2 Eight man sleeper units, 10 feet x 50 feet.

The Trailer units to be provided by the Department are stored adjacent to Mile 21.2 on the Liard Highway.

The Contractor shall provide washroom facilities for up to approximately 8 Public Works Canada employees by either:

- (a) supplying and operating a separate washroom trailer specifically for the purpose, or
- (b) increasing the size and capacity of the facilities provided for his own staff.

The facilities shall be fully self-contained and shall include as a minimum washbasins, showers and flush toilets as required to meet the appropriate regulatory requirements.

The Contractor shall also be responsible for supplying a storage shed together with all materials required for hallways and otherwise setting up the trailers as required in the Specifications.

1.1.14 Engineer's Camp
(cont'd)

The trailer units shall be placed in the Contractor's camp as required in Division 9, Section 14 of the Specification, Articles 9.14.2.1(a) and 9.14.2.2 notwithstanding. Upon completion of the work under this contract, the Department's trailer units shall be removed from the camp complex and moved by the Contractor to a site on the project designated by the Engineer.

1.1.15 Metric
Conversion

The Unit Price Table also shows the estimated work quantities in equivalent metric units. The Contractor is hereby advised this is shown for general interest only and is intended as a preliminary step in familiarizing the industry with metric units that will be used on future contracts. The metric units shown are not to be extended or in any way used as a basis for the Contractor's tender.

1.1.16 Winter Road

It will be the Contractor's responsibility when working on the project in the winter months to establish and maintain winter road access throughout the project.

During the early winter months of 1978/1979 a winter road through the project will be established by others.

The construction and maintenance of the winter road shall be considered incidental to other work and will not be measured separately for payment.

1.1.17 Co-operation
With Others

The Contractor is also hereby notified that other construction activities extending southward from this project may commence during the period of this contract. For such activities, the Contractor shall co-operate to the extent considered reasonable by the Engineer in providing other Contractors and their agents road access over this project.

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1.1.18 Funds

The Contractor is advised there will be no funds available for this Contract from time of award to March 31, 1978. The Department will accept no Progress Claim applications until April 1, 1979. Payment for work done to April 1, 1979, will become due under the Terms of Payment of the Contract upon receipt of a Progress Claim application from the Contractor on or after April 1, 1979.

prior

1.1.19 Labour
Requirements

- .1 The Contractor shall provide all necessary and properly qualified workmen to operate and maintain his equipment and camp.
- .2 The Contractor's attention is drawn to the following guideline for local residents and Section 27(2) of General Conditions "C". Notwithstanding all the terms of Section 27(2), special arrangements shall be enforced for this Contract in line with the guidelines. The Contractor, at least two (2) weeks prior to recruiting his work force, shall meet with the:

Manager
Canada Manpower Centre
Fort Simpson, N.W.T.

and acquaint him with all his labour force requirements. This meeting may also be attended by the Federal Department of Indian and Northern Affairs, Public Works Canada, and N.W.T. Gov't. Employment Liaison Officer.

The Canada Manpower Centre will identify for the Contractor local residents in the area of the contract who appear to have the qualifications to perform the duties as outlined by the Contractor and the Contractor must show Canada Employment and Immigration Commission just cause in the event these local people are not offered employment.

1.1.19 Labour
Requirements
(cont'd)

.3 Liard Highway Project Employment Guidelines

.1 The prime Contractor and Sub-Contractors will be required to notify the Canada Manpower Centre of all jobs at least two (2) weeks prior to recruiting his work force and the Contractor agrees to recruit his workers outside the Northwest Territories only to the extent that qualified residents are not available. The Canada Manpower Centre will act as the only employment referral agency.

.2 The prime Contractor will provide for Training-On-The-Job Contracts to be arranged with the Department of Manpower and Immigration for those indigenous Territorial residents who require special assistance in order to fill available jobs.

.4 Priorities for hiring on the Liard Highway (Mile 35.5 to 38.5) should be based upon residents in the following areas as of January 1, 1978.

Priority 1. Those residents of the area administered by the Fort Simpson Canada Manpower Office and residents of Fort Providence.

Priority 2. Those residents of other areas in the Northwest Territories.

Priority 3. Those residents of other areas in Canada.

In the event that persons are discharged or leave the job, replacement personnel are to be recruited using the same priorities and employment guidelines. Workers on lay off status will be recalled through the Fort Simpson Canada Manpower Centre.

1.1.20 Employment
Report

PRELIMINARY

The Contractor shall, no later than the day of each month, prepare and submit to Public Works Canada a report, showing for each person employed by the Contractor at any time during the previous month, their name, permanent residence, job classification, date hired, and date terminated.

Reporting forms will be supplied by Public Works Canada.

1.1.21 Geotechnical
and Design
Information

Notwithstanding Article 9.2(a).3.2(b) of the Specifications, the tender Plans show the location and designation of exploratory test holes that have been drilled along the proposed highway route and in areas of proposed and potential materials sources. Prospective bidders may obtain copies of the test result sheets for the holes shown from the Project Manager's office in Edmonton, Alberta and these will be considered part of the tender information. It is hereby emphasized to prospective bidders that the test results represent the conditions found in the exploratory holes on the dates that they were established. Any conclusions concerning material outside the bore holes will be the Contractor's own interpretation of the subsoil conditions.

The design mass diagram prepared for the work will also be made available for review by prospective bidders in the Project Manager's office. This will be made available for general information only and is not to be considered a part of the plans and specifications or to be taken as a guarantee of the material sources that will be taken from each source. The Engineer may add to or delete from the material sources indicated on the tender Plans or in the design mass diagram.

Unit Price Table

I/We agree that the following table is the Unit Price Table to be used for the purpose of:

GRADING, DRAINAGE AND STRUCTURES
MILE 35.5 to MILE 38.5
LIARD HIGHWAY, N.W.T.
PROJECT 085909

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
1.	Clearing Normal Division 1, Section 1 Division 9, Section 1	Acre (ha)	11.0 (4.5)	(DO NOT EXTEND)	
2.	Excavation Common Division 9, Section 1 Division 9, Section 2(a) Division 9, Section 4	Cu. Yd. (m ³)	130,000 (99,392)	(DO NOT EXTEND)	
3.	Channel Excavation Common Division 9, Section 3 Division 1, Section 1	Cu. Yd. (m ³)	1,200 (917)	(DO NOT EXTEND)	
4.	Compaction Division 1, Section 1 Division 9, Section 4				
	1. Sheepsfoot Compac- tion Unit	Hour (Hour)	80 (80)	(DO NOT EXTEND)	
	2. Vibratory Drum Compaction Unit Type "A"	Hour (Hour)	55 (55)	(DO NOT EXTEND)	
	3. Self-powered, Hand Operated Vibratory Plate Unit	Hour (Hour)	45 (45)	(DO NOT EXTEND)	
5.	Overhaul Division 9, Section 5	Cu. Yd.-Mile (m ³ -km)	18,000 (22,148)	(DO NOT EXTEND)	
6.	Overhaul	Cu. Yd.-Mile	18,000		

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
5.	Overhaul Division 9, Section 5	Cu. Yd.-Mile (m ³ -km)	18,000 (22,148)	(DO NOT EXTEND)	
6.	Pit Run Gravel Division 1, Section 1 Division 9, Section 8	Cu. Yd. (m ³)	5,200 (4,755)	(DO NOT EXTEND)	
7.	Gravel Haul Division 1, Section 1 Division 9, Section 8	Cu. Yd.-Mile (m ³ -km)	22,000 (27,070)	(DO NOT EXTEND)	
8.	Water for Compaction Division 9, Section 10	1,000 Gals. (m ³)	400 (1,818)	(DO NOT EXTEND)	
9.	Stone Rip-Rap Division 1, Section 1 Division 9, Section 11				
	1. Normal Hand-Placed	Cu. Yd. (m ³)	45 (34)	(DO NOT EXTEND)	
	2. Heavy Machine Placed	Cu. Yd. (m ³)	370 (283)	(DO NOT EXTEND)	
10.	Engineer's Camp Division 1, Section 1 Division 9, Section 14	Each (Each)	1 (1)	(DO NOT EXTEND)	
11.	Engineer's Board Division 9, Section 14	Man Days (Man Days)	675 (675)	(DO NOT EXTEND)	
12.	Install Corrugated Steel Pipe Culverts Division 1, Section 1 Division 9, Section 6				
	1. 30 inch diameter	Lin. Ft. (m)	118 (36)	(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
12.	2. 36 inch diameter	Lin. Ft. (m)	158 (48)	(DO NOT EXTEND)	
13.	Deliver and Install Corrugated Structural Plate Pipe Culverts With all Required Ancillary Equipment Division 1, Section 1 Division 9, Section 1				
(a)	Mile 36.1 Dwg. PWC-501 1 - 120" x 82'	Lin. Ft. (m)	82 (25)	(DO NOT EXTEND)	
(b)	Mile 38.5 Dwg. PWC-501 1 - 96" x 92'	Lin. Ft. (m)	92 (29)	(DO NOT EXTEND)	
14.	Install Highway Signs				
1.	One Post Type Division 9, Section 16	Each (Each)	6 (6)	(DO NOT EXTEND)	
15.	Install Culvert Markers Division 9, Section 16	Each (Each)	18 (18)	(DO NOT EXTEND)	
16.	Install delineators Division 1, Section 1 Division 9, Section 16	Each (Each)	15 (15)	(DO NOT EXTEND)	

TOTAL

1.1.1 Description

The work consists of clearing, grading, culvert installations and the placing of traffic gravel on approximately 22.4 miles of the Liard Highway in the Northwest Territories.

1.1.2 Location

Mile 0 of the Liard Highway is at its junction with the Mackenzie Highway, approximately 38 miles southeasterly from the Town of Fort Simpson, N.W.T. From the junction with the Mackenzie Highway, the Liard Highway routing runs in a southwesterly direction to the Northwest Territory - British Columbia boundary, a distance of approximately 158 miles. The junction of the Mackenzie Highway and the Liard Highway is at Mile 258.4 on the Mackenzie Highway with Mile 0 being at the Alberta - Northwest Territories boundary.

1.1.3 Project Access and Services

Mile 35.5 on the Liard Highway is accessible by all weather road from settled parts in Alberta and southern communities in the N.W.T. by way of the Mackenzie Highway and previously completed construction on the Liard Highway from Mile 0 to Mile 35.5.

Road access to Fort Simpson, N.W.T. is subject to closure of the Liard River Ferry Crossing during spring breakup and freeze-up in the fall. The Contractor is hereby advised that there is a temporary Bailey Bridge Crossing of the Birch River at Mile 32.4. A maximum loading of 40 tonnes and a maximum speed of 10 kilometres per hour will be enforced for this structure.

Winter access to the project will be by winter road from Mile 35.5 on the Liard Highway south to the northern limit of the project. The 1978/79 winter road access will have been completed by others. Due to Land Use Regulation the winter road can be expected to be closed to traffic by approximately March 31, 1979.

1.1.3 Project Access
and Services
(cont'd)

Summer access to the project will be by barge on the Liard River to a barge landing and access road to the Liard Highway adjacent to Mile 61.6. The construction of the access road to the river and the barge landing site will be part of this Contract.

Measurement for payment of the barge landing, staging area and access road will be in accordance with the appropriate Unit Price Table items. Maintenance will be performed by the Contractor at no cost to the Department.

The Nelson and Liard Rivers are navigable from Fort Nelson in British Columbia and Fort Simpson in the Northwest Territories, only during high water. However, barge access from adjacent to Mile 21.2 on the Liard Highway to the barge landing site at Mile 61.6 is generally possible to late September. Final loading date for barge shipment is governed by the barge companies.

There is access by air to Fort Simpson, N.W.T. The Fort Simpson airport has a paved runway and is located adjacent to the Mackenzie Highway about 29 miles northwesterly from Mile 0 on the Liard Highway.

The Contractor will be permitted to construct a maximum of one airstrip on this section of highway. The roadway may be widened to a maximum top width of 65 feet for a length of approximately 3000 feet. The location of the airstrip will be subject to the approval of the Engineer. Measurement for payment for the construction of an airstrip will be in accordance with the appropriate Unit Price Table items.

The Contractor shall permit use of the barge access road, airstrip and access to the airstrip by the Contractor constructing the Mile 63.8 to 67.1 section which will be under construction at the same time as this Contract.

1.1.3 Project Access
and Services
(cont'd)

Maintenance required to the barge access road, airstrip, and access to the airstrip shall be performed by the Contractor as determined by the Engineer at no cost to the Department.

The above information on project access and services is for the Contractor's guidance only and it will be his responsibility to fully investigate the access and services available in the area and to make himself familiar with the conditions of their use.

1.1.4 Scheduling

Work on the project shall commence no later than March 15, 1979. The project shall be completed by September 30, 1980.

Installation of culverts and other work in flowing streams will not be permitted during the period May 1 to June 15. The Contractor's attention is also directed to provisions elsewhere in these specifications with regard to conditions governing excavations and/or the construction of embankments during the period November 15 to May 15.

The construction of the barge access road and staging area and Mile 61.6 to 63.8 section shall be completed by June 1, 1979.

Generally travel of the Contractor's vehicles or equipment on the highway right-of-way will be permitted only after the embankment has been constructed to a minimum height of three (3) feet above the original ground. The Engineer may, however, authorize movement of vehicles and machinery on the right-of-way when the ground is frozen or on sections of the right-of-way where soil conditions are such that travel will not adversely affect the ground regime.

Restrictions to construction as might be specified in the Operating Terms and Conditions of the Liard Use Permit are applicable.

1.1.5 Interceptor/Offtake
Ditches

The Contractor is advised that interceptor/offtake ditches will be constructed on the project by others during the 1978/79 winter months. This work will be completed by March 1, 1979.

1.1.6 Clearing

Right-of-way clearing operations over the entire length of this project will be completed by others by March 1, 1979.

Clearing operations under this contract will consist of any required widenings to the clearing previously carried out, clearing of borrow pits, haul road right-of-ways, disposal areas and clearing for off-take ditches.

1.1.7 Roadway and
Borrow
Excavation

All roadway and borrow excavations shall be carried out in accordance with Division 9, Section 2(a) of the Specifications.

Notwithstanding Article 9.4.3.1.(i) of the Specifications the use of frozen materials will not be permitted in the construction of embankments except where specifically approved by the Engineer. Excavations 6 feet deep or less will not be permitted during the period from November 15 to May 15. Excavations deeper than 6 feet will be permitted during this period providing that the Engineer is satisfied that the frozen materials encountered are placed in embankments where the stability will later not be adversely affected and that the work is carried out in a manner to prevent freezing of thawed materials in the excavations prior to their removal.

Should the Contractor elect to work in excavations deeper than 6 feet during the winter months, the snow and ice shall be removed from the areas being excavated, as well as within the limits of the embankment. The embankment shall also be kept free of snow and ice during the placement of material. To prevent materials in the excavation from freezing, the Contractor shall operate 24 hours a day.

1.1.7 Roadway and
Borrow
Excavation
(cont'd)

Removal of frozen material that cannot be placed in the embankment will be considered incidental to the work and will not be measured separately for payment.

The removal of snow and ice specified above shall be considered incidental to the grading operations and will not be measured separately for payment.

Generally all right-of-way excavations within each balanced section shall be completed prior to excavation of borrow. The Engineer may, however, approve excavation of borrow material for initial roadway access prior to right-of-way excavation.

1.1.8 Compaction

Compaction equipment supplied on the work shall meet the requirements of Division 9, Section 4 of the Specifications.

The Contractor shall supply one each of the sheepsfoot compaction unit and vibratory drum compaction unit Type A.

The vibratory drum compaction unit Type B, self-powered hand-operated vibratory plate unit, and pneumatic hand-operated tamping unit are intended primarily for use in conjunction with culvert installations. The Contractor shall be responsible for determining the number of each type of unit required based on his proposed culvert installation operations.

1.1.9 Culvert Materials

Public Works Canada will supply to the Contractor all culvert and ancillary material required to complete the installations as shown on the plans or as designated by the Engineer in the field. The materials will be supplied f.o.b. at one or more sites within an eighty (80) kilometre radius of Edmonton, Alberta and will be available for pickup by the Contractor by February 15, 1979. The materials will consist of:

.1 Corrugated Steel Pipe

(a) 30 in. Dia., Thickness 14 Gauge

Section
Lengths 14',16',18',20',22'

Number of
Sections 35 3 12 12 23

(b) 36 in. Dia., Thickness 14 Gauge

Section
Lengths 14',16',18',20',22'

Number of
Lengths 9 6 5 19 14

(c) 48 in. Dia., Thickness 12 Gauge

Section
Lengths 14',16',18',20',22'

Number of
Sections - 5 4 13 4

(d) Couplers
c/w Bolts 30", 36", 48"

Number of
Units 65 45 22

1.1.9 Culvert Materials
(cont'd)

.2 Corrugated Structural Steel Plate Pipe

Ancillary Equipment Required

Cut-Off Walls

Diameter and Length			Hold-Down Stiffeners Top and Bottom
	Upstream	Downstream	
a) Mile 42.8 Dwg. PWC 503B 1 - 72" X 64'		X	
b) Mile 43.8 Dwg. PWC 503A 1 - 120" X 80'		X	X
c) Mile 45.9 Dwg. 504 1 - 168" X 120'	X	X	X
d) Mile 48.9 Dwg. PWC 504 1 - 204" X 184'	X	X	X
e) Mile 49.9 Dwg. PWC 505 1 - 120" X 130'		X	
f) Mile 50.7 Dwg. 505 1 - 216" X 150'	X	X	X
g) Mile 51.9 Dwg. 506 1 - 228" X 262'	X	X	X
h) Mile 59.3 Dwg. 506 1 - 216" X 200'	X	X	
i) Mile 62.9 Dwg. 507A 1 - 108" X 106'			

The detailed requirements for each installation site are shown on the drawings referred to in the above list.

Notwithstanding Article 9.6.4 of the Specifications the quantity of corrugated steel pipe culvert acceptably delivered to the project will be measured for payment separately from the quantity of corrugated steel pipe culvert acceptably installed. The delivery and installation of couplers and related hardware will not be measured separately for payment,

acceptably delivered to the project will be

1.1.9 Culvert Materials
(cont'd)

but shall be considered incidental to the delivery and installation of corrugated steel pipe culverts.

Notwithstanding Article 9.7.4 of the Specifications, the quantity of Corrugated Structural Plate Pipe to be measured for payment shall be the total length, measured along the invert(s) in lineal metres of culvert acceptably delivered, assembled and installed at each installation site.

1.1.10 Structural Plate
Corrugated Steel
Pipe Culverts

The construction of a temporary access across streams shall be considered incidental to the work of culvert installation, and will not be measured separately for payment.

1.1.11 Engineer's Camp

Public Works Canada will provide to the Contractor the following trailer units for the purpose of providing an Engineer's camp in accordance with Division 9, Section 14 of the Specifications.

- 1 Office Trailer, 3 m x 12 m
- 4 Eight Man Sleeper Units, 3 m x 15 m.

The trailer units to be provided by the Department are stored in the Department's yard in Fort Simpson, N.W.T.

The Contractor shall provide washroom facilities for up to approximately 20 Public Works Canada employees by either:

- (a) supplying and operating a separate washroom trailer specifically for the purpose, or
- (b) increasing the size and capacity of the facilities provided for his own staff.

The facilities shall be fully self-contained and shall include as a minimum washbasins, showers and flush toilets as required to meet the appropriate regulatory requirements.

1.1.11 Engineer's Camp
(cont'd)

The Contractor shall also be responsible for supplying a storage shed together with all materials required for hallways and otherwise setting up the trailers as required in the Specifications.

The trailer units shall be placed in the Contractor's camp as required in Division 9, Section 14 of the Specifications. Upon completion of the work under this contract, the Department's trailer units shall be removed from the camp complex and moved by the Contractor to a site on the project designated by the Engineer.

1.1.12 Traffic Gravel

Pit run gravel shall be placed on all roadway surfaces completed under this contract. The gravel for the section from Mile 63.8 to Mile 49 shall be taken from a pit adjacent to Mile 66.7. Stripping and the access road to this pit shall be completed by others prior to spring break-up in 1979. The Contractor shall obtain and stockpile the gravel requirement for the Mile 63.8 to 49 section prior to spring break-up in 1979. The gravel shall be stockpiled in the vicinity of the proposed borrow pit at Mile 62.5 as approved by the Engineer.

Pit run gravel for the section from Mile 41.4 to Mile 49 shall be from a stockpile to be established by others in the vicinity of Mile 41.4 during the winter of 1978/79.

Pit run gravel will be used for granular backfill of larger culverts as determined by the Engineer.

1.1.13 Rip-Rap

Materials for stone rip-rap shall be sorted and gathered from roadway and borrow excavations on the project or from any other sources of large stone readily available and designated by the Engineer.

1.1.14 Geotechnical and
Design Information

Notwithstanding Article 9.2(a).3.2(b) of the Specifications the Tender Plans show the location and designation of exploratory test holes that have been drilled along the proposed highway route and in areas of proposed and potential materials sources. Prospective bidders may obtain copies of the test result sheets for the holes shown from the Project Manager's office in Edmonton,

exploratory test holes that have been

1.1.14 Geotechnical and
Design
Information
(cont'd)

Alberta and these will be considered part of the tender information. It is hereby emphasized to prospective bidders that the test results represent the conditions found in the exploratory holes on the dates that they were established. Any conclusions concerning material outside the bore holes will be the Contractor's own interpretation of the subsoil conditions.

The design mass diagram prepared for the work will also be made available for review by prospective bidders in the Project Manager's office. This will be made available for general information only and is not to be considered a part of the Plans and Specifications or to be taken as a guarantee of the material sources that will be taken from each source. The Engineer may add to or delete from the material sources indicated on the Tender Plans or in the design mass diagram.

1.1.15 Delineators

Delineators shall be installed at the following locations as determined by the Engineer:

Sta. 2535+50 to 2541+50
Sta. 2579+50 to 2586+50
Sta. 2635+00 to 2638+00
Sta. 2673+00 to 2678+00
Sta. 2740+00 to 2745+00
Sta. 2940+50 to 2946+00
Sta. 3131+00 to 3135+50

1.1.16 Winter Road

It will be the Contractor's responsibility when working on the project in the winter months to establish and maintain winter road access throughout the project.

During the early winter months of 1978/1979 a winter road through the project will be established by others.

The construction and maintenance of the winter road shall be considered incidental to other work and will not be measured separately for payment.

1.1.17 Co-operation
With Others

The Contractor is also hereby notified that other construction activities in the vicinity of this project will be in progress during the period of this contract. For such activities, the Contractor shall co-operate to the extent considered reasonable by the Engineer in providing other Contractors and their agents road access through the limits of this project.

1.1.18 Funds

The Contractor is advised there will be no funds available for this contract from time of award to March 31, 1979. The Department will accept no Progress Claim applications until April 1, 1979. Payment for work done prior to April 1, 1979, will become due under the Terms of Payment of the contract upon receipt of a Progress Claim application from the Contractor on or after April 1, 1979.

1.1.19 Labour
Requirements

- .1 The Contractor shall provide all necessary and properly qualified workmen to operate and maintain his equipment and camp.
- .2 The Contractor's attention is drawn to the following guideline for local residents and Section 27 (2) of General Conditions "C". Notwithstanding all the terms of section 27(2), special arrangements shall be enforced for this contract in line with the guidelines. The Contractor, at least two (2) weeks prior to recruiting his work force, shall meet with the:

Manager
Canada Manpower Centre
Fort Simpson, N.W.T.

and acquaint him with all his labour force requirements. This meeting may also be attended by the Federal Department of Indian and Northern Affairs, Public Works Canada, and N.W.T. Gov't. Employment Liaison Officer.

The Canada Manpower Centre will identify for the Contractor local residents in the area of the contract who appear to have the qualifications to perform the duties as outlined by the Contractor and the Contractor must show Canada Employment and Immigration Commission just

cause in the event these local people are not offered employment.

1.1.19 Labour
Requirements
(cont'd)

.3 Liard Highway Project Employment Guidelines

- .1 The prime Contractor and Sub-Contractors will be required to notify the Canada Manpower Centre of all jobs at least two (2) weeks prior to recruiting his work force and the Contractor agrees to recruit his workers outside the Northwest Territories only to the extent that qualified residents are not available. The Canada Manpower Centre will act as the only employment referral agency.
- .2 The prime Contractor will provide for Training-On-The-Job Contracts to be arranged with the Department of Manpower and Immigration for those indigenous Territorial residents who require special assistance in order to fill available jobs.
- .3 Priorities for hiring on the Liard Highway (Mile 41.4 to 63.8) should be based upon residents in the following areas as of January 1, 1978.

Priority 1. Those residents of the area administered by the Fort Simpson Canada Manpower Office and residents of Fort Providence.

Priority 2. Those residents of other areas in the Northwest Territories.

Priority 3. Those residents of other areas in Canada.

In the event that persons are discharged or leave the job, replacement personnel are to be recruited using the same priorities and employment guidelines. Workers on lay off status will be recalled through the Fort Simpson Canada Manpower Centre.

1.1.20 Employment
Report

The Contractor shall, no later than the third day of each month, prepare and submit to Public Works Canada a report, showing for each person employed by the Contractor at any time during the previous month, their name, permanent residence, job classification, date hired, and date terminated.

Reporting forms will be supplied by Public Works Canada.

1.1.21 Metric
Conversion

The Unit Price Table also shows the estimated work quantities in equivalent metric units. The Contractor is hereby advised this is shown for general interest only and is intended as a preliminary step in familiarizing the industry with metric units that will be used on future contracts. The metric units shown are not to be extended or in any way used as a basis for the Contractor's tender.

1.1.22 Maintenance Services

The Contractor shall provide, from time to time, qualified maintenance staff and/or maintenance facilities for the purpose of maintaining the Engineer's equipment. For such work, the measurement for payment shall be according to Clause 45 of General Conditions "C".

Unit Price Table

I/We agree that the following table is the Unit Price Table to be used for the purpose of:

CLEARING, GRADING AND DRAINAGE
MILE 41.4 to MILE 63.8
LIARD HIGHWAY, N.W.T.

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
1.	Clearing Division 9, Section 1 Division 1, Section 1	Acre (ha)	60		
2.	Excavation Common Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)	1,300,000.		
3.	Excavation Rock Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)			
4.	Excavation Usable Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)			
5.	Excavation Waste Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)			
6.	Channel Excavation Common Division 9, Section 3 Division 1, Section 1	Cu.Yd. (m ³)	1000		
7.	Channel Excavation Rock Division 9, Section 3	Cu.Yd. (m ³)			

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
8.	Compaction Division 1, Section 1 Division 9, Section 4				
	1. Sheepsfoot Com- paction Unit	Hour (Hour)	1600		
	2. Pneumatic Tired Roller Unit	Hour (Hour)	—		
	3. Grid Roller Unit	Hour (Hour)			
	4. Vibratory Drum Compaction Unit, Type "A"	Hour (Hour)	800		
	5. Vibratory Drum Compaction Unit, Type "B"	Hour (Hour)	280		
	6. Self-powered, Hand Operated Vibratory Plate Unit	Hour (Hour)	400		
	7. Pneumatic, Hand Operated Tamping Unit	Hour (Hour)	140		
9.	Drying Equipment Division 9, Section 4 Division 1, Section 1	Hour (Hour)	—		
10.	Overhaul Division 9, Section 5	Cu.Yd.-Mile (m ³ -km)	140,000		
11.	Pit Run Gravel Division 9, Section 8 Division 1, Section 1	Ton (Tonne)	50,000		
12.	Screened Gravel Division 9, Section 8 Division 1, Section 1	Ton (Tonne)	—		

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
13.	Gravel Haul Division 9, Section 8 Division 1, Section 1	Ton-Mile (tonne-km)	420,000		
14.	Water for Compaction Division 9, Section 10	1,000 Gals. (m ³)	2,000		
15.	Stone Rip-Rap Division 9, Section 11 Division 1, Section 1				
	1. Normal Hand-Placed	Cu.Yd. (m ³)	700		
	2. Heavy Machine Placed	Cu.Yd. (m ³)	3500		
	3. Armour Machine Placed	Cu.Yd. (m ³)			
16.	Sacked Concrete Rip-Rap Division 9, Section 11 Division 1, Section 1	Cu.Yd. (m ³)	—		
17.	Ditch Lining Division 9, Section 12 Division 1, Section 1	Cu.Yd. (m ³)	—		
18.	Haul Ditch Lining Material Division 9, Section 12 Division 9, Section 5 Division 1, Section 1	Cu.Yd.-Mile (m ³ -km)	—		
19.	Snow and Ice Removal Division 9, Section 13	Hour (Hour)	—		

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
20.	Engineer's Camp Division 9, Section 14 Division 1, Section 1	Each (Each)	1		
21.	Engineer's Board Division 9, Section 14	Man Days (Man Days)	3300		
22.	Mobilization Division 9, Section 15	Lump Sum (Lump Sum)	1	\$350,000.00	
23.	Deliver Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
	1. 30 inch diameter	Lin. Ft. (m)	1,500		
	2. 36 inch diameter	Lin. Ft. (m)	1,000		
	3. 48 inch diameter	Lin. Ft. (m)	500		
24.	Install Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
	1. 30 inch diameter	Lin. Ft. (m)	1,500		
	2. 36 inch diameter	Lin. Ft. (m)	1,000		
	3. 48 inch diameter	Lin. Ft. (m)	500		

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
25.	Deliver 60 inch diameter Corrugated Structural Plate Pipe Culverts Division 9, Section 7 Division 1, Section 1	Lin. Ft. (m)	690		
26.	Install 60 inch diameter Corrugated Structural Plate Pipe Culverts Division 9, Section 7 Division 1, Section 1	Lin. Ft. (m)	690		
27.	Deliver and Install Corrugated Structural Plate Pipe Culverts With All Required Ancillary Equipment Division 1, Section 1 Division 9, Section 7				
	M 42.8 72" x 64'	LIN. FT.	64		
	M 43.8 120" x 80'	LIN. FT.	80		
	M 45.9 168" x 102'	LIN. FT.	102		
	M 48.9 204" x 184'	LIN. FT.	184		
	M 49.9 120" x 130'	LIN. FT.	130		
	M 50.7 216" x 150'	LIN. FT.	150		
	M 51.9 228" x 262'	LIN. FT.	262		
	M 59.3 216" x 200'	LIN. FT.	200		
28	INSTALL HIGHWAY SIGNS				
	1. DELINEATORS		42		
	2. CULVERT MARKERS		100		
	3. ONE POST TYPE SIGNS		26		

1.1.1 Description

The work consists of clearing, grading, culvert installations and placing traffic gravel on approximately 3.4 miles of the Liard Highway in the Northwest Territories.

1.1.2 Location

Mile 0 of the Liard Highway is at its junction with the Mackenzie Highway, approximately 38 miles southeasterly from the Town of Fort Simpson, N.W.T. From the junction with the Mackenzie Highway, the Liard Highway routing runs in a southwesterly direction to the Northwest Territory - British Columbia boundary, a distance of approximately 158 miles. The Mackenzie Highway mileage at its junction with the Liard Highway is 258.4 with Mile 0 being at the Alberta Northwest Territories boundary.

1.1.3 Project Access and Services

Mile 35.5 on the Liard Highway is accessible by all weather road from settled parts in Alberta and southern communities in the N.W.T. by way of the Mackenzie Highway and the previously completed section on the Liard Highway from Mile 0 to Mile 35.5. Road access to Fort Simpson, N.W.T. is subject to closure of the Liard River Ferry Crossing during spring breakup and freeze-up in the fall. The Contractor is advised that there is a temporary Bailey Bridge Crossing of the Birch River at Mile 32.4. A maximum loading of 40 tonnes (metric) and a maximum speed of 10 kilometres per hour will be enforced for this structure.

this Contract

Winter access to the project will be by winter road from Mile 35.5 on the Liard Highway south to the northern limit of the project. The 1978/79 winter road access will have been completed by others. Due to Land Use Regulation, the winter road can be expected to be closed to traffic by approximately March 31, 1979.

Summer access to the project will be by barge on the Liard River to a barge landing and access road to the Liard Highway adjacent to Mile 61.6. The access road to the river, the barge landing site and the Liard Highway from Mile 61.6 to the northern limit of this Contract, Mile 63.8, will be constructed by others by June 1, 1979. These facilities will be available for use by the Contractor.

1.1.3 Project Access
and Services
(cont'd)

The Contractor shall be responsible for any maintenance required to the above facilities resulting from his operation, as determined by the Engineer, at no cost to the Department.

The Nelson and Liard Rivers are navigable from Fort Nelson in British Columbia and Fort Simpson in the Northwest Territories, only during high water. However, barge access from adjacent to Mile 22.1 on the Liard Highway to the barge landing site at Mile 61.6 is generally possible to late September. Final loading date for barge shipment is governed by the barge companies. .

There is access by air to Fort Simpson, N.W.T. The Fort Simpson Airport located approximately 29 miles north of Mile 0 on the Liard Highway, has a paved runway.

There may be an airstrip constructed on the section of the Liard Highway between Mile 41.4 and Mile 63.8. The Contractor will be permitted to use this airstrip. Maintenance required to this airstrip as a result of the Contractor's operation shall be performed by the Contractor, as determined by the Engineer, at no cost to the Department.

The above information on project access and services is for the Contractor's guidance only and it will be his responsibility to fully investigate the access and services available in the area and to make himself familiar with the conditions of their use.

1.1.4 Schedule

Work on the project shall commence no later than March 15, 1979. All work on this project shall be completed by June 30, 1980.

Prior to spring break-up in 1979, the Contractor shall open the gravel deposit area at Mile 66.5 and construct a haul road to the highway from the material above the gravel zone.

1.1.4 Schedule
(cont'd)

The section of the highway south of the Blackstone River to Mile 67.1 shall be constructed in the winter months as there will be no summer access across the Blackstone River.

This gravel source will also be used by the Contractor working on the section north of this project, Mile 41.4 to Mile 63.8.

Installation of culverts and other work in flowing streams will not be permitted during the period May 1 to June 15. The Contractors attention is also directed to Article 1.1.7 with regard to conditions governing excavations and/or the construction of embankments during the period November 15 to May 15.

Restrictions to construction as might be specified in the Operating Terms and Conditions of the Liard Use Permit are applicable.

1.1.5 Clearing

Right-of-way clearing operations over the entire length of this project will be completed by others by March 1, 1979.

Clearing operations under this Contract will consist of any required widenings to the clearing previously carried out, clearing of borrow pits, haul road right-of-ways, and disposal areas.

1.1.6 Interceptor/Offtake
Ditches

The Contractor is advised that interceptor/offtake ditches will be constructed on the project by others during the 1978/79 winter months. This work will be completed by March 1, 1979.

1.1.7 Roadway and
Borrow
Excavation

All roadway and borrow excavations shall be carried out in accordance with Division 9, Section 2(a) of the Specifications.

Notwithstanding Article 9.4.3.1.(i) of the Specifications the use of frozen materials will not be permitted in the construction of embankments except where specifically approved by the Engineer. Excavations 6 feet deep or less will not be permitted during the period from November 15 to May 15. Excavations

1.1.7 Roadway and
Borrow
Excavation
(cont'd)

deeper than 6 feet will be permitted during this period providing that the Engineer is satisfied that the frozen materials encountered are placed in embankments where the stability will later not be adversely affected and that the work is carried out in a manner to prevent freezing of thawed materials in the excavations prior to their removal.

Should the Contractor elect to work in excavations deeper than 6 feet during the winter months, the snow and ice shall be removed from the areas being excavated, as well as within the limits of the embankment. The embankment shall also be kept free of snow and ice during the placement of material. To prevent materials in the excavation from freezing, the Contractor shall operate work 24 hours a day.

Removal of frozen material that cannot be placed in the embankment will be considered incidental to the work and will not be measured separately for payment.

The removal of snow and ice specified above shall be considered incidental to the grading operations and will not be measured separately for payment.

Generally, all right-of-way excavations within each balanced section shall be completed prior to excavation of borrow. However, the Engineer may approve excavation of borrow material for initial roadway access prior to right-of-way excavation.

1.1.8 Compaction

Compaction equipment supplied on the work shall meet the requirements of Division 9, Section 4 of the Specification.

*one sheepfoot
compaction unit and*

The Contractor shall supply one ~~sheep-~~
~~foot compaction unit~~ and one vibratory
drum compaction unit, Type A.

The self-powered hand-operated vibratory plate unit is intended for use on culvert installations. The Contractor shall be responsible for determining the number of units required based on his proposed culvert installation operations.

1.1.9 Culvert Materials

All culvert and ancilliary materials required for the work will be provided by Public Works Canada in a stockpile near Mile 21.2 on the Liard Highway. The Contractor shall be responsible for delivery of the materials from the stockpile sites designated above to the individual installation sites.

1.1.10 Structural Plate
Corrugated Steel
Pipe Culverts

The construction of a temporary access across streams shall be considered incidental to the work of culvert installation, and will not be measured separately for payment.

1.1.11 Rip-Rap

Materials for stone rip-rap shall be sorted and gathered from roadway and borrow excavations on the project or from any other sources of large stone readily available and designated by the Engineer.

1.1.12 Traffic Gravel

Pit run gravel shall be placed on all roadway surfaces completed under this contract. Pit run gravel will also be used for backfill of larger culverts as determined by the Engineer.

Pit run gravel will be obtained from the gravel and borrow source adjacent to Mile 66.5.

Notwithstanding Division 9, Section 8, Articles 9.8.4.2 and 9.8.4.3, the quantity of pit run gravel and haul of pit run gravel will be measured in cubic yards and cubic yard miles.

1.1.13 Engineer's Camp

Public Works Canada will provide to the Contractor the following trailer units for the purpose of providing an Engineer's camp in accordance with Division 9, Section 14 of the Specifications.

- 1 Office trailer, 10 feet x 40 feet
- 2 Eight man sleeper units, 10 feet x 50 feet.

The Trailer units to be provided by the Department are stored adjacent to Mile 21.2 on the Liard Highway.

1.1.13 Engineer's Camp
(cont'd)

The Contractor shall provide washroom facilities for up to approximately 8 Public Works Canada employees by either:

- (a) supplying and operating a separate washroom trailer specifically for the purpose, or
- (b) increasing the size and capacity of the facilities provided for his own staff.

The facilities shall be fully self-contained and shall include as a minimum washbasins, showers and flush toilets as required to meet the appropriate regulatory requirements.

The Contractor shall also be responsible for supplying a storage shed together with all materials required for hallways and otherwise setting up the trailers as required in the Specifications.

The trailer units shall be placed in the Contractor's camp as required in Division 9, Section 14 of the Specification, Articles 9.14.2.1(a) and 9.14.2.2 notwithstanding. Upon completion of the work under this contract, the Department's trailer units shall be removed from the camp complex and moved by the Contractor to a site on the project designated by the Engineer.

1.1.14 Metric
Conversion

The Unit Price Table also shows the estimated work quantities in equivalent metric units. The Contractor is hereby advised this is shown for general interest only and is intended as a preliminary step in familiarizing the industry with metric units that will be used on future contracts. The metric units shown are not to be extended or in any way used as a basis for the Contractor's tender.

1.1.15 Winter Road

It will be the Contractor's responsibility when working on the project in the winter months to establish and maintain winter road access throughout the project.

1.1.15 Winter Road
(cont'd)

During the early winter months of 1978/1979 a winter road through the project will be established by others.

The construction and maintenance of the winter road shall be considered incidental to other work and will not be measured separately for payment.

1.1.16 Co-operation
With Others

The Contractor is also hereby notified that other construction activities extending southward and northward from this project may commence during the period of this Contract. For such activities, the Contractor shall co-operate to the extent considered reasonable by the Engineer in providing other contractors and their agents road access over this project.

1.1.17 Funds

The Contractor is advised there will be no funds available for this Contract from time of award to March 31, ~~1978~~ 1979. The Department will accept no Progress Claim applications until April 1, 1979. Payment for work done prior to April 1, 1979, will become due under the Terms of Payment of the Contract upon receipt of a Progress Claim application from the Contractor on or after April 1, 1979.

1.1.18 Labour
Requirements

- .1 The Contractor shall provide all necessary and properly qualified workmen to operate and maintain his equipment and camp.
- .2 The Contractor's attention is drawn to the following guideline for local residents and Section 27(2) of General Conditions "C". Notwithstanding all the terms of Section 27(2), special arrangements shall be enforced for this Contract in line with the guidelines. The Contractor, at least two (2) weeks prior to recruiting his work force, shall meet with the:

Manager
Canada Manpower Centre
Fort Simpson, N.W.T.

and acquaint him with all his labour force requirements. This meeting may also be attended by the Federal Department of Indian and Northern Affairs, Public Works Canada, and N.W.T. Gov't. Employment Liaison Officer

1.1.18 Labour
Requirements
(cont'd)

The Canada Manpower Centre will identify for the Contractor local residents in the area of the contract who appear to have the qualifications to perform the duties as outlined by the Contractor and the Contractor must show Canada Employment and Immigration Commission just cause in the event these local people are not offered employment.

.3 Liard Highway Project Employment Guidelines

- .1 The prime Contractor and Sub-Contractors will be required to notify the Canada Manpower Centre of all jobs at least two (2) weeks prior to recruiting his work force and the Contractor agrees to recruit his workers outside the Northwest Territories only to the extent that qualified residents are not available. The Canada Manpower Centre will act as the only employment referral agency.
- .2 The prime Contractor will provide for Training-On-The-Job Contracts to be arranged with the Department of Manpower and Immigration for those indigenous Territorial residents who require special assistance in order to fill available jobs.
- .4 Priorities for hiring on the Liard Highway (Mile 35.5 to 38.5) should be based upon residents in the following areas as of January 1, 1978.
 - Priority 1. Those residents of the area administered by the Fort Simpson Canada Manpower Office and residents of Fort Providence.
 - Priority 2. Those residents of other areas in the Northwest Territories.
 - Priority 3. Those residents of other areas in Canada.

1.1.18 Labour
Requirements
(cont'd)

In the event that persons are discharged or leave the job, replacement personnel are to be recruited using the same priorities and employment guidelines. Workers on lay off status will be recalled through the Fort Simpson Canada Manpower Centre.

1.1.19 Employment
Report

The Contractor shall, no later than the day of each month, prepare and submit to Public Works Canada a report, showing for each person employed by the Contractor at any time during the previous month, their name, permanent residence, job classification, date hired, and date terminated.

Reporting forms will be supplied by Public Works Canada.

1.1.20 Geotechnical
and Design
Information

Notwithstanding Article 9.2(a).3.2(b) of the Specifications, the tender Plans show the location and designation of exploratory test holes that have been drilled along the proposed highway route and in areas of proposed and potential materials sources. Prospective bidders may obtain copies of the test result sheets for the holes shown from the Project Manager's office in Edmonton, Alberta and these will be considered part of the tender information. It is hereby emphasized to prospective bidders that the test results represent the conditions found in the exploratory holes on the dates that they were established. Any conclusions concerning material outside the bore holes will be the Contractor's own interpretation of the subsoil conditions.

The design mass diagram prepared for the work will also be made available for review by prospective bidders in the Project Manager's office. This will be made available for general information only and is not to be considered a part of the Plans and Specifications or to be taken as a guarantee of the material sources that will be taken from each source. The Engineer may add to or delete from the material sources indicated on the tender Plans or in the design mass diagram.

1.1.21 Delimiters

Roll-proof delimiters
will be installed between
station 3466 and
station 3471 as
designated by the
Engineer

Unit Price Table

I/We agree that the following table is the Unit Price Table to be used for the purpose of:

CLEARING, GRADING, DRAINAGE AND STRUCTURES
MILE 63.8 TO MILE 67.1
~~MACKENZIE~~ HIGHWAY, N.W.T.
LIARD

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
1.	Clearing Division 9, Section 1 Division 1, Section 1	Acre (m²) (ha)	20	(DO NOT EXTEND)	
2.	Excavation Common Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)	240,000	(DO NOT EXTEND)	
3.	Excavation Rock Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
4.	Excavation Usable Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
5.	Excavation Waste Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
6.	Channel Excavation Common Division 9, Section 3 Division 1, Section 1	Cu.Yd. (m ³)		(DO NOT EXTEND)	
7.	Channel Excavation Rock Division 9, Section 3	Cu.Yd. (m ³)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
8.	Compaction Division 1, Section 1 Division 9, Section 4				
	1. Sheepsfoot Compaction Unit	Hour (Hour)	230	(DO NOT EXTEND)	
	2. Pneumatic tired roller unit	Hour (Hour)		(DO NOT EXTEND)	
	3. Grid Roller Unit	Hour (Hour)		(DO NOT EXTEND)	
	4. Vibratory Drum Compaction Unit, Type "A"	Hour (Hour)	100	(DO NOT EXTEND)	
	5. Vibratory Drum Compaction Unit Type "B"	Hour (Hour)		(DO NOT EXTEND)	
	6. Self-powered, Hand Operated Vibratory Plate Unit	Hour (Hour)	50	(DO NOT EXTEND)	
	7. Pneumatic, Hand Operated Tamping Unit	Hour (Hour)		(DO NOT EXTEND)	
9.	Drying Equipment Division 9, Section 4	Hour (Hour)		(DO NOT EXTEND)	
10.	Overhaul Division 9, Section 5	Cu.Yd.-Mile (m ³ -km)	55,000	(DO NOT EXTEND)	
11.	Pit Run Gravel Division 9, Section 8 Division 1, Section 1	Cu. Yds. Ton (Tonne)	3,700	(DO NOT EXTEND)	
12.	Screened Gravel Division 9, Section 8 Division 1, Section 1	Ton (Tonne)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
13.	Gravel Haul Division 9, Section 8 <i>Division 1 Section 1</i>	<i>Cu.Yd. - Mile</i> Ten-Mile (tonne-km)	4,800	(DO NOT EXTEND)	
14.	Water for Compaction Division 9, Section 10 Division 1, Section 1	1000 Gals. (m ³)		(DO NOT EXTEND)	
15.	Stone Rip-Rap Division 9, Section 11 Division 1, Section 1				
	1. Normal Hand-Placed	<i>/</i> Cu.Yd. (m ³)	80	(DO NOT EXTEND)	
	2. Heavy Machine Placed	Cu.Yd. (m ³)	60	(DO NOT EXTEND)	
	3. Armour Machine Placed	Cu.Yd. (m ³)		(DO NOT EXTEND)	
16.	Sacked Concrete Rip-Rap Division 9, Section 11 Division 1, Section 1	Cu.Yd. (m ³)		(DO NOT EXTEND)	
17.	Ditch Lining Division 9, Section 12	Cu.Yd. (m ³)		(DO NOT EXTEND)	
18.	Haul Ditch Lining Material Division 9, Section 12 Division 9, Section 5	Cu.Yd.Mile (m ³ km)		(DO NOT EXTEND)	
19.	Snow and Ice Removal Division 9, Section 13	Hour (Hour)		(DO NOT EXTEND)	
20.	Engineer's Camp Division 9, Section 14	Each (Each)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
21.	Engineer's Board Division 9, Section 14	Man Days (Man Days)	400	(DO NOT EXTEND)	
22.	Mobilization Division 9, Section 15	Lump Sum (Lump Sum)		(DO NOT EXTEND)	
23.	Deliver Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
	1. 30 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
	2. 36 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
	3. 48 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
24.	Install Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
	1. 30 inch dia.	Lin.Ft. (m)	200	(DO NOT EXTEND)	
	2. 36 inch dia.	Lin.Ft. (m)	310	(DO NOT EXTEND)	
	3. 48 inch dia.	Lin.Ft. (m)	80	(DO NOT EXTEND)	
25.	Deliver 60 inch diameter Corrugated Structural Plate Pipe Culverts Division 9, Section 7 Division 1, Section 1	Lin.Ft. (m)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
26.	Install 60 inch diameter Corrugated Structural Plate Pipe Culvert Division 9, Section 7 Division 1, Section 1	Lin.Ft. (m)		(DO NOT EXTEND)	
27.	Deliver and Install Corrugated Structural Plate Pipe Culverts With all Required Ancillary Equipment Division 1, Section 1 Division 9, Section 1				
(a)	Mile 65.7 Dwg. 84" x 136' C.S.P.P	LIN. FT. Each (Each)	136	(DO NOT EXTEND	
(b)	Mile Dwg.	Each (Each)		(DO NOT EXTEND	
(c)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(d)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(e)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(f)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(g)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
(h)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(i)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(j)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(k)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(l)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(m)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
28. HIGHWAY SIGNS					
(a)	DELINEATORS	Each	8		
(b)	CULVERT MARKERS	Each	16		
(c)	ONE POST TYPE SIGNS	Each	4		
(d)	BARRICADE	Each	1		

Unit Price Table

I/We agree that the following table is the Unit Price Table to be used for the purpose of:

CLEARING, GRADING, DRAINAGE AND STRUCTURES
MILE 63.8 TO MILE 67.1
MACKENZIE HIGHWAY, N.W.T.
LIARD

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
1.	Clearing Division 9, Section 1 <i>Division 1, Section 1</i>	Acre <i>(m² ha)</i>	20	(DO NOT EXTEND)	
2.	Excavation Common Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)	240,000	(DO NOT EXTEND)	
3.	Excavation Rock Division 9, Section 2(a) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
4.	Excavation Usable Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
5.	Excavation Waste Division 9, Section 2(b) Division 9, Section 4	Cu.Yd. (m ³)		(DO NOT EXTEND)	
6.	Channel Excavation Common Division 9, Section 3 <i>Division 1, Section 1</i>	Cu.Yd. (m ³)		(DO NOT EXTEND)	
7.	Channel Excavation Rock Division 9, Section 3	Cu.Yd. (m ³)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
8.	Compaction Division 1, Section 1 Division 9, Section 4				
	1. Sheepsfoot Compaction Unit	Hour (Hour)	230	(DO NOT EXTEND)	
	2. Pneumatic tired roller unit	Hour (Hour)		(DO NOT EXTEND)	
	3. Grid Roller Unit	Hour (Hour)		(DO NOT EXTEND)	
	4. Vibratory Drum Compaction Unit, Type "A"	Hour (Hour)	100	(DO NOT EXTEND)	
	5. Vibratory Drum Compaction Unit Type "B"	Hour (Hour)		(DO NOT EXTEND)	
	6. Self-powered, Hand Operated Vibratory Plate Unit	Hour (Hour)	50	(DO NOT EXTEND)	
	7. Pneumatic, Hand Operated Tamping Unit	Hour (Hour)		(DO NOT EXTEND)	
9.	Drying Equipment Division 9, Section 4	Hour (Hour)		(DO NOT EXTEND)	
10.	Overhaul Division 9, Section 5	Cu.Yd.-Mile (m ³ -km)	55,000	(DO NOT EXTEND)	
11.	Pit Run Gravel Division 9, Section 8 Division 1, Section 1	Cu. Yds. Ton (Tonne)	3,700	(DO NOT EXTEND)	
12.	Screened Gravel Division 9, Section 8 Division 1, Section 1	Ton (Tonne)		(DO NOT EXTEND)	

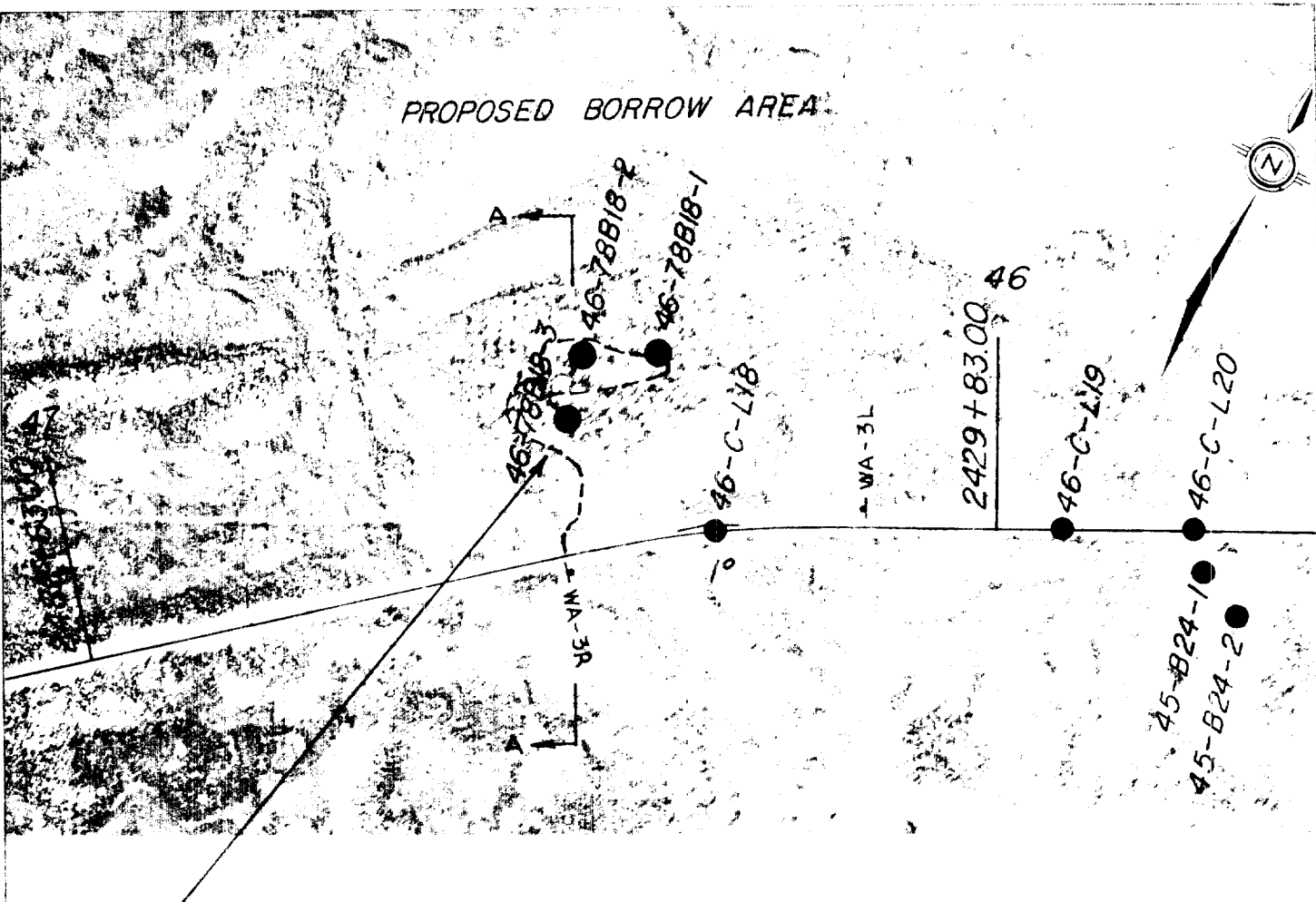
ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
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14.	Water for Compaction Division 9, Section 10 Division 1, Section 1	1000 Gals. (m ³)		(DO NOT EXTEND)	
15.	Stone Rip-Rap Division 9, Section 11 Division 1, Section 1				
	1. Normal Hand-Placed	<i>/</i> Cu.Yd. (m ³)	80	(DO NOT EXTEND)	
	2. Heavy Machine Placed	Cu.Yd. (m ³)	60	(DO NOT EXTEND)	
	3. Armour Machine Placed	Cu.Yd. (m ³)		(DO NOT EXTEND)	
16.	Sacked Concrete Rip-Rap Division 9, Section 11 Division 1, Section 1	Cu.Yd. (m ³)		(DO NOT EXTEND)	
17.	Ditch Lining Division 9, Section 12	Cu.Yd. (m ³)		(DO NOT EXTEND)	
18.	Haul Ditch Lining Material Division 9, Section 12 Division 9, Section 5	Cu.Yd.Mile (m ³ km)		(DO NOT EXTEND)	
19.	Snow and Ice Removal Division 9, Section 13	Hour (Hour)		(DO NOT EXTEND)	
20.	Engineer's Camp Division 9, Section 14	Each (Each)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
21.	Engineer's Board Division 9, Section 14	Man Days (Man Days)	400	(DO NOT EXTEND)	
22.	Mobilization Division 9, Section 15	Lump Sum (Lump Sum)		(DO NOT EXTEND)	
23.	Deliver Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
	1. 30 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
	2. 36 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
	3. 48 inch dia.	Lin.Ft. (m)		(DO NOT EXTEND)	
24.	Install Corrugated Steel Pipe Culverts Division 9, Section 6 Division 1, Section 1				
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	2. 36 inch dia.	Lin.Ft. (m)	310	(DO NOT EXTEND)	
	3. 48 inch dia.	Lin.Ft. (m)	80	(DO NOT EXTEND)	
25.	Deliver 60 inch diameter Corrugated Structural Plate Pipe Culverts Division 9, Section 7 Division 1, Section 1	Lin.Ft. (m)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
26.	Install 60 inch diameter Corrugated Structural Plate Pipe Culvert Division 9, Section 7 Division 1, Section 1	Lin.Ft. (m)		(DO NOT EXTEND)	
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(b)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(c)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(d)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(e)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(f)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(g)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	

ITEM	CLASS OF LABOUR, PLANT OR MATERIAL	UNIT OF MEASUREMENT	ESTIMATED QUANTITY	PRICE PER UNIT	TOTAL
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(i)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(j)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(k)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(l)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
(m)	Mile Dwg.	Each (Each)		(DO NOT EXTEND)	
28. HIGHWAY SIGNS					
(a)	DELINEATORS	Each	8		
(b)	CULVERT MARKERS	Each	16		
(c)	ONE POST TYPE SIGNS	Each	4		
(d)	BARRICADE	Each	1		

PROPOSED BORROW AREA



half road width
to road quarter width

2429+83.00
5,000 CY

excavation

SECTION A-A

100 200 300 400 500 600 700 800 900 1000



Public Works Travaux publics
Canada Canada

EXCAVATION
MILE
JACK HWY. N.T.

66 A.A.V.

WESTERN

040014

TWO

63
3328 + 3778

63-C-15

62
3275 + 5778

- 63-78B33-4
- 63-78B33-3
- 63-78B33-2
- 63-78B33-1

- 62-B5-3
- 62-78B32-3
- 62-B5-2
- 62-78B32-5
- 62-78B32-2
- 62-78B32-4

62-78B32-1
62-B5-1

PROPOSED BORROW AREA

BORROW REQUIRED

30,000 cu yd

due to known requirements of road
work, grading, necessity for incubation
area, etc. The performed
on this larger area beyond
designated borrow area.



Public Works Travaux publics
Canada Canada

BORROW EXCAVATION
V.L.F. 50
DART MOUNTAIN N.W.T.

G. E. ALLAN

G. E. Allan

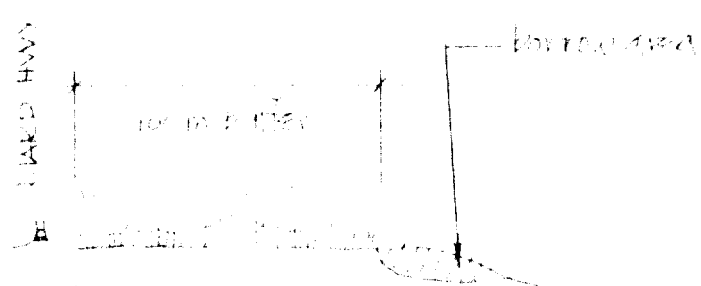
WESTERN

000014

THREE




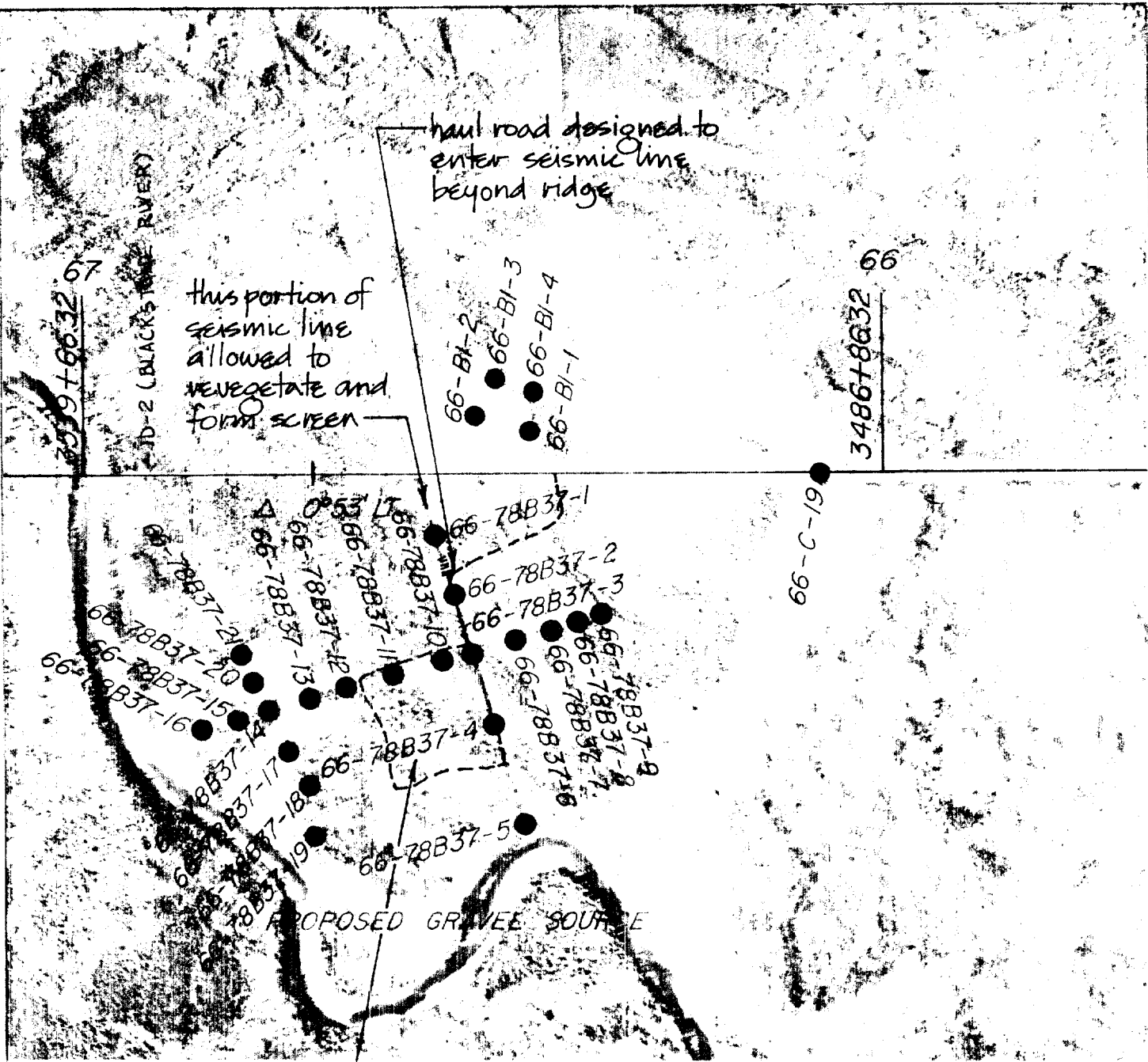
BORROW REQUIRED
40,000 cu.



SECTION A A



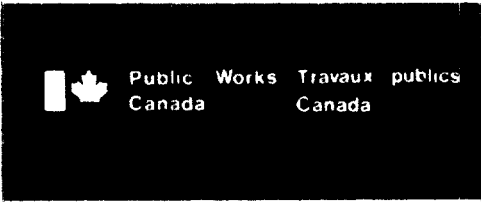
 Public Works Canada	ROADWAY ON MILE 64 HARD HWY N.W.T.	G. G. ALAN <i>[Signature]</i>
WESTERN	06515	FOUR



PROPOSED GRAVEL SOURCE

PROPOSED GRAVEL SOURCE
 2000 sq
 (STRENGTH)

PROPOSED GRAVEL SOURCE
 2000 sq
 (STRENGTH)



FRANCO ALBA
 MGR
 JAMES HAY

FRANCO ALBA
 MGR
 JAMES HAY

WESTERN

CP5015

FIVE