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DEPARTMENT OF HIGHWAYS OF ONTARIO
McDONALD CARTIER FREEWAY & KEELE STREET
DOWNSVIEW, ONTARIO

FOUNDATION INVESTIGATION
J34818 - M.P. 351-63
HOLDRIDGE CREEK BRIDGE
HWY. NO. 64
NEAR FIELD, ONTARIO

66-2390

Project: J3118

August, 1966

William Irwin Associates Limited

Project: J3118

Soil Mechanics
Consultants
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↓
Associates Ltd.

Mr. A. Rutka, P.Eng.,
Chief Materials & Testing Engineer,
Department of Highways of Ontario,
McDonald Cartier Freeway & Keele Street,
Downsview, Ontario.

August 3, 1966

Attention: Mr. A.G. Stermac, P.Eng.

Foundation Investigation
J34818 - W.P. 351-63
Holdridge Creek Bridge
Hwy. No. 64
Near Field, Ontario

Dear Sirs:

Following your letter of authorization dated July 5th, 1966, we have completed a foundation study at the above site. The field work was carried out during the period of July 11th to 23rd, 1966. Our findings and recommendations have been outlined briefly in the following paragraphs.

(1) The subsoil at this site was found to consist of a variable depth of boulders with a sand and gravel matrix over a granite bedrock. The surface of the granite bedrock was found to be broken or badly fissured over much of the area. Boulders in excess of 2 feet in diameter must be anticipated in the overburden. Water level was found to exist at or near river level El 916 feet approximately.

(2) It is recommended that the bridge be supported by spread footings founded near El 906. The network of boulders,



sand and gravel at this elevation can support a safe net bearing pressure of 4 tsf. Footings can be designed for this bearing value provided construction procedures do not disturb the original subsoil.

(3) The sand gravel and boulders are estimated to be free-draining, hence excavations below the present water table can be completed with a minimum of trouble provided the river is diverted well away from the area and provided the excavations are made oversize with perimeter drainage ditches.

(4) No embankment stability problem exists.

The above recommendations and conclusions have resulted from consideration of the following detail.

PROJECT

It is proposed to replace an existing Bailey Bridge over Holdridge Creek on Hwy. No. 64. Present plans indicate that the structure will be a single span of about 30 feet, however, a longer single span or possibly a 3 span structure is possible. Both possibilities have been considered when carrying out the field investigation.

THE SITE

Holdridge Creek is approximately 40 feet wide and flows in a westerly direction at this site. A check of site



conditions shows that the previous bridge at this location was probably supported by a rock filled timber crib. The present Bailey structure is supported by rock filled timber piers. The river flow was found to be negligible. Present water depths vary from 6 to 8 feet while the high water level appears to be near El 917.6 feet some 1 to 2 feet above present river level.

FIELD WORK AND SUBSOIL STRATIGRAPHY

The field work at this site comprised 8 borings located as shown on the site plan drawing. All holes were advanced by rotary drilling using diamond shoes or bits. Bedrock samples were obtained in all boreholes with the exception of number 1 using, AXT coring equipment.

The subsoil encountered is shown in detail on the borehole logs Dwg. 1 to 8 and in summary form on the site plan drawing. In general, the subsoil was found to be boulders with sand and gravel matrix over a granite type bedrock. The boulders, sand and gravel were estimated to be in a relatively dense state. Boulders in excess of 2 feet in diameter can be expected. The bedrock was found to be broken and fissured in the upper regions over much of the site.

Water levels in the boreholes were found to correspond with the river elevation. No artesian conditions were encountered.



FOUNDATIONS

It is recommended that the bridge be supported by spread footings founded 4 feet below maximum scour level. An examination of the borehole logs indicates that scour depth may have extended to El 910.0 feet (Borehole 8), hence all footings should be founded at or below elevation 906.0 feet. At this depth a safe net bearing value of 4 tsf may be used for design purposes. This design value assumes that no disturbance to the founding material will take place during the footing construction. The design value has been assessed by visual observation since samples of the subsoil could not be obtained because of the boulders.

Under the recommended loading the settlement of the structure should be negligible. Since the soil is granular and free-draining almost all the settlement will take place as construction proceeds.

DEWATERING

It will be necessary to excavate below the water table to install the spread footings. Before dewatering all oversize excavations including perimeter drainage ditches should be made. The base of the excavation should be crowned, with the footing area being the highest point of the cut and with the ground sloped down beyond the edge of the footing at 3 horizontal to 1 vertical.



The material which is removed should be placed on the river side of the excavation to form a dyke. In this manner the creek can be diverted around the excavation. The excavation can then be pumped out gradually. Continuous pumping will be required to keep the water table depressed in the working area.

The foregoing proposal will require an excavation which is much larger than that which would normally be needed for a bridge footing. In addition, because the soil is quite permeable, a considerable inflow of water can be expected. Provided the pumping equipment is adequate, the volume of seepage should gradually reduce with continued pumping. The flow can be minimized by directing the river well clear of the work. Since the sand and gravel is estimated to be reasonably well graded, it is expected to remain stable as the dewatering program progresses, provided that the perimeter walls of the excavation are sloped at approximately 2 horizontal to 1 vertical. Gradings of the sand boulders and gravel are not presented since they are not considered to be representative of the actual subsoil.

SCOUR PROTECTION

Positive measures against possible scour and erosion must be provided. Once footings are placed, the excavation should be backfilled with sand and gravel and covered with coarser rock at creek bed level. In addition, rip-rap should be placed in front of



the abutment and wing walls and on the adjacent sections of the road fill, up to the highest anticipated flood level.

APPROACH EMBANKMENTS

No problems are anticipated connected with the construction of the approach embankments. Stability will not be a problem at this site.

EARTH PRESSURES

If abutments and wing walls are used on this project, i.e., the approach fill does not spill through the abutments, they must be designed to withstand the lateral earth pressure exerted by the retained soils. The earth pressure that will act on the walls can be estimated using a value of earth pressure coefficient equal to 0.35 for a rigid type structure or 0.25 if some inward yield of the abutments is permissible. The earth pressure, p , on the walls at any depth, h , can be founded from the expression:

$$p = K \left(\gamma (h - h_1) + \gamma_s h_1 + q \right)$$

where:

- $K = 0.35$, the recommended earth pressure coefficient assuming the walls to be rigid, or 0.25 assuming a slight inward movement is permissible
- $\gamma = 130$ pcf, the estimated unit weight of the retained soil
- $\gamma_s = 65$ pcf, the estimated submerged weight of the retained soil



h_w = height of water table above the point being considered

q = surcharge, if any, acting at the top of the wall.

This calculation assumes that drainage facilities will be provided behind the wall so that the water table considered in the design will remain more or less constant.

The stability of the abutments and wing walls must be checked for horizontal sliding along the footing base. The resistance against sliding is the frictional force acting along the footing base. The frictional force developed along the base can be calculated using a friction coefficient of 0.7 (concrete sliding on granular soils). If the resisting force is less than $1\frac{1}{2}$ times the estimated sliding force, the footing base can be extended under the fill to increase the weight of backfill carried by it. In this manner, the resistance to sliding can be increased.

SEISMIC COMPARISON

A seismic survey was carried out by D.H.O. personnel and the data provided. A comparison of bedrock contact as determined by the subsoil survey and the seismic survey is shown on the site plan drawing. Large discrepancies can be noted; because of the very bouldery nature of the subsoil this site is



not considered ideal for seismic investigations.

Should you have any queries after examining the contents of this report, please do not hesitate to contact this office.

Yours very truly,

K. Peaker, P.Eng.

KP/ba
Encls.

Dist:- Department of Highways
of Ontario,

(11)

WILLIAM TROW ASSOCIATES LTD.

SOIL INVESTIGATIONS SOIL MECHANICS CONSULTATION

LEGEND

DRAWING NO. 1
J3118
PROJECT NO.

BOREHOLE NO. 1
PROJECT Proposed Crossing
LOCATION Hwy. 4 near Field, Ontario.
HOLE LOCATION See Site Plan
HOLE ELEVATION 915.9 ft.
DATE 1/15/68 See Site Plan

PENETRATION RESISTANCE

2" O.D. SPIGOT TUBE
2" O.D. SHELBY TUBE
2" DIA. CONE

SHEAR STRENGTH

UNSATURATED TRIAXIAL
AT OVERBURDEN PRESSURE

UNCONFINED COMPRESSION

WANE TEST AND SENSITIVITY

NATURAL MOISTURE CONTENT AND LIQUIDITY INDEX

ATTENBERG LIMITS

LIQUID LIMIT

PLASTIC LIMIT

SAMPLE TYPE

2" O.D. SPIGOT TUBE

2" O.D. SHELBY TUBE

2" O.D. SHELBY TUBE

DEPTH FEET	DEPTH METERS	SOIL DESCRIPTION	WATER CONTENT PERCENT	LIQUIDITY INDEX	NATURAL MOISTURE CONTENT AND ATTENBERG LIMITS (% DRY WEIGHT)	SAMPLE TYPE AND NO.	NATURAL UNIT WEIGHT P.C.F.
		Water Surface	915.9	0			
		WATER					
		Sand, Gravel & Boulders- densely packed boulders with sand and gravel matrix, unable to penetrate by driving casing advanced by diamond drilling procedures.	911.4	10			
		End of Borehole	889.9				

Notes: 1) Hole advanced by rotary drilling
using diamond bits.
2) Drill located on raft.

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GEO. INVESTIGATIONS SOIL MECHANICS CONSULTATION

DRAWING NO. 2
PROJECT NO. 34118

LEGEND

PENETRATION RESISTANCE

1. 100 SPLIT TUBE

2. 100 SHELBY TUBE

3. DIA. CONE

SHEAR STRENGTH

UNDRAINED TRIAXIAL

AT OVERBURDEN PRESSURE

UNCONFINED COMPRESSION

VANE TEST AND SENSITIVITY (S)

NATURAL MOISTURE CONTENT
AND LIQUIDITY INDEX

ATTERBERG LIMITS

LIQUID LIMIT

PLASTIC LIMIT

SAMPLE TYPE

1. 100 SPLIT TUBE

2. 100 SHELBY TUBE

3. 100 SHELBY TUBE

BOREHOLE NO. 2
PROJECT Proposed Crossing
LOCATION Hwy. 64 near Field, Ontario.
HOLE LOCATION See Site Plan
HOLE ELEVATION 927.1 ft.
DATE See Site Plan




SAMPLE	SOIL DESCRIPTION	ELEV. FEET	DEPTH FEET	PENETRATION RESISTANCE				NATURAL MOISTURE CONTENT AND ATTERBERG LIMITS				SAMPLE TYPE AND NO.	NATURAL UNIT WEIGHT pcf
				100 SPLIT TUBE	100 SHELBY TUBE	150 FT. LB BLOWSET NO.	DIAMETER INCHES	W	U	LL	PL		
	Water Surface	927.1	0										
	WATER												
	BOULDERS - with sand and gravel matrix, relatively dense, unable to penetrate using driving methods	913.4											
			10										
			20										
			30										
		886.1											
	REDROCK - hard, granite, with sand filled fissures or seams. Cored AX from 31 to 39 ft, recovery 65%.												
	End of Borehole	878.1											

Notes: 1) Hole advanced by rotary drilling
using diamond bits.
2) Drill positioned on raft.

[illegible]

(DATE AND TIME) 3
 PROJECT NO. J3118

PENETRATION RESISTANCE

- 1 O.D. SPLIT TUBE 
 2 I.D. SPLIT TUBE 
 3 DIA. CONE 

SHEAR STRENGTH

- UNDRAINED TRIAXIAL
AT OVERBURDEN PRESSURE
UNCONFINED COMPRESSION
VANE TEST AND SENSITIVITY

NATURAL MOISTURE CONTENT AND LIQUIDITY INDEX

ATTERBERG LIMITS

WORLD LEAD

PLASTIC LIMITS




SAMPLE TYPE

- 2 00 SPILL TUBE
2 00 SPILL TUBE
1 00 SPILL TUBE

BOREHOLE NO. 3
 PROJECT Proposed Crossing
 LOCATION Hwy 64 near Field, Ontario
 HOLE LOCATION See Site Plan
 HOLE ELEVATION 915.6 ft.
 DAYUM See Site Plan

[illegible]

PENETRATION RESISTANCE

2. OLD SPILT TUBE 
3. TO SHELBY TUBE 
4. DIA CONE 

SHEAR STRENGTH

UNTRAINED TRIAXIAL
AT OVERBURDEN PRESSURE

UNCONFINED COMPRESSION

[illegible]

NATURAL MOISTURE CONTENT
AND LIQUIDITY INDEX

ATTERBERG LIMITS

LEONARD L. BLOOM

附註：本表係根據 1990 年 12 月 31 日之資料編製。

SAMPLE TYPE

2. C.D. HENKEL

● 10 ●




THE UNIVERSITY OF CHICAGO

SAMPLE NO.	SOIL DESCRIPTION	ELEV FEET	DEPTH FEET	PENETRATION RESISTANCE				NATURAL MOISTURE CONTENT AND ATTENDING LIMITS % DRY WEIGHT	SAMPLE TYPE AND NO.	NATURAL UNIT WEIGHT PCF
				70	80	90	100			
	Water Surface	916.4	0							
	Water	914.1								
	BOULDERS with sand and gravel matrix. Core recovery indicates boulders greater than 2 feet in diameter are present.		10							
			20							
		890.9								
	BEDROCK-granite some fissuring or layering noted, fissures are sand filled. Cored AX from 25½ to 36¼ recovery 75%.		30							
	End of Borehole	879.9								
	Notes: 1) Hole advanced by rotary drilling using diamond bits.									
	2) Drill positioned on raft.									

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DRAWING NO. 5
PROJECT NO. J3118

PENETRATION RESISTANCE

2 00 SPLIT TUBE 
2 10 SHELBY TUBE 
2 DIA CONE 

SHEAR STRENGTH

UNDRAINED TRIAXIAL
AT OVERBURDEN PRESSURE
UNCONFINED COMPRESSION
VANE TEST AND SENSITIVITY

NATURAL MOISTURE CONTENT
AND LIQUIDITY INDEX

ATTERBERG LIMITS

LIQUID LIMIT _____
PLASTIC LIMIT _____
SAMPLE TYPE _____

2 OD SPLIT TUBE
2 10 SHELBY TUBE
3 OD SHELBY TUBE

BOREHOLE NO. 5
PROJECT Proposed Crossing
LOCATION Hwy. 64 near Field, Ontario
HOLE LOCATION See Site Plan
HOLE ELEVATION 918.0 ft.
DATUM See Site Plan

SYMBOL	SOIL DESCRIPTION	ELEV FEET	DEPTH FEET	PENETRATION RESISTANCE				150 P. LB BLOWS/FT	NATURAL MOISTURE CONTENT AS ATTENDED, PERCENT ON DRY WEIGHT	SAMPLE TYPE AND NO.	NATURAL UNIT WEIGHT P.C.F.
				20	40	60	80				
	Topsail	918.0	0								
	Wood cribbing, sand, alluvial deposits.	913.0									
	BOULDERS-with sand and gravel matrix.		10								
		897.5	20								
	BEDROCK-broken granite cored AX 204 to 31 ft., recovery estimated at 75% lost core barrel on last run.										
	End of Borehole	887.0	30								
Notes: 1)Hole advanced by rotary drilling using diamond bits.											
2)Water level at 915.9 ft.			10								

SITE INVESTIGATIONS SOIL MECHANICS CONSULTATION

DRAWING NO. 6
PROJECT NO. J3118

PENETRATION RESISTANCE

2 00 SPLIT TUBE -----

U.S. SHELLEY TUBES

2 DIA CONE

SHEAR STRENGTH

《中国药典》规定：可待因含氮量应为 9.5%~10.5%。

UNCONFINED COMPRESSION

[illegible]

NATURAL MOISTURE CONTENT AND LIQUIDITY INDEX

ATTENDING LIMITS

● 1986年10月

附註：本報廣告費，請向本報經理處接洽。

SAMPLE TYPE

200 SPENT RUBLE

● 2010 年 10 月 10 日 星期六




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6
 FORENOLE NO. _____
 PROJECT **Proposed Crossing**
 LOCATION **Hwy. 64 near Field, Ontario.**
 HOLE LOCATION **See Site Plan**
 HOLE ELEVATION **918.0 ft.**
 DATUM **See Site Plan**





SYMBOL	SOIL DESCRIPTION	ELEV FEET	DEPTH FEET	UNIT WEIGHT pcf	WATER CONTENT %	FLUIDITY INDEX	NATURAL MOISTURE CONTENT AND FLUIDITY INDEX	SAMPLE NO.	NATURAL MOISTURE CONTENT INDEX
2 1 									

BOREHOLE NO. 7
 PROJECT Proposed Crossing
 LOCATION Hwy. 64 near Field, Ontario.
 HOLE LOCATION See Site Plan
 HOLE ELEVATION 919.0 ft.
 DATUM See Site Plan






PENETRATION RESISTANCE




2" O.D. SPLIT TUBE 
 3" I.D. SHELBY TUBE 
 2" O.D. CONE 

SHEAR STRENGTH

UNDRAINED TRIAXIAL 
 AT OVERBURDEN PRESSURE 
 UNCONFINED COMPRESSION 
 VANE TEST AND SENSITIVITY (S) 

NATURAL MOISTURE CONTENT

AND LIQUIDITY INDEX 
 ATTERBERG LIMITS 
 LIQUID LIMIT 
 PLASTIC LIMIT 
 SAMPLE TYPE 




2" O.D. SPLIT TUBE 
 2" I.D. SHELBY TUBE 
 3" O.D. SHELBY TUBE 

SYMBOL	SOIL DESCRIPTION	ELEV FEET	DEPTH FEET	PENETRATION RESISTANCE				NATURAL MOISTURE CONTENT AND LIQUIDITY INDEX	ATTERBERG LIMITS % DRY WEIGHT	SAMPLE TYPE AND NO	NATURAL UNIT WEIGHT P.C.F.
				20	40	60	80				
				SHEAR STRENGTH							
				P.S.F.							
		919.0	0								
	TOPSOIL - ROCK- SAND & GRAVEL	917.5									
	WOODEN LOGS, SAND, etc.										
		913.0									
	BOULDERS - SAND - GRAVEL - less boulders from 19 to 34 ft.		10								
			20								
			30								
			40								
	BEDROCK- broken granite with fissures or seams, Recovery 55%	879									
	End of Borehole	872									
	Notes: 1) Hole advanced by rotary drilling using diamond bits. 2) Water level at 4 ft.		50								
			60								
			70								
			80								
			90								
			100								
			110								

GEO INVESTIGATIONS SOIL MECHANICS CONSULTATION

LEGEND

PENETRATION RESISTANCE

2. O.D. SPLIT TUBE 
3. I.D. SHELBY TUBE 
4. DIA. CONE 

SHEAR STRENGTH

UNGRAINED TRIAXIAL
AT OVERBURDEN PRESSURE
UNCONFINED COMPRESSION
CAGE TEST AND SENSITIVITY

NATURAL MOISTURE CONTENT AND LIQUIDITY INDEX

ATTERBERG LIMITS

LIQUID LIMIT

PLASTIC LIMIT

SAMPLE TYPE

1. O.D. SPLY TUBE.

2. 10. SHELBY TUBE

3 O O SHELBY TUBE

2) Water at 1 ft. below surface.

SEISMIC INVESTIGATION
PROPOSED CROSSING AT HOLDRIDGE CREEK AND PROPOSED HWY #64

14.1 mi. N. of sec. Hwy. #539
Dist. #13

W. P. 351-63

INTRODUCTION

At the request of the Foundation Office, Toronto, a seismic survey was carried out at the proposed bridge site over the Holdridge Creek and proposed Highway #64, 14.1 North of secondary Highway #539.

The survey was conducted to give a depth to bedrock determination at eight points four on each side of the creek, at the location of the end of the footings (see Fig. 1).

Therefore, at the request of Mr. Ken Selby, Supervising Foundation Engineer, Toronto, a seismic survey of the above mentioned foundation location were undertaken from June 28 to June 30, 1966.

TEST PROCEDURE

A seismograph model FS-2 with two channels was used to measure the velocity of the sound waves in this investigation.

Subsurface exploration by use of the seismic technique was undertaken to determine:

- (1) The thickness and characteristics of the Pleistocene sediment
- (2) The configuration of the bedrock surface beneath the sediment.

Seismic depth determination were made at 200 foot intervals 20 feet left and right from the proposed centre line at the ends of the footings on both side of Holdridge Creek crossing.

PHYSIOGRAPHY

The surveyed area is located at the proposed crossing over Holdridge Creek and proposed Highway #64, in Township of Thistle, District #13.

The district is part of Marten Lake and Nipissing physiographic region.

The investigated area is underlain by sand and coarse gravel deposited during the late glacial time. Most of the area is a coarse gravel outwash.

Holdridge Creek has cut a prominent valley in Pleistocene sediments between Red Cedar Lake and Turcotte Lake.

Elevation of the creek and Red Cedar Lake is 917.0' above the sea level.

GENERAL GEOLOGY

The area within the project is underlain by granite, granitic gneisses, which are basic intrusive rocks and as a geological district the rocks belong to the Subdury Eruptive Complex.

The bedrock is highly resistant and has good engineering properties. At the Lodge at Station 357+00 the bedrock is

visible for 40 feet. In this rock the effects of glacial erosion are most strikingly displayed. Depositional features are also present and add distinctiveness to the landscape.

PLEISTOCENE SEDIMENTS

The project and vicinity has been levelled by ice-sheets coming from the north-east. The amount of drift is varied ranging from thin layers on the left of Station 357+00 to massive hills of gravel 300 feet east on the gravel road at Station 357+00. On the east side of the gravel road, as mentioned before, approximately, at a distance of 300 feet is an open face pit with a height of 25 to 35 feet. The material is stoney gravel.

FACTORS EFFECTING THE SEISMIC SURVEY

1) Cross Logging

On the south side of Holdridge Creek at seismic points 5, 6 7, and 8 there is extensive cross logging (see figure 1). This condition is probably due to an old road bed or bridge foundation. The logs have greatly decayed and increased the organic material of the soil. This condition causes a large loss of sound energy because of the absorption. Therefore a correction had to be made in the interpretation of the time-distance graphs.

In this area the cross logging is visible in only certain places and covered with granular material for the rest.
(see figure 2).

2) Stone Cribbing

The approach and foundation of the existing Bailey Bridge is made up of a rock crib resting on the old foundation (see figure 1).

PRESENTATION OF RESULTS

The results of the seismic investigation are presented in the form of points determinations at the end of the proposed footings, as requested by the Foundation Office, Toronto (see figure 1). The seismic survey-line profiles (I to VIII respectively) are drafted at the scale of 1 inch - 20 feet, horizontally and 1 inch - 10 feet, vertically. On the profiles, the overburden and the bedrock with their velocities are indicated.

CONCLUSIONS

The profiles are self-explanatory and very little description is needed here. The maximum depth of overburden recorded is 32 feet. The eight profiles on each footing end show essentially the same structure. The very consistent high velocity of the granite is indicative of the dense matrix.

Sturgeon Falls,
June 30, 1966

S. A. Szenasi,
Geophysicist.

W.P. 351 - 63

SEISMIC SURVEY PROFILES

PROPOSED CROSSING AT HOLDRIDGE CREEK

14.1 MILES NORTH OF SECONDARY HWY. 539

ON

HIGHWAY NO. 64.

TOWNSHIP OF THISTLE

DISTRICT OF NIPISSING

DISTRICT NO. 13

SEISMIC SURVEY PROFILES

SEISMIC SURVEY LINE

1 -	STA. 355 + 00	TO	STA. 357 + 40	25' RT =	240' FT.
2 -	STA. 355 + 00	TO	STA. 357 + 25	20' RT =	225' FT.
3 -	STA. 355 + 00	TO	STA. 357 + 45	20' LT =	245' FT.
4 -	STA. 355 + 00	TO	STA. 357 + 45	25' LT =	245' FT.
5 -	STA. 352 + 20	TO	STA. 355 + 00	25' RT =	280' FT.
6 -	STA. 352 + 20	TO	STA. 355 + 00	20' RT =	280' FT.
7 -	STA. 352 + 20	TO	STA. 355 + 00	25' LT =	280' FT.
8 -	STA. 352 + 20	TO	STA. 355 + 00	20' LT =	280' FT.

TOTAL 2075

TOTAL SURVEYED LINE 2075 FT. = 0.393 MI.

SCALE HORIZONTAL 1" = 20'
VERTICAL 1" = 10'

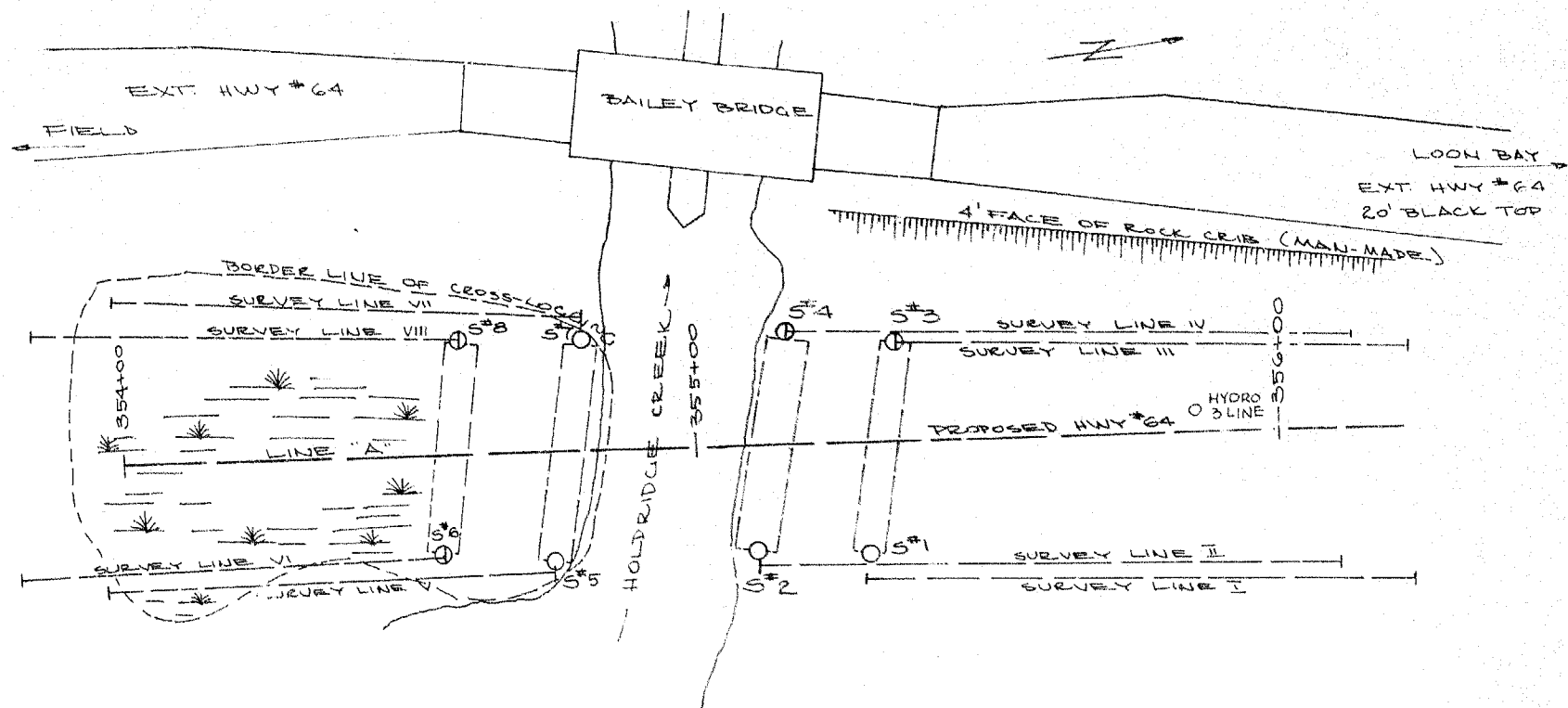
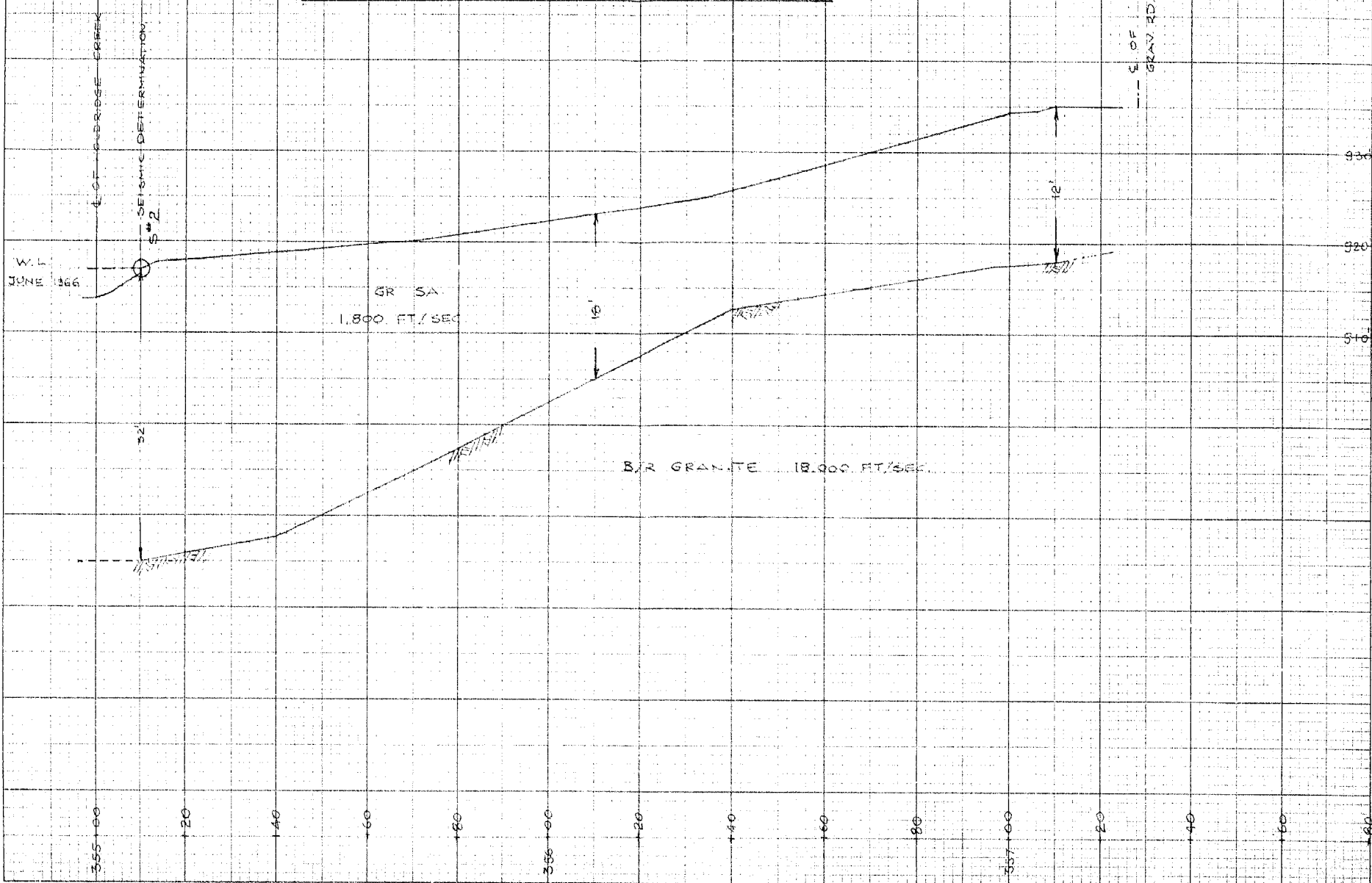


FIG #1 : SHOWING THE SEISMIC SURVEY LOCATION AT PROPOSED CROSSING AT HOLDRIDGE CREEK AND PROPOSED HWY #64. SEISMIC SURVEY DETERMINATION ARE LOCATED AT THE ENDS OF THE FOOTINGS.

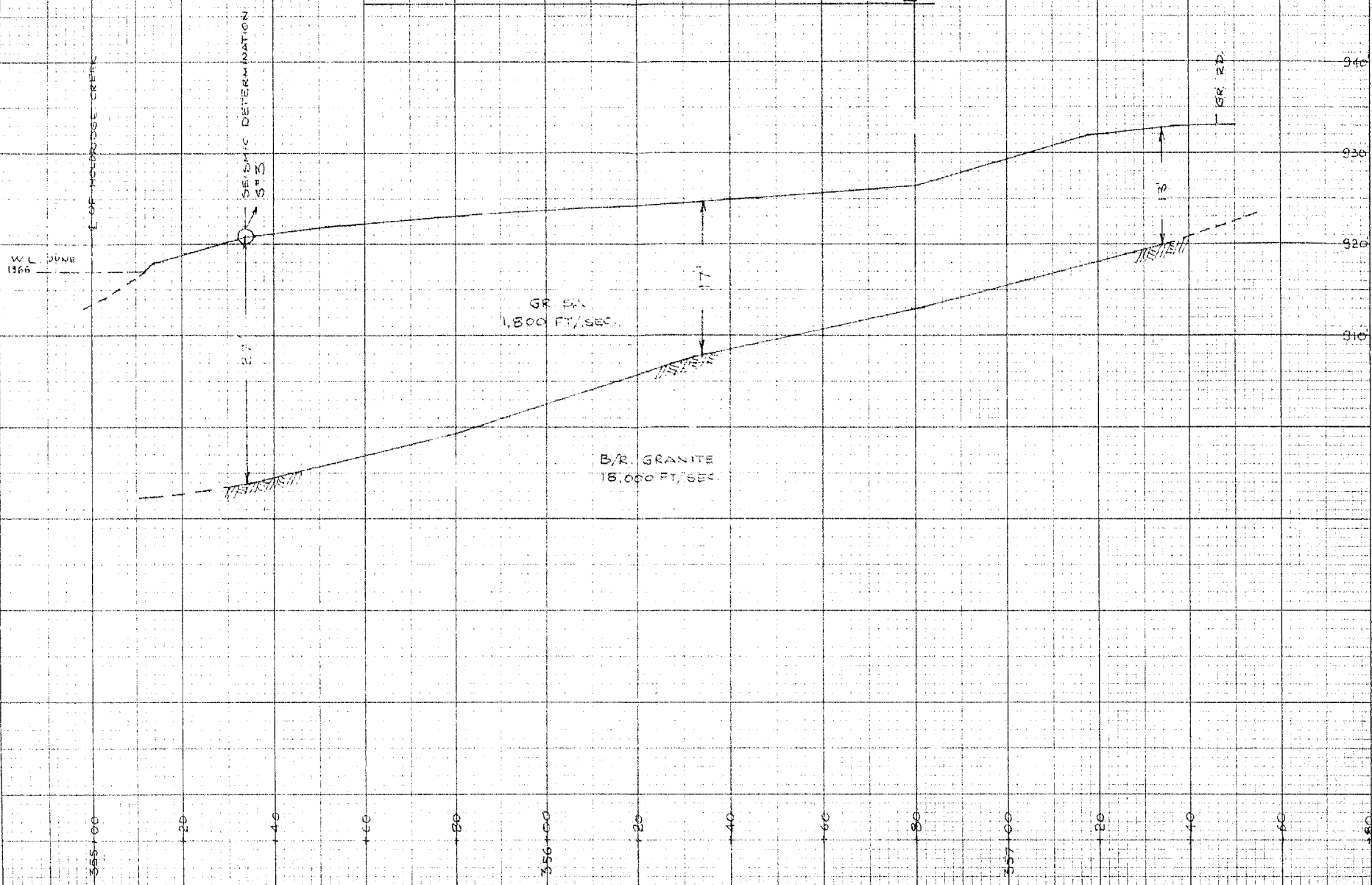
SCALE: 1" = 20 FT.

W.P. 351-63

SEISMIC SURVEY LINE II 20 FT. RT. OF C.



SEISMIC SURVEY LINE III 20 FT. LT OF C.



SEISMIC SURVEY LINE IV 25' LT. OF Q

W.P. 351-G3

6' OF HOLDRIEGE CK.

#

S 4

SEISMIC SURVEY DETERMINATION

27'

GR. SA. 1,900 FT./SEC.

18'

B/R GRANITE 18,000 FT./SEC.

11'

GRAVEL ROAD

940

930

920

910

355.00

120

140

160

180

356.00

200

240

260

280

357.00

220

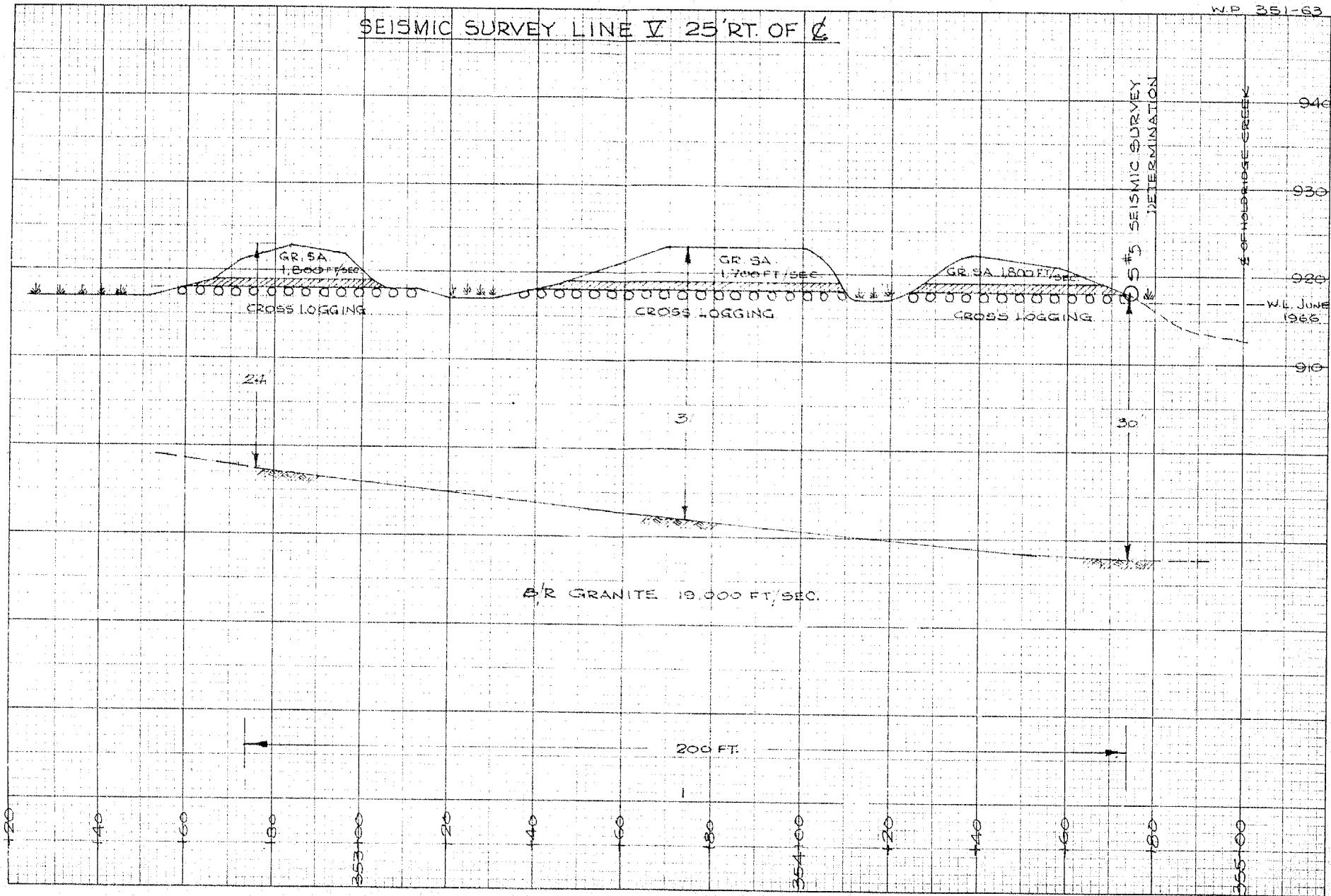
240

260

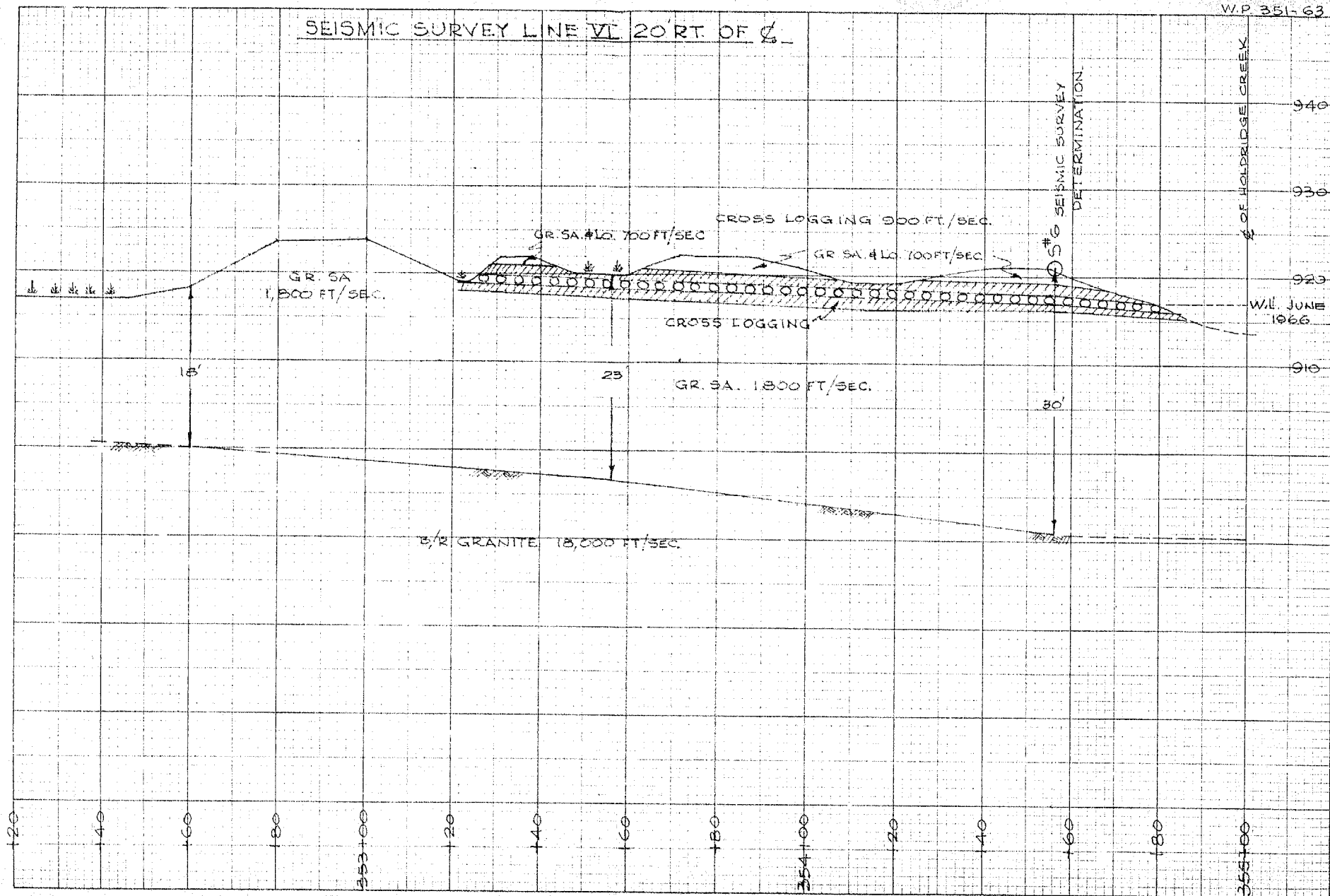
280

SEISMIC SURVEY LINE V 25' RT. OF \angle

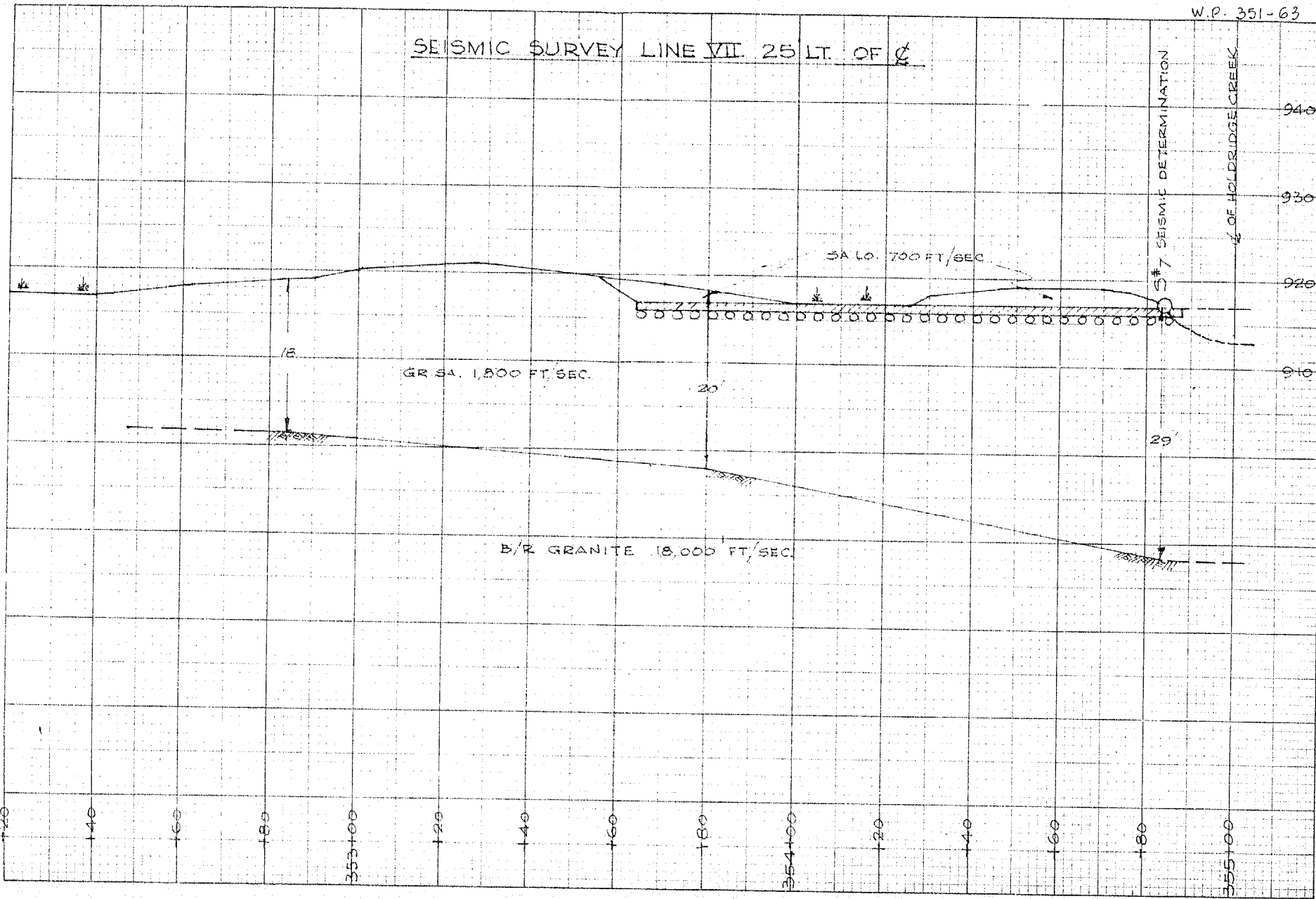
W.D. 351-63



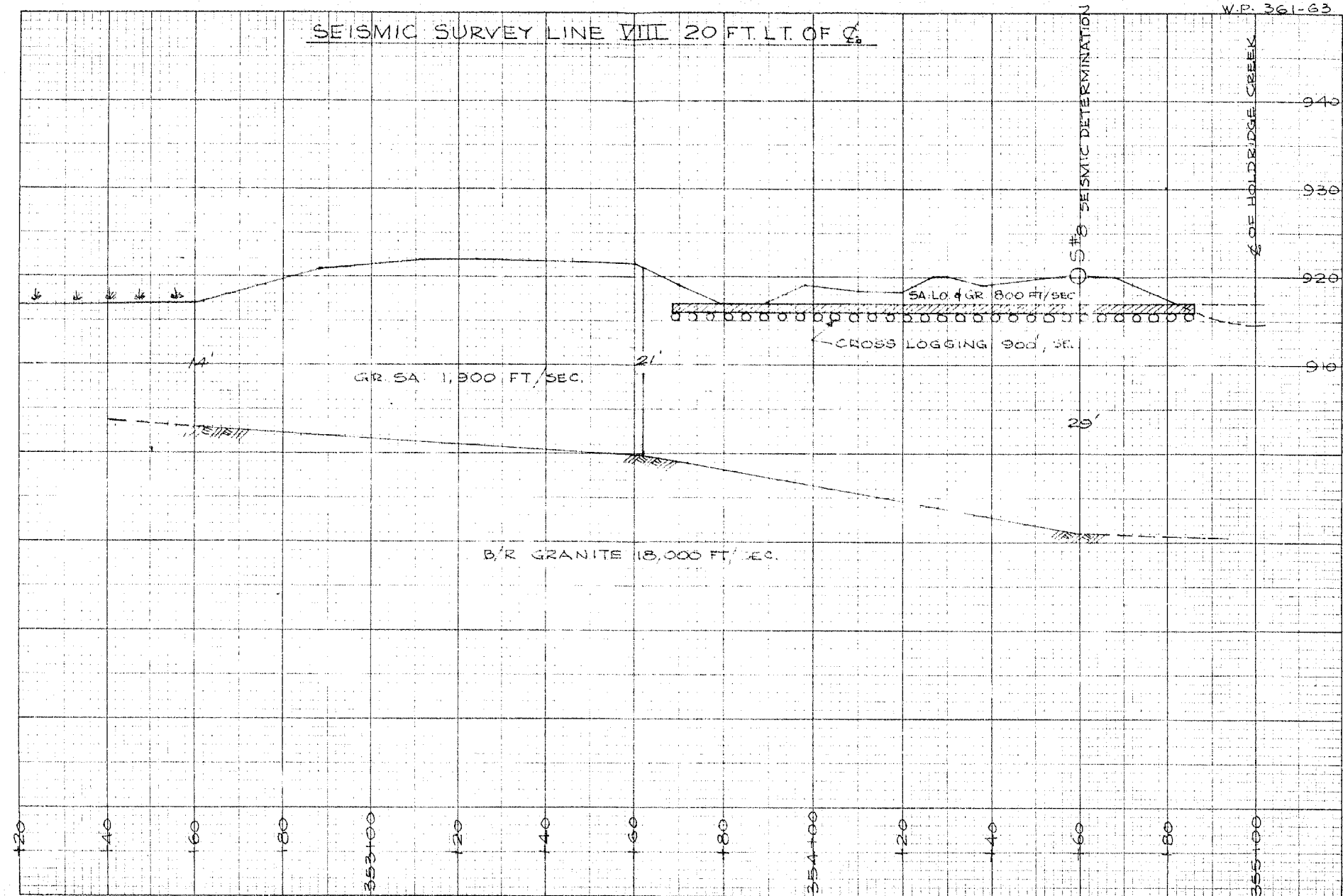
SEISMIC SURVEY LINE VI 20' RT OF C.



SEISMIC SURVEY LINE VII. 25 LT. OF $\frac{1}{2}$



SEISMIC SURVEY LINE VIII 20 FT. LT. OF C.



MEMORANDUM

To: Mr. K. G. Selby,
Supervising Foundation Engineer.

From: Materials & Testing Division.

Date: August 9, 1966.

Our File Ref.

In Reply To:

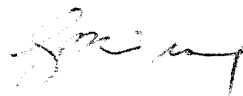
Subject:

Proposed Crossing at Holdridge Creek,
Highway #64 W.P. 351-63.

Attached for your information is a copy of the Seismic investigation carried out at the above-mentioned Creek Crossing. The Seismic profiles showing the soils stratigraphy and bedrock elevation at 20 and 25 ft. left and right of centreline are appended.

This investigation is one of several where we proposed to check the accuracy of the seismic technique. Would you please compare these results with the borehole logs.

Should you have any queries please contact the undersigned.



G. A. Wrong
Principal Soils Engineer

Attach.

GAW/tt

cc: E. R. Saint

A. Szenasi

File

ag

Mr. C. S. Grebski,
Bridge Design Engineer,
Bridge Division,
Admin. Bldg.

Foundation Section,
Materials & Testing Div.,
Room 107, Lab. Bldg.

July 10, 1967

Holdridge Creek Bridge -- W.P. 351-63,
Site #43-4, Hwy. #64, District #13.

Trow/66

We have reviewed Preliminary Bridge Plan D-6036-P2 for the abovementioned structure. We note that you have not followed the recommendations given in the foundation report by William Trow & Associates Ltd. The design you have chosen, spread footings on rock fill, seems to us to be eminently suitable in view of the subsoil conditions, if sufficient protection against scour is provided. This latter requirement should be checked by the Hydrology Section.

J. G. Selby

KGS/KdeF

K. G. Selby,
SUPERVISING FOUNDATION ENGR.
For:
A. G. Sternac,
PRINCIPAL FOUNDATION ENGR.

cc: Messrs. S. McCombie
J. B. Curtis
Foundations Files
Gen. Files

Department of Highways Ontario

Copy for the information of
Mr. A. Stermac, Principal Foundation Engineer,
Room 107, Lab. Building

Mr. J.B. Curtis,
Reg. Bridge Location Engineer,
North Bay Regional Office,
North Bay, Ontario

Bridge Division,
Downsview, Ontario

June 28, 1967

Holdridge Creek Bridge
W.P. 351-63, Site No. 43-4
Highway 64, District No. 13

Attached herewith are prints of the Preliminary Bridge
Plan Drawing D-6036-P2 for the above-mentioned structure.

The estimated cost of the proposed structure is \$37,000.
This cost includes tender, materials, engineering and sundry
construction.

Any comments or revisions you may have should be submitted
within three weeks.

CSG:rd

C.S. Grebaki,
Bridge Design Engineer

Attach.

c.c. R. Forrest
E. Cross
S. McCombie
A. Stermac

Eng. 401 & Maple St.,
Brampton, Ontario,

July 5, 1966

Materials and Testing Division

William A. Frew Associates Ltd.,
90 Millway Drive,
Aurora, Ontario.

Attention: Mr. W. A. Frew

Re: Foundation Investigations - Letter of Authority -

- (1) Englehart River Bridge, 12.3 Mi. West of Hwy. #11 -
Hwy. #66, District #13 (New Lindeard) - u.P. 354-63-1
Site #27-2.
- (2) Boldridge Creek Bridge, 10.1 Mi. North of Sec. Hwy. #120,
Hwy. #64, District #13 (North Bay) - u.P. 351-63.

Dear Sir:

Please consider this your authority to carry out the necessary foundation investigations at the sites of the above two mentioned river crossings.

The plans showing the layout of the proposed crossings were given to your representative on July 5, 1966.

The mobilization costs for the drilling equipment will be approved from North Bay or Sudbury, whichever are the lesser.

In order to meet our schedule, you are requested to submit your report for the Boldridge Creek Bridge on or before July 29, 1966, and the report for the Englehart River Bridge on or before August 12, 1966. Eleven (11) copies of each report will be required for our distribution.

In accordance with our terms of reference, you are to have a qualified soils engineer in charge of the field work at all times. Any deviation from this arrangement has to meet our prior approval. Previous requirements as to preliminary benchwork information and laboratory testing program should be followed.

Since the drawings accompanying the foundation reports, showing the location of borings, the inferred subsoil conditions, etc., are to become contract drawings, you are requested to prepare

cont'd. /1 ...

July 5, 1966

then in accordance with the A.S.C. Standards. To enable you to do this, we are supplying you with a sample drawing with all the necessary explanations, together with linen sheets for your drawings. You are also requested to provide us with Crossflex copies of the drawings.

Charges for the work performed will be in accordance with your schedule of rates, dated January 1, 1966, and invoices to be addressed to the attention of the undersigned.

we are attaching the following Purchase Orders:

J 34817 - U.P. 354-63-1 (Angleshart River Bridge),

J 34818 - U.P. 351-63 (Baldridge Creek Bridge),

covering the purchase of any new material required for this work, in order that you may use these as a basis for exemption from the Federal Tax for such purchases. The Exemption Certificate is printed thereon.

Yours very truly,

AGH/Adaf
Attach.

A. Sutton,
MATHEMATICS & TESTING ENGINEER

cc: Messrs. D. McClellan
B. McArthur
C. R. Sinclair
G. Hartens
E. A. Leint
J. Currie
H. Jennings
Mrs. I. Steinberg
M. Symanski (2) /
A. Crowley
Foundations Office
Gen. Files (2)

Mr. Chas. A. Egan -
William A. Egan Assoc. Ltd.

- 2 -

July 5, 1966

then in accordance with the A.E.C. Standards. To enable you to do this, we are supplying you with a sample drawing with all the necessary explanations, together with linen sheets for your drawings. You are also requested to provide us with Cronaflex copies of the drawings.

Charges for the work performed will be in accordance with your schedule of rates, dated January 1, 1966, and invoices to be addressed to the attention of the undersigned.

we are attaching the following Purchase Orders:

J 34817 - U.P. 354-63-1 (Anglehart River Bridge),

J 34818 - U.P. 351-63 (Maldridge Creek Bridge),

covering the purchase of any new material required for this work, in order that you may use these as a basis for exemption from the Federal tax for such purchases. The Exemption Certificate is printed thereon.

Yours very truly,

ACG/Adaf
Attach.

A. Eaton,
ASTORIA & TESTING ENGINEERS

cc: Messrs. C. McCosbie
B. McArthur
C. R. Sinclair
G. Hartens
E. A. McInt
J. Curtis
H. Koning
Mr. I. Steinberg
E. Szynanski (2) /
A. Crowley
Foundations Office
Gen. Files (2)

Mr. B. B. Davis,
Bridge Engineer,
Bridge Division.

Foundation Section,
Materials and Testing Div.,
Room 107, Lab. Bldg.

Attention: Mr. S. McTavish

August 4, 1966

AUG 4 1966

FOUNDATION INVESTIGATION REPORT BY:
William Trow Associates Limited - (J34818)
Haldridge Creek Bridge, Hwy. No. 64,
Near Field, Ontario - District 13 (North Bay)
W.F. 351-63

Attached, please find the above mentioned report prepared and submitted by the consultant, William Trow Associates Ltd.

We have reviewed the report and found the factual information adequate and well presented.

We are in agreement with the recommendations contained in the report and we feel that they will be sufficient for you to carry on the design. However, should you have any questions pertaining to the foundations of this structure, that you would like to discuss, please feel free to contact this Office.

AGS/4467

Attach.

cc: Messrs. B. B. Davis (2)

M. A. Iregan
D. W. Farren
H. McArthur
G. A. French
J. Curtis
A. A. Saint
A. Watt

Foundations Office
Geo. Files

Afternoon
A. C. Sterns,
PRINCIPAL FOUNDATION ENGINEER

#66-F-239C

W.P. #351-63

HWY. #64

HOLDRIDGE
CREEK BRIDGE

