T. M. Section (M.G.)

Report of Foun ation Investigation For

The Proposed Culvert At

Webi River Diversion

and

Highway No. 65 Revision.

Copies to:

Mr. H. Lemcat
Bridge Engineer (2)

Mr. J. Walter
Construction Engineer (1)

Mr. G. F. Wetherall
Div. Eng., New Liskeard (1)

Mr. G. N. Farquharson (1)

File. (1)

Project F-54-33
WP 629-56
Roust. 14
Cont. 57-021
Hwy 65

ONTARIO

DEPARTMENT OF HIGHWAYS

Memo to Mr. A. Toye, Acting Bridge Engineer

Date June 3, 1955

Subject Re: Foundation Investigation Hwy. #65 Revision at Wabi R.

From F.C. Brownridge

Attached are two copies of the report of the Foundation Investigation for a proposed arch structure, and the approach embankments, for a revised location of Hwy. #65 crossing the Wabi River.

You will note that at this proposed site there is a depth of approximately 50 feet of soft silty clay overlying bedrock. The supporting value of this clay is very low, and spread footings are not recommended. Also the safe embankment height recommended is only 15 feet.

In view of the above conditions, and the light traffic on this highway, serious consideration should be given to a more economical solution and design. The following suggestions are offered for consideration:

1. The use of a timber creosoted structure supported on piles of approximately 35 foot length, driven to refusal.

2. The lowering of the grade line to stay within the safe height limit of 15 feet.

The bearing value of the soil will increase with time due to consolidation from the weight of the fill. At the time a new structure might be required, the fill could be safely increased and a new structure built.

Att.

F.C. Brownridge
Materials & Research Engr.

FCB:JH

copies to: Mr. J. Walter
Mr. G. Wetherall
Mr. G. N. Farantatos
File

Report of Foundation Investigation For

The Proposed Culvert At

Wabi River Diversion

and

Highway No. 65 Revision.

Copies to:

Mr. H. Lemont
Bridge Engineer (2)

Mr. J. Walter
Construction Engineer (1)

Mr. G. F. Wetherall
Div. Eng., New Liskeard (1)

Mr. G. N. Farantatos (1)

File. (1)

Project F-54-33

Report on Foundation Investigation
For the Culvert at Wabi River Diversion and Highway 65 Revision

Introduction

A culvert is to be built for the Wabi River Diversion on Highway #65 Revision to replace the old wooden-truss bridge on the existing Highway #65.

Subsoil investigation was therefore conducted on the above site with the object of discovering the characteristics of the soil so that the best method of foundation for the culvert could be adopted.

Investigation was also conducted to make a check on stability of the soil for the fill which will cover the valley region of the river on the highway revision.

Procedure

The field exploration was conducted between the period 19th March and 24th March 1955.

Four dynamic cone penetration tests were made followed by two boreholes.

Borehole #1, Borehole #2 and Borehole #3 were made in connection with the foundation of the culvert.

Borehole #4 was made to provide a check on slope stability for the fill on the highway revision. The elevation and locations of the boreholes are shown in Drawing F-54-33A.

The logs of the boreholes are shown in Appendix I.

Report on Foundation Investigation
For the Culvert at Wabi River Diversion and Highway 65 Revision

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The logs of the boreholes are shown in Appendix I.

Soil Profile

Borehole #1

Borehole #1 was made down to bedrock. The first 5 feet is topsoil. Below it is soft silty Clay extending to a depth of 49', then coarse sand and gravels were discovered before bedrock was encountered.

Bedrock is shale rock and is found at a depth of 55'-9" below ground level.

Borehole #2 and Borehole #3

Only dynamic cone penetration tests were performed on these borehole locations. These tests were made down to rock surface at depths 50'-9" and 52'-0" in Borehole #2 and Borehole #3 respectively.

The records of penetration resistence through the soft soil are almost identical with those of borehole #1, thus it was decided not to do any borings on the locations of borehole #2 and borehole #3.

Borehole #4

This borehole was made as close to the bank of the river and on the highway revision for the purpose of making a check on the proposed fill, (maximum fill of 35' occurs around Station 22+60).

The soil profile obtained from this borehole is almost similar to that of borehole #1. The same type of soft silty clay was discovered.

Rock surface was encountered at a depth of 46'-6" from ground level.

Water Condition

The water table at the site of the proposed culvert was found to exist at approximately 4 feet below ground surface according to the test holes.

The water condition in the river shows a difference of High Water Level and Low Water Level of about 9 feet. Extreme High Water Level was believed to have reached an elevation of about 115.

Analysis of Test Results and Recommendation

Culvert Foundation

From the results of the three test holes made on the site of the proposed culvert, it is evident that the underlying silty clay is too soft and therefore unsuitable for any type of spread footing foundation.

According to borehole #1 bedrock exists at about 55 feet below ground surface.

In borehole #2 and borehole #3 rock surface was encountered at depths 50'-9" and 52'-0" respectively.

The distance from the bottom of the footing of the culvert to rock surface is between 31 feet and 35 feet approximately.

For reasons outlined above, piles are therefore recommended for foundation, and they should be driven down to rock surface.

Stability of Earth Fill

A fill varying to a maximum of 35 feet is proposed for the revision highway on the valley region of the river. Maximum fill of 35 feet occurs around Station 22/60.

Stability of Earth Fill (cont.)

Undisturbed samples obtained from borehole #4 provided tests for the general condition of the silty clay which is believed to be the type of material covering the entire region of the valley.

It was difficult to perform any triaxial tests on the silty clay which would give reliable results, but unconfined test showed that the material has shearing strength in the order of 180 lb. per square foot. A very rough estimation by slump test on the material indicate that the soil has an internal fictional value about 16°.

Basing on the above discoveries a fill of 35 feet will cause slides and possibly a flow of the silty clay underground.

To obtain stability 15 feet of fill on a slope of 1:3 is recommended. This estimation of slope stability is based on cohesion of 180 lbs. per square foot and internal friction of 16°.

This fill will produce an ultimate settlement of about 17 inches and will take as long as 25 years to reach 90% consolidation. This estimation is based on datas obtained from borehole #4.

Conclusion

Culvert Foundation

Piles are recommended for the foundation of the proposed culvert. They should be driven down to surface of bedrock.

Rock surface exists between the elevations 56' and 60' approximately.

Stability of Earth Fill

The fill for the highway revision on the valley region should be made on a slope of 1:3 and should not exceed 15 feet in height.

Any improvement with respect to the Safe height of the fill should be met by remedial measure using berms or special drainage to consolidate the underlying soft material. The undermentioned will verify this statement in the event that the proposed fill to a maximum of 35 feet should be maintained.

F. C. Brownridge
Materials & Research Engineer

Per:

(G. N. Paramtatos.)

CNF:GP

Soils Report

Hwy. #65 **Wabi River**

Structure and Approaches on New Location

Plan & Profile No. [illegible] **Soils No. 65-[illegible]** **[illegible]**

General:

This proposed project is located approximately 16 miles west, of New Liskeard, along Hwy. #65, between station [illegible] and station 850+00, Twp. of [illegible] on profile No. [illegible], Soils Profile No. 65A-2. On the bridge site plan and profile No. [illegible], [illegible] - 821+00 approximately on profile No. [illegible]. This is listed as No. 3 under structures on the tentative preparation list of 1956-57 dated June 3/55.

The report of the foundation investigation was submitted to the Bridge Office on May 24th, 1955. A power auger investigation along the existing road was made in the spring of 1953.

The existing old wooden truss bridge is in very poor condition and must be replaced in the near future.

Soils Data:

This section is located on the little clay plain. The topography is flat with deep eroded water courses.

The material is a medium to light varved silty clay, which becomes moist and plastic as the depth increases.

All power auger holes were 4' deep on the existing road and do not extend to the bottom of the proposed cuts. Material is similar to that encountered in the bore holes at the bridge site. Therefore, it can be assumed that the cut material will be a varved clay throughout.

Granular Data:

The only granular deposit in this area is located 3 miles west of the Wabi River on Hwy. #65. This is a large esker with G.B. [illegible] Class "A", "B" and 5/8" crushed available. Sand sealing is required for "B" and 5/8".

Remarks:

The following pertinent data are obtained from the Report of the Foundation Investigation at Wabi River Diversion and Hwy. #65 revision dated May 24/55.

1. The silty clay material in the vicinity of the proposed structure is too soft to support a spread footing foundation therefore piles are recommended. The piles should be driven to bedrock which exists between 56' and 60' approximately below ground level.

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

Remarks (cont.)

2. The soft clay cannot support more than 15' of fill built to a 3:1 slope. The grade line shown on plan [illegible]-2 is satisfactory in this respect.

Recommendations: (shown on test plan [illegible]-2)

1. It is recommended that this job be called on a granular base course contract (ie) Class "B" & "A".

2. Due to the soft nature of the silty varved clay the following depths of granular material are recommended:

a) In cuts - [illegible]"
b) In fills [illegible]"

E. Saint
Sept. 16, 1955

ES:[illegible]

copies to: J. Walker
H. Tregaskes
D. Wetherall
E. McMillan
F. Hill
E. Saint

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

Department of Highways
ONTARIO

Mr. [illegible] Chapman
District Engineer
New Liskeard, Ontario

Date [illegible]
Ref. File No. [illegible]
Mileage Sheet

GRANULAR MATERIAL TEST RESULTS

Contract [illegible] Division No. [illegible] Highway No. 65
Work and Location [illegible] River Bridge[illegible] 16 miles West New Liskeard

County Timiskaming Twp. [illegible] Lot Con.
Local Name of Pit [illegible] Pit
Pit Owner [illegible]
General Pit Location [illegible] miles West New Liskeard [illegible]

Haul Route [illegible]
Sampled From: Channelled Face [illegible] Test Pit ☐ Auger ☐ End of Bar ☐ [illegible] ☐
Stockpile ☐ Truck ☐ Road ☐ Non-channelled Face ☐
Depth From 2' To 12' At [illegible]
Sampled By [illegible] July 17/[illegible]

Field Data and Observation

Depth of Total Face 12' Overseas [illegible] Inches [illegible] % [illegible] Inches [illegible] %
Estimated Quantity Yds. Overseas [illegible] Inches [illegible] % [illegible] Inches [illegible] %
Intended Use Concrete Sand As retained [illegible]
Other Pos. e Uses
General Remarks

Other Material Sources [illegible] same as [illegible] Pit

COARSE AGGREGATE		Test Sample	Specif. Limit	FINE AGGREGATE		Test Sample	Specif. Limit
Coarse Aggregate	%	[illegible]		Fine Aggregate	%	[illegible]	
Mg. SO4 Cycles	Loss %			Absorption	%		
Freeze & Thaw Cycles	Loss %			Bulk Specific Gravity			
Deval Abrasion	Loss %			Apparent Specific Gravity			
Los Angeles Abrasion	Loss %			Unit Wt. of Aggregate	lbs.		
Absorption 24 Hours	%			Fineness Modulus		[illegible]	
Bulk Specific Gravity				Shale in Aggregate	%		
Apparent Specific Gravity				Material Pass # 200	%	1.[illegible]	
Clay Lumps	%			Loss By Abrasion	%		
Shale in Aggregate	%			Loss By Abrasion and Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 Cycles	Loss %		
Fineness Modulus				Organic Impurities		1	
Silt & Clay Pass. 4 Fraction	%			Petrographic Number			
Clay Total Sample	%						
Petrographic Number							

Structural Strength	7 Day	28 Day
Standard		
Sample		

Tensile Strength	3 Day	7 Day	28 Day
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Quality Per Cent			
	Excellent	Good	Fair	Poor

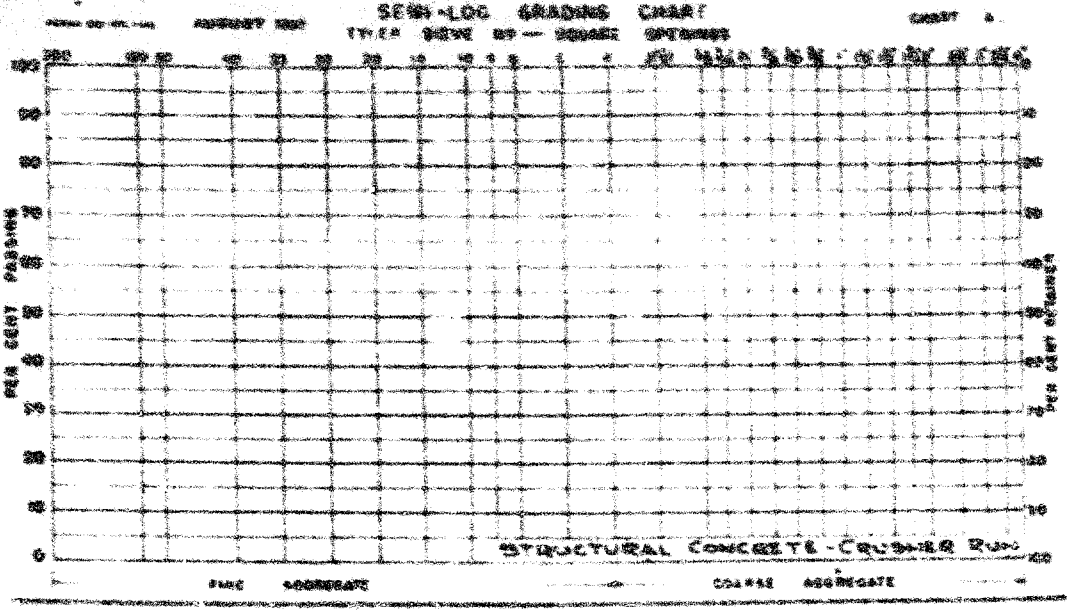
Sample of Fine Aggregate is acceptable for concrete sand.

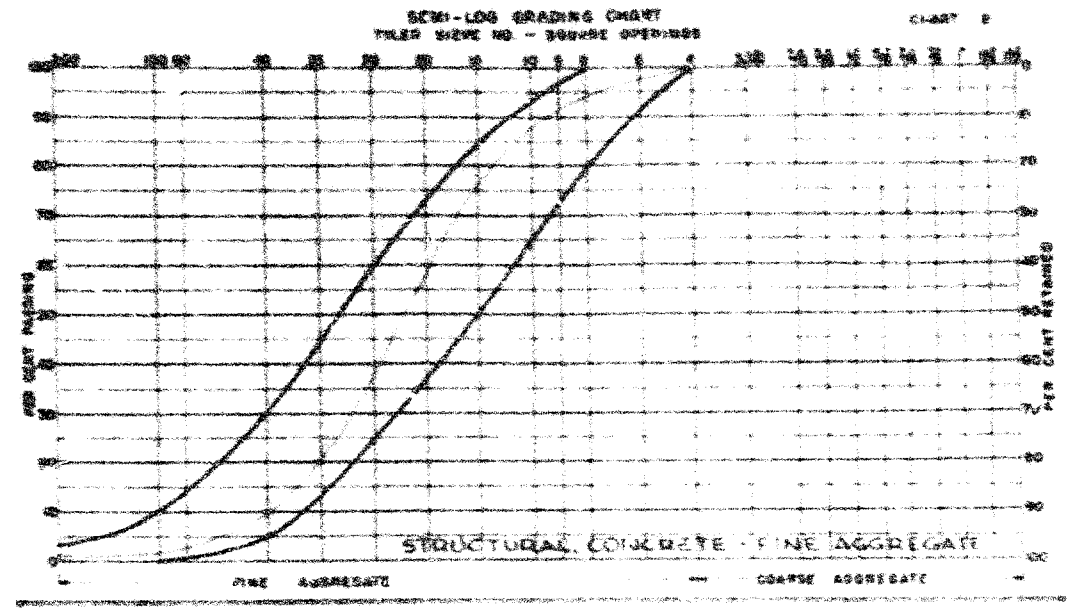
Copies to

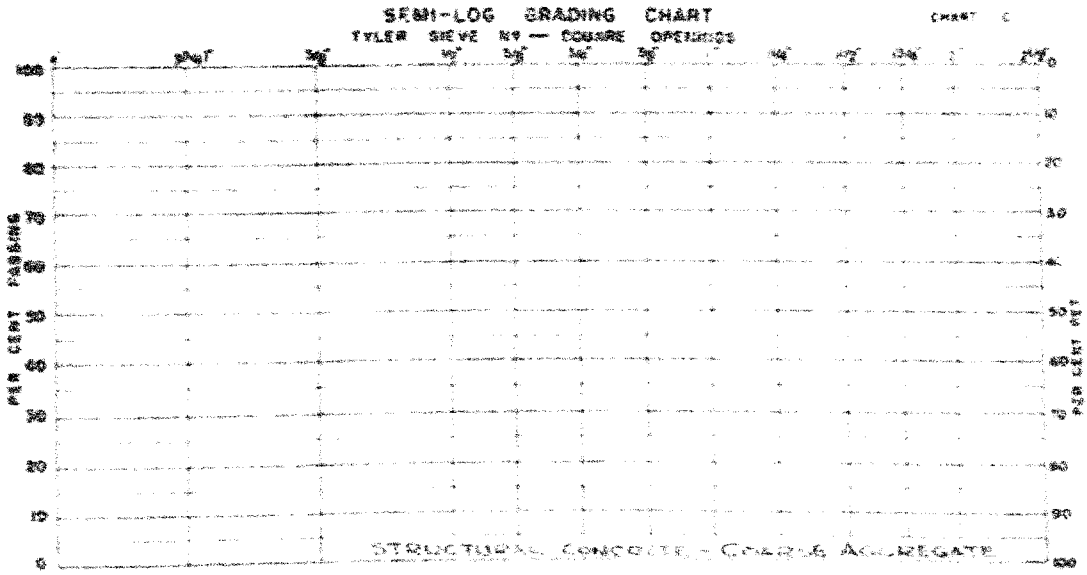
[illegible] Signature Lab. No. [illegible] Field No. [illegible]

[illegible]

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT







Department of Highways
ONTARIO

To: Mr. [illegible]
District Engineer
[illegible], Ontario

Date: August [illegible]
Ref. File No.: [illegible]
Mileage Sheet:

GRANULAR MATERIAL TEST RESULTS

Contract: [illegible] Division No.: [illegible] Highway No.: [illegible]
Work and Location: [illegible] River Bridge [illegible] miles [illegible]

County: [illegible] Twp.: Armstrong Lot: Con.:
Local Name of Pit: Armstrong Twp. Pit
Pit Owner: Armstrong Twp.
General Pit Location: [illegible] miles North [illegible] 3 miles [illegible] Hwy. 11

Haul Route: [illegible] to Hwy. 11 [illegible]

Sampled From: Channelled Face ☒ Test Pit ☐ Auger ☐ End of Belt ☐ Bins ☐
Stockpile ☐ Truck ☐ Road ☐ Non-channelled Face ☐
Depth: From 2' To [illegible]' At Station / Mile Post
Sampled By: Contractor July 12/[illegible]

Field Data and Observations

Depth of Total Face: [illegible] Overburden inches % inches %
Estimated Quantity: [illegible] Yds. Overburden inches inches %
Intended Use: Concrete sand
Other Possible Uses:
General Remarks: Pit is now stripped.

Other Material Sources:

COARSE AGGREGATE		Test Sample	Spec'd Limit	FINE AGGREGATE		Test Sample	Spec'd Limit
Coarse Aggregate	%	[illegible]		Fine Aggregate	%	[illegible]	
Mg. SO4 Cycles	Loss %			Absorption	%		
Freeze & Thaw Cycles	Loss %			Bulk Specific Gravity			
Deval Abrasion	Loss %			Apparent Specific Gravity			
Los Angeles Abrasion	Loss %			Unit Wt. of Aggregate	lbs.		
Absorption 24 Hours	%			Fineness Modulus		[illegible]	
Bulk Specific Gravity				Voids in Aggregate	%		
Apparent Specific Gravity				Material Pass. #200	%	[illegible]	
Clay Lumps	%			Loss By Abrasion			
Voids in Aggregate	%			Loss By Abrasion and Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 Cycles Loss	%		
Fineness Modulus				Organic Impurities		1	
Silt & Clay Ret. #4 Fraction	%			Petrographic Number			
Clay (Total Sample)	%						
Petrographic Number							

Structural Strength	7 Day	28 Day
Standard		
Sample		

Tensile Strength	3 Day	4 Day	28 Day
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Quality Excellent	Per Cent Good	Fair	Poor

Remarks:
Sample of Fine Aggregate is acceptable for concrete sand.

Copies to:

[signature]
Signature

Lab. No.: [illegible]
Field No.: [illegible]

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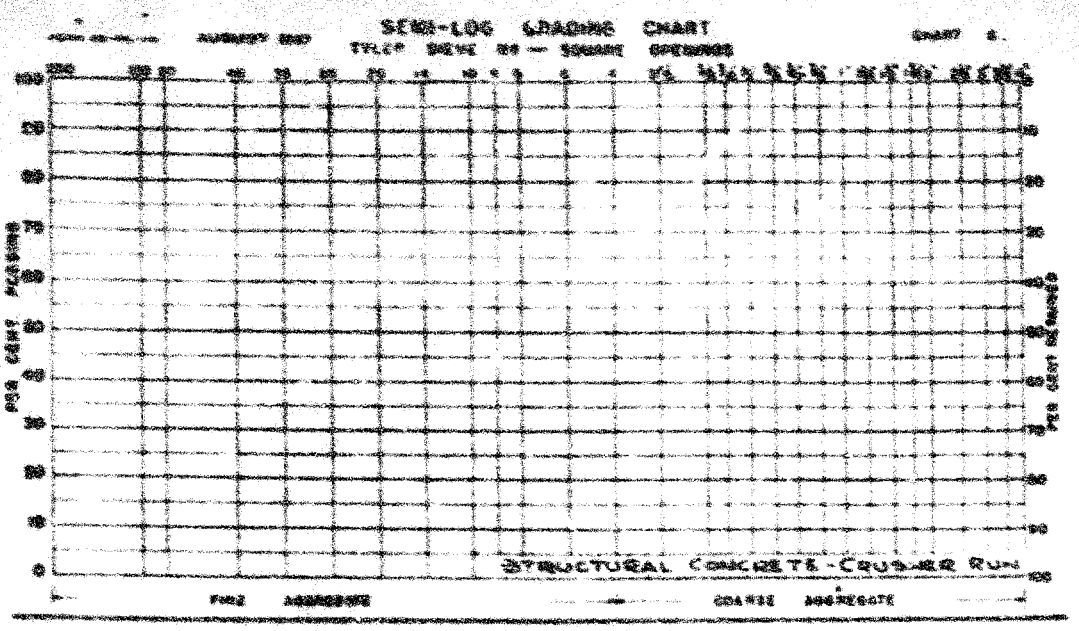
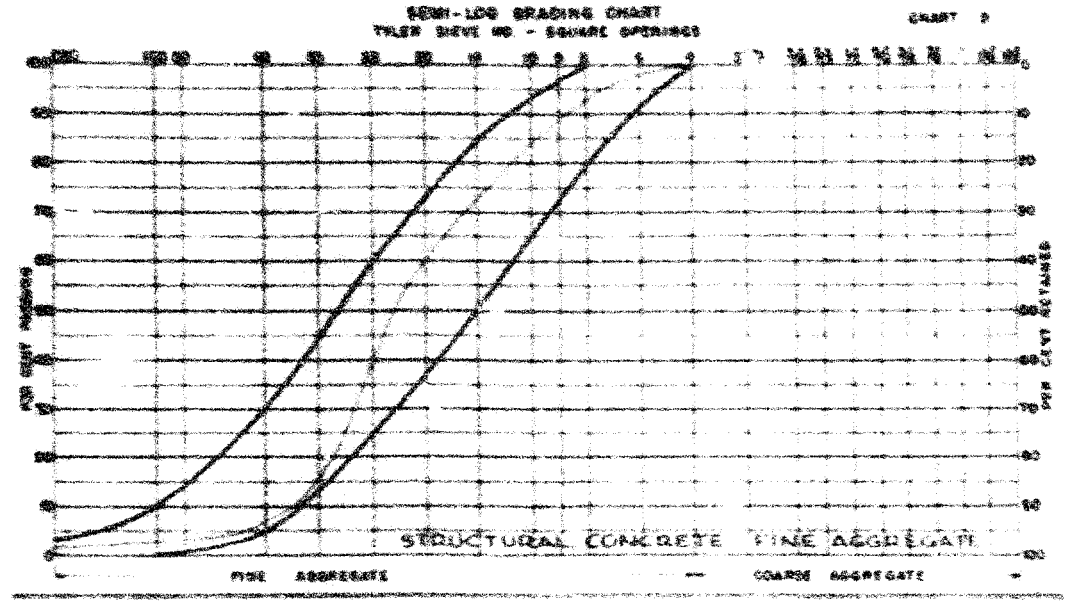
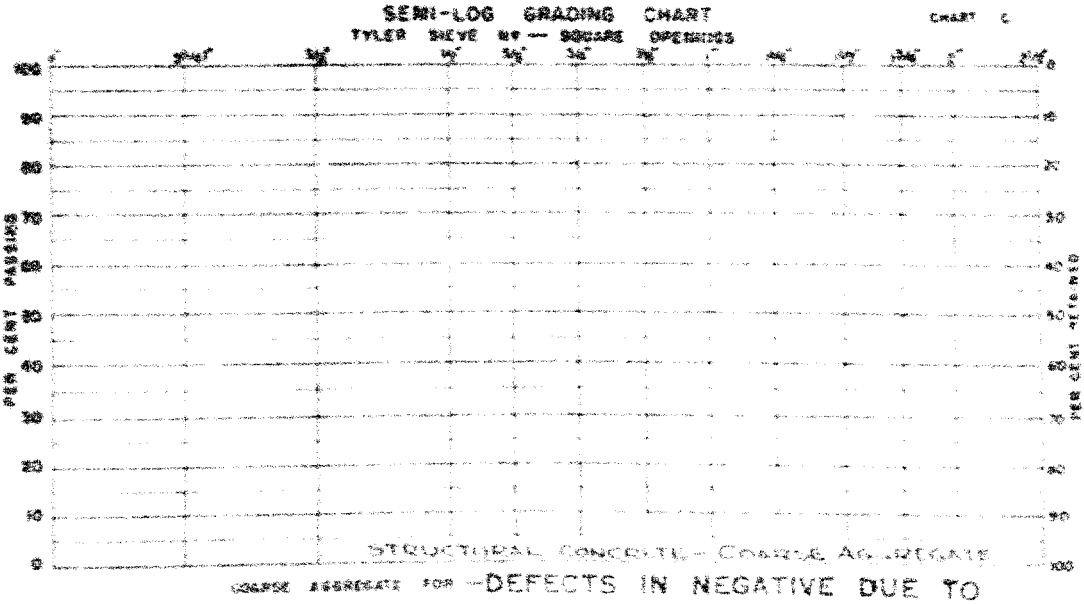
CONDITION OF ORIGINAL DOCUMENT







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Department of Highways
ONTARIO

To: [illegible]
District Engineer
[illegible], Ontario

Date: August 13/[illegible]
Ref. File No. [illegible]
Month Sheet

GRANULAR MATERIAL TEST RESULT.

Contract: [illegible] Division No. [illegible] Highway No. [illegible]

Work and Location: [illegible]
[illegible]

County: [illegible] Twp. [illegible] Lot Con.

Local Name of Pit: [illegible]

Pit Owner: [illegible]

General Pit Location: [illegible]
[illegible]

Haul Route: [illegible]

Sampled From: Observation Face ☐ Test Pit ☒ Auger ☐ End of Belt ☐ Bin ☐
Stockpile ☐ Truck ☐ Road ☐ Semi-Processed Face ☐

Depth: From [illegible] To [illegible] At [illegible]

Sampled By: [illegible] July 22/[illegible]

Field Data and Observation

Depth of Total Face: Overburden inches % inches %

Estimated Quantity: Yds. Overburden inches % inches %

Intended Use: Concrete sand

Other Possible Uses:

General Remarks: [illegible]

Other Material Sources:

COARSE AGGREGATE		Test Sample	Special Limit	FINE AGGREGATE		Test Sample	Special Limit
Coarse Aggregate	%	1.[illegible]		Fine Aggregate	%	[illegible]	
Mg. SO4 ___ Cycles	Loss %			Absorption	%		
Freeze & Thaw ___ Cycles	Loss %			Bulk Specific Gravity			
Deval Abrasion	Loss %			Apparent Specific Gravity			
Los Angeles Abrasion	Loss %			Unit Wt. of Aggregate	lbs.		
Absorption 24 Hours	%			Fineness Modulus		[illegible]	
Bulk Specific Gravity				Voids in Aggregate	%		
Apparent Specific Gravity				Materials Pass #200	%	1.1	
Clay Lumps	%			Loss By Abrasion	%		
Voids in Aggregate	%			Loss By Abrasion and Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 ___ Cycles	Loss %		
Fineness Modulus				Organic Impurities		1	
Silt & Clay Ret. 4 Fraction	%			Petrographic Number			
Clay (Tot. A Sample)	%						
Petrographic Number							

	7 Day	28 Day
Structural Strength		
Standard		
Sample		

	7 Day	14 Day	28 Day
Tensile Strength			
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Quality Per Cent: Excellent	Good	Fair	Poor

Remarks:
[illegible]

Copies to:

Signature

Lab. No. [illegible]
Field No. [illegible]

[illegible]

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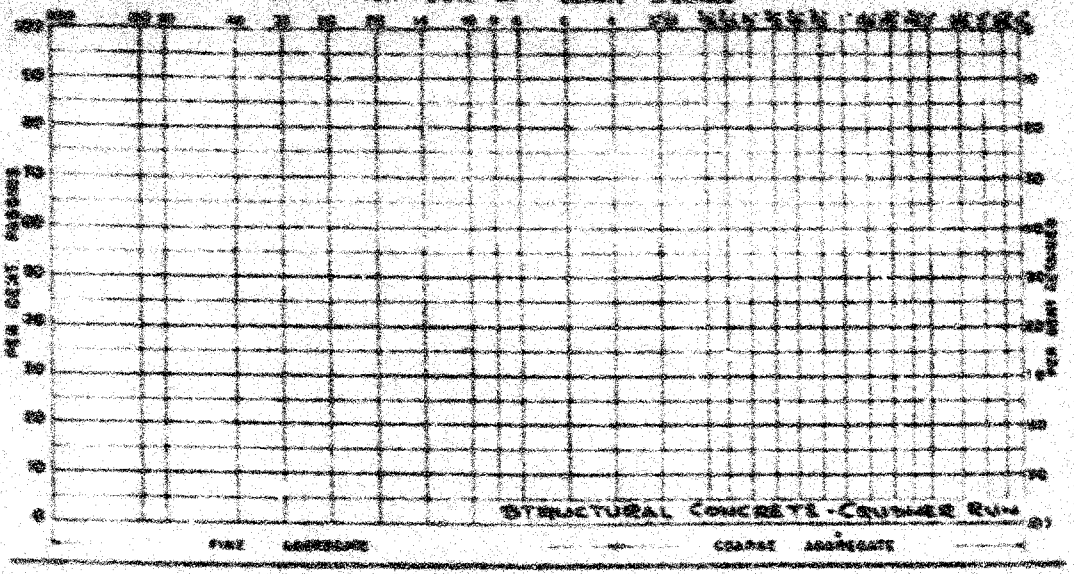
CONDITION OF ORIGINAL DOCUMENT

SEMI-LOG GRADING CHART

TYLER SIEVE NO — SQUARE OPENINGS

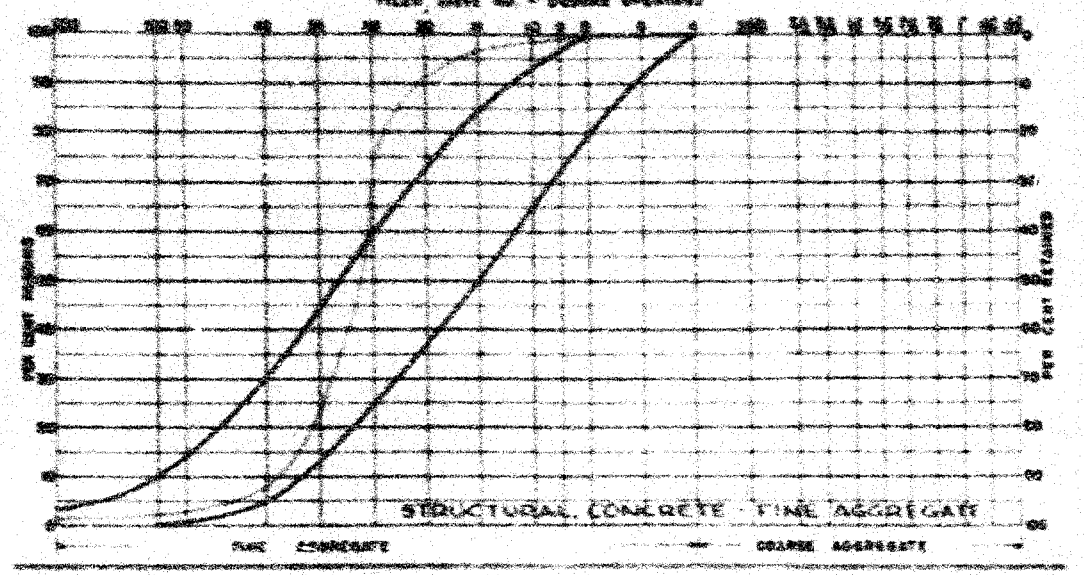
CHART A



SEMI-LOG GRADING CHART

TYLER SIEVE NO - SQUARE OPENINGS

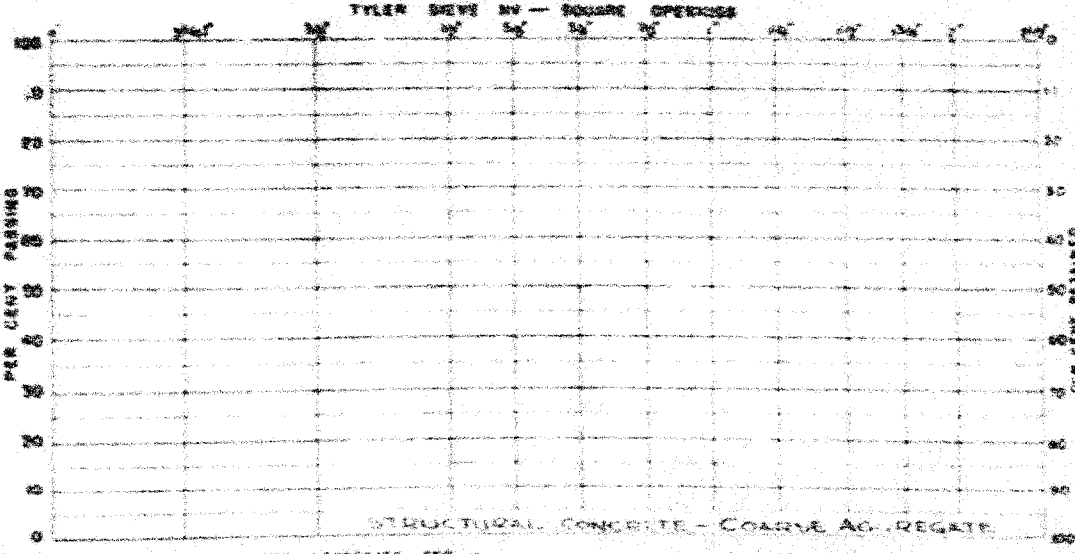
CHART B



SEMI-LOG GRADING CHART

TYLER SIEVE NO — SQUARE OPENINGS

CHART C



Department of Highways
ONTARIO

To: Mr. S. S. Chapman,
Dist. Engr.
[illegible]

Date: May 30/58
Ref. File No. [illegible]
Mileage Sheet

GRANULAR MATERIAL TEST RESULTS

Contract: 57-221 Division No. 14 Highway No. 65

Work and Location: Wabi River Bridge 18 Mi. E. of New Liskeard

County: Timiskaming Twp. Harwood Lot: [illegible] 5 Con. IV

Local Name of Pit: [illegible] No. 1

Pit Owner:

General Pit Location: Approx. 23 mi. E. of New Liskeard - Hwy.65

Haul Route: good

Sampled From: Channelled Face ■ Test Pit ■ Auger ☐ End of Belt ☐ Bins ☐
Stockpile ☐ Truck ☐ Road ☐ Non-channelled Face ☐

Depth: From To Station, Hole, Face

Sampled By: M. Roy Edgar; May 12/58

Field Data and Observation

Depth of Total Face — Oversize — Inches % — Inches %

Estimated Quantity — Oversize — Inches % — Inches %

Intended Use: G.B. [illegible] A 5/8 crushed A

Other Possible Uses:

General Remarks: Sample taken from channelled face at test hole - Pit stripped but not developed - appears shallow

Other Material Sources:

COARSE AGGREGATE		Test Sample	Special Limit
Coarse Aggregate	%	7.1	
Mg SO4 — Cycles	Loss %		
Freeze & Thaw — Cycles	Loss %		
Deval Abrasion	Loss %		
Los Angeles Abrasion E	Loss %	15.3	
Absorption 24 Hours	%	0.63	
Bulk Specific Gravity		2.83	
Apparent Specific Gravity		2.88	
Clay Lumps	%		
Voids in Aggregate	%		
Unit Weight of Aggregate	lbs		
Fineness Modulus			
Silt & Clay (Pct. & Fraction)	%		
Clay (Total Grading)	%		
Petrographic Number		99.7	

FINE AGGREGATE		Test Sample	Special Limit
Fine Aggregate	%	17.9	
Absorption	%		
Bulk Specific Gravity			
Apparent Specific Gravity			
Unit Wt. of Aggregate	lbs		
Fineness Modulus			
Voids in Aggregate			
Materials Pass. #200		1.7	
Loss by Abrasion			
Loss by Abrasion & Washing			
Mg. SO4 — Cycles	Loss		
Organic Impurities			
Petrographic Number			

Compressive Strength	7 Day	28 Day
Standard		
Sample		

Tensile Strength	7 Day	14 Day	28 Day
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Quality Per Cent Excellent	Good	Fair	Poor
Metasedimentites		2.3		
Limestone	10.1	86.7	0.9	
	10.1	89.0	0.9	

Remarks: Sample is acceptable for use as "B" Class "A".

Sample of Fine & Coarse aggregate is acceptable for 5/8 " crushed providing sand content is controlled.

Copies to:

[signature]

Lab. No. 58-S-14709
Field No. [illegible]
1 Misc. 535
EP

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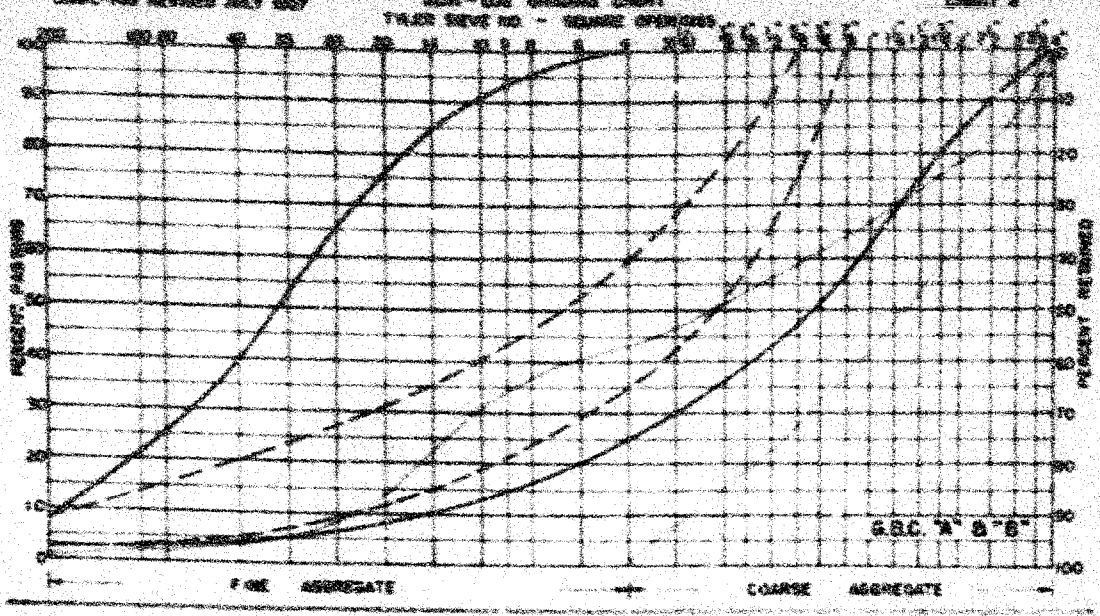
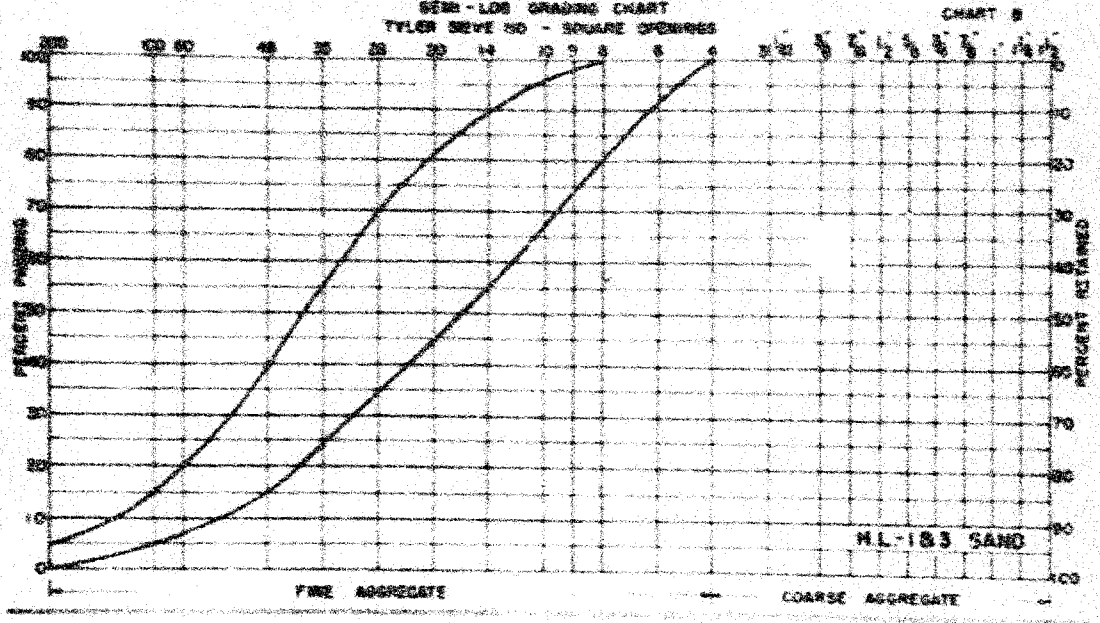
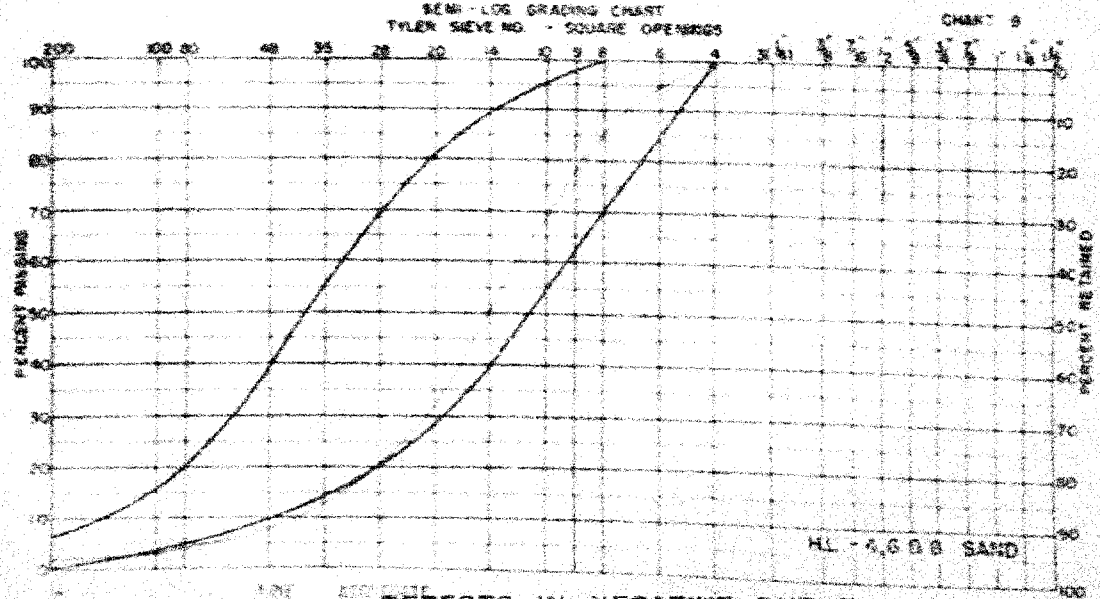
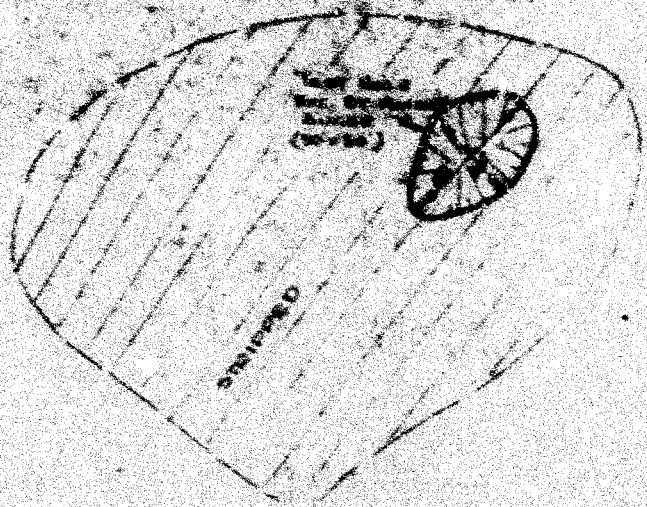








SCALE

HWY # 62

TO BELLEVILLE

TO NEW LISKEARD 45 MILES

DIRECTION OF _____

PIT OWNER HOBART PATTY

PIT LOCATION 7 MI S W OF EARLTON

LOT N½ S CONC IW CO-ORD _____

TOWNSHIP HENWOOD

COUNTY TIMISKAMING

WP NO _____ CONT NO _____ HWY NO 62

MILITIA SHEET _____ E½ ☐ W½ ☐

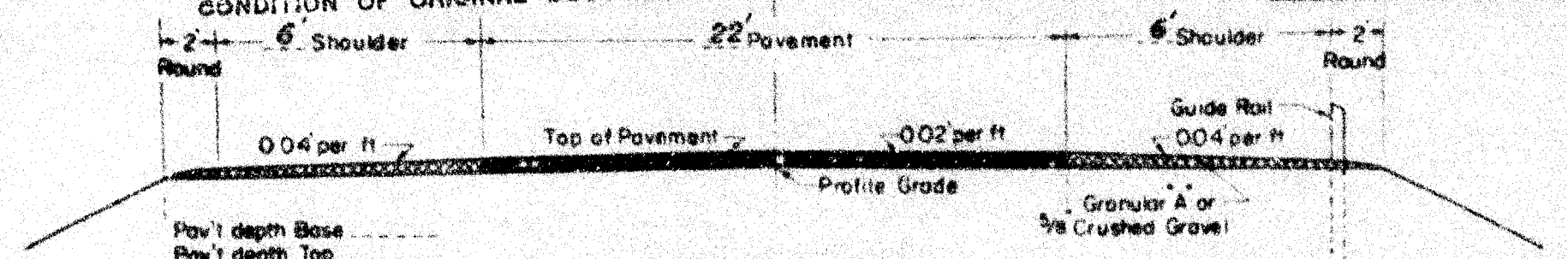
SKETCHED BY _____

APPROX SCALE _____ DATE _____ 20

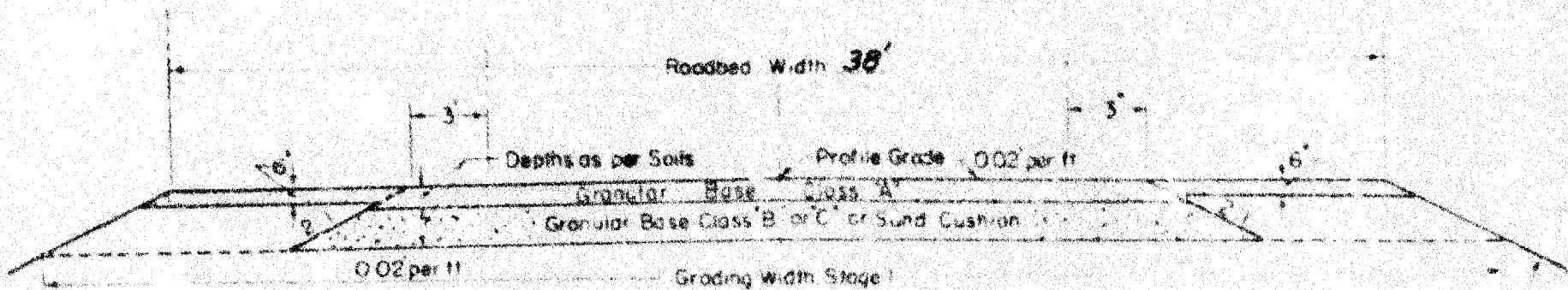
DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

No	DD-201		
DATE	May 16/1956	REV	



PAVEMENT SECTION



(Variable, dependent on depth of Granular Courses to be placed)

GRADING SECTION

Slopes

Fills under 4 ft - slope 3 : 1, fills 4 ft and over - slope 2 : 1 measured from the natural ground to the intersection of the fill slope with the roadbed

PROFILE GRADE is the top of the granular base course at the ℄ of the road, prior to the placing of the 3/8" crushed gravel or pavement driving surface

Swamp excavation width as per Standard DD-406

Top soil to be removed 6 ft wider than future Pavement under fills 4 ft or less in height

DEPARTMENT OF HIGHWAYS-ONTARIO

CLASS EARTH FILL

APPROVED

Jan 12 1956
Date

Design Engineer

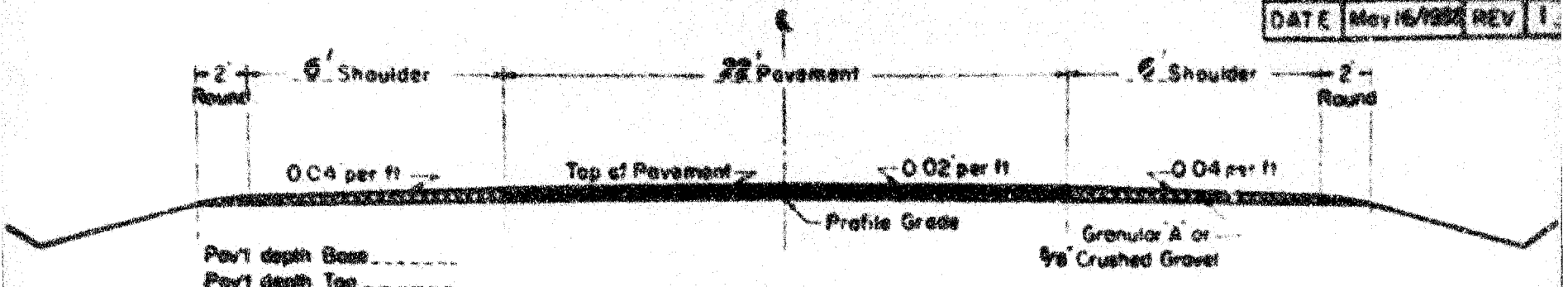
District No. 14 Hwy No. 65 Type of Contract S G

Location Nobi Riv (Twp of Kerns) incl approaches

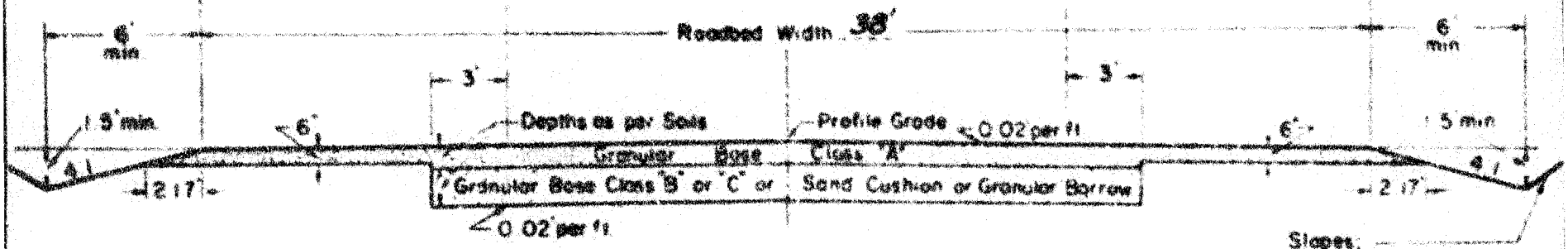
W P 629-56 CONTRACT No

No. DD-202

DATE May 16/1955 REV 1.



PAVEMENT SECTION



GRADING SECTION

Cuts under 4 ft - slope 3:1, cuts 4 ft and over - slope 2:1, measured from the natural ground to the intersection of the ditch slope with the roadbed

PROFILE GRADE is the top of the granular base course at the ℄ of the road, prior to the placing of the ¾" crushed gravel, or pavement driving surface

DEPARTMENT OF HIGHWAYS - ONTARIO

CLASS _____

EARTH CUT

APPROVED

Jan 12 1956
Date

Design Engineer

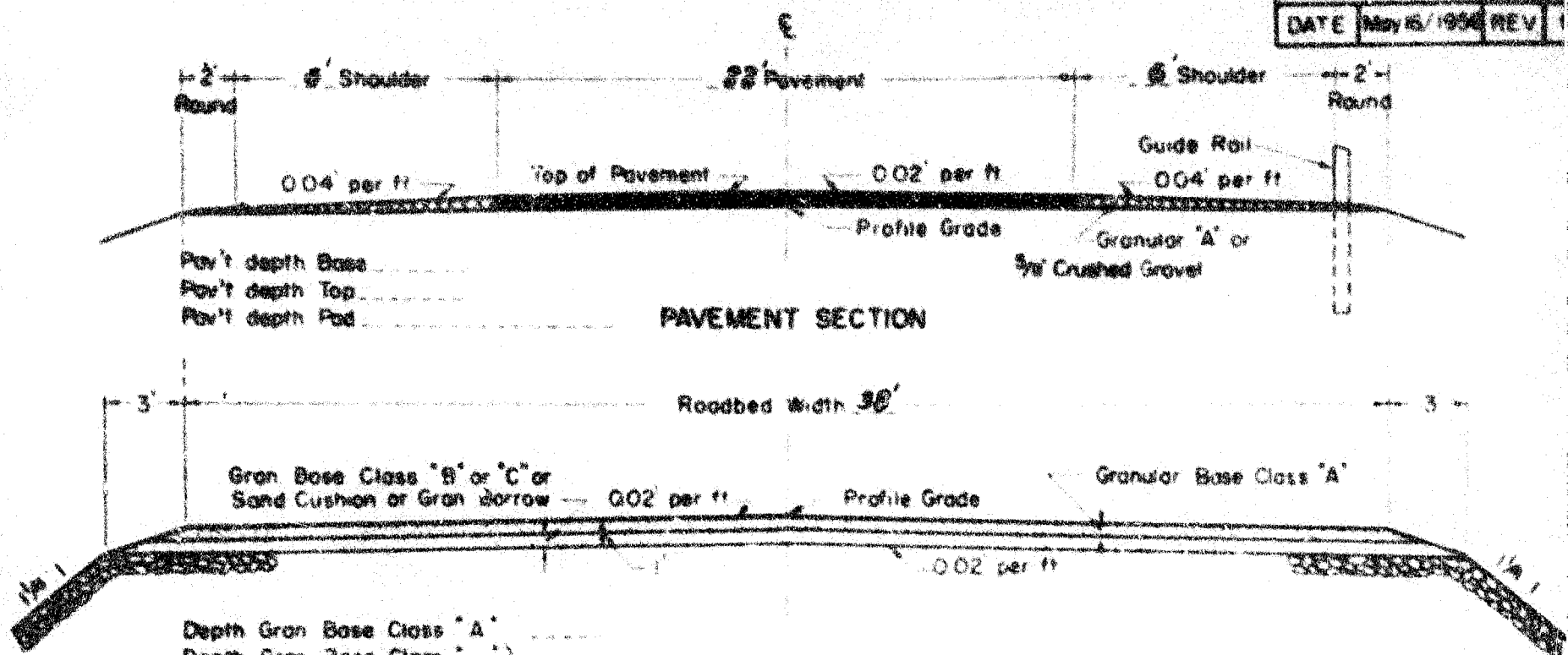
District No 14 Hwy No 65 Type of Contract S. G.

Location Wabi Riv. (Twp. of Kerns) incl. approaches

W.P. 629-56 CONTRACT No _____

NO. DD-209

DATE May 15/1956 REV



PROFILE GRADE is the top of the granular base course at the ℄ of the road, prior to the placing of the ¾" crushed gravel, or pavement driving surface

Swamp excavation width as per Standard DD - 406

Top soil to be removed 6 ft wider than future Pavement under fills 4 ft or less in height

District No 14 Hwy No 65 Type of Contract S C

Location Wabi Riv. (Twp. of Kerns) incl approaches

W.P. 629-56 CONTRACT No

DEPARTMENT OF HIGHWAYS - ONTARIO

CLASS
ROCK FILL

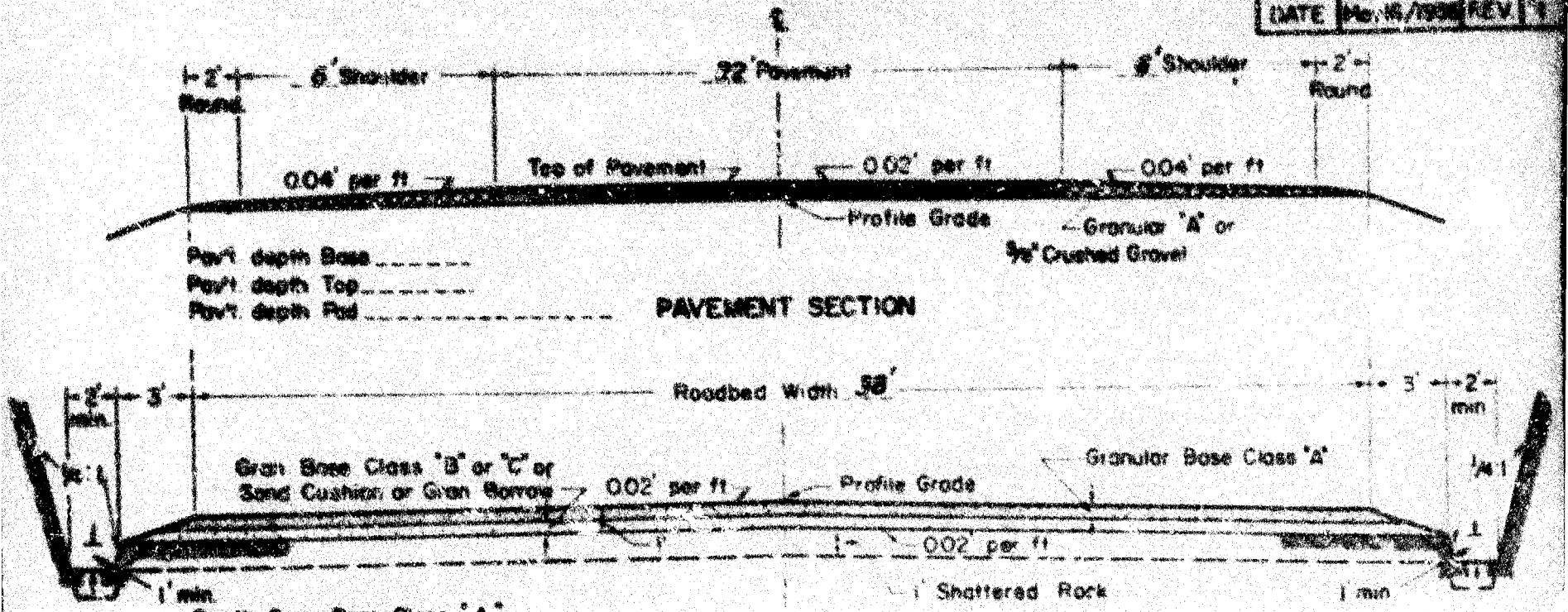
APPROVED

Jan 12 1956
Date

Design Engineer

No. 50 - 604

DATE Mar. 16/1956 REV. 1



PROFILE GRADE is the top of the granular base course at the ℄ of the road, prior to the placing of the ¾" crushed gravel or pavement driving surface.

District No. 14 Hwy No. 65 Type ... Tract S. G.

Location Wabi Riv. (Twp of Ke...ay) incl approaches

W P 628-56 CONTRACT No. .....

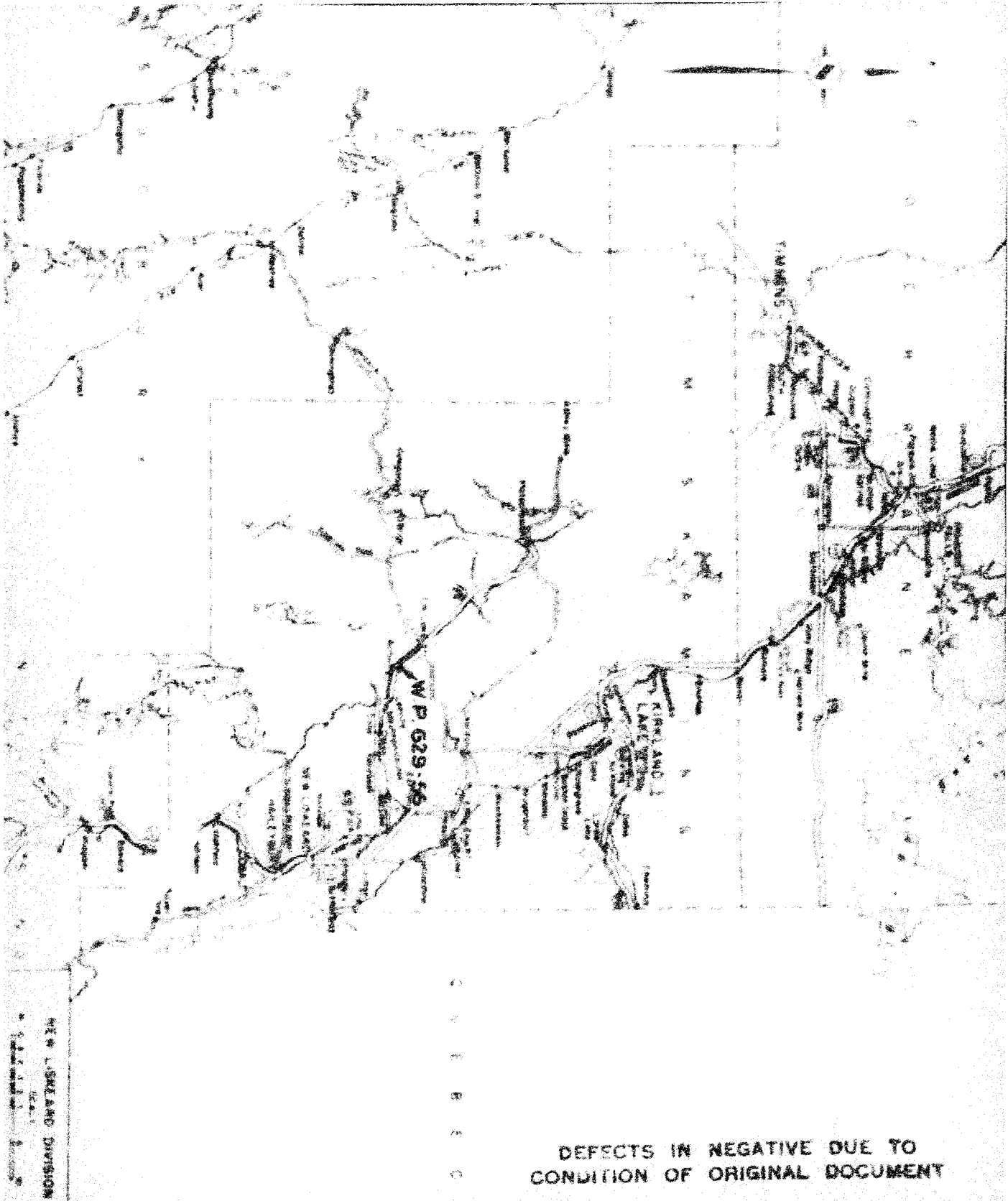
DEPARTMENT OF HIGHWAYS-ONTARIO

CLASS ____
ROCK CUT

APPROVED

Jan 12 1956
Date

Design Engineer



DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

Department of Highways
ONTARIO

To: Mr. [illegible] Chapman
District Engineer
NEW LISKEARD, Ont.

Date: April 30/58.
Ref. File No. [illegible]
Addtl. Sheet

GRANULAR MATERIAL TEST RESULTS

Contract: 58-221 Division No. [illegible] Highway No. [illegible]

Work and Location: [illegible] Mud Slough Bridge

County: [illegible] Twp. [illegible] Lot: [illegible] Con. [illegible]

Local Name of Pit: [illegible] Pit No. 1.

Pit Owner: [illegible]

General Pit Location: [illegible] mi. [illegible] New Liskeard

Haul Route: Good [illegible] mi.

Sampled From: Channelled Face ☐ Test Pit ☐ Auger ☐ End of Belt ☐ Bins ☐
Stockpile ☐ Trench ☐ Road Non-channelled Face ☒

Depth – From ______ To ______ At ______ Station, Hole, Face ______

Sampled By: [illegible] April 17/58.

Field Data and Observation

Depth of Total Face ______ Oversize ______ Inches ______ % Inches ______ %

Estimated Quantity ______ Yds. Oversize ______ Inches ______ % Inches ______ %

Intended Use: Gran. "A" and 5/8

Other Possible Uses: Conc. sand and gravel

General Remarks: Good supply opposite Caswell's Pit. Used by D.H.O. before.

Other Material Sources

COARSE AGGREGATE		Test Sample	Specif. Limit
Coarse Aggregate	%	[illegible]	
Mg. SO4 Cycles	Loss %		
Freeze & Thaw Cycles	Loss %		
Deval Abrasion	Loss %		
Los Angeles Abrasion	Loss %		
Absorption 24 Hours	%	[illegible]	
Bulk Specific Gravity		[illegible]	
Apparent Specific Gravity		[illegible]	
Clay Lumps	%		
Voids in Aggregate	%		
Unit Weight of Aggregate	lbs.		
Fineness Modulus			
Silt & Clay (Ret. 4 Fraction)	%		
Clay (Total Sample)	%		
Petrographic Number		[illegible]	

FINE AGGREGATE		Test Sample	Specif. Limit
Fine Aggregate	%	[illegible]	
Absorption	%		
Bulk Specific Gravity			
Apparent Specific Gravity			
Unit Wt. of Aggregate	lbs.		
Fineness Modulus			
Voids in Aggregate	%		
Materials Pass #200	%	[illegible]	
Loss By Abrasion	%		
Loss By Abrasion & Washing	%		
Mg. SO4 Cycles	Loss %		
Organic Impurities		[illegible]	
Petrographic Number			

Structural Strength	7 Day	28 Day
Standard		
Sample		

Tensile Strength	7 Day	14 Day	28 Day
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Excellent	Good	Fair	Poor
Metamorphics		1.7		
Igneous	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	

Remarks: Sample of Fine and Coarse aggregate is acceptable for G.B.C. "A" and 5/8" crushed providing sand content is controlled.
Coarse aggregate portion of sample is acceptable for structural concrete qualitatively.
Fine aggregate portion of sample is unsuitable for structural concrete due to organic impurity of [illegible].

Copies to:

Signature

Lab. No. 58-[illegible]-12170
Field No. [illegible]

JY.

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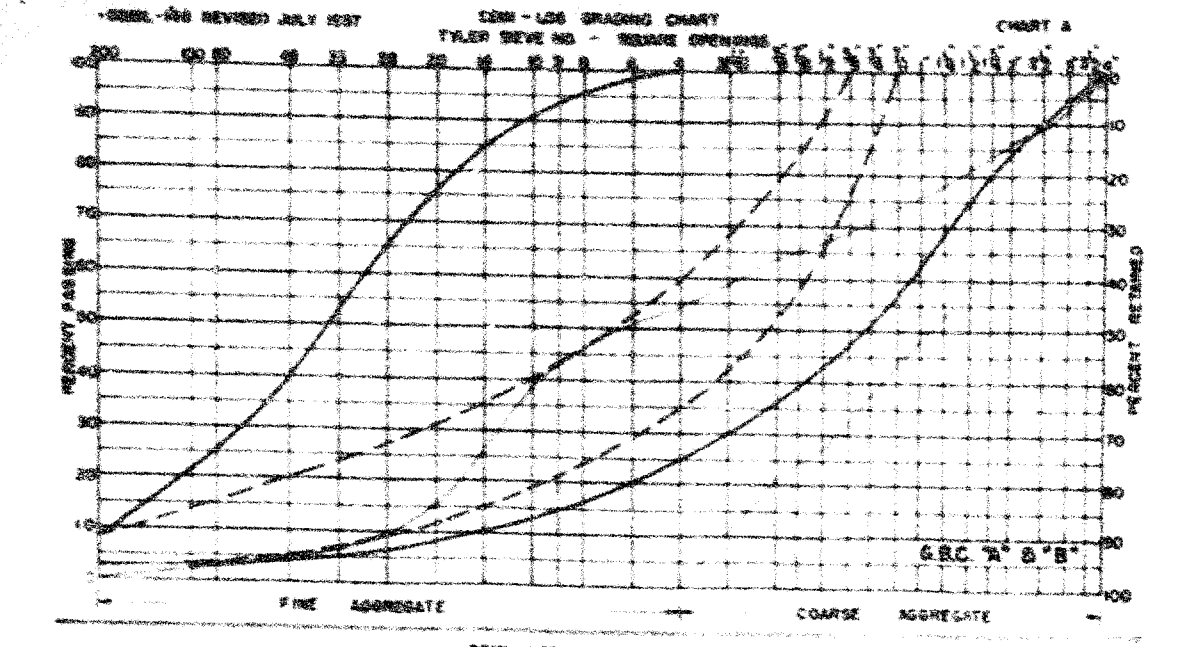
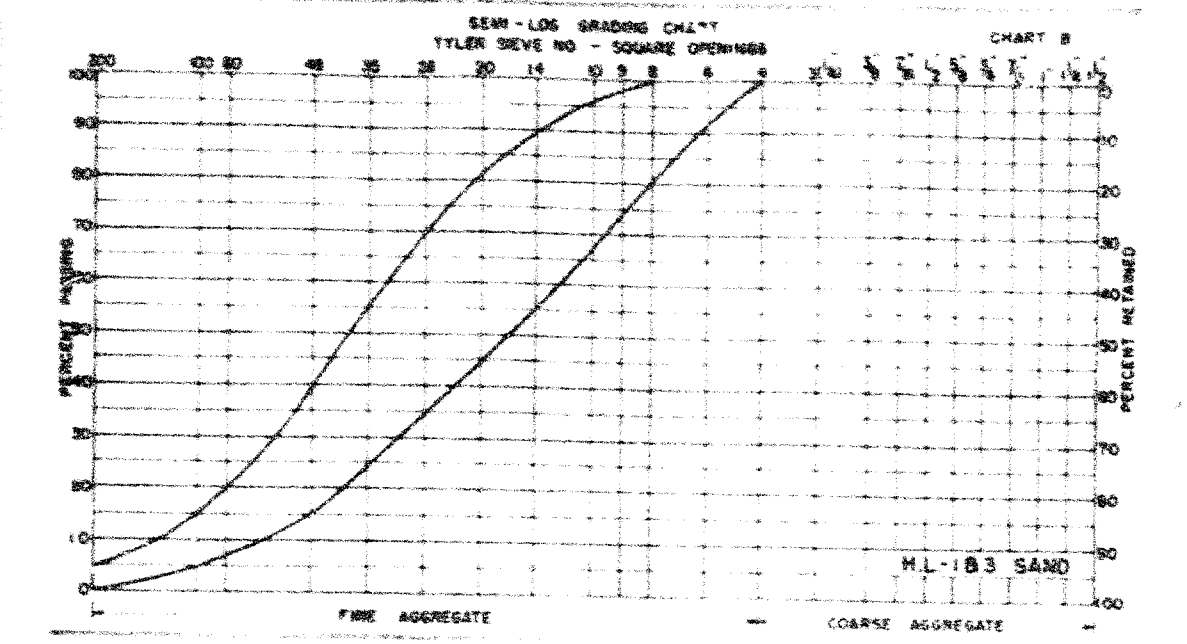
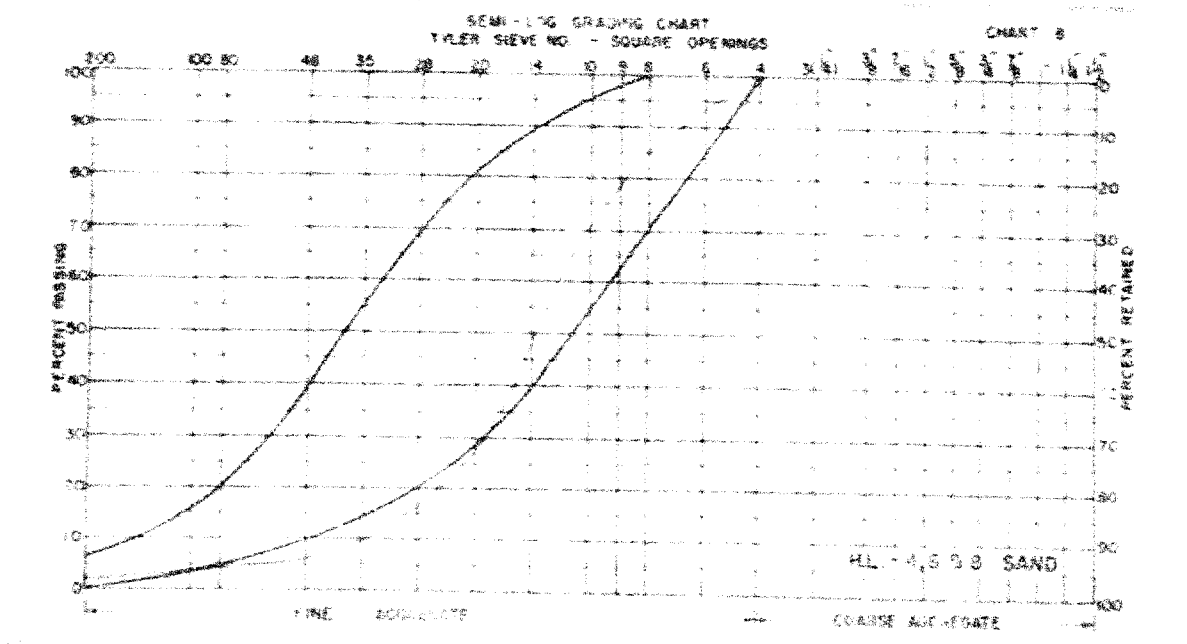
CONDITION OF ORIGINAL DOCUMENT


SEMI-LOG GRADING CHART
TYLER SIEVE NO - SQUARE OPENINGS
CHART A
PERCENT PASSING
PERCENT RETAINED
G.R.C. ¾" & "B"
FINE AGGREGATE
COARSE AGGREGATE


SEMI-LOG GRADING CHART
TYLER SIEVE NO - SQUARE OPENINGS
CHART B
PERCENT PASSING
PERCENT RETAINED
HL-183 SAND
FINE AGGREGATE
COARSE AGGREGATE


SEMI-LOG GRADING CHART
TYLER SIEVE NO - SQUARE OPENINGS
CHART B
PERCENT PASSING
PERCENT RETAINED
HL-4,6,9,8 SAND
FINE AGGREGATE
COARSE AGGREGATE

Department of Highways
ONTARIO

To: Mr. E. S. Chapman,
District Engineer,
NEW LISKEARD,
Ontario.

Date April 30/58.
Ref. File No. 652-3

GRANULAR MATERIAL TEST RESULTS

Contract 57-281 Division No. 11 Highway No. 65
Work and Location S.O. OS. Gobi River Bridge.

County Tem Twp. Bucwood Lot 5 E.½ Con. 4
Local Name of Pit Batty Pit No. 1.
Pit Owner R. E. Bagby
General Pit Location 23 mi. west New Liskeard

Haul Route Good 3½ mi.
Sampled From: Channelled Face / Stockpile / Test Pit / Truck / Auger / Road / End of Belt / Non-channelled Face X / Bins
Depth - From To
Sampled By G. Sutton, April 17/58.

Field Data and Observation

Depth of Total Face
Estimated Quantity
Intended Use Conc. Gravle
Other Possible Uses Gran "A" spc
General Remarks Good supply opposite Caswells Pit Road. Used by T.H.O. before.

Other Material Sources

COARSE AGGREGATE		Test	Specif. Limit
Coarse Aggregate	%	33.4	
Mg SO4 Inches	Loss %		
Freeze & Thaw Inches	Loss %		
Deval Abrasion	Loss %		
Los Angeles Abrasion	Loss %		
Absorption 24 Hours	%	0.53	
Bulk Specific Gravity		2.70	
Apparent Specific Gravity		2.73	
Clay Lumps	%		
Voids in Aggregate	%		
Unit Weight of Aggregate	lbs.		
Fineness Modulus			
Silt & Clay (Coarse Fraction)	%		
Clay (Total sample)	%		
Petrographic Number		98.6	

FINE AGGREGATE		Test	Specif. Limit
	%	66.6	
	%		
		2.51	
	%		
	%	0.6	
	%		
	%		
Mg	Loss %		
Organic Impurities		2	

Petrographic Analysis Coarse Aggregate

Metamorphics
Igneous

Shale 2.5
19.1 78.4
19.1 80.9

Remarks: Sample is acceptable for use as G.B.A. Class "A".
Sample of Fine Aggregate is unsuitable for structural concrete, due to Fineness of grading.
Coarse Aggregate portion of sample is acceptable for structural concrete qualitatively.

Lab. No. 58-S-12171
Field No. Misc.-485

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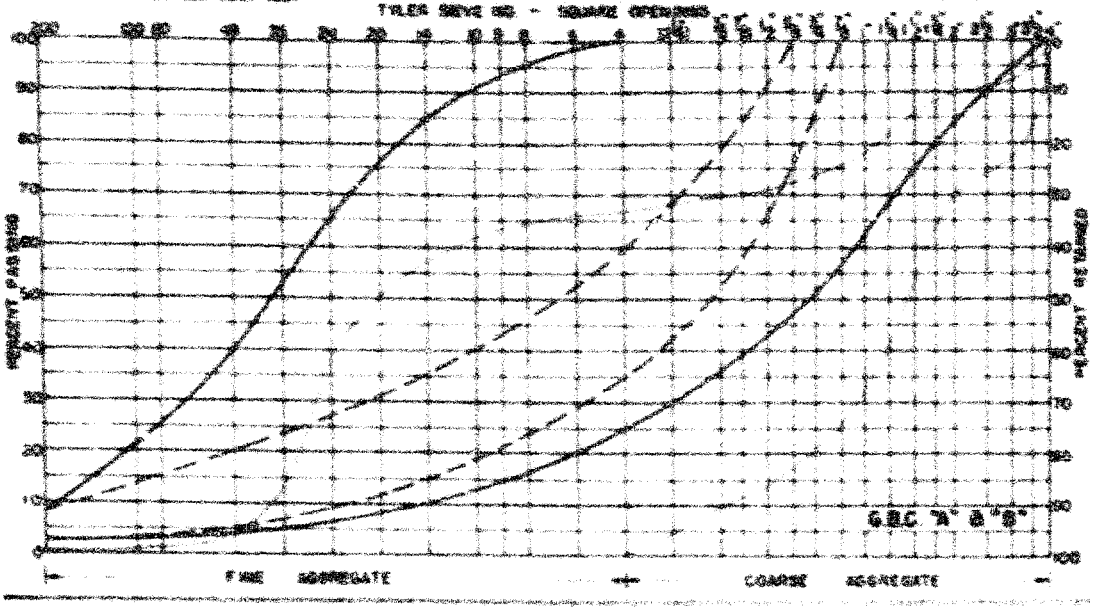
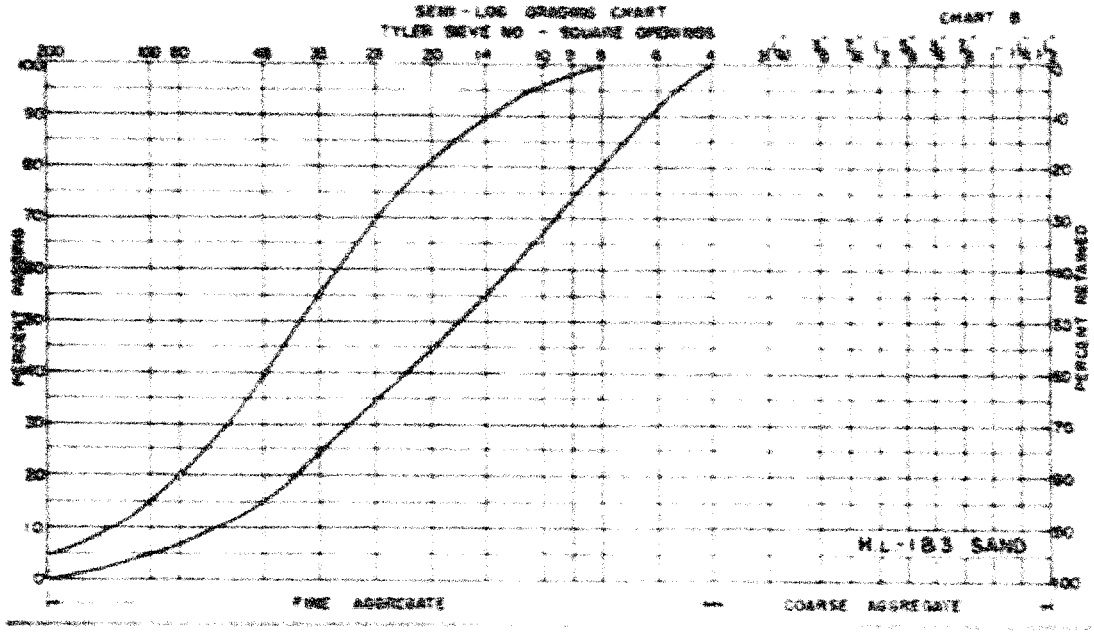
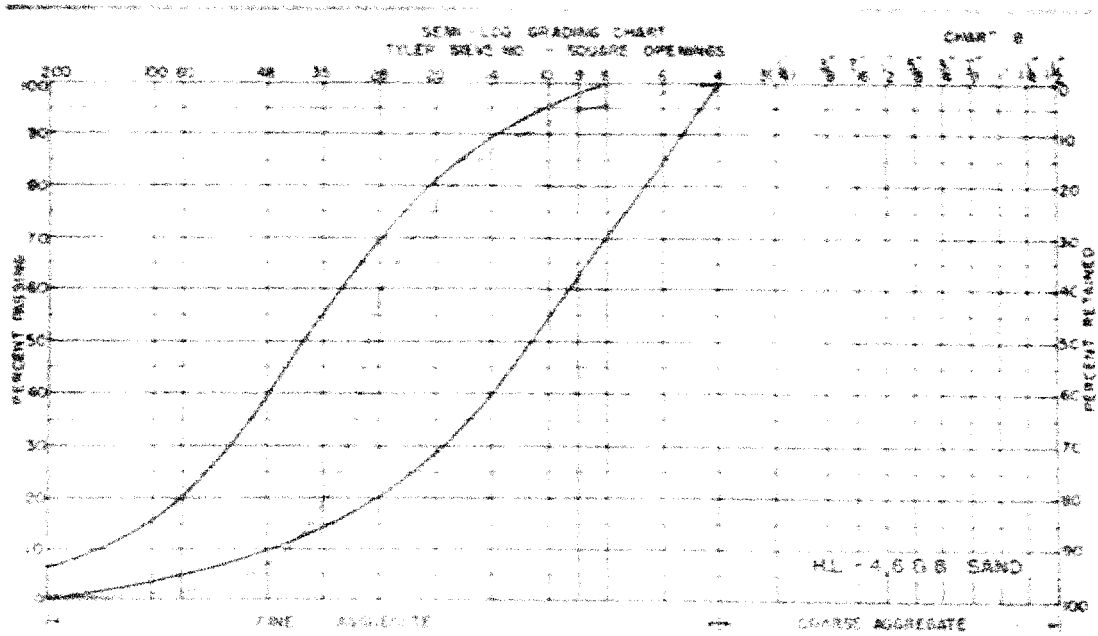

SEMI - LOG GRADING CHART
TYLER SIEVE NO. - SQUARE OPENINGS
CHART A
PERCENT PASSING
PERCENT RETAINED
G.B.C. "A" & "B"
FINE AGGREGATE
COARSE AGGREGATE


SEMI - LOG GRADING CHART
TYLER SIEVE NO. - SQUARE OPENINGS
CHART B
PERCENT PASSING
PERCENT RETAINED
HL-183 SAND
FINE AGGREGATE
COARSE AGGREGATE


SEMI - LOG GRADING CHART
TYLER SIEVE NO. - SQUARE OPENINGS
CHART B
PERCENT PASSING
PERCENT RETAINED
HL-4,6,8 SAND
COARSE AGGREGATE

Department of Highways
ONTARIO

To: Mr. R. S. Chapman, District Engineer, NEW LISKEARD, Ontario.

Date: April 30/58.
Ref. File No. 65A-3
Bulletin Sheet

GRANULAR MATERIAL TEST RESULTS

Contract: 57-221 | Division No.: 1A | Highway No.: 65

Work and Location: S.G. Gd. Lebi River Bridge

County: [illegible] | Twp.: [illegible] | Lot: S R. ½ | Con.: 4

Local Name of Pit: Batty Pit No. 1.
Pit Owner: R. R. Batty
General Pit Location: 23 Mi. East New Liskeard

Haul Route: Good 5½ mi.

Sampled From: Channelled Face ☐ | Test Pit ☐ | Auger ☐ | End of Bank ☐ | Pile ☐
Stockpile ☐ | Truck ☐ | Area | Non-channelled Face ■

Depth — From ... To ... | Station — Area — Face

Sampled By: G. [illegible] April 17/58.

Field Data and Observation

Depth of Total Face ... Overburden ... Inches ... Inches
Estimated Quantity ... Yds. Overburden ... Inches ... Inches

Intended Use: Gran. B.
Other Possible Uses: Gran. "A" Conc. gravel
General Remarks: Good supply opposite Caswell's Pit used by D.H.O. before.

Other Material Sources

COARSE AGGREGATE		Test Sample	Spec'd Limit	FINE AGGREGATE		Test Sample	Spec'd Limit
Coarse Aggregate	%	16.5		Fine Aggregate	%	83.5	
Mg. SO4 ... Cycles	Loss %			Absorption	%		
Freeze & Thaw ... Cycles	Loss %			Bulk Specific Gravity			
Dorry Abrasion	Loss %			Apparent Specific Gravity			
Los Angeles Abrasion	Loss %			Unit Wt. of Aggregate	lbs.		
Absorption 24 Hours	%			Fineness Modulus		2.18	
Bulk Specific Gravity				Voids in Aggregate	%		
Apparent Specific Gravity				Material Pass #200	%	0.7	
Clay Lumps	%			Loss By Abrasion	%		
Voids in Aggregate	%			Loss By Abrasion & Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 ... Cycles	Loss %		
Fineness Modulus				Organic Impurities		2	
Silt & Clay ... Fraction	%			Petrographic Number			
Clay (Total Sample)	%						
Petrographic Number		[illegible] 102.1					

	7 Day	28 Day
... Tensile Strength		
Standard		
Sample		

	3 Day	14 Day	28 Day
Tensile Strength			
Standard			
Sample			

Petrographic Analysis — Coarse Aggregate

Rock Types	Excellent	Good	Fair	Poor
Metamorphics		6.0		1.0
Igneous	17.0	76.0		
	17.0	82.0		1.0

Remarks: Sample is acceptable for use as G.P.C. Class "B".
Sample of Fine Aggregate is unsuitable for structural concrete, due to Fineness of grading.

Signed: ... Signature

Lab. No. 58-S-12172
Field No. Misc.-186

JT.

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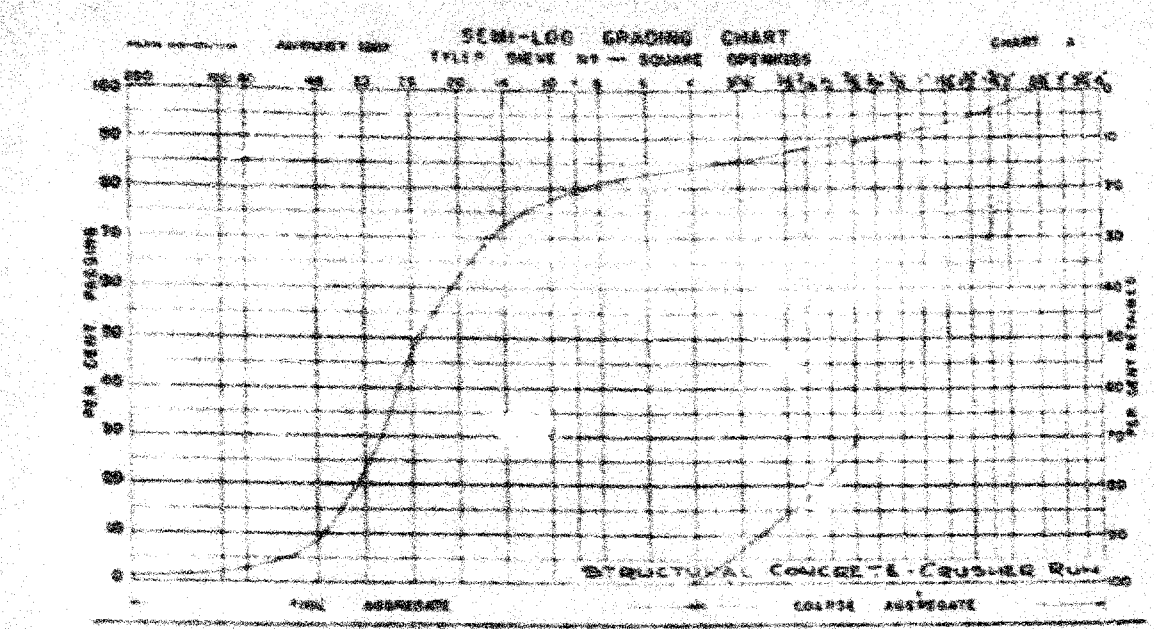
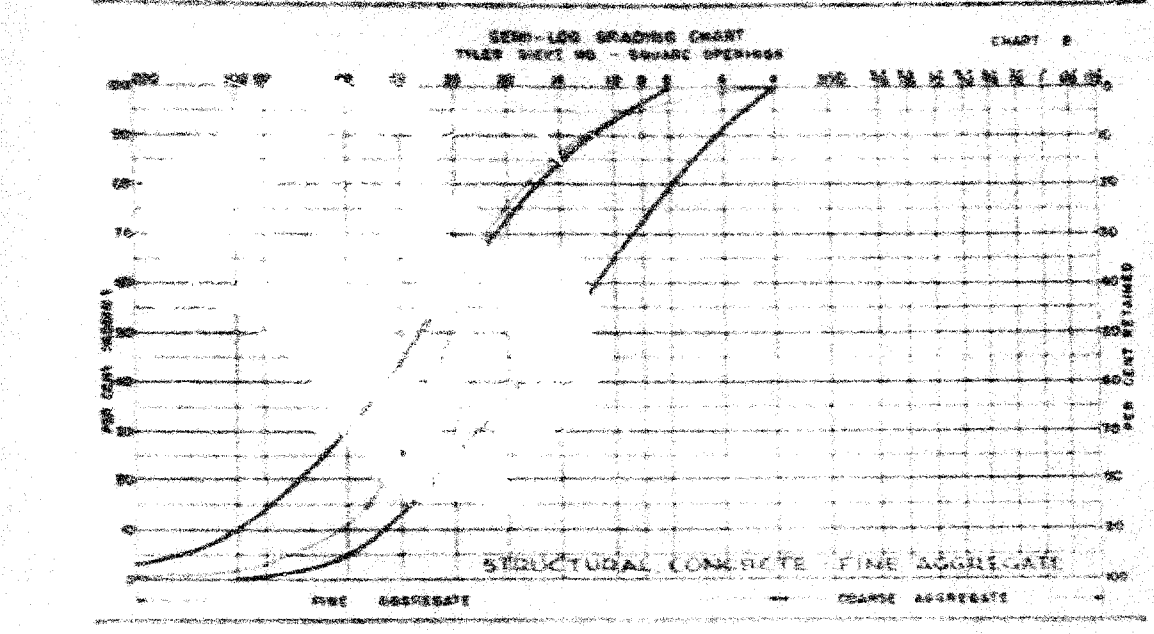
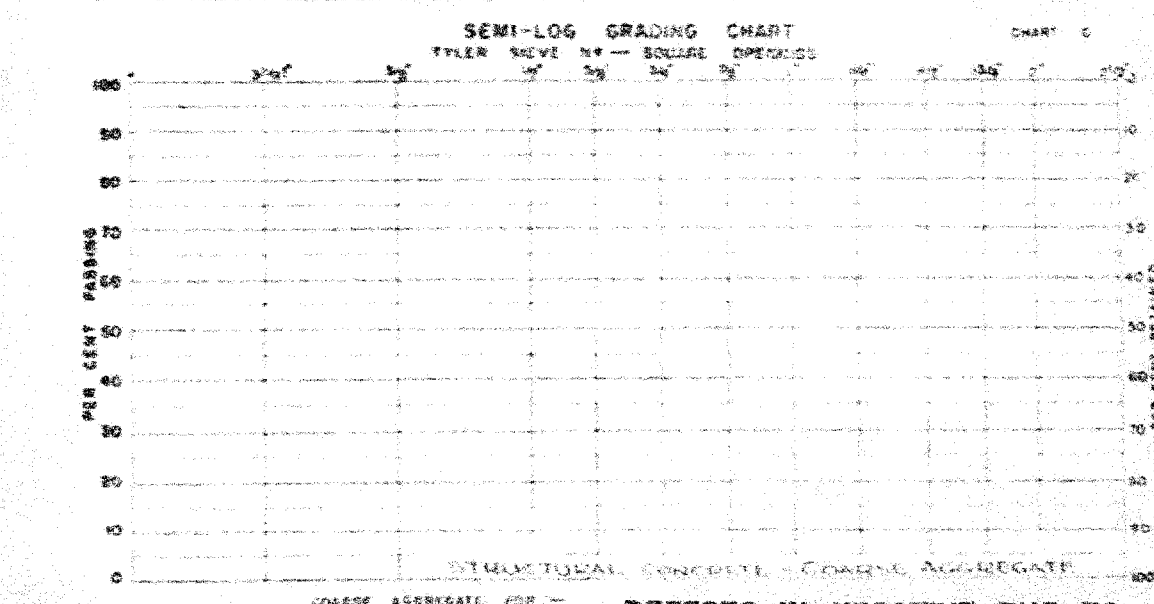
CONDITION OF ORIGINAL DOCUMENT







Department of Highways
ONTARIO

To: Mr. A. S. Chapman,
District Engineer,
NEW LISKEARD Ont.

Date April 30/56.
Ref. File No. 8161
Lab. No.

GRANULAR MATERIAL TEST RESULTS

Contract 57-221 Division No. 14 Highway No. 66
Work and Location 20.02, Wabi River Bridge.

County Tem Twp. Hamond Lot S ½ 4 Con. 4
Local Name of Pit Batty Pit #1
Pit Owner R. R. Batty
General Pit Location 23 Mi. East.
New Liskeard
Haul Route Good 5½ mi.
Sampled From: Channelled Face ☐ Test Pit ☐ Auger ☐ End of Drift ☐ Blast ☐
Stockpile ☐ Truck ☐ Grab ☐ Non-channelled Face ☒
Length - From To Ft. Native Run Face
Sampled By: G. Sabbon, Apr. 17.56.

Field Data and Observation

Depth of Total Face Overside Inches % Inches %
Estimated Quantity Yds. Overside Inches % Inches %
Intended Use: Conc. sand
Other Possible Uses: Conc. gravel and Gran. "A"
General Remarks: Good supply gran "B". opposite road to Cassell Pit used by DHO before.

Other Material Source

COARSE AGGREGATE		Test Sample	Spec'd. Limit	FINE AGGREGATE		Test Sample	Spec'd. Limit
Coarse Aggregate	%	3.0		Fine Aggregate	%	96.0	
Mg. SO4 Soundness	Loss %			Absorption	%		
Freeze & Thaw Soundness	Loss %			Fine Aggregate Soundness			
Deval Abrasion	Loss %			Specific Gravity of Aggregate			
Los Angeles Abrasion	Loss %			Fineness Modulus		2.62	
Absorption 24 Hours	%			Bulk Specific Gravity			
Bulk Specific Gravity				Apparent Specific Gravity			
Apparent Specific Gravity				Material Finer than #200	%	0.6	
Clay Lumps	%			Loss by Abrasion	%		
Voids in Aggregate	%			Loss by Abrasion & Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 Soundness	Loss %		
Fineness Modulus				Organic Impurities		2	
Silt & Clay (Ret. & Fraction)	%			Petrographic Number			
Clay (Total Sample)	%						
Petrographic Number							
				Mortar Strength		7 Day	28 Day
				Remarks			
				Concrete Strength	7 Day	14 Day	28 Day
				Slump			
				Air Content			

Petrographic Analysis - Coarse Aggregate

Rock Types	Weathered	Sound	Total

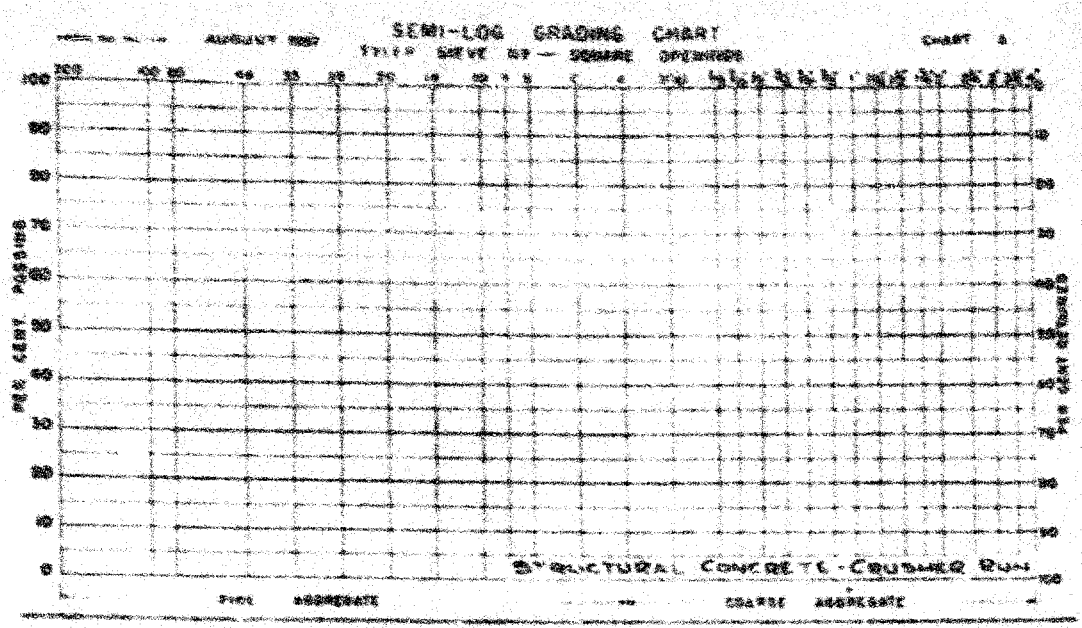
Remarks: Sample of fine aggregate is unsuitable for structural concrete, due to fineness of grading.

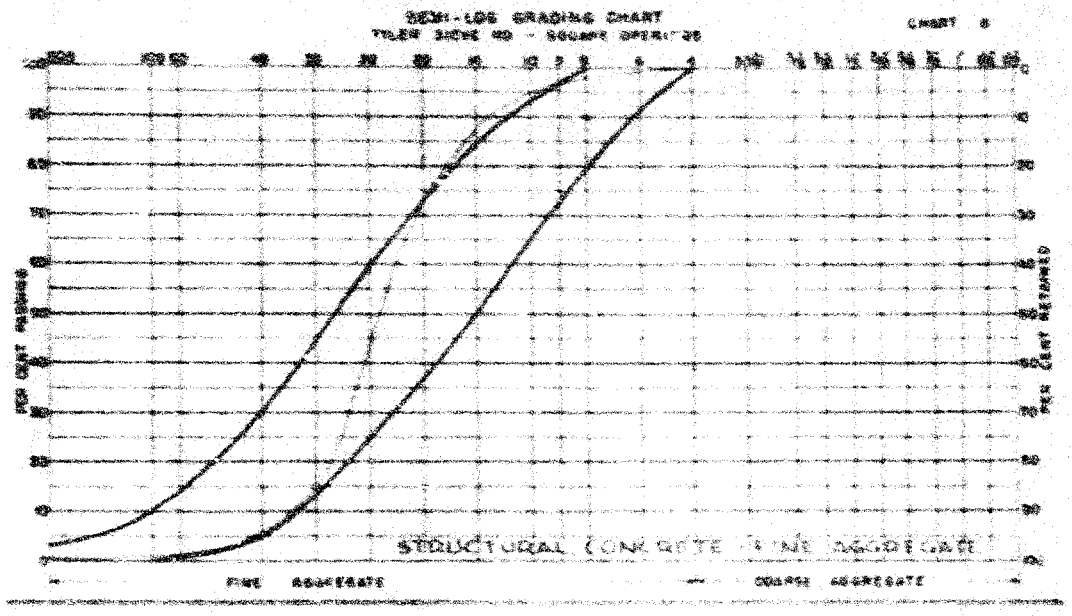
Copies

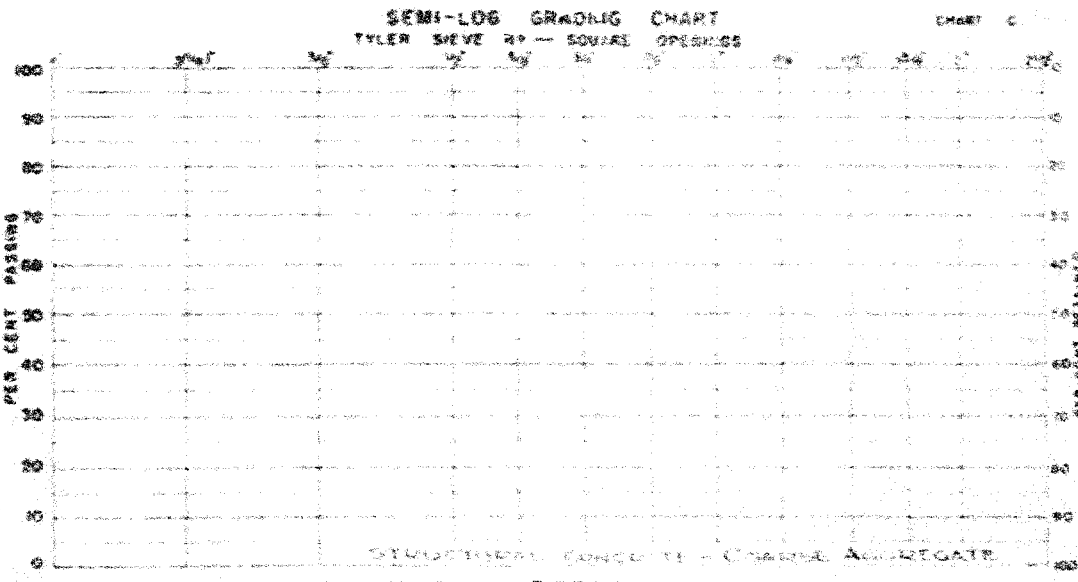
Lab. No. 58-S-12173
Field No. Misc.-487

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

51.







ONTARIO
DEPARTMENT OF HIGHWAYS

Memo to Mr. A. Rutka, Materials & Research Engineer.
From F. G. Allen, Dist. Construction Engineer.

Date April xx, 1959.
Subject Contract [illegible] Wabi River 14 Miles west of Liskeard Hwy. 65.

The above noted contract on Hwy. 65 is in a Varved Clay area. The cut slopes appear to be generally unstable. One slide failure has occurred and as the frost comes out we anticipate further difficulty.

If possible we would like to have a Soils Engineer inspect the condition. I would be pleased to accompany your representative, preferably before May 5, 1959 (Construction Conference).

F. G. Allen.
Dist. Construction Engineer.

FGA/ds.

57-221

CONCRETE POUR REPORT

Date [illegible] Report No [illegible] Contract No [illegible] District 14

Type of structure and location [illegible] Hwy No [illegible]

Contractor [illegible] Sub contractor

Contractor's superintendent [illegible]

Project supervisor [illegible] Inspector [illegible]

LOCATION OF POUR [illegible] Number of yards placed [illegible]

Duration of pour 4 [illegible]

MATERIALS

TYPE	SOURCE	SAMPLES TAKEN DATE	FORWARDED TO	FOR WHAT REASON
COARSE AGGREGATE	[illegible]			
FINE AGGREGATE	[illegible]			
WATER	[illegible]			
CEMENT	[illegible]			

MIX DETAILS

	(A) DESIGN MIX PER ONE CUBIC YARD	(B) BATCH WEIGHTS FROM DESIGN MIX	(C) MOISTURE CONTENTS	(D) MIX ADJUSTMENTS	(E) BATCH WEIGHTS FINAL MIX	(F) BY VOLUME
COARSE AGGREGATE (↓)	3 1/2	[illegible]				[illegible]
FINE AGGREGATE (in)	2 1/4	4 1/2 [illegible]	[illegible]	[illegible]		[illegible]
WATER (in)	4 1/2 Gal	9 Gal				9 Gal
CEMENT (in)	1 Bag	2 Bags				2 B[illegible]
TOTAL						

BATCHING AND MIXING

Type of batching [illegible] Name and location of ready mix plant

Type and capacity of mixer [illegible] Name of D H D checker at plant

Number and capacity of trucks used

ADMIXTURES

Product [illegible] Quantity added per batch [illegible]

CONCRETE TESTS

TIME	7:45	[illegible]			
SLUMP	3	[illegible]	[illegible]	[illegible]	
TEMP OF MIX AT PLACING					
AIR TEST					

Cylinder field numbers 13, 14, [illegible] 15

Type of cylinder curing [illegible]

Slump at time of making cylinders 3 1/2, 2 3/4, 2 3/4

WEATHER AND TEMPERATURES

Days weather [illegible]

Air temperature at time of pour 61°

	TEMP DAY BEFORE POUR	TEMP DAY AFTER POUR
MAXIMUM	60°	66°
MINIMUM	20°	52°

HEATING AND PROTECTION OF FINISHED CONCRETE

CURING OF FINISHED CONCRETE

[illegible]

[illegible] 4 Days

REMARKS [illegible]

[illegible]

[illegible]

[illegible]

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

SIGNED [illegible]

CONCRETE POUR REPORT

Date August 2/53 Report No 4 Contract No 57221 District 14
Type of structure and location [illegible] Hwy No [illegible]
Contractor L H [illegible] Sub-contractor
Contractor's superintendent L H [illegible]
Project supervisor W [illegible] Inspector C [illegible]

LOCATION OF POUR [illegible] Number of yards placed 35
Duration of pour [illegible]

MATERIALS

TYPE	SOURCE	SAMPLES TAKEN DATE	FORWARDED TO	FOR WHAT REASON
COARSE AGGREGATE	[illegible] Pit			
FINE AGGREGATE	[illegible] Pit			
WATER	[illegible]			
CEMENT	[illegible]			

MIX DETAILS

	(A) DESIGN MIX FOR [illegible]	(B) BATCH [illegible] FROM DESIGN MIX	(C) MOISTURE CONTENTS	(D) MIX ADJUSTMENTS	(E) BATCH WEIGHTS FINAL MIX	(F) BY VOLUME
COARSE AGGREGATE (i)	3 1/2	7 cu ft				[illegible]
FINE AGGREGATE (ii)	2 1/4	4 1/2 cu ft	[illegible]	[illegible]		[illegible]
WATER (iii)	4 1/2 Gal	9 Gal				9 Gal
CEMENT (iv)	1 Bag	2 Bag				2 Bag
TOTAL						

BATCHING AND MIXING

Type of batching [illegible]
Type and capacity of mixer 12 cu ft
Name and location of ready mix plant
Name of D.H.O. checker at plant
Number and capacity of trucks used

ADMIXTURES

Product Pozzolith Quantity added per batch 1/2 LB

CONCRETE TESTS

TIME	7 30	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SLUMP	2"	3 1/2	2 1/2	3	2 1/2	2"
TEMP OF MIX AT PLACING						
AIR TEST						

Cylinder field numbers [illegible]
Type of cylinder curing
Slump at time of making cylinders [illegible] 2 1/2 2"

WEATHER AND TEMPERATURES

Days weather [illegible]
Air temperature at time of pour 60°

	TEMP DAY BEFORE POUR	TEMP DAY AFTER POUR
MAXIMUM	60°	60°
MINIMUM	50°	47°

HEATING AND PROTECTION OF FINISHED CONCRETE

CURING OF FINISHED CONCRETE

[illegible]

REMARKS Cylinders [illegible] the day after they were made

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

SIGNED [signature]

DEPARTMENT OF HIGHWAYS - ONTARIO

CONCRETE POUR REPORT

Date [illegible] Report No 3 Contract No 57-221 District 14

Type of structure and location [illegible] Hwy No 62

Contractor [illegible] Sub-contractor

Contractor's superintendent [illegible]

Project supervisor [illegible] Inspector [illegible]

LOCATION OF POUR [illegible] Number of yards placed 32

Duration of pour 5½ Hrs

MATERIALS

TYPE	SOURCE	SAMPLES TAKEN DATE	FORWARDED TO	FOR WHAT REASON
COARSE AGGREGATE	[illegible] Pit			
FINE AGGREGATE	[illegible] Pit			
WATER	[illegible]			
CEMENT	Canada Cem			

MIX DETAILS

	(A) DESIGN MIX FOR ONE-BAG MIX	(B) BATCH WEIGHTS FROM DESIGN MIX	(C) MOISTURE CONTENTS	(D) MIX ADJUSTMENTS	(E) BATCH WEIGHTS FINAL MIX	(F) BY VOLUME
COARSE AGGREGATE (i)	3½	7 Cu Ft				7 Cu Ft
FINE AGGREGATE (ii)	2¼	4½ Cu Ft	[illegible]	[illegible]		[illegible]
WATER (iii)	4½ GAL	9 GAL				9 GAL
CEMENT (iv)	1 Bag	2 Bags				2 Bags
TOTAL						

BATCHING AND MIXING

Type of batching [illegible]

Type and capacity of mixer 12 Cu Ft

Name and location of ready mix plant

Name of D.H.O. checker at plant

Number and capacity of trucks used

ADMIXTURES

Product Pozzolith Quantity added per batch ½ Pound

CONCRETE TESTS

TIME	9:30	[illegible]	[illegible]	[illegible]	[illegible]	
SLUMP	3	2¾	2	3	2½	2½
TEMP OF MIX AT PLACING						
AIR TEST						

Cylinder field numbers 7, 8, and 9

Type of cylinder curing

Slump at time of making cylinders 2¾, 3 and 2½

WEATHER AND TEMPERATURES

Days weather [illegible]

Air temperature at time of pour 60°

	TEMP DAY BEFORE POUR	TEMP DAY AFTER POUR
MAXIMUM	72°	68°
MINIMUM	60°	58°

HEATING AND PROTECTION OF FINISHED CONCRETE

CURING OF FINISHED CONCRETE

Covered with wet sand for 3 Days

REMARKS Cylinders covered with wet sand here for 3 Days before being boxed and shipped

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

SIGNED [signature]

Form 15 Jan. 1956 [illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

CONCRETE POUR REPORT

Date August 26/58 Report No 2 Contract No 57-221 District 19

Type of structure and location [illegible] Hwy No [illegible]

Contractor S.H. [illegible] Sub-contractor

Contractor's superintendent [illegible]

Project supervisor [illegible] Inspector [illegible]

LOCATION OF POUR Centre Section of Deck Number of yards placed 33.5 Cu Yds

Duration of pour 7½ Hrs

MATERIALS

TYPE	SOURCE	SAMPLES TAKEN: DATE	FORWARDED TO	FOR WHAT REASON
COARSE AGGREGATE	Batt... Pit			
FINE AGGREGATE	Armstrong Pit			
WATER	[illegible] River			
CEMENT	Canada Cement			

MIX DETAILS

	(A) DESIGN MIX PER ONE-BAG-BATCH	(B) BATCH WEIGHTS FROM DESIGN MIX	(C) MOISTURE CONTENTS	(D) MIX ADJUSTMENTS	(E) BATCH WEIGHTS FINAL MIX	(F) BY VOLUME
COARSE AGGREGATE (i)	3½	7 Cu Ft				7 Cu Ft
FINE AGGREGATE (ii)	2¼	4½ Cu Ft	Bulked 25%	1 Cu Ft		5½ Cu Ft
WATER (iii)	4½ Gal	9 Gal				9 Gal
CEMENT (iv)	1 Bag	2 Bag				2 Bag
TOTAL						

BATCHING AND MIXING

Type of batching Volume

Type and capacity of mixer 12 Cu Ft

Name and location of ready mix plant

Name of D.H.O. checker at plant

Number and capacity of trucks used

ADMIXTURES

Product Pozzolith Quantity added per batch ½ Pound

CONCRETE TESTS

TIME	9:00	10:00	12:00	2:00	3:00	4:00
SLUMP	2"	2"	2½"	3"	2"	3"
TEMP OF MIX & PLACING						
AIR TEST						

Cylinder field numbers 4, 5, and 6

Type of cylinder curing

Slump at time of making cylinders 2, 3 and 2½

WEATHER AND TEMPERATURES

Days weather Sunny and Hot

Air temperature at time of pour 76°

	TEMP DAY BEFORE POUR	TEMP DAY AFTER POUR
MAXIMUM	75°	72°
MINIMUM	60°	55°

HEATING AND PROTECTION OF FINISHED CONCRETE

CURING OF FINISHED CONCRETE

Covered with wet burlap for 1 day then with wet sand for 5 days

REMARKS The cylinders were covered with wet sand here for 4 days before being boxed and shipped

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

SIGNED [signature]

FORM [illegible]

DEPARTMENT OF HIGHWAYS - ONTARIO

CONCRETE POUR REPORT

Date *AUG. 16.* Report No *1* Contract No *57-221* District *14*

Type of structure and location *Bridge [illegible]* Hwy No *65*

Contractor *L. H. [illegible]* Sub-contractor

Contractor's superintendent *L. H. [illegible]*

Project supervisor *[illegible]* Inspector *C. Craig*

LOCATION OF POUR *Transverse Beams* Number of yards placed *7.5*

Duration of pour *3½ HRS*

MATERIALS

TYPE	SOURCE	SAMPLES TAKEN: DATE	FORWARDED TO	FOR WHAT REASON
COARSE AGGREGATE	*Batty Pit*			
FINE AGGREGATE	*Batty Pit*			
WATER	*Well*			
CEMENT	*Canada Cem.*			

MIX DETAILS

	(A) DESIGN MIX FOR ONE [illegible]	(B) BATCH WEIGHTS FROM DESIGN MIX	(C) MOISTURE CONTENTS	(D) MIX ADJUSTMENTS	(E) BATCH WEIGHTS FINAL MIX	(F) BY VOLUME
COARSE AGGREGATE (i)	*3½ Cu. Ft.*					*3½ Cu. Ft.*
FINE AGGREGATE (ii)	*2¼ Cu. Ft.*		*21%*	*47*		*2¼ Cu. Ft.*
WATER (iii)	*3 Gal*					*3 Gal.*
CEMENT (iv)	*1 Bag*					*1 Bag*
TOTAL						

BATCHING AND MIXING

Type of batching *Volume*

Type and capacity of mixer *12 Cu. Ft.*

Name and location of ready mix plant

Name of D.H.O. checker at plant

Number and capacity of trucks used

ADMIXTURES

Product *Pozzolith* Quantity added per batch *¼ LB Per Bag*

CONCRETE TESTS

TIME	*2:15*	*9:00*	*[illegible]*			
SLUMP	*2"*	*3"*	*2½"*			
TEMP OF MIX AT PLACING	*50°*	*53°*	*55°*			
AIR TEST						

Cylinder field numbers *1, 2, and 3*

Type of cylinder curing

Slump at time of making cylinders *Shown at left*

WEATHER AND TEMPERATURES

Days weather *Sunny & Warm*

Air temperature at time of pour *53°*

	TEMP DAY BEFORE POUR	TEMP DAY AFTER POUR
MAXIMUM	*75°*	*65°*
MINIMUM	*55°*	*50°*

HEATING AND PROTECTION OF FINISHED CONCRETE

Only small area exposed. Covered with wet burlap

CURING OF FINISHED CONCRETE

Covered with wet burlap.

REMARKS

DEFECTS IN NEGATIVE DUE TO CONDITION OF ORIGINAL DOCUMENT

SIGNED *C. Craig*

Department of Highways
ONTARIO

To: Mr. [illegible] [illegible],
District Engineer,
NEW LISKEARD, Ont.

Date: July [illegible]/58
Ref. File No. [illegible]
Mile Sheet:

GRANULAR MATERIAL TEST RESULTS

Contract: [illegible] Division No. [illegible] Highway No. [illegible]

Work and Location: [illegible] Bridge [illegible] mi. [illegible] of New Liskeard

County: [illegible] Twp. [illegible] Lot [illegible] Con. [illegible]

Local Name of Pit:

Pit Owner: [illegible]

General Pit Location: [illegible] mi. [illegible] of Hwy. [illegible]

Haul Route: [illegible]

Sampled From: Channelled Face ☐ Test Pit ☒ Auger ☐ End of Belt ☐ Bins ☐
Stockpile ☐ Truck ☐ Road ☐ Non-channelled Face ☐

Depth: From To At Station, Mile, Face

Sampled By: [illegible] June [illegible], 1958

Field Data and Observation

Depth of Total Face: 10' Oversize Inches % Inches %

Estimated Quantity: Tons Oversize Inches % Inches %

Intended Use: Structural Concrete Sand

Other Possible Uses:

General Remarks:

Other Material Sources:

COARSE AGGREGATE		Test Sample	Spec'd Limit	FINE AGGREGATE		Test Sample	Spec'd Limit
Coarse Aggregate	%	1.3		Fine Aggregate	%	98.7	
Mg. SO4 ___ Cycles	Loss %			Absorption	%		
Freeze & Thaw ___ Cycles	Loss %			Bulk Specific Gravity			
Deval Abrasion	Loss %			Apparent Specific Gravity			
Los Angeles Abrasion	Loss %			Unit Wt. of Aggregate	lbs.		
Absorption 24 Hours	%			Fineness Modulus		2.36	
Bulk Specific Gravity				Voids in Aggregate	%		
Apparent Specific Gravity				Materials Pass #200	%	1.2	
Clay Lumps	%			Loss By Abrasion	%		
Voids in Aggregate	%			Loss By Abrasion and Washing	%		
Unit Weight of Aggregate	lbs.			Mg. SO4 ___ Cycles	Loss %		
Fineness Modulus				Organic Impurities		1	
Silt & Clay (Sep. 4 Fraction)	%			Petrographic Number			
Clay (Total Sample)	%						
Petrographic Number							

Structural Strength	7 Day	28 Day
Standard		
Sample		

Tensile Strength	7 Day	4 Day	28 Day
Standard			
Sample			

Petrographic Analysis - Coarse Aggregate

Rock Types	Quality - Per Cent: Excellent	Good	Fair	Poor

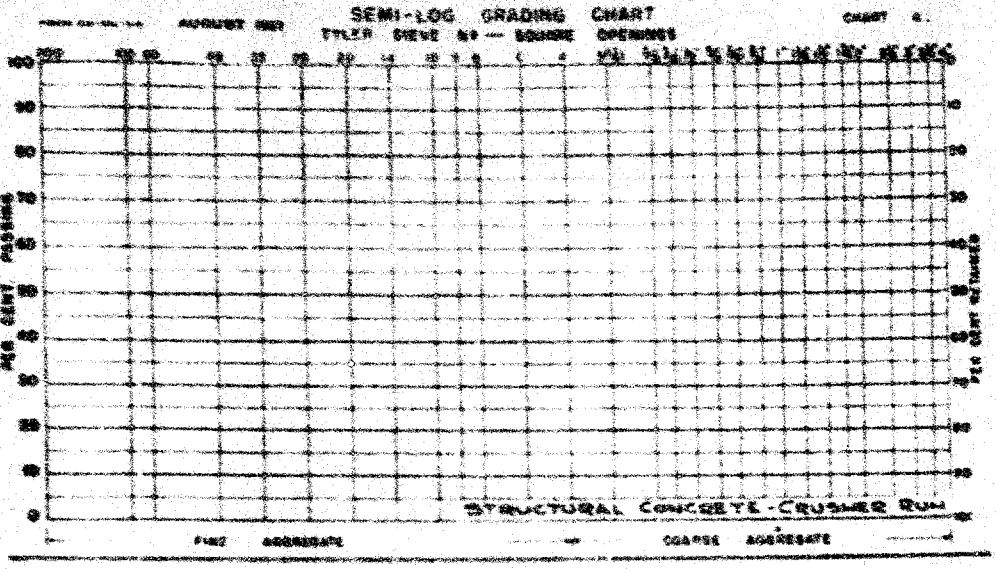
Remarks: Sample of fine aggregate is not suitable for concrete sand due to fineness of gradation. Sample [illegible] too fine on #16 sieve.

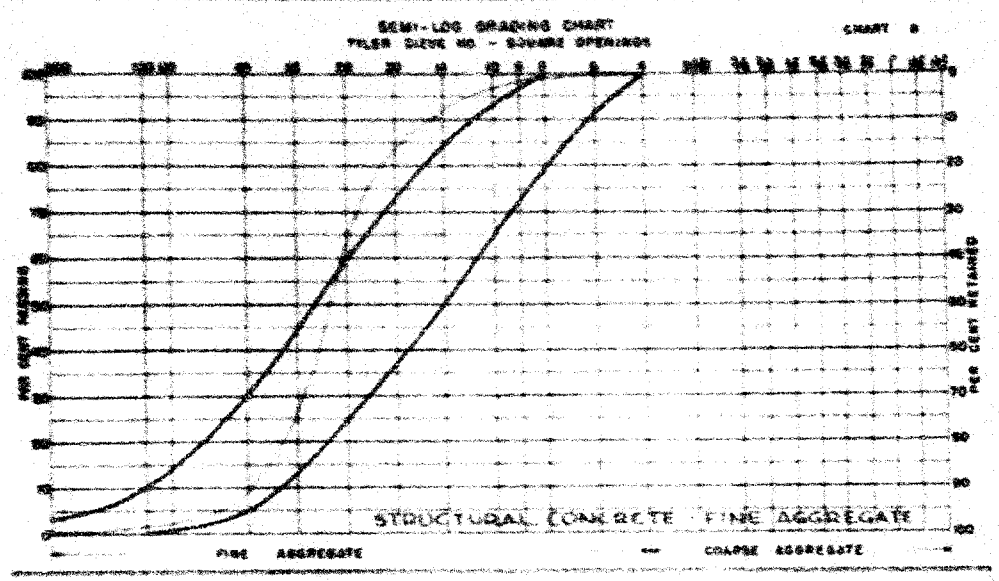
Copies to:

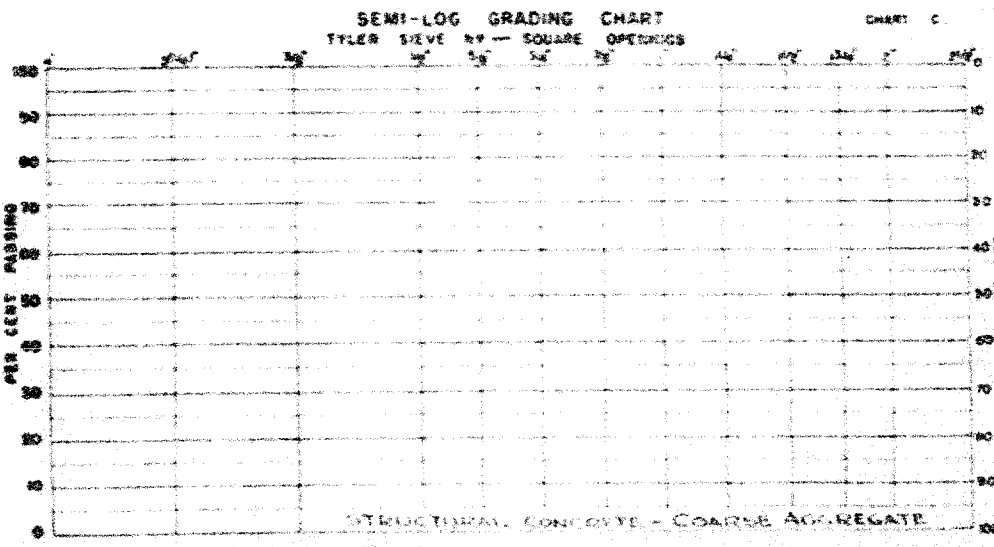
Frank Gill
Signature

Lab. No. 58-L-[illegible]
Field No. [illegible]-1-75

DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT







Form CK-CC4

DEPARTMENT OF HIGHWAYS

TENDER OPENING No. 35

TENDER CLOSING DATE 12:00 NOON, E.S.T. NOVEMBER 27th, 1957

TENDER for - STRUCTURE, GRADING AND GRANULAR BASE

at Hwy. #65 - WABI RIVER, approx. 18 MILES WEST OF NEW LISKEARD - 0.97 MILES
NEW LISKEARD DISTRICT

under CONTRACT NO. 57-221

by

NAME OF FIRM OR INDIVIDUAL (hereinafter referred to as "the Contractor")

ADDRESS

NAME OF PERSON SIGNING FOR FIRM

OFFICE OF PERSON SIGNING FOR FIRM

Tenders Secretary,
Department of Highways,
Parliament Buildings,
Toronto.

TENDER FOR CONTRACT
No. 57-221

Sir:

The Contractor has carefully examined the Provisions, Plans, Specifications and Conditions referred to in the Schedule of Provisions, Plans, Specifications and Conditions attached hereto as part of this tender and has carefully examined the site and location of the work to be done under this Contract, and the Contractor understands and accepts the said Provisions, Plans, Specifications and Conditions and, for the prices set forth in this Tender, hereby offers to furnish all machinery, tools, apparatus and other means of construction, furnish all materials, except as otherwise specified in the Contract, and to complete the work in strict accordance with the Provisions, Plans, Specifications and Conditions referred to in the said Schedule.

Attached to this Tender is a certified cheque in the amount required by the Special Provisions made payable to the Treasurer of Ontario. The proceeds of this cheque shall, upon acceptance of the Tender, constitute a deposit which shall be forfeited to the Department if the Contractor fails to file with the Department the completed Contract Bond required by the Notice to Contractors and an executed form of Agreement for the performance of the work prepared by the Department in accordance with this Tender and the Provisions, Plans, Specifications and Conditions referred to in the said Schedule within ten (10) days from the date of Acceptance of the Tender.

Notification of Acceptance may be given and delivery of the form of Agreement made by prepaid post addressed to the Contractor at the address contained in this Tender.

In accordance with the first paragraph of this Tender the Contractor hereby offers to complete the work specified in the Contract for the following prices for Contract No. . 57:231. . . .

ITEM No.	SPEC. No.	DESCRIPTION OF ITEM	COLUMN 1 Estimated Quantities	COLUMN 2 Contractor's Bid Per Unit IN FIGURES	COLUMN 3 Contractor's Total Bid IN FIGURES
1	S. P.	Supply all equipment for driving piles at site		$_____ Per LUMP SUM	
2	9 S. P.	Drive creosoted timber piles	5,180	$_____ Per LIN. FT.	
3	9 S. P.	Erection of all timber including hardware as per drawings	34	$_____ Per M. F. B. M.	
4	9	Place concrete in deck beams and curbs	123	$_____ Per CU. YD.	
5	9	Place reinforcing steel in structure	11	$_____ Per TON	
6	9 S. P.	Erect and paint steel beam guide rail	312	$_____ Per LIN. FT.	
7	S. P.	Fabricate, transport and erect structural steel		$_____ Per LUMP SUM	

S. P. Special Provisions

CARRIED FORWARD $ _____

In accordance with the first paragraph of the Trades Bid Contractor hereby offers to complete the work specified in the Contract for the following prices for Contract No. 57-321.

ITEM No.	SPEC. No.	DESCRIPTION OF ITEM	COLUMN 1 Estimated Quantities	COLUMN 2 Contractor's Bid Per Unit or Lump Sum	COLUMN 3 Contractor's Total Bid IN FIGURES
9	9 S. P.	Clean and paint structural steel		DOLLARS $ _____ Per LUMP SUM	
9	200	Clearing	3	$ _____ Per ACRE	
10	200 S. P.	Grubbing	3	$ _____ Per ACRE	
11	200 205 421C S. P.	Earth excavation including sub-excavation	42,000	$ _____ Per CU. YD.	
12	200	Compaction	36,500	$ _____ Per CU. YD.	
13	200 314	Application of water	251,000 gallons	$ _____ Per Thousand Gal.	
14	314 315	Selected granular base course class "A"	7,600	$ _____ Per TON	

S. P. Special Provisions

CARRIED FORWARD $ _____

In accordance with the first paragraph of this Tender the Contractor hereby offers to complete the work specified in the Contract for the following prices for Contract No. ...87-221....

ITEM No.	SPEC. No.	DESCRIPTION OF ITEM	COLUMN 1 Estimated Quantities	COLUMN 2 Contractor's Bid Per Unit IN FIGURES	COLUMN 3 Contractor's Total Bid IN FIGURES
12	429	Erection of anchor posts and brace panels DD902	22	BRT. FWD. $ $_____ Per SET	
13	429	Removal of existing guide rail	910	$_____ Per LIN. FT.	
14	424	Handlaid riprap	120	$_____ Per CU. YD.	
15	421A	Place 18" Corrugated iron pipe	130	$_____ Per LIN. FT.	
16	421A	Place 24" Corrugated iron pipe	52	$_____ Per LIN. FT.	
17	421B	Place 30" Corrugated iron pipe	66	$_____ Per LIN. FT.	
18	421B	Place 36" Corrugated iron pipe	178	$_____ Per LIN. FT.	

CARRIED FORWARD $ _____

In accordance with its first paragraph of this Tender the Contractor hereby offers to complete the work specified in the Contract for the following prices for Contract No. 57-221.....

ITEM No.	SPEC. No.	DESCRIPTION OF ITEM	COLUMN 1 Estimated Quantities	COLUMN 2 Contractor's Bid Per Unit IN FIGURES	COLUMN 3 Contractor's Total Bid IN FIGURES
29	421B	Place 48" Corrugated iron pipe	372	BRT. FWD. $ $_____ Per LIN. FT.	
30	422	Erection of fences DD901	650	$_____ Per ROD	
31	422	Removal of old fences	170	$_____ Per ROD	
32	422	Erection of anchor posts and brace panels DD901	48	$_____ Per SET	
33	430	Stockpiling and placing topsoil	1,150	$_____ Per CU. YD.	
34	S.P.	Removal of existing bridge		$_____ Per LUMP SUM	
35	401 Supp	Scarifying and reshaping	1,500	$_____ Per SQ. YD.	

Supp. Supplemental Specifications

CARRIED FORWARD $ _____

In accordance with the first paragraph of this Tender the Contractor hereby offers to complete the work specified in the Contract for the following prices for Contract No. 57 231.....

ITEM No.	SPEC. No.	DESCRIPTION OF ITEM	COLUMN 1 Estimated Quantities	COLUMN 2 Contractor's Bid Per Unit IN FIGURES	COLUMN 3 Contractor's Total Bid IN FIGURES
36	411	Sodding (staked) DD403	100	BRT. FWD. $ $_____ Per SQ. YD.	
37	411	Place wire mesh DD403	100	$_____ Per SQ. YD.	
				$_____ Per	
				$_____ Per	
				$_____ Per	
				$_____ Per	
				$_____ Per	

TOTAL BID _____

The work specified in the Contract will be performed in strict accordance with the following Provisions, Plans, Specifications and Conditions for Contract No. 57-221.

SCHEDULE OF PROVISIONS, PLANS, SPECIFICATIONS AND CONDITIONS

A. SPECIAL PROVISIONS

Tender Requirements - attached
Special Provisions Contract 57-221 attached

B. PLANS

BE & CE 57-221 BOOK), DD200-103S. DD303, DD304, DD403, DD808-A, DD808-B, DD813, DD901, DD902, Bridge Drawings D3859-1, -2, DD202.

C. SUPPLEMENTAL SPECIFICATIONS

2, 3, 20, 30, 31. (see attached index)

D. STANDARD SPECIFICATIONS

*9, 200, 205, 301, *314, 315, 401, 411, 421-A, -B, -C, 422, 425, 424, 425A, 429, 430, 432, *527, 527A. (*Rev. 1957)

E. GENERAL CONDITIONS

D.H.O. Form #100

The Contractor by this Tender offers to complete this Contract in accordance with the terms contained herein.

Dated at this day of 195

Witness

Signature of authorized person signing for Contractor

Position

This is the 9 th. and last page of the 9 pages to be submitted as the Tender Bid for this Contract.

FABRICATE, TRANSPORT, & ERECT STRUCTURAL STEEL. ITEM #7. CONTINUED.

(a) Removing from the beams all existing attached items such as plates and angles, and cutting the beams to the required lengths.

(b) Making all holes in the structural steel and notching the beams as shown on the drawings.

(c) Cleaning the beams with wire brush and scraper and painting with one coat of red lead those surfaces of steel which will not be in contact with concrete in the finished structure. The red lead will be supplied by the Department.

(d) Transporting the beams from the D.H.O. yard at Downsview including loading and unloading.

(e) Erecting the structural steel as shown on the drawings.

CLEAN & PAINT STRUCTURAL STEEL. ITEM #8.

Under this item and for the lump sum bid, the Contractor shall clean thoroughly all structural steel after the concrete deck is placed, touch up any scarred surfaces with red lead, and then paint all exposed surfaces with two coats of field paint. Red lead and field paint will be supplied by the Department.

SERVICES.

The Contractor's attention is drawn to [illegible] Section 9-11-03 as it is expected that there will be services to be taken care of.

EARTH EXCAVATION INCLUDING SUB-EXCAVATION. ITEM #11. FILL FOR STRUCTURE.

Common fill for this structure as shown on the drawing is to be placed before the structure is built. The fill shall not contain any boulders or rock between stations 21/64 and 23/80 which might obstruct the driving of the timber piles.

Granul. - "B" to be placed behind the timber ballast walls at each end of the Bridge.

GRUBBING ON THE RIGHT-OF-WAY. ITEM #10.

Original cross sections for the basis of payment quantities will be taken after clearing and in advance of grubbing operations. No deduction will be made in the measurement for excavation for any top soil moved during grubbing operations.

STOCKPILE. ITEM #17.

The following stockpile shall be built as directed by the Engineer at the location listed :

1,000 tons of 5/8" Crushed Gravel Type "A" at pit approximately 5 miles West of project.

AGGREGATE TEST DATA SUMMARY

CONTRACT NO 51-221 HWY NO. 65

WORK AND LOCATION [illegible] GRADING & GRANULAR BASE - HWY 65 - [illegible] APPROX [illegible] MILES [illegible] OF NEW LISKEARD [illegible]

PIT NAME	PIT LOCATION	FIELD NO. / LAB NO. / DATE SAMPLED / COARSE AGGREGATE / FINE AGGREGATE
New Liskeard & 4		[illegible]
Petty Pit #1	[illegible] of New Liskeard	[illegible]
"	"	[illegible]
"	"	[illegible]
"	"	[illegible]
"	"	[illegible]
"	[illegible]	[illegible]
" #2422		[illegible]
[illegible] Pit	[illegible]	[illegible]
" # 7	South side Hwy 65	[illegible]
Petty Pit #3	[illegible] New Liskeard	[illegible]
" #613		[illegible]
[illegible] Pit	[illegible]	[illegible]
" #19		[illegible]
[illegible] Pit	[illegible]	[illegible]
[illegible]		[illegible]
[illegible] Pit	[illegible] New Liskeard	[illegible]
New Liskeard # 4		[illegible]
Petty Pit # 3	[illegible] Hwy 65	Fine
"	"	[illegible]
		Fine

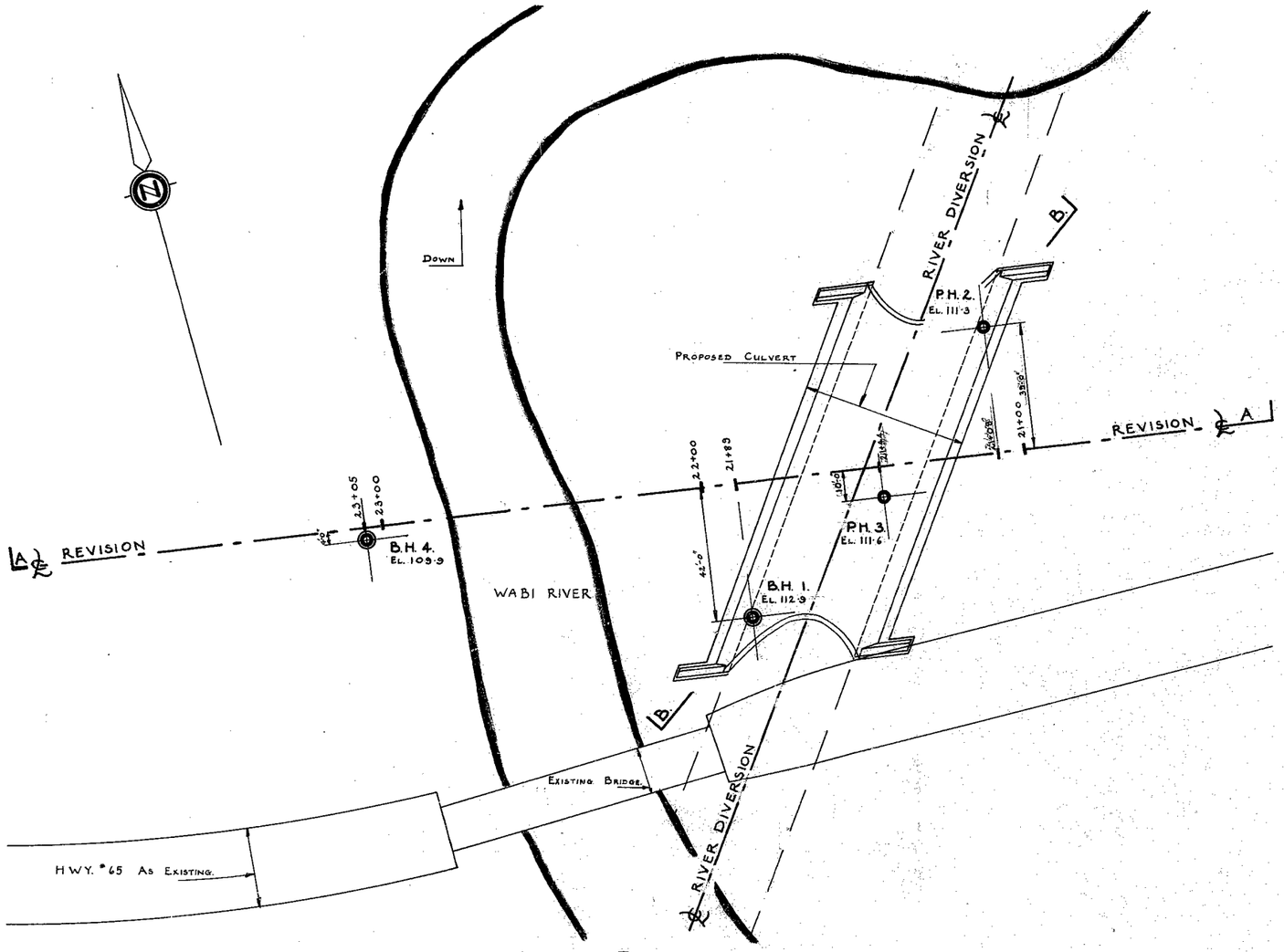
DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

W.P. 629-56

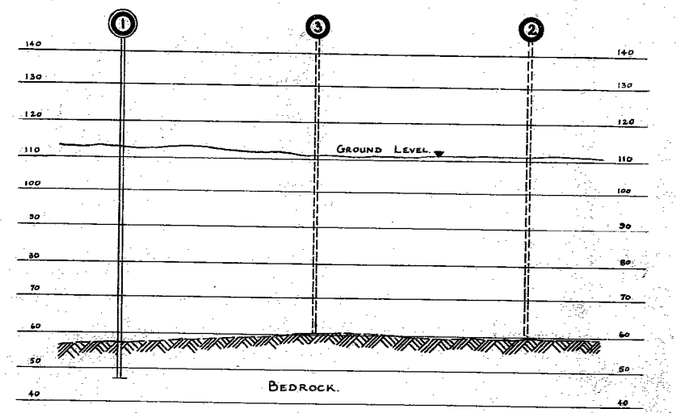
HWY. 65

& WABI RIVER

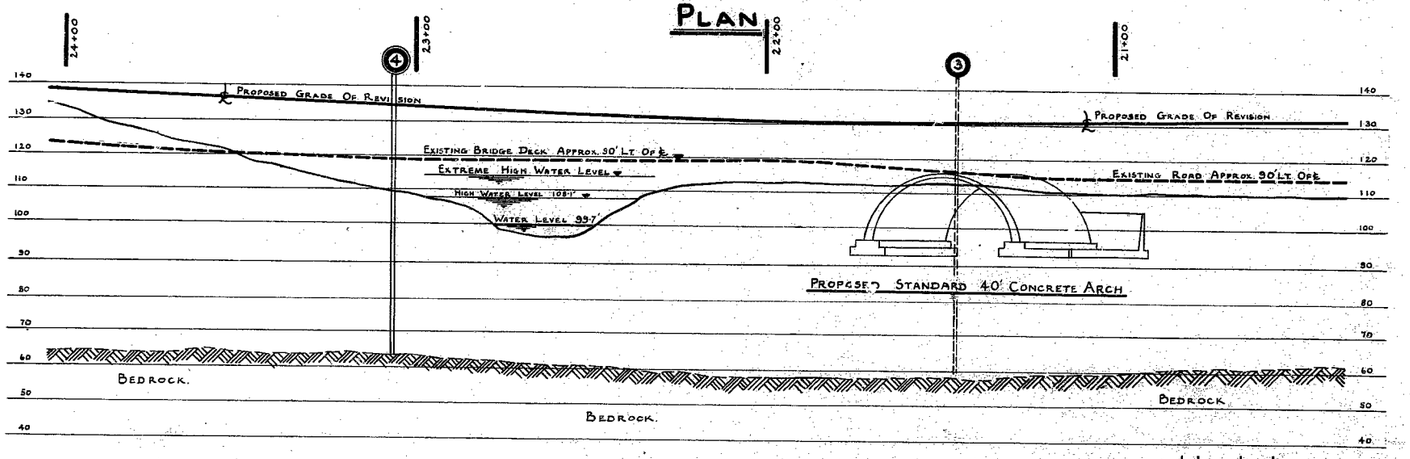
31M-20



PLAN



SECTION B-B.



SECTION A-A SHOWING EARTH STRATA UNDER REVISION

LEGEND:-

P.H. = PENETRATION HOLE.

B.H. = BORE & PENETRATION HOLE.

SCALE:- 1 INCH = 20 FOOT

PRINT RECORD		
NO.	INIT.	DATE

REVISIONS:			
		DATE	BY
	DESCRIPTION		

DEPARTMENT OF HIGHWAYS:-ONTARIO-

SOILS OFFICE:-TORONTO

PROPOSED CULVERT AT WABI RIVER DIVERSION

THE KING'S HIGHWAY No. 65 DIV. No. 14

CO.

TWP. KEARNS LOT 2. CON. V.

PLAN & SECTIONS OF BORE & PEN. HOLES.

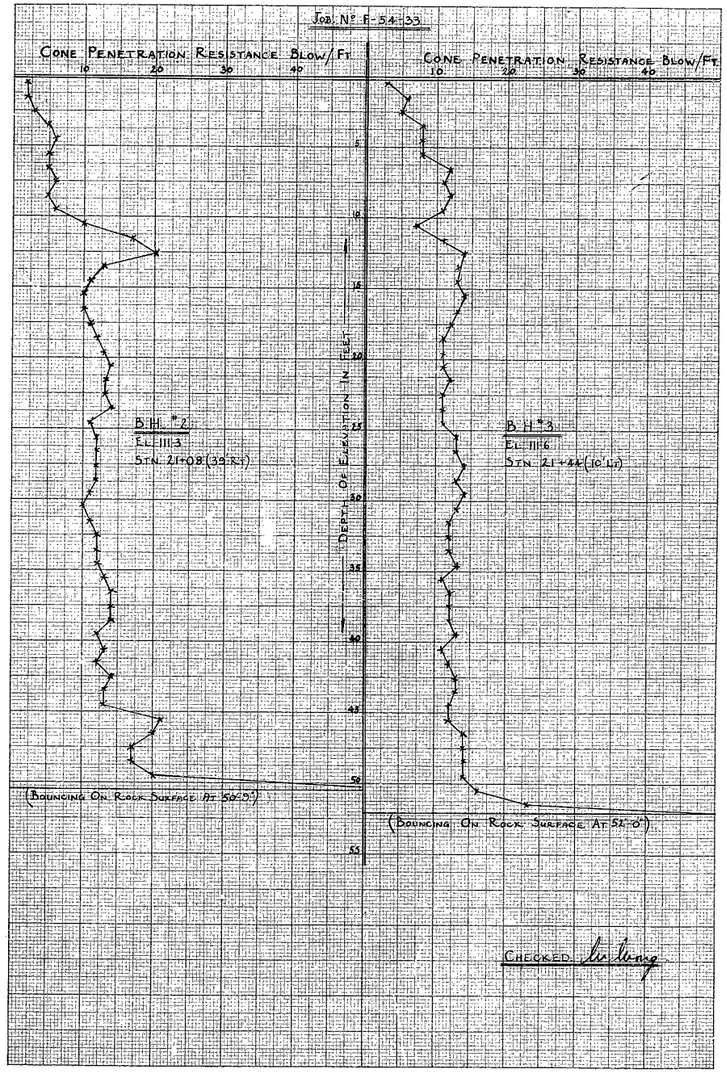
APPROVED

FOUNDATION ENGINEER CHIEF ENGINEER

DESIGN		CHECK		CONTRACT NUMBERS	
DRAWING	M.L.F.	CHECK	H. Wong		
TRACING		CHECK		LOADING	
DATE 26TH MAY. 1955.				DRAWING NUMBER	F-54-33 A

31M-20
GEOCRES No.

Job No. F-54-33



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CL 189
54-90

MATERIALS LABORATORY - DEPARTMENT OF HIGHWAYS - ONTARIO

OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG Core Drill #2 — JOB F-54-33 — BORING No 1
CASING 8X (STANDARD SAMPLERS TO FIT UNLESS NOTED) — DATUM 112.9 Stn. 21+89 (42' Lt.) — DATE REPORT 22nd March 1955.
SAMPLER HAMMER WT. 250 lbs. # — DROP 21 INCHES — COMPILED BY W. Wong CHECKED BY W. Wong BORING DATE 18th - 22nd March 1955.

SAMPLE CONDITION

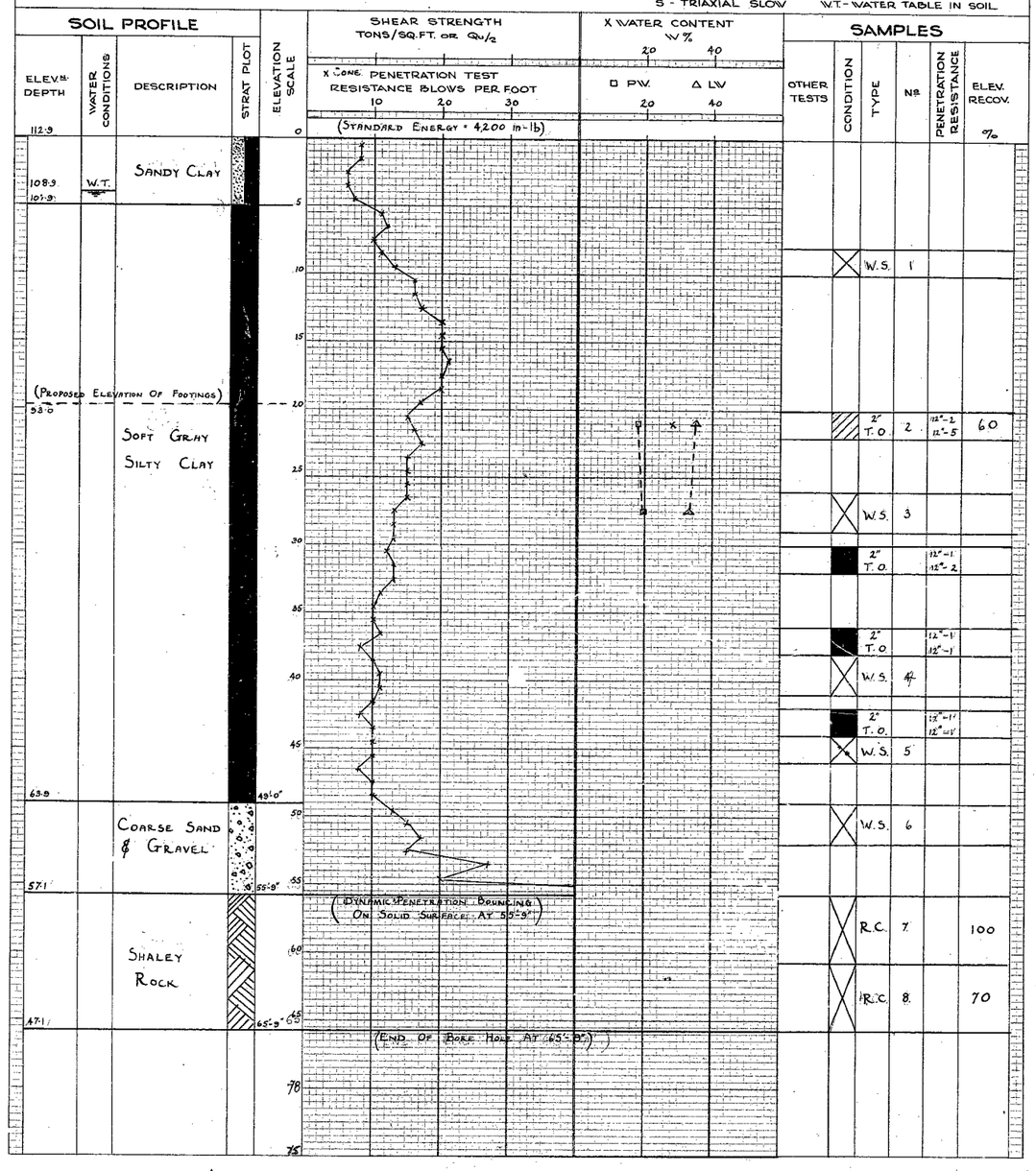
DISTURBED
GOOD
LOST

SAMPLE TYPES

C.S. - CHUNK
D.O. - DRIVE OPEN
D.F. - DRIVE FOOT VALVE
T.O. - THIN WALLED OPEN
W.S. - WASHED SAMPLE
R.C. - ROCK CORE

ABBREVIATIONS

V - INSITU VANE SHEAR TEST
M - MECHANICAL ANALYSIS
U - UNCONFINED COMPRESSION
Q_c - TRIAXIAL CONSOLIDATED QUICK
Q - TRIAXIAL QUICK
S - TRIAXIAL SLOW
γ - UNIT WEIGHT
K - PERMEABILITY
C - CONSOLIDATION
CA. - CASING
W.L. - WATER LEVEL IN CASING
W.T. - WATER TABLE IN SOIL



T.L. 129
54-90

MATERIALS LABORATORY - DEPARTMENT OF HIGHWAYS - ONTARIO

OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG Core Drill #2 — JOB F-54-33 — BORING Nº 4

CASING 4" Ø Bx. (STANDARD SAMPLERS TO FIT UNLESS NOTED) — DATUM 109.9 Stn 23+05 (4' Lt) — DATE REPORT 25th March 1955

SAMPLER HAMMER WT. 250 lbs. # DROP 21 INCHES — COMPILED BY W. Wong CHECKED BY W. Wong BORING DATE 23rd - 24th March 55

SAMPLE CONDITION

- DISTURBED
- GOOD
- LOST

SAMPLE TYPES

- C.S. - CHUNK
- D.O. - DRIVE OPEN
- D.F. - DRIVE FOOT VALVE
- T.O. - THIN WALLED OPEN
- W.S. - WASHED SAMPLE
- R.C. - ROCK CORE

ABBREVIATIONS

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- W.L. - WATER LEVEL IN CASING
- W.T. - WATER TABLE IN SOIL

SOIL PROFILE

ELEVn. DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT PLOT (depth)
109.9			
106.9		Top Soil	3'-0"
105.9	W.T.		
66.9		Soft Gray Silty Clay	43'-0"
63.4		Coarse Sand & Gravel; Top Of Rock Layer	46'-6"

(End Of Bore Hole At 46'-6")

SHEAR STRENGTH TONS/SQ.FT. or Qu/2

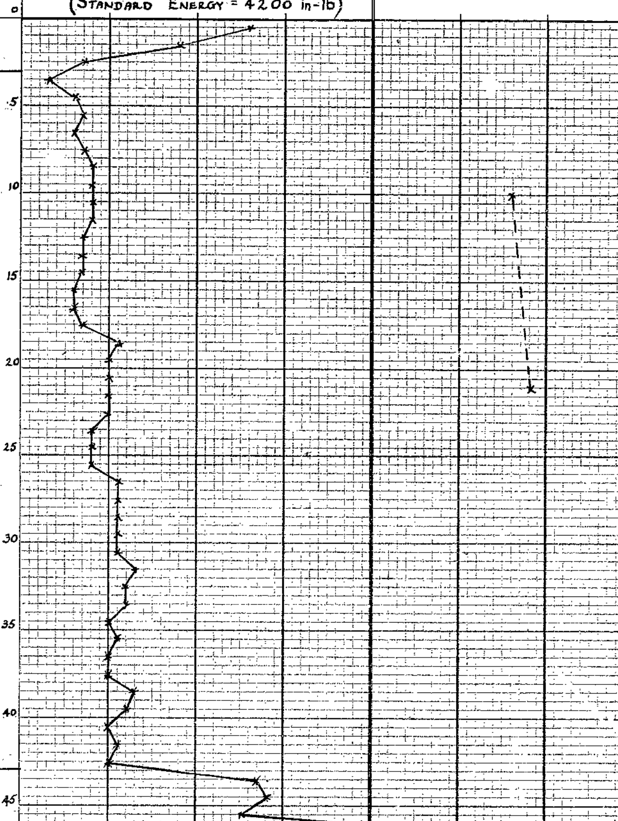
X WATER CONTENT W% (20, 40)

X X CONE PENETRATION TEST RESISTANCE BLOWS PER FOOT (10, 20, 30)

□ P.W. △ L.W. (20, 40)

(Standard Energy = 4200 in-lb)

ELEVATION SCALE: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50



(Penetration Bouncing On Solid Surface At Depth 46'-5")

SAMPLES

OTHER TESTS	CONDITION	TYPE	Nº	PENETRATION RESISTANCE	ELEV. RECOV. %
γ = 118	Good	3" T.O.	1	12"-2, 12"-5	100
	Disturbed	W.S.	2		
γ = 121	Good	2" T.O.	3	12"-2, 12"-2	100
	Lost	2" T.O.		12"-1, 12"-1	Lost.
	Disturbed	W.S.	4		
	Lost	2" T.O.		12"-1, 12"-1	Lost.
	Disturbed	W.S.	5		