

DOCUMENT MICROFILMING IDENTIFICATION

G.I.-30 SEPT. 1976

GEOCRES No. 30M5-80 #81

DIST. 4 REGION

W.P. No. 205-63-01

CONT. No.

W. O. No.

STR. SITE No.

HWY. No.

LOCATION OAKVILLE CREEK BRIDGE

SLOPE EROSION - WEST END

No of PAGES -

=====

OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.

REMARKS:

FILE

MINUTES OF MEETING

RE: Erosion, West End, Oakville Creek Bridge
W.P. 205-~~63~~-01, Site 10

DATE: ⁶³ May 17, 1977, 9:00 A.M.

LOCATION: Structural Section M.T.C.,
3501 Dufferin Street

PRESENT: A. Sulavella)
B. Ly) M.T.C.
D. Riseboro)
C. Farrell)

1. B. Ly reviewed the proposed drainage improvement details and agreed that the proposals will largely eliminate erosion caused by the present 24" C.S.P. but noted that erosion will continue due to surface run off from the slopes.
2. The rock anchor lengths should be increased in length from 6 ft. to 10 ft.
3. An elbow should be provided at the end of the 24" C.S.P. to direct water into the ditch lines.
4. D. Riseboro will check with Remote Sensing to establish whether photography is available at different times for this location. It may be possible to establish rates of erosion from such photography.
5. B. Ly and D. Riseboro will visit the site on May 18, to establish a method of monitoring the slope.

CF:gj

C.F. Farrell
C.F. Farrell,
Sr. Structural Planning Engineer.

c.c. All present



SEND
TO

M. Deveta.
Soil Mechanics Office
Downsview

FROM

Allan Sulavella

DEPT.

DATE

May 13/77

SUBJECT

WP 205-63-01 - Erascon - West End - Oakville Creek Bridge

Attached is the following:

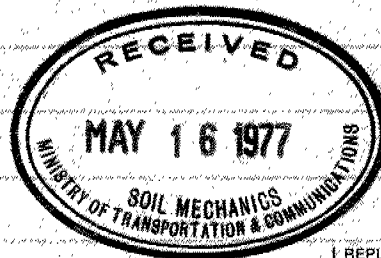
- (1) Elevation of ditch liner.
- (2) Details of gabions.
- (3) Detail of ditch liner anchorage into rock.
- (4) Portion of D-4.
- (5) Gabion S.P.

Regional Review held this morning. Completed drawings to be in Head Office by May 20/77. Please contact me if you wish to view drawing or discuss. Chris Farrell also at meeting.

REPLY

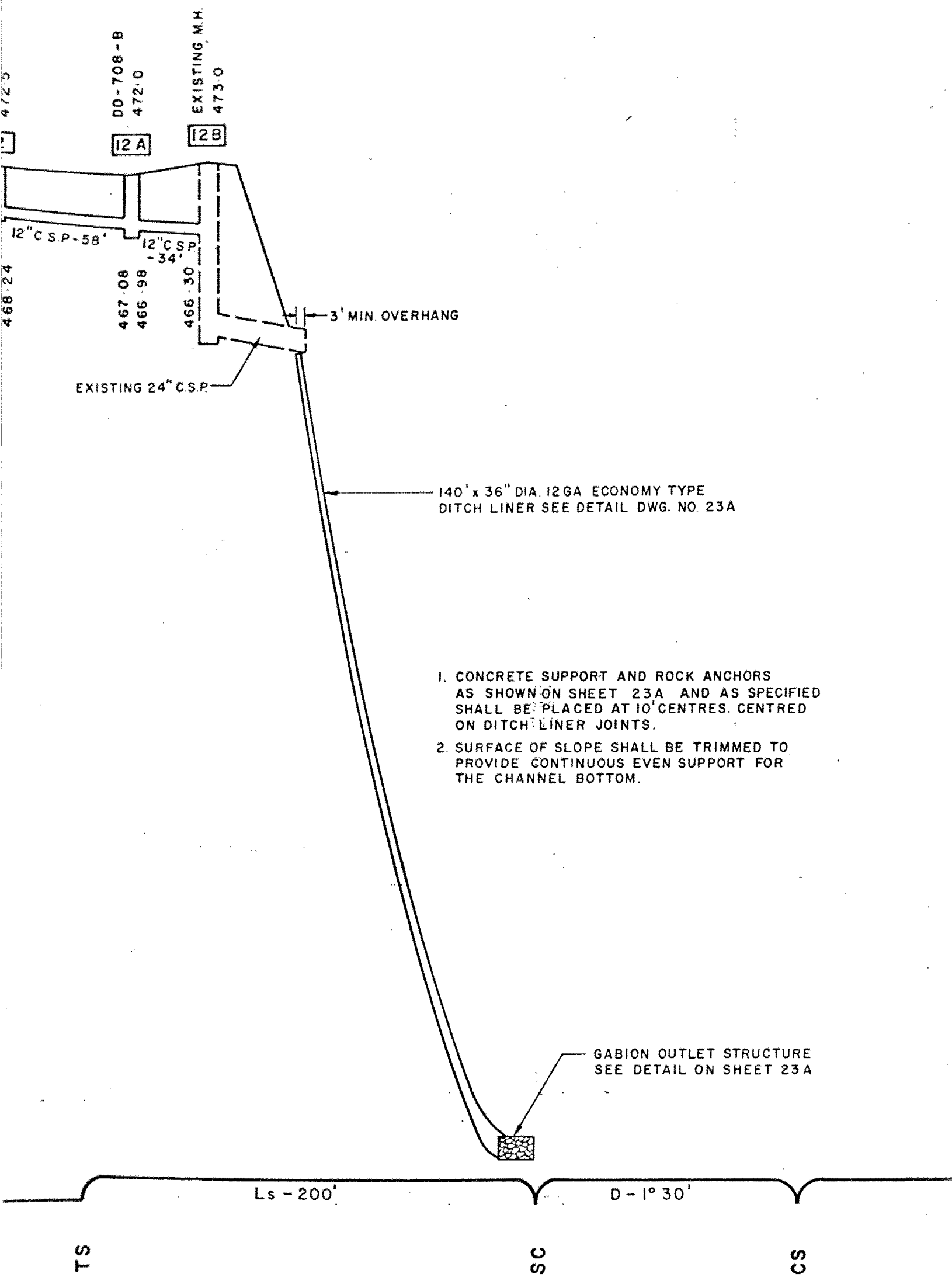
and you can contact him for detail. B.

cc: C. Farrell



REPLY FROM

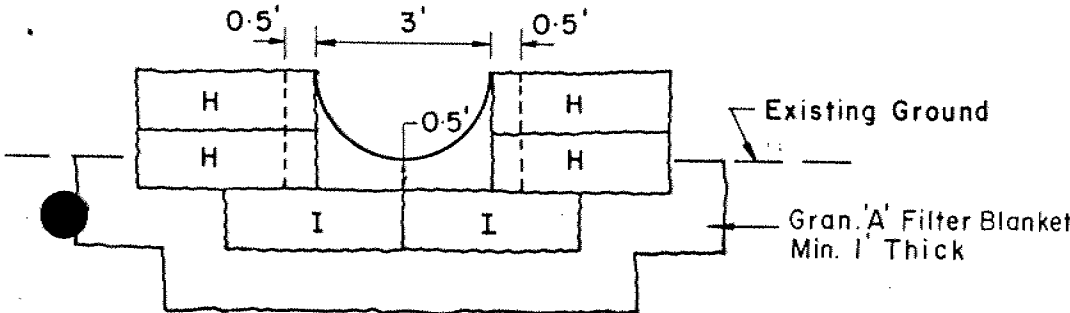
REPLY DATE



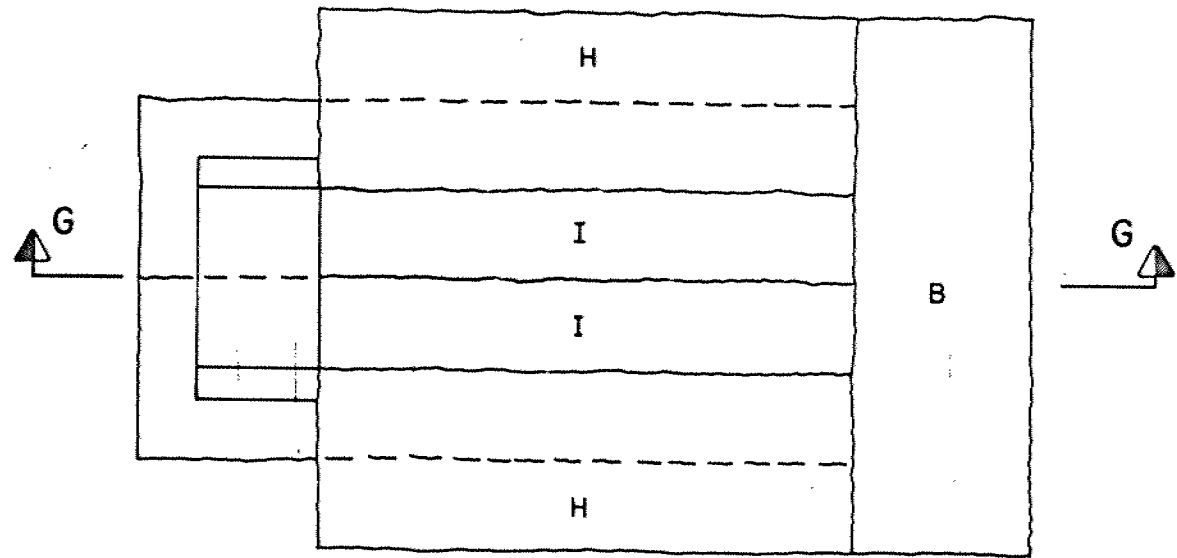
RECONSTRUCTED CONDITION

DETAIL OF GUTTER ENLARGEMENT OUTLET TO
EXPANSION JOINT STATION 281+07

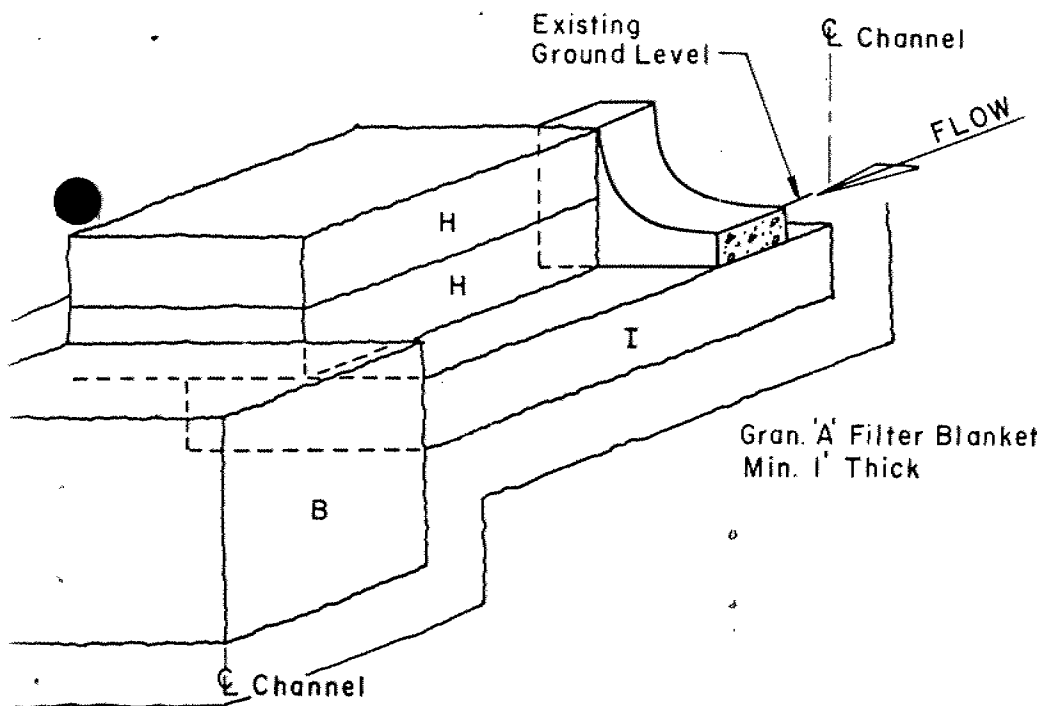
Scale: 3/4" = 1'-0"



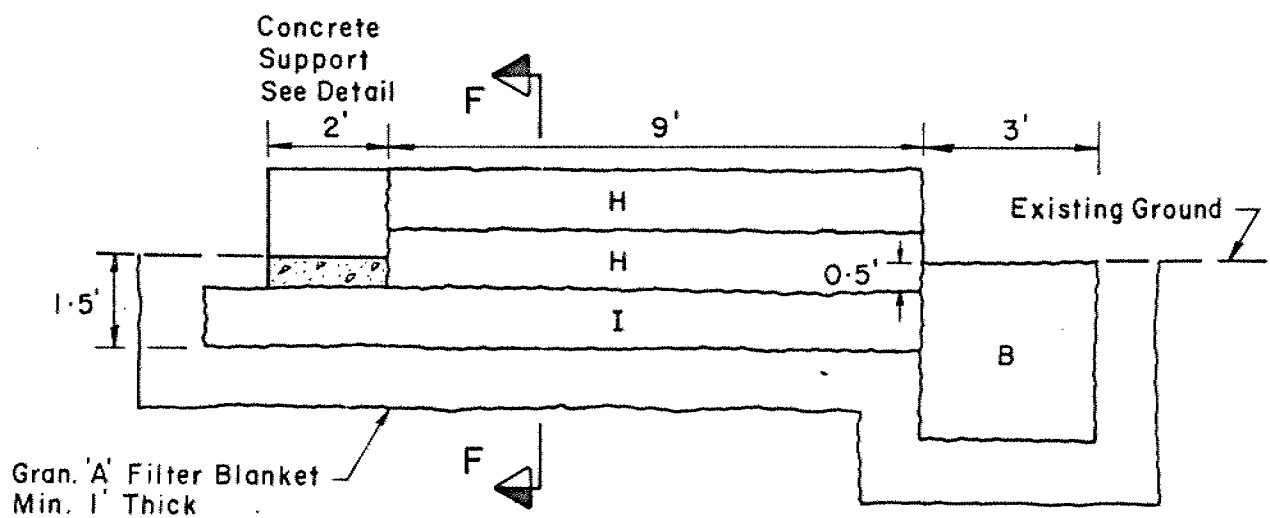
SECTION F - F

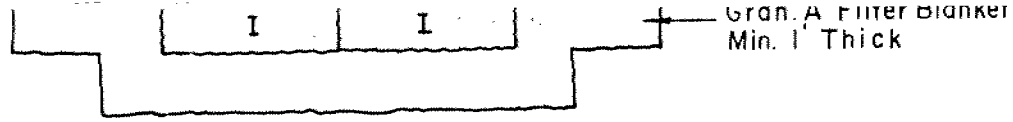


PLAN

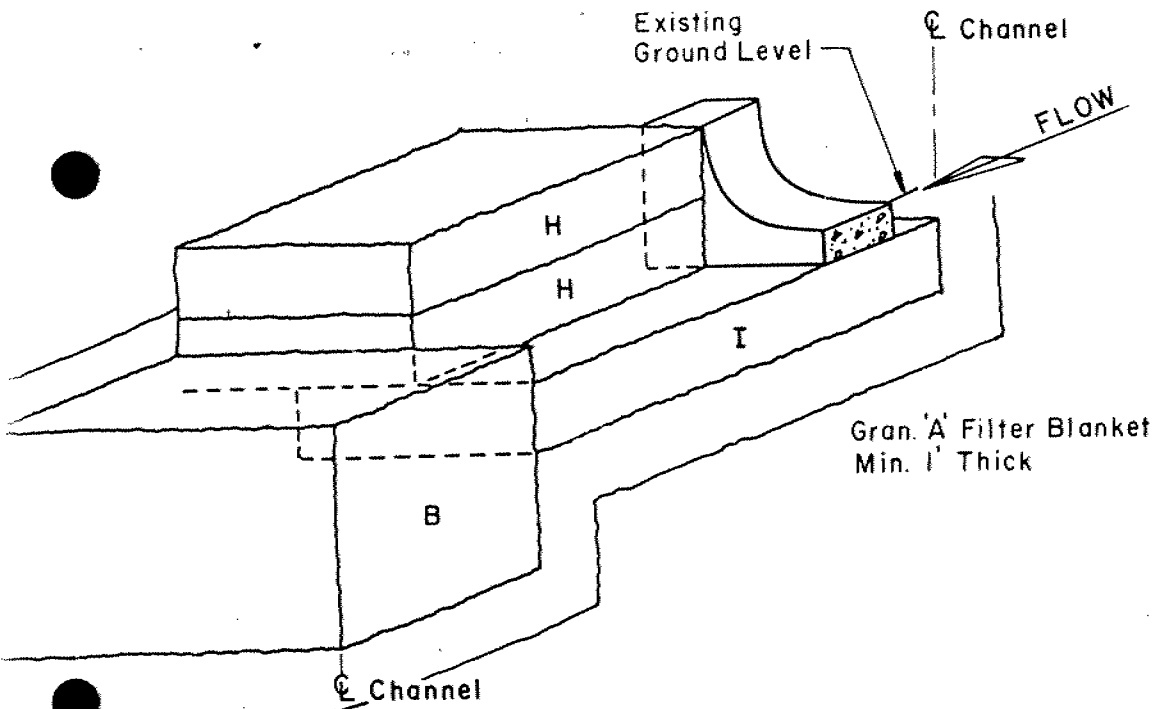


RD GABION DIMENSIONS



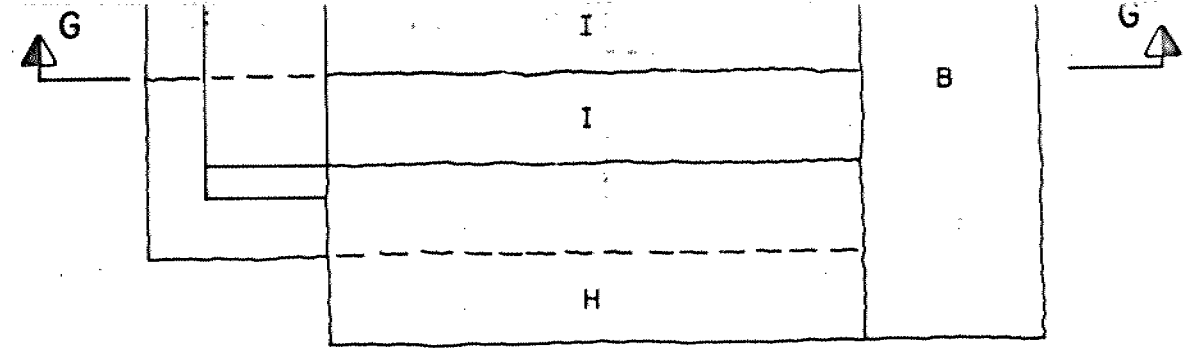


SECTION F - F

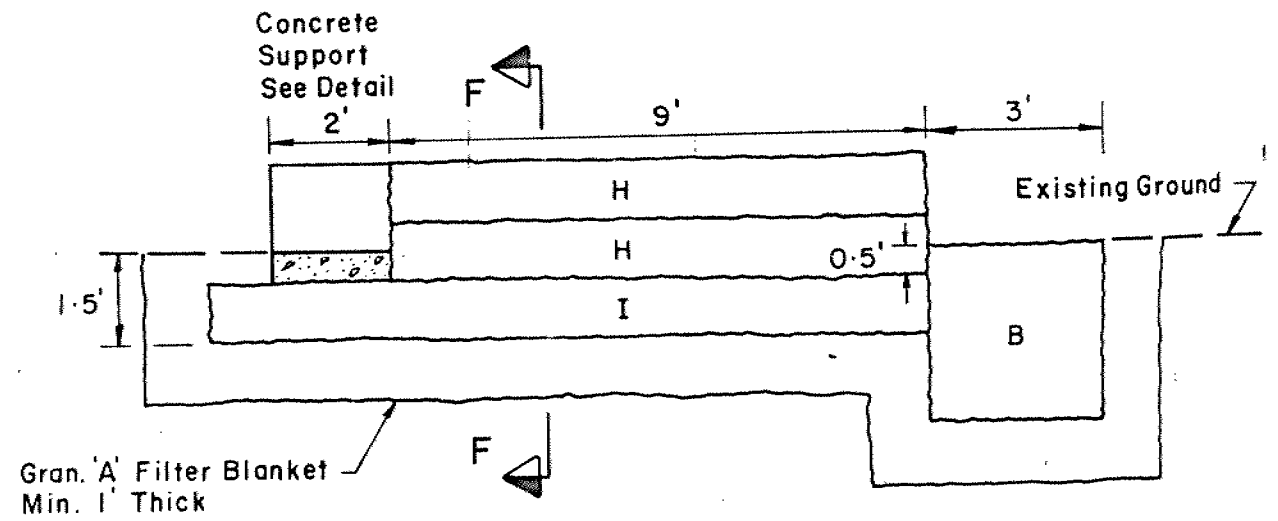


STANDARD GABION DIMENSIONS

- 12' x 3' x 1'
- 9' x 3' x 1'
- 9' x 3' x 3'

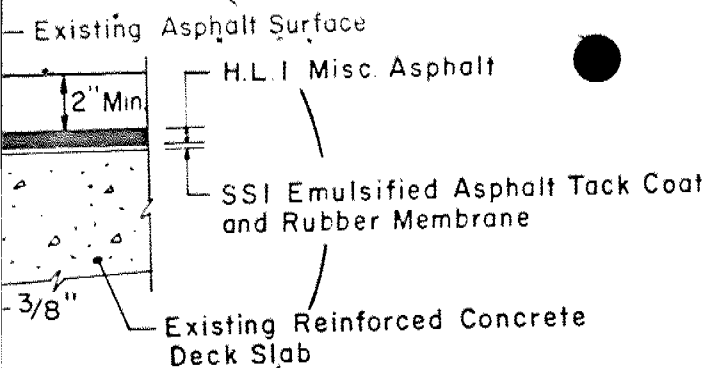


PLAN

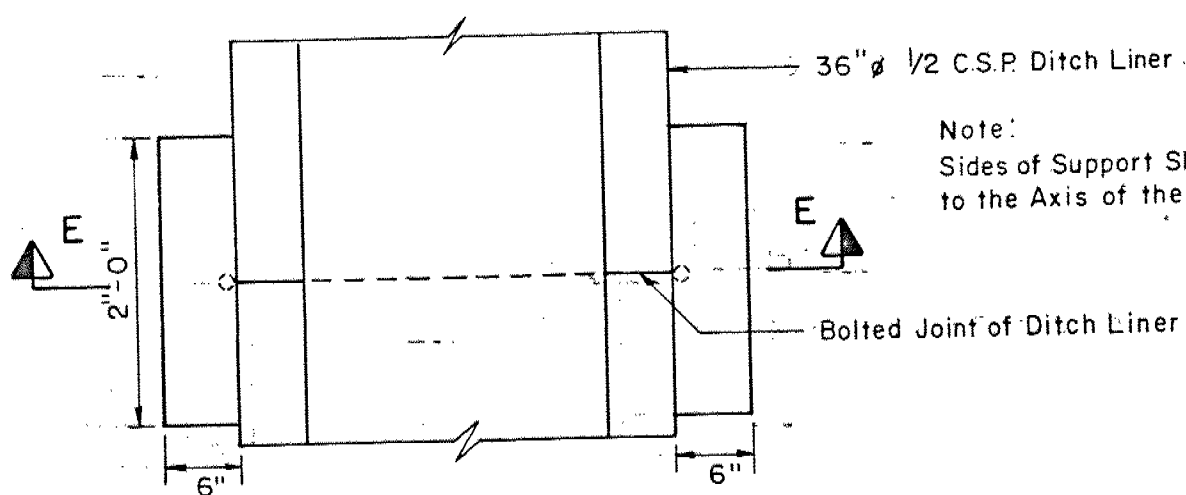


SECTION G - G

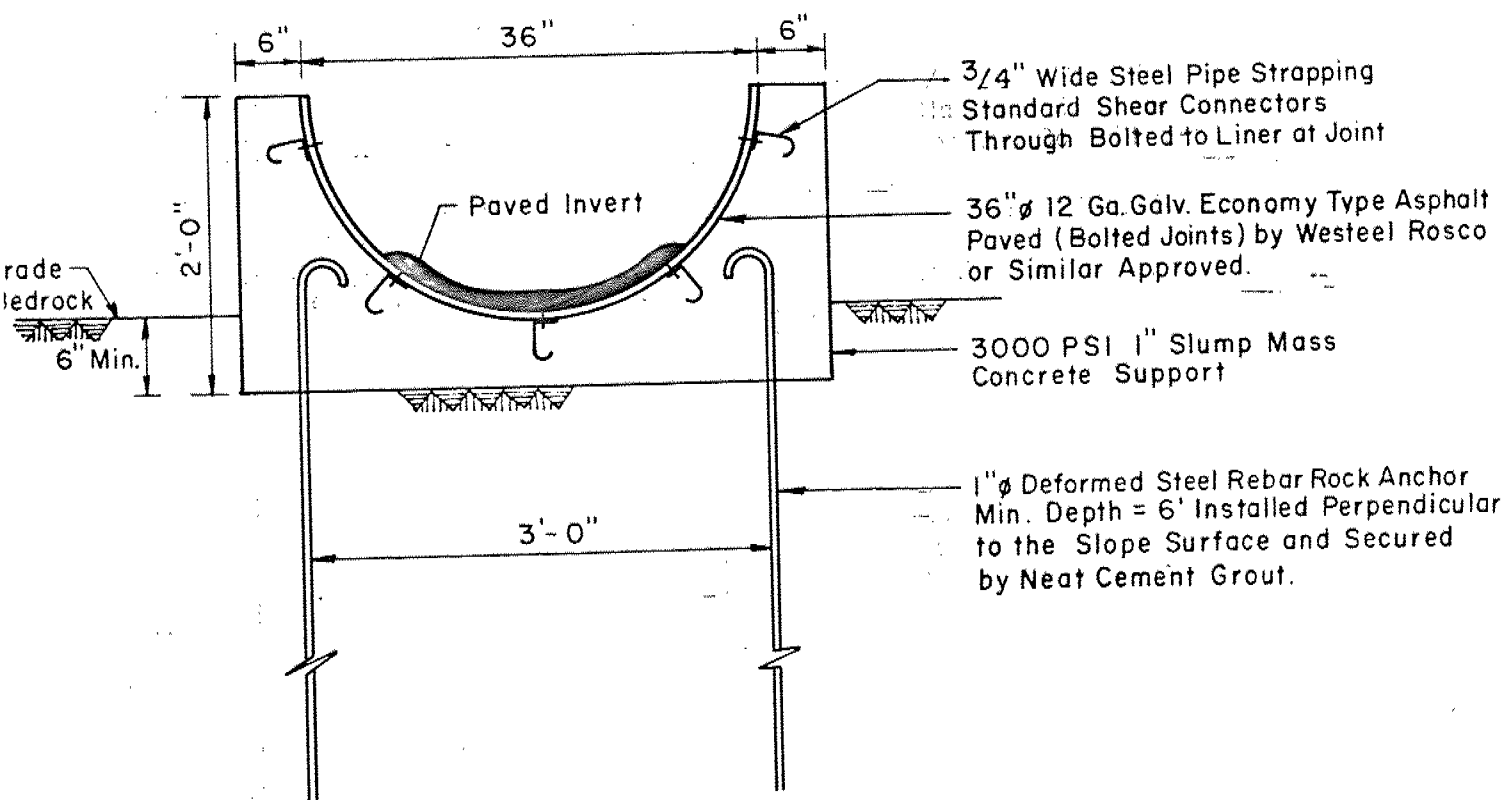
DETAIL OF DITCH LINER OUTLET STRUCTURE



GUTTER ENLARGEMENT END DETAIL STATION 273 + 20 LT. & RT.



PLAN



SECTION E - E
Scale: 3/4" = 1'-0"

DETAIL OF SUPPORT
FOR DITCH LINER

CONTRACT No _____

ITEM	SPEC	ITEM	UNIT	QUANTITY	UNIT PRICE	TOTAL AMT
BROUGHT FORWARD TO						
69	601600 SP SP	Duct Bank Encased in in Concrete - Two 4" Conduits	lf lf	498198		
		16 MILE CREEK BRIDGE				
70	SP SP	Bridge Deck Drainage Improvements	Lump sum (Insert bid price under "TOTAL" column only)			
71	406106	12" C.S.P. Sewer including Excavation, Bedding and Native Backfill	lf lf	196196		
72	406106 SP SI 904004	36" C.S.P. Ditch liner including Concrete Cradles and Anchors	lf lf	140140		
73	917S SP SP	Gabion Drop Structure	cu yd	10		

PROPOSED SPECIAL PROVISION

Section 13.01 of Contract No. _____ District No. 4 Hwy. No. 5 Date May 77
Type of work _____

1. Initiated by (Give Names, Divisions, District & Jurisdictions, etc.) _____

2. (a) This S.P. is new (✓) ☐.
This S.P. replaces No. _____ in the Special Provisions Manual.
This S.P. modifies the following Specification requirement:
MTC Form _____ Section _____ Page(s) _____ Paragraph _____
Remarks as follows:

(b) Explanation of Intent

3. Title and Text as follows:
Specification No(s). _____ Item No(s). 75
TITLE GABION DROP STRUCTURES
Subtitle _____

As part of the work to be performed under and at the contract price for the above tender item the Contractor shall excavate for, supply, place and compact the Granular 'A' filter blanket in accordance with the contract drawings.

Region

Head Office

Detailed by: D.L.C. Date _____ Date _____
Approved by: _____ Date _____ Date _____



Memorandum

To: Mr. M. Devata
Supervising Engineer
Soils Mechanics Section

From: Planning and Design Office
Central Region

Attention:

Date: 77-05-06

Our File Ref.

In Reply to

Subject:

re: Slope Erosion
West End - Oakville Creek Bridge
W.P. 205-65-01
District 4, Hamilton

On 77-02-22 I received a memorandum from Mr. C. Farrell of the Regional Structural Office advising that a visit had been made with your office to the site. The memorandum contained comments and suggestion for improvements. These were:

- (a) extension of the drain pipe to the bottom of the slope, and
- (b) possible treatment of the slope with 'Gunite'.

Based on the above recommendations two alternatives were investigated. The cost and general detail is contained in De Leuw Cather's letter dated 77-04-14 which is attached.

Since the cost of the two alternatives was estimated at \$35,000. and \$59,000. a meeting was held on 77-04-01 with the Structural Office to discuss the subject. At this meeting Mr. Bin Ly of your office was present.

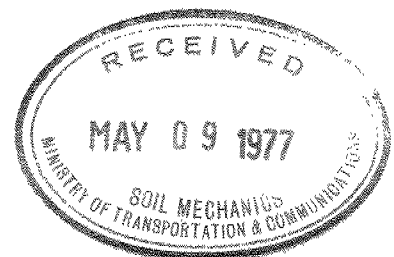
The opinion of the meeting was that the slope should be monitored for a period before a large expenditure could be recommended. Mr. Ly advised that this would take a minimum of three months.

For reasons of project scheduling, this office has had to go ahead and complete the project. We have included in the contract the extension of the drain pipe down the slope. A half-round pipe anchored to the slope will be specified.

Possibly the above is not the total solution. Would your office therefore undertake some study to determine what further work may be necessary and when.

It is unlikely that work on this contract will commence till late summer. It is also considered that any slope improvements need not necessarily be part of this contract. However, a commitment has been made in view that the out-fall sewer is being extended to the bottom of the slope. Any further improvement should therefore suit the overall solution.

continued.../2



Could we therefore hear from you in due course.



A. Sulavella

for: J. P. Cullen
Area Manager

JPC/AS/rg

Attached

c.c. G. Burkhardt
D. A. Waller
H. Potts
R. Fitzgibbon
De Leuw Cather

SULAVELLA

De Leuw Cather
MEMORANDUM

TO File

OUR REF: 01-401-31

FROM K. Loughborough

DATE: April 1, 1977

Re: Hwy. 5 - Oakville Creek Bridge
Storm Drainage Improvement



Minutes of meeting held at Structural Office, MTC, 3501 Dufferin St.,
Downsview at 10:00 a.m., Thursday, March 17th, 1977.

Present: For the Ministry of Transportation & Communications:

- A. Sulavella
- C. Farrell
- B. Ly

For De Leuw Cather, Canada Ltd.:

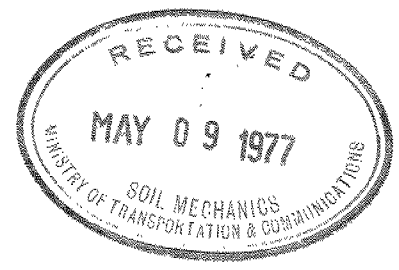
- A. Scott
- K. Loughborough

Mr. Loughborough outlined the background for Proposal I and Proposal II for the extension of the 24" dia. c.s.p. on the west slope discussed in a letter from Mr. Scott to Mr. Sulavella dated March 14, 1977. Mr. Loughborough indicated that Proposal I represents only a temporary solution. The Guniting treatment cannot be guaranteed for more than one year since erosion would continue although at a reduced rate, and the rock anchors would loosen eventually. Proposal II, however, represents a permanent solution.

Mr. Farrell noted that the Maintenance Office felt there appeared to be no immediate danger of slope failure at the original west pier but he felt the rate of weathering and erosion would have to be determined. Mr. Ly said this could be monitored over a period of a minimum of a few months and will consider placing monitoring devices on the slope to indicate any erosion.

Mr. Sulavella indicated that stability of the slope was an engineering problem which required appraisal by specialists who can best estimate if and when the original bridge abutment foundations will be near failure. Mr. Loughborough underlined the importance of the memo from Mr. Burkhardt to Mr. Sulavella which discusses the stability of the original west abutment.

If nothing is done, general weathering and erosion from surface and groundwater flow will continue and rate of erosion will increase as the slope steepens. Cost of remedial work will thus increase with time. The advantage of construction of an extension at the same time as the other improvements to Hwy. 5 was pointed



Memo To: File 01-401
April 1, 1977
Page Two

out by Mr. Scott. Mr. Sulavella indicated that construction west of Oakville Creek Bridge will take place in 1977 and east of Oakville Creek Bridge will take place in 1978.

The proposed east end deck drain to down pipe connections design modification was discussed. Sketches were distributed showing the abs pipe connection and expansion joint. Electric heating cables are required to prevent ice build up. The expansion joint axis parallels the direction of bridge deck expansion. The Structural Office will consider the proposal and Mr. Loughborough will provide a ball park construction cost estimate.

Consideration of an addendum will take place at a later date. Mr. Sulavella will contact Mr. Loughborough to arrange a site visit to coincide with a rainstorm. Mr. Loughborough will supply a set of site photographs and a detailed sketch of Proposal II.

K. Loughborough

KTL/ts

c.c. Those Present

March 14, 1977

Our ref: 01-401-31

Mr. A. Sulavella
Senior Project Manager
Planning and Design Office
Central Region
Ministry of Transportation & Communications
3501 Dufferin Street
Downsview, Ontario
M3K 1N6

Dear Sir:

Re: Erosion at Oakville Bridge
Highway 5, W.P. 205-63-01

In reply to your letter of February 25, 1977, which included recommendations by the Soil Mechanics Office resulting from the prerequisite site examination of the erosion and stability of the west slope, we have made cost estimates for 2 alternative schemes to extend the 24" CSP to the base of the west slope as follows:

Proposal 1: Half C.S.P. Channels Anchored to Slope:

Gunite 2½" thick pneumatically applied mortar treatment with 4" x 4" x 8 ga. reinforcing mesh	\$ 13,000
Supply and install 36" dia. 1/2 C.S.P. with 10' long rock anchors (14 sets of 2 at 10' spacing)	8,250
Excavate and place french drain at top of slope	650
Place head wall, energy dissipator and gabion mat at outlet	3,750
Reinstatement	800
	<hr/>
	\$ 26,450
Contingencies(10%)	2,645
	<hr/>
	\$ 29,095
Say	\$ 29,000

Mr. A. Sulavella

March 14, 1977

Page Two

Proposal 1a:

If a soils investigation indicates that the shale slope cannot support the pneumatically applied mortar treatment, the following would be required:

100 grouted anchors 4' long	Add	\$ 6,910
	Contingencies (10%)	690
	Add	\$ 7,600

In view of the comments and recommendations made in a memorandum from W. H. B. Burkhardt to A. Sulavella dated February 22, 1977, the above alternative represents only a temporary solution. Due to the poor quality of the shale bedrock, Canada Gunite cannot guarantee the durability of a "Gunite" slope treatment. Canada Gunite indicates that freeze-thaw action (which will take place even if ground water pressure release outlets are installed) will eventually breakdown the Gunite treatment. Erosion due to general weathering will eventually loosen the rock anchors for both the Gunite blanket and the C.S.P. channel. Hence Proposal 1 is not recommended as a long term solution.

Proposal 1b: Anchors, Drop Pipes and Connecting C.S.P. 1a:

Cast in place 5 (4' x 4' x 9" x 24") concrete anchors with drop pipes	\$ 24,000
Lock in manholes with K-Krete	3,500
Backfill with sand and gravel for insulation against frost	19,000
Supply and install 24" Ø C.S.P. at shallow gradient between manholes	1,450
Load and stake, including for soil	4,200
Retain wall and 6' x 10' x 1' gabion mat at outlet	1,250
	\$ 53,400
Contingencies (10%)	5,340
	\$ 58,740
Sub	\$ 59,000

De Leuw Cather

Mr. A. Sulavella
March 14, 1977
Page Three

This solution is a long term one, assuming ground water flows are low. The excellent energy dissipation will minimize erosion on the floodplain at the base of the slope. Backfill will provide frost protection for the shale slope and the manhole foundations. The reinstated slope will be protected from further general weathering. We therefore, recommend Proposal II.

We have developed a proposal for the preliminary design modification requested by the Bridge Maintenance Office, dealing with the connection from the east end gutter enlargements under the bridge deck across the bridge deck expansion joint to the existing down drain pipes.

We have considered fees incurred as a result of work carried out at your request and to complete the design work not covered by agreement no. 9200-213-74 dated July 8, 1974, and we have itemized estimated fees below.

- project administration and site meeting with Ministry representatives, January 26, 1977	\$ 500
- modification requested by the Bridge Maintenance office in connection with the east end gutter enlargements discussed above	600
- developing Proposals I and II discussed above including quantities and cost estimates	700
- design and modification of contract plans for Proposal II above	2,900
- realignment of 4th Line at Highway 5, as outlined in our letter of February 9, 1977	<u>1,800</u>
Total Fees	\$ 6,500
- disbursements, largely in connection with survey for design of Proposal II	200
Total additional fees and disbursements	<u><u>\$ 6,700</u></u>

We will appreciate your consideration of an addendum to allow us to complete the work outlined above.

De Leuw Cather

Mr. A. Sulavella

March 14, 1977

Page Four

We look forward to reviewing the preliminary design modification, and two pipe extension alternatives with you.

Yours very truly,

A handwritten signature in cursive script, appearing to read "A. Scott".

A. Scott, P. Eng.

KTL:11

c.c. M. Jefferson
K. Loughborough

Memorandum

To: Mr. A. Sulavella
Sr. Project Manager
Planning & Design Office
Central Region

From: G.C.E. Burkhardt,
Structural Section
3501 Dufferin St.

Attention:

Date: February 22, 1977

Our File Ref.

In Reply to

Subject:

Re: Oakville Creek Bridge Hwy # 5
Site 10-119 W.P. 205-63-01
District # 4 Hamilton


An inspection of the slopes at the south west corner of the above bridge was made by the undersigned on February 15, 1977 accompanied by Messrs. M. Devata and V. Korlu of the Soil Mechanics Office.

The purpose of the inspection was to observe the shale slopes in view of proposals to modify the drainage scheme at this location.

Mr. M. Devata noted that the slope consists of erodible shale and suggested that any proposed extension to the existing drain pipe should be attached to the slope by rock anchors at least 10 ft. long. Extension of the drain pipe to the bottom of the slope would reduce but not eliminate the weathering of the slope. Erosion in the vicinity of the proposed pipe could be further reduced by treating the slope with 'Gunitite' concrete.

No problems are anticipated in the foreseeable future with respect to the stability of the west abutment of the original bridge. This abutment could be used to support any construction equipment required to implement the extension of the drain pipe.

CF:sg


C.F. Farrell

for:
G.C.E. Burkhardt,
Head, Structural Section

c.c. M. Devata

De Leuw Cather

CONSULTING ENGINEERS AND PLANNERS

April 6, 1977

Our ref: 01-401

Mr. A. Sulavella
Project Design Engineer
Systems Design Office
Ministry of Transportation & Communications
3501 Dufferin Street
Downsview, Ontario M3K 1N6

Dear Sir:

Re: Hwy. 5 - Oakville Creek Bridge
Storm Drainage Improvement

This letter confirms a telephone conversation between your Mr. Ly and our Mr. Loughborough on Tuesday, April 5, 1977.

He indicated that his statement in our memorandum to our file 01-401 dated April 1, 1977, which reads: "Mr. Ly said this could be monitored over a period of a minimum of a few months and will consider placing monitoring devices on the slope to indicate any erosion", should be changed to read: "Mr. Ly said this could be monitored over a period of a minimum of a few months and the Soil Mechanics Section will assist in monitoring the slope if so required".

We would appreciate your making the requested change on your copy of the memorandum.

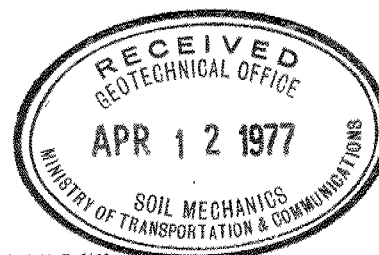
Yours very truly,

K. T. Loughborough

K. T. Loughborough, P. Eng.

KTL:11

c.c. C. Farrell
B. Ly ✓



Bm
↓
File

De Leuw Cather

MEMORANDUM

~~DIST-6~~

W. P. 205-65-01

TO: File

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FROM: K. Loughborough

DATE: April 1, 1977

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C. Farrell
B. Ly

For De Leuw Cather, Canada Ltd.:

A. Scott
K. Loughborough

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*called
De Leuw
Cather on
April 5, 1977*

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Memo To: File 01-401
April 1, 1977
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K Loughborough

KTL/ts

c.c. Those Present



Memorandum

To: Mr. A. Sulavella
Sr. Project Manager
Planning & Design Office
Central Region

From: G.C.E. Burkhardt,
Structural Section
3501 Dufferin St.

Attention:

Date: February 22, 1977

Our File Ref.

In Reply to

Subject:

Re: Oakville Creek Bridge Hwy # 5
Site 10-119 W.P. 205-63-01
District # 4 Hamilton


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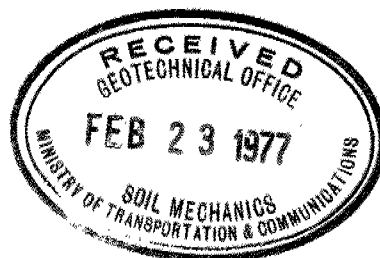
No problems are anticipated in the foreseeable future with respect to the stability of the west abutment of the original bridge. This abutment could be used to support any construction equipment required to implement the extension of the drain pipe.

CF:sg


C.F. Farrell

for: G.C.E. Burkhardt,
Lead, Structural Section

c.c. M. Devata



Mr. A. Towe

March 27, 1958

Bridge Engineer

Re: Bedrock investigation at
new bridge site, Highway #5 crossing
Oakesville River.

Materials & Research Section.

Attention: Mr. G. Grebski- Senior Bridge Design Engineer

We are forwarding the established bedrock elevations as requested and indicated on your plan drawing of the above mentioned site.

After boring through the overlying clay till layer, the bedrock layer was drilled some 15 ft. by means of diamond bit and core samples taken. A thorough examination of these samples, by checking crushing strengths, etc., established the elevations accepted as sound bedrock layer.

It will be convenient to consider as sound bedrock the following elevations:

	BOREHOLE NO:	ELEVATION:
East Footing	(1	457.05 ft.
	(2	457.19 ft.
West Footing	(3	463.00 ft.
	(4	463.50 ft.

All the details concerning the subsoil stratigraphy are shown on the attached two sets of drawing and log sheets.

F. C. Brownridge,
Materials & Research Engineer.

cc:

Mr. H. McMillan
Mr. R. Richardson
Soils
File

Per:

[Signature]
V. Koria

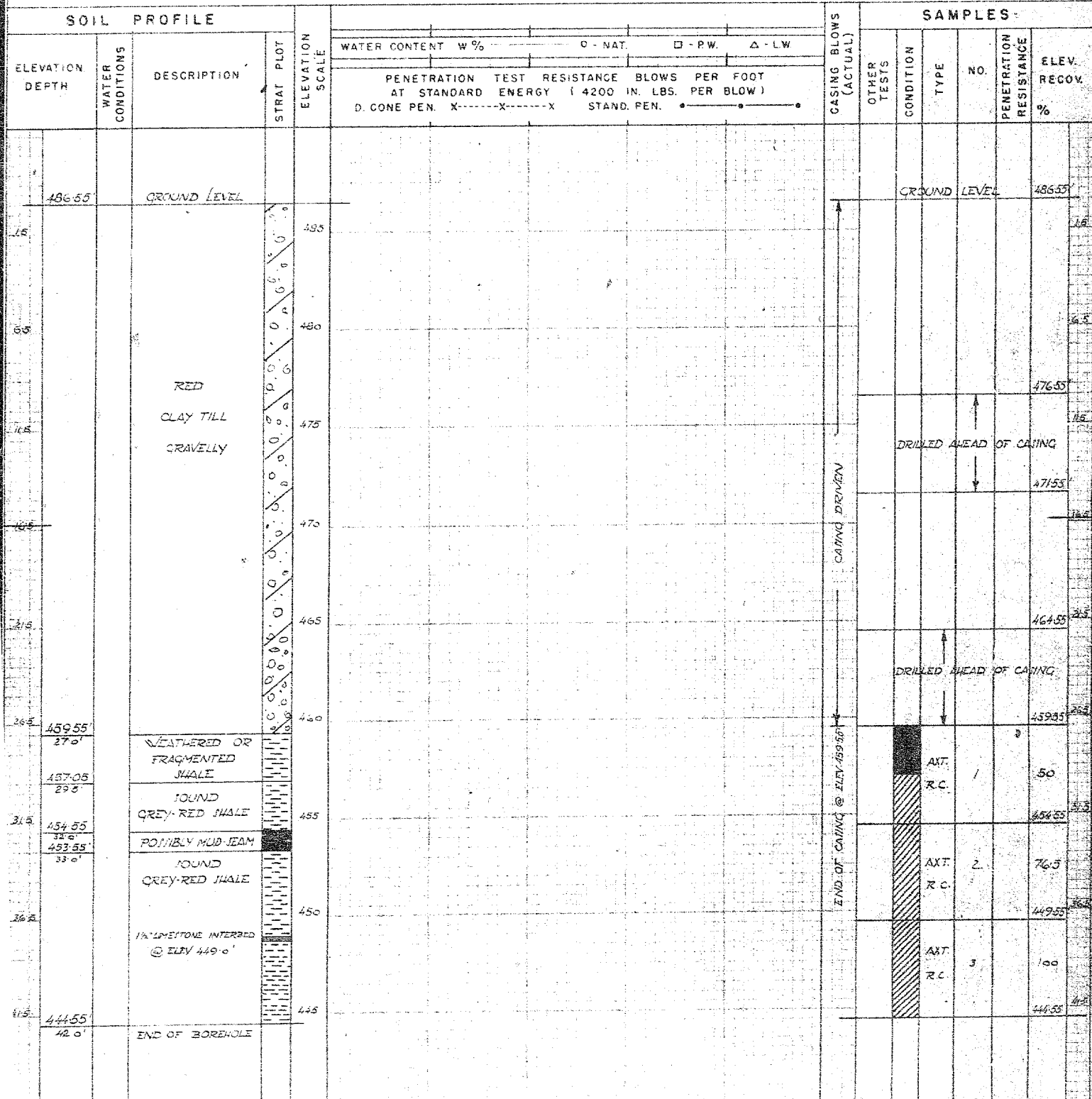
DEPARTMENT OF HIGHWAYS - ONTARIO
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION BORE JOB F-58-5 WP 710-56 BORING 1 STA. 291+690.4
CASING BA (standard samplers to fit unless noted) DATUM CEODETIC DATE REPORT MARCH 1958
SAMPLER HAMMER WT. LBS. DROP INCHES COMPILED BY AL CHECKED BY DATE BORING FEB. 24 1958

ABBREVIATIONS
V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMIABILITY
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING
QC - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL γ - UNIT WEIGHT

SAMPLE TYPES
CS - CHUNK SS - SLEEVE SAMPLE
DO - DRIVE OPEN PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION
 - DISTURBED
- FAIR
- GOOD
- LOST



DRILL RIG 54-2 OPERATION BORE JOB F-58-5 WP 70-50 BORING 2 STA. 291+69.5 (33'RT)
CASING BA (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT MARCH 1958
SAMPLER HAMMER WT. _____ LBS. DROP _____ INCHES COMPILED BY 46 CHECKED BY _____ DATE BORING MARCH 1, 1958

ABBREVIATIONS

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SAMPLE TYPES

C.S. - CHUNK	SS - SLEEVE SAMPLE
DO - DRIVE OPEN	PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE	WS - WASHED SAMPLE
TO - THIN WALLED OPEN	RC - ROCK CORE

SAMPLE CONDITION:



- DISTURBED
- FAIR
- GOOD
- LOST

SOU PROFILE

[illegible]

[illegible][illegible]

SAMPLE CONDITION

- DISTURBED
- FAIR
- GOOD
- LOST

SAMPLES

MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW

OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 54-2 OPERATION BORE JOB F-58-5 W.P. 710-56 BORING 4 STA. 300+50.5 (33.17)
CASING BX (standard samplers to fit unless noted) DATUM GEODETIC DATE REPORT MARCH 1958
SAMPLER HAMMER WT. _____ LBS. DROP _____ INCHES COMPILED BY A.L. CHECKED BY _____ DATE BORING MARCH 11, 1958

ABBREVIATIONS

V - INSITU VANE SHEAR TEST	Q - TRIAXIAL QUICK	K - PERMIABILITY
M - MECHANICAL ANALYSIS	S - TRIAXIAL SLOW	C - CONSOLIDATION
U - UNCONFINED COMPRESSION	WL - WATER LEVEL IN CASING	CA - CASING
D - TRIAXIAL CONSOLIDATED QUICK	WT - WATER TABLE IN SOIL	γ - UNIT WEIGHT

SAMPLE TYPES

SAMPLE CONDITION



SOIL PROFILES

SAMPLES

SOIL PROFILE					SAMPLES									
ELEVATION DEPTH	WATER CONDITIONS	DESCRIPTION	STRAT PLOT	ELEVATION SCALE	WATER CONTENT W %			CASING BLOWS (ACTUAL)	OTHER TESTS	CONDITION	TYPE	NO.	PENETRATION RESISTANCE	ELEV. RECOVER
					O - NAT. □ - P.W. Δ - L.W.									
					PENETRATION TEST RESISTANCE BLOWS PER FOOT AT STANDARD ENERGY (4200 IN. LBS. PER BLOW) D. CONE PEN. X-----X-----X STAND. PEN. •-----•-----•									
486.50'		GROUND LEVEL		485										486.5
1.5'		JOFT JILTY CLAY		485										485
6.5'			480											480
10.5'			475											475
14.5'		RED CLAY TILL		475										475
18.5'			470											470
22.5'			465											465
26.5'		SOUND GREY-RED SHALE		465										465
30.5'			460											460
34.5'			455											455
38.5'		END OF BOREHOLE		455										455
42.5'			450											450
46.5'			445											445
50.5'				445										445

DEPARTMENT OF THE ARMY
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 242 OPERATION BUREAU JOB 7000 WP 20 30 BORING 1 STA 101/09533307
CASING 24 (standard samplers to fit unless noted) DATUM ELEVATION 100 DATE REPORT 10/10/50
SAMPLER HAMMER WT 100 LBS DROP 18 INCHES COMPILED BY J.E. CHECKED BY DATE BORING 10/10/50

ABBREVIATIONS

V - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMEABILITY
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING
Qc - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL G - UNIT WEIGHT

SAMPLE TYPES

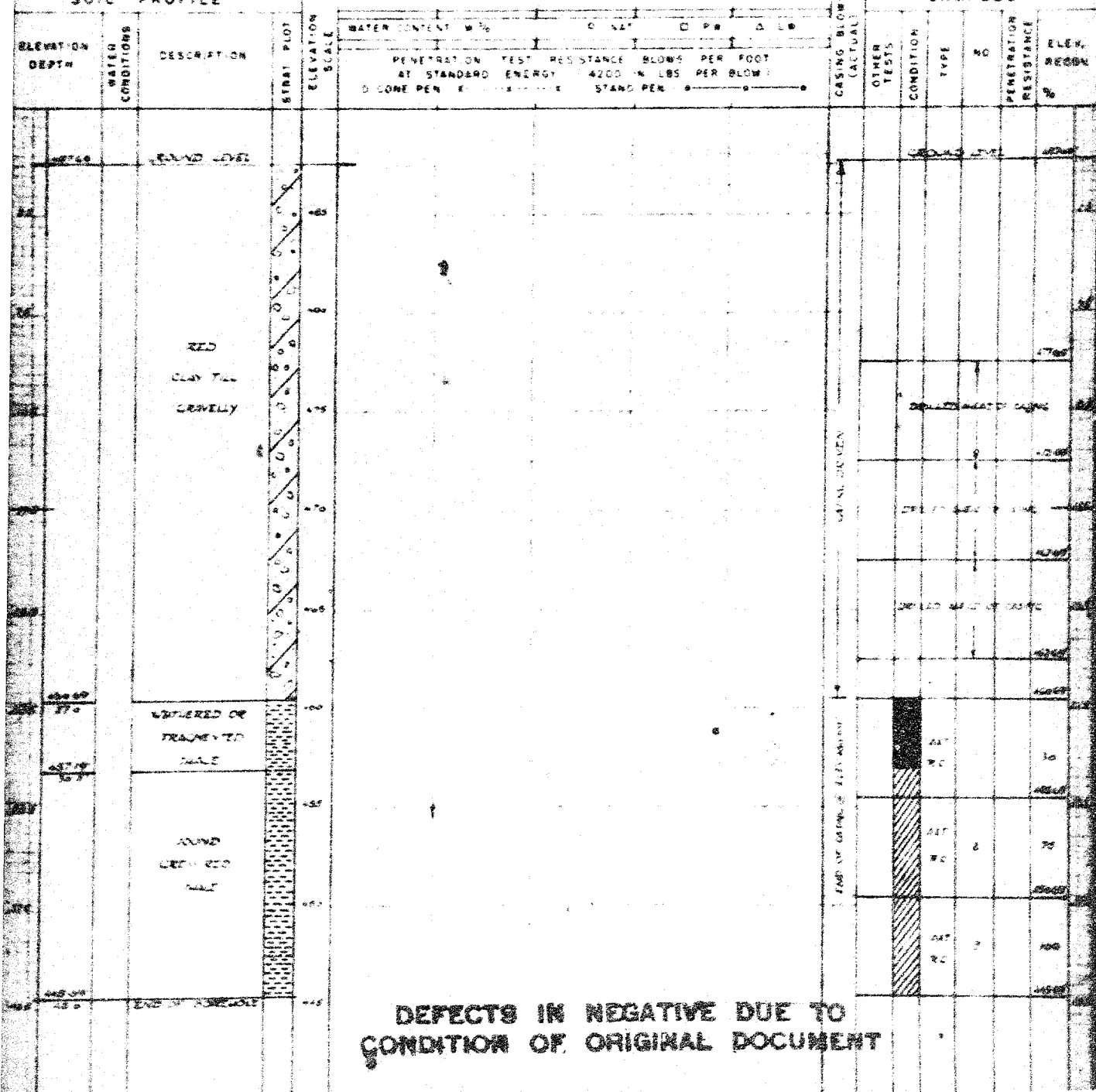
CS - CHUMP SS - SLEEVE SAMPLE
DO - DRIVE OPEN PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION

1 - DISTURBED
2 - FAIR
3 - GOOD
4 - BEST

SOIL PROFILE

SAMPLES



DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT

MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

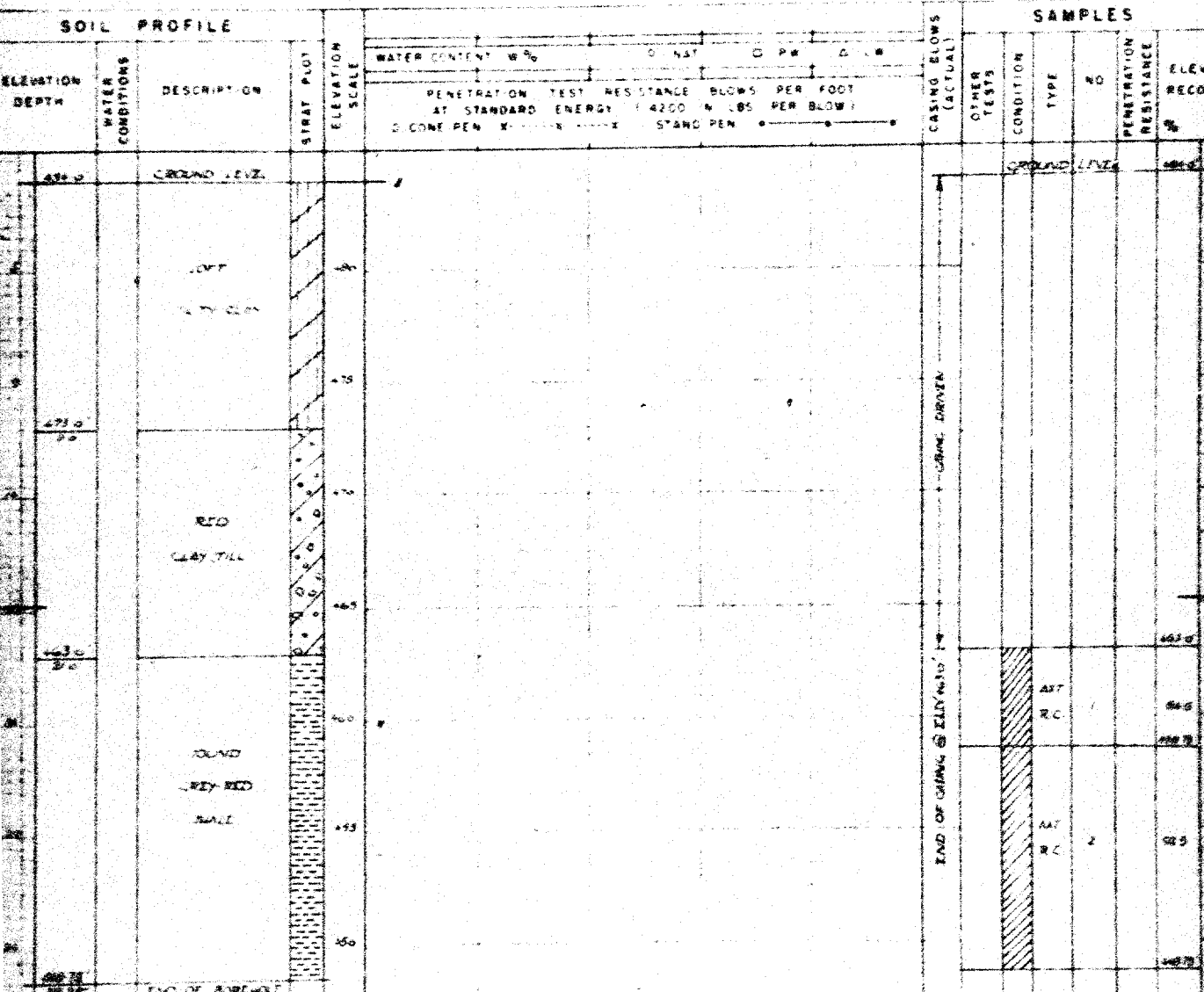
DRILL RIG: 547 OPERATION: 5007 JOB: 5007 WP: 5007 BORING: 5007 STA: 5007
 CASING: 2" (standard samplers to fit unless noted) DATUM: 5007 DATE REPORT: 5007
 SAMPLER HAMMER WT: LBS DROP: INCHES COMPILED BY: CHECKED BY: DATE BORING: 5007

ABBREVIATIONS
 U - INSITU VANE SHEAR TEST Q - TRIAXIAL QUICK K - PERMEABILITY CS - CHURN SS - SLEEVE SAMPLE
 M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION DO - DRIVE OPEN PS - PISTON SAMPLE
 U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING OF - DRIVE FOOT VALVE WS - WASHED SAMPLE
 Q - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL G - UNIT WEIGHT TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE TYPES
 SS - SLEEVE SAMPLE
 PS - PISTON SAMPLE
 WS - WASHED SAMPLE
 RC - ROCK CORE

SAMPLE CONDITION

 DISTURBED
 FAIR
 GOOD
 LOST



DEPARTMENT OF HIGHWAYS
MATERIALS & RESEARCH BRANCH - FOUNDATIONS SECTION - DOWNSVIEW
OFFICE REPORT ON SOIL EXPLORATION

DRILL RIG 5-1 OPERATION 1000 JOB 1001 WP 70 50 BORING STA 300 500 100
CASING 31 (standard samplers to fit unless noted) DATUM 1000 DATE REPORT 1000
SAMPLER HAMMER WT LBS DROP INCHES COMPILED BY 1000 CHECKED BY 1000 DATE BORING 1000

ABBREVIATIONS

V - VIBRATORY SHEAR TEST Q - TRIAXIAL QUICK P - PERMEABILITY
M - MECHANICAL ANALYSIS S - TRIAXIAL SLOW C - CONSOLIDATION
U - UNCONFINED COMPRESSION WL - WATER LEVEL IN CASING CA - CASING
Q - TRIAXIAL CONSOLIDATED QUICK WT - WATER TABLE IN SOIL Y - UNIT WEIGHT

SAMPLE TYPES

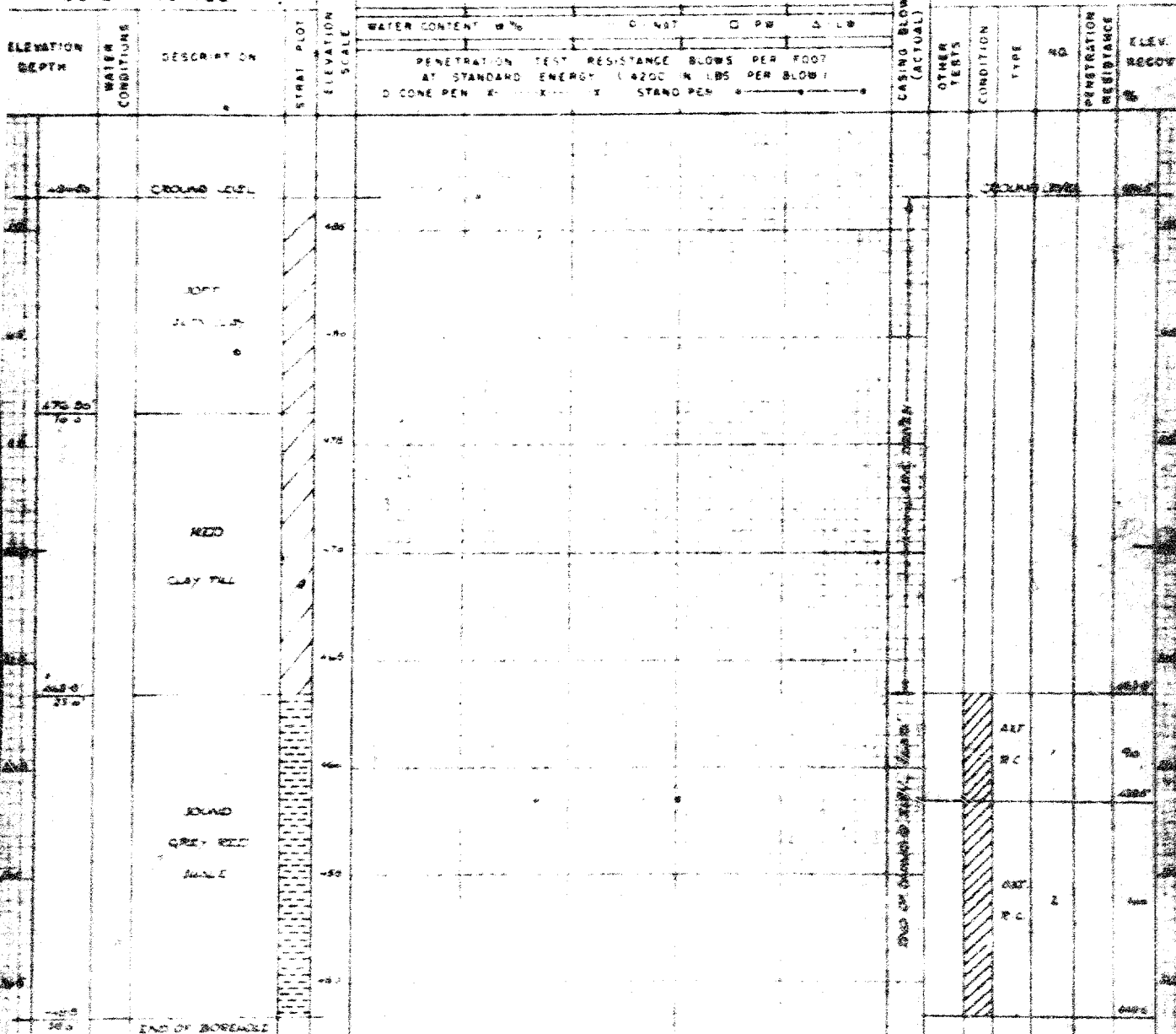
CS - CHURN SS - SLEEVE SAMPLE
DO - DRIVE OPEN PS - PISTON SAMPLE
DF - DRIVE FOOT VALVE WS - WASHED SAMPLE
TO - THIN WALLED OPEN RC - ROCK CORE

SAMPLE CONDITION

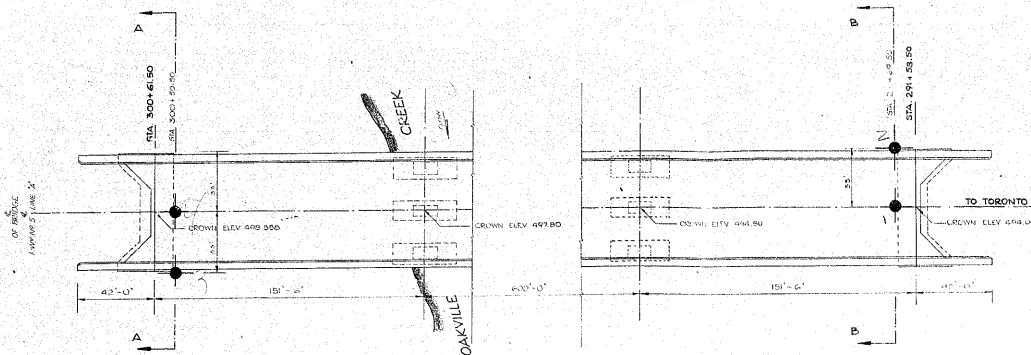
 - DISTURBED
- FAIR
- GOOD
- LOST

SOIL PROFILE

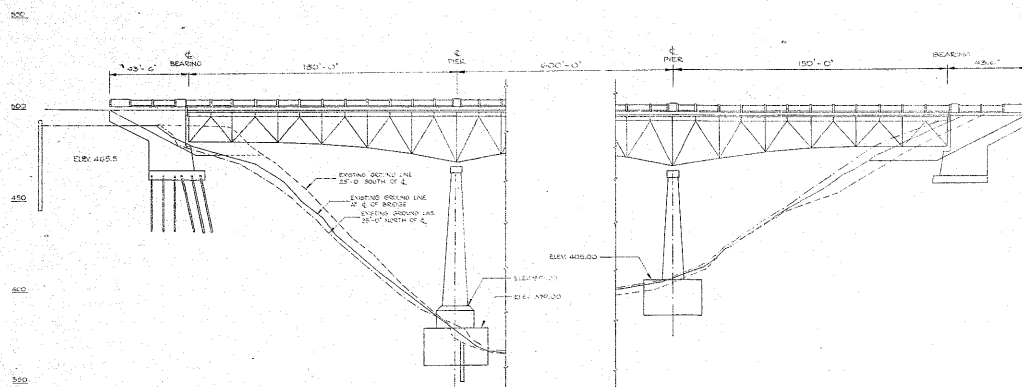
SAMPLES



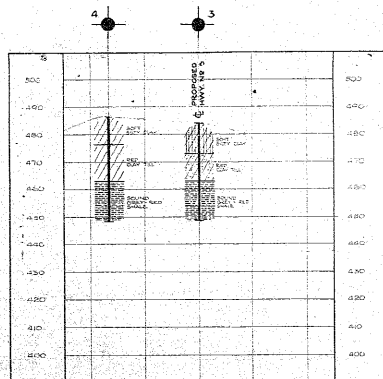
DEFECTS IN NEGATIVE DUE TO
CONDITION OF ORIGINAL DOCUMENT



PLAN
SCALE 1 IN = 30 FT

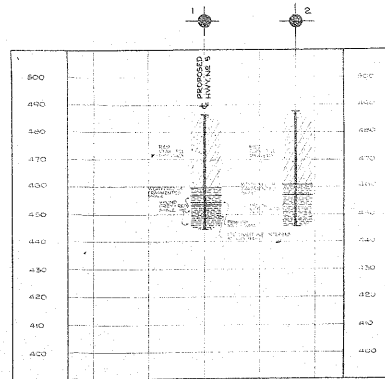


ELEVATION
SCALE 1 IN = 30 FT



STA. 300+50.50 A - A

SECTION
SCALE 1 IN = 20 FT



STA. 291+29.50 B - B

LEGEND			
WELL HOLE			
PROPOSED HOLE			
BEST AVAILABLE HOLE			
NO.	ELEVATION	DEPTH	REMARKS
1	480.55	10' 11"	1
2	480.55	10' 11"	2
3	480.55	10' 11"	3
4	480.55	10' 11"	4

NOTE
THE BOUNDARIES BETWEEN SOIL STRATA HAVE BEEN ESTABLISHED ONLY AT BORE HOLE LOCATIONS. BETWEEN BORE HOLES THE BOUNDARIES ARE ASSUMED FROM GEOLOGICAL EVIDENCE AND MAY BE SUBJECT TO CONSIDERABLE ERROR.

DEPARTMENT OF HIGHWAYS - ONTARIO		
MATERIALS & RESEARCH SECTION - DOWNSVIEW		
PROPOSED CROSSING OF OAKVILLE CREEK		
HWY. NO. 5	W.P. 710 - 58	DIV. NO. 6
CO. HALTON	LOT 22 & 23	CON. 1
TWP. TRAFALGAR		
POSITION & ELEVATION OF HOLES		
SCALE	SUBMITTED BY	DATE
AS SHOWN		20 MARCH 58
DRAWN BY	APPROVED BY	DRAWING NO.
R.E.F.		P-58-5A