

G.I.-30 SEPT. 1976

GEOCRES No. 31D-252DIST. 5 REGION W.P. No. 99-75-19CONT. No. 80-23W. O. No. STR. SITE No. 30-359HWY. No. 400LOCATION Medonte Conc. 4
UnderpassNo of PAGES - =====
OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT. REMARKS:

NOTES:

CLASS OF CONCRETE

DECK	5000 PSI
PIER COLUMN	5000 PSI
BARRIER WALL	5000 PSI
REMAINDER OR AS NOTED ON DWGS	5000 PSI

WEAR COVER ON REINFORCING STEEL

FOOTINGS, ABUTMENTS & PIER COLUMNS - 3"

DECK 2" TOP, 1 1/2" BOTTOM, OR AS NOTED ON DWGS.

REINFORCING STEEL GRADE

AS STEEL GRADE 400. REINFORCING BARS WITH DESIGNATION 'C' AT THE END OF BAR MARKS SHALL BE COATED BARS.

CONSTRUCTION NOTES:

THE CONTRACTOR IS RESPONSIBLE FOR FINISHING THE BEDDING SEATS TO THE SPECIFIED ELEVATIONS WITH A TOLERANCE OF ± 1/8".

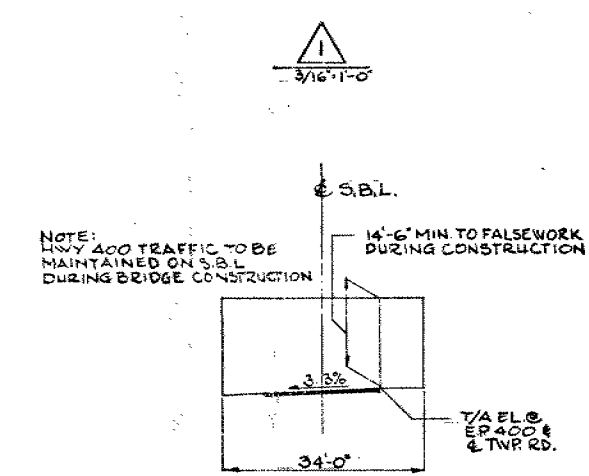
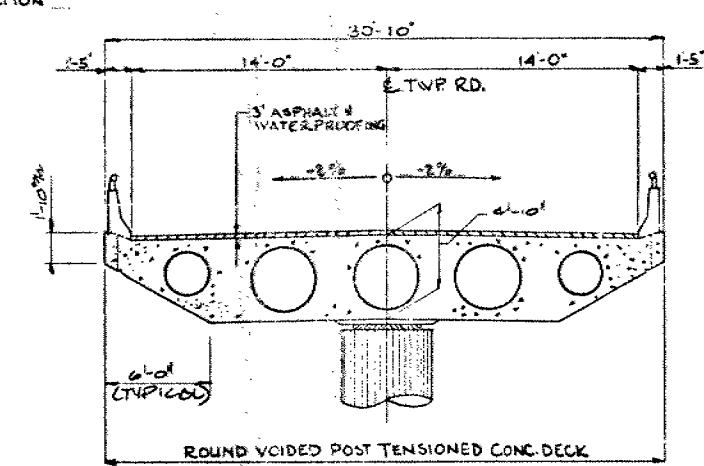
NO CONCRETE SHALL BE PLACED ABOVE THE ABUTMENT BEDDING SEATS UNTIL THE CONCRETE IN THE DECK HAS BEEN PLACED, STRESSED AND GROUTED.

CONCRETE QUANTITIES

CONCRETE QUANTITIES ARE LISTED BELOW FOR THE APPROPRIATE CONCRETE WUMP SUM TENDER ITEMS:

CONC. IN PIER, ABUTMENTS & WINGWALLS -	5000 P.S.I.	19 CUMYD
	3000 P.S.I.	230 CUMYD
CONCRETE IN PRESTRESSED CONC. BRIDGE DECK		55 CUMYD
CONC. IN APPROACH SLOBS		36 CUMYD
CONC. IN BARRIER WALLS		38 CUMYD
CONC. IN SLOPE PAVING		38 CUMYD

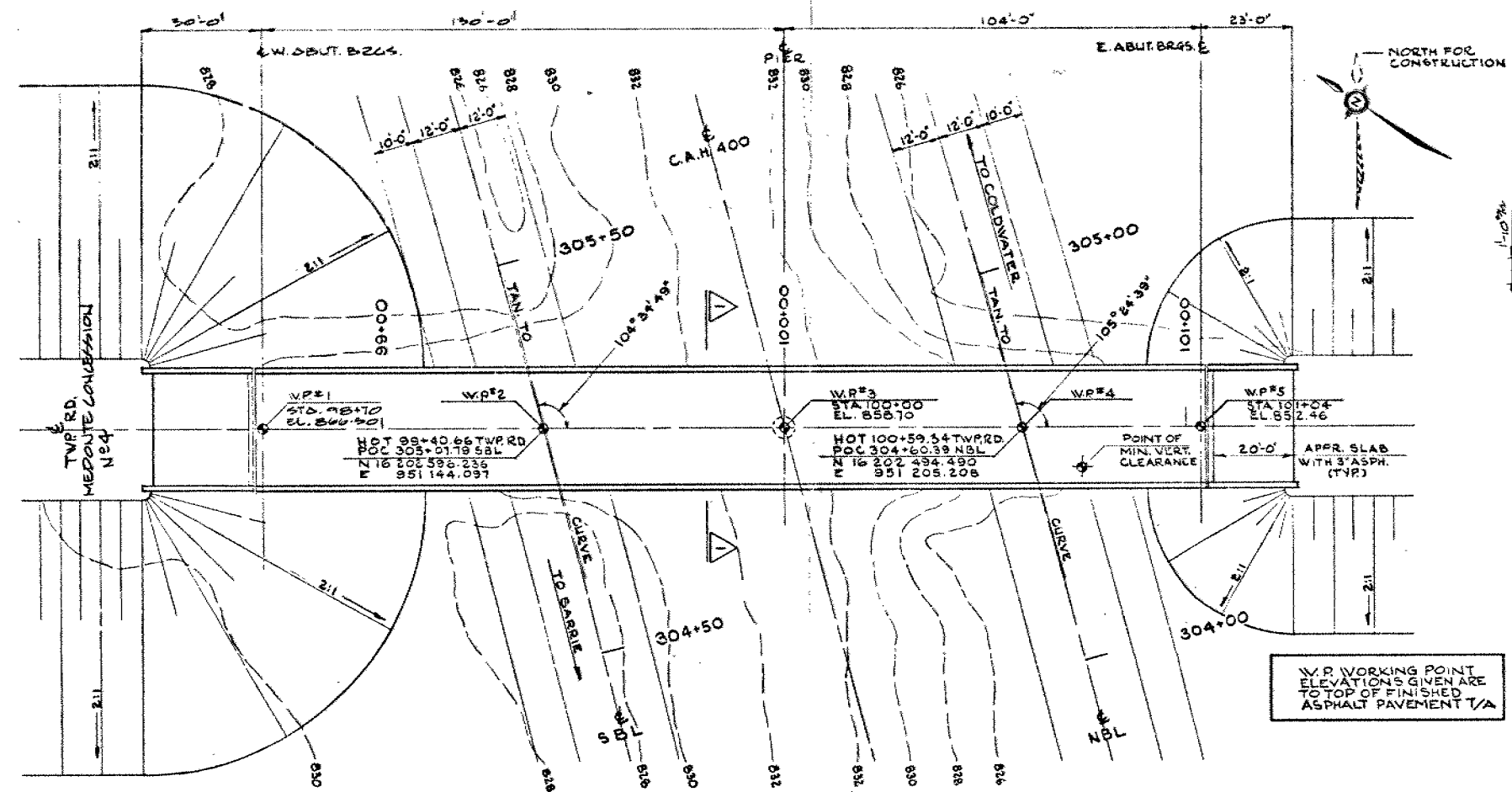
- LIST OF DRAWINGS
1. GENERAL ARRANGEMENT
 2. BOREHOLE LOCATION & SOIL STRATA.
 3. ABUTMENT FOOTING LAYOUT.
 4. WEST ABUTMENT LAYOUT.
 5. WEST ABUTMENT REINFORCING.
 6. EAST ABUTMENT LAYOUT.
 7. EAST ABUTMENT REINFORCING.
 8. PIER LAYOUT AND DETAILS.
 9. DECK LAYOUT.
 10. LONGITUDINAL CABLE DETAILS.
 11. TRANSVERSE CABLE DETAILS.
 12. DECK REINFORCING.
 13. BARRIER WALL.
 14. STEEL RAILING.
 15. APPROACH SLOBS.
 16. CONCRETE SLOPE PAVING.
 17. STANDARD DETAILS I
 18. STANDARD DETAILS II
 19. STANDARD DETAILS III
 20. STANDARD DETAILS IV
 21. AS CONSTRUCTED ELEV. AND DIM'S.

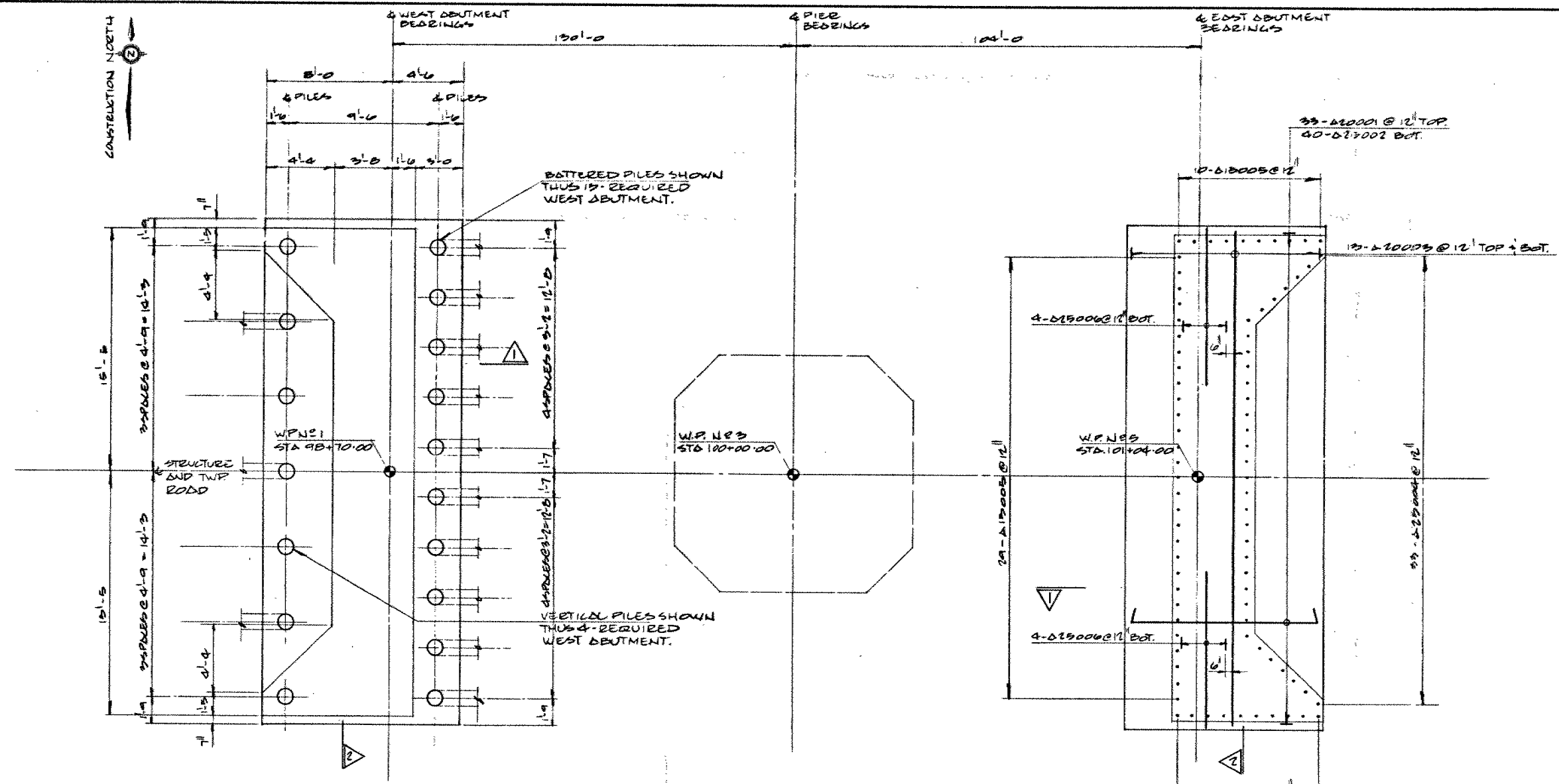


CONSTRUCTION CLEARANCE
DIAGRAM FOR S.B.L.

NTS
(SEE STANDARD SS-16-2)

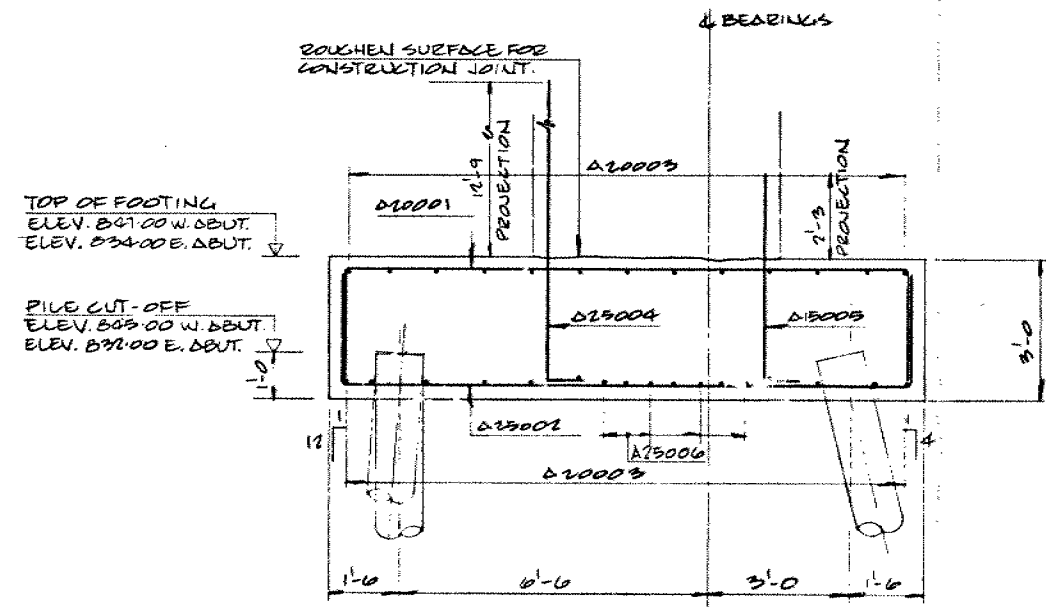
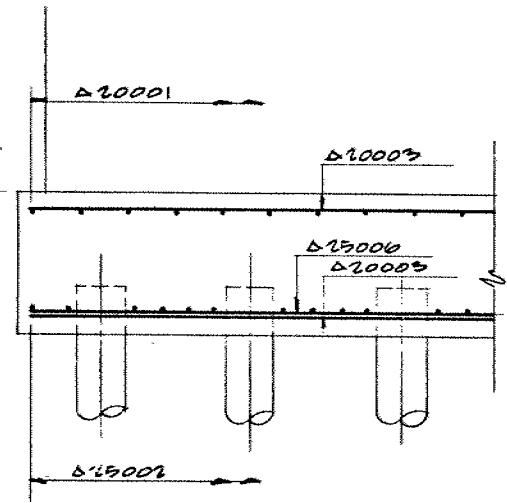
BM. 835.04
NEW IN S.E. FOOT OF 4' BASSWOOD ON W SIDE HWY 400 2 1/2" LT. OF 305+13 (S.B.L.)





WEST ABUTMENT FOOTING AND PILE LAYOUT
EAST ABUTMENT SIMILAR BUT OPPOSITE HAND
SCALE 1/4" = 1'-0"

EAST ABUTMENT FOOTING REINFORCEMENT.
WEST ABUTMENT SIMILAR BUT OPPOSITE HAND
SCALE 1/4" = 1'-0"

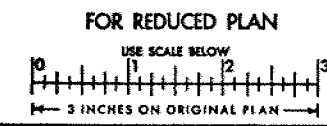
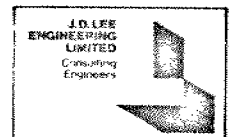


SCALE 1/2" = 1'-0"

PILE DATA			
LOCATION	NO	LENGTH	TYPE
WEST ABUT. VERTICAL	4	60'-0	12 3/4" O.D. ST. TUBE WITH 0.25" WALL
	3	60'-3	
	10	62'-0	
EAST ABUT. VERTICAL	4	47'-0	12 3/4" O.D. ST. TUBE WITH 0.25" WALL
	3	47'-3	
	10	48'-6	

STEEL TO BE IN ACCORDANCE WITH A.S.T.M. SPECIFICATION A-36, GRADE 2.

- NOTES
1. PILES 12 3/4" NCH O.D. X 0.25" WALL STEEL TUBES WITH CLOSED ENDS AS PER STD. S53-2.
 2. PIER, FOOTING AND PILE LAYOUT SEE DWG NO. 5.
 3. PILE LENGTH SHOWN ON DRAWING IS THE THEORETICAL LENGTH BELOW CUT-OFF.
 4. PILES TO BE DRIVEN IN ACCORDANCE WITH STANDARD S53-11 USING DESIGN LOAD 60 TONS / PILE.



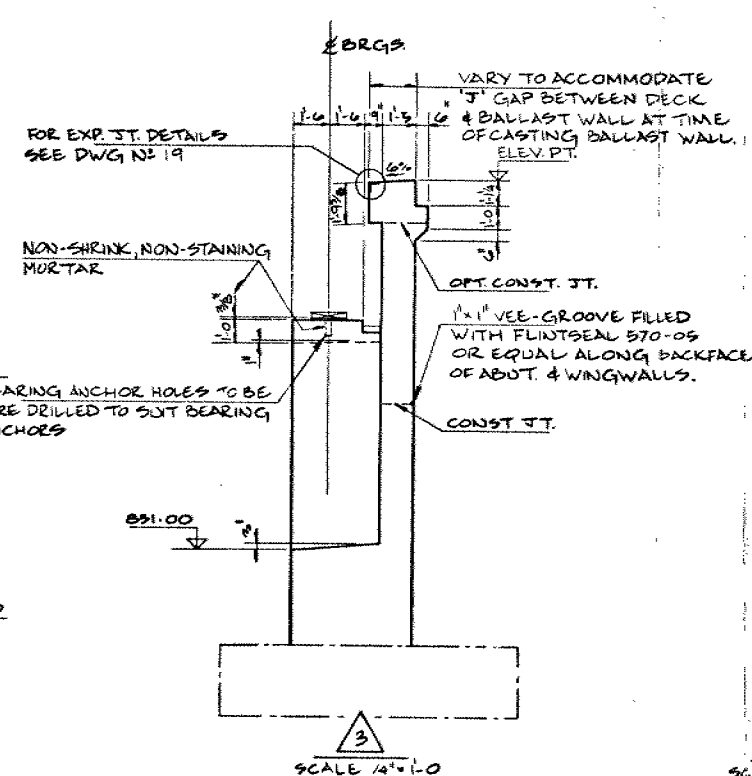
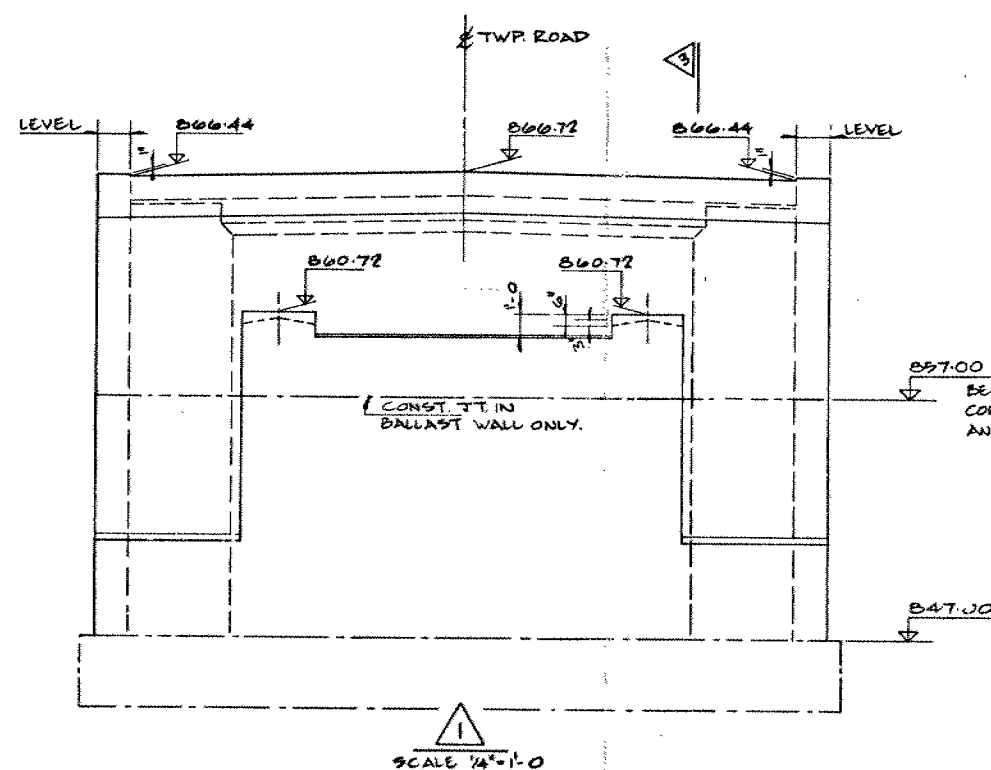
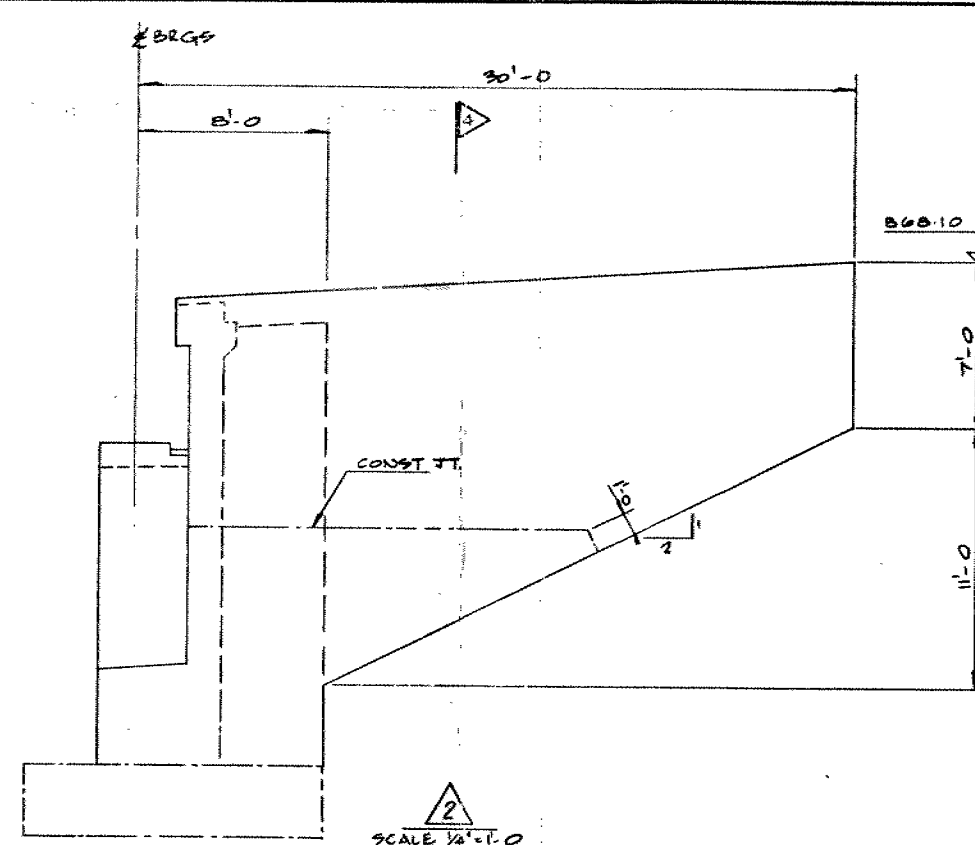
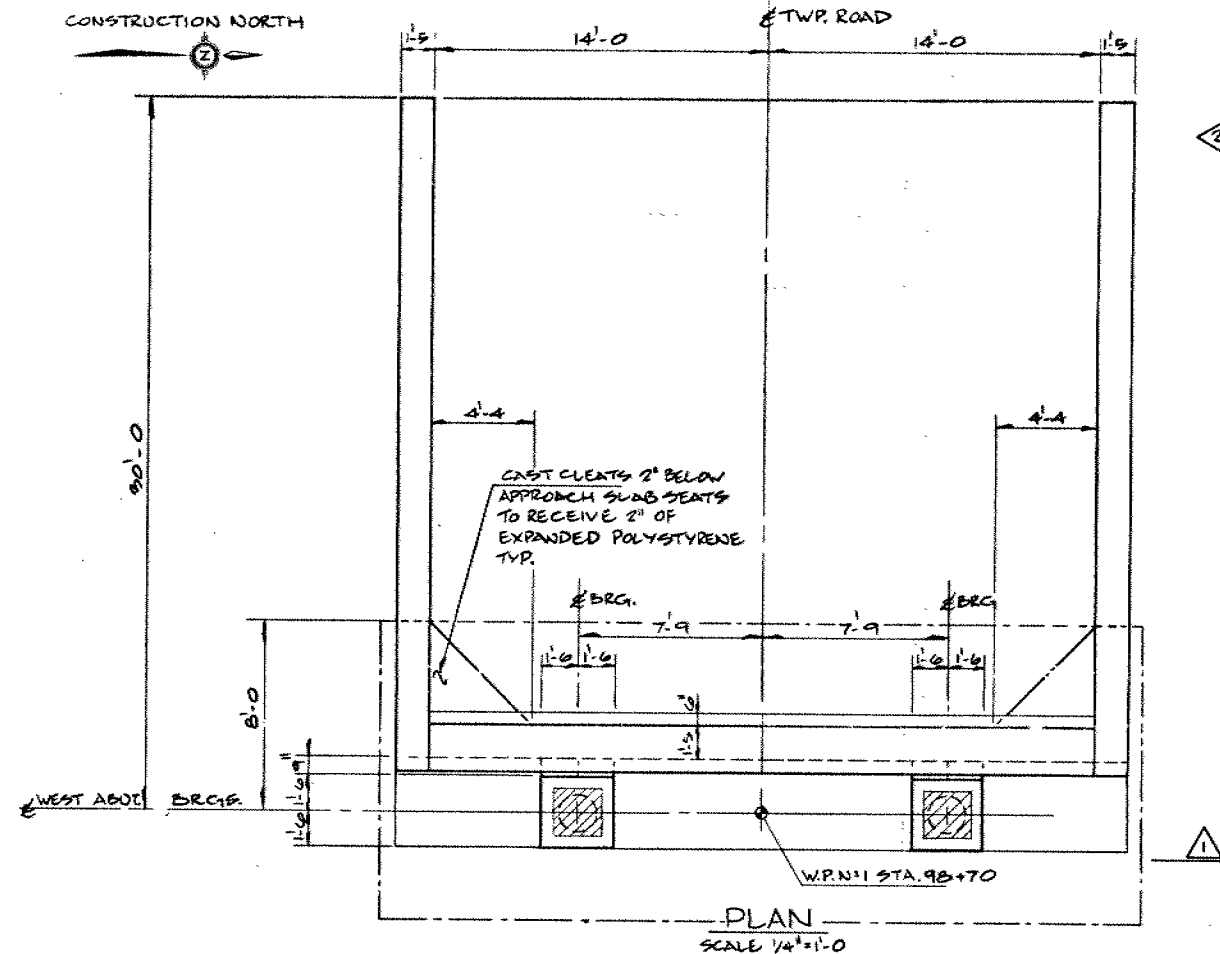
REVISIONS		DATE BY		DESCRIPTION	
DESIGN	20	CHECK	20	LOADING	510-40
DRAWING	20	CHECK	20	SITE No	30-550
				DATE	5/2/74
				DWG	27

CONSTRUCTION NORTH

DIST. No 5.
CONT No
WP No 99-75-19

MEDONTE CONCESSION 4
UNDERPASS
3.9 MILES NORTH OF HWY 99
WEST ABUTMENT LAYOUT

SHEET

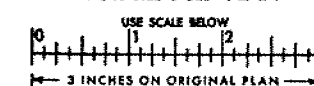


UNIDIRECTIONAL BEARINGS

WABO - FYFE BEARING N^o B1-600
OR APPROVED EQUAL (2. REQ'D)
D.L. 450K
D.L. + L.L. 340K
LATERAL HORIZ. LOAD 10K
TOTAL MOVEMENT + 1" AND - 2 3/4"



FOR REDUCED PLAN



REVISIONS					
DATE		BY	DESCRIPTION		
DESIGN	MJS	CHECK	DL	LOADING	45 10-44
DRAWING	MJS	CHECK	DL	SITE No	30-359
				DWG	5



Memorandum

To: Mr. K. G. Selby
Supervising Engineer
Soils Mechanics Section
Central Building, Downsview

From: Structural Section
Southwestern Region
LONDON

Attention:

Date: 78 08 28

Our File Ref.

In Reply to

Subject: W.P. 99-75-13, New Site No. 30-485
Medonte Concession 5 Underpass
4.7 Miles North of Highway 93
Highway 400
District #5 - Owen Sound

Please be advised that the above work project is being cancelled as it has been decided to close this Concession 5 Road and keep Concession 4 Road open. Therefore, this site has been given a new site number 30-485 in order to file the Foundation Investigation and Design Report.

The old existing site number 30-359 has been retained for Medonte Concession Road 4 Underpass, 3.9 Miles north of Highway 93 and given a new work project number, W.P. 99-75-19. A new foundation investigation request will be issued for this site. An existing Foundation Investigation Report exists, BA 1083 was prepared under W.P. 62-60 for site 30-359 which could be reviewed for the new request.

A. P. Watt, Head
Structural Section

APW:cc

Attach.

c.c. J. Camilleri
J. G. Forster
A. Crowley
J. Anderson
W. Slater (attach.)



Mr. A.E. McKim
Head, Southwestern Section
Structural Office
2nd Floor, West Building

Soil Mechanics Section
Engineering Materials Office
Room 315, Central Building

79 02 20

Re: Medonte Conc. 4 Underpass
W.P. 99-75-19, Site 30-359
Hwy. 400, District 5, Owen Sound

We have reviewed the preliminary drawing for the above structure and we have the following comments.

The required piles should be shown as 12 3/4" O.D. x 0.25 inch wall steel tubes with closed ends.

Pile driving should be according to the current M.T.C. Standard SS-3-10, 11.



C.T. Johnson
Project Engineer

CTJ/gs

cc: Files ✓



Memorandum

New File Required

To: Mr. A.P. Watt
Head, Structural Section
Southwestern Region
London

From: Soil Mechanics Section
Engineering Materials Office
Room 315, Central Building

Attention:

Date: 78 11 10

Our File Ref.

In Reply to

Subject:

Re: Foundation Investigation and Design Report
Medonte Township Road (Con. 4 & 5) and Hwy. 400
District 5, Owen Sound, W.P. 99-75-19

SITE NO 30-359

We have reviewed the foundation report for the above mentioned project which was prepared for the Ministry by E.M. Peto, Associates Ltd., and is dated 60 06 24. The work project at that time was W.P. 62-60. As a result of this report and of recommendations made by L.G. Soderman, a four span bridge was designed (in 1960) having perched abutments supported on 60 foot long steel tube piles and piers supported on 46 foot long steel tube piles. Design load for the piles was 30 tons/pile. This structure was never built and it has since been decided to update the 1960 design and it is now proposed to construct a two span bridge with spans of 108 feet and 126 feet. Our comments with regard to subsurface conditions and the foundation design of the newly proposed structure and approaches are as follows.

Subsurface Conditions

The field investigation was carried out during the period 60 05 17 to 60 05 19. Since that time no major changes in topography have occurred and it can be inferred that subsurface conditions have undergone very little change either. Conditions as revealed by the foundation investigation are as follows: From 3 to 6 feet of compact sand and gravel fill material is followed by 18 to 22 feet of loose to compact fine to medium sand which is underlain by about 6 feet of stiff to very stiff varved clay. This is followed by about 25 feet of compact to dense silt or silty fine sand. The maximum depth tested was to elevation 775, some 52 feet below the ground surface. Groundwater was observed to be generally below the surface of the varved clay deposit at approximate elevation 802 which is about 24 feet below the ground surface. It is probable, however, that perched water exists above this level during the wet seasons of the year.

Recommendations

At the present time Medonte Township Road between Con. IV and V intersects Hwy. 400 by means of a level crossing. The Township Road is an 11 foot wide gravel road which is paved with asphalt

cont'd.....

for about 100 feet east and west of the intersection. Hwy. 400 is a two lane paved highway with 10 foot wide gravel shoulders. It is proposed to construct a new flyover bridge to cross Hwy. 400 which will be reconstructed to 4 lanes with a 70 foot median. The existing 2 lanes of Hwy. 400 will be demolished since they lie within the boundaries of the future median. The proposed flyover bridge will have 2 spans of 126 feet and 108 feet and will require approach embankments 33 feet high at the west end and 25 feet at the east end. As noted previously the upper subsoil layers consist of fine to medium sands of which a 12 to 15 foot zone is in a generally loose state. This material would be expected to undergo settlements in the order of several inches under the load of structure and embankment and due to the variable condition of the soil, these settlements could vary considerably within short distances. For this reason spread footings are not recommended and the most suitable type of support for the structure would be piled foundations utilizing large displacement piles. Such piles would have the additional effect of densifying the soil in the loose zone and thereby decreasing settlements due to embankment loading in the vicinity of the abutments. It is recommended, therefore, that the piers and abutments of the new structure be supported on 12 3/4 inch O.D. x 0.25 inch wall, steel tubes with closed ends driven into the dense silty fine sand deposit to approximate elevation 985, at which depth a safe load of 65 tons per pile should be achieved. Pile driving should be controlled according to M.T.C. Standards SS3-10,11. Pile caps should have a minimum of 6 feet of cover for frost protection. No stability problems are anticipated for the approach embankments constructed with standard 2:1 slopes. At locations within the embankments where piles are to be driven the grain size of fill material should not exceed 2 inches. Portions of existing roads below the footings should be completely removed and replaced with suitable fill in accordance with this requirement.

Foundation Report

The foundation investigation report for contract purposes will be prepared at the appropriate time i.e. 6 weeks prior to advertising. A drawing showing locations and elevations of borings and estimated soil stratigraphy will be prepared following receipt by us of the final structural drawings. This memorandum should be sufficient for your present planning and design purposes.

K.G. Selby

K.G. Selby
Supervising Engineer

KGS/gs

cc: J.R. Roy	A.E. McKim	R.S. Pillar
A. Wittenberg	G.A. Wrong	R. Hore
J.H. Blevins	B.J. Giroux	A. Crowley
J. Keen	J. Anderson	G. Sloan
Files		



Memorandum

To: Mr. A.P. Watt
Head, Structural Section
Southwestern Region
London

From: Soil Mechanics Section
Engineering Materials Office
Room 315, Central Building

Attention:

Date: 78 11 10

Our File Ref.

In Reply to

Subject: Re: Foundation Investigation and Design Report
Medonte Township Road (Con. 4 & 5) and Hwy. 400
District 5, Owen Sound, W.P. 99-75-19

SITE N2 30-359

We have reviewed the foundation report for the above mentioned project which was prepared for the Ministry by E.M. Peto, Associates Ltd., and is dated 60 06 24. The work project at that time was W.P. 62-60. As a result of this report and of recommendations made by L.G. Soderman, a four span bridge was designed (in 1960) having perched abutments supported on 60 foot long steel tube piles and piers supported on 46 foot long steel tube piles. Design load for the piles was 30 tons/pile. This structure was never built and it has since been decided to update the 1960 design and it is now proposed to construct a two span bridge with spans of 108 feet and 126 feet. Our comments with regard to subsurface conditions and the foundation design of the newly proposed structure and approaches are as follows.

Subsurface Conditions

The field investigation was carried out during the period 60 05 17 to 60 05 19. Since that time no major changes in topography have occurred and it can be inferred that subsurface conditions have undergone very little change either. Conditions as revealed by the foundation investigation are as follows: From 3 to 6 feet of compact sand and gravel fill material is followed by 18 to 22 feet of loose to compact fine to medium sand which is underlain by about 6 feet of stiff to very stiff varved clay. This is followed by about 25 feet of compact to dense silt or silty fine sand. The maximum depth tested was to elevation 775, some 52 feet below the ground surface. Groundwater was observed to be generally below the surface of the varved clay deposit at approximate elevation 802 which is about 24 feet below the ground surface. It is probable, however, that perched water exists above this level during the wet seasons of the year.

Recommendations

At the present time Medonte Township Road between Con. IV and V intersects Hwy. 400 by means of a level crossing. The Township Road is an 11 foot wide gravel road which is paved with asphalt

cont'd.....

WP 99-75-19

SITE 30-359

MEDONTE CONC. 4 U'PHOS

HWY 400

DIST 5



VIEW LOOKING NORTHEAST ALONG NBL HWY 400



LOOKING NORTH ALONG CONC. 4



LOOKING SOUTH ALONG CONC. 4



DOCUMENT VERIFICATION IDENTIFICATION

GEOCRES No. 310-252

DIST. 5 REGION SOUTH WESTERN

W.P. No. 99-75-13

CONT. No. _____

W. O. No. _____

STR. SITE No. 30-485

HWY. No. 400

LOCATION MEDONTE CONCESSION 5

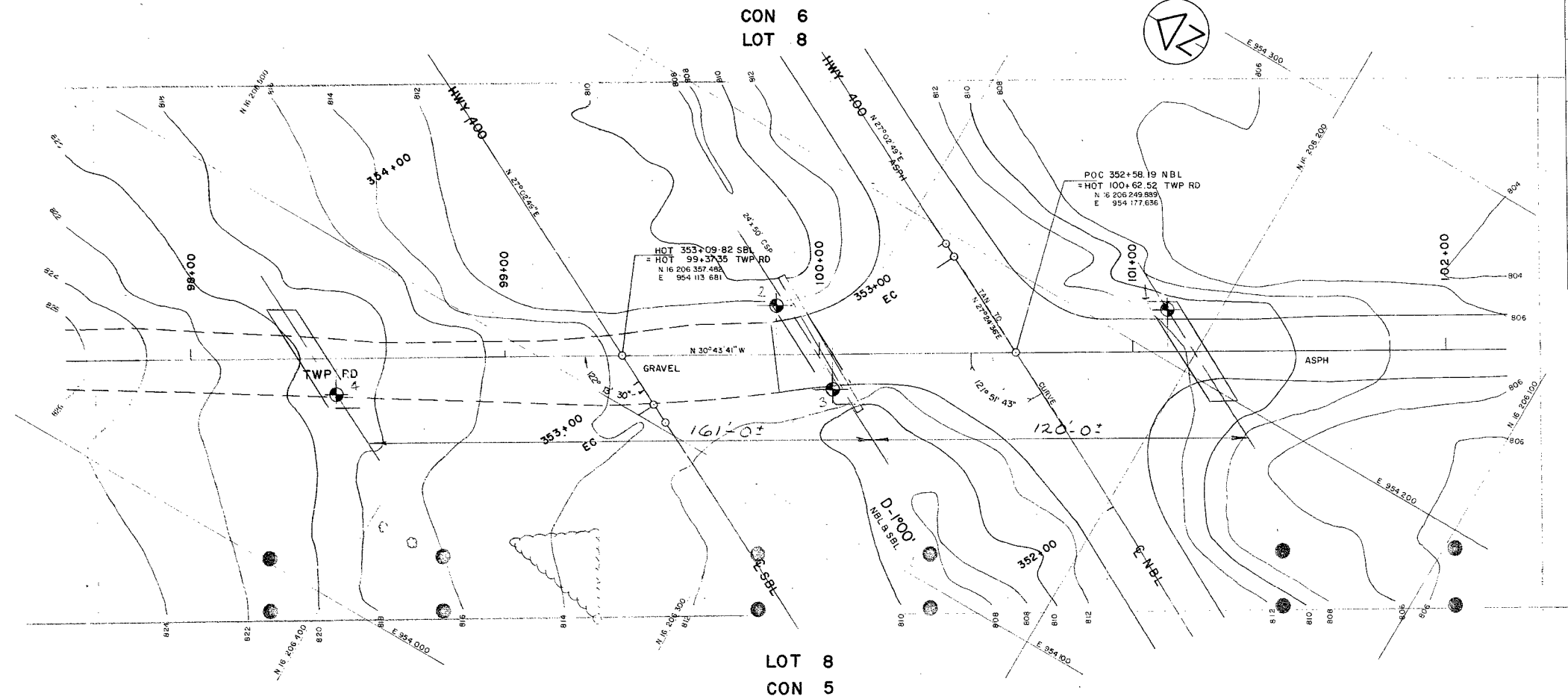
UNDERPASS

OVERLAP DRAWING TO BE INCLUDED WITH THIS REPORT. /

REMARKS: _____

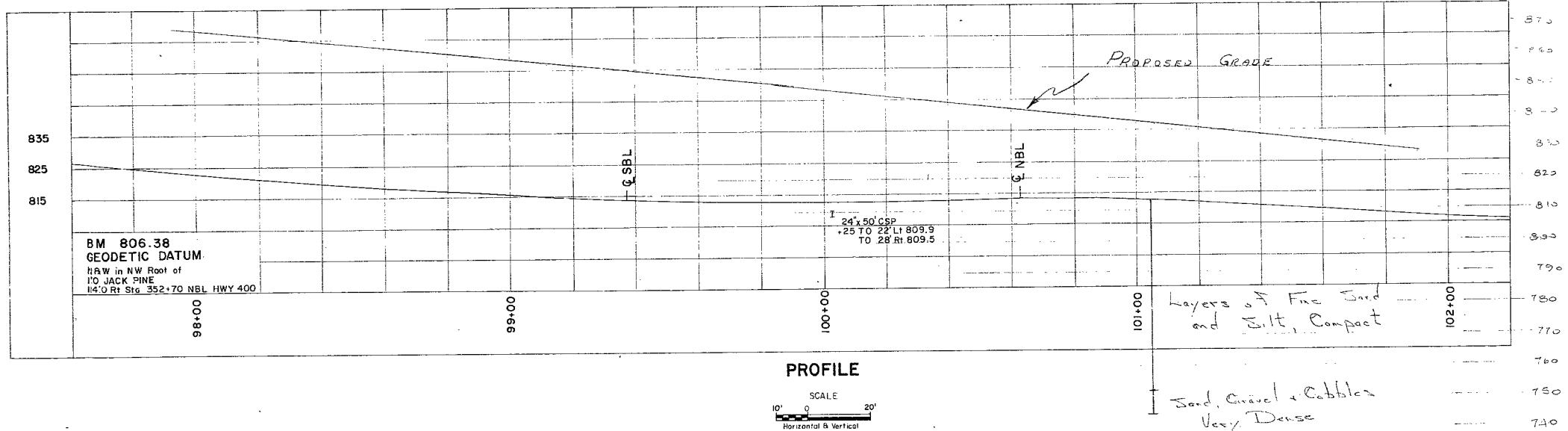
CO SIMCOE
TWP MEDONTE

PROBABLE FOOTING LOCATIONS



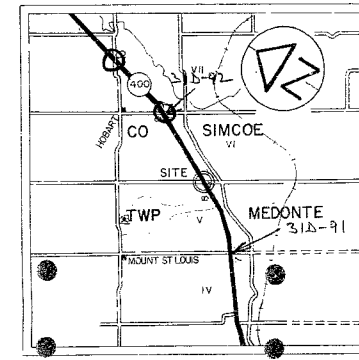
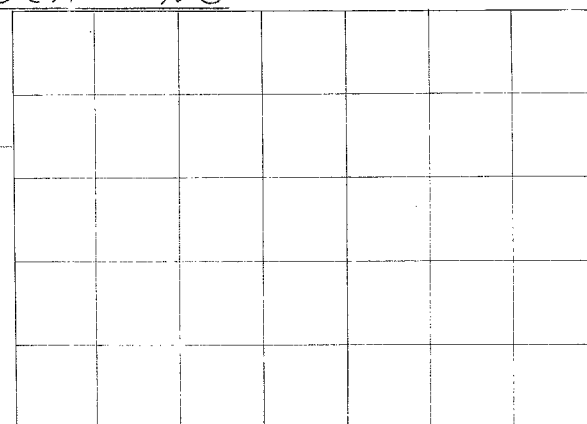
LOT 8
CON 5

PLAN
SCALE
10' 0 20'



PROFILE

SCALE
Horizontal & Vertical
10' 0 20'

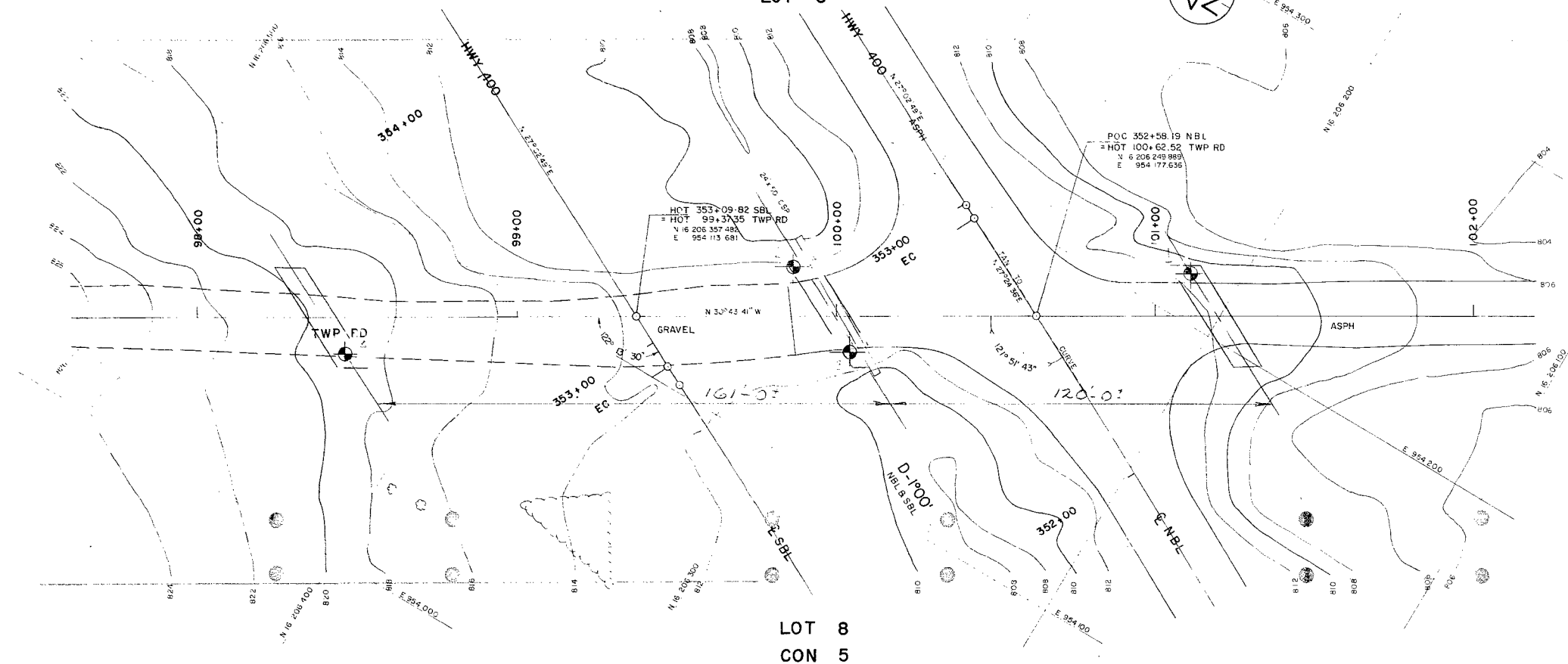


KEY PLAN
SCALE
0.5 MI 1.0 MI

DATE	REVISIONS & ADDITIONS	BY	CHKD
31D-252			
MINISTRY OF TRANSPORTATION & COMMUNICATIONS ENGINEERING & RIGHT OF WAY OFFICE SURVEYS & PLANS SECTION			
BRIDGE SITE PLAN			
PROPOSED CROSSING AT TOWNSHIP ROAD (CON 5 & 6) AND KING'S HIGHWAY 400			
<div> <div> </div> <div> <div>LOT 8</div> <div>CON 5 & 6</div> <div>TWP MEDONTE</div> <div>CO SIMCOE</div> </div> </div>			
SCALE AS SHOWN	DISTRICT 5 OWEN SOUND	REGION SOUTHWESTERN	
SURVEY BY Party Chief D FREEMAN Supervisor D FUSEE	DRAWN BY Draftspersons K MARTIN G RICE Supervisor O SCHUR	CHECKED BY Draftsperson J JANUJ Supervisor O SCHUR	
DATE OF Survey Plan JUNE 1977 JULY 1977	PLAN NO 252-400	SITE NO 30-485	
STR WP	99-75-13	PLAN E-5520-1	

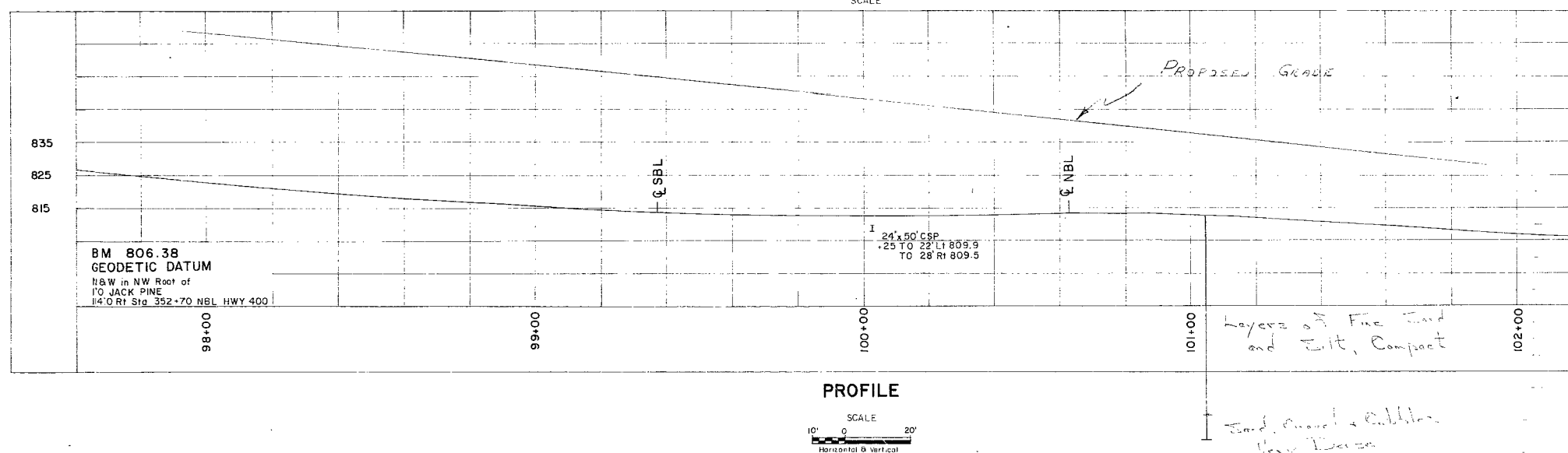
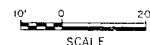
CO SIMCOE
TWP MEDONTE

CON 6
LOT 8

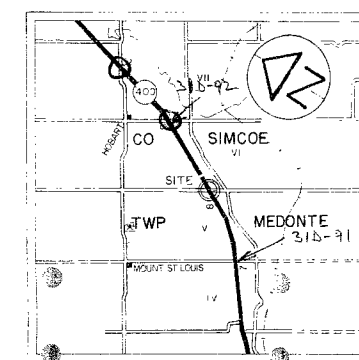
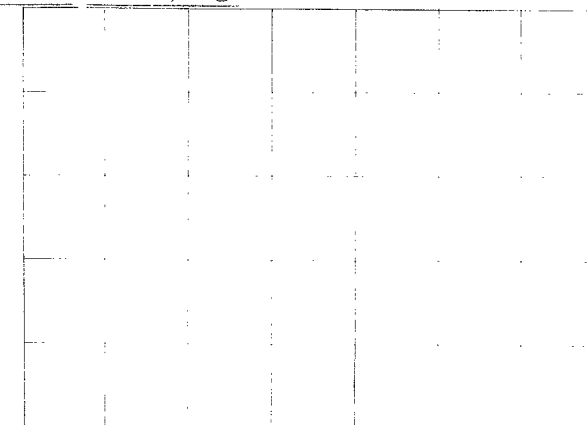
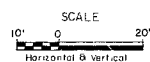
PROBABLE FOOTING LOCATION

LOT 8
CON 5

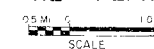
PLAN




PROFILE



KEY PLAN



DATE	REVISONS & ADDITIONS	BY	CHKD
	31D-252		
MINISTRY OF TRANSPORTATION & COMMUNICATIONS ENGINEERING & RIGHT OF WAY OFFICE SURVEYS & PLANS SECTION			
BRIDGE SITE PLAN			
PROPOSED CROSSING AT TOWNSHIP ROAD (CON 5 & 6) AND KING'S HIGHWAY 400			
	LOT 8 P MEDONTE	CON 5 & 6 CO SIMCOE	
SCALE AS SHOWN	DISTRICT 5 OWEN SOUND	REGION SOUTHWESTERN	
SURVEY BY Party Chief D FREEMAN	DRAWN BY Draftspersons K MARTIN J RICE	CHECKED BY Draftsperson J JANUJ	
Supervisor D FUSEE	Supervisor O SCHUR	Supervisor O SCHUR	
DATE OF Survey JUNE 1977 Plan JULY 1977	PLAN NO 252-400	SITE NO 30-252	
STR WP	99-75-13	PLAN	E-5520-1

ENGINEERING MATERIALS OFFICE
SOIL MECHANICS SECTION

WP 99-75-13

DIST 5

NEW 30-485*

HWY 400

STR SITE ~~30-059~~

Medonte Concession 5 Underpass

* SEE MEMO

DISTRIBUTION

A.P. Watt (2)
J.R. Roy
A. Wittenberg
J.H. Blevins (2)

J.L. Keen
G.A. Wrong
B.J. Giroux
R.S. Pillar

R. Hore

A. Crowley)
J. Anderson) cover only
G. Sloan)

Files ✓

SAMPLE DISPOSITION NOTICE		
TYPE	DISCARD AFTER	RECOMM. BY
JARS	77-12-15	145
TUBES	77-12-15	128
ROCK CORES	77-12-15	128

FOUNDATION INVESTIGATION REPORT

For

Medonte Concession 5 Underpass
W.P. 99-75-13, Site 30-359
Hwy. 400, District 5, Owen Sound

INTRODUCTION

This report contains the results of a foundation investigation carried out for the above project. Fieldwork consisted of 4 boreholes with each one accompanied by a dynamic cone penetration test. This work was carried out during the period October 19th to 24th, 1977, utilizing a CME75 auger machine mounted on a tracked vehicle. Hollow stem augers were employed in all boreholes.

SITE DESCRIPTION

The site is located on existing Hwy. 400 some 4.9 miles north of its northern intersection with Hwy. 93. At this location Hwy. 400 consists of 2 paved lanes which will act as the northbound lanes when it becomes a 4 lane, controlled access, divided highway. The township road has a gravel surface except in the immediate vicinity of its intersection with Hwy. 400 where it is paved.

North of Barrie Hwy. 400 runs across the Simcoe Lowlands following a broad valley flanked by steep slopes, some of which have been developed for ski runs. This site is located on the valley floor immediately adjacent to a steep slope which was formed as a shore cliff of Glacial Lake Algonquin.

A large portion of the land in the area is either reforested or natural bush. Occasional mixed farms are located in the areas of greatest agricultural potential.

SUBSURFACE CONDITIONS

General

Hwy. 400 runs north from Barrie across the Simcoe Lowlands following a broad valley which was flooded by Glacial Lake Algonquin. This period of inundation produced a deep deposit of fine sand and silt over the valley floor and bordered it by beach deposits and shore cliffs. This bridge site is located on the valley floor immediately adjacent to a steep slope which was formed as a shore cliff of Lake Algonquin.

Subsoil under the north abutment which is located adjacent to the shore cliff represents a beach deposit and consists of well graded sands and gravels to a depth of 26 feet where B.H. #4 was terminated.

The area of the median pier lay just offshore during the period of highest Lake Algonquin. Subsoil here consists of approximately 30 feet of layered sands and silts underlain by a very dense granular till consisting of gravel, some sand and silt with numerous cobbles.

At the south abutment which is located still further from the shore cliff, subsoil consists of about 60 feet of fine uniform sand with occasional silt layers overlying the same very dense granular till deposit of gravel, some sand and silt with numerous boulders, which was found in the area of the median pier.

Reference should be made to the Record of Borehole Sheets which are contained in the Report Appendix and on which are shown the boundaries between different soil types as well as a summary of the results of all field and laboratory tests performed. Reference should also be made to Drawing #997513-A which shows the locations and elevations of all borings, together with the inferred subsoil stratigraphy. More detailed descriptions of the soil types encountered are given below.

Sand and Gravel, Trace of Silt

This deposit is found in the area of the north abutment and is a beach formed by Glacial Lake Algonquin. It consists of compact to very dense sand and gravel in varying proportions and extends to a depth in excess of 26 feet.

Standard Penetration 'N' values vary from 18 to in excess of 100 blows per foot. Typical grain size curves are shown in Figure 1 of the Appendix.

Layers of Fine Uniform Sand, Well Graded Sand, and Silt

This material represents an offshore deposit from Lake Algonquin. It consists primarily of fine uniform sand as shown in Figure 2. The deposit also contains occasional silt layers, which are generally less than a foot in thickness, as well as some layers of well graded sand in the area of the central pier. Typical grain size distribution curves for this well graded sand are shown in Figure 3. The deposit rapidly increases in thickness moving away from the old shoreline toward the southeast. In the area of the median pier its thickness is about 30 feet while at the south abutment its thickness is approximately 60 feet. The upper 3 to 7 feet of the deposit is loose to compact. Below this the relative

density increases and varies from compact to very dense with Standard Penetration 'N' values as high as 90 blows per foot.

Gravel, Some Sand and Silt, Numerous Cobbles

This deposit was encountered underlying the layered fine sand and silt. It contains gravel, some sand and silt, as well as larger grain sizes and is a granular till deposit. It is very dense with Standard Penetration 'N' values always exceeding 100 blows per foot. Augering in this layer was difficult due to the coarse gravel and cobbles with refusal to augering occurring in B.H. #1 at elevation 744.

Groundwater

Fieldwork for this project was carried out in late October after a period of wet weather through August and September. As a result the groundwater levels encountered at the time of the investigation are somewhat higher than normal values. Levels recorded were 3 feet at the north abutment, 10 feet at the median pier and 42 feet at the south abutment. This shows a steep groundwater gradient and indicates that water drains from the hill down through the deep sand deposit.

DISCUSSION AND RECOMMENDATIONS

General

It is proposed that the township road between the 5th and 6th concession of Medonte Township cross Hwy. 400 on a 2 span structure. Due to the steep hill north of the highway the grade of the township road slopes up in this direction. The north approach fill is, therefore, about 45 feet in height while that of the south approach fill is approximately 25 feet. This leads to unequal spans with the proposed span over the northbound lanes being 120 feet while that over the southbound lanes is 160 feet.

Median Pier

The median pier should be supported by a spread footing founded at elevation 804 with a design load of 3 tons per square foot.

Abutments

Perched abutments should be supported on steel tube piles (12 3/4" x 1/4") driven in accordance with SS3-11. It is estimated that a design load of 70 tons per pile will be achieved at elevation 802 for the north abutment and elevation 785 for the south abutment.

Dewatering

No dewatering problems are anticipated due to the low groundwater level encountered in the area of the median pier.

Settlements

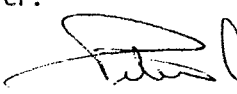
Settlements will be rapid occurring during construction. In all cases footing settlement will be less than 1 inch.

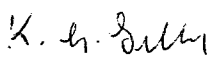
Approach Embankments

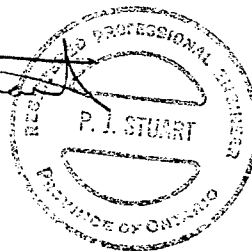
No stability problems are anticipated with the approach fills if slopes of 2 horizontal to 1 vertical are employed. Fill placed at locations through which piles will be driven should not contain material with a grain size in excess of 3 inches.

Frost Protection

All pile caps or spread footings should be protected against frost action by a minimum of 6 feet of cover.


Peter Stuart, P. Eng.
Project Engineer


K.G. Selby, P. Eng.
Supervising Engineer




KGS/PS/bh/gs
December, 1977

RECORD OF BOREHOLE No 1

W P 99-75-13 LOCATION Co-ords N 16,206,215; E 954,214 ORIGINATED BY P.J.S.
DIST 5 HWY 400 BOREHOLE TYPE Hollow Stem Augers and Cone Tests COMPILED BY G.P.
DATUM Geodetic DATE October 19, 1977 CHECKED BY P.J.S. (P)


SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			'N' VALUES	20						40	60
811.9	Ground Level												GR SA SI CL		
0.0	Fine Uniform Sand with Occasional Silt Layers		1	SS	10								3 90 (7)		
			2	SS	14									0 76 22 2	
			3	SS	23										
	Compact to Very Dense		4	SS	12										
			5	SS	14										
			6	SS	32										
			7	SS	10										
			8	SS	50										
			9	SS	32										0 94 (6)
			10	SS	30										
			11	SS	72										0 93 (7)
			12	SS	26										0 40 56 4
			13	SS	26										
			14	SS	8										
750.9															
61.9	Gravel some Sand and Silt, numerous Cobbles		15	SS	160								49 26 24 1		
743.6	Very Dense				Refusal to Augering										
68.3	End of Borehole														

RECORD OF BOREHOLE No 2

W P 99-75-13 LOCATION Co-ords N 16,206,323; E 954,152 ORIGINATED BY P.J.S.
DIST 5 HWY 400 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY G.P.
DATUM Geodetic DATE October 20,21, 1977 CHECKED BY P.J.S. 

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20 40 60 80 100	20 40 60 80 100					
812.5	Ground Level													
0.0	Loose Layers of, Fine Uniform Sand, Well Graded Sand, and Silt		1	SS	6		810							0 98 (2)
			2	SS	56									3 75 19 3
			3	SS	56		800							0 3 92 5
			4	SS	79									
			5	SS	41									
			6	SS	70									
			7	SS	98		790							
	Dense to Very Dense		8	SS	42									
781.5			9	SS	100/ 8"		780							
31.0	Gravel some sand and silt, numerous cobbles		10	SS	100/ 6"									
772.2	Very Dense		11	SS	100/ 4"									
40.3	End of Borehole													

RECORD OF BOREHOLE No 3

W P 99-75-13 LOCATION Co-ords N 16,206,294; E 954,138 ORIGINATED BY P.J.S.
DIST 5 HWY 400 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY G.P.
DATUM Geodetic DATE October 21, 1977 CHECKED BY P.J.S. 

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20 40 60 80 100	20 40 60 80 100					
812.4	Ground Level													
0.0	Compact Layers of, Fine Uniform Sand, Well Graded Sand, and Silt		1	SS	13		810							0 95 (5)
			2	SS	46									3 90 (7)
			3	SS	50		800							0 91 (9)
			4	SS	92									
			5	SS	55									
	Dense to Very Dense		6	SS	65		790							0 93 (7)
			7	SS	47									
785.9			8	SS	42									
26.5	End of Borehole													

+3, x⁵: Numbers refer to
Sensitivity

20
15 \div 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 4

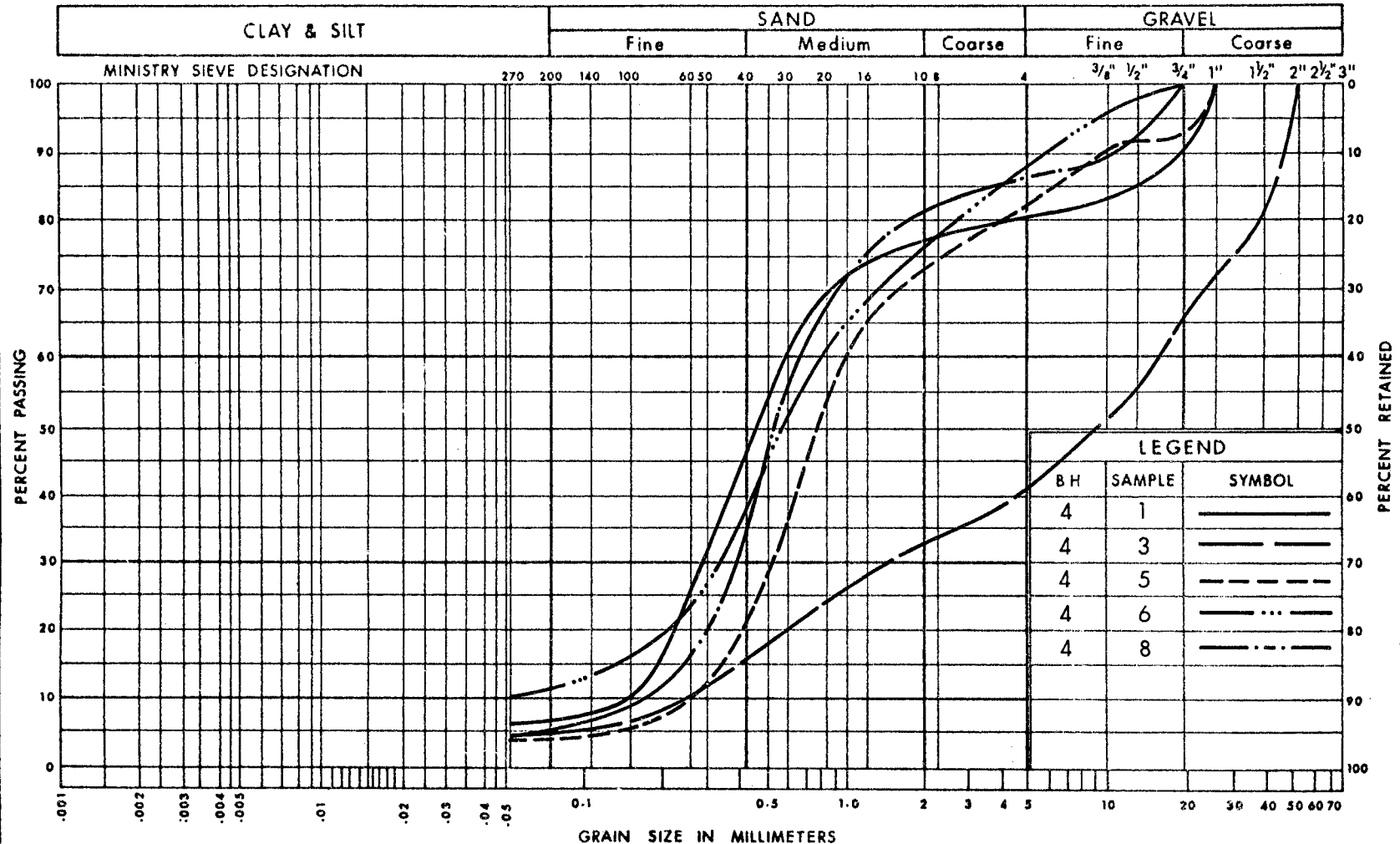
W P 99-75-13 LOCATION Co-ords N 16,206,430; E 954,057 ORIGINATED BY P.J.S.
 DIST 5 HWY 400 BOREHOLE TYPE Hollow Stem Augers and Cone Test COMPILED BY G.P.
 DATUM Geodetic : October 24, 1977 CHECKED BY P.J.S.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	'N' VALUES			20	40	60	80	100				
819.2	Ground Level															GR SA SI CL
0.0	Sand and Gravel, Trace of Silt		1	SS	40		810									19 74 (7)
			2	SS	18											60 34 (6)
			3	SS	34											18 78 (4)
			4	SS	15											13 76 (11)
	Compact to Very Dense		5	SS	122											
			6	SS	100											
			7	SS	100/11"		800									
792.7			8	SS	94											14 80 (6)
26.5	End of Borehole															

+³, x⁵: Numbers refer to
Sensitivity

20
15-0.5 (%) STRAIN AT FAILURE
10

UNIFIED SOIL CLASSIFICATION SYSTEM



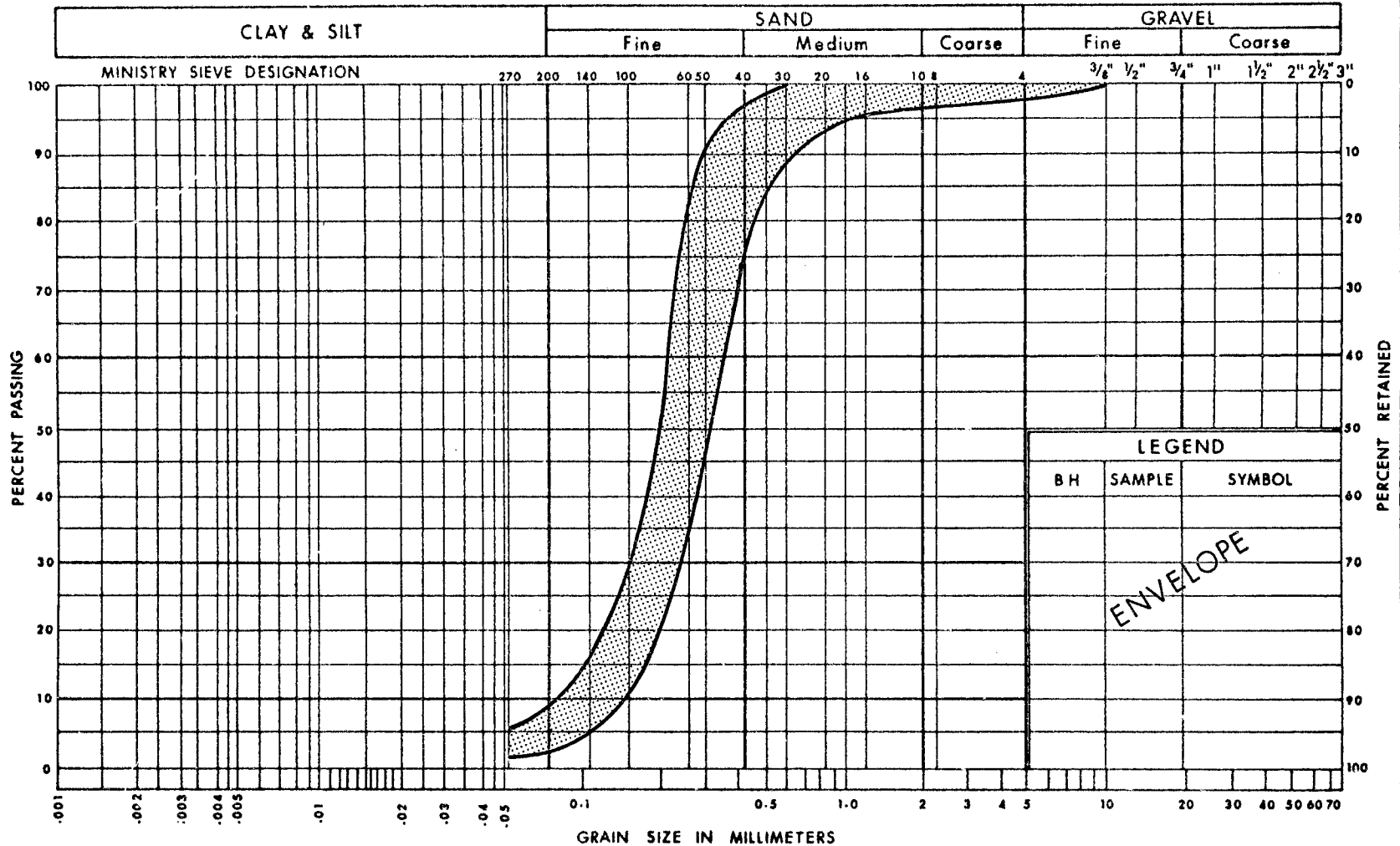
Ministry of
Transportation and
Communications

GRAIN SIZE DISTRIBUTION
SAND & GRAVEL, TRACE OF SILT

FIG No 1

W P 99-75-13

UNIFIED SOIL CLASSIFICATION SYSTEM



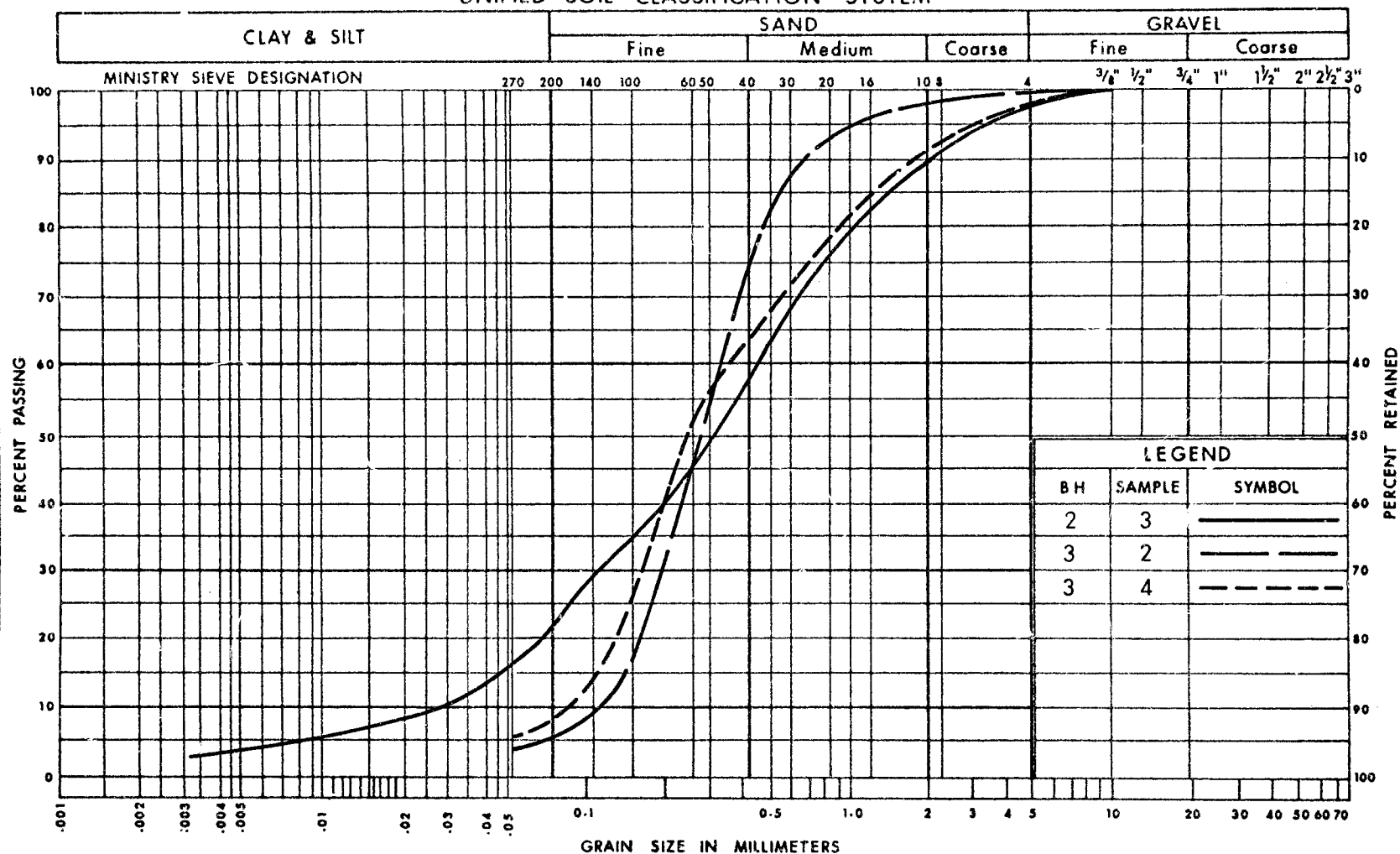
Ministry of
Transportation and
Communications

GRAIN SIZE DISTRIBUTION
FINE UNIFORM SAND

FIG No 2

W P 99-75-13

UNIFIED SOIL CLASSIFICATION SYSTEM

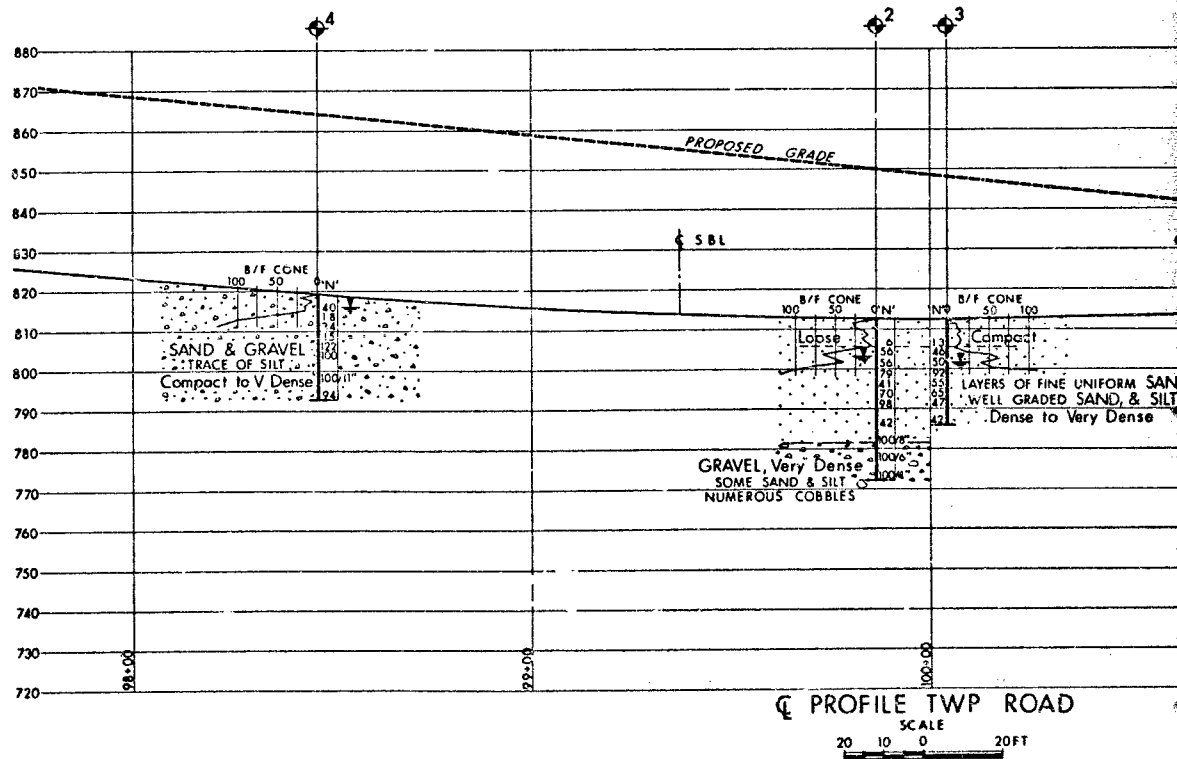
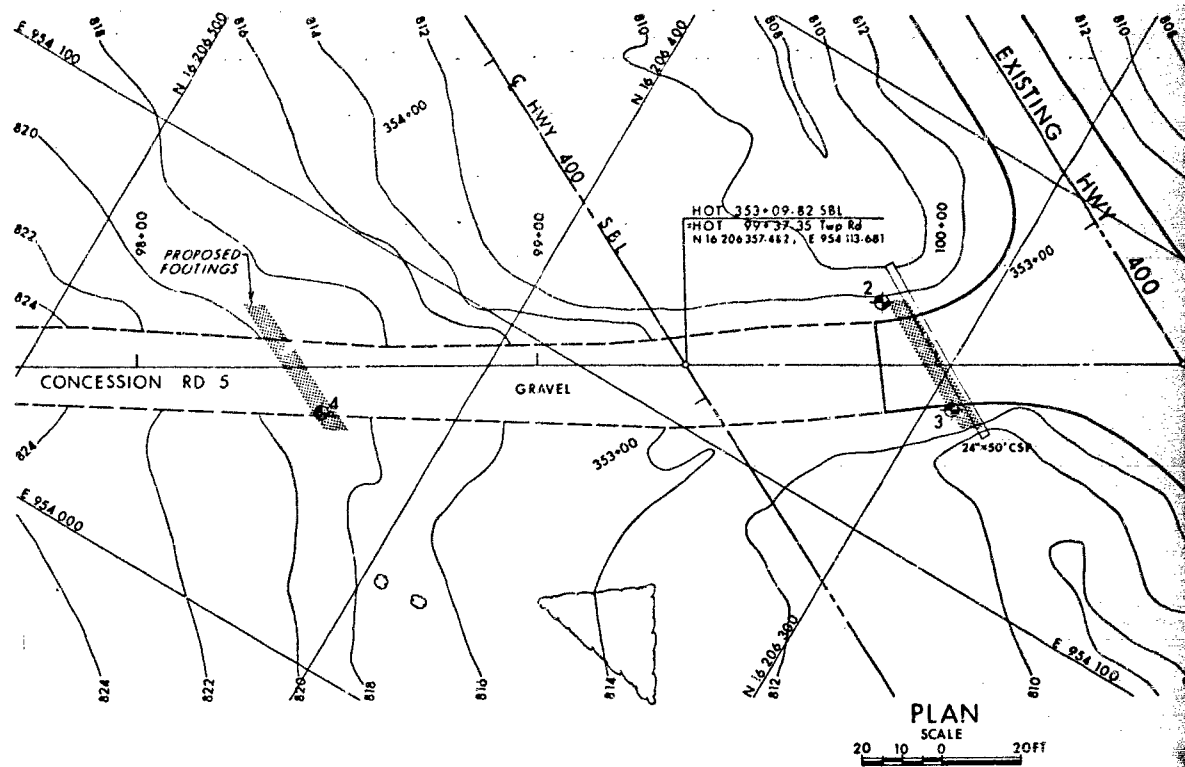


Ministry of
Transportation and
Communications

GRAIN SIZE DISTRIBUTION
WELL GRADED SAND

FIG No 3

W P 99-75-13



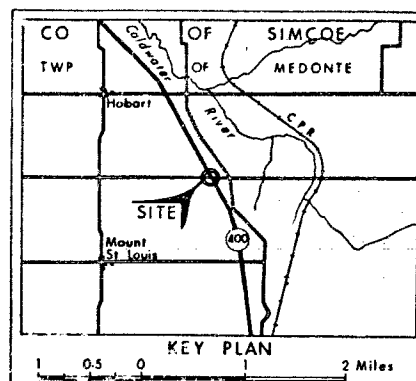
PROFILE TWP ROAD

CONT No
WP No 99-75-13

MEDONTE CON 5 UNDERPASS

SHEET

BORE HOLE LOCATIONS & SOIL STRATA



LEGEND

- Bore Hole
- ⊕ Dynamic Cone Penetration Test (Cone)
- ⊕ Bore Hole & Cone
- 'N' Blows/ft (Std Pen Test 350ft lbs energy)
- CONE Blows/ft (60° Cone, 350ft lbs energy)
- ↓ WL of time of investigation Oct 1977

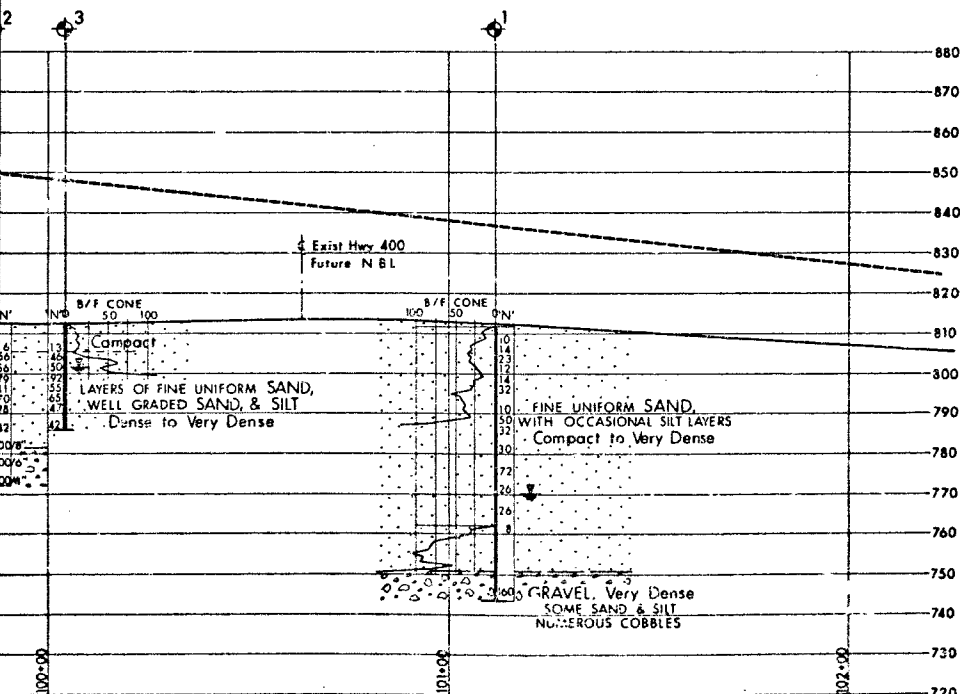
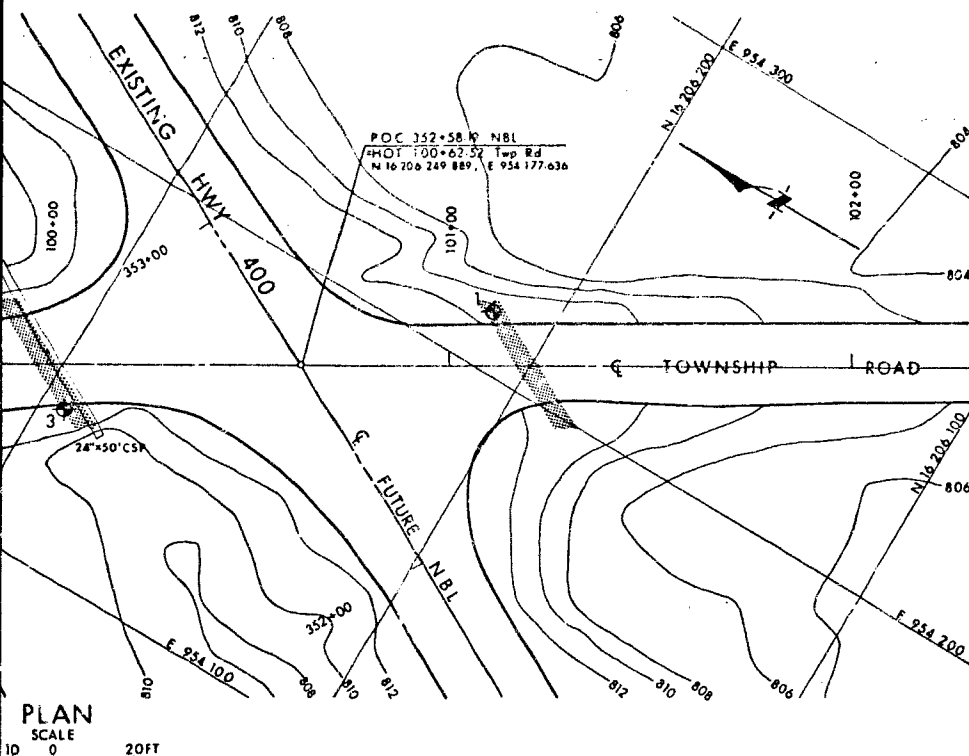
No	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	811.9	16 206 215	954 214
2	812.5	16 206 323	954 152
3	812.4	16 206 294	954 138
4	819.2	16 206 430	954 057

-NOTE-

The boundaries between soil strata have been established only at Bore Hole locations. Between Bore Holes the boundaries are assumed from geological evidence.

REVISIONS	DATE	BY	DESCRIPTION

HWY No 400
SLM: P.J.S. CHECKED: DATE Dec 7, 1977
DRAWN: CHECKED: DATE
DIST 5
SITE 30-359
DWG 997513-A



LE TWP ROAD
SCALE 0 0 20FT



Memorandum

To: Mr. K. G. Selby
Supervising Engineer
Soils Mechanics Section
Cental Building, Downsview

From: Structural Section
Southwestern Region
LONDON

Attention:

Date: 78 08 28

Our File Ref.

In Reply to

Subject: W.P. 99-75-13, New Site No. 30-485
Medonte Concession 5 Underpass
4.7 Miles North of Highway 93
Highway 400
District #5 - Owen Sound

Please be advised that the above work project is being cancelled as it has been decided to close this Concession 5 Road and keep Concession 4 Road open. Therefore, this site has been given a new site number 30-485 in order to file the Foundation Investigation and Design Report.

The old existing site number 30-359 has been retained for Medonte Concession Road 4 Underpass, 3.9 Miles north of Highway 93 and given a new work project number, W.P. 99-75-19. A new foundation investigation request will be issued for this site. An existing Foundation Investigation Report exists, BA 1083 was prepared under W.P. 62-60 for site 30-359 which could be reviewed for the new request.

A. P. Watt, Head
Structural Section

APW:cc

Attach.

c.c. J. Camilleri
J. C. Forster
A. Crowley
J. Anderson
W. Slater (attach.)





Memorandum

To: Mr. K. G. Selby, Supvr. Engr.,
Soil Mechanics Section,
Geotechnical Office,
West Bldg., Downsview.

From: Structural Section,
Southwestern Region,
London.

Attention:

Date: 77 10 06

Our File Ref.

In Reply to

Subject: W.P.99-75-13, Site 30-359
Medonte Concession 5 Underpass
3.9 miles north of Hwy.93
Hwy.400
District 5, Owen Sound

DUE DATE: Nov. 30/77

PROG. YEAR: 1979

Would you kindly arrange to have a Foundation Investigation and Design Report prepared for the above site.

The existing Foundation Investigation Report BA1083 under W.P.62-60 conducted for this site was done at Concession Road 4 along with the design under the drawing number D-4681-1 to 13. This structure site has been moved to Concession Road 5; therefore, another investigation will be required.

Enclosed please find two copies of the bridge site plan E-5520-1 showing the probable footing locations marked in red. I have enclosed two copies of the plate 40 of the Preliminary Design Report W.P.99-75-00 Highway 400 Twinning for your use.

The structure planning field reconnaissance report for subsurface exploration and pictures of the site are enclosed.

A. P. Watt,
Head, Structural Section.

Encls.

c.c. A. Crowley
J. Forster
J. Anderson
J. L. Keen

APW:mam

