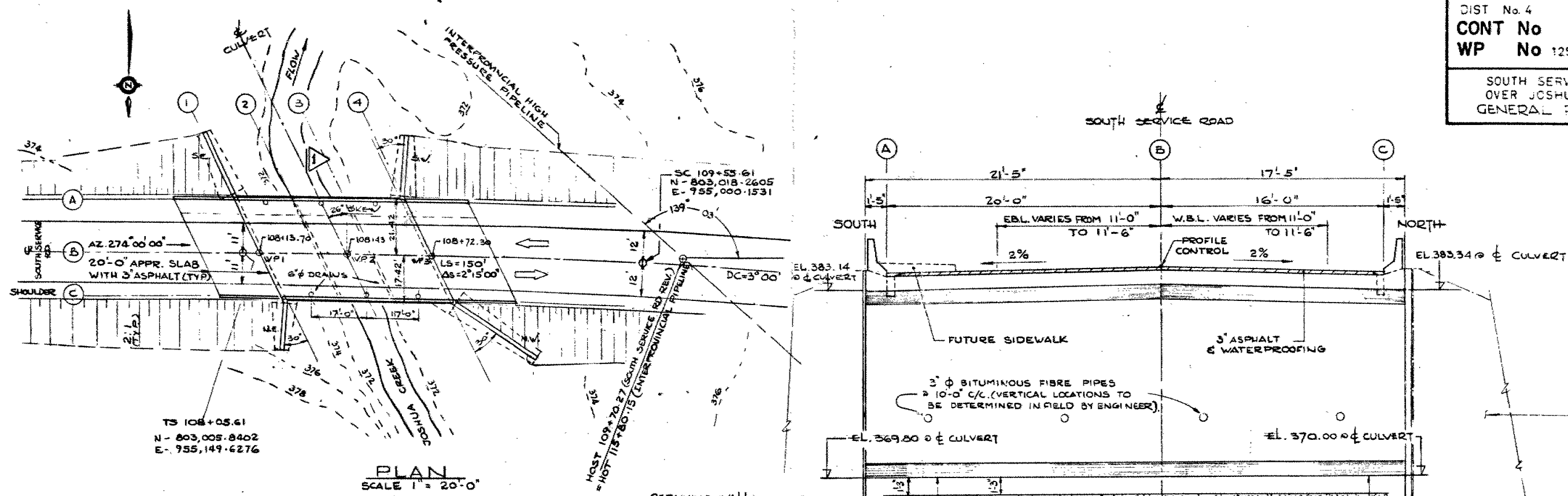
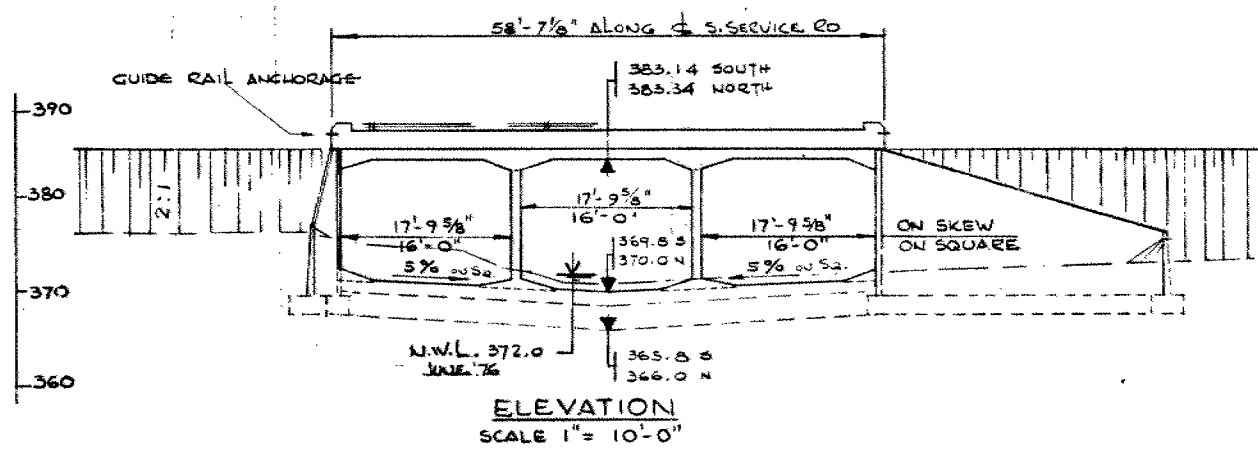


G.I.-30 SEPT. 1976

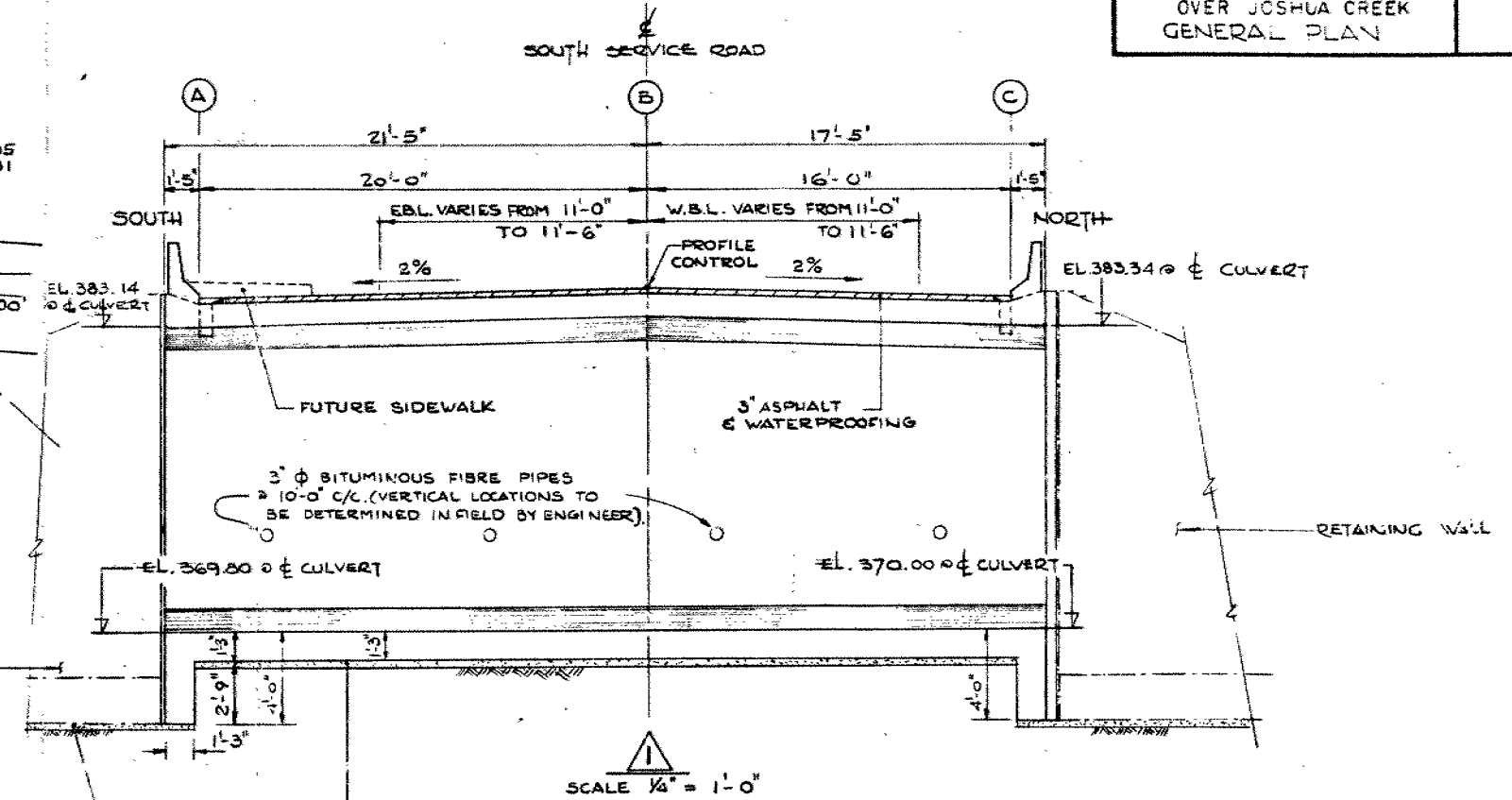
GEOCRES No. 3045-113DIST. 4 REGION           W.P. No. 125-66-19CONT. No. 79-80W. O. No.           STR. SITE No. 10-288HWY. No.           LOCATION South Service Rd. Over  
Joshua CreekNo of PAGES -           =====OVERSIZE DRAWINGS TO BE INCLUDED WITH THIS REPORT.           REMARKS:



SCREED ELEVATIONS (7/8")				
	1	2	3	4
A	383.99	384.12	384.24	384.37
B	384.46	384.58	384.71	384.83
C	384.16	384.31	384.43	384.57



**BENCH MARK**  
EL. 440.81  
BENCH MARK IS LOCATED ON TOP OF NW CORNER OF CONC. PORCH OF BHB W OF FORD DRIVE & E OF QEW 180 FT. RT STA. 109+37 EXISTING FORD DRIVE.



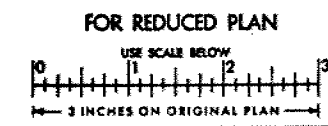
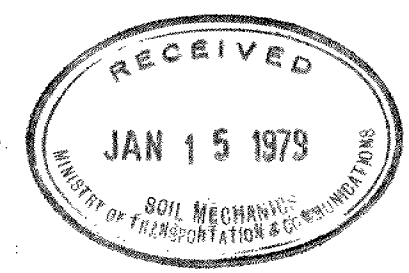
EXCAVATED SHALE BEDROCK SHALL BE COVERED WITH MIN. 3 INCHES OF MASS CONCRETE IMMEDIATELY AFTER THE EXCAVATION UNDER THE FOOTING AND BOTTOM SLAB.

- NOTES**
- CLASS OF CONCRETE: CULVERT, BARRIER WALLS & RET. WALLS 4000 PSI; FOOTINGS 3000 PSI
  - REINFORCING STEEL: GRADE 400
  - CLEAR COVER TO REINFORCING STEEL: 3 IN. EXCEPT AS NOTED
  - COATED BARS HAVE A SUFFIX 'C'
  - FILL SHALL BE PLACED ON BOTH SIDES OF CULVERT SIMULTANEOUSLY.

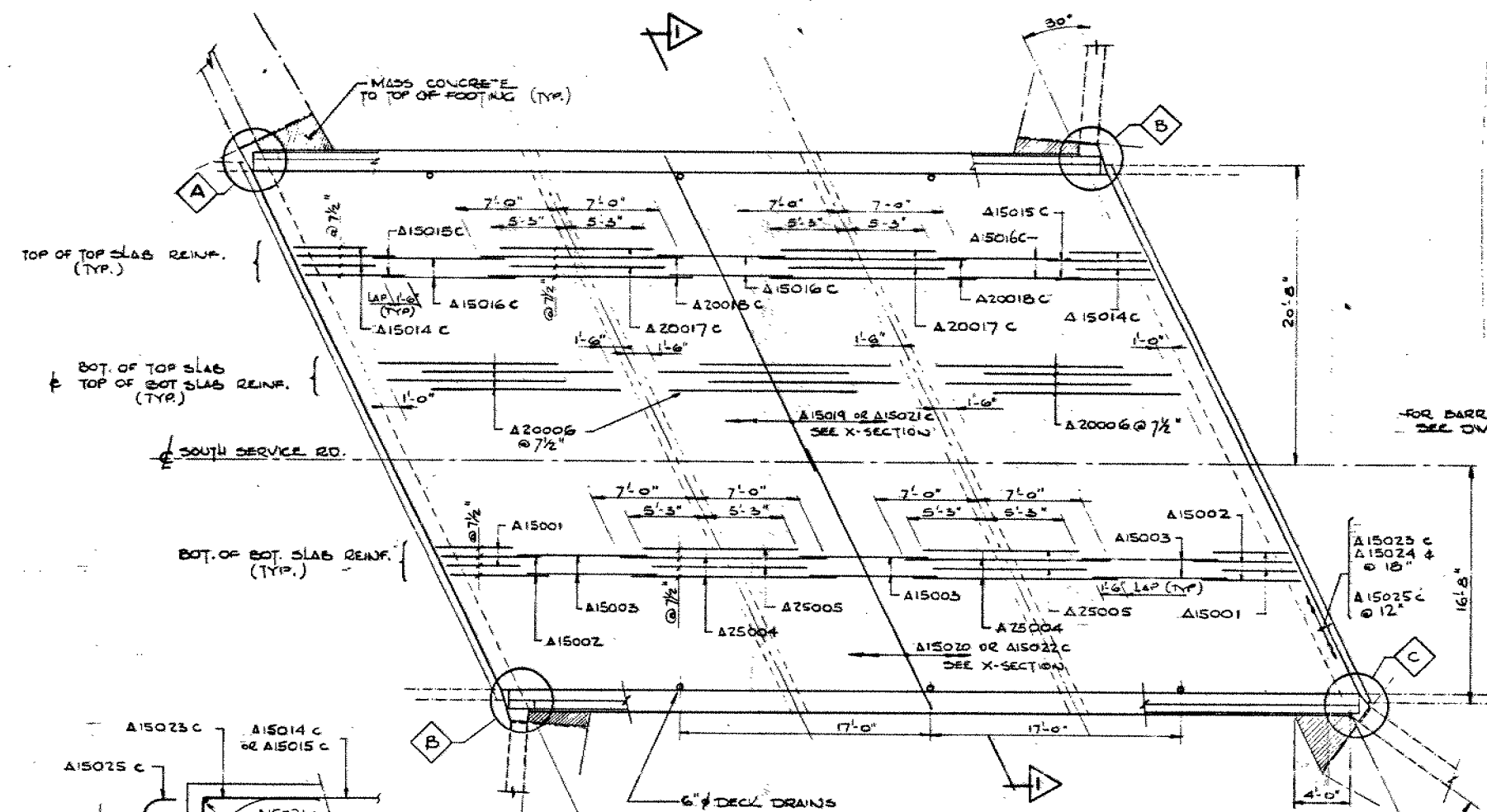
- LIST OF DRAWINGS**
- 10-208-1 GENERAL PLAN
  - 2 BOREHOLE LOCATION & SOIL STRATA
  - 3 CULVERT DETAILS
  - 4 RETAINING WALLS I
  - 5 RETAINING WALLS II
  - 6 BARRIER WALL
  - 7 STEEL RAILING (SINGLE TUBE)
  - 8 20 FT. APPROACH SLAB
  - 9 STANDARD DETAILS
  - 10 AS CONSTRUCTED ELEV. & DIM.

**CONCRETE QUANTITIES FOR LUMP SUM TENDOR ITEMS**

CONCRETE IN CULVERT	328 c.y.
CONCRETE IN BARRIER WALLS	9
CONCRETE IN APPROACH SLABS	49
CONCRETE IN RETAINING WALLS	60

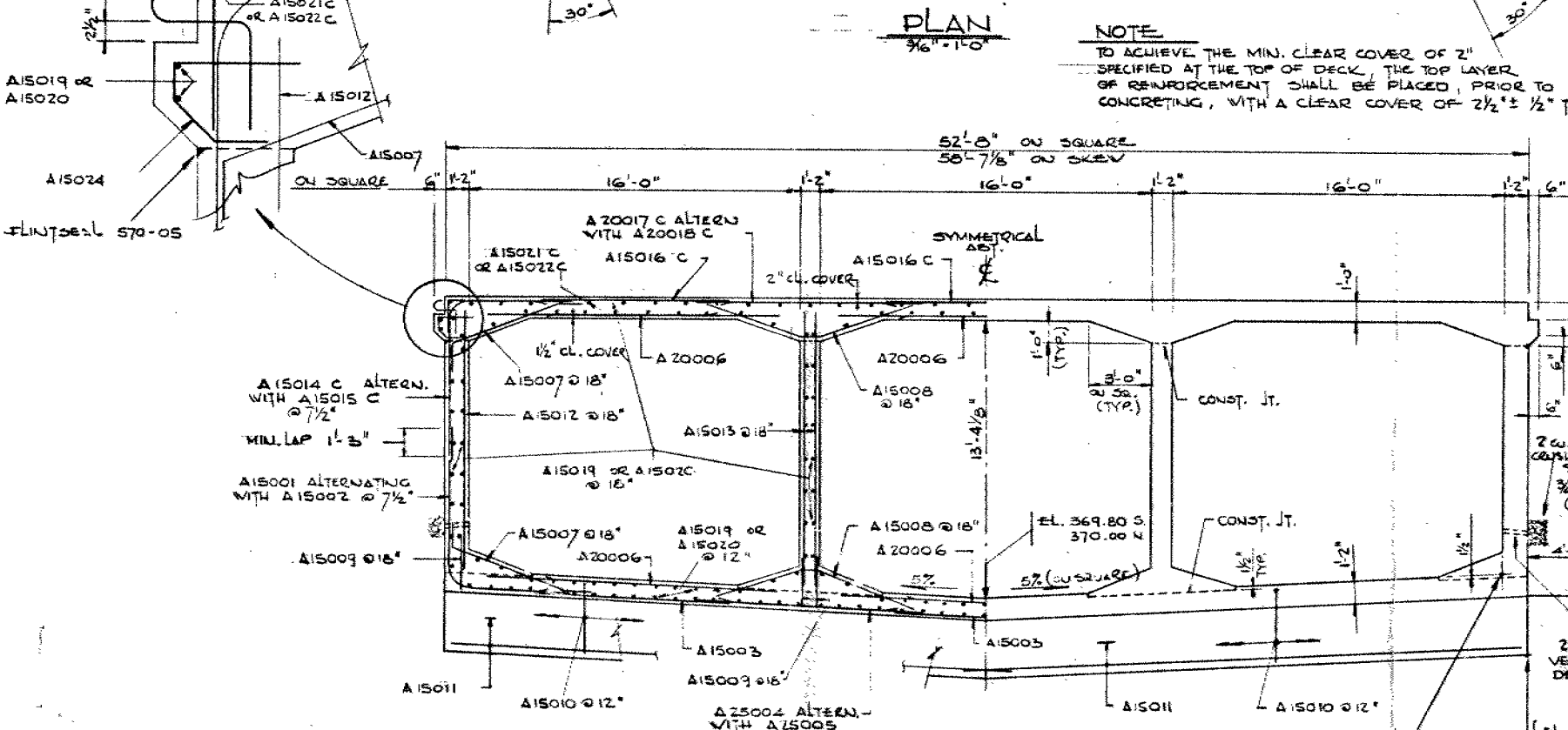


REVISIONS	DATE	BY	DESCRIPTION
DESIGN	1/15/79	WV	CHECKED C. L. D. 10-208-1
DRAWING	1/15/79	E	CHECKED C. L. D. 10-208-1

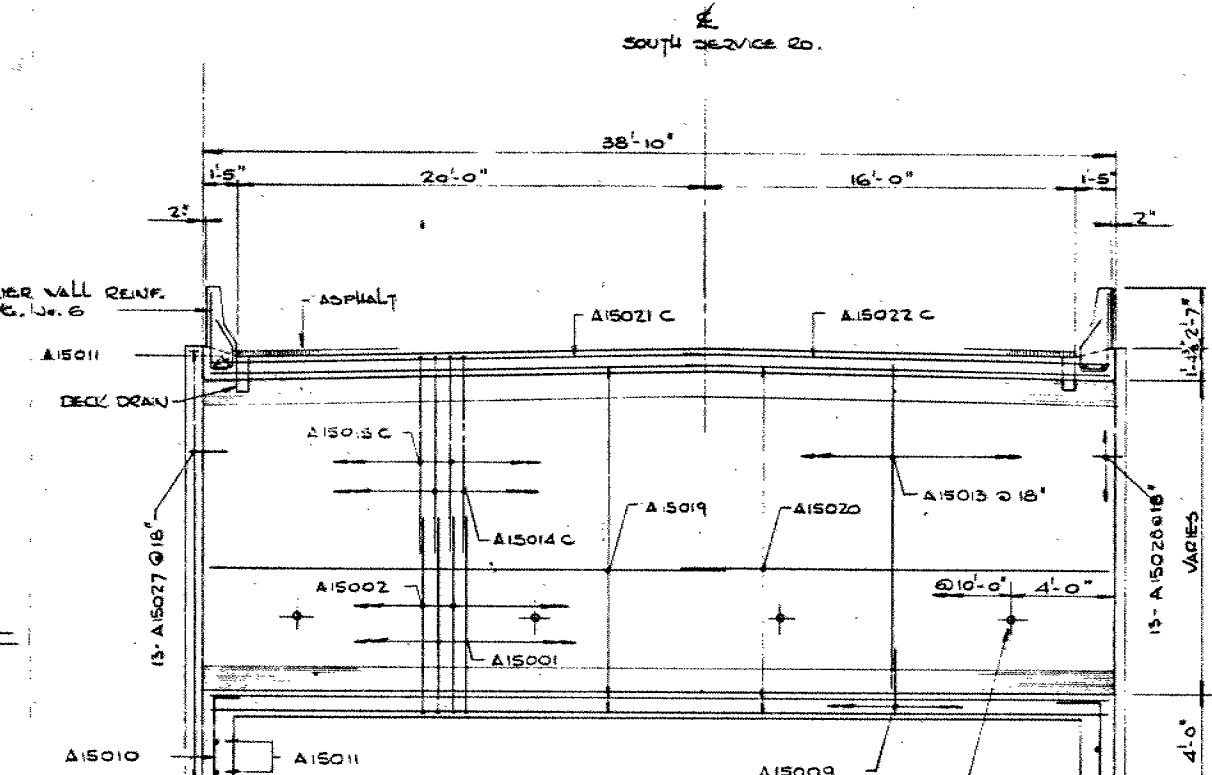


PLAN  
3/8" = 1'-0"

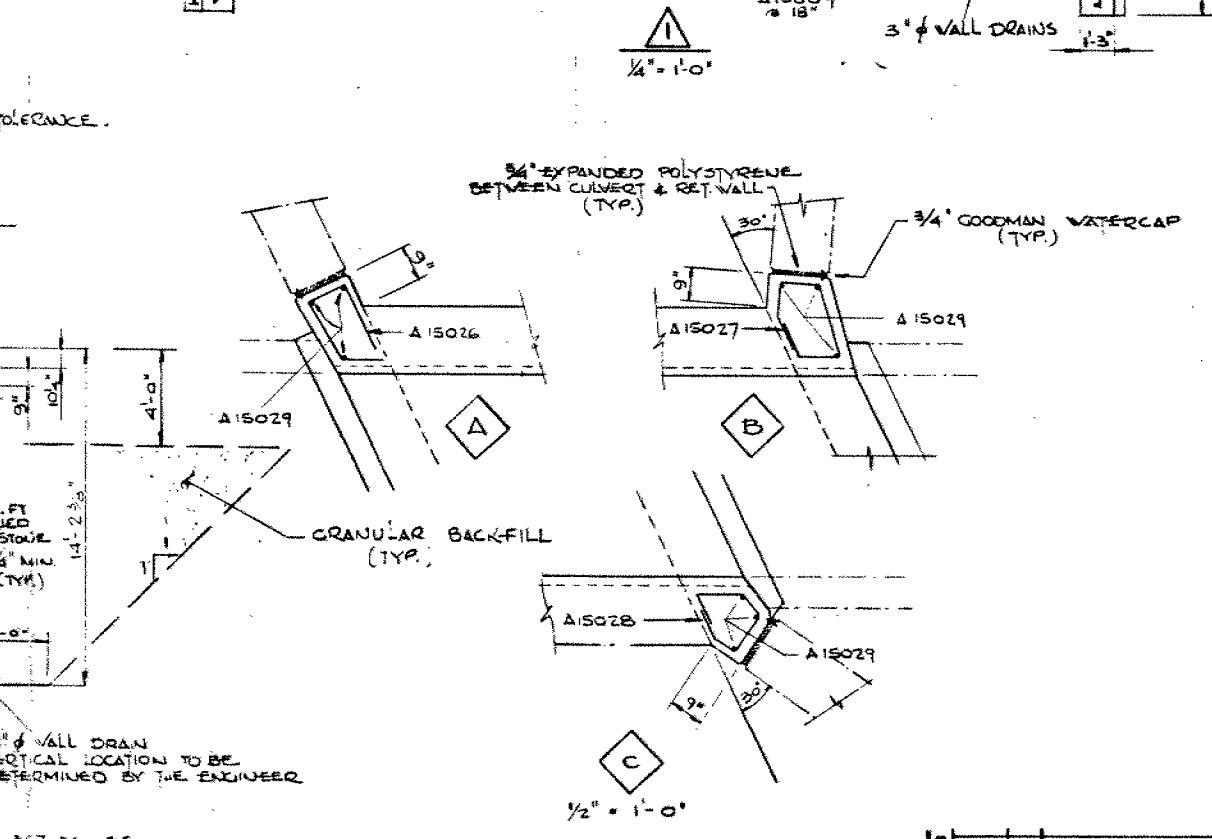
**NOTE**  
TO ACHIEVE THE MIN. CLEAR COVER OF 2" SPECIFIED AT THE TOP OF DECK, THE TOP LAYER OF REINFORCEMENT SHALL BE PLACED PRIOR TO CONCRETING, WITH A CLEAR COVER OF 2 1/2" ± 1/2" TOLERANCE.



TYP. CROSS-SECTION  
1/4" = 1'-0"



1/4" = 1'-0"



FOR REDUCED PLAN  
USE SCALE BELOW



REVISIONS	DATE	BY	DESCRIPTION
DESIGN	N.V.	CHECK	2-C
DRAWING	N.V.	CHECK	2-C
DATE	AUG. 78		
SITE	No 10-268		
DWG	3		

ENGINEERING MATERIALS OFFICE  
SOIL MECHANICS SECTION

WP 125-66-19

DIST 4

HWY 403

STR SITE 10-288

South Service Road to Ford Motor Co.  
Over Joshua Creek

DISTRIBUTION

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J. Anderson ) cover only  
G. Sloan )

Files ↓

SAMPLE DISPOSITION NOTICE		
TYPE	DISCARD AFTER	RECOMM. BY
JARS	78 01 18	M.D.
TUBES		
ROCK CORES	After the removal of test	M.H.

FOUNDATION INVESTIGATION REPORT  
For  
South Service Road to Ford Motor Co.  
Over Joshua Creek  
W.P. 125-66-19, Site 10-288  
Hwy. 403, District 4, Hamilton

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INTRODUCTION

This report contains the results of a foundation investigation carried out at the site of the above mentioned project on November 15, 1977.

The fieldwork consisted of one probe hole (B.H.#3) and three sampled boreholes advanced by means of a continuous flight auger machine equipped with 3¼" hollow stem augers. In addition, diamond drilling techniques were employed to obtain BXL size core of the bedrock. The sampled boreholes ranged in depth from 8.5 to 10 feet below the ground surface. Borehole No.3 was located in the creek bed, where the bedrock is exposed below 6 to 8 inches of water.

SITE DESCRIPTION AND GEOLOGY

The site is located approximately 1½ miles east of Q.E.W. on Joshua Creek in the Town of Oakville, Regional Municipality of Halton. The land immediately adjacent to the site has a gentle rolling topography sloping down to the south. The creek bed has exposed the underlying red Queenston shale. The land forms part of the green park area surrounding the Ford Motor Co. of Oakville office building.

Physiographically the site lies on the southern edge of the region referred to as the "South Slope". This region is a strip of land bounded by the Iroquois Plain on the south and Peel Plain on the north. The region is characterized by glacial till overburden underlain by shale bedrock of Queenston and Dundas Formation of the Upper Ordovician Age.

## SUBSURFACE CONDITIONS

The subsurface conditions at the site were found to be quite uniform. A 3 to 4.5 foot layer of clayey silt is underlain by shale bedrock, except in the creek bed where the bedrock is exposed. A detailed description of the various soil and rock types encountered in each borehole is given in the Record of Borehole Sheets. The estimated stratigraphical profile and sections shown on Drawing No. 125-66-19-A are based upon this information. From ground level downwards the various types encountered are as follows:

### Clayey Silt With Some Sand and Organics (Fill)

Under a 6 inch thick layer of topsoil a cohesive deposit of 3 to 4.5 feet thick consisting of clayey silt with some sand and gravel and intrusions of organics was encountered. The material is mainly an alluvial fill deposit and lies in the flood plain of the creek.

### Bedrock Shale

Underlying the cohesive deposit or immediately below the creek bed the bedrock was cored to a maximum depth of 5 feet. The bedrock can be described as soft, red in colour and fissile, having thin horizontal bedding planes with seams of limestone up to 15 inches thick.

The upper 6 to 12 inches of the bedrock is weathered and the rest moderately fractured. In B.H.1 at a 9 foot depth, a vertical joint fracture of 12 inches was present. A detailed description of the bedrock is given on the Record of Borehole Sheets. The rock quality designation (R.Q.D.) for the cored bedrock is 25% to 35% indicating that the rock quality is generally poor.

### Groundwater

The groundwater level conditions were observed by measuring in the open boreholes during and after the completion of the foundation investigation. The groundwater level was found to be at elevation 370.0, which corresponds to the creek water elevation during the time of the investigation.

## DISCUSSION AND RECOMMENDATIONS

As part of the proposed new complex interchange connecting Q.E.W. to Hwy. 403, a structure will be required to carry South Service Road over Joshua Creek. It is also proposed to realign Joshua Creek at this crossing by moving the creek channel about 25 feet south of the existing creek.

In the vicinity of the proposed structure the existing ground elevation varies from 373.8 to 375.2. The proposed grade of the South Service Road elevation is about 381.0. This will necessitate embankment fills of maximum 10.0 feet.

A single span structure is presently being contemplated.

### Structure Foundations

It is assumed that a single span structure with closed type abutments is considered. In such a case the abutments can be founded on spread footings placed on sound bedrock.

Spread footings placed at about elevation 366.0 or below can be designed for 10 t.s.f. Since the shale is frost susceptible the underside of the footings should be provided with 4 feet of earth cover for frost protection purposes.

### Other Considerations

In order to prevent the softening of the shale bedrock due to weathering, the excavated base should be covered with a minimum of 3 inches thick mass concrete immediately after the excavation.

No dewatering problems are anticipated for the construction of the foundations. The eastern half of the northern abutment footing will be located in the existing creek bed area. It is assumed that the creek water will be rechannelled before the construction of the footings and, therefore, will not present any dewatering problems. Otherwise, any minor seepage or surface runoff into the excavations can be handled by pumping from sumps.

Approaches

The approach fills to the proposed structure will be in the order of maximum 10 feet. No stability problems are anticipated for the proposed approach fills constructed with standard 2:1 slopes.

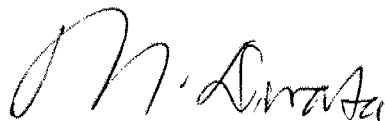
MISCELLANEOUS

The fieldwork was carried out on November 15, 1977 under the supervision of Mr. V. Korlu, Project Engineer, who also prepared this report.

The drilling equipment was owned and operated by D.S.I.L. Drilling Inc., of Toronto.

This report was reviewed by Mr. M. Devata, Supervising Engineer.

  
V. Korlu, P. Eng.  
Project Engineer

  
M. Devata, P. Eng.  
Supervising Engineer

MD/VK/eh  
January, 1978



## APPENDIX

## RECORD OF BOREHOLE No 1

W P 125-66-19 LOCATION Co-ords N 15 802 989 E 955 080 ORIGINATED BY V.K.  
 DIST 4 HWY Q.E.W. BOREHOLE TYPE Hollow Stem Auger and BXL Core COMPILED BY V.K.  
 DATUM Geodetic DATE 15 November 1977 CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W <sub>L</sub>	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40	60	80	100					
373.8	Ground Level																GR SA SI CL
0.0	Clayey Silt, Sand With Gravel and Organics (Fill)		1	SS	37.6		370							10	20	30	39 23 26 12
5.0	----- B -----																
363.8	----- A (Bedrock) -----																
10.0	----- B -----																
	End of Borehole						360										
	Bedrock:																
	A. Shale, Dark Grey Colour Fine Texture, Soft, - Fissile.																
	B. Limestone, Light Grey Colour, Med.Texture, Hard, Vertical Joint Fracture																
	R.Q.D. 25%																

+3, x5: Numbers refer to Sensitivity

20  
15-5 (%) STRAIN AT FAILURE  
10

# RECORD OF BOREHOLE No 2

W P 125-66-19 LOCATION Co-ords N 15 803 034 E 955 074 ORIGINATED BY V.K.  
DIST 4 HWY Q.E.W. BOREHOLE TYPE Hollow Stem Auger and BXL Core COMPILED BY V.K.  
DATUM Geodetic DATE 15 November 1977 CHECKED BY J.F.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					UNIT WEIGHT $\gamma$	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40	60	80	100		
374.4	Ground Level													
0.0	Clayey Silt, Sand, Some Gravel & Organics (Fill)		1	AS	-									14 31 38 17
370.9	Weathered													
3.5	A (Bedrock)		2	BXL	90%									
365.9	A													
8.5	End of Borehole													
	Bedrock:													
A.	Shale, Dark Grey Colour, Fine Texture, soft, fissile.													
B.	Limestone, Light Grey Colour, Med. Texture, Hard. Vertical Joint Fracture 6.5' to 7'.													
	R.Q.D. 35%													

+3, x5 : Numbers refer to Sensitivity

20  
15-5 (%) STRAIN AT FAILURE  
10

## RECORD OF BOREHOLE No 3

W P 125-66-19 LOCATION Co-ords N 15 802 986 E 955 128 ORIGINATED BY V.K.  
DIST 4 HWY Q.E.W. BOREHOLE TYPE Probe Hole COMPILED BY V.K.  
DATUM Geodetic DATE 15 November 1977 CHECKED BY el.

[illegible]

+3, x5 : Numbers refer to Sensitivity

20  
15  $\phi$  5 (%) STRAIN AT FAILURE  
10

# RECORD OF BOREHOLE No 4

W P 125-66-19 LOCATION Co-ords N 15 803 030 E 955 122 ORIGINATED BY  
 DIST 4 HWY Q.E.W. BOREHOLE TYPE Hollow Stem Auger and BXL Core COMPILED BY  
 DATUM Geodetic DATE 15 November 1977 CHECKED BY

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT W <sub>p</sub>	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W <sub>L</sub>	UNIT WEIGHT Y	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	'N' VALUES			20	40	60	80	100					
375.2	Ground Level																
0.0	Clayey Silt, Sand and Gravel and Some Organics (Fill)		1	SS	4/6"		370-										34 38 16 12
5.0	Weathered																
366.2	A (Bedrock)		2	BXL	75%												
9.0	End of Borehole																
	Bedrock:						360-										
A.	Shale, Red Brown Colour, Fine Texture, Soft, Fissile.																
B.	Limestone, Light Grey Colour, Med. Hard. R.Q.D. 35%																

+3, x5: Numbers refer to Sensitivity

20  
15 5 (%) STRAIN AT FAILURE  
10

## EXPLANATION OF TERMS USED IN REPORT

**'N' VALUE:** AN INDICATOR OF SUBSOIL QUALITY. IT IS OBTAINED FROM THE STANDARD PENETRATION TEST (CSA STD. A119.1). SPT 'N' VALUE IS THE NUMBER OF BLOWS REQUIRED TO CAUSE A STANDARD 2 INCH O.D. SPLIT-BARREL SAMPLER TO PENETRATE 12 INCHES INTO UNDISTURBED GROUND IN A BOREHOLE WHEN DRIVEN BY A HAMMER WEIGHING 140 POUNDS, FALLING FREELY A DISTANCE OF 30 INCHES. FOR PENETRATIONS OF LESS THAN 12 INCHES 'N' VALUES ARE INDICATED AS THE NUMBER OF BLOWS FOR THE PENETRATION ACHIEVED. 'N' VALUES CORRECTED FOR OVERBURDEN PRESSURE ARE DENOTED THUS  $N_c$ .

**DYNAMIC CONE PENETRATION TEST (CSA STD. A119.3):** CONTINUOUS PENETRATION OF A CONICAL STEEL POINT (2" O.D. 60 CONE ANGLE) DRIVEN BY 350 FT-LB IMPACTS ON "A" SIZE DRILL RODS. THE RESISTANCE TO CONE PENETRATION IS MEASURED AS THE NUMBER OF BLOWS FOR EACH 12 INCH ADVANCE OF THE CONICAL POINT INTO THE UNDISTURBED GROUND.

**SOIL QUALITY:** SOILS ARE DESCRIBED BY THEIR COMPOSITION AND CONSISTENCY OR DENSITY.

**CONSISTENCY:** COHESIVE SOILS ARE DESCRIBED ON THE BASIS OF THEIR UNDRAINED SHEAR STRENGTH AS FOLLOWS:

$S_u$ (PSF)	0 - 250	250 - 500	500 - 1000	1000 - 2000	2000 - 4000	> 4000
	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD

**DENSENESS:** COHESIONLESS SOILS ARE DESCRIBED ON THE BASIS OF SPT 'N' VALUES AS FOLLOWS:

'N' (BLOW/FT)	0 - 5	5 - 10	10 - 30	30 - 50	> 50
	VERY LOOSE	LOOSE	COMPACT	DENSE	VERY DENSE

**ROCK QUALITY:** ROCKS ARE DESCRIBED BY THEIR COMPOSITION AND STRUCTURAL FEATURES AND/OR STRENGTH.

**RECOVERY:** SUM OF ALL RECOVERED ROCK CORE PIECES FROM A CORING RUN EXPRESSED AS A PERCENT OF THE TOTAL LENGTH DRILLED IN THAT CORING RUN.

**MODIFIED RECOVERY:** SUM OF THOSE NATURALLY FRACTURED CORE PIECES, 4"+ IN LENGTH EXPRESSED AS A PERCENT OF THE LENGTH OF THE CORING RUN. THE ROCK QUALITY DESIGNATION (RQD), FOR MODIFIED RECOVERY, IS:

RQD (%)	0 - 25	25 - 50	50 - 75	75 - 90	90 - 100
	VERY POOR	POOR	FAIR	GOOD	EXCELLENT

**JOINTING AND BEDDING:**

SPACING	2"	2" - 12"	1' - 3'	3' - 10'	> 10'
JOINTING	VERY CLOSE	CLOSE	MOD. CLOSE	WIDE	VERY WIDE
BEDDING	VERY THIN	THIN	MEDIUM	THICK	VERY THICK

### ABBREVIATIONS & SYMBOLS




#### LABORATORY TESTING

TRIAXIAL TESTS ARE DESCRIBED IN TERMS OF WHETHER THEY ARE CONSOLIDATED (C) OR NOT (U) ISOTROPICALLY (I) OR NOT (A) AND SHEARED DRAINED (D) OR UNDRAINED (U) WITH PORE PRESSURE MEASUREMENTS (BAR OVER SYMBOLS) EG.  $CUU$  = CONSOLIDATED ISOTROPIC UNDRAINED TRIAXIAL WITH PORE PRESSURE MEASUREMENT UNLESS OTHERWISE SPECIFIED IN REPORT ALL TESTS ARE IN COMPRESSION

#### FIELD SAMPLING

S S SPLIT SPOON  
W S WASH SAMPLE  
S T SLOTTED TUBE SAMPLE  
B S BLOCK SAMPLE  
C S CHUNK SAMPLE  
T W THINWALL OPEN  
T P THINWALL PISTON  
O S OSTERBERG SAMPLE  
F S FOIL SAMPLE  
R C ROCK CORE  
P H T.W. ADVANCED HYDRAULICALLY  
P M T.W. ADVANCED MANUALLY

#### EARTH PRESSURE TERMS

$\mu$  COEFFICIENT OF FRICTION  
 $\delta$  ANGLE OF WALL FRICTION  
 $k_o$  COEFFICIENT OF EARTH PRESSURE AT REST  
 $k_A$  COEFFICIENT OF ACTIVE EARTH PRESSURE  
 $k_P$  COEFFICIENT OF PASSIVE EARTH PRESSURE  
 $i$  ANGLE OF INCLINATION OF SURCHARGE   
 $w$  SLOPE ANGLE-BACKFACE OF WALL   
 $\beta$  ANGLE OF SLOPE   
 $N_c, N_q, N_\gamma$  BEARING CAPACITY FACTORS  
 $D_f$  DEPTH OF FOOTING  
 $B, L$  FOOTING DIMENSIONS

#### INDEX PROPERTIES

$\gamma$  UNIT WEIGHT OF SOIL (BULK DENSITY)  
 $\gamma_w$  UNIT WEIGHT OF WATER  
 $\gamma_d$  UNIT DRY WEIGHT OF SOIL (DRY DENSITY)  
 $\gamma'$  UNIT WEIGHT OF SUBMERGED SOIL  
 $G_s$  SPECIFIC GRAVITY OF SOLIDS  
 $e$  VOIDS RATIO  
 $e_o$  INITIAL VOIDS RATIO  
 $e_{max}$   $e$  IN LOOSEST STATE  
 $e_{min}$   $e$  IN DENSEST STATE  
 $D_r$  RELATIVE DENSITY =  $\frac{e_{max} - e}{e_{max} - e_{min}}$   
 $n$  POROSITY  
 $w$  WATER CONTENT  
 $w_L$  LIQUID LIMIT  
 $w_P$  PLASTIC LIMIT  
 $w_S$  SHRINKAGE LIMIT  
 $I_P$  PLASTICITY INDEX =  $w_L - w_P$   
 $I_L$  LIQUIDITY INDEX =  $\frac{w - w_P}{p}$   
 $I_c$  CONSISTENCY INDEX =  $\frac{w_L - w}{I_P}$   
 $A_c$  ACTIVITY =  $\frac{I_P \text{ of soil}}{I_P \text{ of } 2\mu m \text{ Soil Fraction}}$   
 $Om$  ORGANIC MATTER CONTENT  
 $S_r$  DEGREE OF SATURATION  
 $S$  SENSITIVITY =  $\frac{S_u(\text{undisturbed})}{S_u(\text{remoulded})}$

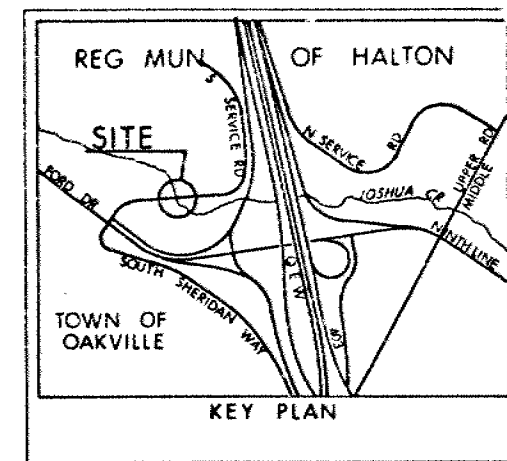
#### STRENGTH PARAMETERS

$\phi$  ANGLE OF SHEARING RESISTANCE  
 $\tau_f$  PEAK SHEAR STRENGTH  
 $\tau_R$  RESIDUAL SHEAR STRENGTH  
 $c$  COHESION INTERCEPT  
 $\sigma_1, \sigma_2, \sigma_3$  NORMAL PRINCIPAL STRESSES  
 $u$  PORE WATER PRESSURE  
 $u_e$  EXCESS  $u$   
 $r_u$  PORE PRESSURE RATIO  
 $q_u$  UNCONFINED COMPRESSIVE STRENGTH  
 $s_u$  UNDRAINED SHEAR STRENGTH  
 $\epsilon$  LINEAR STRAIN  
 $\gamma$  SHEAR STRAIN  
 $\nu$  POISSON'S RATIO  
 $E$  MODULUS OF ELASTICITY  
 $G$  MODULUS OF SHEAR DEFORMATION  
 $k_s$  MODULUS OF SUBGRADE REACTION  
 $m, n$  STABILITY COEFFICIENTS  
 $A, B$  PORE PRESSURE COEFFICIENTS

**NOTE:** EFFECTIVE STRESS PARAMETERS ARE DENOTED BY USE OF APOSTROPHE ABOVE THE SYMBOL, THUS:  
 $\phi'$  = EFFECTIVE ANGLE OF SHEARING RESISTANCE;  
 $\sigma'$  = EFFECTIVE NORMAL STRESS

#### HYDRAULIC TERMS

$h$  HYDRAULIC HEAD OR POTENTIAL  
 $q$  RATE OF DISCHARGE  
 $v$  VELOCITY OF FLOW  
 $i$  HYDRAULIC GRADIENT  
 $j$  SEEPAGE FORCE PER UNIT VOLUME  
 $\eta$  COEFFICIENT OF VISCOSITY  
 $k$  COEFFICIENT OF HYDRAULIC CONDUCTIVITY  
 $k_h$   $k$  IN HORIZONTAL DIRECTION  
 $k_v$   $k$  IN VERTICAL DIRECTION  
 $m_v$  COEFFICIENT OF VOLUME CHANGE  
 $c_v$  COEFFICIENT OF CONSOLIDATION  
 $C_c$  COMPRESSION INDEX  
 $C_r$  RECOMPRESSION INDEX  
 $d$  DRAINAGE PATH DISTANCE  
 $T_v$  TIME FACTOR  
 $U$  DEGREE OF CONSOLIDATION  
 $O_r$  OVERCONSOLIDATION RATIO (OCR)



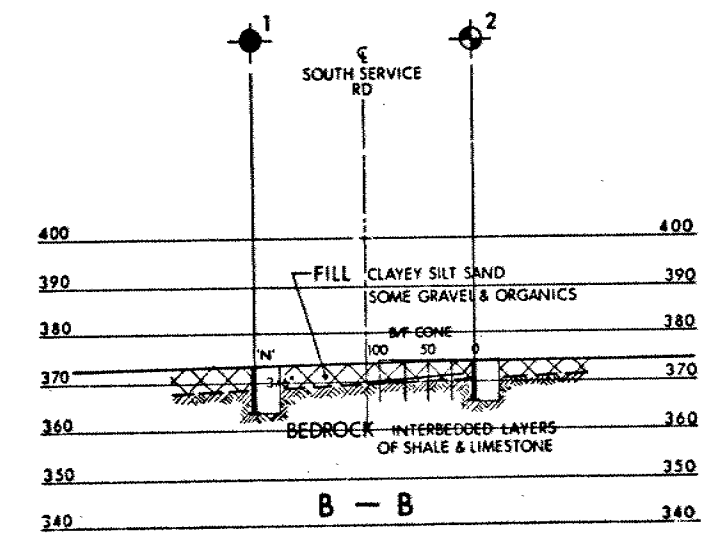
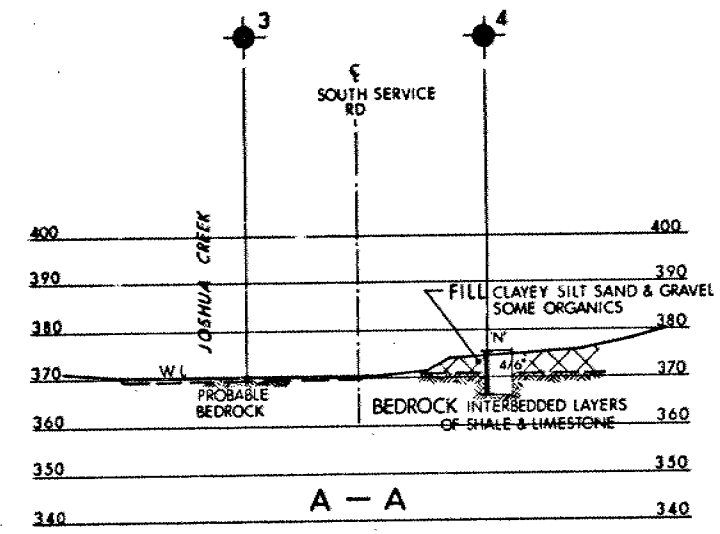
LEGEND

- Bore Hole
- Dynamic Cone Penetration Test (Cone)
- Bore Hole & Cone
- 'N' Blows/ft (Std Pen Test 350 ft lbs energy)
- CONE Blows/ft (60" Cone, 350 ft lbs energy)
- WL at time of investigation

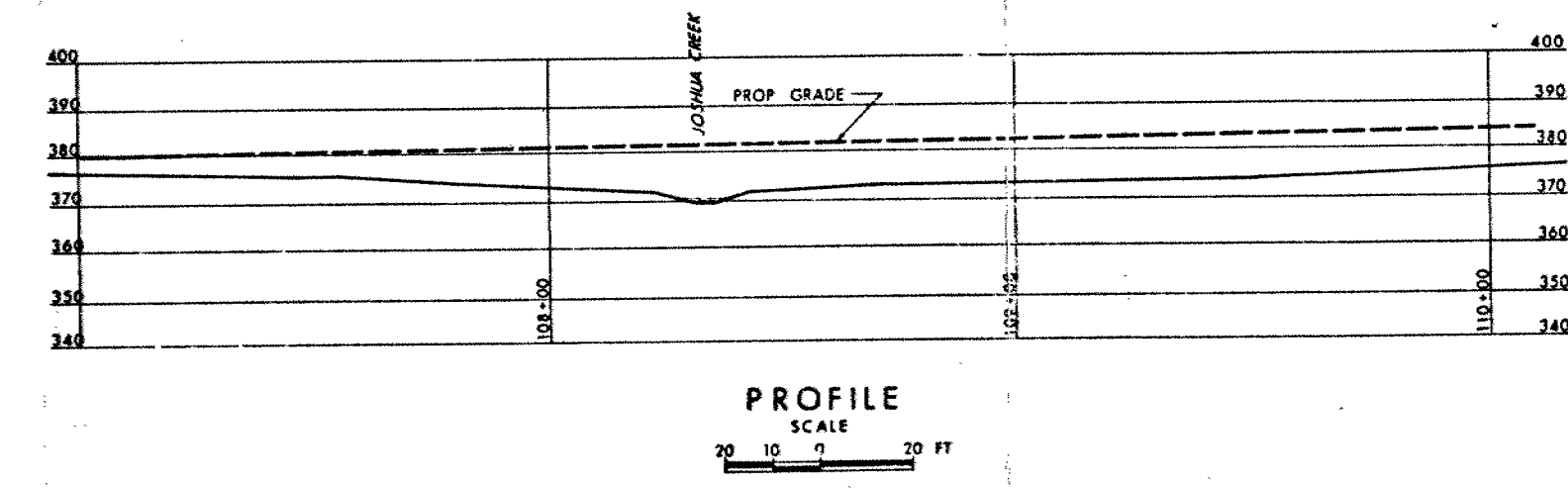
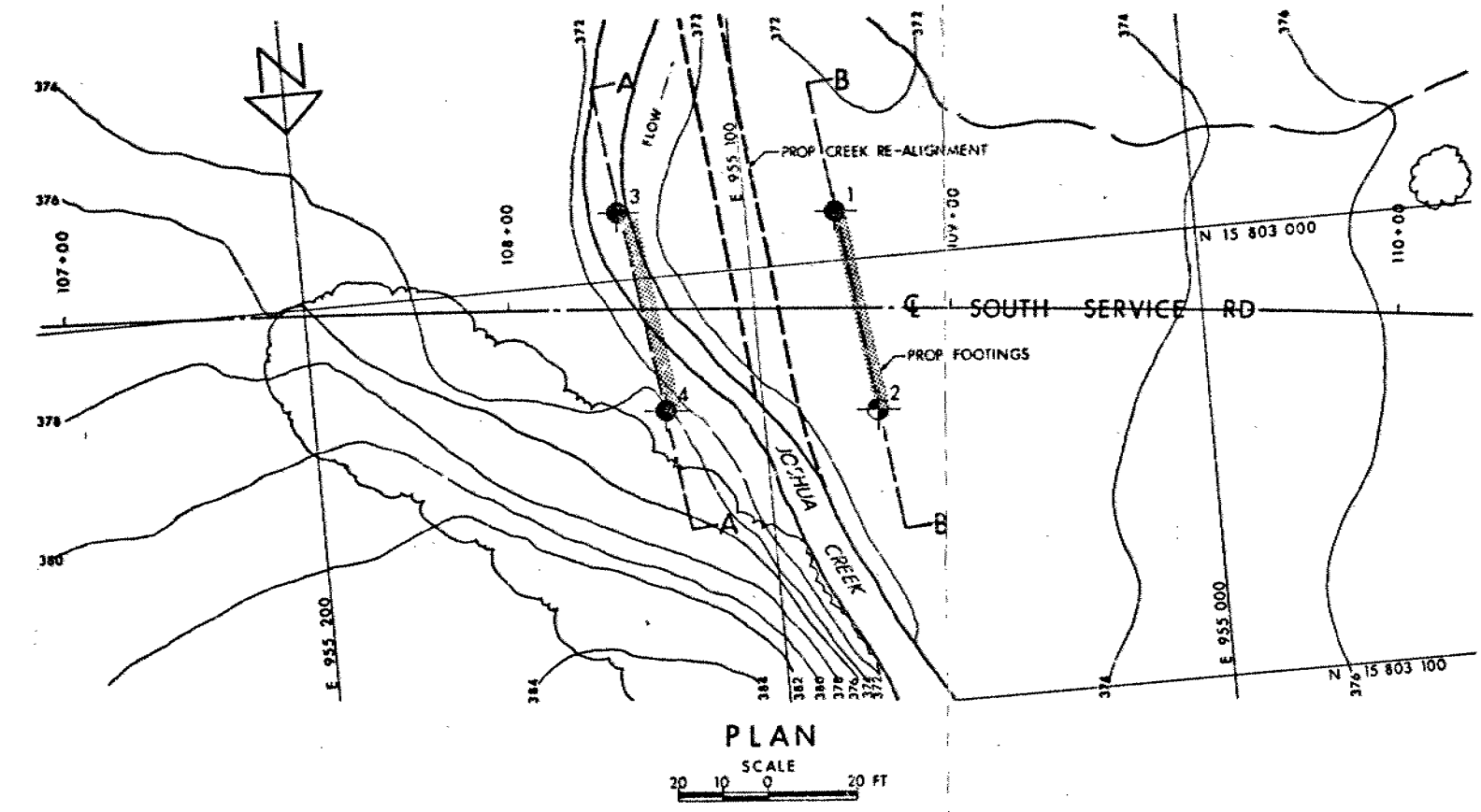
No	ELEVATION	CO-ORDINATES	
		NORTH	EAST
1	373.8	15 802 989	955 080
2	374.4	15 803 034	955 074
3	370.3	15 802 986	955 128
4	375.2	15 803 030	955 122

**-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		DESCRIPTION
DATE	BY	



SECTIONS  
SCALE  
20 10 0 20 FT



PROFILE  
SCALE  
20 10 0 20 FT

Mr. C.S. Grebski  
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78 08 28

Re: South Service Road Over Joshua Creek  
W.P. 125-66-19, Site 10-288  
District 4, Hamilton

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We have reviewed the Preliminary Design Drawing (10-288-P1) for the above mentioned structure. The drawing indicates that a three-cell box culvert with long wingwalls will be used to carry South Service Road over Joshua Creek. The design of the structure foundations and the approach fills as shown in the drawing is found to be satisfactory. However, since bedrock in this area appears to be sloping down in a southerly direction, mass concrete may be required to bring the footings of the south wingwalls to the proposed founding levels.

B. Ly  
Senior Engineer

BL/gs

cc: Files ✓