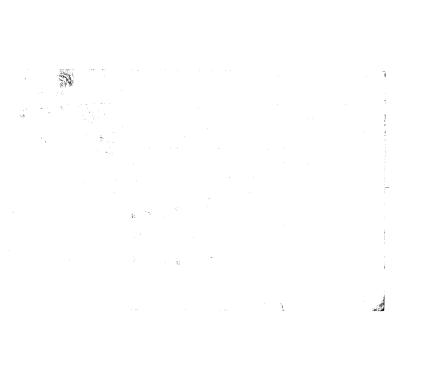
Name of Consultant BRERETT CARBO WITHERS & ASSOC  Name of Drilling Contractor H.C. NUTTING  Contents of File  Date of Report No. of Tracings  Date Received Filed with Year  Remarks	762 Job. No. 00 553 ar Changes	00070	County Bridge No. Section Location  FICH IN KLAI  FICH IN	0. 1/2. (0.00)
Name of Drilling Contractor H. C. Native  Contents of File  Date of Report No. of Tracings  Date Received Filed with Year	<u>co</u>	NSULTANT PE	ROJECT	
Name of Drilling Contractor #. C. NWTING  Contents of File  Date of Report No. of Tracings  Date Received Filed with Year				
Name of Drilling Contractor #. C. NWTING  Contents of File  Date of Report No. of Tracings  Date Received Filed with Year	Nome of Consultant BAA	PRETT CARRO	WitHERS & ASSO	ا ا
Date of Report No. of Tracings Date Received Filed with Year	Name of Drilling Contractor	H.C. NUTTI	NG	
Date of ReportNo. of Tracings Date ReceivedFiled with Year				
Date of Report No. of Tracings Date Received Filed with Year				
Date of Report No. of Tracings  Date Received Filed with Year	<i>P</i> .			
	Date of Report	No. of Trac		
	Date Received	Filed with	Year	



REPORT OF FOUNDATION INVESTIGATION INTERSTATE 71
BRIDGE NO. FRA-1-0310 R & L
SR-1 (I-71) OVER STATE ROUTE NO. 3
FRANKLIN COUNTY, OHIO
1962

BARRETT, CARGO, WITHERS & ASSOCIATES, LTD.
CONSULTING ENGINEERS



AUG 24 1582

BARBETT CAROL WITHERE A ASSOCIATE.

CONTINUE CONTINUE CALLACTERS

CHILLICOTTES, CHIC

# REPORT OF FOUNDATION INVESTIGATION

INTERSTATE 71

BRIDGE NO. FRA-1-0310 R & L

SR-1 (I-71) OVER STATE ROUTE NO. 3

FRANKLIN COUNTY, OHIO

BARRETT, CARGO, WITHERS & ASSOCIATES, LTD. CONSULTING ENGINEERS

FOUNDATION INVESTIGATION BY

THE H. C. NUTTING COMPANY CINCINNATI, OHIO

# THE H.C. NUTTING COMPANY

MEMBER OF

AMERICAN SOCIETY OF CIVIL ENGINEERS

AMERICAN SOCIETY OF TESTING MATERIALS

AMERICAN CONCRETE INSTITUTE

AMERICAN WATERWORKS ASSOCIATION

AMERICAN PUBLIC WORKS ASSOCIATION

ANTIONAL SOCIETY OF PROFESSIONAL ENGINEERS

ENGINEERS AND CHEMISTS

4120 AIRPORT ROAD
GINGINNATI 26. OHIO

B-16814-ams Order No. 1770.8

August 22, 1962

Barrett, Cargo, Withers & Assoc., Ltd. Post Office Box 186 Chillicothe, Ohio

Attention: Mr. Wm. I. Cargo

Re: Foundation Investigation Interstate 71 Bridge No. FRA-1-0310 R & L Interstate Route 71 (SR-1) Over State Route 3

#### Gentlemen:

Submitted herewith is the foundation investigation report for Bridge No. FRA-1-0310 R & L, which will carry the proposed Interstate Route 71 over State Route No. 3 in Franklin County, Ohio. This report includes a summary of all laboratory test data, final laboratory logs and the results of our foundation analysis.

This work was accomplished in accordance with an agreement between Barrett, Cargo, Withers & Assoc., Ltd. and The H. C. Nutting Company dated March 20, 1962. This agreement covers the field and laboratory work on a reimbursable basis for the Ohio Department of Highways.

In addition, in accordance with your request, we have performed a foundation analysis to satisfy the requirements of Section IV-3, State of Ohio Department of Highway, "Specification for Subsurface Investigation" dated April 1, 1959, revised April 1, 1960.

Respectfully submitted,

THE H. C. NUTTING COMPANY

90118 S

C. R. Lennertz, Chief Engineer

George J. Thelen Assistant Engineer

# TABLE OF CONTENTS

		Page No.
ITEM I	INTRODUCTION	1
ITEM II	DESCRIPTION OF SITE	1
ITEM III	FIELD EXPLORATIONS	2
ITEM IV	LABORATORY TESTS	2
ITEM V	SUMMARY OF SUBSURFACE CONDITIONS	3
ITEM VI	DESIGN ANALYSIS	5
ITEM VII	RECOMMENDATIONS	7
ITEM VIII	CONSTRUCTION PROBLEMS	8
ITEM IX	APPENDIX I	
	Plate I Location of Borings Plate II Data Summary Sheet Plate III Pile Length - Capacity Curves - Piers PLATE IV Load Settlement Diagram Abutments	
ITEM X	APPENDIX II	
	Laboratory Logs of Borings     Summary of Test Data     Undisturbed Test Data	

### INTRODUCTION

This report covers the foundation investigation for the proposed Bridge No. FRA-1-0310 on the Interstate Route 71 to carry traffic on the Interstate Route over State Route 3 at Station 1004+00 to Station 1005+76 on the Interstate Route in Franklin County, Ohio. The proposed twin structures are to be continuous concrete slab with concrete substructure having overall lengths of about 176-ft. with 50-ft. wide roadways.

# II. DESCRIPTION OF SITE

All pertinent and existing conditions relative to the investigation are indicated on the site plan for the proposed structures. State Route 3 passes through the area in a northeast-southwest direction and is at the present time a two lane 20-ft. wide pavement constructed of Portland cement concrete. However, there are plans in the future for making State Route 3 four lanes wide, divided, so that the proposed structures to carry the Interstate over this highway are to be designed to accommodate the future dualization of the existing State Route 3. The proposed bridges are located in an approximately east-west direction and will carry the Interstate over State Route 3 at about a 270 skew.

For all practical purposes the existing topography within the area of these structures is relatively level at about elevation 873. Within the immediate area the site plan indicates the topography is relatively consistent with the general topography in the overall area, with the only breaks in the elevation of any consequence due to the drainage swales along the sides of the existing State Route 3 right-of-way. There is a slight rise to the southeast of the proposed crossing and a slight drop to the southwest. The difference in elevation between these high and low points is in the neighborhood of 5-ft. or less so that essentially the existing grade is nearly level at the site. The proposed finished grade of the Interstate Route is at about elevation 892 for the finished bridge structures. This means that there will be approximately 20-ft. of embankment fill required at the approaches to the structures to carry finished grade at the proposed elevation of the roadway surface on the bridges.

The subsurface materials at this site are glacial in origin and rather uniform, consisting of deep strata of glacial till extending from beneath the surface clays to the end of the borings. There is indicated at least one pocket of granular outwash materials as discovered in these borings. The glacial deposits originate from both the Illinoian and Wisconsin ice sheets. Bedrock at this site is of the Monroe formation of the Devonian System, primarily dolomites, and would be approximately 100-ft. below the ground surface.

# III. FIELD EXPLORATIONS

Six of the ten test borings as staked in the field by our engineer were drilled. The holes are numbered 1, 4, 5, 6, 7 and 10, and are located at the west abutment, the easternmost pier and the east abutment of the southbound structure and the west abutment, the westernmost pier and the east abutment of the northbound structure respectively. The existing ground elevation at each boring was determined by our field engineer. (See Plate I for a sketch indicating the "as drilled" locations.) Upon completion of the drilling of the first six holes an appraisal of the uniformity of the subsurface conditions by our engineer indicated that a relatively good correlation between borings Nos. 1, 4 and 5 for the southbound structure and Nos. 6, 7 and 10 for the northbound structure would permit omitting drilling any additional borings, in accordance with criteria previously established.

The six test borings were drilled during the period of July 7th thru July 11th, 1962. All six borings were made with a truck-mounted drill utilizing 3.5" I.D. hollow stem augers for advancing the holes. Sampling was accomplished with a split spoon sampler having an outside diameter of 2-inches and an inside diameter of 1-3/8 inches driven with a 140-1b, weight falling 30-inches. Samples were obtained at maximum intervals of 2.5-ft. from the indicated footing elevation as shown on the site plan to a depth of 20-ft. and at each change of material or at maximum intervals of 5-ft. thereafter. In accordance with the established criteria, the borings were taken 30-ft. into 30-blow material below the footing elevation. In addition to the spoon samples, five 3-inch diameter Shelby-tube samples were taken from test borings Nos. 4, 5 and 7 at depths as indicated on the laboratory logs. All borings at this site were carried to a depth of 56.5-ft. below the existing ground surface with the exception of boring No. 4 which extended only 51.5 feet. The total depth of the subsurface investigated extended to elevation 814.5.

All work was done in accordance with the governing specifications under the direction and supervision of a Field Engineer responsible to the Project Soil Engineer, both regular employees of The H. C. Nutting Company.

# IV. LABORATORY TESTS

All samples obtained in the six test borings were returned to our soil mechanics laboratory in Cincinnati, Ohio where they were tested in accordance with Section VII of the State of Ohio, Dept. of Highways, "Specifications for Subsurface Investigations" dated April 1, 1959 and revised April 1, 1960. All 111 samples obtained in the boring operations were then classified under the HRB and State of Ohio Testing Laboratory Classification Systems.

Undisturbed tests on specimens taken from the Shelby-tube samples consisted of five unconfined compression tests and one consolidation test.

The results of all tests and classifications are given in the Summary of Test Data forms. These tests are plotted in combination with the results of the field logs in the form of laboratory logs together with the undisturbed test data, all presented on appropriate forms included in Appendix II of this report.

# V. SUMMARY OF SUBSURFACE CONDITIONS

On Plates II-a and II-b in Appendix I we have shown the summary of the field and laboratory phases of the subsurface investigation. On these figures we have included the following.

- A) A graphic log of each of the six test borings indicating various soil strata using the Ohio State Testing Laboratory Legend, ground water data, and the proposed footing elevations.
- B) A plot of the medians of the natural moisture content, liquid and plastic limits versus elevation.
- C) A plot of the N-values; i.e., the Standard Penetration Test versus elevation. In our analysis we have taken the N-value as being the total number of blows for the final foot of penetration in an overall penetration of 18-inches.

The details of the stratification and properties of the various subsurface strata indicated on the these summary sheets in Appendix I are listed on the laboratory logs and the Summary of Test Data sheets included in Appendix II of this report. The following are what we consider to be the most important points which will determine the design and performance of the foundation for the proposed structure at this site.

A) The subsurface profile consists of a relatively deep deposit of glacial till extending to the end of the borings, elevation 814.5. There was encountered in one boring, test boring No. 1, a pocket of granular outwash sand and gravel which was not evidenced in any of the other borings at this site.

- B) The soil profile exhibits a rather heterogeneous character for a depth of about 25-ft.. It is likely that the last 5 to 10-ft. of this 25-ft. total is weathered till with the upper 15-ft. being a product of erosion and redeposition. For simplicity, however, we refer to this material as "weathered till". Also, based upon the available data contained on Plates II-a and II-b, it is our estimation that this weathered till terminates at about elevation 848 to 850. Except for the pocket of A-2-4 outwash material previously described, the weathered till contains varying amounts of sandy silt, A-4a and silt and clay, A-6a soils.
- C) A thin layer of topsoil and/or fill approximately 1-ft. in thickness covers the entire site except the area of the existing road surface. Immediately underlying the topsoil and/or fill material there is a layer of clay, A-7-6 or A-6b, soils which extends to a depth of about 2 to 4-ft. with the exception of boring No. 7 where the A-7-6 soil extended to a depth of about 7 or 8-ft. below the surface. These clay soils are the result of erosion and redeposition for the most part with the possibility of their partially being the result of some mechanical and chemical weathering processes of the underlying glacial till soils.
- D) The physical properties of the various soils which comprise the soil profile do show some variation; however, there is a remarkable similarity in the general trends of these properties with relation to elevation. In the weathered zone the Standard Penetration Resistances vary from 5 blows per foot near the surface to about 35-blows per ft. near elevation 850. A straight line drawn between these two values starting with 5 at elevation 774 and going to 35 at elevation 850 would not be too far from the average N-value curve through this range in elevations. As can be noted on Plates II-a and II-b in the appendix, the natural moisture contents and Atterberg limits are also quite uniform. Natural moisture will average close to 10% throughout the entire depth of the soil profile. The plastic limit decreases slightly with depth, varying from about 15% near the surface to 12% at approximately elevation 815. The liquid limit shows the greatest variation ranging from a high of 54% to a low of 19%. The surface clays yielded high liquid limits and in general these limits decreased to an elevation of about 862. There the trend is toward a slight decrease until elevation 850 is reached, and below elevation 850 there is a consistent decrease in the liquid limit from a value of 25% to about 20% at about elevation 815.

Page 5

- Judging from the Standard Penetration resistances and the other physical characteristics, it is our estimation that the soils below elevation 848 to 849 are unweathered dense glacial tills. Although there appears to be a trend toward decreasing values in the Standard Penetration Resistances below elevation 830, it is not considered significant insofar as the stability and safety of the proposed structures is concerned. It is possible that the sandy silt soils at depths of about 50-ft. below the surface are under hydrostatic pressures and became slightly and temporarily quick due to the dynamic forces produced by driving the sampling spoon. This could have resulted in penetration resistances falling off from the high values of about 80 encountered at elevation 830 down to values of 40 to 45 below elevation 820.
- F) The ground water elevations as reported vary from about 863 to 867. This will be within 2 to 6-ft. below the bottom of the proposed pier footing elevations.
- G) Based upon the foregoing statements, we have assumed the following soil profile for our analyses.
  - From the surface to about elevation 868 or 869, topsoil and/or fill underlain by stiff surficial clays.
  - From 868 or 869 to elevation 849 brown sandy silt and clay with some outwash sands and gravel varying from stiff to very stiff in consistency.
  - Below elevation 849 to the limit of exploration, brown sandy silt, some clay, little gravel, varying from very stiff to hard in consistency.
  - 4) Ground water elevation = 864.

## VI. DESIGN ANALYSIS

The preliminary design studies as represented on the site plan indicate tentative pier footing elevations at about 868 to 869 and the abutments are shown at elevation 880.5 to 882.7. Each pier consists of four 3-ft. diameter columns tied together as a rigid frame by a 3 to 4-ft. deep cap and a continuous footing. The columns will be approximately 15-ft. high. Judging by the site plan, it appears that the abutments will be approximately 60-ft. long with a footing width of about  $6^{\circ}$ -3".

The depth of the approach fill at the abutment locations will be about 19 to 22-ft. above the existing ground surface after topsoil and fill is removed. In performing a settlement analysis of the fill foundation materials (See Plate IV in Appendix I.) we assumed an average height of 20-ft.. The abutment footings will be an average of 9-ft. above the bottom of the fill. Because of the relatively light loads imposed by the abutments the total effect of the abutment on estimated settlement will be very slight. Our settlement analysis indicates a total potential settlement of fill of in excess of 3-inches. At least 90% of this total settlement should be realized within 60-days from time the fill is completed. By waiting at least 60-days after completion of the approach embankment fills before beginning of the construction of the abutment footings, settlement of the abutments due to consolidation of the subgrade soil should be of a non-detrimental quantity.

The soil pressure at the base of the abutment footings will be in the neighborhood of 2 kips per sq. ft. with 7 to 10-ft. of fill between the abutment footing and the top of the existing subgrade, these pressures will be reduced less than 1 kip per sq. ft. at the existing subgrade elevation. The fill and foundation soils will have more than sufficient shearing strength to support the abutments without danger of bearing capacity failure.

The problem is much more severe at the pier foundations, however. The pier footings seated in the surface clays with the ground water possibly as close as 2-ft. to the bottom of footings make it quite probable that excessive long term settlements could develop if spread footings are used to support the piers. A pile foundation therefore was analyzed for these piers.

Theoretical analyses of pile foundations provide only guides to the final length and capacity recommendations. This is especially true in construction procedures which use dynamic formulas as a criteria for determination of the final length of the piles in-place. Since a pile derives its supporting capacity from shear along the periphery of the pile and from the portion of load carried by the tip in end bearing, it is necessary that these values be established for the various soils found in the soil profile. Friction values assumed for the soils encountered at this site are given on Plate III in the appendix. For the stiff till it is assumed 1000-psf friction and for the hard till, 2000-psf skin friction is assumed. Although the amount of the total load carried by the pile tip would vary with the materials into which it is driven, we have used a figure of 30% of the ultimate pile load, assuming, as well as recommending, that the piles will be driven to at least elevation 845, or below, into the hard glacial till strata.

# VIII. CONSTRUCTION PROBLEMS

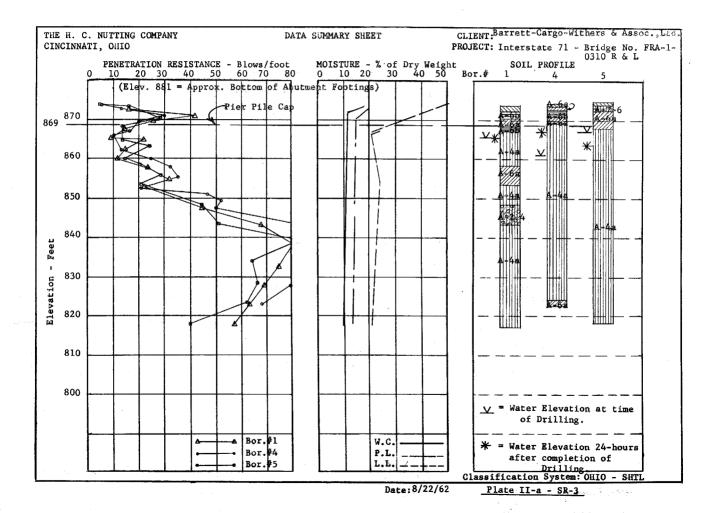
The only anticipated problems at this site are those which are always present in construction of pile foundations; i.e., failure of the piles to penetrate to the recommended depth or excessive penetration of the pile. The former problem can generally be overcome by the use of pre-drilling. We would not anticipate at this site that this would be needed, however. The latter problem, again which we do not anticipate will present itself at this site, but is always possible, cannot be handled so easily.

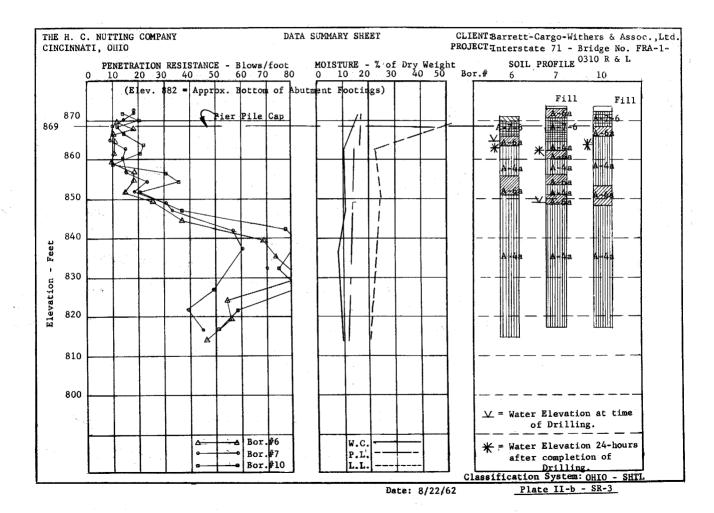
Preventing excessive pile penetration, especially when the subsurface investigations indicate satisfactory supporting capacities, can develop into a difficult problem. It is possible that the sandy silts might develop a temporarily quick condition when subjected to dynamic forces produced during pile driving operations. Under such conditions piles could continue to move, possibly until bedrock is encountered; yet if driving is discontinued for a short period of time, it may not be possible to drive the piles further when driving is resumed. The results of driving the first pile usually provide a good guide to use in making a decision with regard to the amount of maximum penetration of piles at any site. It is suggested that if at this site or any other site the first pile driven exceeds the recommended design depth without satisfying the requirements of the dynamic formula for that depth, driving of the pile should be discontinued for 24-hours. After waiting one day attempts to re-drive this pile should be made. If these attempts to re-drive still result in failure of the pile to satisfy the dynamic formula requirements, then driving can be continued until the requirements are met. In a silt soil under hydrostatic water pressure conditions, many times piles will not meet the driving formula conditions at the time of driving, but after driven to a design depth and waiting 24-hours it will be found impossible to re-drive the piling to any greater penetration which indicates that the piles do meet the formula conditions for the particular loading to be placed on the pile.

Ground water should be no problem, as excavations for the pile caps should not extend deep enough to penetrate the ground water at this site. The fill materials for the approach embankments should be compacted to the specifications as required for embankment construction by the State Highway Department.

Barrett-Cargo-Withers & Assoc., Ltd. The H. C. Nutting Company Interstate 71 - Bridge No. FRA-1-0310 R & L Cincinnati 26, Ohio LOCATION OF BORINGS Bridge No. FRA-1-0310 R & L 31+00 #3 SR-1 Over SR-3 #2 **⊕** #4 30+00 \_SR-1 1006+00 1005+00 1004+00 1003+00 (Note:) Only borings Nos. 1, 4, 5, 6, 7 and 10 were drilled. Boring Locations (As Drilled) Scale: 1" = 50' Existing Ground Offset Elevation No. Station Plate I - SR-3 55 L. 873.5 30+41 731 R. 873.8 30+54 97' R. 874.6 5 31+33 55' L. 871.0 28+56 29+33 21' L. 873.5 97' R. 29+34 873.2 10

Station on SR-3



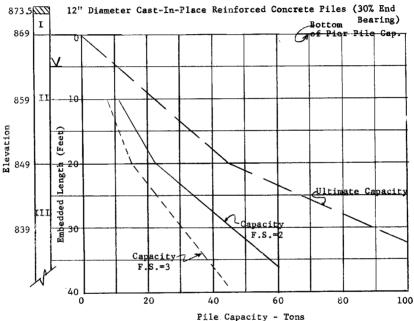


The H. C. Nutting Company Cincinnati 26, Ohio

Barrett-Cargo-Withers & Assoc.,Ltd. Interstate 71 - Bridge No. FRA-1-0310 R & L

# PILE LENGTH - CAPACITY CURVES

SR-3, Piers



### SOIL PROFILE

I - Clay

II - Stiff Till - Assumed Skin Friction = 1000 psf

III - Hard Till - Assumed Skin Friction = 2000 psf

Assume -  $P_{tip}$  = 30%  $P_{u1t}$ .

Pult = Pfrict. + Ptip = Pfrict./0.7

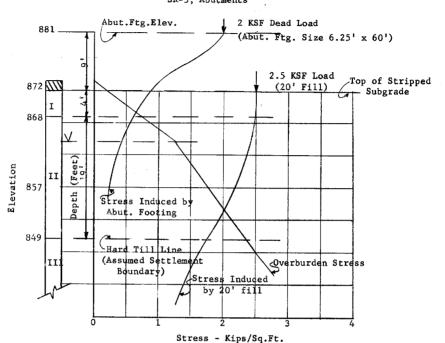
For 12" Dia. Pile,  $P_{ult} = 3.14$  (D)(L)(F)/0.7 = 4.5 (L)(F)

Recommended Design Capacity Curve - F.S. = 2

(Due to very hard consistency of soil below elevation 845, doubtful if piles will penetrate much below elevation 840 which will result in a 12" Diameter Pile Capacity of about 40 T. - with F.S. = 2)

Plate III - SR-3

# LOAD SETTLEMENT DIAGRAM SR-3, Abutments



# SOIL PROFILE

I - Clay Stratum -  $\Upsilon$ = 130 pcf,  $e_0$  = 0.50,  $C_c$  = 0.06 II - Stiff Till Stratum -  $\Upsilon$ = 135 pcf,  $\Upsilon$ sub = 73,  $e_0$  = 0.39,  $C_c$  = 0.03 III - Hard Till Stratum

# SETTLEMENT COMPUTATIONS

 $S = \left[ C_{c} / (1 + e_{o}) \right] (H) \log_{10} \left[ (Po + \Delta_{p}) / Po \right]$ 

20' Fill S =  $\begin{bmatrix} 0.06/1.50 \end{bmatrix}$  (4) Log  $\begin{bmatrix} (.5+2.5)/.5 \end{bmatrix}$  +  $\begin{bmatrix} 0.03/1.39 \end{bmatrix}$  (19) Log  $\begin{bmatrix} (1.7+2.2)/1.7 \end{bmatrix}$  = 0.12 + 0.15 = 0.27-ft. or  $3\frac{1}{4}$ -inches

Assuming Po (Clay) = 50% of P. induced by 20-ft. Fill (after 30-days)

Aubt. Ftg. S =  $\begin{bmatrix} 0.06/1.50 \end{bmatrix}$  (4) Log  $\begin{bmatrix} (1.25+.7)/1.25 \end{bmatrix}$  +  $\begin{bmatrix} 0.04/1.39 \end{bmatrix}$  (19) Log  $\begin{bmatrix} (1.7+.25)/1.7 \end{bmatrix}$  = 0.03 + 0.02 = 0.05-ft. or 5/8-inch.

BORING No.

32

# TESTING ENGINEERS AND SOILS CONSULTANTS

SURFACE ELEV. 873.5

Split

### LOG OF BORING

DATE STARTED 7/10/62 SAMPLER: TYPE Spoon Dia 2"0.D. WATER ELEV. IMMEDIATE 866.0 CLIENT: Barrett-Cargo-Withers & Assoc. DATE COMPLETED 7/11/62 CASING: LENGTH DIA 3.5"I.D.
Hollow Stem Augers AFTER 24 HOURS 865.7 PROJECT: 1-71 - Bridge No. FRA-1-0310 STATION AND OFFSET 30+41, 55° L. of C.L. of SR-3

STD PEN Physical Characteristics FLEV DEPTH No. (N) REC. DESCRIPTION SHITE CLASS 873.5 No Tests Performed. 872.0 3-7-9 16" Topsoil, dry - hard. Brown silty clay, little sand, trace 10-19-34 15" 870.5 7 11 38 35 22 38 Q A-6h gravel, dry - hard. Brown silt and clay, some sand, little 15-14-12 16" 12 12 13 14 A-6a 868.5 gravel, moist - very stiff. 4 5-6-8 17" Mottled brown and grav silt and clav. 10 Q 12 37 32 23 40 18 A-6h 866.0 some sand, little gravel, moist - stiff.
Brown sandy silt, little gravel, very
Brown sandy silt, little gravel,
moist - stiff. 12" 5 4-5 13 15 18 15 21 A-4a 11 15 20 17 38 10 19 10 A-4a 10 7 10-7-7 16" dο dο dο 17 11 13 40 19 21 11 A-4a 12 17" 14 6-6-6 Brown sandy silt, little gravel. 15 12 13 42 18 21 8 13 A-4a 858.5 moist - medium stiff. 16 5-9-14 18" Brown silt and clav, some sand, little 13 11 15 39 22 25 11 13 A-6a gravel, moist - medium stiff. 18 10 11-14-18 16% Brown silt and clay, some sand, trace 11 15 41 25 25 12 12 A-6a 853.5 gravel moist - medium stiff. 20 8-10-12 | 17" 11 Gray sandy silt, little gravel, moist 10 9 15 26 23 11 A-4a 22 stiff. 24 848.5 26 12 10-16-28 18" Brownish gray silty sand, little 9 11 61 15 23 11 A-2-4 gravel, moist - dense. 28 843.5 13 24-44 12" Brownish gray sandy silt, little 10 7 17 41 25 23 10 8 A-4a

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OUNSELVES, ALL REPORTS ARE SUBMITTED AS THE COMPIDENTIAL PROPERTY OF QLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGASIONS OUR REPORTS IS RESERVED PERSONS OUR WINTERS APPROVAL."

gravel, moist - very stiff.

# THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD

# TESTING ENGINEERS AND SOILS CONSULTANTS LOG OF BORING

Split

DATE STARTED 7/10/62 SAMPLER: TYPE Spoon DIA. 2"O.D. WATER ELEV. IMMEDIATE 866.0 CLIENTBATTECT: Cargo-Withers & Assoc.

DATE COMPLETED 7/11/62 CASING: LENGTH DIA 3.5"I.D. AFTER 24 HOURS 865.7 PROJECT: I-71 - Bridge No. FRA-1-0310

ORING No. 1 STATION AND OFFSET 30+41, 55' L. of C.L. of SR-3 SURFACE ELEV. 873.5

		SAMPLE	STD. PEN.	%							Physi	cal Cha	racteristi	C5			
ELEV.	DEPTH	No.	(N)	REC.		DESCRIPTION			% AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	SHYL
	34															Ī	-
	36	14	32-49	12"	Brownish gray gravel, moist			-	10	7	17	41	25	22	9	8	A-4a
	38	٠			graver, moroc	very berr	••										
	40																
	42	1.5	17-26-39	175"	do	do	do	,	11	8	16	39	26	22	9	10	A-4a
	44											-					
	46	16	22-29-40	18"	do	do	do		16	7	16	39	22	21	8	10	A-4a
	48																
	50														-		
	52	17	20-26-37	18"	do	do	do		12	8	16	40	24	22	8	9	A⊸4a
	54																
817.0	56	18	13-23-24	18"	Brownish gray gravel, moist	- very stif			10	9	18	40	23	21	8	11	A-4a
	58	·			Boring	Completed.											
	60	i			4												
	62		.*		* .												
	-																
		·															

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS AND SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCINENCES, ENVED PERSONNEL WRITTEN | PROVINCE OF STATEMENTS CONCINENCES.

# Form No. 530---16-59

# TESTING ENGINEERS AND SOILS CONSULTANTS

	Split	100 0.					
DATE STARTED 7/8/62	_ SAMPLER: TYPE Spoon 1	DIA 2"O.D. WATE	R FLEV. IMMEDIATE	861.3	CLIENT Barrett-	-Cargo-Withe	rs & Assoc.
DATE COMPLETED 7/8/62							
DATE COMITECTED	Residence Carrotte	ollow Stem Auger	\$				R & L

STATION AND OFFSET 30+54, 73 R. of C.L. of SR-3 873.8 SURFACE FLEV BORING No Physical Characteristics SAMPLE STD. PEN. SHILL ELEV. DEPTH (N) REC. DESCRIPTION c.s CLAY w.c. CLASS AGG SILT 873.8 411 Topsoil moift, lefte sand, dry iff. No Tests Performed 873.3 811 2 5-8 O 6 12 53 29 34 14 13 A-6a 872.3 Brown silty clay, little sand, trace gravel, dry - very stiff. 8 8 1.1 39 34 35 20 6 A~6b 3 870.8 Brown silt and clay, some sand, 9-10-10 17" 26 12 4 11 11 14 38 26 11 A-6a 868.8 little gravel, moist - stiff. Brown sandy silt, trace gravel, 6 12" S-1 26 24 9 12 moist - stiff. 11 14 42 A-4a 6" Brown sandy silt, little gravel, moist-Brown sandy silt, some gravel, /stiff. very moist - medium stiff. 20 21 20 A-4a A-4a 12 16 40 8 4∽6 12" 12" S-2 Brown sandy silt, some gravel, moist + 24 11 14 37 14 21 7 12 A-4a 10 medium stiff. 15# 5 6-6-7 Brown sandy silt, little gravel, 17 11 18 41 13 20 10 A-4a 12 moist - stiff. 8 7-10-14 12" 7 11 30 14 20 12 A-4a Brown sandy silt and gravel, moist -38 6 14 medium stiff. 16 17-17-15 17" 9 15 38 22 22 8 10 A-4a Brown sandy silt, little gravel, 16 moist - stiff. 18 9-15-2d 18" 20 10 14 35 21 22 8 10 A-4a 10 Brown sandy silt, some gravel, moiststiff. 20 11 5-8-13 l 18" 10 g 15 38 28 24 8 12 A-4a Brown sandy silt, little gravel, 22 moist - stiff. 11-21-26 18" Brown sandy silt, little gravel, moist - very stiff. 17 8 14 37 24 24 9 11 A-4a 12 24 13-20-32 18" 9 39 27 25 10 12 A-4a 13 11 14 26 14 15-21-29 17" Brown sandy silt, little gravel, 12 10 18 39 21 23 8 10 A-4a moist - stiff. 28 30 15 25-40-61 18" 10 9 1.6 41 24 22 8 10 A-48 Brownish gray sandy silt, little 32 gravel, moist - very stiff.



Split

# LOG OF BORING

DATE STARTED 7/8/62 SAMPLER: TYPE Spoon DIA. 2" O.D. WATER ELEV. IMMEDIATE 861.3 CLIENT: Barrett-Cargo-Withers & Assoc.

DATE COMPLETED 7/8/62 CASING: LENGTH DIA 3.5"I.D. Hollow Stem Augers

AFTER 96 HOURS 867.8 PROJECT: I-71 - Bridge No. FRA-1-0310

R & L

		SAMPLE	STD. PEN.	% REC.				Physi	cal Cha	racteristi	cs			
LEV	DEPTH	No.	(N)	REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	SHT
	34					Ī								
	36	16	32-50	12"	Brownish gray sandy silt, little	10	8	18	42	22	20	6	10	A-4
					gravel, moist - very stiff.							Ů	1	-
	38			-										
	40													
		17	36-52	12"	Brownish gray sandy silt, trace	9	7	17	44	23	22	9	9	A-4
	42				gravel, moist - very stiff.									
	44													
			1											
	_46	18	25-34-46	18"	do do do	8	8	18	42	24	21	7	9	A-4
	48			'										
			•											
.8	50				Provide and silt and slaw sees and									١
.3	_52	19	18-28-40		Brownish gray silt and clay, some sand trace gravel, moist wery sriff	1 5	9	18	44	24	27	14	10	A-6
	_;				Boring Completed.									
	54			1										
	56													
	58		!											
	60													
						1								
		l												
,						1								

#### Form No. 530-16-59

# TESTING ENGINEERS AND SOILS CONSULTANTS

LOG OF BORING

DATE STARTED 7/8/62 SAMPLER: TYPE Spoon DIA 2"O.D. WATER ELEV. IMMEDIATE 867.1 CLIENT: Barrett-Cargo-Withers & Assoc.

DATE COMPLETED 7/9/62 CASING: LENGTH DIA 3.5"I.D. AFTER 72 HOURS 864.1 PROJECT: I-71 - Bridge No. FRA-1-0310

R & I

BORING No. 5 STATION AND OFFSET 31+33, 97 ° R. of C.L. of SR-3

SURFACE ELEV. \_\_\_\_874.6

		SAMPLE	STD. PEN.	%					cal Cha		tics			
ELEV.	DEPTH	No.	(N)	REC.	DESCRIPTION	% AGG	cs.	% F.S.	% ŞILT	CLAY	L.L.	P.I.	W.C.	SHTL CLASS
874.6	0		2-4	9"	m	N7.	Tests	Dame	ormed					
873.6		1	8	6"	Topsoil - dry - loose.  Brown clay, little sand, moist - stiff		1ests	er i	35	52	51	32	18	A-7-6
872.1	2		j °	١	Brown cray, little sand, morst - stri		"		ارد	32		24		** , 0
	4	3	16-14-14	17"	Brown silt and clay, some sand,	13	11	12	37	27	28	12	11	A-6a
					little gravel, moist - very stiff.									
867.6	6	4	5-6-7	12"	Mottled brown and gray silt and clay, some sand, some gravel, moist - stiff	21	12	12	33	22	26	11	13	A-6a
	. 8	S-1	]	16"	Brown sandy silt, some gravel,	22	10	12	33	23	23	9	14	A-4a
	10	5	6-6-7	14"	moist - stiff. do do do	20	14	13	35	18	20	. 6	11	A-4a
1	10	6	10-11-13	1 1	Brownish gray sandy silt, little gravel	ł	) "	10	40	24	22	8	11	A-4a
	12	•	10-11-13	10	moist - very stiff.	13	11	1.0	40	24	22	8	11	A=4a
	14	7	5-6-8	17"	Brown sandy silt, little gravel, moist - very stiff.	16	10	14	34	26	24	10	12	A-4a
	16	8	8-10-11	18"	Brown sandy silt, trace gravel, moist - very stiff.	9	9	17	40	25	23	10	11	A-4a
	18	9	8-12-16	17"	Brown sandy silt, little gravel, moist - very stiff.	14	8	11	42	25	24	10	13	A-4a
	20	10	6-10-11	10"	Brown sandy silt, little gravel,	13	10	1.3	45	19	23	9	11	A-4a
1	22	10	0=10=11	10	moist - stiff.	13	10	10	75		-3			"
									}					i
1	24	+			A Property of				Ì				1	
	26	11	15-21-24	18"	Brown sandy silt, little gravel,	10	8	19	45	18	24	10	10	A-4a
1			1		moist - very stiff.						ĺ	•		-
	28	1				1							1	
	30	1												
		12	14-22-29	175"	Brownish gray sandy silt, little	13	7	16	46	18	22	9	9	A-4a
	32		1		gravel, moist - hard.	l								
İ	34	1							-				İ	l

Split

LOG OF BORING

DATE STARTED 7/8/62	SAMPLER: TYPE Spoon	DIA. 2"0.D.	WATER ELEV. IMMEDIAT	E 867.1	CHENT: Barrett-Cargo-Withers & Assoc.
DATE COMPLETED 7/9/62	CASING: LENGTH	_ DIA.3.5"I.D.	AFTER	HOURS 864.1	PROJECT: I-71 - Bridge No. FRA-1-0310

BORING No. 5 STATION AND OFFSET 31+33, 97' R. of C.L. of SR-3 SURFACE ELEV. 874.6

		SAMPLE	STD. PEN.	%						racteristi	cs		,	,
ELEV.	DEPTH	No.	(N)	REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	SHTL
	34									·				
	36	13	32-51	12"	Brownish gray sandy silt, trace gravel	. 6	-8	18	49	19	21	8	8	A-4a
					moist - hard.							_		
	38													1
	40													
	—	14	24-29-35	18"	Brownish gray sandy silt, little	10	8	18	43	21	21	8	9	A-4a
	42				gravel, moist - hard.									
	44													
	,,						-							
	46	15	22-30-36	10"	Brownish gray sandy silt, trace gravel	9	8	17	42	24	22	9	9	A-4a
	48				moist - hard.									
	50													
		16	16-26-36	1011	Brownish gray sandy silt, little	12	8	17	43	20	20	8	9	A-4a
	52	1.0	10-20-30	10	gravel, moist - hard.	12		1,	45	20	20	١		1
	54													
					Brownish gray sandy silt, trace									
8.1	56	17	11-16-24	18"	gravel, moist - hard.	9	8	20	42	21	21	9	10	A-4a
	58				Boring Completed.									
								.*						
	60													
	62													
											İ		ĺ	
											i			
•	-													

# THE H. C. NUTTING COMPANY

Form No. 530---16-5

# TESTING ENGINEERS AND SOILS CONSULTANTS

Split LOG OF BORING

DATE STARTED 7/9/62 SAMPLER: TYPE Spoon DIA 2"O.D. WATER ELEV. IMMEDIATE 863.5 CLIENT: Barrett-Cargo-Withers & Assoc.

DATE COMPLETED 7/10/62 CASING: LENGTH DIA 3.5"I.D. AFTER 48 HOURS 862.5 PROJECT: I-71 - Bridge No. FRA-1-0310

BORING No. 6 STATION AND OFFSET 28+56, 55 L. of C.L. of SR-3 SURFACE ELEV. 871.0

		SAMPLE	STD. PEN.	%						racteris	tics			
ELEV.	DEPTH 0	No.	. (N)	REC.	DESCRIPTION	AGG.	c.s.	% F.S.	% SILT	CLAY	Lili	P.I.	w.c.	SHTL CLASS
871.0	0	1	1-5-7	6"	Topsoil, moist - medium stiff.	No. T	bers	Perfo	med			$\vdash$		
869.5	2	2	5-8-10	8"	Mottled brown and gray clay, trace sand, moist - very stiff.	0	2	7	39	52	47	26	18	A-7-6
866.0	4	3	6-6-4	15"	Mottled brown and gray clay, little sand, moist - very stiff.	0	3	7	42	48	44	25	20	A-7-6
	6	4	3-5-6	8"	Brown silt and clay, little sand,	4	7	11	48	30	29	12	14	A-6a
863.5	8	5	5-5-5	175"	trace gravel, moist - stiff.  Brown sandy silt, little gravel,	19	12	16	37	16	21	7	13	A-4a
	10				moist - medium stiff.			.,	,,	1.0	,,		,,,	
	12	6	3-4-5	17"	do do do	17	11	14	40	18	19	5	13	A-4a
856.0	14	7	5-8-10	16"	Brown sandy silt, some gravel, moist - stiff.	27	9	10	37	17	21	8	13	A-4a
030.0	16	8	3~4-5	18"	Brown silt and clay, some sand, little gravel, moist - stiff.	10	10	14	38	28	25	11	15	A-6a
851.0	18	9	4-6-9	16"	Brownish gray silt and clay, some sand little gravel, moist - stiff.	12	10	14	43	21	24	11	12	A-6a
0,10	20	10	6-9-17	18"	Gray sandy silt, trace gravel, moist -	7	10	14	41	28	24	10	12	A-4a
	24	_					ļ							
	26	- 11	10-15-22	18"	Brown sandy silt, little gravel, moist	10	10	18	42	20	22	8	10	A-4a
	28				very stiff.									
	30	10	20-29-40	1 70	Brown sandy silt, trace gravel, moist	8	8	16	43	25	23	10	9	A-4a
	32	12	20-29-40		very stiff.	ľ	ľ	-		-				
	34					1			ŀ			1		1

AS A NUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERIONIS OUR WRITTEN APPROVAL."

Split LOG OF BORING

Date Started 7/9/62 SAMPLER: TYPE Spoon DIA 2"0.D. WATER ELEV. IMMEDIATE 863.5 CLIENT BATTECT CAIRGO-Withers & Assoc. DATE COMPLETED 7/10/62 CASING: LENGTH DIA 3.5"I.D. AFTER 48 HOURS 862.5 PROJECT:  $\frac{1-71}{100} = \frac{1-71}{100} =$ 

BORING No. 6 STATION AND OFFSET 28+56, 55 L. of C.L. of SR-3 SURFACE ELEV. 871.0

BORING N	No	STATIO	N AND OFFSI	T_201	50, 55' L. of C.L. of SK-3 SURFACE ELEV.	0/1	. U							
		SAMPLE	STD. PEN.	% REC.				Physi	cal Cha	racteristi	cs			
ELEV.	DEPTH	No.	(N)	REC.	DESCRIPTION	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	SHTL CLASS
	34													
	36	13	33-40	12"	Brownish gray sandy silt, trace gravel,	7	7	17	43	26	22	9	8	A-4a
			33-40	12	moist - hard.	′	′	. 1/	43	20	2.2	,	٥	N-48
	38											-		-
1	40	14	27-36-49	1011	do do do	7	8	17	44	24	21	8	9	A-4a
	42	14	27-30-49	10	ao ao ao	<b>'</b>	°	.17	44	24	21	0	,	n=4a
					•									
	44													
	46	1.5	1									_	_	
		15	15-23-31	18	Brownish gray sandy silt, little gravel, moist - hard.	1. 11	8	17	42	22	22	9	9	A-4a
	48				moist - mard.									
-	50													
		1.6	15-23-33	1 77.11	do do do	1.0			40	24	21	9	10	
1	52	16	12-23-33	1/3.	do do do	10	9	17	40	24	21	9	10	A-4a
	Ē,——													
	54													
	56	17	16-19-28	1011	Brown sandy silt, little gravel, moist	14		7	20	•	22	10	10	
814.5		.1/	16-19-28	18	very stiff.  Boring Completed.	14	8		38	23	22	10	10	A-4a
	58				portug completes.									
	60							-						,
1														1
			'	. :										
					,									
						İ								
L					UTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REM	<u></u>								L

# Form No. 530-16-5

# TESTING ENGINEERS AND SOILS CONSULTANTS

Split LOG OF BORING

DATE STARTED 7/10/62 SAMPLER: TYPE Spoon DIA 2"O.D. WATER ELEV. IMMEDIATE 848.5 CLIENT: Barrett-Cargo-Withers & Assoc.

DATE COMPLETED 7/10/62 CASING: LENGTH DIA 3.5"I.D. AFTER 48 HOURS 863.0 PROJECT: I-71 - Bridge No. FRA-1-0310
R & L

BORING No. 7 STATION AND OFFSET 29+33, 21 L. of C.L. of SR-3 SUPPLIED 873.5

SAMPLE   No.   STD. PEN.   No.   N	SHTE CLASS A=6a
873 5 0 1 9 6" Crushed Limestone and Clay, Fill, dry medium dense No Tests Performed.  2 10-8 9" Brown silt and clay, some sand trace 5 13 19 36 27 30 13 15	A-6a
873 5 0 1 9 6" Crushed Limestone and Clay, Fill, dry medium dense No Tests Performed.	
1   10-8   9"   Brown silt and clay, some sand trace   5   13   19   36   27   30   13   15	
870.5 3 6-7-7 4" Brown silt and clay, fill, moist stiff, Brown silt and clay, fill, moist stiff, Insufficient Sample	
870.5 3 6-7-7 4" Brown silt and clay, fill, moistastiff, Insufficient Sample	A-6a
	1
4 4 3-4-6 16" Mottled Brown and gray clay, 7133417 0 4 9 38 49 54 36 14	A-7-6
6 S-1   14"   do do do   0   3   7   43   47   48   30   21	A-7-6
8 5 3-4-5 15" do do do 0 6 12 40 42 42 23 12	A-7-6
864.5	
10 6 9-7-8 17" Brown sandy silt, little gravel, 17 12 15 35 21 21 7 10	A-4a
862.0 moist - stiff.	
7   10-7-7   6"   Brown silt and clay, little sand,   30   7   9   36   18   27   12   14	A-6a
860.0 some gravel, moist stiff.	
S-2   16" Brown sandy silt, some gravel, moist - 20   12   12   38   18   21   7   12	A-4a
856.0	A-4a
	A-6a
853.5 20 little gravel, moist - very stiff.	
10 6-8-10 18" Brown sandy silt, little gravel, 15 9 13 38 25 25 10 13	A-4a
851.0 22 moist - very stiff.	
24 11 10-14-17 18" Brownish gray silt and clay, some sand 7 9 15 44 25 25 11 11	A-6a
848.5 trace gravel, moist - very stiff.	11-0a
25	1, ,_ !
20 12 10-14-19 18" Brown sandy silt, little gravel, 10 12 19 41 18 23 9 12 moist - stiff.	A-4a
28	
30   30   314-21-36   18"   Brownish gray sandy silt, little   13   7   16   40   24   23   10   10	A-4a
1	M-48
gravel, moist - very stiff.	
34	<u> </u>

Split

### LOG OF BORING

DATE STARTED 7/10/62 SAMPLER: TYPE SPOON DIA 2"O.D. WATER ELEV. IMMEDIATE 848.5 CLIENT: Barrett-Cargo-Withers & Assoc.

DATE COMPLETED 7/10/62 CASING: LENGTH DIA 3.5"I.D. AFTER 48 HOURS 863.0 PROJECT: I-71 - Bridge No. FRA-1-0310

Hollow Stem Augers

\_\_\_ STATION AND OFFSET 29+33, 21° L. of C.L. of SR-3 SURFACE ELEV. \_ 873.5 BORING No. 7 Physical Characteristics SAMPLE STD. PEN. FIFV DEPTH No. (N) DESCRIPTION % SILT % CLAY L.L. w.c CLASS 34 36 14 17-26-3517%" Brownish gray sandy silt, trace grayel, 7 17 42 26 22 10 9 A-4a moist - very stiff. 40 22-34-36175" Brownish gray sandy silt, little gravel 13 17 38 25 23 10 9 A-4a 42 moist - hard. 44 16 13-20-29 18" dο 11 17 22 10 A-4a 48 50 17 12-16-23 18" dο do 12 17 40 23 22 10 10 A-4a 52 Brownish gray sandy silt, little 56 18 14-19-26 18" gravel, moist - hard. 817.0 Boring Completed. 58 60

# Form No. 530---16-

# TESTING ENGINEERS AND SOILS CONSULTANTS

Split

LOG OF BORING

DATE STARTED 7/7/62 SAMPLER: TYPE Spoon DIA 2"O.D. WAT	R ELEV. IMMEDIATE None CLIENT Barrett-Cargo-Withers & Assoc.
DATE COMPLETED 7/8/62 CASING LENGTH DIA 3.5"I.D.	
Hollow Stem Augers	R & L
BORING No. 10 STATION AND OFFSET 29+34, 97 R. of C.L. of SR-3	SURFACE ELEV. 873.2

BORING No. \_ 10 SURFACE ELEV. Physical Characteristics SAMPLE STD. PEN. % DEPTH DESCRIPTION SHTL ELEV. REC. (N) AGG. CLASS 873.2 Topsoil and brown sandy clay, with 12! No Tests Performed 1-7-7 fine gravel, fill, dry - loose (visual) 871.7 Brown clay, little sand, moist -2 7-9-12 14" 6 37 53 54 36 15 A-7-6 very stiff. 3 5-6-6 17" Mottled brown and gray clay, little sand, trace gravel, moist - very stiff 1 10 40 46 42 24 21 A-7-6 868.2 175" 10 24 26 11 A-6a 4 5-7-7 Brown silt and clay, some sand, little 11 14 41 14 6 gravel, moist - stiff. 865.7 Brown sandy silt, some gravel, moist -24 18" 22 10 13 36 19 10 11 A-4a 5 5-11-11 stiff. 10 15" 21 10 21 23 9 A-4a 6 do 12 36 10 11-14-7 do 12 17" 22 11 40 18 9 14 A-4a 7 4-4-6 Brown sandy silt, little gravel, very 17 14 14 moist - medium stiff. 35 20 22 9 11-13-18 18" 14 10 A-4a 16 8 Brown sandy silt, some gravel, moist stiff. 18 9 18" 12 43 27 25 10 10 A-4a 9-15-21 Brown sandy silt, little gravel, 10 853.2 moist - stiff. 20 18" 10 40 27 26 12 10 4-9-12 Brown silt and clay, some sand, trace 14 13 A-6a 22 gravel, moist - stiff. 24 848.2 21 24 11 A-4a 26 17%" 9 17 44 10 11 7-15-22 Brown sandy silt, trace gravel, moist stiff. 30 21-33-45 18" Brownish gray sandy silt, trace gravel 12 10 18 42 22 9 23 9 A-4a moist - very stiff.

AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUMMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS,

# THE H. C. NUTTING COMPANY

4120 AIRPORT ROAD CINCINNATI 26, OHIO



# TESTING ENGINEERS AND SOILS CONSULTANTS

Split

LOG OF BORING

DATE STARTED	7/7/62	SAMPLER: TYPE Spoon	DIA. 2"O.D.	WATER ELEV. IMMEDIA	TE_None	CLIENT Barrett-	-Cargo-Withers	& Assoc.
DATE COMPLETED	7/8/62	CASING: LENGTH	DIA.3.5"I.D. Hollow Stem A	AFTER <u>96</u> ugers	HOURS 863.7	PROJECT: <u>I-71</u> -	Bridge No. F	RA-1-0310 R & L

BORING No. 10 29+34, 97 R. of C.L. of SR-3 SURFACE ELEV. 873.2 STATION AND OFFSET. Physical Characteristics SAMPLE STD. PEN. % REC. DESCRIPTION SHITL FLEV. DEPTH AGG. C.S. F.S. SILT CLAY CLASS 34 13 12# Brownish gray sandy silt, little gravel 11 10 17 40 22 22 8 A-4a 33-56 36 moist - very stiff. 38 40 22 12" Brownish gray sandy silt, trace gravel, 15 25 A-4a 14 26-49 moist - very stiff. 42 44 46 15 22-37-5d18" Brownish gray sandy silt, little gravel, 12 16 40 23 21 A-4a moist - very stiff. 48 150 15-24-3518" Brownish gray sandy silt, trace gravel, 9 17 40 26 21 10 A-4a 16 moist - very stiff. Brownish gray sandy silt, trace 17 13-21-3018" gravel moist - very stiff. 8 19 39 25 21 10 A-4a 816.7 Boring Completed. 58 60

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECORDING OUR REPORTS IS RESERVED PERMING OUR WRITTEN APPROVAL."

# SUMMARY OF TEST DATA FOR SOILS

BORING No. 1 STATION & OFFSET 30+41, 55 ° L. of C.L. of SR-3 SURFACE ELEV. 873.5 CLIENT: Barrett-Cargo-Withers & Assoc. PROJECT: I-71 - Bridge No. FRA-1- 0310 - R & L

										sical Cha	racteristi	cs			
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP	% AGG	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	OTHER TESTS	
1	0.0-1.5	0.0-1.5			Topsoil	No	Tests	Perfor	med.						
2	1.5-3.0	1.5-3.0	A-6	A-6b	12	9	7	11	38	35	38	22	9		
3	3.0-4.5	3.0-5.0	A-6	A-6a	7	12	12	13	38	25	29	14	12		
4	5.0-6.5	5.0-7.5	A-6	A-6b	12	10	9	12	37	32	40	23	18		
5	7.5-8.5	7.5-15.0	A-4	A-4a	4	13	15	18	39	15	21	6	15		
6	8.5-9.0	7.5-15.0	A-4	A-4a	3	15	20	17	_38	10	19	6	10		
7_	10.0-11.5	7.5-15.0	A-4	A-4a	5	17	11	13	40	19	21	8	11		
8	12.5-14.0	7.5-15.0	A-4	A-4a	5	15	12	13	42	18	21	8	13		
9	15.0-16.5	15.0-20.0	A-6	A-6a	6	13	11	15	39	22	25	11	13		
10	17.5-19.0	15.0-20.0	A-6	A-6a	7	8	11	15	41	25	25	12	12		
11	20-21.5	20.0-25.0	A-4	A-4a	6	10	9	15	40	26	23	8	11		
12	25.0-26.5	25.0-30.0	A-2-4	A-2-4	0	11	9	61	4	15	23	9	11		
13	30.0-31.0	30.0-56.5	A-4	A-4a	7	10_	7	17	41	25	23	10	8		
14	35.0-36.0	30.0-56.5	A-4	A-4a	6	10	7	17	41	25	22	9	8		
15	40.0-41.5	30.0-56.5	A-4	A-4a	6	11	8	16	39	26	22	9	10		
16	45.0-46.5	30.0-56.5	A-4	A-4a	5	16	7	16	39	22	21	8	10		
17	50.0-51.5	30.0-56.5	A-4	A-4a	6	12	8	16	40	24	22	8	9		

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARGING OUR REPORTS IS SPESERVED PEROING OUR WRITTEN APPROVAL."

### SUMMARY OF TEST DATA FOR SOILS

BORING No. 1 STATION & OFFSET_	30+41, 55 L. of C.L. of SR-3	SURFACE ELEV. 873.5	CLIENT: Barrett-Cargo-Withers & Assoc.
SR-1 Over SR-3			PROJECT: I-71 - Bridge No. FRA-1-
			0310 - P & T

							V46.51			sical Cha	racteristi	cs		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L	P.I.	w.c.	OTHER TESTS
18	55.0-56.5	30.0-56.5	A-4	A-4a	6	10	9	18	40	23	21	8	11	
4.														
-					ļ									
											-			
							,							
				,										
					<del> </del>	ļ			:					
					<del> </del>									
									1					_

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS SEESENED PROMING OUR WRITTEN APPRAL."

### SUMMARY OF TEST DATA FOR SOILS

SORING No. 4 STATION & OFFSET 30+54, 73 ° R, of C.L. of SR-3 SURFACE ELEV. 873.8 CLIENT: Barrett-Cargo-Withers & Assoc.

SR-1 Over SR-3 PROJECT: I-71 - Bridge No. FRA-1
0310 - R & L

	,					Da Vallas		All and the same of the same of	Phy	sical Cha	racteristi	cs		774:4
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	OTHER TESTS
1	0.0-0.5	0.0-0.5		Topsoil		No Te	ests Pe	rforme	d					
2	0.5-1.5	0.5-1.5	A-6	A-6a	10	0	6	12	53	29	34	14	13	
3	1.5-3.0	1.5-3.0	A-6	A-6b	12	8	8	11	39	34	35	20	6	
4	3.0-4.5	3.0-5.0	A6	A-6a	7	11	11	14	38	26	26	12	11	
S-1	5.0-6.5	5.0-50.0	A-4	A-4a	7	7	11	14	42	26	24	9	12	Unconfined Compression
5	6.5-7.0	5.0-50.0	A-4	A-4a	5	12	12	16	40	20	21	8	11_	
6	7.0-8.0	5.0-50.0	A-4	A-4a	3	28	11	13	33	15	20	6	14	
S-2	8.5-10.0	5.0-50.0	A-4	A-4a	3	24	11	14	37	14	21	7	12	Unconfined Compression
7	10.0-11.5	5.0-50.0	A-4	A-4a	4	17	11	18	41	13	20	- 5	10	
8	12.5-14.0	5.0-50.0	A-4	A-4a	2	38	7	11	30	14	20	6	12	
9	15.0-16.5	5.0-50.0	A-4	A-4a	5	16	9	15	38	22	22	8	10	
10	17.5-19.0	5.0-50.0	A-4	A-4a	4	20	10	14	35	21	22	8	10	
11	20.0-21.5	5.0-50.0	A-4	A-4a	6	10	9	15	38_	28	24	88	12	
12	21.5-23.0	5.0-50.0	A-4	A-4a	5	17	8	14	37	24	24	9	11	
13	23.0-24.5	5.0-50.0	A-4	A-4a	6	11	9	14	39	27	25	10	12	
14	25.0-26.5	5.0-50.0	A-4	A-4a	5	12	10	18	39	21	33	8	10	
15	30.0-31.5	5.0-50.0	A-4	A-4a	6	10	9	16	41	24	22		10	

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERMING OUR WRITTEN APPROVAL."

### SUMMARY OF TEST DATA FOR SOILS

BORING No.	NPLE   SAMPLE   STRATUM   HRB   CLASS   CLASS   CLASS   CLASS   CLASS   CLASS   CLASS   C.S.   F.S.   SILT   CLAY   L.L   P.I.   W.C.							ithers & Assoc. No. FRA-1- R & L						
									Phy	rsical Cha	racterist	cs		
SAMPLE No.			HRB CLASS	SHTL CLASS		% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	OTHER TESTS
16	35.0-36.0	5.0-50.0	A-4	A-4a	6	10	8	18	42	22	20	6	10	
17	40.0-41.0	5.0-50.0	A-4	A-4a	6	9	7	17	44	23	22	9	9	
18	45.0-46.5	5.0-50.0	A-4	A-4a	6	8	8	18	42	24	21	7	9	
19	50.0-51.5	50.0-51.5	A-6	A-6a	9	5	9	18	44	24	27	14	10	
W.AW.A.														
										-				
										<u> </u>				
								South and the second		•••				
7														
<del></del> _														!

. CLIENT: Barrett-Cargo-Withers & Assoc.



## TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELYES, ALL REPORTS ARE SUBMITTED AS THE COMPIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PROMING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

NG No SR-	5 STAT	ION & OFFSET 3	11+33, 97'	R. of C.L	of SR-3	su	RFACE EL	EV87	4.6	CLII	JECT: _I			thers & Ass No. FRA-1- R & L
			T			1			Phy	rsical Cha		cs		
AMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	£.L.	P.I.	w.c.	OTHER TEST
17	55.0-56.5	7.0-56.5	A-4	A-4a	6	9	8	20	42	21	21	9	10	
										•				
								-						
				11										

#### Form No. 531-16-59

# TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERMING OUR WRITTEN APPROVAL."

### SUMMARY OF TEST DATA FOR SOILS

BORING No. 6 STATION & OFFSET 28+56, 55 L. of C.L. of SR-3
SR-1 Over SR-3

SURFACE ELEV. 871.0

CLIENT: Barrett-Cargo-Withers & Assoc. PROJECT: I-71 - Bridge No. FRA-1-

0310 - R & L

						Physical Characteristics									
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	c.s.	% F.S.	% SILT	% CLAY	L.L.	P.J.	w.c.	OTHER TESTS	
1	0.0-1.5	0.0-1.5		Topsoil		No To	ests Pe	rforme	d.						
2	1.5-3.0	1.5-5.0	A-7-6	A-7-6	15	0	2	7	39	52	47	26	18		
3	3.0-4.5	1.5-5.0	A-7-6	A-7-6	15	0	3	7	42	48	44	25	20		
4	5.0-6.5	5.0~7.5	A-6	A-6a	9	4	7	11	48	30	29	12	14		
5	7.5-9.0	7.5-15.0	A-4	A-4a	4	19	12	16	37	16	21	7	13		
6	10.0-11.5	7.5-15.0	A-4	A-4a	5	17	11	14	40	18	19	5	13		
7	12.5-14.0	7.5-15.0	A-4	A-4a	4	27	9	10	37	17	21	8	13		
8	15.0-16.5	15.0-20.0	A-6	A-6a	7	10	10	14	38	28	25	11	15		
9	17.5-19.0	15.0-20.0	A-6	A=6a	7	12	10	14	43	21	24	11	12		
10	20.0-21.5	20.0-56.5	A-4	A-4a	7	7	10	14	41	28	24	10	12		
11	25.0-26.5	20.0-56.5	A-4	A-4a	5	10	10	18	42	20	22	8	10		
12	30.0-31.5	20.0-56.5	A-4	A-4a	7	8	8	16	43	25	23	10	9		
13	35.0-36.0	20.0-56.5	A-4	A-4a	7	7	7	17	43	26	22	9	8		
14	40.0-41.5	20.0-56.5	A-4	A~4a	. 7	7	8	17	44	24	21	8	9		
15	45.0-46.5	20.0-56.5	A-4	A-4a	6	11	8	17	42	22	22	9	9		
16	50.0-51.5	20.0-56.5	A-4	A-4a	6	10	9	17	40	24	21	9	10		
17	55.0-56.5	20.0-56.5	A-4	A-4a	5	14	8	17	38	23	22	10	10		



### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS PRESERVED PERIONING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

SORING No. 7 STATION & OFFSET 29+33, 21' L. of C.L. of SR-3 SURFACE ELEV. 873.5 CLIENTBarrett-Cargo-Withers & Assoc. PROJECT: I-71 - Bridge No. FRA-1-0310 - R & L

							· · · · · · · · · · · · · · · · · · ·		Phy	ysical Cha	racterist	ics		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP	% AGG.	% C.S.	% F.S.	% SiLT	% CLAY	L.L	P.I.	w.c.	OTHER TESTS
1	0.0-0.5	0.0-0.5		Fill		No T	ests P	rforme	d.					
2	0.5-1.5	0.5-3.0	A-6	A-6a	. 6	5	13	19	36	27	30	13	15	
3	1.5-3.0	0.5-3.0	A-6	A-6a	Visua	- Ins	ufficie	nt Sar	ple fo	r Test	ing		,	
4	3.0-4.5	3.0-9.0	A-7-6	A-7-6	19	0	4	9	38	49	54	36	14	
S-1	5.0~6.5	3.0-9.0	A-7-6	A=7=6	18	0	3	7	43	47	48	30	21	Unconfined Compression
5	6.5~8.0	3.0-9.0	A-7-6	A-7-6	13	0	6	12	40	42	42	23	12	
6	9.0-10.5	9.0-11.5	A-4	A-4a	4	17	12	15	35	21	21	7	10	
7	11.5-13.0	11.5-13.5	A-6	A-6a	5	30	7	9	36	18	27	12	14	
S-2	13.5-15.0	13.5-17.5	A-4	A-4a	4	20	12	12	38	18	21	7	12	Consolidation & Unconfined Compr
8	15.0-16.5	13.5-17.5	A-4	A-4a	3	29	9	11	35	16	23	10	13	
9	17.5-19.0	17.5-20.0	A-6	A-6a	6	14	12	15	38	21	24	11	10	
10	20.0-21.5	20.0-22.5	<b>A</b> ⇔4	A-4a	6	15	9	13	38	25	25	10	13	
11	22.5-24.0	22.5-25.0	A-6	A-6a	8	7	9	15	44	25	25	11	11	
12	25.0~26.5	25.0-56.5	A≈4	A-4a	5	10	12	19	41	18	23	9	12	
13	30.0-31.5	25.0-56.5	A-4	A-4a	6	13	7	16	40	24	23	10	10	
14	35.0-36.5	25.0-56.5	A-4	A-4a	7	7	8	17	42	26	22	10	9	
15		25.0-56.5	A-4	A-4a	6	13	7	17	38	25	23	10	9	

### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No	7	STATION & OFFSET	29+33,	21° L.	of C.	L, c	of SR-3	SURFACE ELEV.	873.5	CLIENTBarrett	-Cargo-With	ers & Assoc
SR-1	Over	: SR∞3								PROJECT: I-71		
											0310 - R 8	
											-	

	,					Physical Characteristics								
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	c.s.	% F.S,	% SILT	% CLAY	L. L.	P.J.	W.C.	OTHER TESTS
16	45.0-46.5	25.0-56.5	A-4	A-4a	6	11	8	17	40	24	22	10	10	
17	50.0-51.5	25.0-56.5	A-4	A-4a	6	12	8	17	40	23	22	10	10	
18	55.0-56.5	25.0-56.5	A-4	A-4a	5	13	8	18	37	24	21	. 9	10	
				1										
														***************************************





"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No. 10 STATION & OFFSET 29+34, 97 R. of C.L. of SR-3 SURFACE ELEV. 873.2 CLIENT Barrett - Cargo - Withers & Assoc.

PROJECT: I-71 - Bridge No. FRA-10310 - R & L

										sical Cha	racteristi	cs		
No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% S≀LT	% CLAY	L.L.	P.I,	w.c.	OTHER TESTS
_11	0.0-1.5	0.0-1.5		Fill	No Tes	ts Per	formed							
2	1.5-3.0	1.5-5.0	A-7-6	A-7-6	19	0	4	6	37	53	54	36	15	
3	3.0-4.5	1.5⇔5.0	A-7-6	A-7-6	14	1	3	10	40	46	42	2.4	21	
4	5.0-6.5	5.0-7.5	A-6	A-6a	7	11	10	14	41	24	26	11	14	
5	7.5-9.0	7.5-20.0	A-4	A-4a	4	22	10	13	36	19	24	10	11	
6	10.0-11.5	7.5-20.0	A-4	A-4a	5	21	10	12	36	21	23	9	10	
7	12.5-14.0	7.5-20.0	A-4	A-4a	5	17	11	14	40	18	22	9	14	
8	15.0-16.5	7.5-20.0	A-4	A-4a	4	22	9	14	35	20	22	9	10	
9	17.5-19.0	7.5-20.0	A-4	A-4a	7	10	8	12	43	27	2.5	10	10	
1.0	20.0-21.5	20.0-25.0	A-6	A-6a	7	9	10	14	40	27	26	12	13	
11	25.0-26.5	25.0~56.5	A-4	A-4a	6	9	9	1.7	44	21	24	1.0	11	
12	30.0-31.5	25.0-56.5	A-4	A-4a	6	7	10	18	42	23	22	9	9	
13	35.0-36.0	25.0-56.5	A-4	A-4a	5	11	10	17	40	22	22	9	8	
14	40.0-41.0	25.0-56.5	A-4	A-4a	6	9	9	15	42	25	22	9	8	
15	45.0-46.5	25,0-56.5	A-4	A-4a	6	12	9	16	40	23	21	9	9	
16	50.0-51.5	25.0-56.5	A-4	A-4a	6	9	8	17	40	26	21	9	10	
17	55.0-56.5	25.0~56.5	A-4	A-4a	6	8	9	19	39	25	21	9	10	

# TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

#### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Cargo-Wi	thers & Associate	s, Ltd.	LAB No	3988
PROJECT	I-71 - Bridge No	. FRA-1-0310 - R	& L		
HOLE No.	- L	SAMPLE No	S-1	DEPTH (ft.)	5-6.5

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

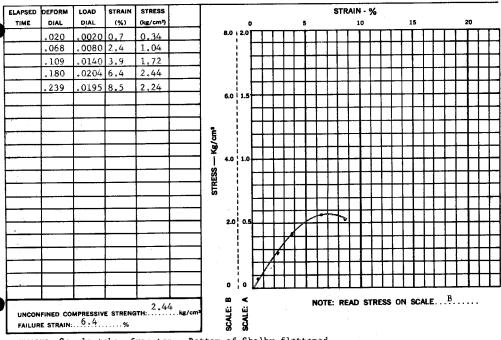
3.56
9.95

HEIGHT (in)	2.8
VOLUME (Cm²)	70.74
WEIGHT-WET (Gm)	155.5
WEIGHT-DRY (Gm)	136.4
DENSITY DRY (Lb/ft*)	120.3



TARE No.	K-14	
WEIGHT-WET (Gm)	176.2	
WEIGHT-DRY (Gm)	157.1	
WEIGHT WATER (Gm)	19.1	
WEIGHT TARE (Gm)	21.14	
WEIGHT SOLIDS (Gm)	135.96	
w %	14.0	

DESCRIPTION OF SAMPLE Brown Sandy SILT, Trace of Gravel, Moist - Stiff, (A-4a).



REMARKS: Sample taken from top - Bottom of Shelby flattened.

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE COMPIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRATA FROM OR RECARDIN GOUR PREPORTS IS RESERVED PERMING OUR WRITTEN APPROVAL."

#### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Cargo-	Withers & Associat	es, Ltd.	LAB No.	3989 .	
PROJECT	I-71 - Bridge	No. FRA-1-0310 - R	- A-I			
HOLE No	4	SAMPLE No	S-2	DEPTH (ft.)	8.5-10	

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

DIA.—TOP (Cm)	
DIAMIDDLE (Cm)	
DIA.—BOTTOM (Cm)	
DIAAV. (Cm)	3.55
AREA—AV. (Cm²)	9.90

HEIGHT (In)	2.8
VOLUME (Cm²)	70.39
WEIGHT-WET (Gm)	161.0
WEIGHT-DRY (Gm)	143.1
DENSITY DRY (Lb/ft³)	126.9



TARE No.	P-2	
WEIGHT-WET (Gm)	181.9	
WEIGHT-DRY (Gm)	164.0	
WEIGHT WATER (Gm)	17.9	
WEIGHT TARE (Gm)	21.18	
WEIGHT SOLIDS (Gm)	142.82	
w %	12.5	

DATE8/22/62

BY\_\_

AJB

DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Medium Stiff, (A-4a).

	DEFORM	LOAD	STRAIN	STRESS											ST	RAI	N٠	%										
TIME	DIAL	DIAL	(%)	(kg/cm²)								5	i				10				1	5				20	)	
	.040	.0015		0.28			8.0	2.0	П	Т			П	T	Т	T	Т	П		П			П	T	Т	Т	Т	
	. 152	.0055	5.4	0.73				1	П	1	T			ヿ	1	1	T	П		П			П	7	T	T	T	
	. 283	.0095	10.1	1.13					H	十	+	П		7	+	1	t	Т		П			T	7	7	†	7	
	.450	.0116	16.1	1.26				! 1	H	+	+	Н		7	+	+	t	$\vdash$	H	Н	┪	Н	$\forall$	┪	+	†	+	-
	. 520	.0119	18.6	1.26					H	+	╁	$\vdash$	+	十	+	╁	t	Н	-	H	┪	Н	+	+	+	+	+	-
							6.0	1.5	┝┿	+	╁	Н	-	╌┼	+	+	╁	$\vdash$	-	Н	$\dashv$	-	$\dashv$	-+	+	+	+	-
								:	${oldsymbol{arphi}}$	+	╁	Н	$\dashv$	+	+	+	╀	H	Н	$\vdash$	┥	Н	$\dashv$	+	+	+	+	-
									$\vdash$	+	+	Н	$\dashv$	-	-	+	╄	H	Щ		4		4	4	_}	+	4	_
	<u> </u>					Ë			Н	+	$\perp$	Ш	$\dashv$	4	+	4	╄	Ļ	-	_	4		*	7	4	4	+	_
					-	Š			Ц	4	$\perp$			4	4	4,	봗		Ц	Ш	_	Щ	4	4	4	4	4	_
						STRESS Kg/cm³	4.0	1.0	$\sqcup$	┸	Н	Ш		4	J.	4	L	Ц		Щ	_	Ц	4	4	4	4	4	اـــ
						ģ		1	Ц	┸	Ш		Ц	يل	4		L			Ш			_	_		_	1	
		<u> </u>				ű			Ц	┸	Ш			4		L	L		L							1	┙	
						S			П				6	- [	1		l				-							
									П	Т		7			Т										$_{\rm I}$	Ī		7
							20	0.5	П	Т	T			Т	Т		Γ		Г				. [		Т	T	Т	
							2.0	, J.S	П	Т	7		П	丁	Т	T	Π	П	Г	П			Т	Т	Т	Т	T	
		:						[ ]	$\vdash$	7	т	П	┪	1	十	十	T	Т	Г	П			7	T	+	1	Ť	٦
									Ħ.	1	Н		T	十	+	十	T	П	Г	П	П	П	7	7	+	1	T	┪
									H	+	+	Н	$\Box$	$\dashv$	十	+	t	H	┪	Н		T	7	1	+	T	†	╛
									//	╅	Н	Н	+	+	+	十	t	Н	H	Н	Н	Н	+	+	╅	+	+	┪
							0	0			ш	ш			<u> </u>		_	ட	_	Ц.,		Ш	_			_	_1	_
UNCON!	FINED COL	APRESSIVE	STRENG	тн:12	26 kg/cm²		SCALE: B	SCALE: A					N	OTE	: R	EAD	S	rre	SS	10	1 5	CA	LE.	4	<u>}</u>		•	

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AR A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR MECARDING OUR REPORTS IS RESERVED PERIONS QUE WRITTEN APPROVAL."

### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Carog	Withers & Associ	ates, Ltd.	LAB No.	3890	,
PROJECT	I-71 - Bridge	No. FRA-1-0310 -	R & L			
HOLE No	5	SAMPLE No	S-1	DEPTH (ft.)	7-8.5	

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

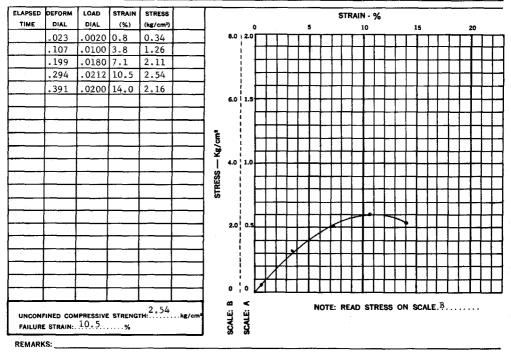
DIATOP (Cm)	ŀ
DIAMIDDLE (Cm)	
DIA.—BOTTOM (Cm	1)
DIA.—AV. (Cm)	3.56
AREAAV. (Cm²)	9.95

HEIGHT (In)	2.8
VOLUME (Cm²)	70.74
WEIGHT-WET (Gm)	164.5
WEIGHT-DRY (Gm)	148.3
DENSITY DRY (Lb/ft)	130.8



TARE No.	V~9	
WEIGHT-WET (Gm)	185.0	
WEIGHT-DRY (Gm)	1.68.9	
WEIGHT WATER (Gm)	16.1	
WEIGHT TARE (Gm)	20.90	
WEIGHT SOLIDS (Gm)	148.00	
w %	10.9	

DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Stiff (A-4a).



BY AJB

DATE 8/22/62

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS. THE PUBLIC, AND GURBELVES, ALL REPORTS ARE SUBMITTED AS THE COMFIDENTIAL PROFERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERIONING OUR WITTEN APPROVAL."

### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Cargo-Withers & Associates, Ltd.	LAB No	3991
PROJECT_	I-71 - Bridge No. FRA-1-0310 - R & L		
HOLE No		DEPTH (ft.)	5-6.5

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

DIA.—TOP (Cm)	
DIAMIDDLE (Cm)	
DIA.—BOTTOM (Cm)	
DIA.—AV. (Cm)	3.57
AREA-AV. (Cm²)	10.01

HEIGHT (In)	2.8
VOLUME (Cm²)	71.17
WEIGHT-WET (Gm)	146.5
WEIGHT-DRY (Gm)	121.6
DENSITY DRY (Lb/ft)	106.6



TARE No.	V-35
WEIGHT-WET (Gm)	167.0
WEIGHT-DRY (Gm)	142.1
WEIGHT WATER (Gm)	24.9
WEIGHT TARE (Gm)	20.92
WEIGHT SOLIDS (Gm)	121.18
w %	20.5

DESCRIPTION OF SAMPLE Mottled Brown and Gray CLAY, Little Sand, Moist - Stiff, (A-7-6).

	DEFORM	LOAD	STRAIN	STRESS	1 1										ST	RAI	N -	%										
TIME	DIAL	DIAL	(%)	(kg/cm²)	ļ	l								_			10				1	5		_		2	0	
	.014	.0020		0.34			8.0	2.0		Т	Τ			П	Т		Τ							I				
	.110	.0125		1.54				İ	П	Т	Т			Т	Т	Т	Т						П	٦			٦	Γ
	.230	.0180	8.2	2.07					П		Τ	П		寸	Ť	1	T	Г			П		٦	٦	T	╗	٦	Π
	.265	.0183	9.5	2.08						十	T	П	М		T	+	†	T	Г	П		П	T	7	7	7	┪	Г
	.322	.0175	11.5	1.95				•	Н	十	T	П	Н	$\dashv$	+	+	t		Н	Н		П	1	7	7	┪	٦	Т
							6.0	1.5	H	+	┿	Н		$\dashv$	+	+-	t	t	Н	Н		Н	$\forall$	_	┪	7	7	Г
								i	H	+	+-	Н	H	$\dashv$	+	╁	╁	$\vdash$	Н	-	-		$\dashv$	-	+	┪	┪	Г
						_		!	H	+	╁╌	Н	H	+	+	╅	╁	$\vdash$	H		Н		Н	4	ᅥ	1	ᅱ	-
						Kg/cm²		i	$\vdash$	+	┿	Н	Н	+	+	╁	╀	⊢	⊢	H	-	Н	Н	+	-	┨	-	$\vdash$
						9		i	Н		+-	Н	Н	+	+	╁	╀	╀	H	-	Н	Н	$\dashv$	-	+	┥	4	<u> </u>
						ı	4.0	1.0	H	+	┿	Н	Н	+	+	+	╀	⊢	-	-	Н	Н	H	-+	$\dashv$	┪	┥	-
						8		1	┝┤	+	╄	Н	Н	-+	+	+	╀	⊢	-	H	Н	Н	Н	4	4	4	4	۳
		-				STRESS		i	Н	+	╁-	Н	Н	+	+	╁	╀	┝	H	H	H	Н	$\dashv$	4	$\dashv$	-1	$\dashv$	-
-					<del>  </del>	ίs		į	Н	+	+-		Н	4	+	4	╀	L	L	L	Ц	Н	4	-4	4	4	4	L
					<del></del>			į	Н	4	╄-	Щ	Н	4	+	+	╄	╄	L	_	Ц	Ц	Ц	4	4	4	4	ـــا
							2.0	0.5	Н	4	4_	Ц	Ц	ᅪ	4	-   *	┾	F	L	L	Щ	Ц	_	4	4	4	4	_
					-				Ш	$\perp$	┸		口	$\perp$	1	┸	L	Ľ	L	L,	L	Ц	Ц	4	4	_	4	L
								į	Ц	ᆚ	2		Ш	$\perp$	$\perp$	L	L	L	L	L	Ц	Ш			┙	┙	┙	L
					<u> </u>			İ	Ш	$\mathcal{L}$	1_			┙	_	Ŀ	L	L		L	Ц			_			┙	_
								į	L	1	1					┙		L										L
					L		0	. 0			$\Gamma$					Ι		L						Ι				Ĺ
		APRESSIVE		2.0 TH:	8 kg/cm²		SCALE: B	SCALE: A					N	OTE	: R	EAC	S	rre	SS	Of	1 5	CA	LE.	. F	3			

BY AJB DATE 8/22/62

### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE COMPIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Cargo-Wi	thers & Associates	Ltd.	LAB No.	3992	
PROJECT	I-71 - Bridge No	. FRA-1-0310 - R &	L			
HOLE No.	7	SAMPLE No	S-2	DEPTH (ft.)	13.5-15	

#### SPECIMEN AT START

### FAILURE SKETCH

#### WATER CONTENT

DIA.—TOP (Cm)	
DIAMIDDLE (Cm)	
DIABOTTOM (Cm)	
DIA.—AV. (Cm)	3.57
AREA—AV. (Cm²)	10.01

HEIGHT (In)	2.8
VOLUME (Cm³)	71.17
WEIGHT-WET (Gm)	166.0
WEIGHTDRY (Gm)	147.4
DENSITY DRY (Lb/ft³)	129.2



TARE No.	E-107	
WEIGHT-WET (Gm)	186.0	
WEIGHT—DRY (Gm)	167.4	
WEIGHT WATER (Gm)	18.6	
WEIGHT TARE (Gm)	20.21	
WEIGHT SOLIDS (Gm)	147.2	
w %	12.6	

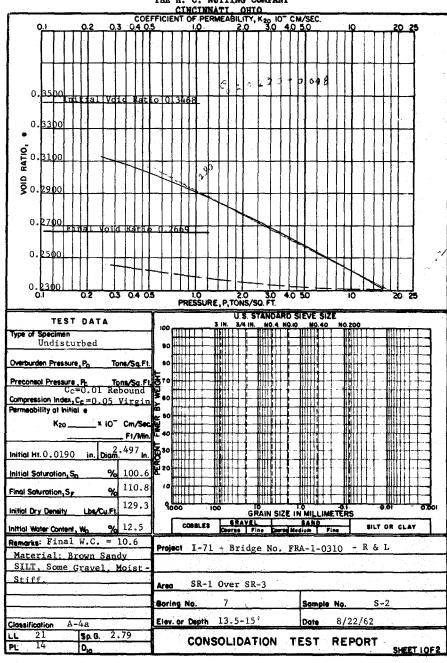
AJB

BY\_

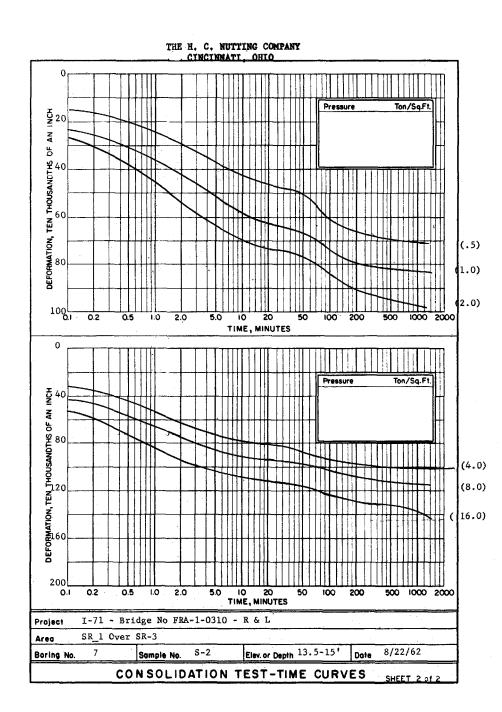
DATE8/22/62

DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Stiff, (A-4a).

8 .0092	3.9	0.22 0.44 0.65 0.86 0.96			8.0	2.0	1		П	5 	-	Н	1	10	П	1	T	15	H		Ŧ	20	П
0 .0030 5 .0050 3 .0075 8 .0092	3.9 7.3 13.7 19.9	0.44 0.65 0.86 0.96			8.0	2.0	$\exists$	F	H	+	H	H	+	I	Ц	$\Box$	$\perp$	I	H	$\dashv$	Ŧ	F	П
5 .0050 3 .0075 8 .0092	7.3 13.7 19.9	0.65 0.86 0.96						Ī	П	1		П	$\top$	+	11	_	_	╅	П	$\neg$	┰	Т	-
3 .0075 8 .0092	13.7 19.9	0.86			i	1	_						- 1		1 1	- 1	- 1						1 1
8 .0092	19.9	0.96							П	T	1	Н	1	T	Ħ	T		T	П		T	Т	П
					- 1	1	$\top$	T	Н	+	T			1	П	7	$\top$	1	П		$\top$	1	П
2 .0094	20.8		i			1	1	T	H	╅	1	Н	_	T	$\Box$		T	T	T	Ħ	$\top$	T	П
		0.97			6.0	1.5	$\dashv$	${}^{+}$	Н	十	T	Н	$\top$	t	H	_	+	十	Ħ		1	T	П
					1		+	+	H	十	T	H	十	t	$\dagger \dagger$	寸	$\top$	+	H		$\top$	1	П
1					1		$\vdash$	+-	╁┼	十	+-	Н	+	t	H	$\dashv$	+	+	Ħ	$\dashv$	$\pm$	t	11
				Ē			Н	+-	Н	十	+		+	╈	H	+	+	+	П	$\dashv$	十	T	$\forall$
				<u> </u>			$\vdash$	╁	Н	+	+	H	+	十	Н	+	+	+	Н	$\dashv$	+	t	Н
				ı	4.0	1.0	$\vdash$	+	Н	+	╁	H	+	t	Н	1	┪	†	Н	1	+	-	1
				SS			H	+	Н	+	+-	H	+	+	H			扌	┥		十	T	Ħ
				K			$\vdash$	۳	Н	╅	+-	H	+	t	H	7	7	T	T	$\top$	$\top$	T	$\vdash$
						1	H	+	Н	+	╁╴		1	1	+1	H	╅	╁	t	H	╅	╁╴	+
							$\vdash$	+	Н	+	+	H	+	╆	$\forall$	H	+	+	۲	H	十	t	H
					2.0	0.5	H	╁	Ⅎ	4	+	Н	+	╆	H	$\vdash$	十	+	t	H	+	+-	H
							Н	╆	М	╅	+	Н	+	╈	+	Н	╅	╅	┿	H	+	+	+
							⊢	4	Н	╁	+	Н	+	╁	Н	H	┿	┿	╁	H	╁	╁┈	H
<del></del>							И	+	Н	╅	╁	Н	+	╫	+	Н	+	+	╁	H	十	┿	╀┤
			<del>                                     </del>				$\vdash$	╁	Н	+	+-	H	+	┿	Н	Н	+	╁	╁┤	┝╅	+	┿	╁┤
					0	0	Ш	Т.	ш			Ц				ш	1_		Ш	ш		1_	ш
COMPRESSIV	E STRENG	тн: . 0 . 9	6 kg/cm²		SCALE: B	SCALE: A					NOT	Έ: f	REAI	S	TRE	SS	ON	SC	ALE		Ą		•
	COMPRESSIVALINE: 20.0	AIN:	AIN:	AIN:		2.0  COMPRESSIVE STRENGTH: 0.96 kg/cm² NIN:20.0%	2.0 0.5  COMPRESSIVE STRENGTH: 0.96 kg/cm will strength with strength wi	2.0 0.5 2.0 0.	2.0 0.5 2.0 0.	COMPRESSIVE STRENGTH: 0.96 kg/cm Min:20,0 %	20 0.5	20 0.5	2.0 0.5	2.0 0.5	2.0 0.5 NOTE: PEAD S	2.0 0.5 MOTE PEAD SIDE	2.0 0.5 DOOR STREET	2.0 0.5 NOTE: READ STRESS ON NOTE: READ STRESS ON NOTE: NOTE	2.0 0.5 NOTE: READ STRESS ON SC.	2.0 0.5  COMPRESSIVE STRENGTH: 0.96 kg/cm with 1.20.0 %  NOTE: READ STRESS ON SCALE	2.0 0.5  COMPRESSIVE STRENGTH: 0.96 kg/cm with 20.0 % William with	2.0 0.5 NOTE: READ STRESS ON SCALE A	2.0 0.5 DEAD STRESS ON STAFE A



490



LOCATION.

DRILLER\_

1770.8

7-10-62

1 SR-1 over SR-3

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AB A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OUTSELVES, ALL REPORTS ARE SUBMITTED AS THE  $_2$  13553 -vb or extracts prom of regarding our reports is reserved pending our written approved."  $_{7-1.8-62}$ 

17

Field

Interstate Rt.71, Ohio, Fay te, Madison, Pickaway \*

Barrett-Cargo-Withers & Assoc., Ltd.

30+41, 55 L

E. Philpot

#### TEST BORING REPORT

DRILL No.\_

\* & Franklin Counties

ORDER No.

DATE STARTED.

ELEVATION	REFEREN	ICE	873.5		DATE COM	PLETED	7-11-62	
CASING: DI	AMETER_		3.5" I.D. Hollow Stem Augers	_HAMMER	WT	FALL_		
SAMPLER: [	DIAMETER	& TYPE	2" O.D. Split Spoon	_HAMMER	wт. <u>140#</u>	FALL_	30"	
DEPTH TO	WATER; I	MMEDIATE	7.5°	_UPON C	OMPLETION_		None	
DEPTH TO	WATER_	1DAYS	AFTER COMPLETION 7.8"	WATER	JSED IN DRI	LLING	No	
ELEVATION 873.5	<b>DEP</b> TH		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER Dr % Core Rec.	Recover in linches
				1	0-1.5	SS	3-7-9	16"
872.0	1.5	1.5	Topsoil, dry - hard	2.	1.5~3 3~4.5	SS	10-19-33 15-14-12	15" 16"
	ĺ`	3.5	Brown and gray sandy clay	1	3-4.3	55	15 14 12	120.
868.5	5 '		with fine gravel, dry - hard	4	5-6.5	SS	5-6-8	17"
		2.5	Brown and gray sandy clay with fine gravel, moist - stiff	i	<u>.</u>			
866.0	7.5			5	7.5-8.5	SS	4-5	12"
	-	1 0	Brown and gray sandy clay with fine gravel, wet - medium dense					
865.0	8.5			6	8.5-9	ss	11	6''
		1.5'	Brown sandy clay with fine gravel, dry - hard					
863.5	101			7	10-11.5	SS	10-7-7	16"
		2.5	with fine to coarse gravel, moist - stiff					
861.0	12.5	1		-	12.5-14 15-16.5	I SS SS	16-6-6 5-9-14	18"
REMARKS:		i di Linguistr		10	17.5~19	SS	11-14-18	16%"

Elev. (proposed) bottom of footing = 882.0

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted,
THE H. C. NUTTING CO.



PROJECTInterstate Rt.71, Ohio, Fayette, Madison, Pickaway \*

HOLE No. 1 SR-1 over SR-3

			DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PE Re 6" ON SAMPLER or % Core Rec. 1	in nches
ELEVATION	DEPTH		DESCRIPTION .	<b> </b>				
861.0	12.5	7.5'	Brownish gray sandy clay with fine to coarse gravel, moist - stiff	11	20-21.5	SS	8-10-12	17"
853.5	201	51	Gray sand, clay with fine gravel, moist - very stiff	12	25-26.5	ss	10-16-28	18"
848.5	25				į	1	1	1
843.5	301	5 %	Brownish gray sandy clay with fine gravel, moist - hard	13 14 15	35-36	SS SS SS	24-44 32-49 17-26-39	12" 12" 174 18'
		26.5	Gray sandy clay with fine to coarse gravel, moist - hard	16 17 18	45-46. 50-51.	5 SS 5 SS	22-29-40 20-26-37 13-23-34	18
917.0	)   56.	5 '	_	- }	1	1	1	}
,	1	}	Boring completed	1	1	1	l l	1
							-	
•								

### TESTING ENGINEERS AND SOILS CONSULTANTS

"As a mutual protection to clients, the public, and ourselves, all reports are submitted as the Confidential Property of Clients, and authorization for Publication of Statements, conclusions. 7/11/62 or extracts from or regarding our reports is reserved pending our written approval."

Page 1 of 2

#### FIELD TEST BORING REPORT

	CLIENT		Barret	t-Cargo-Withers & Associates, Lt	:d.	_ORDER No.		1770.8	5.1
	PROJECT_IT	ntersta	te Rt.	71 - Ohio - Fayette, Madison, P:	Lckaway	ـــــــــــــــــــــــــــــــــــــ	4 S	R-1 Over S	3R=3
	LOCATION		30+54,	63 R. of C.L. of SR-3					
	DRILLER			Rt. 71 - Ohio - Fayette, Madison, Pickaway and Franklin Countries 4 SR 20+54, 63' R. of C.L. of SR-3 10ge No. FRA-1-0310  Philpot DRILL No. 17 DATE STARTED  873.8 DATE COMPLETED  873.8 DATE COMPLETED  12.0 Split Spoon HAMMER WT. FALL  DAYS AFTER COMPLETION WATER USED IN DRILLING  DESCR NOF MATERIALS SAMPLE DEPTH SAMPLE DEPTH SAMPLE OF SAMPLE OF SAMPLE DEPTH SAMPLE OF SAMPLE		7/8/62			
	ELEVATION	REFEREN	DE	873.8		DATE COM	PLETED	7/8/62	
	CASING: DIA	METER_	3.5" I.	D. Hollow Stem Augers	HAMMER	WT		30**	
	SAMPLER: D	IAMETER	& TYPE	2" O.D. Split Spoon	HAMMER	WT	FALL.	None	
	DEPTH TO				_UPON CO	MPLETION			
	DEPTH TO	WATER	DAY	S AFTER COMPLETION	WATER L	SED IN DRII		None	
	ELEVATION 873.8	DEPTH O <sup>↓</sup>		DESCR		SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
8					1	0-0.5	ss	3	4"
	873.3	0.5	0.5	Topsoil, moist - soft.	2	0.5~1.5	SS	5~8	8"
	872.3	1.5°	1.0	Brown sandy clay, dry - hard.	3	1.5-3	ss	8-12-18	15"
		·	3.5	with fine to coarse gravel,	4	3-4.5		9~10~10	1.7"
	868.8	5.01			S-1	5-6.5	3"ST \	•	1251
			2.0"	fine to coarse gravel, moist -	1	6.5-7	SS	8	6"
	866.8	7.0		very still.	6	7-8	SS	4-6	12"
	863.8	10.0	3.0°	with fine to coarse gravel,	_			6-6-7	12" 15"
	861.3	12.5	2.5	with fine to coarse gravel,	8	12.5-14	ss	7-10-14	12"

REMARKS:

Respectfully submitted, THE H. C. NUTTING CO.

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

### TESTING ENGINEERS AND SOILS CONSULTANTS

"As a mutual protection to clients, the public, and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions, 7/11/62 or extracts from or regarding our reports is reserved perionic our written approach."

Page 1 of 2

### FIELD TEST BORING REPORT

CLIENT		Barrett-Cargo-Withers & Associates.				1770.8	<u> </u>
PROJECT_I	ntersta	te Rt. 71 - Ohio - Fayette, Madison,	Pickaway Franklin	cottone No.	4 S	R-1 Over	SR-3
LOCATION_		30+54, 63' R. of C.L. of SR-3 Bridge No. FRA-1-0310					
DRILLER		E. Philpot DRILL No.	17	DATE STAR	TED	7/8/62	
ELEVATION	REFEREN	DE873.8		DATE COM		7/8/62	<u> </u>
		3.5" I.D. Hollow Stem Augers	HAMMER		FALL_		
SAMPLER: D	DIAMETER		HAMMER	wr140#	FALL_	30"	
DEPTH TO	WATER; II	MMEDIATE12,5 °	UPON CO	OMPLETION		None	
DEPTH TO	WATER	DAYS AFTER COMPLETION	WATER U	JSED IN DRII		None	
ELEVATION 873.8	<b>DEPTH</b> О <sup>3</sup>	DESCR: JIN OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
		0.51	1	0-0.5	SS	3	46
873.3	0.5	0.5° Topsoil, moist - soft.	2	0.5-1.5	SS	5~8	8"
872.3	1.5	1.0° Brown sandy clay, dry - hard	3	1.5-3	SS	8-12-18	15".
		3.5' Brown and gray sandy clay, with fine to coarse gravel, dry - hard.	4	3-4.5	ss	9-10-10	17"
868.8	5.0		8-1	5~6.5	3"ST \		12"
i		2.0° Brown and gray sandy clay, w fine to coarse gravel, moist very stiff.		6.5~7	SS	8	6"
866.8	7.08	very serri.	6	7-8	ss	4-6	1.2"
		3.0° Brown and gray sandy clay, with fine to coarse gravel, moist - medium stiff.	S <b>~</b> 2	8.5-10	3"ST?		12"
863.8	10.0	2.5° Brown and gray sandy clay	7	10-11.5	SS	6-6-7	15"
		2.5° Brown and gray sandy clay, with fine to coarse gravel, moist - stiff.		*			
861.3	12.5		Ιg	12.5-14	l ss	7-10-14	12"

REMARKS:

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted,
THE H. C. NUTTING CO.

By Smy Dn

1. 50

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLF No. 4 SR-1 Over SR-3

(Bridge No. FRA-1-0310) and Franklin Counties

5.0° Brownish gray sandy clay, with fine to coarse gravel, moist - very stiff to hard.  10 17.5-19 SS 9-15-20 20-21.5 SS 5-8-13  1.5° Brownish gray sandy clay, with fine gravel, moist - very stiff.  21.5° Brownish gray sandy clay, with fine gravel, dry - hard.  8.5° Brownish gray sandy clay, with fine gravel, dry - hard.  21.5° Gray sandy clay, with fine gravel, moist - hard.  21.5° Gray sandy clay, with fine gravel, moist - hard.  21.5° Gray sandy clay, with fine gravel, moist - hard.  21.5° Ss 32-50 SS 32-50 SS 32-50 SS 32-50 SS 32-50 SS 32-34-46	IALS SAMPLE SAMPLE OF 6" ON 1 SAMPLE SAMPLER 1	Recov in Inche
58.8   15.0°   5.0°   Brownish gray sandy clay, with fine to coarse gravel, moist - very stiff to hard.   10   17.5-19   SS   9-15-20    53.8   20.0°   1.5°   Brownish gray sandy clay, with fine gravel, moist - very stiff.   12   21.5-23   SS   11-21-26    8.5°   Brownish gray sandy clay, with fine gravel, dry - hard.   13   23-24.5   SS   13-20-32    43.8   30.0°   21.5°   Gray sandy clay, with fine gravel, moist - hard.   16   35-36   SS   32-50    21.5°   Gray sandy clay, with fine gravel, moist - hard.   16   35-36   SS   32-50    21.5°   Gray sandy clay, with fine gravel, moist - hard.   18   45-46.5   SS   25-34-46    22.3   51.5°   Boring Completed.   19   50-51.5   SS   18-28-40		
fine to coarse gravel, moist - very stiff to hard.  1.5' Brownish gray sandy clay, with fine gravel, moist - very stiff.  12 21.5-23 SS 11-21-26  8.5' Brownish er y sandy clay, with fine gravel, dry - hard.  13 23-24.5 SS 13-20-32 14 25-26.5 SS 15-21-29  15 30-31.5 SS 25-40-61  21.5' Gray sandy clay, with fine gravel, moist - hard.  16 35-36 SS 32-50 SS 32-50 17 40-41 SS 36-52 18 45-46.5 SS 25-34-46  19 50-51.5 SS 18-28-40  22.3 51.5'  Boring Completed.  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	9 15-16.5 SS 17-17-15	17**
1.5' Brownish gray sandy clay, with fine gravel, moist - very stiff.  21.5' Brownish er y sandy clay, with fine gravel, dry - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  21.5' Gray sandy clay, with fine gravel, moist - hard.  22.3 51.5' Boring Completed.  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	avel, moise -	18"
fine gravel, moist - very stiff.  21.5 Brownish er y sandy clay, with fine gravel, dry - hard.  23.24.5 SS 13.20-32 SS 15.21-29  43.8 30.0 Gray sandy clay, with fine gravel, moist - hard.  21.5 Gray sandy clay, with fine gravel, moist - hard.  21.5 Gray sandy clay, with fine gravel, moist - hard.  21.5 SS 32-50 17 40-41 SS 36-52 18 45-46.5 SS 25-34-46  19 50-51.5 SS 18.28-40  Remarks: Elevation (Proposed) Bottom of Footing - 868.0		18"
52.3   21.5   8.5   Brownish gr y sandy clay, with fin. gravel, dry - 143.8   30.0   21.5   Gray sandy clay, with fine gravel, moist - hard.   12   21.5 - 23   SS   13 - 20 - 32   15 - 21 - 29   15   30 - 31.5   SS   25 - 40 - 61   16   35 - 36   SS   32 - 50   SS   36 - 52   SS   25 - 34 - 46   19   50 - 51.5   SS   25 - 34 - 46   19   50 - 51.5   SS   18 - 28 - 40   19   50 -		
with fin. gravel, dry - 14 25-26.5 SS 15-21-29 15 30-31.5 SS 25-40-61 21.5 Gray sandy clay, with fine gravel, moist - hard. 16 35-36 SS 32-50 SS 36-52 SS 25-34-46 17 40-41 SS 36-52 SS 25-34-46 19 50-51.5 SS 18-28-40 Remarks: Elevation (Proposed) Bottom of Footing - 868.0	12 21.5-23 SS 11-21-26	181
hard.  15 30-31.5 SS 25-40-61  21.5 Gray sandy clay, with fine gravel, moist - hard.  16 35-36 SS 32-50  17 40-41 SS 36-52  18 45-46.5 SS 25-34-46  19 50-51.5 SS 18-28-40  Remarks: Elevation (Proposed) Bottom of Footing - 868.0		18"
21.5 Gray sandy clay, with fine gravel, moist - hard.  16 35-36 SS 32-50 SS 36-52 SS 36-52 SS 25-34-46  19 50-51.5 SS 18-28-40  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	dry - 14 25-26.5 SS 15-21-29	17"
21.5' Gray sandy clay, with fine gravel, moist - hard.  17	15 30-31.5 SS 25-40-61	18"
grave1, moist - hard.  17	sith fine 16 35-36 SS 32-50	12"
22.3 51.5 Boring Completed.  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	ard. 17 40-41 SS 36-52	1.2"
Boring Completed.  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	18   45-46.5   SS   25-34-46	18"
Boring Completed.  Remarks: Elevation (Proposed) Bottom of Footing - 868.0	19 50-51.5 SS 18-28-40	18"
Remarks: Elevation (Proposed) Bottom of Footing - 868.0		
	posed) Bottom of Footing ~ 868.0	
ce. onto seate argumy restring additions		

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND GURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING GUR REPORTS IS RESERVED PENDING GUR WRITTEN APPROVAL."

B-12611-ams 7/11/62

Page 1 of 2

### FIELD TEST BORING REPORT

CLIENT		Barret	t-Cargo-Withers & Associates,	Lta.	ORDER No.		1770.8	
		te Rt. 71	- Ohio - Favette Madison P	ickawav			SR-1 over	SR-3
LOCATION_		31+33.	- Ohio - Fayette, Madison, P 97° R. of C.L. of SR-3 and No. FRA-1-0310	Frankli	n Countie	8		
		E 71.4		17			7/8/62	
DRILLER			DIVIET 110				210100	·
					DATE COM			
CASING: DI	AMETER_	3.5" I.	D. Hollow Stem Augers	HAMMER	WT	FALL_	2011	
			O.D. Split Spoon			FALL_		
		MMEDIATE				None		
DEPTH TO	WATER	DAYS	AFTER COMPLETION	WATER U	JSED IN DRII	LING	None	
ELEVATION	DEPTH		DESCRIE LUN OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER	Recover in
874.6	0 8			140.	DET	SAIM LL	or % Core Rec.	Inches
,		1.0'	Topsoil, dry - loose.	1	0-1	ss	2-4	9"
873.6	1.0		,,	2	1~1.5	SS	8	6 <b>*</b> *
		1.5°	Brown and gray sandy clay, dry - hard.			-		
872.1	2.5			3	2.5-4	SS	16-14-14	17"
869.6	5.0	2.5	Brown and gray sandy clay, with fine gravel, dry - hard	4	5-6.5	SS	5-6-7	12"
		5.01	Brown and gray sandy clay, with fine to coarse gravel, moist - stiff to medium	S-1	7-8.5	3"ST		16"
864.6	10.09		stiff.	5 6	8.5-10 10-11.5	SS SS	6-6-7 10-11-13	14" 16"
		15.0*	Brownish gray sandy clay, with fine to coarse gravel, moist - stiff.	7 8 9 10	12.5-14 15-16.5 17.5-19 20-21.5	SS	5-6-8 8-10-11 8-12-16 6-10-11	17" 18" 17" 18"
849.6	25.0			11	25-26.5	ss	15-21-24	18"

REMARKS:

Respectfully submitted,
THE H. C. NUTTING CO.

By W Som On

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLE No. 5 SR-1 over SR-3

(Bridge No. FRA-1-0310) and Franklin Counties

ELEVATION	DEPTH 25.0°	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
	20.0	5.0' Brownish gray sandy clay, with fine gravel, dry - hard.	12	30-31.5	ss	14-22-29	17½"
344.6	30.0	26.5' Gray sandy clay, with fine	13 14	35-36 40-41.5 45-46.5	SS SS SS	32-51 24-29-35 22-30-36	12" 18" 18"
		gravel, moist - hard.	15 16	50-51.5	SS	16-26-36	18**
			17	55-56.5	SS	11-16-24	18"
18.1	56.5	Boring (pleted.					
•		Remarks: Elevation (Proposed) Bottom cc: Ohio State Highway Testing Labora		ing - 88	0.5		
						:	
					:		

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

B-12770-vb 7-12-62

#### FIELD TEST BORING REPORT

\*& Franklin Counties

1770 0

CLIENT	Barre	tt-Cargo-Wi	thers & Assoc., Ltd.		ORDER No.	1770.	8	
PROJECT	Inter	state Rt.71	,Ohio, Fayette, Madison, Picka	away	* HOLE No	6 SR-	1 over SR-	3
LOCATION_	28+56	, 55 L. of	CL of SR-3 (Bridge No. FRA	A-1-031	0)			
DRILLER	E. Ph	ilpot	DRILL No	17	DATE STAR	TED	7-9-62	
ELEVATION	REFEREN	CE	871.0		DATE COM	PLETED	7-10-62	
CASING: DI	AMETER_	3.5" I.D.	Hollow Stem Augers	HAMMER	wr	FALL_		
SAMPLER: [	DIAMETER	& TYPE	2" O.D. Split Spoon	_HAMMER	wr. <u>140#</u>	FALL_	30"	
DEPTH TO	WATER: II	MMEDIATE	1		OMPLETION	None		
					SED IN DRIL	LING	None	
ELEVATION 871.0	DEPTH		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER K 6" ON SAMPLER or % Core Rec.	ecovery in inches
			· ·	1	0-1.5	SS	1-5-7	6"
		1.5	Topsoil, moist - medium stiff					٠
869.5	1.5			2	1.5-3	SS	5-8-10	8"
		3.51	Brown and gray sandy clay, moist - hard	3	3-4.5	SS	6-6-4	15"
866.0	5 *			4	5-6.5	SS	3-5-6	8"
		2.5'	Stown and gray sandy clay with fine to coarse gravel, moist - stiff					-
863.5	7.5'			5	7.5-9	SS	5-5-5	175"
¥.		2.5'	Brown and gray sandy clay with fine to coarse gravel, and small layers of fine sand, moist - stiff					
861.	10'		· · · · · · · · · · · · · · · · · · ·	6	10-11.5	SS	3-4-5	17"
•				7	12.5-14	SS	5-8-10	16"
:		7.51	Brownish gray sandy clay wit fine to coarse gravel, moist - stiff to medium stiff		15-16.5	SS	3-4-5	18"
853.5	17.5'		and the second of the second	9	17.5-19	SS	4-6-9	16"
) !					l		1	

REMARKS: Elev.(proposed) bottom of footing = 882.8

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted,
THE H. C. NUTTING CO.

By Wande

Page 2 PROJECT Interstate Rt.71.0hio.Fayette, Madison, Pickaway & HOLE N.6 SR-1 over SR-3 /Franklin Counties

ELEVATION 853.5	DEPTH 17.5		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PERR 6" ON SAMPLER OF % Core Rec.	in inches
851.0	201	2,5	Gray sandy clay with fine gravel, moist - stiff	10	20-21.5	ss	6-9-17	18"
846:0	25'	5'	Gray sandy clay with fine gravel and layers of fine sand, moist - medium stiff	11	25-26.5	SS	10-15-22	18"
	-	5 <sup>†</sup>	Brownish gray sandy clay with fine gravel, moist -					
841,0	30¹.	26.5'	Gray sandy clay with fine	12 13 14	30-31.5 35-36 40-41.5	SS SS SS	20-29-40 33-40 27-36-49	12"
814.5	56.5		gravel, moist - hard	15 16 17	45-46.5 50-51.5 55-56.5	SS SS SS	15-23-3 15-23-3 16-19-2	17₺
014.5	20,27		Boring completed			-		
	-						· .	

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERIONS OUR WRITTEN APPROVAL."

B-12771-vb 7-12-62

		Field	TEST BORING REPOR	t T	* & Fra	nklin C	ounties	
CLIENT	Barre	tt-Cargo-Withers &	Assoc., Ltd.		ORDER No	1770.	88	324.4
PROJECT	Inter	state Rt.71,0hio,Fa	yette Madison, Picka	way *	HOLE No	7 SR-	1 over SR-	3
LOCATION_	-		R-3 Bridge No.		_			
DRILLER	E. Ph	ilpot	DRILL No	17	DATE STAF	RTED	7-10-62	
ELEVATION	REFEREN	CE873,5			DATE COM	PLETED	7-10-62	. :
CASING: DI	AMETER	3.5" I.D. Hollow	Stem Augers					
			Split Spoon					
		MMEDIATE 25 1			OMPLETION_		None	
		DAYS AFTER COMPL	ETION		JSED IN DRI		None	
ELEVATION 873.5	<b>DEPTH</b> 0 °	DESCRIPTION	N OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER R 6" ON SAMPLER or % Core Rec.	ecover in inches
			limestone and clay	1	0-0.5	SS	9	6"
873.0	0.5'	fill, d	ry - medium dense	2	0.5-1.5	ss	10-8	9"
***			andy clay with fine se gravel, fill,	3	1,5-3	ss	6-7-7	4"
870.5	31	4		4 S-1	3-4.5 5-6.5	ss 3"sT4	3-4-6	16" 14"
			brown and gray silt		6.5-8	SS	3-4-5	15"
864.5	9"		V251 31111	6	9-10.5	ss	9-7-8	17"
		with fir	nd gray sandy clay ne to coarse gravel,		11.5-13	ss	10-7-7	6"
860.0	13.5'	moist -	very stiff to stiff	S-2	13 .5~15	3"ST		16"
		with fit	n gray sandy clay ne to coarse gravel, medium stiff to	8	15-16.5	SS	6-7-8	10"
856.0	17.5			9	17.5-19	SS	7-10-13	18"
				10 11	20-21.5 22.5-24	SS	6-8-10 10-14-17	18"

REMARKS:

Elev. (Proposed) bottom of footing = 869.0

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted,
THE H. C. NUTTING CO.

THE R. C. NOTTING CO.

Page 2

PROJECT Interstate Rt.71,0hio,Fayette,Madison,Pickaway & HOLE No. 7 SR-1 over SR-3
/Franklin Counties

ELEVATION	DEPTH	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER B 6" ON SAMPLER or % Core Rec.	ecovery
856.0	17.5		No.	DEPTH	SAMPLE	SAMPLER or % Core Rec.	inches
<b>8</b> 48.5	25 '	7.5' Brownish gray andy clay with fine to coarse gravel, moist - very stiff	12	25-26.5	ss	10-14-19	
843.5	304	5' Brownish gray sandy clay with fine gravel and layers of fine sand, wet - very stiff  15' Brownish gray sandy clay with fine gravel, moist -	13 14 15	30-31.5 35-36.5 40-41.5	SS SS SS	14-21-36 17-26-35 22-34-36	17岁"
828.5	45'	hard  11.5' Gray sandy clay with fine	16 17 18	45-46.5 50-51.5 55-56.5	SS SS SS	13-20-29 12-16-23 14-19-26	18" 18" 18"
817.0	56.5	gravel, moist - hard		1.			
		Boring completed					
					ē.		

#### TESTING ENGINEERS AND SOILS CONSULTANTS

THE A MUTUAL PROTECTION TO CLIENTS. THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, B=12612-ams OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL: 7/11/62

Page 1 of 2

### FIELD TEST BORING REPORT

			11111 TEST BORNEO REFOR	•				
CLIENT			tt-Cargo-Withers & Associates, Lt		ORDER No		1770.8	
PROJECT	Interst	ate Rt	. 71 - Ohio - Fayette, Madison, Pi	ckaway	HOLE No.	10 8	R-1 over	SR-3
LOCATION_	29+34	97 ° R	of C.L. of S.R3 - Bridge No.	FRA-1-C	310.	nties		
DRILLER		E. Ph	ilpotDRILL No	17	DATE STAF	RTED	7/7/62	<u> </u>
ELEVATION	REFEREN	ICE	873.2		DATE COM	PLETED_	7/8/62	
CASING: DI	AMETER_	3.5"			WT			
SAMPLER:	DIAMETER	& TYPE_	2" O.D. Split Spoon	_HAMMER	wt. 140#	FALL.	30"	·
DEPTH TO	WATER; I	MMEDIAT	E None	_UPON CO	OMPLETION	None		
DEPTH TO	WATER_	DA	YS AFTER COMPLETION	WATER U	JSED IN DRI	LLINGN	one	
ELEVATION	DEPTH		DESCRIBION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec	Recovery
) <del>873.2</del>	10.			<del> </del>			T	
		1.5	Brown sandy clay, with fine gravel and topsoil, (fill), dry - loose.	1	0-1.5	SS	1-7-7	12"
871.7	1.5		dry - 100se.	2	1.5-3	ss	7~9~12	14"
870.2	3.0"	1.5	Mottled brown and gray sandy clay, moist - hard.	3	3-4.5	SS	5-6-6	17"
		2.0	Mottled brown and gray sandy clay, moist - stiff.					
868.2	5.0			4	5-6.5	SS	5-7-7	175"
		5.0	Brown and gray sandy clay, with fine to coarse gravel, moist - stiff.	5	7.5-9	SS	5-11-11	18"
863.2	10.0			6	10-11.5	ss	11-14-7	15"
		2.5	Brown and gray sandy clay, with fine to coarse gravel and small silt layers, moist - stiff.		-			
860.7	12.5			7	12.5-14	SS	4-4-6	17"
)		2.5	Brownish gray sandy clay, with fine gravel, moist - soft.	1				

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

858.2

15.0

15-16.5 SS 11-13-18 18"
Respectfully submitted,
THE H. C. NUTTING CO.

By Wangler

Page 2 of 2

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLE No. 10 SR-1 over SR-3

(Bridge No. FRA-1-0310) and Franklin Counties

ELEVATION 858.2	DEPTH 15.0°		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
		5.0	Gray sandy clay, with fine to coarse gravel, moist -	9	17.5-19	ss	9-15-21	18"
853.2	20.01		hard.	10	20-21.5	SS	4-9-12	18"
848.2	25.01	5.0*	Gray sandy clay, with fine to coarse gravel, moist - stirf.	11	25-26.5	ss	7-15-22	17ት"
		5.01	Brownish gray sandy clay, with fine to coarse gravel, moist - hard.					
843.2	30.01			12	30-31.5	SS	21-33-45	18"
		26.5	Gray say clay, with fine gravel, dry - hard.	13 14 15 16	35-36 40-41 45-46.5 50-51.5	SS SS SS SS	33~56 26-49 22-37-50 15-24-35	12" 12" 18" 18"
*								10#
816.7	56.51			17	55-56.5	SS	13-21-30	18"
			Boring Completed.	-				
		Remark	s: Elevation (Proposed) Bottom	of Foo	ting - 88	.4		
		cc: O	thio State Highway Testing Labor	atory				
	;							
						1		

 $P^{\alpha}$ 

PROJECT\_

LOCATION\_

30+41, 55° L

1770.8

HOLE No. 1 SR-1 over SR-3

### THE H. C. NUTTING COMPANY

Barrett-Cargo-Withers & Assoc., Ltd.

Elev. (proposed) bottom of footing = 882.0

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Interstate Rt.71, Ohio, Fay te, Madison, Pickaway \*

### TESTING ENGINEERS AND SOILS CONSULTANTS

"AB A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE B-13553 "VD or extracts from the transfer of the publication of parameters of conclusions, B-13553 "VD or extracts from or regarding our reports is reserved pending our written approval." 7-18-62

Field TEST BORING REPORT

\* & Franklin Counties

ORDER No.

Respectfully submitted,

THE H. C. NUTTING CO.

DRILLER	E. Ph	ilpot	DRILL No	17	DATE STAF	RTED	7-10-62		
ELEVATION			873.5		DATE COM	PLETED_	7-11-62		
CASING: DI	AMETER _		3.5" I.D. Hollow Stem Augers	_наммер	wT	FALL		<del></del>	
SAMPLER: I		-	2" O.D. Split Spoon	HAMMER	wr. 140#	FALL.	30"		
		MMEDIATE	7.51		OMPLETION_		None		
			AFTER COMPLETION 7.81	-	USED IN DRI		No		
ELEVATION 873.5	<b>ВЕРТН</b>		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec	Recovery in Linches	
				1	0-1.5	SS	3-7-9	16"	
		1.5	Topsoil, dry - hard	1.					
872.0	1.5			2.	1.5-3	SS	10-19-33	15"	
•	ì	3.5	Brown and gray sandy clay with fine gravel, dry - hard	-	3-4.5	SS	15-14-12	16.	
868.5	5.1			4	5-6.5	SS	5-6-8	17"	
866.0	7.5'	2.5"	Brown and gray sandy clay with fine gravel, moist - stiff	5	7.5-8.5	SS	4~5	12"	
	-	1"	Brown and gray sandy clay with fine gravel, wet - medium dense		:				
865.0	8.51			6	8.5-9	SS	11	6"	
0.400 5	10'	1.51	Brown sandy clay with fine gravel, dry - hard	7	10-11.5	ss	10-7-7	16"	
863.5	10.		\$ 1	1 ′	10-11.3	33	10-7-7	10	
		2.5	<b>Brown</b> and gray sandy clay with fine to coarse gravel, moist - stiff						
861.0	12.5			8	12.5-14	SS	6-6-6	17"	
	19			-	15-16.5	SS	5-9-14	18"	
REMARKS:		CROD.		10	17.5-19	SS	11-14-18	165"	

PROJECTInterstate Rt.71,0hio,Fayette,Madison,Pickaway \* HOLE No. 1 SR-1 over SR-3

ELEVATION 861.0	DEPTH 12.5°		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PE. 50 ON SAMPLER or % Core Rec.	ecovery in inches
601.0	12.2	7.5'	Brownish gray sandy clay with fine to coarse gravel,					
853.5	20 '		moist - stiff	11	20-21.5	ss	8-10-12	17"
848.5	.25 <sup>‡</sup>	5 <sup>‡</sup>	Gray sand, clay with fine gravel, moist - very stiff	12	25-26.5	ss	10-16-28	18"
		5 °	Brownish gray sandy clay with fine gravel, moist - hard					
843.5	30°	26.51	Gray sandy clay with fine to coarse gravel, moist -	13 14 15 16 17	30-31 35-36 40-41.5 45-46.5 50-51.5	SS SS SS SS	24-44 32-49 17-26-39 22-29-40 20-26-37	
317 <b>.0</b>	56.5		hard	18	55-56.5	SS	13-23-34	18"
,			Boring completed					
					ļ			
								÷
	٠.							

### TESTING ENGINEERS AND SOILS CONSULTANTS

The a mutual protection to clients, the public, and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions. 7/11/62 or extracts from or regarding our reports is reserved pending our written approval...

Page 1 of 2

#### FIELD TEST BORING REPORT

CLIENT		Barrett-Cargo-Withers & Associates, Ltd		_ORDER No.		1770.8	
PROJECT_I	ntersta	te Rt. 71 - Ohio - Fayette, Madison, Pic	kaway nklin	edunties –	4 5	R-1 Over S	R-3
LOCATION_		30+54, 63 R. of C.L. of SR-3 Bridge No. FRA-1-0310					<u></u>
DRILLER		E. Philpot DRILL No. 17		DATE STAR	TED	7/8/62	
				DATE COM		7/8/62	
		o fil I D Walley Cham Avenue	HAMMER	WT	FALL		
SAMPLER: I	DIAMETER	& TYPE 2" O.D. Split Spoon		140#	FALL.	30"	
		MMEDIATE 12.5°	UPON CO	MPLETION		None	
			WATER L	ISED IN DRIL	LING	None	
ELEVATION	DEPTH O <sup>1</sup>	DESCRIE ON OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery in Inches
873.8	0.		1	0-0.5	SS	3	4.41
873.3	0.5	0.5° Topsoil, moist - soft.	2	0.5-1.5	ss	5-8	8"
872.3	1.5	1.0° Brown sandy clay, dry - hard.	3	1.5-3	SS	8-12-18	15".
		3.5 Brown and gray sandy clay, with fine to coarse gravel, dry - hard.	4	3-4.5	SS	9-10-10	17"
868.8	5.0		S-1	5~6.5	3"ST		12"
,		2.0° Brown and gray sandy clay, with fine to coarse gravel, moist	5	6.5-7	SS	8	6"
866.8	7.0	very stiff.	6	7-8	ss	4-6	12"
863.8	10.0	3.0° Brown and gray sandy clay, with fine to coarse gravel, moist ~ medium stiff.	<b>S≃2</b> 7	8.5-10 10-11.5	3"ST SS	6-6-7	12" 15"
861.3	12.5	2.5 Brown and gray sandy clay, with fine to coarse gravel, moist - stiff.	8	12.5-14	ss	7-10-14	12"

REMARKS:

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted, THE H. C. NUTTING CO.

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLE No. 4 SR-1 Over SR-3

(Bridge No. FRA-1-0310) and Franklin Counties

ELEVATION	DEPTH 12.5°		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
		2.5	Brownish gray sandy clay, with fine to coarse gravel, moist - medium stiff.					
858.8	15.0		mediam still.	9	15-16.5	SS	17-17-15	17**
		5.04	Brownish gray sandy clay, with fine to coarse gravel, moist - very stiff to hard.	10	17.5-19	SS	9-15-20	18"
353.8	20.0		very still to hald.	11	20-21.5	SS	5-8-13	18"
		1.5	Brownish gray sandy clay, with fine gravel, moist - very stiff.					
352.3	21.5		octi.	12	21.5~23	SS	11-21-26	18"
		8.5	Brownish or y sandy clay, with fin gravel, dry - hard.	13 14	23-24.5 25-26.5	SS SS	13-20-32 15-21-29	18" 17"
43.8	30.0°			15	30-31.5	ss	25-40-61	18"
*		21.5	Gray sandy clay, with fine	16	35-36	SS	32-50	12"
		21.0	gravel, moist - hard.	17	40-41	SS	36-52	12"
				18	45-46.5	SS	25-34-46	18"
				19	50-51.5	SS	18-28-40	18"
322.3	51.5						]	
-			Boring Completed.					
		Remark	cs: Elevation (Proposed) Bottom	of Foo	ing - 86	3.0		
			Dhio State Highway Testing Labora					
				]				

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR WRITTEN APPROVAL."

B-12611-ams 7/11/62

Page 1 of 2

#### FIELD TEST BORING REPORT

CLIENT		Barrett	-Cargo-Withers & A	Associates,	Lta.	_ORDER No.		1770.8	
PROJECT_I	ntersta	te Rt. 71	- Ohio - Fayette.					SR-1 over	SR-3
LOCATION_		31+33.	97° R. of C.L. of	SR-3 and	Frankli	n Countie	s		
DRILLER		F D1.11	No. FRA-1-0310 pot	DOU! No	17	DATE STAR	TED	7/8/62	
				DRILL NO				- 1- 1	
			D. Hollow Stem Aus						
			O.D. Splir Spoon					0.011	
		MMEDIATE	7.5						
			FTER COMPLETION					None	
ELEVATION	DEPTH		DESCRI N OF MATERIAL	s	SAMPLE	SAMPLE	TYPE OF	BLOWS PER 6" ON	Recover
874.6	O g				No.	DEPTH	SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	ın Inches
•		1.0	W		1 1	0~1	SS	2-4	9"
873.6	1.0	1.0	Topsoil, dry - loc	se.	2	1-1.5	ss	8	6*2
					-	1 1.5			
			Erown and gray sar dry - hard.	ndy clay,					
872.1	2.5				3	2.5-4	ss	16-14-14	17"
			Brown and gray sar						
			with fine gravel, hard	dry -					
869.6	5.0"		Maru		4	5-6.5	SS	5-6-7	12"
		5.01		. 4					
			Brown and gray san with fine to coars		S-1	7-8.5	3"ST		16"
4			moist - stiff to m	nedium	5	8.5-10	SS	6-6-7	14#
864.6	10.0		stiff.		6	10-11.5		10-11-13	16"
						10 5 14	SS	5-6-8	1.75
			Brownish gray sand with fine to coars		7 8	12.5-14 15-16.5		8-10-11	18"
			moist - stiff.	e graver,	9 10	17.5-19 20-21.5	SS SS	8-12-16 6-10-11	17"
0.0	<b>5.</b> 6.0	14 4						15-21-24	
849.6	25.0				11	25-26.5	22	13-51-54	10

REMARKS:

Respectfully submitted,
THE H. C. NUTTING CO.

By W Som Du

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLE No. 5 SR-1 over SR-3

(Bridge No. FRA-1-0310) and Franklin Counties

ELEVATION 849.6	рертн 25.0°	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recover in Inches
844.6	30.0	5.0' Brownish gray sandy clay, with fine gravel, dry - hard.	12	30-31.5	ss	14-22-29	175"
		26.5' Gray sandy clay, with fine gravel, moist - hard.	13 14 15 16	35-36 40-41.5 45-46.5 50-51.5	SS SS SS SS	32-51 24-29-35 22-30-36 16-26-36	12" 18" 18" 18"
818.1	.56.5⁴	Boring Completed.	17	55~56.5	ss	11-16-24	18"
		Remarks: Elevation (Proposed) Bottom	of Foo	ting a 88	6.5		
		cc: Ohio State Highway Testing Labora		1			
				į			
					}		

### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS,  $B\!=\!126\,12\!-\!aus$  or extracts from or regarding our reports is reserved pending our written approval." 7/11/62

Page 1 of 2

#### FIELD TEST BORING REPORT

		Barre	tt-Cargo-Withers & Associates, L	rd			1770.8	
CLIENT	T 4:				ORDER No			00.0
PROJECT	inters	cate Kt	. 71 - Ohio - Fayette, Madison, P	and Fr	nklin Coi	untles	R-1 over	5R-3
LOCATION	29T34	. 9/· K	of C.L. of S.R3 - Bridge No.	FRA-1-(	1310.			
DRILLER		E. Ph	ilpotDRILL No	17	DATE STAI	RTED	7/7/62	
ELEVATION	REFEREN	ICE	873.2		DATE CON	IPLETED	7/8/62	
CASING: DI	IAMETER_	3.5"	I.D. Hollow Stem Augers	_HAMMER	wr	FALL		
SAMPLER:	DIAMETER	& TYPE _	2" O.D. Split Speen	_HAMMER	wт. <u>140#</u>	FALL.	30"	
DEPTH TO	WATER;	IMMEDIAT	E None	_UPON C	OMPLETION_	None		
DEPTH TO	WATER_	D	AYS AFTER COMPLETION	WATER	USED IN DRI	LLINGN	lone	<del></del>
ELEVATION	DEPTH		DESCR OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec	Recover
873.2	10.	1				<del> </del>	or % Core Rec	Jocnes
		1.51	Brown sandy clay, with fine gravel and topsoil, (fill), dry - loose.	1	0-1.5	ss	1-7-7	12"
871.7	1.5		dry - roose.	2	1.5-3	ss	7-9-12	14"
		1.5	Mottled brown and gray sandy clay, moist - hard.					
870.2	3.0			3	3-4.5	SS	5-6-6	1.711 /
		2.0	Mottled brown and gray sandy clay, moist - stiff.					
868.2	5.07			4	5-6.5	SS	5-7-7	1.75
		5.0	Brown and gray sandy clay, with fine to coarse gravel, moist - stiff.	5	7.5-9	ss	5-11-11	18"
863.2	10.0			6	10-11.5	SS	11-14-7	15 <sup>11</sup>
		2.5	Brown and gray sandy clay, with fine to coarse gravel and small silt layers, moist - stiff.					
860.7	12.5			7	12.5~14	ss	4~4~6	17"
		2.5	Brownish gray sandy clay, with fine gravel, moist - soft.					1

858.2 15.0

8 15-16.5 SS 11-13-18 18" Respectfully submitted,

THE H. C. NUTTING CO.

By Jav Empler

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

79

Page 2 of 2

PROJECT Interstate Rt. 71 - Ohio - Fayette, Madison, Pickaway HOLE No. 10 SR-1 over SR-3 (Bridge No. FRA-1-0310) and Franklin Counties

ELEVATION 858.2	рертн 15.0°	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery in Inches
- 1		5.0' Gray sandy clay, with fine to coarse gravel, moist -	- 9	17.5-19	SS	9-15-21	18"
853.2	20.0'	hard.	10	20-21.5	ss	4-9-12	18"
848.2	25.0'	5.0' Gray sandy clay, with fine to coarse gravel, moist - stirf.	11	25-26.5	SS	7-15-22	17½"
0/2.2		5.0 Brownish gray sandy clay, with fine to coarse gravel, moist - hard.	10	20.21.5	gg	21 22 45	1.04
843.2	30.0		12	30~31.5	SS	21-33-45	1.8**
		26.5' Gray sy clay, with fine gravel, dry - hard.	13 14 15 16	35-36 40-41 45-46.5 50-51.5	SS SS SS SS	33~56 26~49 22~37~50 15~24~35	12" 12" 18" 18"
816.7	56.5		17	55-56.5	SS	13-21-30	18"
		Boring Completed.					
		Remarks: Elevation (Proposed) Bottom		ting = 88	.4		
					-		,
					<del>!</del> !		

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, 7-12-62

FIELD TEST BORING REPORT

Day mud Pin Jan \*& Franklin Counties

			TABLE ISSI BORNEO REI	ORI,	- C TIAN	KIIII GO	on cres	
CLIENT	Barre	tt-Cargo-Wi	_ORDER No	1770.	8			
PROJECT	Inter	state Rt.71	,0hio,Fayette, Madison, Pi	ckaway 1	HOLE No	6 SR-	1 over SR-	-3
LOCATION_	28+56	, 55' L. of	CL of SR-3 (Bridge No.	FRA-1-031	9)			
DRILLER	E. Ph	ilpot	DRILL No	17	_DATE STAF	TED	7-9-62	
ELEVATION	REFEREN	CE	871.0		_DATE COM	PLETED	7-10-62	
CASING: DI	AMETER_	3.5" I.D.	Hollow Stem Augers	HAMMER	WT	FALL_		
SAMPLER: [	DIAMETER	& TYPE	2" O.D. Split Spoon	HAMMER	wт. <u>140#</u>	FALL_	30"	
DEPTH TO	WATER; II	MMEDIATE	7.51	UPON CO	MPLETION_	None		
DEPTH TO	WATER_	DAYS AF	TER COMPLETION	WATER U	SED IN DRII	LLING	None	
ELEVATION 871.0	DEPTH O <sup>‡</sup>		DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER IN 6" ON SAMPLER OF % Core Rec.	ecovery in µinches
		1.5'	Topsoil, moist - medium	1	0-1.5	SS	1-5-7	6"
		1.3	stiff					
869.5	1.51			2	1.5-3	SS	5-8-10	8"
		3.51		3	3-4.5	SS	6-6-4	15"
		3.5.	Brown and gray sandy clay	3				
866.0	5'			4	5-6.5	SS	3-5-6	8"
		2.5'	Brown and gray sandy clay with fine to coarse grave					
863.5	7.5'		moist - stiff	5	7.5-9	SS	5-5-5	17뉯"
		2.5'	Brown and gray sandy clay with fine to coarse grave and small layers of fine					
861.	10'		sand, moist - stiff	6	10-11.5	SS	3~4~5	17"
001.	10		$\frac{p}{e} = \frac{1}{2} \left( \frac{1}{2} \right) \right) \right) \right) \right) \right) \right) \right) \right) \right) \right) \right) \right) $	7	12.5-14		5-8-10	16"
`		7.5'	Brownish gray sandy clay		15-16.5	SS	3-4-5	18"
		* .	fine to coarse gravel, mo - stiff to medium stiff	ist				
853.5	17.5'		- Stirr to medium stirr	9	17.5-19	SS	4-6-9	16"

Elev.(proposed) bottom of footing = 882.8 REMARKS:

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted, THE H. C. NUTTING CO.

PROJECT Interstate Rt.71.0hio.Fayette, Madison,Pickaway & HOLE NÓ SR-1 over SR-3 /Franklin Counties

ELEVATION	DEPTH 17.5°	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PERRE 6" ON SAMPLER or % Core Rec.	cover in inche
851.0	201	2.5' Gray sandy clay with fine gravel, moist - stiff	10	20-21.5	SS	6-9-17	18'
846.0	25'	5' Gray sandy clay with fine gravel and layers of fine sand, moist - medium stiff	, 11	25-26.5	SS	10-15-22	18'
841.0	30 <b>'</b> .	5' Brownish gray sandy clay with fine gravel, moist - hard	12	30-31.5	SS	20-29-40 33-40	17' 12'
:		26.5' Gray sandy clay with fine gravel, moist - hard	13 14 15 16 17	35-36 40-41.5 45-46.5 50-51.5 55-56.5	SS SS SS SS SS	27-36-49 15-23-31 15-23-33 16-19-28	18 18 17
814.5	56 .5 '						
,		Boring completed					
						}	
						.	
				·			

\* & Franklin Counties

### THE H. C. NUTTING COMPANY

Field

### TESTING ENGINEERS AND SOILS CONSULTANTS

TEST BORING REPORT

B-12771-vb "AB A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL." 7-12-62

CLIENT	Barre	tt-Cargo-Wi	thers & Assoc., Ltd.		_ORDER No.	1770.	8	<u> </u>
PROJECT	Inter	state Rt.71	Ohio Fayette Madison, Pickar	vay *	HOLE No	7 SR-	l over SR-	3
LOCATION_	29+33	21 L. of	CL of SR-3 Bridge No. 1	RA-1-0	310		·	
DRILLER	E. Ph	ilpot	DRILL No				7-10-62	
ELEVATION	REFEREN	CE	873.5		DATE COM	PLETED	7-10-62	<del></del>
CASING: DIA	AMETER_	3.5" I.D.	Hollow Stem Augers	HAMMER	WT	FALL_		
SAMPLER: D	DIAMETER	& TYPE	2" O.D. Split Spoon	_HAMMER	wт. <u>140#</u>	FALL_	30"	
DEPTH TO	WATER: I	MMEDIATE	25 '	UPON CO	MPLETION_		None	
			TER COMPLETION	_WATER (	ISED IN DRI		None	
ELEVATION	DEPTH		DESCRIPTION OF MATERIALS	SAMPLE	SAMPLE	TYPE OF SAMPLE	BLOWS PER R 6" ON SAMPLER or % Core Rec.	ecover
873.5	0"		DESCRIPTION OF MATERIALS	No.	SAMPLE DEPTH	SAMPLE	SAMPLER or % Core Rec.	inches
		0.5	Crushed limestone and clay	1	0-0.5	SS	9	6"
			fill, dry - medium dense		:			
873.0	0.5'			2	0.5-1.5	SS	10-8	9"
		2.5	Brown sandy clay with fine	3	1.5-3	SS	6-7-7	40
440			to coarse gravel, fill,	*		33		
			dry - hard	}	]	}	]	
870 5	3'	1		4	3-4.5	SS	3-4-6	16"
		61	Mottled brown and gray silty	S-1 5	5-6.5 6.5-8	3"ST SS	3-4-5	14!" 15"
		ľ	clay, moist - stiff	17	10.5-8	33	3040	1.5
864.5	91		,	6	9-10.5	SS	9-7-8	17"
	<u> </u>			Ì				
	ŀ	4.5	Brown and gray sandy clay	7 .	11.5-13	SS	10~7~7	6"
		. 1	with fine to coarse gravel, moist - very stiff to stiff	1				
860.0	13.5		morse very serie to serie	S-2	13 ,5-15	3"ST		16"
				Ì		•		
,		41	Brownish gray sandy clay					
			with fine to coarse gravel, moist - medium stiff to	8	15-16.5	SS	6-7-8	10"
			stiff	ł			}	
856.0	17.5			9	17.5-19	ss	7-10-13	18"
	) ' '		,	10	20-21.5	SS	6-8-10	18"
		ĺ		11	22.5-24	SS	10-14-17	18"
	I	l		1.	1.	I		i

REMARKS:

Elev. (Proposed) bottom of footing = 869.0

As a mutual protection to the owners and ourselves, the engineer in the owner's behalf shall check this report with the samples submitted prior to the purchase of property, or designing of structures.

Respectfully submitted,

THE H. C. NUTTING CO.

PROJECT Interstate Rt.71.0hio.Fayette, Madison, Pickaway & HOLE No. 7 SR-1 over SR-3 /Franklin Counties

7.5' Brownish gray sandy clay with fine to coarse gravel, moist - very stiff  5' Brownish gray sandy clay with fine gravel and layers of fine sand, wet - very stiff  843.5 30'  13 30-31.5 SS 14-21-36 18" 14 35-36.5 SS 17-26-35 17½ 15' Brownish gray sandy clay with fine gravel, moist - hard  828.5 45'  828.5 45'  849.5 SS 13-20-29 18" 16 45-46.5 SS 13-20-29 18" 17 50-51.5 SS 12-16-23 18"	ELEVATION 856.0	DEPTH 17.5°	DESCRIPTION OF MATERIALS	SAMPLE No.	SAMPLE DEPTH	TYPE OF SAMPLE	BLOWS PER 6" ON SAMPLER or % Core Rec.	Recovery in inches
843.5 30'  843.5 30'  828.5 45'  817.0 56.5'  With fine gravel and layers of fine sand, wet - very stiff  817.0 56.5'  With fine gravel and layers of fine sand, wet - very stiff  13	848.5	251	with fine to coarse gravel,	12	25-26.5	SS		
828.5 45'  828.5 45'  817.0 56.5'  843.5 30'  Brownish gray sandy clay with fine gravel, moist - hard  828.5 45'  11.5' Gray sandy clay with fine gravel, moist - hard  817.0 56.5'		,	with fine gravel and layers of fine sand, wet - very					
with fine gravel, moist - hard  45'  11.5' Gray sandy clay with fine gravel, moist - hard  817.0 56.5'  818.5 45'  819.5 45'  819.5 55-56.5 SS  12-20-29 18" 17 50-51.5 SS  12-16-23 18" 18 55-56.5 SS  14-19-26 18"	843.5	30'		14	35-36.5	ss	17-26-3	17½"
817.0 56.5   11.5' Gray sandy clay with fine gravel, moist - hard   18   55-56.5   SS   14-19-26   18"	828.5	45'	with fine gravel, moist -	16	<b>45-46.</b> 5	SS	13-20-29	18"
Boring completed	817.0	56.51						
			Boring completed				· .	
						:		
			1					
	•							

### Form No. 531---16-59



CINCINNATI 26, OHIO

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No.  $\frac{1}{\text{SR-1}}$  STATION & OFFSET  $\frac{30+41}{1}$ , 55  $^{\circ}$  L. of C.L. of SR-3 CLIENT: Barrett-Cargo-Withers & Assoc. 873.5 SURFACE ELEV. PROJECT: I-71 - Bridge No. FRA-1-0310 - R & L

				]		Physical Characteristics								
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GAGUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	OTHER TESTS
1	0.0-1.5	0.0-1.5			Topsoil	No	Tests	Perfor	med.					
2	1.5-3.0	1.5-3.0	A-6	A-6b	12	9	7	11	38	35	38	22	9	
3	3.0-4.5	3.0-5.0	A-6	A-6a	7	12	12	13	38	<b>2</b> 5	29	14	12	
4	5.0-6.5	5,0-7.5	A-6	A-6b	12	10	9	12	37	32	40	23	18	
5 .	7.5-8.5	7.5-15.0	A-4	A-4a	4	13	15	18	39	15	21	6	15	
6	8.5-9.0	7.5-15.0	A-4	A-4a	3	15	20	17	38	10	19	6	10	
7	10.0-11.5	7.5-15.0	A-4	A-4a	5	17	11	13	40	19	21	8	11	
8	12.5-14.0	7.5-15.0	A-4	A-4a	5	15	12	13	42	18	21	8	13	
9	15.0-16.5	15.0-20.0	A-6	A-6a	6	13	11	15	39	22	25	11	13	
10	17.5-19.0	15.0-20.0	A-6	A-6a	7	8	11	15	41	25	25	12	12	
11	20-21.5	20.0-25.0	A-4	A-4a	6	10	9	15	40	26	23	8	11	
12	25.0-26.5	25.0-30.0	A-2-4	A-2-4	0	11	9	61	4	15	23	9	11	
13	30.0-31.0	30.0-56.5	A-4	A-4a	7	10	7	17	41	25	23	10	8	
14	35.0-36.0	30.0-56.5	A-4	A-4a	6	10	7	17	41	25	22	- 9	8	
15	40.0-41.5	30.0-56.5	A-4	A-4a	6	11	8	16	39	26	22	9	10	
16		30.0-56.5	A-4	A-4a	5	16	7	16	39	22	21	8	10	
17	50.0-51.5		A-4	A-4a	6	12	8	16	40	24	22	8	9 /	

Form No. 531---16-59

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROXIMATION.

SUMMARY OF TEST DATA FOR SOILS

S	K-1 Over SR	-3								PRO	JECT: I=			No. FRA-1- R & L
							COLUMN DESIGNATION	Married Marie	Phy	sical Cha	racteristi	cs		
No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.i.	P.I.	w.c.	OTHER TESTS
18	55.0-56.5	30.0-56.5	A-4	A-4a	6	10	9	18	40	23	21	8	11	r
									···					
				ļ										
						_								
			-										-	
							-			<u>-</u>				
				-										

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND DURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLISIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

SUMMARY OF TEST DATA FOR SOILS

BORING No. 4 STATION & OFFSET 30+54, 73 R, of C.L. of SR-3 SURFACE ELEV. 873.8 CLIENT: Barrett-Cargo-Withers & Assoc.

SR-1 Over SR-3 PROJECT: I-71 - Bridge No. FRA-10310 - R & L

						•	, popular		Phy	sical Cha	racteristi	cs		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	ال.ال	P.I.	w.c.	OTHER TESTS
1	0.0-0.5	0.0-0.5		Topsoil		No T	sts Pe	rforme	d					
2	0.5-1.5	0.5-1.5	A-6	A-6a	10	0	6	12	53	29	34	14	13	
3	1.5-3.0	1.5-3.0	A=6	A-6b	12	8	8	11	39	34	35	20	6	
4	3.0-4.5	3.0-5.0	A-6	A-6a	7	11.	11	14	38	26	26	12	11	
S-1	5.0-6.5	5.0-50.0	A-4	A-4a	7	7	11	14	42	26	24	9	12	Unconfined Compression
5	6.5-7.0	5.0-50.0	A-4	A-4a	5	12	12	16	40	20	21	8	11	
6	7.0-8.0	5.0-50.0	A-4	A-4a	3	28	11	13	33	15	20	6	14	
S-2	8.5-10.0	5.0-50.0	A=4	A-4a	3	24	11	14	37	14	21	7	12	Unconfined Compression
7	10.0-11.5	5.0-50.0	A-4	A-4a	4	17	11	18	41	13	20	5	10	
8	12.5-14.0	5.0-50.0	A-4	A-4a	2	38	7	11	30	14	20	6	12	
9	15.0-16.5	5.0-50.0	A-4	A-4a	5	16	9	15	38	22	22	8	10	
10	17.5-19.0	5.0-50.0	A-4	A-4a	4	20	10	14	35	21	22	8	10	
11	20.0-21.5	5.0-50.0	A-4	A-4a	6	10	9	15	38	28	24	8	12	
12	21.5-23.0	5.0-50.0	A-4	A-4a	5	17	8	14	37	24	24	9	11	
13	23.0-24.5	5.0-50.0	A-4	A-4a	6	1.1	9	14	39	27	25	10	12	
14	25.0-26.5	5.0-50.0	A-4	A-4a	5	12	10	18	39	21	33	8	10	
15	30.0-31.5	5.0-50.0	A-4	A-4a	6	10	9	16	41	24	22	8	10	

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

ORING No. 4 STATION & OFFSET 30+54, 73 TOVER SR-3	R. of C.L. of SR-3	SURFACE ELEV. 873.8	CLIENT: Barrett-Cargo-Withers & Assoc PROJECT: I-71 - Bridge No. FRA-1-
			0310 - R & L

				T					Phy	rsical Cha	racteristi	ics		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L.	P.I.	w.c.	OTHER TESTS
16	35.0-36.0	5.0-50.0	A-4	A-4a	6	10	8	18	42	22	20	6	10	
17	40.0-41.0	5.0-50.0	A-4	A-4a	6	9	7	17	44	23	22	9	9	
18	45.0-46.5	5.0-50.0	A-4	A-4a	6	8	8	18	42	24	21	7	9	
19	50.0-51.5	50.0-51.5	A-6	A-6a	9	5	9	18	44	24	27	14	10 -	
														•
								·						
														4-
Marria														
-														
<del></del>	-				-									
					-									
<del></del>											-			
÷														

4120 ALTON ROAD CINCINNATI 26, OHIO

#### Form No. 531-16-59

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS PRESERVED PENDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No. 5 STATION & OFFSET 31+33, 97 R. of C.L. of SR-3 SURFACE ELEV. 874.6 CLIENT: Barrett-Cargo-Withers & Assoc. PROJECT: 1-71 - Bridge No. FRA-1- 0310 - R & L

						Physical Characteristics								
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	£.L	P.I.	w.c.	OTHER TESTS
1	0.0-1.0	0.0-1.0		Topsoil		No Te	sts Pe	rforme	d.					
2	1.0-1.5	1.0-2.5	A=7-6	A-7-6	18	0	4	9	35	52	51	32	18	
3	2.5-4.0	2.5~7.0	A-6	A-6a	7	13	11	12	. 37	27	28	12	11 .	
4	5.0-6.5	2.5-7.0	A-6	A-6a	5	21	12	12	33	22	26	11	13	
S-1	7.0-8.5	7.0-56.5	A-4	A-4a	4	22	10	12	33	23	23	9	14	Unconfined Compression
5	8.5-10.0	7.0-56.5	A-4	A-4a	4	20	14	13	35	18	20	6	11 ~	gari (TV )
6	10.0-11.5	7.0~56.5	A-4	A-4a	6	15	11	10	40	24	22	8	11	
7	12.5-14.0	7.0-56.5	A-4	A-4a	5	16	10	14	34	26	24	10	12	
8	15.0-16.5	7.0-56.5	A-4	A-4a	6	9	9	17	40	25	23	10	11	
9	17.5-19.0	7.0-56.5	A=4	A-4a	6	14	8	11	42	25	24	10	13	
10	20.0-21.5	7.0-56.5	A-4	A-4a	6	13	10	13	45	19	23	9	11	
11	25.0-26.5	7.0-56.5	A-4	A-4a	6	10	8	19	45	18	24	10	10	
12	30.0-31.5	7.0-56.5	A-4	A-4a	6	13	7	16	46	18	22	9	9	
13	35.0-36.0	7.0~56.5	A-4	A-4a	7	6	8	18	49	19	21	8	8	
14	40.0-41.5	7.0-56.5	A-4	A-4a	6	10	8	18	43	21	21	8	9	
15	45.0-46.5	7.0-56.5	A-4	A-4a	6	9	8	1.7	42	24	22	9	9	
16	50.0-51.5		A-4	A-4a	6	12	8	17	43	20	20	8	9	

STATION & OFFSET 31+33, 97 R. of C.L. of SR-3

BORING No.

## CINCINNATI 26, OHIO

CLIENT Barrett-Cargo-Withers & Assoc.

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECORDS IS RESERVED PERDING OUR WRITTEN APPROVAL."

SUMMARY OF TEST DATA FOR SOILS

874.6

SR	-1 Over SR-	3					THE PLANT			PRC	JECT: _I	-71 <b>-</b>	Bridge 0310 -	No. FRA-1- R & L
								that is a survive of the	Phy	sical Cha	racteristi	cs		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG	% C.S.	% F.S.	% SILT	% CLAY	Ł.L	P.I.	w.c.	OTHER TESTS
17	55.0-56.5	7.0-56.5	A-4	A-4a	6	9	8	20	42	21	21	9	10	
				-			-							
-														
	-										-			
							<u> </u>							
							}							

CINCINNAT) 26, OHIO

#### Form No 531-16-59

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF QLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECORD IS RESERVED PERSONS OF WRITTEN APPROVAL."

SUMMARY OF TEST DATA FOR SOILS

BORING No. 6 STATION & OFFSET 28+56, 55 L. of C.L. of SR-3 SURFACE ELEV. 871.0 CLIENT: Barrett-Cargo-Withers & Assoc. PROJECT: I-71 - Bridge No. FRA-1-0310 - R & L

										rsical Cha	racteristi	cs		
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L	P.I.	w.c.	OTHER TESTS
1	0.0-1.5	0,0-1,5		Topsoil		No Te	sts Pe	rforme	d.					
2	1.5-3.0	1.5-5.0	A-7-6	A-7-6	15	0	2	7	39	52	47	26	18	
3	3.0-4.5	1.5-5.0	A-7-6	A-7-6	15	0	3	7	42	48	44	25	20 -	
4	5.0-6.5	5.0-7.5	A-6	A-6a	9	4	7	11	48	30	29	12	14	
5	7.5-9.0	7.5-15.0	A-4	A-4a	4	19	12	16	37	16	21	7	13	
6	10.0-11.5	7.5-15.0	A-4	A-4a	5	17	11	14	40	18	19	5	13	
7	12.5-14.0	7.5-15.0	A-4	A-4a	4	27	9	10	37	17	21	8	13	
8	15.0-16.5	15.0-20.0	A-6	A~6a	7	10	10	14	38	28	25	11	15	
9	17.5-19.0	15.0-20.0	A-6	A-6a	7	12	10	14	43	21	24	11	12	
10	20.0-21.5	20.0-56.5	A-4	A-4a	7	7	10	14	41	28	24	10	12 -	
11	25.0-26.5	20.0-56.5	A-4	A-4a	5	10	10	18	42	20	22	8	10 👈	
12	30.0-31.5	20.0-56.5	A-4	A-4a	7	8	8	16	43	25	23	10	9.	
13	35.0-36.0	20.0-56.5	A-4	A-4a	. 7	7	7	17	43	26	22	9	8- <	
14	40.0-41.5	20.0-56.5	A-4	A-4a	7	7	8	17	44	24	21	8	9	
15	45.0-46.5	20.0-56.5	A-4	A-4a	6	11	8	17	42	22	22	9	9	
16	50.0-51.5	20.0-56.5	A-4	A-4a	6	10	9	17	40	24	21	9	10	
17	55.0=56.5	20.0-56.5	A-4	A-4a	5	14	8	17	38	23	22	10	10	

# THE H. C. NUTTING COMPANY

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No. 7 STATION & OFFSET 29+33, 21' L. of C.L. of SR-3 SURFACE ELEV. 873.5 CLIENTBarrett-Cargo-Withers & Assoc. SR-1 Over SR-3 PROJECT: 1-71 - Bridge No. FRA-1-0310 - R & L

					Physical Characteristics									
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	L.L	P.1.	w.c.	OTHER TESTS
1	0.0-0.5	0.0-0.5		Fill		No T	ests Pe	rforme	d.					
2	0.5-1.5	0.5-3.0	A-6	A-6a	. 6	5	13	19	36	27	30	13	15	
3	1.5-3.0	0.5-3.0	A6	A-6a	Visual	- Ins	fficie	nt San	ple fo	r Test	ing			,
4	3.0-4.5	3.0~9.0	A-7-6	A-7-6	19	0	4	9	38	49	54	36	14	
S-1	5.0-6.5	3.0-9.0	A-7-6	A-7-6	18	0	3	7	43	47	48	30	21	Unconfined Compression
5	6.5-8.0	3.0-9.0	A-7-6	A-7-6	13	0	6	12	40	42	42	23	12	
6	9.0-10.5	9.0-11.5	A-4	A-4a	4	17	12	15	35	21	21	7	10	
7	11.5-13.0	11.5-13.5	A-6	A-6a	5	30	7	9	36	18	27	12	14	
S-2	13.5-15.0	13.5-17.5	A-4	A-4a	4.	20	12	12	38	18	21	- 7	12 ~	Consolidation & Unconfined Compr.
8	15.0-16.5	13.5-17.5	A-4	A-4a	3	29	9	11	35	16	23	10	13	
9	17.5-19.0	17.5-20.0	A-6	A-6a	6	14	12	15	38	21	24	11	10	
10	20.0-21.5	20.0-22.5	A4	A-4a	6	15	9	13	38	25	25	10	13	
11	22.5-24.0	22.5-25.0	A-6	A-6a	8	7	9.	15	44	25	25	11	11	
12	25.0-26.5	25.0-56.5	A-4	A-4a	5	10	12	19	41	18	23	9	12	
13	30.0-31.5	25.0-56.5	A-4	A-4a	6	13	7	16	40	24	23	10	10	
14	35.0-36.5	25.0-56.5	A-4	A-4a	7	7	8	17	42	26	22	10	9	
15		25.0-56.5	A-4	A-4a	6	13	7	17	38	25	23	10	9	



"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERMING OUR WRITTEN APPROVAL."

#### SUMMARY OF TEST DATA FOR SOILS

BORING No. 7 STATION & OFFSET_	29+33, 21 L. of	C.L. of SR-3	_ SURFACE ELEV	873.5	CLIENTBarrett-Cargo-Withers & Assoc
SR-1 Over SR-3					PROJECT: I=71 - Bridge No. FRA-1-1
					0310 ≈ R & L

	,									sical Cha	racteristi	cs		
SAMPLÉ No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP	% AGG.	% C.S.	% F.S.	% SILT	% CLAY	Ł.L	P.I.	w.c.	OTHER TESTS
16	45.0-46.5	25.0-56.5	A-4	A-4a	6	11	8	17	40	24	22	10	10	
17	50.0-51.5	25.0-56.5	A-4	A∽4a	6	12	8	17	40	23	22	10	10	
18	55.0-56.5	25.0-56.5	A-4	A-4a	5	13	8	18	37	24	21	9	10	
												-6		
	ļ													
														13010
												-		
														w/*
· · · · · · · · · · · · · · · · · · ·												-		
												<u> </u>		·-





"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF GLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVED.

#### SUMMARY OF TEST DATA FOR SOILS

BORING No. 10 STATION & OFFSET 29+34, 97 R. of C.L. of SR-3 SURFACE ELEV. 873.2 CLIENTBarrett-Cargo-Withers & Assoc.

SR-1 Over SR-3 PROJECT: I-71 - Bridge No. FRA-1
0310 - R & L

				•		Physical Characteristics								
SAMPLE No.	SAMPLE DEPTH	STRATUM DEPTH	HRB CLASS	SHTL CLASS	GROUP INDEX	% AGG.	c.s.	% F.S.	% SILT	% CLAY	£.L.	P.I.	w.c.	OTHER TESTS
1	0.0-1.5	0.0-1.5		Fill	No Tes	ts Per	formed							
2	1.5-3.0	1.5-5.0	A-7-6	A-7-6	19	0	4	6	37	53	54	36	15	
3	3.0-4.5	1.5~5.0	A-7-6	A-7-6	14	1	3	10	40	46	42	24	21	
4	5.0-6.5	5.0-7.5	A-6	A-6a	7	11	10	14	41	24	26	11	14	· · · · · ·
5	7.5-9.0	7.5-20.0	A-4	A-4a	4	22	10	13	36	19	24	10	11	
6	10.0-11.5	7.5-20.0	A⇔4	A⇔4a	5	21	10	12	36	21	23	9	10	
7	12.5-14.0	7.5-20.0	A-4	A⇔4a	5	17	11	14	40	18	22	9	14 ~	
8	15.0~16.5	7.5-20.0	A-4	A~4a	4	22	9	14	35	20	22	9	10	
9	17.5-19.0	7.5-20.0	A-4	A-4a	7	10	8	12	43	27	25	10	10	
10	20.0-21.5	20.0-25.0	A-6	A-6a	7	9	10	14	40	27	26	12	13 -	
11	25.0-26.5	25.0-56.5	A-4	A-4a	6	9	9	17	44	21	24	10	11	
12	30.0-31.5	25.0~56.5	A-4	A-4a	6	7	10	18	42	23	22	9	9	
13	35.0-36.0	25.0-56.5	A-4	A-4a	5	11	10	17	40	22	22	9	8	
14	40.0-41.0	25.0-56.5	A-4	A~4a	6	9	9	15	42	25	22	9	8	
15	45.0-46.5	25.0-56.5	A-4	A-4a	6	12	9	16	40	23	21	9	9	
16	50.0-51.5	25.0-56.5	A-4	A-4a	6	9	8	17	40	26	21	9	10	
17	55.0-56.5	25.0-56.5	A-4	A-4a	6	8	9	19	39	25	21	9	10	

DIA.-TOP (Cm)

DIA.-AV. (Cm)

AREA-AV. (Cm²)

DIA.-MIDDLE (Cm)

DIA.-BOTTOM (Cm)

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR REGARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### **UNCONFINED COMPRESSION TEST**

CLIENT	Barrett-Cargo-W	lithers & Associates, Ltd.	LAB No	3988
PROJECT	I-71 - Bridge N	lo. FRA-1-0310 ~ R & L		
HOLE No.	4	SAMPLE No. S-1	DEPTH (ft.)	<u>5-6.5</u>

#### SPECIMEN AT START

3.56

9.95

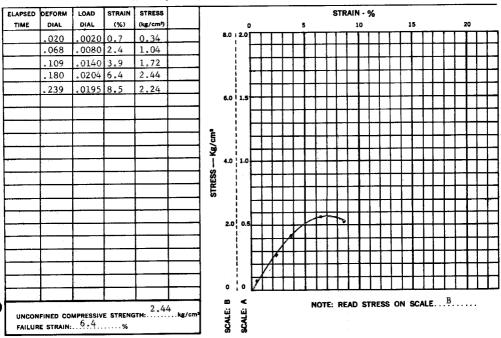
# HEIGHT (In) 2.8 VOLUME (Cm³) 70.74 WEIGHT—WET (Gm) 155.5 WEIGHT—DRY (Gm) 136.4 DENSITY DRY (Lb/ft³) 120.3

# FAILURE SKETCH

## WATER CONTENT

TARE No.	K-14	
WEIGHT-WET (Gm)	176.2	
WEIGHTDRY (Gm)	157.1	
WEIGHT WATER (Gm)	19.1	
WEIGHT TARE (Gm)	21.14	
WEIGHT SOLIDS (Gm)	135.96	
W %	14.0	

DESCRIPTION OF SAMPLE Brown Sandy SILT, Trace of Gravel, Moist - Stiff, (A-4a)



REMARKS: Sample taken from top - Bottom of Shelby flattened.

BY\_AJB DATE 8/22/62

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC. AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPOVAL."

#### **UNCONFINED COMPRESSION TEST**

CLIENT	Barrett-Cargo	-Withers & Associate	≊s, Ltd.	LAB No	3989	
PROJECT	I-71 - Bridge	No. FRA-1-0310 - R	& I.			
HOLE No	4	SAMPLE No	S-2	DEPTH (fl.)	8.5~10	

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

DIATOP (Cm)	
DIAMIDDLE (Cm)	
DIABOTTOM (Cm)	
DIAAV. (Cm)	3.55
AREA—AV. (Cm²)	9.90

HEIGHT (In)	2.8
VOLUME (Cm²)	70.39
WEIGHT-WET (Gm)	161.0
WEIGHTDRY (Gm)	143.1
DENSITY DRY (Lb/ft)	126.9



TARE No.	P-2
WEIGHT-WET (Gm)	181.9
WEIGHTDRY (Gm)	164.0
WEIGHT WATER (Gm)	17.9
WEIGHT TARE (Gm)	21.18
WEIGHT SOLIDS (Gm)	142.82
W %	12.5

DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Medium Stiff, (A-4s).

ELAPSED	DEFORM	LOAD	STRAIN	STRESS												ST	RAI	N -	%											
TIME	DIAL	DIAL	(%)	(kg/cm²)		l			0				5					10				1	5				2	0		
	.040	.0015	1.4	0.28			8.0	2.0	Г	П		Т	T	Т	Т	Т	T	Т	Т	Г					П	П		П		_
	.152	.0055	5.4	0.73				į	Г	Ħ	┪	7	1	1	$\top$	Ť	T	T	T			П	П	Г		Т	П	П	П	_
	.283	.0095	10.1	1.13		i		i .	t	H	7	+	+	╅	十	十	+	t	十				Н	П		H	Н	Н	٦	_
	.450	.0116	16.1	1.26				!	H	H	$\dashv$	+	+	+	+	+	╁	╁	十	$\vdash$	$\vdash$	Н	Н	Н	Н	Н	$\neg$	+	┪	_
7	.520	.0119	18.6	1.26				ł	⊦	H	┪	+	+	╅	+	+	╫	╁	┾	┢┈	┝	Н	H	Н		Н	Н	Н	-	-
				1			6.0	1.5	╀	₩	$\dashv$	+	+	+	+	+	┿	╀	╄	┝	-	H	-	Н	Н	Н	-	Н	$\dashv$	_
			<b></b>	<b></b>				:	┝	╁	+	-+	+	+	+	+	+	╀	╄	⊢	-	H	$\vdash$	Н	Н	Н	Н	Н	-	_
				<del>                                     </del>				;	L	Н	4	4	4	4	4	4	$\bot$	╀	╄	L	L	L	Щ	Ц	Ц	Ц	_	4	4	_
						Ë			L	Ш	_	4	4	4	_	$\perp$	┸	Ļ	Ļ		_	_		•		٩		Ц	_	_
						Kg/cmª		1	L	Ш			1	_	┸	L	1	<u> </u>		L		L	Ц	Ц				Ц	┙	
						-K	4.0	1.0	L	Ш		_	1	_		L	4	L	L	L	L		Ц	Ц	Ц			Ц	_	_
						ģ			L					$\perp$		1		L	L											_
		_		ļ		STRESS -			Ľ	П		$\Box$	$\perp$		7	Τ		L	L											
						E		!	Г	П		T	7	8	Т	T	Т	Γ	Г	Γ										_
				Ĺ				ĺ	Г	П	$\neg$	٦,	7	1	T	T	T	Т	Т	Г	Г	П	П	П					7	_
							2.0	0.5	Γ	П	┪	7	T	T	T	T	T	T	T	Γ	Г		П	П					٦	_
							2.0	1 0.5	Τ	П	7	1	T	1	1	T	1	T	T	Г		Т	П	П				┪		_
								į	r	Ħ	/1	+	+	┪	+	十	十	t	t	┢		Н	Н	H	٦	Н	_	7	┪	_
-								ĺ	r	d	+	+	†	╅	+	t	╈	۲	┢	-	H	Н	Н	Н	7		Н	┪	7	-
								į	H	И	+	+	+	+	+	+	+	t	╆	╁	H	Н	Н	Н	┪		$\dashv$	+	┪	-
				`				•	Н	1	+	+	+	╅	+	+	┿	╀	╁	┝	╁	Н	Н	Н	┥	-	$\dashv$	+	$\dashv$	-
							0	, 0	<u></u>	Ш	_	_	_	_		1		_	Ц.	<u>_</u>	<u>_</u>	Ш	Ш	Ш		نــا	_		_i	_
UNCONI	FINED COI	MPRESSIVE	E STRENG	тн:12	1.26 kg/cm iii iii NOTE: READ STRESS ON SCALE																									

REMARKS: \_

BY AJB DATE8/22/62

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE BUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PENDING OUR WRITTEN APPROVAL."

#### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Carog-	Withers & Associates, Ltd.	LAB No. 3890
PROJECT	I-71 - Bridge	No. FRA-1-0310 - R & L	
HOLE No	5	SAMPLE NoS-1	DEPTH (ft.) 7-8.5

#### SPECIMEN AT START

#### FAILURE SKETCH

#### WATER CONTENT

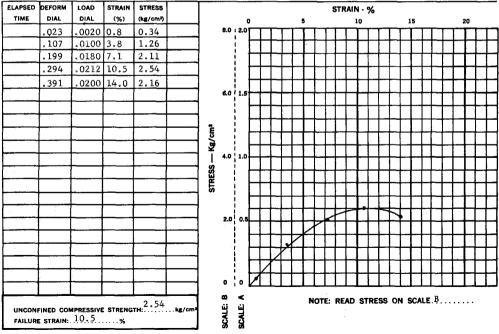
DIATOP (Cm)	
DIAMIDDLE (Cm)	
DIA.—BOTTOM (Cm)	
DIAAV. (Cm)	3.56
AREA-AV. (Cm²)	9.95

HEIGHT (In)	2.8
VOLUME (Cm²)	70.74
WEIGHT-WET (Gm)	164.5
WEIGHT-DRY (Gm)	148.3
DENSITY DRY (Lb/ft)	130.8



TARE No.	V-9	
WEIGHT-WET (Gm)	185.0	
WEIGHT-DRY (Gm)	168.9	
WEIGHT WATER (Gm)	16.1	
WEIGHT TARE (Gm)	20.90	
WEIGHT SOLIDS (Gm)	148.00	
w %	10.9	

DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Stiff, (A-4a).



REMARKS:

## THE H. C. NUTTING COMPANY

## TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS, AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS, CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERDING OUR WRITTEN APPROVAL."

#### **UNCONFINED COMPRESSION TEST**

	Barrett-Cargo-Withers & Associates, Ltd.	LAB No. 3991
PROJECT	I-71 - Bridge No. FRA-1-0310 - R & L	
HOLE No.	7 SAMPLE No. S-1	DEPTH (ft.)5-6.5

#### SPECIMEN AT START

## FAILURE SKETCH

#### WATER CONTENT

DIATOP (Cm)	
DIAMIDDLE (Cm)	
DIA.—BOTTOM (Cm)	
DIAAV. (Cm)	3.57
AREA—AV. (Cm²)	10.01
<del></del>	

HEIGHT (In)	2.8
VOLUME (Cm²)	71.17
WEIGHT-WET (Gm)	146.5
WEIGHT-DRY (Gm)	121.6
DENSITY DRY (Lb/ft)	106.6



TARE No.	V-35	
WEIGHT-WET (Gm)	167.0	
WEIGHT-DRY (Gm)	142.1	
WEIGHT WATER (Gm)	24.9	
WEIGHT TARE (Gm)	20.92	
WEIGHT SOLIDS (Gm)	121.18	
w %	20.5	

Mottled Brown and Gray CLAY, Little Sand, Moist - Stiff, (A-7-6). DESCRIPTION OF SAMPLE

LAPSED	DEFORM	LOAD	STRAIN	STRESS	1										STE	RAII	١ - 9	%							
TIME	DIAL	DIAL	(%)	(kg/cm²)				0				5				1	10				15	i			2
	.014	.0020	0.5	0.34			8.0	2.0	T	Т	Τ	П	T	Т	T		П				Ι	I	T	L	
	.110	.0125	3.9	1.54					$\dashv$	$\top$	T	П		T	Τ	Г	П			T	T	Т	T	Г	
	.230	.0180	8.2	2.07			- 1			T		П		1	Т	T	Г			T	T	Т	Т	Г	
	. 265	.0183	9.5	2.08					$\dashv$	T	Ţ	П	7	1	$\top$	T				7	T	T	1	Τ	П
	. 322	.0175	11.5	1.95						$\top$	1	П	┪	T	1	1	Г			T	1	Т	Т	Г	П
							6.0	1.5	$\Box$	十	T	П	$\neg$	T	╅	1	T		П	7	T	T	7	Т	П
									1	$\top$	1	П	寸		1	T	П	Ţ	П	7	T	T	Τ	Т	Г
						۹.		1	Н	+	t	Н	7	7	T	t	T	П	П	ヿ゙	7	T	$\top$	1	Г
						Kg/cmª			Ħ	+	T	П		$\dashv$	1	1	T	Г	П		1	$\top$	T	$\top$	Τ
						3			Ħ		t	П		1	1	T	T		П	$\neg$	_	ナ	T	T	Γ
						ļ	4.0	1.0	П	T	†	П		T	T		T		П	٦	┪	Т	Т	Т	Γ
-						STRESS		į	H	十	⇈			1	$\top$	Τ	T		П		1	T	T	T	Γ
						STR		į	П	$\top$	T			7	T	Τ	Г	Г			П	Т	Т	Т	Γ
								į	H	$\top$	†	1	$\Box$	1	1	1	T	Г	П	П	┪	1	T	1	Γ
	- 1							0.5		十	T	П			٦,	-	Į	Г	П		T	Τ	Ι	Τ	Γ
							2.0	i 0.9 I	П	1	T	П	Ħ	7	Т	Τ	Т		Г		7	Т	Т	Т	Γ
								!	П	$\top$	t		H	1	1	T	T	Τ	Г		1	T	T	T	Т
								1	H	Ѣ	术	П	П	$\neg$	1	T	T	Г	П		T	T	T	Т	Γ
								!	П	1	T		П	1	十	T	Т	Γ	Γ	П	T	T	T	Т	Γ
		1					0		7	$\top$	T	1	H	T	十	T	T	Г		П	┪	丁	T	Т	Τ
								•	4			_	_		_		_	_	_					_	_
				2.0	)8		ee iii	<u>۷</u>					N	OTE	: R	EAD	S	TRE	:SS	10	1 9	CAL	.E	Ь	· • •
UNCON	IFINED CO IE STRAIN:	9.5	E SIKENG	i Mi	, , , RE/UIII-		SCALE	SCALE																	
PAILUR	E SIRAIN:		/0			ļ	ð	ď																	

DATE 8/22/62 BY\_AJB

## THE H, C. NUTTING COMPANY

#### TESTING ENGINEERS AND SOILS CONSULTANTS

"AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC, AND OURSELVES, ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AND AUTHORIZATION FOR PUBLICATION OF STATEMENTS. CONCLUSIONS, OR EXTRACTS FROM OR RECARDING OUR REPORTS IS RESERVED PERFOING OUR WRITTEN APPROVAL."

#### UNCONFINED COMPRESSION TEST

CLIENT	Barrett-Cargo-Wi	thers & Associate	s, Ltd.	LAB No.	3992	
PROJECT_	I-71 - Bridge No.	FRA-1-0310 - R	&_ L			
HOLE No	7	SAMPLE No	S-2	DEPTH (ft.)	13.5-15	

#### SPECIMEN AT START

#### FAILURE SKETCH

## WATER CONTENT

DIA.—TOP (Cm)	
DIAMIDDLE (Cm)	
DIABOTTOM (Cm)	
DIA.—AV. (Cm)	3.57
AREA-AV. (Cm²)	10.01

HEIGHT (In)	2.8
VOLUME (Cm²)	71.17
WEIGHT-WET (Gm)	166.0
WEIGHT-DRY (Gm)	147.4
DENSITY DRY (Lb/ft)	129.2



TARE No.	E-107	
WEIGHT-WET (Gm)	186.0	
WEIGHT-DRY (Gm)	167.4	
WEIGHT WATER (Gm)	18.6	
WEIGHT TARE (Gm)	20.21	
WEIGHT SOLIDS (Gm)	147.2	
w %	12.6	

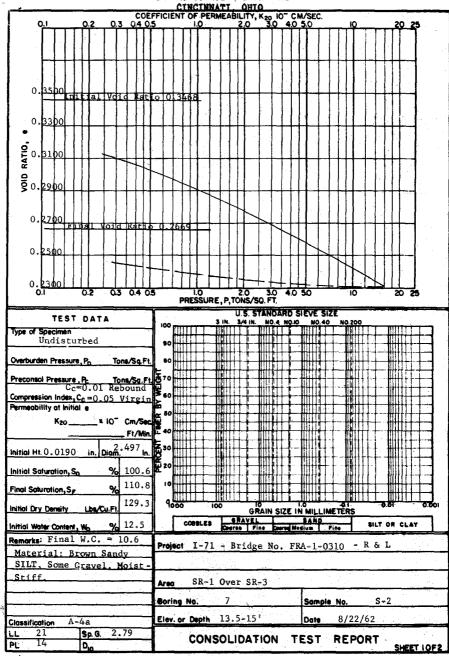
DESCRIPTION OF SAMPLE Brown Sandy SILT, Some Gravel, Moist - Stiff, (A-4a)

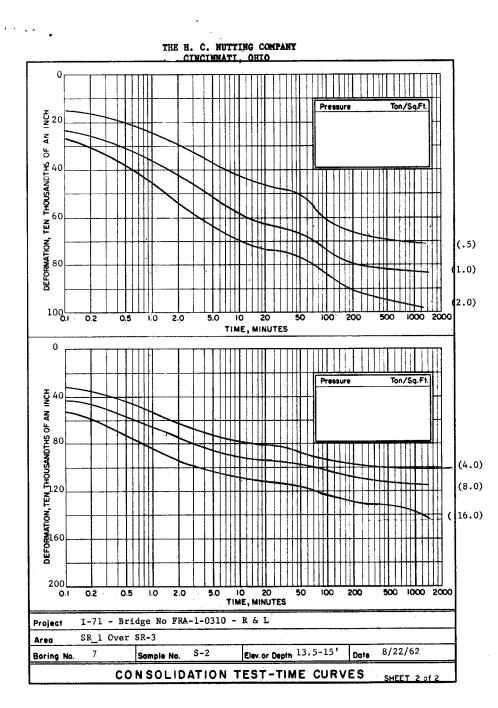
ELAPSED		LOAD	STRAIN	STRESS		i									STI	RAII	۱ -	%										
TIME	DIAL	DIAL	(%)	(kg/cm²)	<u> </u>	l			•			5	,				10				1	5				2	0	
	.028	.0010	0.1	0.22			8.0	2.0		Т	Т	П	П	Т	Т	Т	Т	Ī	Г		П	Г	П				П	
	.110	.0030	3.9	0.44			i		Н	十	t	П		_	T	1	T	T	Г	Н	Н	Т	Н	Н			Н	М
	.205	.0050	7.3	0.65			į		Н	$\top$		Н	+	+	t	╁	H	H	H	П	Н	Н	Н	Н	Н		Н	Н
	.383	.0075	13.7	0.86					Н	+	+	Н	+	+	+-	+-	H	╁	┝	H	Н	Н	Н	$\dashv$	$\vdash$	Н	Н	Н
	,558	.0092	19.9	0.96					Н	┿	1	-	+	+	+	╁╌	┢	┢	┝	H	H	Н	Н	$\dashv$	$\dashv$	Н	Н	Н
	.582	.0094	20.8	0.97			6.0	1.5	Н	+	+	Н	+	+	+	╁╌	┢	⊢	⊢	H	Н	H	Н	-	Н	Н	Н	Н
									Н	+	+	Н	+	+	┿	┿	⊢	⊢	$\vdash$	_	Н	-	Н	-	$\dashv$	Н	Н	Н
							i		Н	+	Н	Н	+	+	╀	╁	┞	L	L	Н	Н	Н	Ч	4	Н	_	Н	Н
						Kg/cm <sup>s</sup>	- 3		Н	+	$\vdash$	Н	+	+	╀	╄	┞	L	H	Н	Н	Н	Н	-	_	_	$\dashv$	Н
						<u>`</u>			Н	+	$\vdash$	Н	-	+	╄	╄	┞	├-	L	Н	Н	Н	Н	4	4		Н	Н
					-	ī	4.0	1.0	Н	+	Н	Н	+	+	+	┼-	┡	-	-	Н	Н	Н	4	-	4		_	Н
- :-						ġ	į		Н	4	H	Ш	4	4	+	+	L	_	_	Ц	Щ		4	-	7	_		Ц
					-	STRESS			Ц	4	$\perp$	Н	4	4	╀	↓	L	Ļ	_	•	Ц	Ц	Ц	Ц	4	Ц	Ц	Н
						S	į		Ц	4	Ш	Ц	4	_	١,	뇓	Ľ	L	L	Ц	Ц	Ш	Ц	_	4	_	_	Ц
							į		Ц		Ш	Ц		4	1	┺	L	L	L	Ц		Ц	Ц	_	4	_	_	Ц
							2.0	0.5	Ц	4	Ц		4	_	┸	┺	L	L	Ц	Ц	Ц	Ц		_	_		Ц	
							j		Ц			Ц	$\perp$	┸	$\perp$	L	L	L	L	Ц	Ц	Ц	$\sqcup$	╝	┙		Ц	
		-							Ш	X	Ш		$\perp$		L	<u> </u>	L			L						_	┙	
		-					i		A	$\perp$	Ш		$\perp$	丄	L		L											╝
							į						$\Box$		L	L												
							0	0					$\Box$	Ι	L								Π	П	$\Box$			
							<u> </u>	<																				_
UNCONF	INED CON	PRESSIVE	STRENG	тн: 0.96	kg/cm²		SCALE: 1	SCALE: /					NC	)TE:	RE	AD	ST	RE	SS	10	4 S	iCA	LE.		Ą.		• •	

REMARKS: \_

BY AJB DATE8/22/62

THE H. C. NUTTING COMPANY





то



THE H. C. NUTTING COMPANY

0.4. 5 26-62

ENGINEERS AND CHEMISTS 4120 AIRPORT ROAD

EAST 1-5816

CINCINNATI 26. OHIO \*Pickaway & Franklin Counties

Barrett-Cargo-withers & Assoc. Ltd.

INVOICE NO. R-2394

P. 0. Box 372 245-249 S. Paint Street Chillicothe, Chio

DETACH HERE AND SEND UPPER PART WITH CHECK. CANCELLED CHECK IS YOUR RECEIPT.

TERMS: 30 DAYS NET NO DISCOUNT

CUST. No.	FOR Test So	rings		Interstate Houte 71 te, Ohio, Madison*	invoice No.	ORDER No. 1770.8	7-2 <sup>1</sup> :-62L
	REPORT No.		DE	ESCRIPTION	QUANTITY	RATE	TOTAL
Hole No. 1 4 5 6 7	Ground <u>\$167.</u> 873.5 873.8 874.6 871.0 873.5 873.2	Fc <u>1</u> 88, 86, 88, 88, 86,	oting ev. 2.0 8.0 0.5 2.8 9.0 1.4		145.0 31.5 45.0 31.5 42.4 48.3 36.5 44.7 248.4	hock	5/1 2 1 2
	#	orings : " urbed Sa		rburden 2} Ft.Sampl	ing Interve S5.6Ft 248.4 Ft 5	1s 5.75/Ft 5.25/Ft 12.00 ea	492.20 1304.10 60.00 \$1856.30
		3:	392	-0 N			
9-NCI			/-	-BA-1-	03/	0	

NVOICE

# THE H. C. NUTTING COMPANY

ENGINEERS AND CHEMISTS
4120 AIRPORT ROAD
CINCINNATI 26, OHIO
EAST 1-5816

2-27-6

Barrett-Cargo-Withers & Assoc. Ltd.,
TO Post Office Box 186,
Chillicothe, Chio

INVOICE No. R-3050

9 m 13-4-1

... DETACH HERE JAND SEND UPPER PART WITH CHECK CANCELLED CHECK IS YOUR RECEIPT.

TERMS: 30 DAYS NET NO DISCOUNT

CUST. No.	FOR Soil Test	PROJECT Interstate Rt. Bridge No. FRA-1-03 CONTRACTOR		ORDER No.	DATE 8/24/62 (Ik)
	REPORT No.	DESCRIPTION	QUANTITY	RATE	TOTAL
		Moisture Content Plastic Limit Liquid Limit Sieve & Hydrometer Unconfined Compression Consolidation	104 104 104 104 104	\$ 1.50/ea 4.00/ea 6.00/ea 10.00/ea 12.00/ea 60.00/ea	\$156.00 416.00 624.00 1040.00 60.00 60.00
	·				\$ 2356.00
					-
		C1 5 - CL			
•					
				į 	

INVOICE

## THE H. C. NUTTING COMPANY

ENGINEERS AND CHEMISTS
4120 AIRPORT ROAD
CINCINNATI 26, OHIO
EAST 1-5616

Barrett-Cargo-Withers & Assoc. Ltd.,
Post Office Box 186,
Chillicothe, Chio

INVOICE No. R-3051

. DETACH, HERELAND, SEND, UPPER, PART, WITH, CHECK. CANCELLED, CHECK, IS, YOUR, RECEIPT.

TERMS: 30 DAYS NET NO DISCOUNT

CUST. No.	FOR Engineeri Analysis	ng PROJECT Interstate Rt. 71 Bridge No. FRA-1-0310 CONTRACTOR Over State Rt. 3	R.L. R-3051	ORDER No.	8/24/62 (IK)
	REPORT No.	DESCRIPTION	QUANTITY	RATE	TOTAL
		Twin Structure			\$ 250.00
ı					
		CI 6 - CL			