

**REPORT OF
GEOTECHNICAL STUDY
PROPOSED CHAPPELL CROSSING BOULEVARD & ACCESS ROAD
WEST CHESTER, OHIO**

FOR

**CHAPPELL CONSTRUCTION
WEST CHESTER, OHIO**

JULY 2004



H. C. NUTTING COMPANY

EMPLOYEE OWNED

TABLE OF CONTENTS

	PAGE
PROJECT DESCRIPTION	2
FIELD EXPLORATION AND LABORATORY TESTING	2
Field Exploration.....	2
Laboratory Testing.....	3
ENCOUNTERED SUBSURFACE CONDITIONS.....	3
Topsoil / Loess	4
Cohesive Overburden Soils.....	4
Granular Overburden Soils.....	5
Groundwater Conditions	5
CONCLUSIONS AND RECOMMENDATIONS	6
CONSTRUCTION AND QUALITY CONTROL CONSIDERATIONS	7
LIMITATIONS OF LIABILITY	7

APPENDIX

BORING TERMINOLOGY	
SOIL CLASSIFICATION	
FIGURE 1: SITE LOCATION PLAN	
FIGURE 2: TEST BORING LOCATION PLAN	
FIGURE 3: SUMMARY OF GEOTECHNICAL DATA	
TEST BORING LOGS	
LABORATORY TEST DATA	
SOIL DISPOSITION FORM	



H. C. NUTTING COMPANY

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS
SINCE 1924

CORPORATE CENTER
611 LUNKEN PARK DRIVE
CINCINNATI, OHIO 45226
(513) 321-5816
FAX (513) 321-0294

July 22, 2004

W.O. #15356.005 jak

Mr. Charles W. Chappell
Chappell Construction
P. O. Box 278
West Chester, Ohio 45071-0278
Tel: (513) 777-6177
Fax: (513) 777-6178

**Re: Report of Geotechnical Study
Proposed Chappell Crossing Boulevard
West Chester, Ohio**

Dear Mr. Chappell:

We are pleased to submit herewith our report of geotechnical study performed for the proposed Chappell Crossing Boulevard and access road in West Chester, Ohio. This study was performed in accordance with our proposal dated June 7, 2004 and per your verbal authorization on June 8, 2004.

The work performed for this evaluation consisted of: (1) engineering site reconnaissance, (2) test boring layout, (3) drilling of nine shallow test borings, (4) laboratory testing and analysis, (5) engineering analyses, and (6) preparation of this geotechnical report. The following paragraphs summarize a description of the project scope, our investigative procedures, subsurface conditions encountered, and geotechnical recommendations. The text is followed by an information sheet describing the basis and limitations of this investigation. This is then followed by an Appendix which contains a Site Location Plan (Figure 1), a Test Boring Location Plan (Figure 2),

a Summary of Geotechnical Data drawing (Figure 3), test boring logs, laboratory test data, information describing the terminology used on the boring logs and laboratory data sheets, and information regarding disposal of the soil samples.

PROJECT DESCRIPTION

The project will involve approximately 2,000 ft. of new roadway to be constructed off of Union Centre Boulevard in West Chester, Ohio. The proposed Chappell Crossing Boulevard will create a bypass around Union Centre Boulevard beginning near STA 88+00 and extending westward to STA 105+75. Site development will also include approximately 1,200 lineal feet of new access drive just north of the proposed Chappell Crossing. The topography at the site is relatively flat and is covered with low vegetation.

FIELD EXPLORATION AND LABORATORY TESTING

Field Exploration

Nine Standard Penetration test borings, designated as B-1 through B-9, were drilled for this project. The nine borings were each extended to a depth of 11.5 ft. below existing grades.

The test boring locations were established in the field by H. C. Nutting personnel. The ground surface elevations were estimated from the provided topographic plan (Figure 2). The location of the test borings are shown on the Test Boring Location Plan (Figure 2), attached within the Appendix.

The test borings were drilled on June 25, 2004 with a track-mounted drill rig. Boreholes were advanced and stabilized using hollow-stem augers while sampling was accomplished using the Standard Penetration Test procedure (ASTM D 1586). This

procedure involves driving a 2" O.D. by 1 3/8" I.D. split-spoon sampler with a 140 lb. hammer falling 30". The number of blows required for each 6" of penetration was recorded; the Standard Penetration Test result, or N-value, is the number of blows for the final 12" of penetration within each driving interval. These "split-spoon" samples were obtained at 2.5 ft. intervals.

Laboratory Testing

Upon completion of drilling operations, all samples were returned to our Soil Mechanics Laboratory. Each sample was examined and visually classified by the project geotechnical engineer in accordance with the Unified Soil Classification System (USCS). The test boring logs were prepared per the visual classification and the laboratory testing. Laboratory tests consisting of pocket penetrometer readings (an estimate of the unconfined compressive strength), moisture content determinations, Atterberg limits, and loss-on-ignition tests were performed on representative samples. The tests were conducted in accordance with ASTM Standard Specifications. The classified boring logs, which include the existing ground and subsurface strata elevations, are included in the Appendix.

ENCOUNTERED SUBSURFACE CONDITIONS

Typically, the subsurface conditions as encountered at the test borings consisted of topsoil, loess, glacial till soils, residual soils, and weathered shale bedrock. Test borings B-1 and B-2 were terminated within bedrock.

The subsurface conditions are graphically illustrated on Figure 3. This data is shown for illustration purposes only. For details of soil types encountered at each test boring location, please refer to the individual boring logs.

The following is a description of the pertinent characteristics of each major strata encountered in this study in order of increasing depth below existing grade.

Topsoil / Loess

The topsoil at the site was very thin, however, windblown soil deposits referred to as loess were encountered within the upper soil profile. Loess is generally described as lean clay with a high silt content and is subject to severe loss of shear strength when it becomes wet or disturbed. Therefore, we are recommending that these soils be undercut and replaced with structural fill (where required). The loess at this site is dark gray, blocky, lean to silty clay. The underlying suitable soils are gray and brown, but have a higher clay content than the loess. The following table lists the approximate thickness of the topsoil and loess encountered at the test boring locations:

Test Boring No.	Approximate Depth of Undercut (inches)
B-1	12"
B-2	6"
B-3	12"
B-4	6"
B-5	7"
B-6	12"
B-7	12"
B-8	10"
B-9	6"

Cohesive Overburden Soils

Cohesive overburden soils consisting of lean clay, clay, and fat clay were encountered at each test boring location underlying the surficial topsoil/loess. "Clay" is the term used to describe a lean clay with a Liquid Limit between 40% and 49%. The cohesive overburden soils varied in color, including brown, brown and gray, gray, and dark gray. The cohesive soils were described as containing various amounts of sand and gravel, iron oxide stains, and noted organics. Limestone fragments were noted with increasing depth. Sand seams were also present within the cohesive soils, which is common in

glacial profiles. Atterberg limit testing on a representative clay sample yielded a liquid limit of 46%, with a plasticity index of 27.

The consistency of the cohesive overburden soils were generally described as moist to very moist and medium stiff to stiff. Some soft zones were encountered, namely at test borings B-1 and B-5 at depths of 7.5 ft. and 5.0 ft., respectively. Natural moisture contents in the cohesive soils ranged from 13% to 36%.

Granular Overburden Soils

Granular soils, consisting of silty sand and sandy silt were encountered at test borings B-4 and B-9. The granular soils also contained trace amounts of clay and noted gravel. The consistency of the granular soils were described as very moist to wet.

Groundwater Conditions

Immediate and at completion water levels were recorded in each of the test borings. No water was encountered at any of the test borings during or upon completion of drilling.

Test Boring	Depth to Immediate Groundwater (ft.)	Depth to Groundwater After Drilling (ft.)
B-1	8.0	6.5
B-2	5.5	3.5
B-3	NW	4.0
B-4	7.5	4.0
B-5	4.5	4.5
B-6*	NW	4.5
B-7	NW	NW
B-8	5.0	3.5
B-9	5.0	3.5

NW = No Water Encountered

*24-hour water level reading was 4.0 ft. beneath ground surface.

In determining the groundwater levels at the site, we have considered the levels at which the drill foreman encountered during drilling and at completion, moisture condition of the soils and the color of the samples. Based on this information, it is our

opinion that the groundwater table at the time of this study was most likely around elevation 595 to 598 ft., approximately 4 to 7 ft. below existing grades.

Actual groundwater conditions can change with rainfall and other seasonal variations. It should be noted that perched water could be present at much higher elevations within the glacial till soils, due to water trapped within silt, sand, and gravel pockets, and seams, which are oftentimes present within the glacial till soils. Based on short-term observations, it is expected that any seepage encountered within shallow excavations or within undercuts can most likely be handled by sump pumping methods.

CONCLUSIONS AND RECOMMENDATIONS

Based on the subsurface conditions encountered in the test borings, the soil anticipated at the subgrade is generally high in silt and organic content and will require undercutting.

Once the existing topsoil and loess is removed, the exposed soils should be proof rolled to determine any soft or weak areas that may require additional undercutting. Any soft or yielding areas under the proof rolling should be inspected to determine remedial measures, which may require an undercut, stabilizing, discing and aeration. The appropriate remediation of yielding soils will have to be determined in the field during construction.

Proof rolling should be accomplished using a pneumatic tired device such as a loaded 20-ton capacity tandem axle dump truck as outlined in Section 203.14 of the Standard Specifications. Soft or yielding areas, which are identified during the proof rolling operation, should be assessed by a geotechnical engineer or authorized representative to determine if an undercut may be required, or other remedial measures.

Any structural fill required to reach design subgrade elevation should be placed in maximum 8" thick horizontal loose lifts. Each lift should be uniformly compacted to at least 98% per the Standard Proctor moisture density (ASTM D 698).

The thickness of flexible and rigid pavement can be established based on a subgrade as represented by the existing site materials. It is our understanding that the new pavement will consist of asphaltic concrete. The new pavement can be designed based on a CBR value of 3 and a resilient modulus of 3,600 psi.

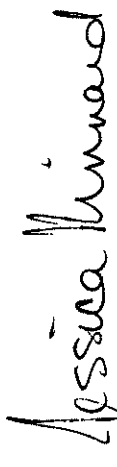
Proper drainage of the pavement subgrade will extend pavement life. Sloping or crowning the new subgrade should be considered for positive drainage. Additionally, surface water runoff from areas adjacent to and sloping towards the pavement should be intercepted, collected and not permitted to flow onto the pavement or infiltrate the pavement base and subgrade material. The control and disposal of surface and subsurface water is a very important part of pavement design. Pavement problems in Ohio most often are caused by prolonged retention of water on the surface and within or beneath the pavement. A drainage ditch or edge underdrain should be considered to intercept seepage and water moving down the subgrade slope.

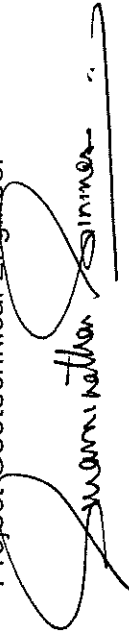
CONSTRUCTION AND QUALITY CONTROL CONSIDERATIONS

It is recommended that all aspects of this roadway construction be performed in accordance with the current ODOT standards. It is recommended that testing and inspection by qualified geotechnical personnel be utilized during the construction phase of the project. These services should be performed during proof rolling activities, any required undercutting and placement of any structural fill and reconstruction of pavement. We request the opportunity of remaining involved with the project through the construction phase by providing materials testing and monitoring services. Testing and inspection is considered essential to evaluate site and construction conditions as they relate to these findings and recommendations.

We appreciate the opportunity of providing these geotechnical services. Should you have any questions concerning the contents of this report, please contact us.

Respectfully submitted,
H. C. NUTTING COMPANY


Jessica Kinnard, P.E.
Project Geotechnical Engineer


Swaminathan Srinivasan, P.E.
Chief Geotechnical Engineer



LIMITATIONS OF LIABILITY

OUR WARRANTY

We warrant that the services performed by H. C. Nutting Company are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions. **NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE.** While the services of H. C. Nutting Company are a valuable and integral part of the design and construction teams, we do not warrant, guarantee, or insure the quality or completeness of services provided by other members of those teams, the quality, completeness, or satisfactory performance of construction plans and specifications which we have not prepared, nor the ultimate performance of building site materials.

SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test borings; test pits are sometimes employed. The method of determining the boring location and the surface elevation at the boring is noted in the report. The information is represented on a drawing or on the boring log. The location and elevation of the boring should be considered accurate only to the degree inherent with the method used.

The boring log includes sampling information, description of the materials recovered, approximate depth of boundaries between soil and rock strata and groundwater data. The log represents conditions specifically at the location and time the boring was made. The boundaries between different soil strata are indicated at specific depths; however, these depths are in fact approximate and dependent upon the frequency of sampling. The transition between soil strata is often gradual. Water level readings are made at the times and under the conditions stated on the boring logs. Water levels change with time and season. The borehole does not always remain open sufficiently long for the measured water level to coincide with the groundwater table.

LABORATORY AND FIELD TESTS

Tests are performed in accordance with specific ASTM Standards unless otherwise indicated. All determinations included in a given ASTM Standard are not always required and performed. Each test report indicates the measurements and determinations actually made.

ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it is not intended to determine the cost of construction or to stand alone as a construction specification.

Report recommendations are based primarily on data from test borings made at the test locations shown on a boring location drawing included. Soil variations may exist between borings and these variations may not become evident until construction. If significant variations are then noted, the geotechnical engineer should be contacted so that field conditions can be examined and recommendations revised if necessary.

The geotechnical report states our understanding as to the location, dimensions and structural features proposed for the site. Any significant changes in the nature, design, or location of the site improvements **MUST** be communicated to the geotechnical engineer so that the geotechnical analysis, conclusions, and recommendations can be appropriately adjusted.

The geotechnical engineer should be given the opportunity to review all drawings that have been prepared based on his recommendations.

CONSTRUCTION MONITORING

Construction monitoring is a vital element of complete geotechnical services. The field engineer/inspector is the owner's "representative" observing the work of the contractor, performing tests as required in the specifications, and reporting data developed from such tests and observations. **THE FIELD ENGINEER OR INSPECTOR DOES NOT DIRECT THE CONTRACTOR'S CONSTRUCTION MEANS, METHODS, OPERATIONS OR PERSONNEL.** He does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. He is responsible for his own safety but has no responsibility for the safety of other personnel at the site. He is an important member of a team whose responsibility is to watch and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications.

APPENDIX

BORING TERMINOLOGY

SOIL CLASSIFICATION

FIGURE 1: SITE LOCATION PLAN

FIGURE 2: TEST BORING LOCATION PLAN

FIGURE 3: SUMMARY OF GEOTECHNICAL DATA

TEST BORING LOGS

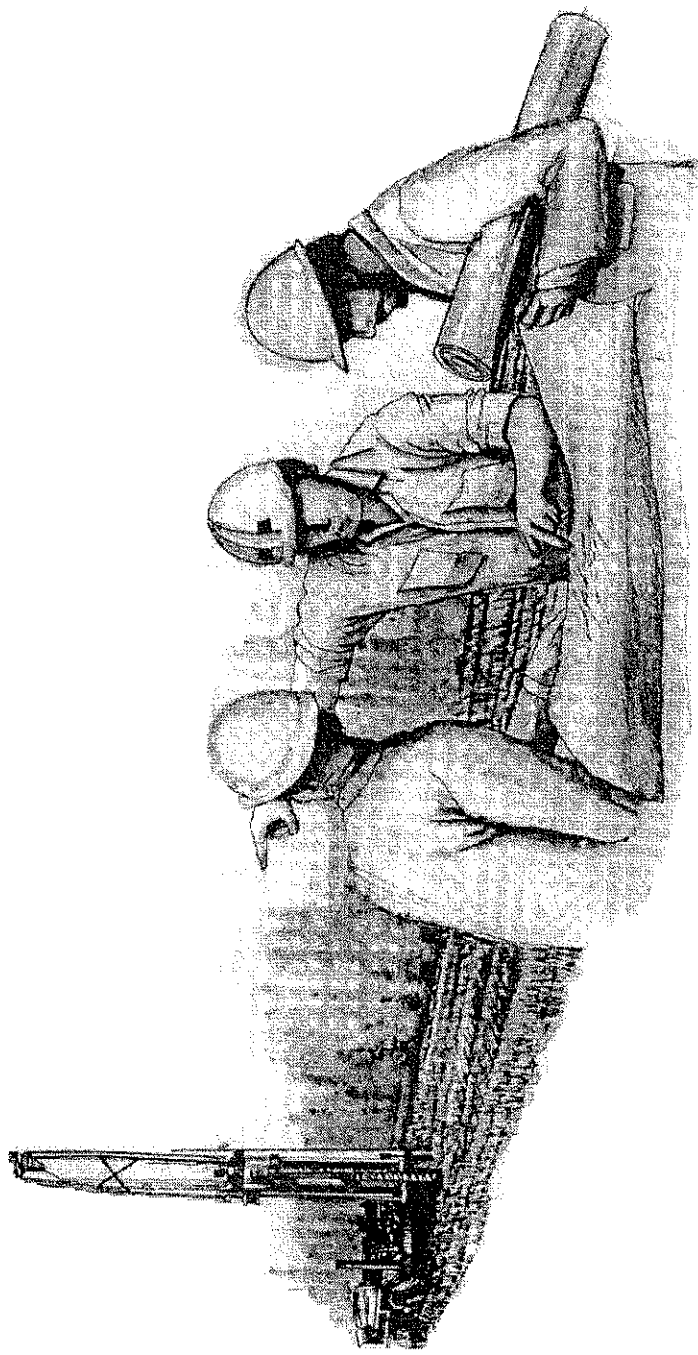
LABORATORY TEST DATA

SOIL DISPOSITION FORM



A description of terminology and symbols used in the logs of test borings, and a copy of ASTM D 2487, "Classification of Soils for Engineering Purposes", are included in the following two pages.

Readers of this report who wish an in-depth discussion on the basis for geotechnics, including procedures used in subsurface exploration, laboratory testing, and geotechnical analyses are referred to The H. C. Nutting Geotechnical and Test Engineering Manual. Those readers not having a copy of this manual may obtain one at nominal cost by contacting The H. C. Nutting Company at (513) 321-5816.





STANDARD PENETRATION TEST

THE PENETRATION RESISTANCE OR N-VALUE AS IT IS COMMONLY REFERRED TO IS THE SUMMATION OF THE NUMBER OF BLOWS REQUIRED TO DRIVE TWO SUCCESSIVE 6" PENETRATIONS OF THE 2" O.D. SPLIT BARREL SAMPLER. THE SAMPLER IS DRIVEN WITH A 140 LB. WEIGHT FALLING 30" AND IS SEATED TO A DEPTH OF 6" BEFORE COMMENCING THE STANDARD PENETRATION TEST.

THE STANDARD PENETRATION TEST IS PERFORMED IN COMPLIANCE WITH PROCEDURES AS SET FORTH IN ASTM D-1586.

TERMINOLOGY

GRAIN SIZE (PER ASTM D-2487)

SOIL FRACTION	PARTICLE SIZE	U.S. STANDARD SIEVE SIZE
BOULDERS	LARGER THAN 12" (300mm)	LARGER THAN 12"
COBBLES	3" (75 mm) TO 12" (300 mm)	3" TO 12"
GRAVEL:		
COARSE	3/4" (19 mm) TO 3" (75 mm)	3/4" TO 3"
FINE	4.75 mm TO 19mm	#4 TO 3/4"
SAND:		
COARSE	2.00 mm TO 4.75 mm	#10 TO #4
MEDIUM	0.425 mm TO 2.00 mm	#40 TO #10
FINE	0.075 mm TO 0.425 mm	#200 TO #40
FINES: (SILTS & CLAYS)	SMALLER THAN 0.075 mm	SMALLER THAN #200
	PLASTICITY CHARACTERISTICS DIFFERENTIATE BETWEEN SILTS AND CLAYS	

RELATIVE DENSITY OF GRANULAR SOILS

TERM*	N VALUE
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 29
DENSE	30 - 50
VERY DENSE	OVER 50

*THESE ARE USUALLY BASED ON AN EXAMINATION OF SOIL SAMPLES, PENETRATION RESISTANCE AND SOIL DENSITY DATA.

RELATIVE PROPORTIONS OF COHESIONLESS SOILS

(Per ASTM D2488)

PROPORTIONAL TERM	DEFINING RANGE BY PERCENTAGE OF WEIGHT
TRACE	<5%
FEW	5 TO 10%
LITTLE	15 TO 25%
SOME	30 TO 45%

FOR RELATIVE PERCENTAGE OF GRAVELS, SAND AND FINES.

CONSISTENCY OF COHESIVE SOILS

TERM	N VALUE*	STRENGTH (QU, TSF)	IDENTIFICATION PROCEDURE
VERY SOFT	0 - 2	0 - 0.25	EASILY PENETRATED SEVERAL INCHES BY FIST.
SOFT	3 - 4	0.25 - 0.5	EASILY PENETRATED SEVERAL INCHES BY THUMB
MEDIUM STIFF	5 - 8	0.5 - 1.0	PENETRATED SEVERAL INCHES BY THUMB WITH MODERATE EFFORT.
STIFF	9 - 15	1.0 - 2.0	READILY INDENTED BY THUMB, BUT PENETRATED WITH GREAT EFFORT
VERY STIFF	16 - 30	2.0 - 4.0	READILY INDENTED BY THUMBNAIL
HARD	OVER 30	>4.0	INDENTED WITH DIFFICULTY BY THUMBNAIL.

*N-value correction is approximate and typically only used in absence of actual field or laboratory strength data.

RELATIVE PROPORTIONS OF COHESIONLESS SOILS

(Per ASTM D2488)

DRY	ABSENCE OF MOISTURE, DUSTY, DRY TO THE TOUCH
MOIST	DAMP BUT NO VISIBLE WATER
WET	VISIBLE FREE WATER, USUALLY SOIL IS BELOW WATER TABLE

SYMBOLS

DRILLING AND SAMPLING

RC -	ROCK CORING, SIZE NW, NX = 2-1/8" diameter
ROD -	ROCK QUALITY DESIGNATION
FT -	FISH TAIL
DC -	DRIVE CASING
C -	CASING SIZE NW, 4", HW, 6"
CW -	CLEAR WATER
DM -	DRILLING MUD
HAS -	HOLLOW STEM AUGER
FA -	FLIGHT AUGER
HA -	HAND AUGER
COA -	CLEAN-OUT AUGER
SS -	2" DIAMETER SPLIT BARREL SAMPLE
ST -	3" DIAMETER THIN-WALLED TUBE SAMPLE
PT -	3" DIAMETER PISTON TUBE SAMPLE
AS -	AUGER SAMPLE
WS -	WASH SAMPLE
PTS -	PEAT SAMPLE
PS -	PITCHER SAMPLE
NR -	NO RECOVERY
S -	SOUNDING
PMT -	BOREHOLE PRESSUREMETER TEST
VS -	VANE SHEAR TEST
WPT -	WATER PRESSURE TEST
ATV -	ALL TERRAIN VEHICLE
R -	REFUSAL CONDITION

LABORATORY TESTS

PP -	PENETROMETER READING, TONS/SQ. FT.
QU -	UNCONFINED STRENGTH, TONS/SQ. FT.
W -	MOISTURE CONTENT, %
LL -	LIQUID LIMIT, %
PL -	PLASTIC LIMIT, %
SL -	SHRINKAGE LIMIT, %
LOI -	LOSS ON IGNITION, %
D -	DRY UNIT WEIGHT, LBS./CU. FT.
PH -	MEASURE OF SOIL ALKALINITY OR ACIDITY

WATER LEVER MEASUREMENT

NW -	NO WATER ENCOUNTERED
WD -	WATER DRILLING
BCR -	BEFORE CARING REMOVAL
ACR -	AFTER CARING REMOVAL
ICR -	CAVED AND MUST BE BACKFILLED UPON COMPLETION
BF -	BACKFILLED UPON COMPLETION

NOTE: WATER LEVEL MEASUREMENTS SHOWN ON THE BORING LOGS REPRESENT CONDITIONS AT THE TIME INDICATED AND MAY NOT REFLECT STATIC LEVELS, ESPECIALLY IN COHESIVE SOILS

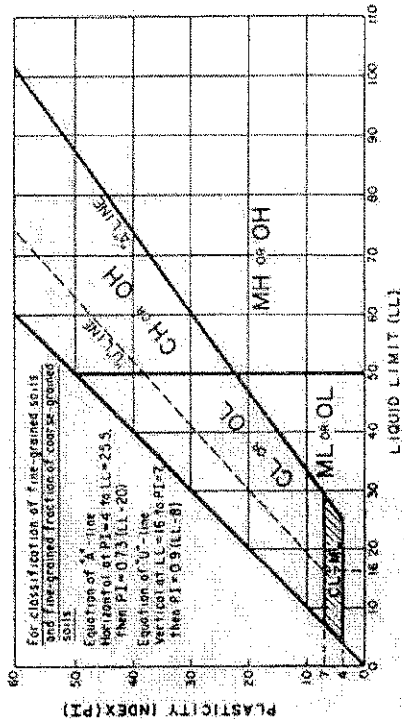
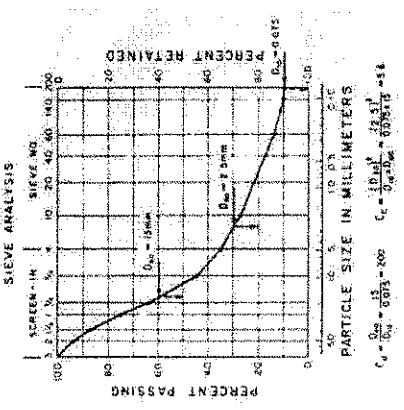


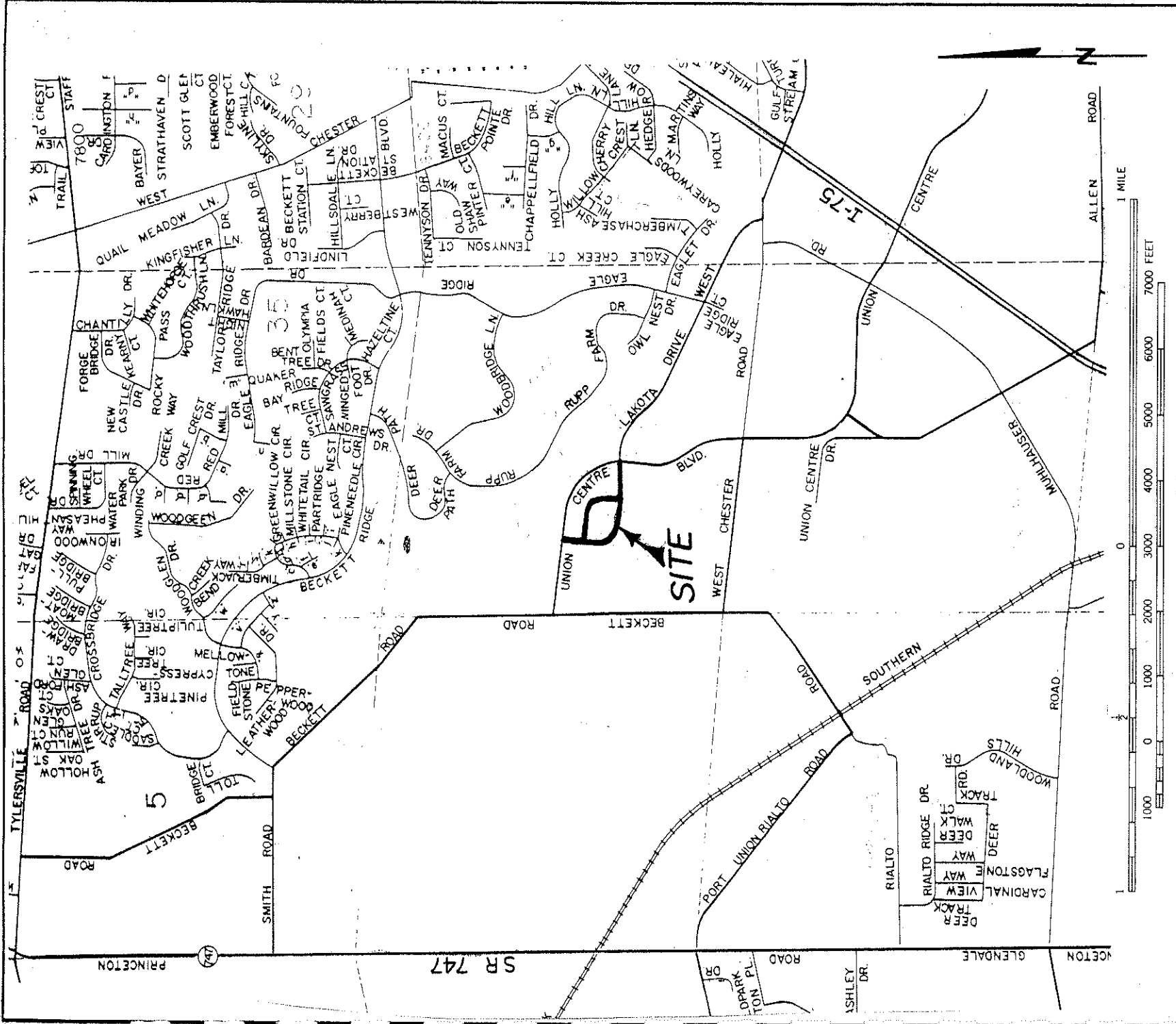
CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM Designation: D 2487
(Based on Unified Soil Classification System)

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A		Soil Classification
Group Symbol	Group Name ^B	
GW	Well graded gravel ^F	
Clean Gravels		
	Less than 5% fines ^C	
	$C_u \geq 4$ and $1 \leq C_c \leq 3$ ^E	
Gravels with Fines		
	More than 5% coarse fraction retained on No. 4 sieve	
	More than 12% fines ^C	
	$C_u < 4$ and/or $1 > C_c > 3$ ^E	
	Fines classify as ML or MH	
	Fines classify as CL or CH	
	$C_u \geq 6$ and $1 \leq C_c \leq 3$ ^E	
	Fines classify as CL or CH	
	$C_u > 6$ and/or $1 < C_c < 3$ ^E	
	Fines classify as ML or MH	
	Fines classify as CL or CH	
	$P_I > 7$ and plots on or above "A" line ^J	
	$P_I < 4$ or plots below "A" line ^J	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	P_I plots on or above "A" line	
	P_I plots below "A" line	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	Primarily organic matter, dark in color, and organic odor.	
	Highly organic soils	
	E $C_u = D_{60} / D_{10}$	
	$C_c = (D_{30})^2 ?$	
	$D_{10} * D_{60}$	
	f If soil contains $\geq 15\%$ sand, add "with sand" to group name.	
	g If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.	
	h If fines are organic, add "with organic fines" to group name.	
	i If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.	
	Clean Sands	
	Less than 5% fines ^D	
	$C_u \geq 6$ and $1 \leq C_c \leq 3$ ^E	
	Fines classify as CL or CH	
	$C_u > 6$ and/or $1 < C_c < 3$ ^E	
	Fines classify as ML or MH	
	Fines classify as CL or CH	
	$P_I > 7$ and plots on or above "A" line ^J	
	$P_I < 4$ or plots below "A" line ^J	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	P_I plots on or above "A" line	
	P_I plots below "A" line	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	Primarily organic matter, dark in color, and organic odor.	
	Highly organic soils	
	E $C_u = D_{60} / D_{10}$	
	$C_c = (D_{30})^2 ?$	
	$D_{10} * D_{60}$	
	f If soil contains $\geq 15\%$ sand, add "with sand" to group name.	
	g If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.	
	h If fines are organic, add "with organic fines" to group name.	
	i If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.	
	Sands with Fines	
	More than 12% fines ^D	
	$C_u > 6$ and/or $1 < C_c < 3$ ^E	
	Fines classify as ML or MH	
	Fines classify as CL or CH	
	$P_I > 7$ and plots on or above "A" line ^J	
	$P_I < 4$ or plots below "A" line ^J	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	P_I plots on or above "A" line	
	P_I plots below "A" line	
	Liquid limit - oven dried	
	Liquid limit - not dried	
	Primarily organic matter, dark in color, and organic odor.	
	Highly organic soils	
	E $C_u = D_{60} / D_{10}$	
	$C_c = (D_{30})^2 ?$	
	$D_{10} * D_{60}$	
	f If soil contains $\geq 15\%$ sand, add "with sand" to group name.	
	g If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.	
	h If fines are organic, add "with organic fines" to group name.	
	i If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.	
	Silts and Clays	
	Liquid limit less than 50	
	Silts and Clays	
	Liquid limit less than 50	
	Highly organic soils	
	E $C_u = D_{60} / D_{10}$	
	$C_c = (D_{30})^2 ?$	
	$D_{10} * D_{60}$	
	f If soil contains $\geq 15\%$ sand, add "with sand" to group name.	
	g If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.	
	h If fines are organic, add "with organic fines" to group name.	
	i If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.	
	Coarse-Grained Soils	
	More than 50% retained on No. 200 sieve	
	Gravels	
	More than 50% coarse fraction retained on No. 4 sieve	
	Gravels with Fines	
	More than 12% fines ^C	
	Clean Sands	
	Less than 5% fines ^D	
	Sands with Fines	
	More than 12% fines ^D	
	Silts and Clays	
	Liquid limit less than 50	
	Highly organic soils	
	Group Symbol	
	Group Name ^B	
	Soil Classification	

- ^A Based on the material passing the 3-in. (75-mm) sieve.
- ^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
- ^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt; GW-GC well-graded gravel with clay; GP-GM poorly graded gravel with silt; GP-GC poorly graded gravel with clay
- ^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt; SW-SC well-graded sand with clay; SP-SM poorly graded sand with silt; SP-SC poorly graded sand with clay
- ^E $C_u = D_{60} / D_{10}$
- ^F If Aterberg limits plot in hatched area, soil is a CL-ML, silty clay.
- ^G If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.
- ^H If soil contains $\geq 30\%$ plus No. 200, predominantly sand, add "sandy" to the group name.
- ^I If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to the group name.
- ^J $P_I \geq 4$ and plots on or above "A" line
- ^K $P_I < 4$ or plots below "A" line
- ^L P_I plots on or above "A" line
- ^M P_I plots below "A" line





H.C. NUTTING COMPANY
 CORPORATE OFFICE - 611 LUKEN PARK DRIVE
 CINCINNATI, OHIO 45226
 (513) 321-5816
 (EMPLOYEE OWNED)

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS

JUNE 2004

W.O. 15356.005

SITE LOCATION PLAN

**CHAPPELL CONSTRUCTION
 PROPOSED CHAPPELL CROSSING
 BLVD. & ACCESS DRIVE
 WEST CHESTER, OHIO**

FIGURE 1



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0284

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

LOG OF TEST BORING

APPALACHIAN REGION
912 MORRIS STREET
CHARLESTON, WV 25031
(304) 344-0821
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE B
LAWRENCEBURG, IN 47025
(812) 336-4000
FAX (812) 339-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-B
LEXINGTON, KY 40511
(609) 455-8650
FAX (609) 455-8650

Client Chappell Construction, Inc.

Boring No. **B-1**

Project Prop. Chappell Crossing Blvd. & Access Road

Date Started 6/25/2004

Boring Location As Shown On Test Boring Location Plan

Date Completed 6/25/2004

Elevation Ref. Interpolated From Provided Topographic Plan

Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/6" (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE		
														NO.	TYPE	
605.30	0.0															
604.30	1.0	1.0 Dark brown LEAN CLAY (LOESS), moist-stiff	1	SS	0.0-1.5	4-4-4 (8)	100									
		4.0 Brown, noted gray, LEAN CLAY, trace sand, moist-stiff	2	SS	2.5-4.0	5-6-7 (13)	100		28				2.5			
600.30	5.0	2.5 Gray, noted brown, LEAN CLAY, noted sand, very moist-stiff	3	SS	5.0-6.5	5-6-6 (12)	100						1.5			
597.80	7.5	1.5 Brown CLAY with wet sand seams, very moist-soft	4	SS	7.5-9.0	3-3-6 (9)	100									
596.30	9.0	BORING COMPLETED @ 9.0'														

General Notes
Driller D. Maxwell
Rig No. _____
Rig Type Track
Method SS
Inspector _____

Remarks

Water Level Observations
Immediate 8.0 ft. ▽
At Completion 6.5 ft. ▽
After 0 Hrs. BF ft.
Water used in drilling NW ft.
BF = BACKFILLED NW = NO WATER
(Measured from ground surface)



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEO TECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
312 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0621
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE 6
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
470 B CONWAY CT., STE B-8
LEXINGTON, KY 40511
(609) 465-4830
FAX (609) 465-8630

LOG OF TEST BORING

Client

Chappell Construction, Inc.

Boring No.

B-2

Project

Prop. Chappell Crossing Blvd. & Access Road

Date Started

6/25/2004

Boring Location

As Shown On Test Boring Location Plan

Date Completed

6/25/2004

Elevation Ref.

Interpolated From Provided Topographic Plan

Work Order No.

15356.005

ELEV. ft.	DEPTH ft.	NO.	TYPE	DEPTH ft.	BLOWS/6" (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE		
599.00	0.0	1	SS	0.0-0.5	5	100									
598.50	0.5	1A	SS	0.5-1.5	4-5	50						2.0			
596.50	2.5	2	SS	2.5-4.0	3-4-5 (9)	100							2.5		
594.00	5.0														
593.00	6.0	3	SS	5.0-6.0	5-7	100						1.0			
		3A	SS	6.0-6.5	13	100									
591.00	8.0														
590.00	9.0	4	SS	7.5-9.0	15-17-15 (32)	100									

DESCRIPTION OF MATERIALS

0.5 color, material description, moisture, stiffness/density/hardness
Dark gray LEAN CLAY, noted sand and roots (LOESS/TOPSOIL), moist-medium stiff

2.0 Dark gray, noted brown, LEAN CLAY, noted sand, moist-stiff

2.5 Brown and gray LEAN CLAY, noted clay, moist-stiff

1.0 Gray and brown CLAY, noted silt pockets, very moist-medium stiff

2.0 Brown SANDY LEAN CLAY, trace gravel, noted sand seams (GLACIAL TILL), moist-very stiff

1.0 Gray, LEAN CLAY, trace sand, gravel, and rock fragments (GLACIAL TILL), moist-very stiff

BORING COMPLETED @ 9.0'

General Notes

Driller D. Maxwell
Rig No. _____
Rig Type Track
Method SS
Inspector _____

Remarks

Water Level Observations

Immediate 5.5 ft.

At Completion 3.5 ft.

After 0 Hrs. BF ft.

Water used in drilling NW ft.

BF = BACKFILLED NW = NO WATER
(Measured from ground surface)



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
612 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0921
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE 8
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-6
LEXINGTON, KY 40511
(609) 455-6630
FAX (609) 455-8630

LOG OF TEST BORING

Client Chappell Construction, Inc.

Boring No. B-3

Project Prop. Chappell Crossing Blvd. & Access Road

Date Started 6/25/2004

Boring Location As Shown On Test Boring Location Plan

Date Completed 6/25/2004

Elevation Ref. Interpolated From Provided Topographic Plan

Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/ft. (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR Isf	SAMPLE		
														Isf	PPR	
598.40	0.0		1	SS	0.0-1.0	4-4	50									
598.10	0.3	0.3 Dark brown silty clay, trace roots (TOPSOIL), moist-medium stiff	1A	SS	1.0-1.5	5	100						2.75			
597.40	1.0	0.7 Dark gray, blocky, LEAN CLAY, trace sand (LOESS), moist-stiff														
		4.0 Gray, noted brown, LEAN CLAY, noted sand, moist to very moist-stiff	2	SS	2.5-4.0	3-4-5 (9)	100		25				1.75			
593.40	5.0															
		3.0 Brown LEAN CLAY, trace sand and gravel, noted rock fragments (GLACIAL TILL), moist-very stiff	3	SS	5.0-6.5	7-8-7 (15)	87		13				4.5+			
590.40	8.0		4	SS	7.5-8.0	13	100						4.5+			
589.40	9.0	1.0 Gray, LEAN CLAY, trace sand, gravel, and rock fragments (GLACIAL TILL), moist-very stiff	4A	SS	8.0-9.0	15-16	100									
		BORING COMPLETED @ 9.0'														

General Notes

Driller D. Maxwell
Rig No. _____
Rig Type Track
Method SS
Inspector _____

Remarks

Water Level Observations

Immediate _____ ft.
At Completion 4.0 ft. ▼
After _____ ft.
Water used in drilling _____ ft.
BF = BACKFILLED NW = NO WATER
(Measured from ground surface)



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
872 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0021
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3713
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE 8
LAWRENCEBURG, IN 47025
(717) 539-4300
FAX (717) 539-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-8
LEXINGTON, KY 40511
(606) 455-9690
FAX (606) 455-9680

LOG OF TEST BORING

Client Chappell Construction, Inc. Boring No. B-4
Project Prop. Chappell Crossing Blvd. & Access Road Date Started 6/25/2004
Boring Location As Shown On Test Boring Location Plan Date Completed 6/25/2004
Elevation Ref. Interpolated From Provided Topographic Plan Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/6" (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE	
														1	2
598.30	0.0		1	SS	0.0-0.5	5	100								
597.70	0.6	0.6 Dark gray, blocky, LEAN CLAY, noted fine sand and fine roots (LOESS), moist-stiff	1A	SS	0.5-1.5	6-7	100		24				4.25		
595.80	2.5	1.9 Dark gray, noted brown, LEAN CLAY, noted sand, moist-very stiff	2	SS	2.5-4.0	4-6-8 (14)	100		24				2.25		
593.30	5.0	2.5 Brown and gray CLAY, noted sand and silt pockets, moist-stiff	3	SS	5.0-6.5	4-6-7 (13)	100						1.75		
590.80	7.5	2.5 Brown and gray FAT CLAY, note silt partings and concretions, moist-stiff	4	SS	7.5-9.0	5-10-15 (25)	100								
589.30	9.0	1.5 Brown, fine to coarse, SILTY SAND, trace gravel and clay, very moist-medium dense BORING COMPLETED @ 9.0'													

General Notes		Remarks		Water Level Observations	
Driller	D. Maxwell			Immediate	7.5 ft. ▽
Rig No.				At Completion	4.0 ft. ▽
Rig Type	Track			After	0 Hrs. BF ft.
Method	SS			Water used in drilling	NW ft.
Inspector				BF = BACKFILLED NW = NO WATER (Measured from ground surface)	

H. C. NUTTING COMPANY



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
912 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0621
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
348 WALNUT STREET, STE B
LAWRENCEBURG, IN 47025
(812) 538-4300
FAX (812) 538-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-B
LEXINGTON, KY 40511
(609) 455-8630
FAX (609) 455-8630

LOG OF TEST BORING

Client Chappell Construction, Inc.

Boring No. B-5

Project Prop. Chappell Crossing Blvd. & Access Road

Date Started 6/25/2004

Boring Location As Shown On Test Boring Location Plan

Date Completed 6/25/2004

Elevation Ref. Interpolated From Provided Topographic Plan

Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/S* (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE	
														1	2
598.70	0.0		1	SS	0.0-0.5	3	100								
598.10	0.6	0.6 Dark gray silty clay, trace roots, noted sand (TOPSOIL), moist-medium stiff	1A	SS	0.5-1.5	4-4	100		25				3.25		
		4.4 Dark gray, noted brown, LEAN CLAY, noted sand and concretions, moist-very stiff to stiff	2	SS	2.5-4.0	3-4-4 (8)	100		26				2.0		
593.70	5.0														
		2.5 Brown and gray LEAN CLAY, trace sand and gravel, wet sand seam (GLACIAL TILL), very moist-soft	3	SS	5.0-6.5	4-9-11 (20)	100								
591.20	7.5														
		1.5 Gray CLAY, trace sand and gravel, noted wet sand seam (GLACIAL TILL), very moist-medium stiff	4	SS	7.5-9.0	18-21-37 (58)	100						1.25		
589.70	9.0														
		BORING COMPLETED @ 9.0'													

General Notes

Driller D. Maxwell
Rig No. _____
Rig Type Track
Method SS
Inspector _____

Remarks

Water Level Observations

Immediate _____ ft. ▽
At Completion _____ ft. ▽
After _____ Hrs. _____ BF _____ ft.
Water used in drilling _____ NW _____ ft.
BF = BACKFILLED NW = NO WATER
(Measured from ground surface)



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED
GEO TECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
912 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0621
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE 8
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
479-B CONWAY CT., STE B-8
LEXINGTON, KY 40511
(859) 455-8930
FAX (859) 455-8630

LOG OF TEST BORING

Client Chappell Construction, Inc.

Boring No. B-6

Project Prop. Chappell Crossing Blvd. & Access Road

Date Started 6/24/2004

Boring Location As Shown On Test Boring Location Plan

Date Completed 6/24/2004

Elevation Ref. Interpolated From Provided Topographic Plan

Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/6" (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE	
														1A	1B
600.50	0.0														
599.50	1.0	1.0 Brown and gray lean clay, trace sand and gravel (FILL), moist-very stiff	1	SS	0.0-1.0	6-5	100		15				3.5		
598.00	2.5	1.5 Dark gray LEAN CLAY, noted sand (LOESS), moist-very stiff	1A	SS	1.0-1.5	7	100		20				4.5+		
		Gray, noted brown, LEAN CLAY, noted sand and concretions, moist-stiff, -very moist-medium stiff @ 5.0 ft. - noted wet sand seam	2	SS	2.5-4.0	4-6-6 (12)	100		36				2.75		
			3	SS	5.0-6.5	3-3-3 (6)	100						0.75		
593.00	7.5														
591.50	9.0	1.5 Gray LEAN CLAY, trace sand and gravel, noted sand seams (GLACIAL TILL), moist-very stiff BORING COMPLETED @ 9.0'	4	SS	7.5-9.0	12-11-12 (23)	100						4.5+		

General Notes		Remarks		Water Level Observations	
Driller	D. Maxwell			Immediate	ft. <u>4.5</u>
Rig No.				At Completion	ft. <u>4.5</u>
Rig Type	Track			After	24 Hrs. <u>4.0</u> ft. <u>4.0</u>
Method	SS			Water used in drilling	NW <u> </u> ft.
Inspector				BF = BACKFILLED	NW = NO WATER
				(Measured from ground surface)	



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
912 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0821
FAX (304) 342-4711

CENTRAL OHIO REGION
780 MORRISON ROAD
COLUMBUS, OH 43226
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
349 WALNUT STREET, STE B
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
4708 CONWAY CT, STE B-8
LEXINGTON, KY 40511
(959) 454-8530
FAX (959) 465-9830

LOG OF TEST BORING

Client Chappell Construction, Inc.

Boring No. B-7

Project Prop. Chappell Crossing Blvd. & Access Road

Date Started 6/25/2004

Boring Location As Shown On Test Boring Location Plan

Date Completed 6/25/2004

Elevation Ref. Interpolated From Provided Topographic Plan

Work Order No. 15356.005

ELEV.	DEPTH	ft.	NO.	TYPE	DEPTH	ft.	BLOWS/6"	(N Value)	REC.	%	RQD	%	W	%	LL	%	PI	%	Qu	tsf	PPR	tsf	
																							DESCRIPTION OF MATERIALS
599.40	0.0		1	SS	0.0-1.0	4-4	100	16															
598.40	1.0		1A	SS	1.0-1.5	5	100	25															2.0
595.40	4.0		2	SS	2.5-4.0	3-3-4 (7)	47	14															1.0
591.90	7.5		3	SS	5.0-6.5	6-13-12 (25)	100																4.5
590.40	9.0		4	SS	7.5-9.0	8-11-13 (24)	100																4.5+

General Notes		Remarks		Water Level Observations	
Driller	D. Maxwell	Immediate	NW		ft.
Rig No.		At Completion	NW		ft.
Rig Type	Track	After	0 Hrs.	BF	ft.
Method	SS	Water used in drilling	NW		ft.
Inspector		BF = BACKFILLED	NW = NO WATER		
		(Measured from ground surface)			



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

LOG OF TEST BORING

APPALACHIAN REGION
912 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-6821
FAX (304) 342-4711

CENTRAL OHIO REGION
730 MORRISON ROAD
COLUMBUS, OH 43226
(614) 953-3113
FAX (614) 953-0475

INDIANA REGION
349 WALNUT STREET, STE B
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-8
LEXINGTON, KY 40511
(609) 455-8530
FAX (609) 455-8630

Client Chappell Construction, Inc. Boring No. B-8
Project Prop. Chappell Crossing Blvd. & Access Road Date Started 6/25/2004
Boring Location As Shown On Test Boring Location Plan Date Completed 6/25/2004
Elevation Ref. Interpolated From Provided Topographic Plan Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS	NO.	TYPE	DEPTH ft.	BLOWS/6" (N Value)	REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf	SAMPLE		
														NO.	TYPE	
600.50	0.0	color, material description, moisture, stiffness/density/hardness														
599.70	0.8	0.8 Dark gray, blocky, LEAN CLAY, trace sand, noted fine roots (LOESS), moist-very stiff	1	SS	0.0-1.0	4-5	100						4.5+			
598.00	2.5	1.7 Gray, noted brown, CLAY, noted sand and concretions. moist-stiff	1A	SS	1.0-1.5	6	100		27	46	27		2.25			
595.50	5.0	2.5 Brown and gray, LEAN CLAY, noted sand and concretions, moist-stiff	2	SS	2.5-4.0	5-5-6 (11)	100		26				1.5			
593.00	7.5	2.5 Gray and brown CLAY with silt partings, wet sand and gravel seam at 6.5 ft., very moist-medium stiff	3	SS	5.0-6.5	6-8-9 (17)	100						0.75			
591.50	9.0	1.5 Brown LEAN CLAY, trace sand, gravel, and rock fragments (GLACIAL TILL), moist-very stiff BORING COMPLETED @ 9.0'	4	SS	7.5-9.0	11-13-29 (42)	100						4.5+			

General Notes		Remarks		Water Level Observations	
Driller	D. Maxwell			Immediate	5.0 ft. ▽
Rig No.				At Completion	3.5 ft. ▽
Rig Type	Track			After	0 Hrs. BF ft.
Method	SS			Water used in drilling	NW ft.
Inspector				BF = BACKFILLED NW = NO WATER (Measured from ground surface)	

H. C. NUTTING COMPANY



H.C. NUTTING COMPANY
CORPORATE CENTER - 611 LUNKEN PARK DRIVE
CINCINNATI, OH 45226 (513) 321-5816
FAX (513) 321-0294

EMPLOYEE OWNED
GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS SINCE 1921

APPALACHIAN REGION
812 MORRIS STREET
CHARLESTON, WV 25301
(304) 344-0821
FAX (304) 342-4711

CENTRAL OHIO REGION
790 MORRISON ROAD
COLUMBUS, OH 43230
(614) 863-3113
FAX (614) 863-0475

INDIANA REGION
348 WALNUT STREET, STE B
LAWRENCEBURG, IN 47025
(812) 539-4300
FAX (812) 539-4301

BLUEGRASS REGION
470-B CONWAY CT., STE B-8
LEXINGTON, KY 40511
(609) 495-6630
FAX (609) 495-6630

LOG OF TEST BORING

Client Chappell Construction, Inc.
Project Prop. Chappell Crossing Blvd. & Access Road
Boring Location As Shown On Test Boring Location Plan
Elevation Ref. Interpolated From Provided Topographic Plan

Boring No. B-9
Date Started 6/25/2004
Date Completed 6/25/2004
Work Order No. 15356.005

ELEV. ft.	DEPTH ft.	DESCRIPTION OF MATERIALS color, material description, moisture, stiffness/density/hardness	NO.	TYPE	DEPTH ft.	BLOWS/ft. (N Value)	SAMPLE										
							REC. %	RQD %	W %	LL %	PI %	Qu tsf	PPR tsf				
600.20	0.0																
599.70	0.5	0.5 Dark gray, blocky, LEAN CLAY, noted roots and sand (LOESS), moist-stiff	1	SS	0.0-1.5	4-3-4 (7)	67		28								3.5
597.70	2.5	2.0 Gray, noted brown, LEAN CLAY, noted sand and concretions, moist-stiff	2	SS	2.5-4.0	4-6-6 (12)	73		22								2.5
595.20	5.0	2.5 Brown and gray LEAN CLAY, noted sand and concretions, moist-stiff	3	SS	5.0-6.5	3-5-7 (12)	100										
592.70	7.5	2.5 Brown SANDY SILT with clay, wet-medium dense	4	SS	7.5-8.5	5-8	100										
591.70	8.5	1.0 Brown, fine to coarse, SILTY SAND, trace gravel and clay, wet-medium dense	4A	SS	8.5-9.0	11	100										1.5
591.20	9.0	0.5 Gray CLAY, trace sand and gravel, noted sand seams (GLACIAL TILL), very moist-medium stiff BORING COMPLETED @ 9.0'															

General Notes		Remarks		Water Level Observations	
Driller	D. Maxwell			Immediate	ft. ▽
Rig No.				At Completion	ft. ▽
Rig Type	Track			After	0 Hrs. BF ft.
Method	SS			Water used in drilling	NW ft.
Inspector				BF = BACKFILLED NW = NO WATER (Measured from ground surface)	

H.C. Nutting Company
 611 Lunken Park Dr.
 Cincinnati, Ohio 45226

Chappell Construction
 Prop. Chappel Crossing Blvd.
 West Chester, OH
 HCN W.O. # 15356.005

TABLE I: CLASSIFICATION TEST DATA

Boring No.	Sample No.	Depth (Ft.)	Moisture Content (%)	Loss On Ignition (%)	Atterberg Limits		
					Liquid Limit (%)	Plastic Limit (%)	Plasticity Index
B-1	2	2.5-4	27.8				
B-3	2	2.5-4	24.5				
	3	5-6.5	13.3				
B-4	1A	0.5-1.5	24.2				
	2	2.5-4	23.5				
B-5	1A	0.6-1.5	25.2				
	2	2.5-4	26.3				
B-6	1	0-1.5	15.2				
	1A	2.5-4	20.4				
	2	5-6.5	35.8				
B-7	1	0-1.0	16.4	7.1			
	1A	1-1.5	25.1				
	2	2.5-4	14.2				
B-8	1A	1-1.5	27.4			46	27
	2	2.5-4	25.9				
B-9	1	0.5-1.5	28.3				
	2	2.5-4	22.1				



H. C. NUTTING COMPANY

EMPLOYEE OWNED

GEOTECHNICAL, ENVIRONMENTAL AND TESTING ENGINEERS

SINCE 1921

CORPORATE CENTER
611 LUNKEN PARK DRIVE
CINCINNATI, OHIO 45226
(513) 321-5816
FAX (513) 321-0294

SAMPLE DISPOSITION

Unless other arrangements are made with H. C. Nutting Company (HCN), all soil and rock core samples collected during the course of this work will be disposed of 30 days after our report or lab test result submittal.

If the client wishes to avoid sample disposal in 30 days, other arrangements can be made, including any of the following:

1. The samples may be picked up by the client's representative from HCN's office, as prescheduled with HCN. The pick up date must precede the 30-day limit described above.
2. The samples can be shipped to the client by HCN. All costs associated with shipping shall be borne by the client.
3. The samples can be stored by HCN at a cost borne by the client. This cost will be based on the type of samples stored (boxes of soil sample jars, rock core boxes, etc.) and the duration of storage. Specific needs for sample storage beyond 30 days shall be detailed in the contract at agreed upon rates.

Requested Alternate Action:

- _____ Samples to be picked up by Client
(arrangements will be coordinated with Laboratory Manager)
- _____ Samples to be shipped to: _____
(costs borne by client) _____

- _____ Samples to be stored by HCN at negotiated rates

Acknowledgment:

Company: _____
 Name: _____
 Signature: _____
 Date: _____

Please return this form to: H.C. Nutting Co. 611 Lunken Park Dr. Cincinnati, OH 45226

Attn: Laboratory Manager
Phone: (513) 321-5816, Fax: (513) 321-0294



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Chappco, LLC
P.O. Box 278
6097 Chappellfield Drive
West Chester, Ohio 45071
ATTN: Mr. John Chappell

Date: 08/18/04

Project:

Chappell Crossing Blvd.
West Chester, Ohio

Our Report No.: OC4068

CC: Broshear

VISUAL INSPECTION

As requested, our representative was at the above referenced site to inspect stripping operations of the building pad. Stripping was verified from the center of Building #9 going east @ parking and drive way.

If you have any question concerning this report, please call.

SENIOR TECHNICIAN: William Johnson

PRINCIPAL ENGINEER: Patrick A. Knoll, P.E.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Chappco, LLC
P.O. Box 278
6097 Chappellfield Drive
West Chester, Ohio 45071
ATTN: Mr. John Chappell

Date: 08/23/04

Project:

Chappell Crossing Blvd.
West Chester, Ohio

Our Report No.: OC4068

CC: Broshear

MASS EARTHWORK UNDERCUT REPORT

As per your request, our senior technician arrived on the above referenced job site to inspect subgrade for: Driveway west of building lot #11 starting from intersection @ lot #7.

The undercuts measured: 1) 200' x 30' x 3'

SENIOR TECHNICIAN: William Johnson

PRINCIPAL ENGINEER: Patrick A. Knoll, P.E.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Chappco, LLC
P.O. Box 278
6097 Chappellfield Drive
West Chester, Ohio 45071
ATTN: Mr. John Chappell

Date: 08/24/04

Project:

Chappell Crossing Blvd.
West Chester, Ohio

Our Report No.: OC4068

CC: Broshear

PROOFROLLING INSPECTION

As per your request, our senior technician arrived on the above referenced job site to inspect subgrade for: Entire proposed driveway throughout site.

Proofrolling was observed in these areas and soft areas were found at various locations throughout driveways. The contractor decided to continue filling efforts and re-assess after placement of underground sewerage systems.

SENIOR TECHNICIAN: William Johnson

PRINCIPAL ENGINEER: Patrick A. Knoll, P.E.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Chappco, LLC
P.O. Box 278
6097 Chappellfield Drive
West Chester, Ohio 45071
ATTN: Mr. John Chappell

Date: 09/01/04

Project:

Chappell Crossing Blvd.
West Chester, Ohio

Our Report No.: OC4068

CC: Broshear

CANCELLATION REPORT

Our engineering technician arrived at the above referenced job site, as per the superintendent's request for compaction of structural backfill and proofroll inspection.

The testing work was cancelled because the subcontractors were not ready.

The rescheduled date is open.

SENIOR TECHNICIAN: William Johnson

PRINCIPAL ENGINEER: Patrick A. Knoll, P.E.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC

P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-A

Date: Thursday, December 09, 2004

Project:

Chappel Crossing Blvd

West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: Street Curbs

Date of Pour: 12/09/04

Air Temp.(F):

Concrete Temp.(F):

No. of Cylinders: 4

Slump (in): 1.75

Type of Concrete: 4000 psi

AirContent (%): 5.5

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814207

Time Truck Dispatched: 10:35:00 AM

Time Truck Unloaded: 11:15:00 AM

Cubic Yds - Per Truck: 7

Cubic Yds - Cumulative: 130

Compression Test Results Nominal Cylinders Size 6 x 12

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9232	Lab	12/16/04	7	3540
9233	Lab	01/06/05	28	
9234	Lab	01/06/05	28	
9235	Lab		Spar	

Specification Requirement at 28 days 4000 psi.

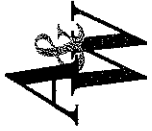
Date Received: 12/10/2004

Cylinders Picked Up By
Alt & Witzig Personnel

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC
P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No.: OC4068-CON-B

Date: Thursday, December 09, 2004

Project:

Chappel Crossing Blvd
West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb
Location of Placement: Street curbs

Date of Pour: 12/09/04
Air Temp.(F):
Concrete Temp.(F):
No. of Cylinders: 4
Slump (in): 1.8
Type of Concrete: 4000 psi
Concrete Supplier: Moraine Materials
Supplier Ticket No.: 814188
Time Truck Dispatched:
Time Truck Unloaded: 11:50:00 AM
Cubic Yds - Per Truck: 10
Cubic Yds - Cumulative: 130

Compression Test Results

Nominal Cylinders Size 6 x 12

No.	Cure Type	Date Tested	Age Days	Strength (psi)	Reference No.: 4811	
					Date Received: 12/10/2004	Cylinders Picked Up By Alt & Witzig Personnel
9236	Lab	12/16/04	7	4420		
9237	Lab	01/06/05	28			
9238	Lab	01/06/05	28			
9239	Lab					

Specification Requirement at 28 days 4000 psi.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC
P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-A

Date: Wednesday, December 08, 2004

Project:

Chappel Crossing Blvd
West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: Lakota Drive, west curb C-0.53-C-O.84

Date of Pour: 12/08/04

Air Temp.(F): 50

Concrete Temp.(F): 89

No. of Cylinders: 4

Slump (in): 1.5

Type of Concrete: 4000 psi

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814066

Time Truck Dispatched:

Time Truck Unloaded:

Cubic Yds - Per Truck: 10

Cubic Yds - Cumulative: 48

Compression Test Results

Nominal Cylinders Size 6 x 12

Reference No.: 4807

Date Received: 12/9/2004

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9220	Lab	12/15/04	7	4460
9221	Lab	01/05/05	28	
9222	Lab	01/05/05	28	
9223	Lab		Spar	

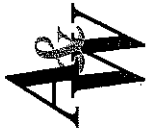
Cylinders Picked Up By
Alt & Witzig Personnel

Specification Requirement at 28 days 4000 psi.

OFFICES:

- INDIANAPOLIS, INDIANA
- TERRE HAUTE, INDIANA
- LAFAYETTE, INDIANA
- FORT WAYNE, INDIANA
- SOUTH BEND, INDIANA
- LOUISVILLE, KENTUCKY
- EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC

P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-B

Date: Wednesday, December 08, 2004

Project:

Chappel Crossing Blvd

West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: C-o.17 to C-0.79

Date of Pour: 12/08/04

Air Temp.(F): 50

Concrete Temp.(F): 88

No. of Cylinders: 4

Slump (in): 1.5

Type of Concrete: 4000 psi

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814096

Time Truck Dispatched:

Time Truck Unloaded:

Cubic Yds - Per Truck: 10

Cubic Yds - Cumulative: 220

Compression Test Results Nominal Cylinders Size 6 x 12

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9224	Lab	12/15/04	7	5060
9225	Lab	01/05/05	28	
9226	Lab	01/05/05	28	
9227	Lab		Spar	

Reference No.: 4808

Date Received: 12/9/2004

Cylinders Picked Up By
Alt & Witzig Personnel

Specification Requirement at 28 days 4000 psi.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC

P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-A

Date: Thursday, December 09, 2004

Project:

Chappel Crossing Blvd

West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: Street Curbs

Date of Pour: 12/09/04

Air Temp.(F):

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814207

Concrete Temp.(F):

Time Truck Dispatched: 10:35:00 AM

No. of Cylinders: 4

Time Truck Unloaded: 11:15:00 AM

Slump (in): 1.75

Cubic Yds - Per Truck: 7

Type of Concrete: 4000 psi

Cubic Yds - Cumulative: 130

Air Content (%): 5.5

Compression Test Results

Nominal Cylinders Size 6 x 12

Reference No.: 4810
Date Received: 12/10/2004

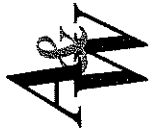
No.	Cure Type	Date Tested	Age Days	Strength (psi)
9232	Lab	12/16/04	7	3540
9233	Lab	01/06/05	28	4970
9234	Lab	01/06/05	28	4840
9235	Lab		Spar	

Specification Requirement at 28 days 4000 psi.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC
P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-B

Date: Thursday, December 09, 2004

Project:

Chappel Crossing Blvd
West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: Street curbs

Date of Pour: 12/09/04

Air Temp.(F):

Concrete Temp.(F):

No. of Cylinders: 4

Slump (in): 1.8

Type of Concrete: 4000 psi

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814188

Time Truck Dispatched:

Time Truck Unloaded: 11:50:00 AM

Cubic Yds - Per Truck: 10

Cubic Yds - Cumulative: 130

Compression Test Results Nominal Cylinders Size 6 x 12

Reference No.: 4811

Date Received: 12/10/2004

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9236	Lab	12/16/04	7	4420
9237	Lab	01/06/05	28	6200
9238	Lab	01/06/05	28	6370
9239	Lab		Spar	

Cylinders Picked Up By
Alt & Witzig Personnel

Specification Requirement at 28 days 4000 psi.

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC
P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No.: OC4068-CON-A

Date: Wednesday, December 08, 2004

Project:

Chappel Crossing Blvd

West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: Lakota Drive, west curb C-0.53-C-O.84

Date of Pour: 12/08/04

Air Temp.(F): 50

Concrete Temp.(F): 89

No. of Cylinders: 4

Slump (in): 1.5

Type of Concrete: 4000 psi

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814066

Time Truck Dispatched:

Time Truck Unloaded:

Cubic Yds - Per Truck: 10

Cubic Yds - Cumulative: 48

Compression Test Results Nominal Cylinders Size 6 x 12

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9220	Lab	12/15/04	7	4460
9221	Lab	01/05/05	28	6080
9222	Lab	01/05/05	28	5910
9223	Lab		Spar	

Specification Requirement at 28 days 4000 psi.

Reference No.: 4807

Date Received: 12/9/2004

Cylinders Picked Up By
Alt & Witzig Personnel

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Mr. John Chappell
Chappco, LLC

P.O. Box 278/6097 Chappellfield Drive
West Chester, OH

Report No: OC4068-CON-B

Date: Wednesday, December 08, 2004

Project:

Chappel Crossing Blvd

West Chester, OH

In response to your request, our engineering technician performed testing and inspection of the concrete placement at the above referenced project. The results of the field inspection and corresponding laboratory testing are summarized below:

Type of Structure: Curb

Location of Placement: C-0.17 to C-0.79

Date of Pour: 12/08/04

Air Temp.(F): 50

Concrete Temp.(F): 88

No. of Cylinders: 4

Slump (in): 1.5

Type of Concrete: 4000 psi

Concrete Supplier: Moraine Materials

Supplier Ticket No.: 814096

Time Truck Dispatched:

Time Truck Unloaded:

Cubic Yds - Per Truck: 10

Cubic Yds - Cumulative: 220

Compression Test Results Nominal Cylinders Size 6 x 12

No.	Cure Type	Date Tested	Age Days	Strength (psi)
9224	Lab	12/15/04	7	5060
9225	Lab	01/05/05	28	5620
9226	Lab	01/05/05	28	5480
9227	Lab		Spar	

Specification Requirement at 28 days 4000 psi.

Reference No.: 4808

Date Received: 12/9/2004

Cylinders Picked Up By
Alt & Witzig Personnel

OFFICES:

INDIANAPOLIS, INDIANA
TERRE HAUTE, INDIANA
LAFAYETTE, INDIANA
FORT WAYNE, INDIANA
SOUTH BEND, INDIANA
LOUISVILLE, KENTUCKY
EVANSVILLE, INDIANA

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES



Alt & Witzig Engineering, Inc.

10178 INTERNATIONAL BLVD. • CINCINNATI, OHIO 45246
(513) 874-9494 • FAX (513) 874-9452

Tested For:

Chappco, LLC
P.O. Box 278
6097 Chappellfield Drive
West Chester, Ohio 45071
ATTN: Mr. John Chappell

Date: 09/10/04

Project:

Chappell Crossing Blvd.
West Chester, Ohio

Our Report No.: OC4068

CC: Broshear

MASS EARTHWORK UNDERCUT REPORT

As per your request, our senior technician arrived on the above referenced job site to monitor undercutting of existing detention pond

The undercuts measured: half the volume of 54' x 45' x 5' (to be shared evenly with the Wellington project).

SENIOR TECHNICIAN: William Johnson

PRINCIPAL ENGINEER: Patrick A. Knoll, P.E.

OFFICES:

- INDIANAPOLIS, INDIANA
- TERRE HAUTE, INDIANA
- LAFAYETTE, INDIANA
- FORT WAYNE, INDIANA
- SOUTH BEND, INDIANA
- LOUISVILLE, KENTUCKY
- EVANSVILLE, INDIANA

Time Received Oct. 6. 11:58AM

SUBSURFACE INVESTIGATION AND FOUNDATION ENGINEERING
CONSTRUCTION MATERIALS TESTING AND INSPECTION
ENVIRONMENTAL SERVICES