

Cottington Court Homeowners' Association
William L Jenkins, Vice President
9100 British Station Lane
Knoxville, TN. 37922

December 3, 2018

Knoxville/Knox County
Metropolitan Planning Commission
City-County Building, Suite 403
400 Main Street
Knoxville, TN. 37002

RE: MPC December 13, 2018
MPC File #12-SC-18-F
MPC File #12-E-18-UR

Honorable Members of the Knox County MPC:

In an effort to expedite and summarize the issues facing the Commission, we offer the following:

1. MPC agenda lists items 21 and 53 for review concerning Lot #25 (see attached final plat dated September 27, 2005).
2. The final plat indicates for Lot #25 a 200 foot sinkhole with required "sinkhole buffer." See attached MPC final comments, dated September 27, 2005. See Department of Engineering comments (Re: Ashland Creek, aka Cottington Court) dated September 23, 2005 with comment "sinkhole needs to be shown with a 50 foot no-build line around it."
3. Saddlebrook Homes purchased and eventually sold Lots #1-24.
4. Saddlebrook Homes (aka B&J Enterprises) completed and registered a permanent use easement around the perimeter of Lot #25 (see attached Ron German memo).
5. It is our opinion that the permanent use easement negates petitioners access to a public road (see Knox County Subdivision Rules, Section 3.03, Access Standards, which requires frontage to public roads).
6. The presence of a sinkhole precludes compliance with Knox County Subdivision Rules, Section 3.02, 1, Lot Standards, which requires a "Suitable Building Site."
7. In the late Fall of 2008, Lot #15 suffered the collapse of a sinkhole (see attached amended complaint dated June 18, 2010). Lawsuit was brought against Saddlebrook Homes, Fulghum MacIndoe, and Benchmark Associates. See attached photos.
8. The resulting sinkhole on Lot #15 had been referenced by S&ME as a "depression" (see S&ME, November 11, 2004).
9. During the process of remediation on Lot #15, two other sinkholes developed on Lot #13.

Cottingham Court Homeowners believe that any disruption to Lot #25 poses a substantial additional risk to our community.

Sincerely,

COTTINGTON COURT HOMEOWNERS' ASSOCIATION

By: William L Jenkins
William L Jenkins

Its: Vice President

Attachments

ITEM #2



OFFICE OF COUNTY MAYOR


Department of Engineering & Public Works • 205 West Baxter Avenue, Knoxville, TN 37917

September 22, 2005

Emily Dills
Metropolitan Planning Commission
FAX # 52068

Dear Mrs. Dills:

The following is a list of needed corrections with the Final Plats for the October 13, 2005 MPC meeting.

 **Ashland Creek:** Recommend approval.

Brimer, Ronnie: A 35' buffer and Drainage Easement is required along the creek.

Casa Bella, Unit 2: Recommend approval.

Hansard, Clyde: Recommend approval.

Hinekley, Derek: A ROW Variance needs to be requested reducing the ROW from 50' to 45' from centerline of E. Emory Road so structure will not be in ROW.

Hines Valley Farm: Recommend denial unless the IPE is paved to a width of 20' due to the number of lots it is serving. A 20' Drainage Easement is required along the drainage channels across this property.

Kear, Jeffrey: Recommend approval.

Lastor, Jack: Recommend approval of variance reducing Drainage Easement under structure and approval of the plat.

McCroskey, Pat: Sinkhole needs to be shown with a 50' "No Build" line around it.

New Castle: Recommend approval.

Powell Gardens: Recommend denial of ROW Variance on Brickyard Road.

Reynolds, A.L.: A 20' Drainage Easement is required along both channels across this property.

Ruggles Ferry, Lot 11: Recommend approval.

DJL00139

ITEM 42

KNOXVILLE-KNOX COUNTY

M P C

METROPOLITAN
P L A N N I N G
C O M M I S S I O N

T E N N E S S E E

Suite 403 • City County Building
400 Main Street
Knoxville, Tennessee 37902
4 2 3 • 2 1 5 • 2 5 0 0
F A X • 2 1 5 • 2 0 6 8

FINAL PLAT COMMENTS

MPC FILE NUMBER: 10-S^Y8-05-F
SUBDIVISION NAME: Ashland Creek
SURVEYOR: Benchmark Associates, Inc.
Reviewed by: Emily Dills
Date: September 27, 2005

1. The surveyor's certification stamps, including the surveyor's seal, must be signed and dated on the revised copies. All other certification stamps must be signed and dated prior to plat certification.
2. Add Knox County Certification stamps for guarantee of completion of drainage system and completion of streets and related improvements.
3. Add MPC file number 10-SY-05-F to the plat.
4. Your note #9 should say: The purpose of this plat is to divide 2 lots into 25 lots. We are dividing lots 1 & 2 from a recorded plat into 25 lots. They will be assigned a tax parcel number after the lots are created by this plat.
5. Add the total acreage of the 2 lots being subdivided into 25 lots in your note #9.
6. Show old lot numbers in a dashed circle.
7. Is the shed on Lot 25 to remain? If it is to be removed add that note to the plat.
8. Add the approved road names to the plat.
9. ~~Each 50" Sinkhole Buffer needs to be labeled exactly like that, not just 50' Buffer.~~
10. Provide permanent reference markers and monuments as required by Section 43-63 of the Subdivision Regulations.
11. Provide complete and proper reference to adjoiners: if platted, reference s/d name and lot number and if unplatted, reference owner name and deed.
12. Add note to plat that all lots will have access to the interior street system only. (per condition #7 of the approved Concept Plan)
13. Provide closure sheet for MPC Staff review. Submit with revised copies of plat.
14. Meet all requirements of the Knox County Department of Engineering and Public Works.
15. Meet all requirements of MPC Addressing.
16. Make sure your M# is on the Final Plat before bringing in to certify.
17. MPC does reserve the right to modify these comments as new information comes to our attention from field review and/or requirements from other government review agencies.
18. **** MPC STAFF WILL RECOMMEND DENIAL OF THE PLAT IF ALL CORRECTIONS OR A REQUEST FOR POSTPONEMENT IS NOT RECEIVED BY THE CORRECTIONS DEADLINE DATE NOTED BELOW.**

DJL00137

JUN 18 2010

IN THE CHANCERY COURT FOR KNOX COUNTY, TENNESSEE



BRIAN DALE, single; BRIAN LAWHORN
and wife, PAMELA LAWHORN; and
WILLIAM JENKINS and wife, ELAINE
JENKINS

Plaintiffs

vs.

NO. 175314-2

B & J ENTERPRISES, a Tennessee
general partnership; ROBERT L. MOHNEY, General
Partner and individually; SADDLEBROOK HOMES, LLC, a
Tennessee limited liability company; SADDLEBROOK
REALTY, LLC., a Tennessee limited liability company;
TRAVIS FULLER, individually and d/b/a Fuller & Sims
Development, LLC; JEFF SIMS, individually and
d/b/a Fuller & Sims Development, LLC;
FULLER & SIMS DEVELOPMENT, LLC, an inactive
limited liability company; FULGHUM MACINDOE &
ASSOCIATES, INC.; and BENCHMARK ASSOCIATES, INC.

Defendants

SECOND AMENDED COMPLAINT

Now come the Plaintiffs, Brian Dale; Brian Lawhorn and wife, Pamela Lawhorn; and
William Jenkins and wife, Elaine Jenkins, and would respectfully show unto the Court as
follows:

1. The Plaintiff, Brian Dale, is a citizen and resident of Knox County, Tennessee, currently
residing on Lot No. 15, Cottington Court Subdivision in Knoxville, Tennessee. Your
Plaintiffs, Brian Lawhorn and wife, Pamela Lawhorn, are citizens and residents of Knox
County, Tennessee, and are the purchasers of Lot No. 13, Cottington Court Subdivision in

Knoxville, Tennessee. Your Plaintiffs, William Jenkins and wife, Elaine Jenkins, are citizens and residents of Knox County, Tennessee, and are the purchasers and occupants of Lot No. 24 of the Cottingham Court Subdivision in Knoxville, Tennessee.

2. The Defendants are B & J Enterprises, a Tennessee general partnership; Robert L. Mohney, individually and as a general partner; and Saddlebrook Homes, LLC, a Tennessee limited liability company. B & J Enterprises is believed to be a partnership with Robert L. Mohney as a General Partner, who may be served with process at 10627 Deerbrook Drive, Knoxville, Tennessee 37922. The partnership is comprised of Mr. Mohney and an unknown person or persons. Saddlebrook Homes, LLC is a limited liability company which entity may be served with process by serving its registered agent, Robert L. Mohney, 10627 Deerbrook Drive, Knoxville, Tennessee 37922. Robert L. Mohney, individually, may be served with process at 10627 Deerbrook Drive, Knoxville, Tennessee 37922. The Defendant, Saddlebrook Realty, LLC, is a Tennessee limited liability company, and may be served through its agent for service of process, Robert Mohney, 10627 Deerbrook Drive, Knoxville, Tennessee 37922. (Collectively "The Original Defendants").
3. Plaintiffs executed various real estate purchase agreements as follows:
 - (a) Plaintiff, Brian Dale, contracted with Saddlebrook Homes, LLC for the purchase of Lot No. 15 of Cottingham Court. He executed a purchase agreement dated January 15, 2008. The "as completed" purchase price was Five Hundred Twenty-Four Thousand Five Hundred Ninety-Three Dollars (\$524,593.00). The parties contemplated the construction of a turn key home. Construction was not

underway at the time of the parties agreement. In fact, at the time of the parties agreement (which reflects the sellers as Saddlebrook Homes, LLC), Saddlebrook Homes, LLC was not the owner of Lot No. 15 but said property was titled in the name of B & J Enterprises which the public records reflect as a partnership with Robert L. Mohny, Managing Partner. Saddlebrook Homes, LLC acquired the property by quitclaim deed on July 23, 2008, and conveyed to Plaintiff on July 23, 2008.

- (b) Plaintiffs, Brian Lawhorn and wife, Pamela Lawhorn, purchased their home on or about October 30, 2008, being Lot 13 of Cottington Court Subdivision. The purchase price was for Four Hundred Twenty-Four Thousand Nine Hundred Dollars (\$424,900.00).
- (c) Plaintiffs, William Jenkins and wife, Elaine Jenkins, purchased their property by the execution of a "Custom Home Construction Agreement" dated the 8th day of August, 2006. The closing and settlement with Saddlebrook Homes, LLC was on March 19, 2007, with a purchase price of Seven Hundred Two Thousand Seventy-Two Dollars (\$702,072.00).
- (d) The Defendants, B & J Enterprises, Robert L. Mohny, Saddlebrook Homes, LLC, and Saddlebrook Realty, LLC, have asserted and claimed that the comparative fault of Travis Fuller, Jeff Sims, Fuller & Sims Development, LLC, Fulghum, MacIndoe & Associates, Inc., and Benchmark Associates, Inc. caused or contributed to the Plaintiffs damages and losses. ("The Comparative Fault Defendants"). Fuller & Sims Development, LLC further asserted and claimed

comparative fault against Benchmark Associates, Inc. as to the liability of Benchmark Associates, Inc. for the damages sustained by the Plaintiffs. It is alleged by Fuller & Sims Development, LLC that Benchmark Associates, Inc. either by neglect/fault or direction of other known Defendants or unknown Defendants with the exception of B & J Enterprises, Robert L. Mohney, and Saddlebrook Homes, LLC, failed to properly include the sink holes and/or depressions on the final plat submitted to the Knox County Metropolitan Planning Commission and/or Register of Deeds Office for Knox County, Tennessee. Plaintiffs hereby state claims against the Comparative Fault Defendants under the principles of comparative fault and under the theories stated by the various Defendants who have named the Comparative Fault Defendants in their Answers. The Answers of the Defendants asserting comparative fault against the Comparative Fault Defendants are hereby incorporated by reference as though set forth in full, and Plaintiffs state a cause of action against these Comparative Fault Defendants based on the assertions of neglect and/or fault stated by other Defendants in their Answers.

- (e) The Comparative Fault Defendants may be served at the following addresses:
- (1) Travis Fuller, individually and doing business as Fuller & Sims Development, LLC, 9050 Executive Park Drive, Suite 200, Knoxville, Tennessee 37923-4699.
 - (2) Jeff Sims, individually and doing business as Fuller & Sims Development, LLC, 9050 Executive Park Drive, Suite 200, Knoxville, Tennessee 37923-

4699.

- (3) Fuller & Sims Development, LLC, 9050 Executive Park Drive, Suite 200, Knoxville, Tennessee 37923-4699, by service on Travis Fuller and Jeff Sims.
- (4) Fulghum, MacIndoe & Associates, Inc. in care of its agent for service of process, William C. Fulghum, Jr., 10330 Hardin Valley Road, Suite 201, Knoxville, Tennessee 37932.
- (5) Benchmark Associates, Inc. in care of its agent for service of process, Benjamin J. Moorman, 2610 Shoreline Drive, Knoxville, Tennessee 37932.

SUMMARY OF THE CASE

4. Each of the Plaintiffs purchased homes in the Cottingham Court Subdivision in Knox County, Tennessee, which subdivision was developed to completion on final plat approval by B & J Enterprises, a Tennessee general partnership consisting of Robert L. Mohny and perhaps other unknown persons. Homes were constructed by Saddlebrook Homes, LLC and contracted to be sold and were sold to the Plaintiffs by Saddlebrook Homes, LLC. The Defendants and each of them neglected either by acts of commission or omission to disclose to Plaintiffs that their respective lots were subject to significant damage and/or diminution in value from the undisclosed location of sink holes/depressions within the subdivision. Defendants had prior knowledge of the existence of sink holes/depressions on or in close proximity to the properties purchased by Plaintiffs. The sink holes/depressions were improperly filled and disguised so that the

potential consequences of the same were not disclosed and were unknown to the Plaintiffs. The Original Defendants claim that they did not develop the subdivision and that if there is any responsibility to the Plaintiffs, the Defendants, Travis Fuller and Jeff Sims, individually and d/b/a Fuller & Sims Development, LLC; Fuller & Sims Development, LLC; and Fulghum MacIndoe & Associates, Inc., are responsible.

STATEMENT OF FACTS

5. Plaintiffs have executed and purchased various lots in the Cottingham Court Subdivision from the Defendant, Saddlebrook Homes, LLC through Saddlebrook Realty, LLC as follows:
 - (a) Brian Dale executed a real estate purchase agreement dated January 15, 2008, at an original purchase price of Five Hundred Twenty-Four Thousand Five Hundred Ninety-Three Dollars (\$524,593.00).
 - (b) Brian Lawhorn and wife, Pamela Lawhorn, executed a real estate purchase agreement and purchased their property on or about October 30, 2008.
 - (c) William Jenkins and wife, Elaine Jenkins, purchased their property complete with the home located thereon on or about March 19, 2007.
6. Construction of Brian Dale's home began in late February or early March of 2008. Brian Lawhorn and wife, Pamela Lawhorn's home was completed and occupied on or about October 30, 2008. Construction of William Jenkins and wife, Elaine Jenkins', home was completed on or about March 19, 2007.
7. A large sink hole to the rear of the northwest lot line of Lot No. 15, the Brian Dale lot, collapsed in late fall of 2008. Plaintiffs have now learned that various engineers had

inspected the property (now known as Cottingham Court) and that the Cottingham Court Development contained significant sink holes/depressions throughout the property. In fact, the Plaintiff, Brian Dale, has two sink holes/depressions located virtually under his home and there is another sink hole on Lot No. 15 adjacent to the property of Brian Lawhorn and his wife. William Jenkins and wife, Elaine Jenkins' property is located across the street from Brian Dale and Brian Lawhorn and his wife. Their Lot No. 24 is within the parameter or buffer of a very large sink hole located on adjoining property to the southeast of the Jenkins' property line. The Plaintiffs' three properties are located between a major sink hole located on adjoining property and four (4) sink holes located on or in close proximity of the Plaintiffs' Lot Nos. 15 and 13.

8. Plaintiffs were not advised of the existence of any sink holes/depressions prior to their purchase. The Defendants, however, had knowledge as the developers of said properties. Attached as Exhibit No. 1 is a copy of an Addendum Report to S&ME which reflect numerous sinkholes/depressions on Lot No. 15 (which Plaintiff Dale subsequently purchased), Lot No. 25 (adjacent to Jenkins' Lot No. 24), Lot No. 11, Lot No. 2, and Lot No. 3, all as more particularly shown on the map of S&ME dated November 11, 2004, and attached hereto as Exhibit No. 2.
9. Prior to approval of the Cottingham Court Subdivision, the minutes of the Knox County Metropolitan Planning Commission reflect considerable discussion with the then developer (Ashland Creek-Travis Fuller) regarding the existence of depressions and/or sink holes on the property. The minutes require various restrictions which are attached as Exhibit No. 3. As a result, the Knox County Metropolitan Planning Commission

imposed certain restrictions on the development of the property. Approval of the subdivision was subject to eleven conditions including the following:

(5) If any building construction is proposed within the 50 foot buffer around the designated sink holes/depressions (including the depressions), a geotechnical report must be prepared by a registered engineer to determine soil stability and that report must be submitted to the Knox County Department of Engineering and Public Works for consideration. Any construction in these areas is subject to approval by the County following review of the report. Engineered footings must be designated for these areas. For those lots that do not have a building site outside of the 50 foot buffer, approval by Knox County will be required prior to final plat approval. The sink holes/depressions and 50 foot buffer shall be designated on the final plat even if they are approved to be filled.

(See Exhibit No. 4).

Exhibit No. 4 - Agenda items for 9/9/2004 meeting.

10. The final plat of the subdivision of Cottingham Court was registered in the Register of Deeds Office for Knox County, Tennessee, on May 19, 2006. The final plat did not show the four (4) sink holes/depressions located on Lot No. 15 nor did the Defendants disclose to your Plaintiffs or otherwise record the existence of those sink holes/depressions. No disclosure of the 50 foot buffer area around each sink hole/depression was made on the plats provided to Plaintiffs by the Original Defendants.
11. Plaintiff, Brian Dale, would show that his home was in fact built upon Lot No. 15 on top of the footprint of two (2) of the four (4) sink holes/depressions located on his property.
12. To the West of Brian Dale's home on Lot No. 15, one (1) of the four (4) depressions has now expanded exponentially and has deepened to a height in excess of nine (9) feet and appears to continue to expand, all as more particularly shown by the following

photographs:



In addition, another sink hole is adjacent to the property of the Plaintiffs, Brian Lawhorn and wife, Pamela Lawhorn, and their home was built within the 50 foot buffer zone as defined by KMPC.

13. Plaintiff, Brian Dale, avers that he was not advised of the existence of sink holes/depressions under his home and sinkholes/depressions within close proximity of his home. He has experienced cracking within the bath area of his home and to date other cracks. He seeks rescission of his purchase.
14. Plaintiffs, Brian Lawhorn and wife, Pamela Lawhorn, aver that they too were not advised of the existence of the sink holes within the proximity of their property and that said sink holes constitute a material breach of the duty of the Defendant, Saddlebrook Homes, LLC, to disclose and that they therefor seek rescission and/or stigmatic damages.
15. Likewise, the Plaintiffs, William Jenkins and wife, Elaine Jenkins, aver that they had no knowledge of the existence on their property of the perimeter of the fifty (50) foot buffer area required to be shown on the MPC approvals. They aver that their property lies between the very large sink hole to the southeast of their property and the sink holes identified on the Brian Dale property and that they also seek either rescission or recovery of stigmatic damages to their property.

CAUSES OF ACTION

16. Each of the Plaintiffs assert the following causes of action:
 - (a) Failure to Disclose. Plaintiff avers that the Defendants have negligently breached their duty to disclose that the Dale home was constructed directly upon sink holes/depressions; and that his lot was not suitable for construction nor was

the lot properly approved for the construction of a home; and, that the Lawhorn and Jenkins homes are so close to the sink holes as to be at risk of damage from future collapse as well as the stigma of the same upon mandatory disclosure to any future purchasers.

(b) Misrepresentation; Misrepresentation by Concealment. Plaintiffs allege and aver that the Defendants either by acts of commission or omission misrepresented to each of the Plaintiffs the condition of the properties by their failure to disclose the existence of sink holes/depressions on, under, or in close proximity to their properties. Plaintiffs aver that the existence of the sink holes/depressions were negligently misrepresented or purposely concealed from the Plaintiffs for the purpose of facilitating a sale.

(c) Consumer Protection Act.

(1) Each of the Plaintiffs aver that the Defendants have violated the Consumer Protection Act which is set out in T.C.A. §47-18-104 in the following particulars:

(27) Engaging in any other act or practice which is deceptive to consumer or any other person.

(2) Plaintiffs aver that the Defendants' failure to disclose to the Plaintiffs the existence of sink holes/depressions on the properties that they purchased is a deceptive practice for which they are entitled to treble damages pursuant to the provisions of the Tennessee Consumer Protection Act, T.C.A. §47-18-101 et seq. and including attorney fees.

COMPARATIVE FAULT DEFENDANTS

17. All of the allegations of the original Complaint are incorporated herein as to the Comparative Fault Defendants.
18. As to the Defendants, Travis Fuller and Jeff Simms, individually and doing business as Fuller & Sims Development, LLC, and Fuller & Sims Development, LLC, the Plaintiffs, based upon the allegations of the Answer in this cause, assert that these Defendants are guilty of negligence which is a contributing cause of the Plaintiffs alleged damages. Based upon the Original Defendants' pleadings, Travis Fuller, Jeff Sims and Fuller & Sims Development, LLC were the developers and/or developed the Cottington Court Subdivision and that Fuller and Sims were responsible for any claims regarding the construction, design, implementation, relevant approval, architectural and engineering aspects, drainage, geotechnical matters related to the Cottington Court Subdivision, and alleged failures, omissions or defects associated with the same.
19. As to Fulghum, MacIndoe & Associates, Inc., Plaintiffs allege, based upon the Original Defendants' allegation of comparative fault, the comparative fault of Fulghum, MacIndoe & Associates, Inc.; and, that Fulghum, MacIndoe & Associates, Inc. was responsible for certain engineering requirements and duties associated with the development, plat documentation, construction of the subdivision and/or Plaintiffs' homes. Plaintiffs adopt their original allegations in the original Complaint regarding errors, failures and omissions concerning the development of Cottington Court Subdivision.
20. As to Defendant, Benchmark Associates, Inc., Plaintiffs allege based on allegations of comparative fault by other Defendants, the comparative fault of Benchmark Associates,

Inc. and that Benchmark Associates, Inc. was responsible for and negligent in failing to include sink holes and/or depressions on the final plat submitted to the Knox County Metropolitan Planning Commission and/or the Register of Deeds Office either on their own or at the direction of other Defendants and that this failure proximately caused and/or contributed to the damages sustained by the Plaintiffs.

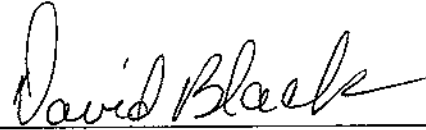
21. The allegations in Paragraphs 18, 19 and 20 are in addition to the allegations of the original Complaint and in no way constitute any waiver of any allegation as to the Original Defendants, but are made in response to Defendants' invocation of the doctrine of comparative fault.

WHEREFORE, Plaintiffs demand damages as to these Defendants to the extent determined by their alleged comparative fault.

WHEREFORE, each Plaintiff sues the Defendants for:

1. Either rescission of the sale of their properties and return of their purchase price plus subsequent improvements less their reasonable rental value or; alternatively,
2. Damages for the difference in the market value of the properties with and without knowledge of the sink holes/depressions plus costs and attorney fees, which damages are to be determined by the Court and jury to be fair and equitable, but collectively not in excess of Three Million Dollars (\$3,000,000.00).
3. That Plaintiffs have such other, further and general relief to which they may show themselves to be entitled to upon a hearing of this cause.

4. Plaintiffs demand a jury to try the factual issues when joined.



DAVID T. BLACK, Attorney for Plaintiffs
Tennessee Bar No. 000999
Kizer & Black, Attorneys, PLLC
329 Cates Street
Maryville, TN 37801
Telephone: (865) 982-7650

CERTIFICATE

I, DAVID T. BLACK, hereby certify that a true copy of the foregoing SECOND AMENDED COMPLAINT was served on:

Jon M. Cope, Attorney
Stokes, Williams, Sharpe & Davies
P.O. Box 2644
Knoxville, Tennessee 37901-2644

James "Bo" Reed, Attorney
P. O. Box 2186
Knoxville, TN 37901

H. Casey Field, Attorney
Lewis, King, Krieg & Waldrop, P.C.
620 Market Street, Fifth Floor
P. O. Bo 2425
Knoxville, Tennessee 37901

by delivering the same to office of said counsel or by placing same in the United States Mail, sufficient postage prepaid, addressed to said counsel at his office.

THIS 16th day of June, 2010.



DAVID T. BLACK

ITEM 5, ITEM 6.

- E. **Conflicting Design Standards.** Wherever there appears to be a conflict between the general design standards of this Article and design standards established through the City of Knoxville and Knox County ordinances and regulations, the City and County regulations shall prevail.

3.02 LOT STANDARDS

- A. **Lots.** Land for subdivision purposes shall be so selected as to provide sound building sites on suitable lots. The design and preparation of lots shall be undertaken, and the approval of such lots, shall be based on the following standards:

1. **Suitable Building Site.** The lot configuration and shape shall provide satisfactory sites for buildings while meeting zoning ordinance requirements and taking into consideration topography, drainage, natural elements, access and utilities, and meeting the following requirements:
 - a. Lots shall contain building sites which are well drained in coordination with the stormwater management system for the subdivision. Drainage systems shall be designed to avoid concentration of flow from each lot onto adjacent lots.
 - b. Lots shall be designed to allow for driveway access in compliance with Section 3.03.J.
 - c. Lots shall contain adequate building sites outside of required riparian buffer zones and sinkholes and shall meet the required minimum building setbacks.
2. **Lot Area and Building Setback Line.** Lot area, width, depth, and minimum building setback line for residential or nonresidential use shall meet the minimum standards required by the *Knox County Zoning Ordinance* or the *Knoxville Zoning Ordinance*.
3. **Lots with Individual Sewage Treatment.** Lot area and shape for lots with individual sewage treatment facilities shall be determined by the *Knoxville Zoning Ordinance* or the *Knox County Zoning Ordinance* and the regulations of the Knox County Health Department.
4. **Double Frontage Lots.** Double frontage lots should be avoided except where they are needed to provide for the separation of development and access from traffic arteries or to overcome specific disadvantages of topography and orientation.
 - a. When double frontage lots are created within a development, restrictions shall be placed on the lots requiring all buildings to face the interior road system with vehicular access being provided from the interior road system. The Planning Commission may approve double frontage lots with orientation to an exterior street if site conditions would prohibit access to the interior road system.

ITEM 5

- b. Double frontage lots shall have a minimum depth of at least 150 feet.
5. **Corner Lots.** Corner lots for residential use shall be of sufficient width to permit compliance with the required minimum building setback line on all property lines which abut streets. In order to comply with the additional width requirement and continue the same size building site, as on adjoining lots, corner lots shall be increased to whatever width is necessary.
6. **Narrow Connecting Strips of Land.** Lots shall not be designed with long narrow strips incorporated for the sole purpose of obtaining frontage on a street. The minimum width of any connecting strip shall not be less than 25 feet.
7. **Land Remnants.** The subdivision of land shall not create land remnants which have no apparent means of access or future use that can be properly controlled or maintained.
8. **Lot Lines.** Side lot lines shall generally be at right angles to straight street centerlines, and radial to curved street centerlines. Rear lot lines should consist of straight lines with a minimum number of deflections.
9. **Lots on Collectors or Arterials.** Residential lots having access only from a collector or arterial street shall be required to provide a vehicular turnaround on the lot in order to eliminate backing out onto the public street.

3.03 ACCESS STANDARDS

- A. **General:** All lots shall have either frontage of not less than twenty-five (25) feet in width on a public street or approved access to a public street by one of the following:
 1. Access to a public street by an approved exclusive permanent access easement;
 2. Access to a public street by an approved private right-of-way;
 3. Access to a public street by a previously approved joint permanent easement;
 4. Access to a public street by an approved permanent cross access easement;
 5. Access provided to a public street through some other legally binding document approved by the Planning Commission.

Such access shall provide a readily apparent physical means of traversable pedestrian and vehicular access from the lot(s) onto the street and shall meet the standards identified below in Sections B-G.

- B. **Street Frontage:** Lots shall have a minimum street frontage of 25 feet. The area of the access strip in the case of a flag lot, shall not be included in computing the lot area. The plat shall identify both the total area of the lot and the area excluding the access strip for the flag lot. The driveway width and surface material are regulated by other City of Knoxville and Knox County regulations. If a lot meets the minimum frontage requirement but access to the property is restricted and cannot occur at the street frontage, legal access shall be provided by one of the alternative access options identified below in Sections C-G.

demonstrate to the reasonable satisfaction of the Planning Commission that the right-of-way will be properly maintained.

- h. A note shall be placed on the final plat that the private right-of-way is not a public street and will not be maintained by the City of Knoxville or Knox County. A private right-of-way shall also function as a utility easement and a note shall be placed on the final plat specifying such use.
 - i. A private right-of-way that serves nonresidential lots, or lots that are to be used for duplex or multi-dwelling structures or development, shall be subject to the requirements of Section 3.03.D.3.
2. **A private right-of-way serving less than six (6) lots shall meet the following additional standards:**
- a. Roadway construction standards shall be approved by the City of Knoxville Department of Engineering or the Knox County Department of Engineering and Public Works. A minimum twenty-foot (20') wide, unobstructed driving surface shall be required, capable of supporting the imposed loads of emergency apparatus under all weather conditions. In the city, the driving surface must be paved. In the county, a gravel surface may be permitted, although paving may be required, particularly for erosion control when the road grade exceeds eight (8) percent.
 - b. A road profile may be required to determine whether a proposed private right-of-way will be traversable.
 - c. Any subdivision of land that creates additional lots that will be served by an existing private right-of-way or extend the private right-of-way, shall be subject to the requirements of Section 3.03.D.1, and as applicable, Sections 3.03.D.2 or 3.03.D.3. A note shall be placed on the final plat to that effect.
3. **A private right-of-way serving six (6) or more lots.** A private right-of-way serving six (6) or more lots or a system of private rights-of-way, where the total number of lots is six (6) or more, shall meet the following standards:
- a. A private right-of-way serving six (6) or more lots, shall meet the same design and construction standards as a public street. The Planning Commission may reduce the required width of the right-of-way from fifty (50) feet to forty (40) feet, unless otherwise recommended by the City of Knoxville Department of Engineering or the Knox County Department of Engineering and Public Works based on the grading, drainage and traffic characteristics of the subdivision. The Planning Commission may reduce the required pavement width to twenty (20) feet, unless otherwise recommended by the City of Knoxville Department of Engineering or the Knox County Department of Engineering and Public Works, if an appropriate amount of guest parking is provided.
 - b. A street profile and pavement cross-section shall be required. A private right-of-way serving six (6) or more lots that does not conform to the

Engineering or the Knox County Department of Engineering and Public Works in their respective jurisdictions.

3.04 STREETS

A. **Conformance with the *Major Road Plan*, the Transportation Improvements Program, and/or the Capital Improvements Programs.** The subdivision of land and the design of streets servicing such land shall be undertaken in conformance with the *Major Road Plan*, the Transportation Improvements Programs and the Capital Improvements Program of Knox County and the City of Knoxville. Dedication of streets and rights-of-way may be required to assure conformance with the plan or programs.

1. **Streets Classified in the *Major Road Plan*.** Right-of-way widths for classified streets shall be provided in accordance with the requirements of the *Major Road Plan*. The minimum right-of-way widths for classified streets (both existing and proposed) are required by the *Major Road Plan* to accommodate future road, utility, sidewalk, and bikeway improvements. The maps and text of the *Major Road Plan* should be consulted to determine the required right-of-way width of a particular street segment.

2. **Streets Not Classified in the *Major Road Plan*.** There will be occasions when new streets are proposed which were not included in the *Major Road Plan*. The *Major Road Plan* will be amended to include these new streets, their functional classifications, and right-of-way requirements. When streets are proposed which are not classified by the *Major Road Plan*, right-of-way shall be provided based on the projected function and use of the street as determined by the City of Knoxville Department of Engineering, Knox County Department of Engineering and Public Works, or Tennessee Department of Transportation.

3. **Right-of-Way Dedication Along Existing Streets.**

a. Any proposed subdivision of property that adjoins an existing street that will result in the creation of additional lots, shall be subject to right-of-way dedication in order to bring the right-of-way closer to compliance with the *Major Road Plan*. The entire right-of-way shall be provided where any part of the subdivision is on both sides of the existing street. When the subdivision is located on only one (1) side of an existing street, one-half of the required right-of-way, measured from the centerline of the existing roadway, shall be provided.

b. The area of the right-of-way being dedicated shall be shown on the plat by providing a metes and bounds description for the existing front property line (right-of-way line) and the new right-of-way line. The area of the right-of-way being dedicated shall also be provided.

c. If a street improvement project has been completed by the Tennessee Department of Transportation and the State has acquired all the right-of-way needed for the project, a waiver may be granted from the right-of-way requirements specified in the *Major Road Plan* and the right-of-way corner radius requirements of Sections 3.04.J.2 and 3.04.J.3 of these regulations,

ADDITIONAL REPORT



ITEM #7

November 11, 2004

Fuller-Sims Development
9050 Executive Park Drive, Suite 200
Knoxville, Tennessee 37923

Attention: Mr. Travis Fuller

Subject: **REPORT OF LIMITED GEOTECHNICAL EXPLORATION**
Closed Depressions at Northshore Subdivision
9117 S. Northshore Drive
Knoxville, Tennessee
S&ME Project No. 1431-04-503A

Dear Mr. Fuller:

S&ME, Inc. (S&ME) has completed our exploration of the subject lots located at the subject project. The exploration was performed in accordance with our Proposal No. 3104890, dated October 5, 2004. S&ME has previously performed a geotechnical exploration of the on-site closed depressions. This report was submitted as "Report of Geotechnical Exploration", dated August 9, 2004.

The purpose of this recent, limited geotechnical exploration was to determine the feasibility of construction on 12 lots that are within the 50 foot buffer zone of three, on-site closed depressions (identified as Closed Depressions #1, 2, and 3 on the attached Boring Location Plan). This geotechnical exploration involved a site reconnaissance, field drilling, laboratory testing, and engineering analysis. This report presents our geotechnical characterization and provides karst-related sinkhole information.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, subsurface water, or air, on, or below, or around this site. Any statements in this report or on the boring logs

DJL00210

S&ME, Inc., Knoxville Branch
1413 Topside Road
Louisville, Tennessee 37777

(865) 970-0003
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www.smeinc.com

EX 1

regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

PROJECT DESCRIPTION

The proposed Northshore Subdivision is located at 9117 S. Northshore Drive in Knox County, Tennessee. Available topographic information indicates that several topographical closed depressions are presently within the subdivision area. In areas underlain by limestone and/or other carbonate rocks (collectively known as karst terrain), closed depressions can be surficial indications of downward soil migration into the underlying karst bedrock. Settlement associated with the downward migration of soil can damage overlying structures and foundations.

The development will include 25 residential lots and two paved roadways. At the time of the field exploration the site was primarily an open, grassed field with some moderately wooded areas located primarily along the site boundaries. Three closed depressions have been identified on the site. The closed depressions, however, are not shown on the USGS topographic map of this area. The closed depression near the southwest corner of the property (closed depression # 1) is approximately 200 feet in diameter and is a low-lying area which has been used for agriculture in the past. The closed depression near the southeast corner of the property (closed depression # 2) is approximately 100 feet in diameter and appears to have been formed during construction of the adjacent Whittington Creek Subdivision. The closed depression near the north end of the property (closed depression # 3) is approximately 80 feet in diameter and is composed of two connected depressions which have been filled in with lumber and waste materials by the previous property owner. Our exploration has been limited to exploring the lots (2, 3, 4, 10, 11, 12, 15, 16, 22, 23, 24, and 25) that are within 50 feet of the buffer zone of the closed depressions.

FIELD EXPLORATION

The subsurface conditions were explored with twelve soil test borings drilled within the subject 12 lots. The boring locations and depths were selected by S&ME. The borings were located in the field by S&ME personnel by measuring distances from known site reference points provided on the site plan supplied by Fulghum MacIndoe & Associates, Inc. Drilling was performed on November 1, 2004 by S&ME. The borings were advanced using 3.25-inch inside diameter hollow stem augers (HSA) and a CME 550X drill rig. The drill crew worked in general accordance with ASTM D6151 (HSA Drilling). Sampling of overburden soils was accomplished using the standard penetration test procedure (ASTM D1586). The borings were backfilled with soil cuttings and hole plugs were set just below the ground surface before leaving the site.

SUBSURFACE CONDITIONS

Geologic Conditions

The project site, as most of east Tennessee, lies in the Appalachian Valley and Ridge Physiographic Province. The Province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstones and shales. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestones, dolomites and shales.

Published geologic data indicates that the project site is underlain by bedrock from the Newala formation of the Knox Group. The Newala formation is made up of the Mascot Dolomite and the Kingsport formation and generally consists of siliceous dolomite with minor limestone. The silica is in the form of nodules and lenses of gray to white chert and varies greatly in quantity. The bedrock weathers to a reddish or orange brown clay soil with variable quantities of chert gravel.

Since the Newala formation consists of carbonate rock, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate

rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass, is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil-supported structures. In East Tennessee, sinkholes occur primarily due to differential weathering of the bedrock and "flushing" or "raveling" of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or "dome" in the overburden. Growth of the dome over time or excavation over the dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

Subsurface Conditions

Borings B-1, B-5, B-6 and B-7 were drilled on lots 22 thru 25 that are within the buffer limits of closed depression # 1 and encountered a surface layer of topsoil approximately 6 to 8 inches in thickness. Beneath this surface layer, the borings encountered existing fill soils and/or residual soils. Existing fill was observed in boring B-5 to a depth of 4 feet. Fill soils are soils that have been transported and placed by man. The existing fill soils consisted of reddish brown and black clays. Beneath the fill soil in boring B-5 and the topsoil in borings B-1, B-6 and B-7, residual soils were encountered. Residual soils are formed from the in-place weathering of the underlying bedrock. The residual soils in these borings consisted of dark brown clay transitioning to reddish brown clay and isolated areas of black staining and varying amounts of chert fragments. The N-values of the standard penetration resistance tests (SPT) are used to evaluate the relative consistency or density of the subsurface soils. The N-values in the residual clays ranged from 3 blows per foot (bpf) to 13 bpf. In boring B-1, low N-values were observed at depths near boring termination. Soft N-values at boring termination can be indicative of past or active sinkhole conditions. The residual soils in each of the borings typically exhibited a firm to stiff soil consistency. The natural moisture content of the tested residual soils in these borings ranged from 26.4 to 47.9 percent.

Borings B-2, B-3 and B-4 were drilled on lots 2, 3, and 4 that are within the buffer limits of closed depression # 2 and encountered a surface layer of topsoil to a depth of approximately 8

inches. Below this surface layer, residual soils were encountered. The residual soils in this boring consisted of reddish brown clays with isolated areas of black staining and varying amounts of chert fragments. The N-values in the residual clays ranged from 6 to 12 bpf, which indicates a firm to stiff soil consistency. The natural moisture content of the tested residual soils in this boring ranged from 21.7 to 41.3 percent. Atterberg limits testing on boring B-3 indicated a liquid limit (LL) of 46 percent and a plasticity index (PI) of 29 percent. The tested soil is classified as CL (lean clay) in accordance with the Unified Soil Classification System (USCS).

Borings B-8, B-9, B-10, B-11 and B-12 were drilled on lots 10, 11, 12, 15, and 16 within the buffer limits of closed depression # 3 and the two connected depressions which have been filled in with lumber and waste materials. In each of the borings, a surficial layer of topsoil was encountered at depths ranging from 3 to 24 inches. Below the topsoil, residual soils were encountered. The residual soils in each of the borings consisted of reddish brown clays transitioning to dark brown clays with varying amounts of black staining and chert fragments. The N-values in the residual clays ranged from 1 bpf to 50 blows for 2 inches of penetration. However, the N-value in excess of 50 bpf was recorded near the auger refusal depth in boring B-8. In borings B-8, B-9 and B-12 the N-values were typically less than 1 bpf to 3 bpf at depths of 8 to 20 feet. The residual soils in the upper part of the borings typically exhibited a firm to stiff soil consistency. The natural moisture content of the tested residual soils in these borings ranged from 21.3 to 39.8 percent. Atterberg limits testing on boring B-8 indicated a liquid limit (LL) of 71 percent and a plasticity index (PI) of 43 percent. The tested soil is classified as CH (fat clay) in accordance with the Unified Soil Classification System (USCS).

Refusal materials were encountered at borings B-8, B-10 and B-12 at depths ranging from 17 to 30 feet. Refusal is a designation applied to any material that cannot be penetrated by the power auger. Auger refusal may indicate dense cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. Rock coring was beyond the scope of this exploration; therefore, the character and continuity of the refusal materials were not determined.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the attachments should be reviewed for specific information at individual boring locations. The depth and thickness of the subsurface strata indicated on the test boring records were generalized from and interpolated between test locations. The transition between materials will be more or less gradual than indicated and may be abrupt. Information on actual subsurface conditions exists only at the specific boring locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between boring locations. The stratification lines were used for our analytical purposes and, unless specifically stated otherwise, should not be used as the basis for design or construction cost estimates.

CONCLUSIONS AND RECOMMENDATIONS

Although a potential for sinkhole formation and subsidence is present at any site within limestone geologic regions, the results of the soil test borings indicate that the upper clay residuum is generally suitable for the support of lightly residential construction. We note that soft soils conditions were encountered in the borings on lots 8 and 9. These borings were performed near the trash pit that was excavated on the site. We expect the soft soil conditions are related to the trash pit. These soft soils and some existing fill near lot 22 will require undercutting and replacement during site subgrade preparation. Some other isolated areas of soft soils were encountered which will likely require undercut and replacement during subgrade preparation. A representative of S&ME should be retained during site preparation to determine the extent of the remediation of the soft soils.

To further reduce the risk of sinkhole activity on this site, we recommend that the depressed areas be filled and the construction grades be maintained to divert surface drainage off the site at all times during construction. In addition, water lines, storm sewers, roof drains, and other hydraulic structures should be designed to deter leaking and to divert flow away from these low lying areas. Granular backfill in utility trenches or other excavations should consist of compacted,

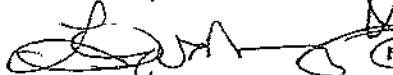
well-graded material such as crusher run gravel. The use of an open graded stone such as No. 57 stone is not recommended due to the tendency for this material to act as a conduit for subsurface water. If sinkhole conditions are encountered, the type of corrective action should be determined by S&ME during subgrade construction.

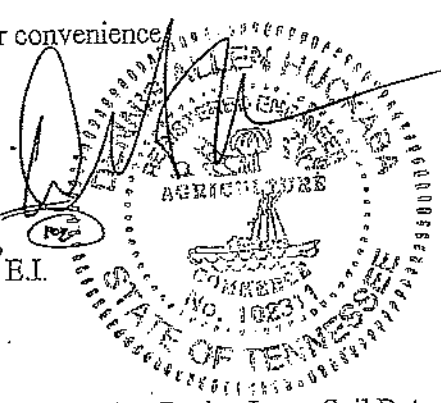
LIMITATIONS


This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

If you have any questions regarding the content of this report, or require additional information, please contact us at your convenience.

Sincerely,
S&ME, Inc.


William R. Kingery III, E.I.
Staff Professional




Dennis A. Huckaba, P.E.
Geotechnical Department Manager
TN 102311

Attachments: Boring Location Map, Boring Logs, Soil Data Summary

ATTACHMENTS

Boring Location Map

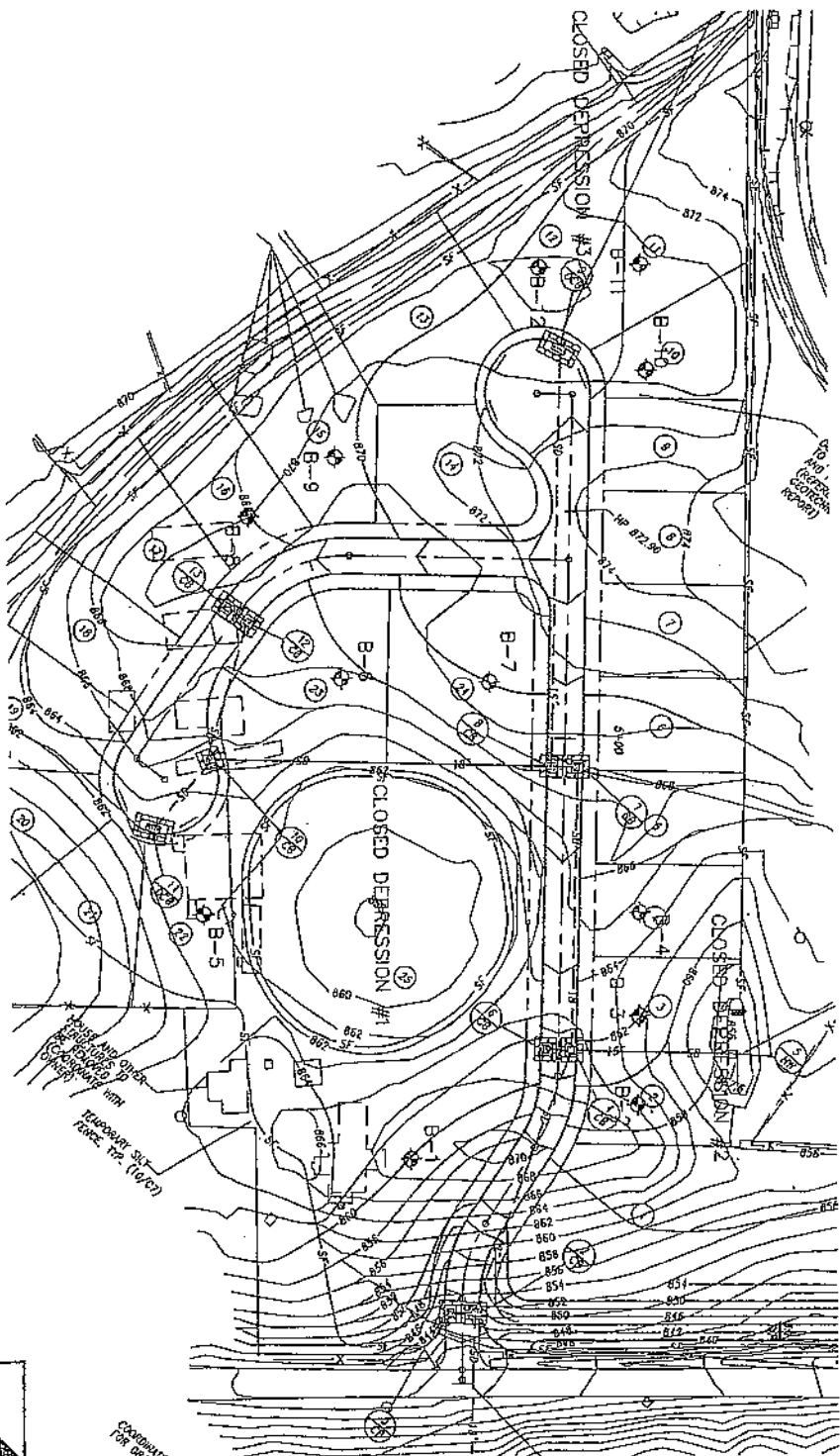
Boring Logs

Soil Data Summary

LEGEND
 ◆ APPROXIMATE LOCATION OF SOIL TEST BORINGS

NOTES:

- 1) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGEMENT ONLY.
- 2) DO NOT USE BORING LOCATIONS FOR DETERMINATION OF DISTANCES AND QUANTITIES.
- 3) BASE MAP PROVIDED BY: FULGHUM MACDOE & ASSOCIATES.



SWME
 ENGINEERING SERVICES

BORING LOCATION MAP
 CLOSED DEPRESSIONS
 NORTHSHORE SUBDIVISION
 KNOXVILLE, TENNESSEE

SCALE:	NTS	DRAWN BY:	WRK	CHECK BY:	DAM
JOB NO:	1431-04-SG3A	DATE:	11-11-04	FIGURE NO.:	1

DEPTH (feet)		MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
GRAPHIC LOG							10	20	30	60	80	
0	0	Topsoil (8 inches)										
5	5	Clay (CL) - reddish brown with black staining, stiff to soft, moist; (Residuum)		861	1	⊗						9
10	10			856	2	⊗						11
15	15			851	3	⊗						5
20	20			846	4	⊗						3
		Boring Terminated at 20 feet										

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/11/04

NOTES:

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2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.





PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-2

DATE DRILLED: 11/1/04 ELEVATION: 864
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 20.0 feet
 LOGGED BY: R. Kingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.



DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 8		Topsoil (8 inches)										
8 - 20		Clay (CL) - reddish brown with black staining; stiff to firm; moist; with chert fragments; (Residuum)			1							12
				859								
					2							9
				854								
					3							8
				849								
					4							8
				844								
20		Boring Terminated at 20 feet										

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision Knoxville, Tennessee S&ME Project No. 1431-04-503A				BORING LOG B-3								
DATE DRILLED: 11/1/04		ELEVATION: 864		NOTES: Soil descriptions based on visual observation of obtained samples.								
DRILLING METHOD: CME 550, 3 1/2" H.S.A.		BORING DEPTH: 20.0 feet										
LOGGED BY: R. Kingery		WATER LEVEL @ TOB: Dry										
DRILLER: T. Hall		WATER LEVEL @ 24 hrs: N/A										
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO. SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE	
						10	20	30	60	80		
0 - 8		Topsoil (8 inches)										
8 - 20		Clay (CL) - reddish brown; firm; moist; with chert fragments; (Residuum)		859	1							5
				854	2							6
				849	3							7
				844	4							6
20 - 20		Boring Terminated at 20 feet										

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-4

DATE DRILLED: 11/1/04 ELEVATION: 866
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 20.0 feet
 LOGGED BY: R. Klingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 7		Topsoil (7 inches)										
5				861	1	X						9
10		Clay (CL) - reddish brown; stiff to firm; moist; with chert fragments; (Residuum)		856	2	X						8
15				851	3	X						8
20		Boring Terminated at 20 feet		846	4	X						8

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-5

DATE DRILLED: 11/1/04 ELEVATION: 864
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 20.0 feet
 LOGGED BY: R. Kingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 0.5		Topsoil (8 inches)										
0.5 - 5		Clay (CL) - reddish brown and black; moist; (Fill)			1	X						7
5 - 10		Clay (CL) - reddish brown; firm; moist; with chert fragments; (Residuum)		859								
10 - 15				854	2	X						5
15 - 20				849	3	X						6
20 - 20		Boring Terminated at 20 feet		844	4	X						6

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-6

DATE DRILLED: 11/1/04
 ELEVATION: 867
 DRILLING METHOD: CME 550, 3/4" H.S.A.
 BORING DEPTH: 20.0 feet
 LOGGED BY: R. Kingery
 WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall
 WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 6		Topsoil (6 inches)										
6 - 20		Clay (CH) - reddish brown; stiff to firm; moist; with chert fragments; (Residuum)		862	1	X						13
				857	2	X						12
				852	3	X						9
				847	4	X						8
20		Boring Terminated at 20 feet										

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-7

DATE DRILLED: 11/1/04 ELEVATION: 870
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 20.0 feet
 LOGGED BY: R. Kingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 0.5		Topsoil (6 Inches)										
5		Clay (CL) - reddish brown; moist; stiff; with chert fragments; (Residuum)		865	1							9
10		Clay (CL) - reddish brown; moist; stiff; with chert fragments; (Residuum)		860	2							11
15		Clay (CL) - brown and tan; moist; firm; (Residuum)		855	3							10
20		Boring Terminated at 20 feet		850	4							7

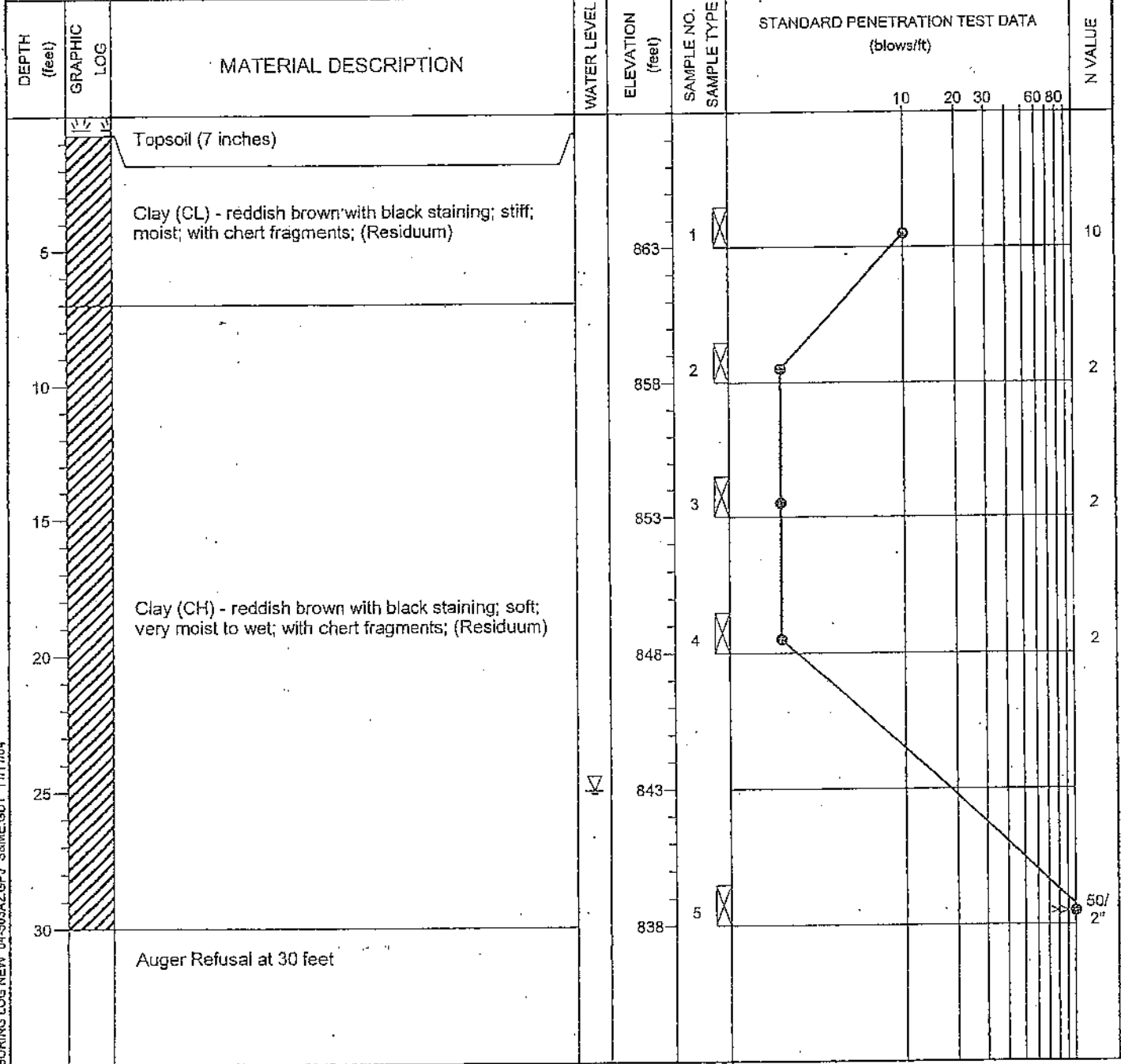
BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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DATE DRILLED: 11/1/04	ELEVATION: 868	NOTES: Soil descriptions based on visual observation of obtained samples.
DRILLING METHOD: CME 550, 3 1/2" H.S.A.	BORING DEPTH: 30.0 feet	
LOGGED BY: R. Kingery	WATER LEVEL @ TOB: 25 feet	
DRILLER: T. Hall	WATER LEVEL @ 24 hrs: N/A	



BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

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PROJECT: Closed Depressions Northshore Subdivision Knoxville, Tennessee S&ME Project No. 1431-04-503A				BORING LOG B-9								
DATE DRILLED: 11/1/04		ELEVATION: 870		NOTES: Soil descriptions based on visual observation of obtained samples.								
DRILLING METHOD: CME 550, 3/4" H.S.A.		BORING DEPTH: 20.0 feet										
LOGGED BY: R. Kingery		WATER LEVEL @ TOB: Dry										
DRILLER: T. Hall		WATER LEVEL @ 24 hrs: N/A										
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0-3		Topsoil (3 inches)										
3-7		Clay (CL) - reddish brown; stiff; moist; with chert fragments; (Residuum)		865	1							14
7-10		Clay (CH) - reddish brown; very soft; moist; (Residuum)		860	2							1
10-15		Clay (CH) - reddish brown; very soft; moist; (Residuum)		855	3							WOH
15-20		Boring Terminated at 20 feet		850	4							3

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-10

DATE DRILLED: 11/1/04 ELEVATION: 870
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 23.0 feet
 LOGGED BY: R. Kingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 6		Topsoil (6 inches)										
5 - 10		Clay (CL) - reddish brown; firm to very hard; moist; (Residuum)		865	1	X						8
10 - 15		Clay (CL) - reddish brown; firm to very hard; moist; (Residuum)		860	2	X						7
15 - 20		Sandy Clay (CL) - brown and tan; soft; moist; (Residuum)		855	3	X						61
20 - 23		Sandy Clay (CL) - brown and tan; soft; moist; (Residuum)		850	4	X						4
23 - 23		Auger Refusal at 23 feet										

BORING LOG NEW: 04-503A2.GPJ S&ME.GDT 11/1/04

NOTES:

- THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
- BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
- STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
- WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-11

DATE DRILLED: 11/1/04 ELEVATION: 870
 DRILLING METHOD: CME 550, 3/4" H.S.A. BORING DEPTH: 20.0 feet
 LOGGED BY: R. Kingery WATER LEVEL @ TOB: Dry
 DRILLER: T. Hall WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 1.2		Topsoil (12 inches)										
5		Clay (CL) - reddish brown with black staining; stiff to very stiff; moist; with chert fragments; (Residuum)		865	1	X		10				9
10		Clay (CL) - reddish brown with black staining; stiff to very stiff; moist; with chert fragments; (Residuum)		860	2	X		10				12
15		Clay (CH) - reddish brown with black staining; very moist; soft; (Residuum)		855	3	X		10				16
20		Boring Terminated at 20 feet		850	4	X		10				4

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

NOTES:

- THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
- BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
- STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
- WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



PROJECT: Closed Depressions Northshore Subdivision
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503A

BORING LOG B-12

DATE DRILLED: 11/1/04
 DRILLING METHOD: CME 550, 3 1/2" H.S.A.
 LOGGED BY: R. Kingery
 DRILLER: T. Hall

ELEVATION: 868
 BORING DEPTH: 17.0 feet
 WATER LEVEL @ TOB: Dry
 WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples.

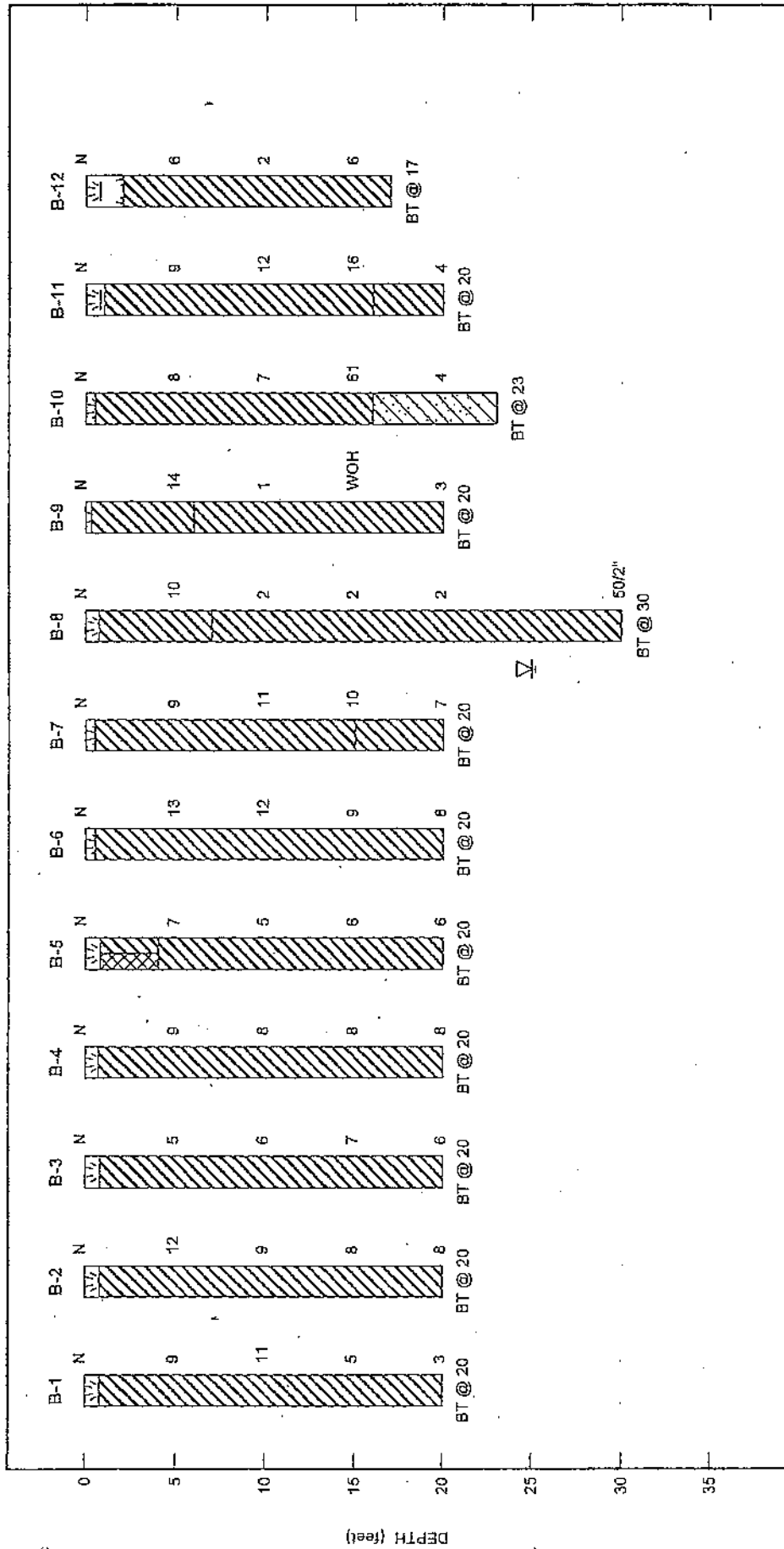
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 24		Topsoil (24 inches)										
5		Clay (CL) - dark brown and black; firm to soft; moist; (Residuum)		863	1							6
10				858	2							2
15				853	3							6
17		Auger Refusal at 17 feet										

BORING LOG NEW 04-503A2.GPJ S&ME.GDT 11/1/04

NOTES:

- THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
- BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
- STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
- WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

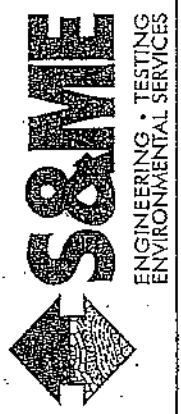




▽ = Water Level At Termination of Boring
 ▽ = Water Level Taken After 24 Hours
 BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated

Fill
 Topsoil
 Clay
 Sandy Clay

N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.



JOB NO: 1431-04-503A

DATE: 11/1/04

Project: Closed Depressions Northshore Subd
 Location: Knoxville, Tennessee

DJL00231

SOIL DATA SUMMARY
Closed Depression at Northshore Subdivision
S&ME Project No. 1431-04-503A
November 10, 2004

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-1	SS-1	3.5	37.5%				
B-2	SS-2	8.5	21.7%				
B-3	SS-1	3.5		46	17	29	CL
B-4	SS-3	13.5	41.3%				
B-5	SS-1	3.5	28.9%				
B-6	SS-3	13.5	47.9%				
B-8	SS-2	8.5		71	28	43	CH
B-7	SS-1	3.5	26.4%				
B-9	SS-1	3.5	39.8%				
B-10	SS-2	8.5	38.8%				
B-11	SS-2	8.5	36.6%				
B-12	SS-3	13.5	21.3%				

Lot 15 sinkhole





Lot 13
Sinkholes



Cottingham Court Homeowners' Association, Inc.

Ron German, President
9108 British Station Lane
Knoxville, Tennessee 37922

December 3, 2018

Knoxville/Knox County
Metropolitan Planning Commission
City-County Building, Suite 403
400 Main Street
Knoxville, TN 37902

RE: MPC December 13, 2018
MPC File #12-SC-18-F
MPC File #12-E-18-UR

Honorable Members of the Knox County MPC:

I write on behalf of the Cottingham Court Homeowners' Association, Inc. (the "Association") to provide you with information concerning two important circumstances; (1) there is an existing permanent easement which surrounds the boundary of Lot #25 and which is comprised of large trees and shrubs; and (2) there exists a registered sinkhole, 200 feet in diameter that was not remediated per TEDEC protocols.

1) EASEMENT

There exists a recorded permanent easement (Exhibit 1) dated 26 September 2006, registered in Knox County. The document is signed by all parties owning and having an interest in the use of all property to include Lots #1 through #25.

See attached plat relating to Lots #1 and #25. The document provides for a permanent use easement for the "maintenance and repairs of . . . monument, landscaping, and lighting . . . to the extent "as the Second Party (B & J Enterprises, aka Saddlebrook Homes) deems necessary and appropriate." Accordingly, Saddlebrook Homes built a berm with trees and shrubbery planted around Lot #25 on three sides. For approximately 12 years, the easement has been constructed and maintained by the Cottingham Court HOA (see Exhibit 10 photos).

The areas which entail the permanent easement are referenced in the Declaration of Covenants (Exhibit 2) on page 3, as "common area." "Common area means the grassy plots located at the entrance of Cottingham Court between the edge of pavement and Lots 1 and 25 . . . and includes the buffer on which surrounds the Stanley R Jones property."

The petitioners' proposed subdivision contemplates the removal of the berm, shrubs & trees in order to provide driveway access to the three lots. Such an act, if approved by the MPC, would negate the permanent use easement recorded. The HIOA has invested in the construction and maintenance of said improvements for over 12 years.

As a note, a copy of the referenced HOA covenants were provided to petitioner prior to their purchase of the Stanley Jones property (Lot #25).

2) SINKHOLE ON LOT #25

Regarding the history of the sinkhole conditions believed to exist on Lot 25 of the Cottingham Court Subdivision (the "Subdivision"), the Association members are concerned that purchasers or developers of Lot 25 may not be aware of the history of Lot 25 and that the subdivision and subsequent development of that lot may pose a hazard to any structure constructed in or near the sinkhole on that lot and to homes in the Cottingham Court Subdivision.

Reference is first made to the final Subdivision Plat of Cottingham Court dated September 27, 2005, and recorded on May 19, 2006, as Instrument #200605190097154, in the Office of the Register of Deeds for Knox County, Tennessee (the "Subdivision Plat"). A true and accurate copy of the Subdivision Plat is attached hereto as Exhibit 3 for ease of reference. As the Subdivision Plat indicates, a large sinkhole depression is shown to exist on Lot 25 ("Sinkhole #1"). The 50 foot building setback from the outermost edge of Sinkhole #1 extends into Lots 22, 23, & 24 within the Subdivision.

When the Subdivision was originally developed by Fuller Sims Development, it is believed that it was first generally referred to as "Northshore Subdivision" but was later called Ashland Creek Subdivision. On or about October 14, 2004, Jeff Sims and Travis Fuller of Fuller Sims Development applied to the State of Tennessee, Department of Environment and Conservation Water Supply ("TDEC") for authorization to operate a Class V underground injection well or storm water discharge to the subsurface (the "Application") because the planned development activities were to take place around six sinkholes and/or depressions. According to Aaron M. Gray, P.E., of Fulghum MacIndoe & Associates, Inc. ("FM") in his transmittal letter of October 15, 2004 of the Application to TDEC, a total of six (6) sinkholes and/or depressions were located in various positions on the site. What is believed to be most of the Application is attached hereto as Exhibit 4 for ease of reference.

In an August 9, 2004 Report of Geotechnical Exploration Closed Depressions at Northshore Subdivision by S&ME attached to the Application, there existed a closed depression near the southwest corner of the property that was approximately 200 feet in diameter and that was in a low-lying area which had been used for agriculture in the past. S&ME referred to this depression as "closed depression #1" in its August 9, 2004 report. According to S&ME, it drilled two borings, B-1 and B-2, within the limits of closed depression #1 and encountered a surface

layer of topsoil approximately 1 to 2 inches in thickness. Below the topsoil, residual soils were encountered. Residual soils are formed from the in-place weathering of the underlying bedrock. The residual soils in these borings consisted of dark brown clay transitioning to reddish orange clay with varying amounts of chert and black staining. The N-values of the standard penetration resistance tests are used to evaluate the relative consistency or density of the subsurface soils. The N-values in the residual clays ranged from 3 blows per foot ("bpf") to 35 bpf. However, the N-value in excess of 30 bpf was recorded near the auger refusal depth. In boring B-1, the N-values were typically 3 to 4 throughout the boring depth. Soft N-values throughout the boring depth can be indicative of past or active sinkhole conditions. The residual soils in both borings typically exhibited a soft to firm soil consistency. The natural moisture content of the tested residual soils in these borings range from 23 to 36.8 percent. A copy of S&ME's August 9, 2004 Boring Location Plan is attached hereto as Exhibit 5 for ease of reference.

Closed depression #1 was also later identified by FM. A copy of the FM drawings for Ashland Creek Subdivision are attached hereto as collective Exhibit 6 for ease of reference. The FM drawings identified a large sinkhole depression on Lot 25 that was labeled "Sinkhole #1".

As it related to Sinkhole #1 and in the Application to TDEC, the developer stated that the resultant construction activities would not affect Sinkhole #1. Based upon the developer's representations, TDEC considered the Application complete dated October 14, 2004 and granted authorization as requested for a fixed term not to exceed two (2) years. By April 9, 2009, the authorization for Ashland Creek had expired and the developer was notified that it had to renew the existing authorization or provide a change of ownership showing the new name of Cottingham Court and identify the current responsible parties. A true and accurate copy of the April 9, 2009 letter from Carolyn P. Sullivan of TDEC is attached as Exhibit 7 for ease of reference.

On April 18, 2009, in a Memo regarding closed depression #1 from the developer to the builder, the developer told the builder that:

Closed depression one (#1) was identified by S&ME and we ordered additional geological testing to be conducted. The depression is approximately two hundred (200) feet in diameter. S&ME instructed field technicians to drill borings B-1 and B-2 (page 4 of the report) within the limits of closed depression one (#1) to determine the consistency of the soils. Based on their findings they recommend that *no construction take place within the limits on Closed depression one (#1)*. ... The developers also followed the recommendations of the county, Tennessee Department of Environment and Conservation by filling Closed Depression one (#1) which would reduce further sinkhole activity. The way we minimize the risk of increased sinkhole activity is to minimize the amount of storm water the sinkhole takes in. We filled in Closed Depression one (#1) to construction grades that would create sheet flow drainage away from the lowest are of the depression so that all water run-off would collect into the storm drain system that was installed per Fulghum MacIndoe's design and move the water off site into Bluegrass

Lake. We also installed storm drain pip and drainage structures along the rear property lines of Lot twenty-three (23) and twenty-four (24) to ensure that no sheet flow drainage from the house on those lots would add additional water to Closed Depression one (#1).

A true and accurate copy of the April 18, 2009 Memo from the developer to the builder is attached as Exhibit 8 for ease of reference.

In a deposition taken of the developer, Travis Sims, on September 23, 2013, the developer confirmed that it did nothing to remediate the condition of Sinkhole #1 on Lot 25 other than hire Yates Construction to "undercut sinkhole area and fill up" with dirt, base stone, and No. 4 stone. I attach the relevant pages of that deposition testimony as collection Exhibit 9 for your ease of reference. It is the Association's concern that by filling in Sinkhole #1, the condition of that area on Lot 25 has been concealed and that any construction in that area may disturb the sinkhole depression or create a hazardous condition to those developing the lot without this knowledge.

While the Association claims no expertise regarding the current condition of the sinkhole depression described as Sinkhole #1 on the Subdivision Plat, based upon the history of that condition the Association is concerned that any development on the site of the closed and now concealed sinkhole depression may create a risk of injury or damage to those developing Lot 25 or to any overlying structures or foundations that are constructed. The Association is concerned that damage resulting from development could include, but may not be limited to, rapid local soil and ground subsidence and collapse. In addition, there is concern that development on Lot 25 may place other properties and roadways in the Subdivision at risk by disruption of approved drainage systems and destabilization of other sinkholes and depressions in the area that were previously remediated under TDEC approved plans.

The Association hopes that you find this information helpful. For further information regarding sinkhole remediation, or for questions concerning this property and its history, you may contact the Tennessee Department of Environment and Conservation, Drinking Water Program, Division of Water Resources, William R. Snodgrass TN Tower, 312 Rosa L. Parks Ave, 11th Floor, Nashville, Tennessee 37243, (615) 532-0159.

Sincerely,

COTTINGTON COURT HOMEOWNERS' ASSOCIATION, INC.

By: 

Ron German

Its: President

Enclosure

EXHIBIT 1

*COURT
COURT*

This Instrument Prepared By:
ROB GRATIGNY
Attorney at Law
114 Lovell Road, Suite 201
Knoxville, Tennessee 37934

SHERRY WITT
REGISTER OF DEEDS
KNOX COUNTY

PERMISSIVE USE AND EASEMENT AGREEMENT

THIS PERMISSIVE USE AND EASEMENT AGREEMENT is made and entered into on the dates shown below by and between TRAVIS FULLER and JEFFREY SIMS, hereinafter referred to collectively as First Party; B & J ENTERPRISES, a Tennessee General Partnership, hereinafter referred to as Second Party and JAMES M. SCOTT, hereinafter referred to as Third Party

WITNESSETH:

WHEREAS, the First Party is the owner of certain real property located in the 6th Civil District of Knox County, Tennessee, said property being known and designated as Lot 25 of Cottingham Court as shown on plat of record as Instrument #200605190097154 in the Register's Office for Knox County, Tennessee, and being a portion of the property conveyed to First Party by Warranty Deed of record as Instrument #200505270095582 in the aforesaid Register's Office; and

WHEREAS, the Second Party is the owner of certain real property being known and designated as Lots 1 through 24, inclusive, of Cottingham Court as shown on the aforesaid plat and being the same property convey to Second Party by Warranty Deed of record as Instrument #200605230098387 in the aforesaid Register's Office; and

WHEREAS, the Second Party has proposed to construct upon a portion of the property of the First Party a monument for the placement of a sign for Cottingham Court, along with accompanying landscaping and lighting; and

WHEREAS, First party has agreed to said construction and has further agreed to grant to Second Party a temporary easement for said construction and a permanent easement to be utilized by Second Party in conjunction with the maintenance and necessary repairs of said monument, landscaping and lighting.

NOW THEREFORE, in consideration of the foregoing, First Party hereto agrees that Second Party may construct, upon a portion of the property of the First Party herein referenced, a monument for the placement of a sign for Cottingham Court, and accompanying landscaping and lighting, as the Second Party deems necessary and appropriate. First Party hereby further grants to Second Party a temporary construction easement for the installation of said improvements, and a permanent easement to be utilized by Second Party for the maintenance and repair of said improvements.

THIRD PARTY joins in the execution of this instrument to acknowledge his acquiescence to the terms of this Permissive Use and Easement Agreement and to the rights hereby extended to and created for the benefit of Second Party.

THIS AGREEMENT represents the parties' entire understanding and agreement, and shall be binding upon the parties hereto, their respective heirs, successors and assigns. This document shall not be amended or modified except by written consent and agreement of all parties having an interest herein.



WITNESS the execution of this Agreement on the dates below written.

FIRST PARTY:

[Signature]
TRAVIS FULLER
Dated: 9/26/06

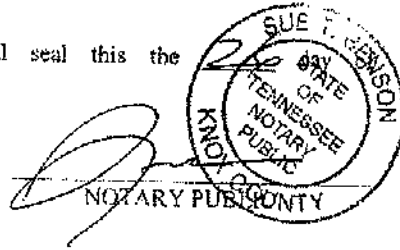
I hereby swear or affirm that the actual consideration or true value of this transfer, whichever is greater, is \$ 50.00 Affiant [Signature]
Subscribed and sworn to before me this 26 day of Sept yr 2006 Deputy Registrar [Signature]

STATE OF TENNESSEE
COUNTY OF KNOX

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, TRAVIS FULLER, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged his execution of the foregoing instrument for the purposes therein contained.

Witness my hand and official seal this the 26 day of September, 2006.

My Commission Expires: 10/13/07



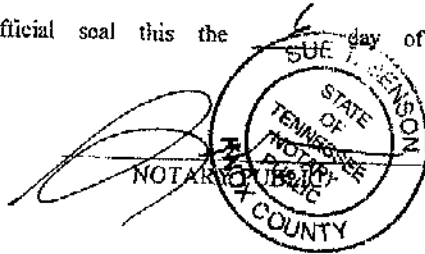
[Signature]
JEFFREY SIMS
Dated: 10-6-06

STATE OF TENNESSEE
COUNTY OF KNOX

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, JEFFREY SIMS, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged his execution of the foregoing instrument for the purposes therein contained.

Witness my hand and official seal this the 6 day of Oct, 2006.

My Commission Expires: 10/13/07



SECOND PARTY:

B & J ENTERPRISES,
a Tennessee General Partnership

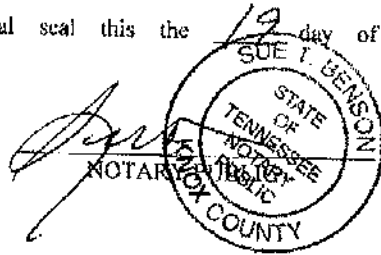
By: [Signature]
Robert L. Mohnney, Managing Partner

STATE OF TENNESSEE
COUNTY OF KNOX

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, Robert L. Mohnney, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who, in the capacity of Managing Partner of B & J ENTERPRISES, a Tennessee General Partnership, being duly authorized to so do, acknowledged the execution of the foregoing instrument on behalf of B & J ENTERPRISES, a Tennessee General Partnership, for the purposes therein contained.

Witness my hand and official seal this the 19 day of April, 2006.

My Commission Expires: 10/13/09



THIRD PARTY:

[Signature]
JAMES M. SCOTT
Dated: 9/10/07

STATE OF TENNESSEE
COUNTY OF KNOX

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, JAMES M. SCOTT, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who acknowledged his execution of the foregoing instrument for the purposes therein contained.

Witness my hand and official seal this the 10 day of April, ~~2006~~ 2007

My Commission Expires: 9/11/2010

[Signature]
NOTARY PUBLIC



EXHIBIT 2

THIS INSTRUMENT PREPARED BY:
Wilson S Ritchie, Esq.
RITCHIE & POWELL, P.C.
Suite 200
606 W. Main Street
Knoxville, TN 37902
865-524-5353

AMENDED AND RESTATED

DECLARATION OF COVENANTS AND RESTRICTIONS

OF

COTTINGTON COURT

This Amended and Restated Declaration of Covenants and Restrictions is hereby declared and agreed to by the Owners of all Lots in Cottingham Court, as hereinafter defined. This document amends, restates and replaces in its entirety the prior Declaration of Covenants and Restrictions dated August 15, 2006, of record in Instrument No. 200608150013973 in the Register's Office for Knox County, Tennessee, and all amendments thereto prior to the date hereof (the "Declaration Documents"), and the Declaration Documents are hereby terminated in full and declared to be null, void and of no further force or effect.

BACKGROUND

Cottingham Court was owned and developed by Saddlebrook Homes, LLC, a Tennessee limited liability company.

SUBDIVISION PLAT

Cottingham Court is located in the Sixth (6th) Civil District of Knox County, Tennessee, and without the corporate limits of the City of Knoxville, being known and designated as Lots 1 - 24, as shown on Subdivision Plat of Cottingham Court of record as Instrument No. 200605190097154, in the Register's Office for Knox County, Tennessee ("Plat") to which specific reference is hereby made for a more particular description, and a copy of the Plat is attached as Exhibit "1".

SUBDIVISION PLAT OF COTTINGTON COURT

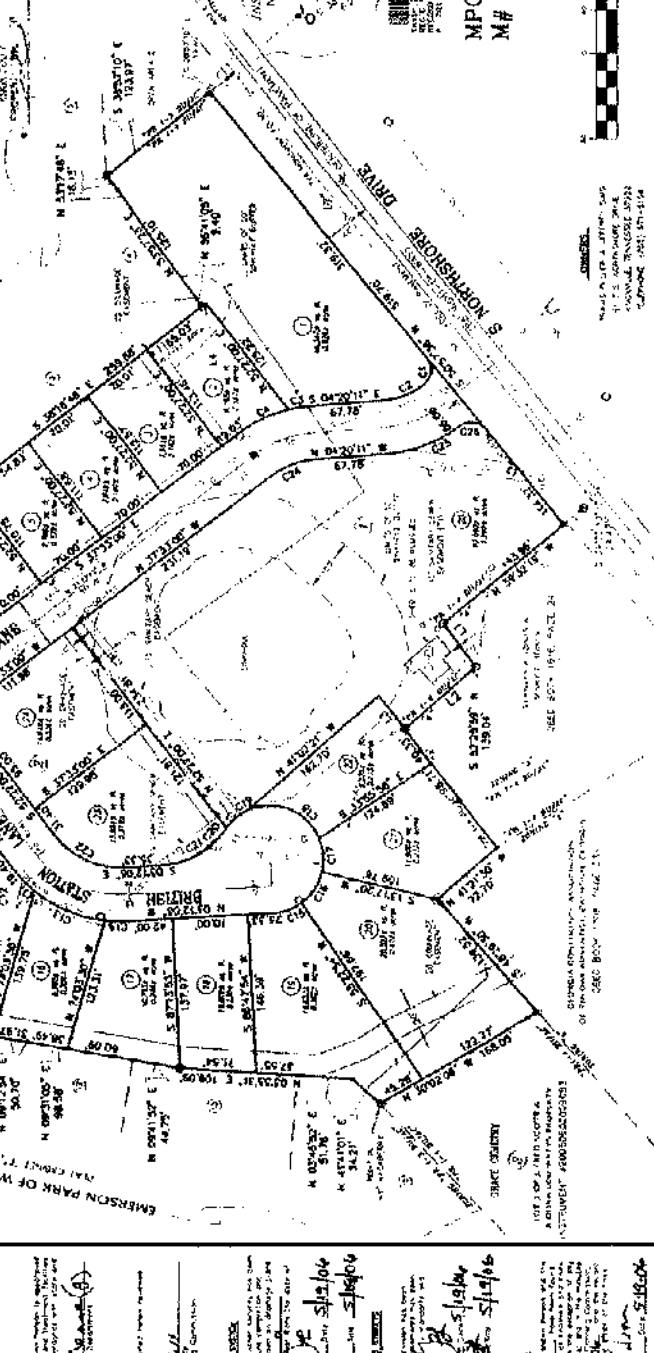
BEING PART OF A 60 AC. TRACT BEING REFERRED TO AS PARCEL 201 A, BEING
TRACT 201A, IN THE CITY OF KNOXVILLE, TENNESSEE,
COUNTY OF HAMILTON, TENNESSEE.

Table with 3 columns: Lot No., Area (Ac.), and Area (Sq. Ft.).

NOTICE TO THE PUBLIC: THIS PLAT OF COTTINGTON COURT...
THESE LOTS ARE TO BE USED FOR RESIDENTIAL PURPOSES...
THE CITY OF KNOXVILLE, TENNESSEE, HAS REVIEWED THIS PLAT...

PROPERTY CURVE TABLE
COURSE DISTANCE CURVE AREA
1. 100.00 1.00 1.00
2. 100.00 1.00 1.00
...

EMERSON PARK OF WHITTINGTON CREEK
WHITTINGTON CREEK
COTTINGTON LANE
STATION LANE
BRIAR LANE
...



EMERSON PARK OF WHITTINGTON CREEK
WHITTINGTON CREEK
COTTINGTON LANE
STATION LANE
BRIAR LANE
...

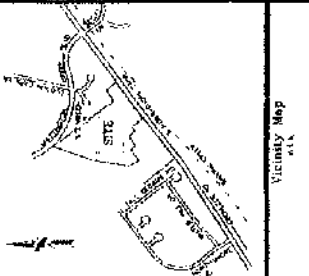
STATE OF TENNESSEE
COUNTY OF HAMILTON
I, [Signature], Surveyor, do hereby certify that the above is a true and correct copy of the original plat of the above described tract as the same appears on the records of this office.

PREPARED BY: BENCHMARK ASSOCIATES, INC.
DATE: 5-8-04
BY: [Signature]

REVISIONS:
1. [Signature] 5/10/04
2. [Signature] 5/10/04
3. [Signature] 5/10/04

APPROVED BY: [Signature]
DATE: 5-8-04

DATE: 5-8-04
BY: [Signature]



PROPERTY CURVE TABLE
COURSE DISTANCE CURVE AREA
1. 100.00 1.00 1.00
2. 100.00 1.00 1.00
...

NOTICE TO THE PUBLIC: THIS PLAT OF COTTINGTON COURT...
THESE LOTS ARE TO BE USED FOR RESIDENTIAL PURPOSES...
THE CITY OF KNOXVILLE, TENNESSEE, HAS REVIEWED THIS PLAT...

PROPERTY CURVE TABLE
COURSE DISTANCE CURVE AREA
1. 100.00 1.00 1.00
2. 100.00 1.00 1.00
...

DATE: 5-8-04
BY: [Signature]

BENCHMARK ASSOCIATES, INC.

Land Planners & Land Surveyors

SUBDIVISION PLAT OF COTTINGTON COURT

5. Northshire Drive, Knoxville
Knox County, Tennessee 37922

DATE: 5-8-04
DRAWN BY: [Signature]
FILE NAME: 0417-SPR-041
BY PROJECT NO. 1 of 1



MPC FILE# 10-SY-05-F
M# M556456BD

GRAPHIC SCALE
1 INCH = 100 FEET



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER SUPPLY
INJECTION WELL FEE WORKSHEET
(SUBMIT THIS WORKSHEET WITH EACH PROJECT)

ACTIVITY	FEE PAID	FEE DUE
1. Innovative technology wells at \$1000.00 per project	= \$ _____	\$ _____
2. Storm water drainage wells (sinkhole modification, or drilled): Subdivisions at \$500.00 per project Commercial/industrial facilities \$750.00 per project	= \$ _____ \$ _____	\$ _____ \$ _____
3. Commercial/industrial geothermal wells: Open loop systems at \$750.00 per facility	= \$ _____	\$ _____
4. Commercial/industrial SFDS and infiltration cells at \$500.00 per facility	= \$ _____	\$ _____
5. Large capacity septic systems at \$250.00 per facility Churches at \$100.00 per facility	= \$ _____ = \$ _____	\$ _____ \$ _____
6. Remediation wells: Oversight under this rule at \$1000.00 per project Oversight by the Department not under this rule	= \$ _____	\$ _____ = N/A
7. Renewal of storm water drainage wells commercial/industrial facilities at \$350.00 per facility	= \$ _____	\$ _____
8. Renewal of commercial/industrial geothermal wells open loop at \$350.00 per facility	= \$ _____	\$ _____
9. Renewal of commercial/industrial SFDS and infiltration cells at \$250.00 per facility	= \$ _____	\$ _____
10. Renewal of large capacity septic systems at \$250.00 per facility Churches \$50.00	= \$ _____	\$ _____
TOTAL INJECTION WELL FEE PAID	= \$ _____	
TOTAL INJECTION FEE DUE	=	\$ _____

Make checks payable to the Treasurer, State of Tennessee and submit to:
Department of Environment and Conservation, Division of Water Supply,
6th Floor L & C Tower, 401 Church Street Nashville, Tennessee 37243-1549

Name of Project: Northshore / Highland Creek S/W

County: Knox

Engineer/Owner: Julie Lum, Mac Sedoe, & Associates

Payment by: Engineer Other: Future to Senior Development

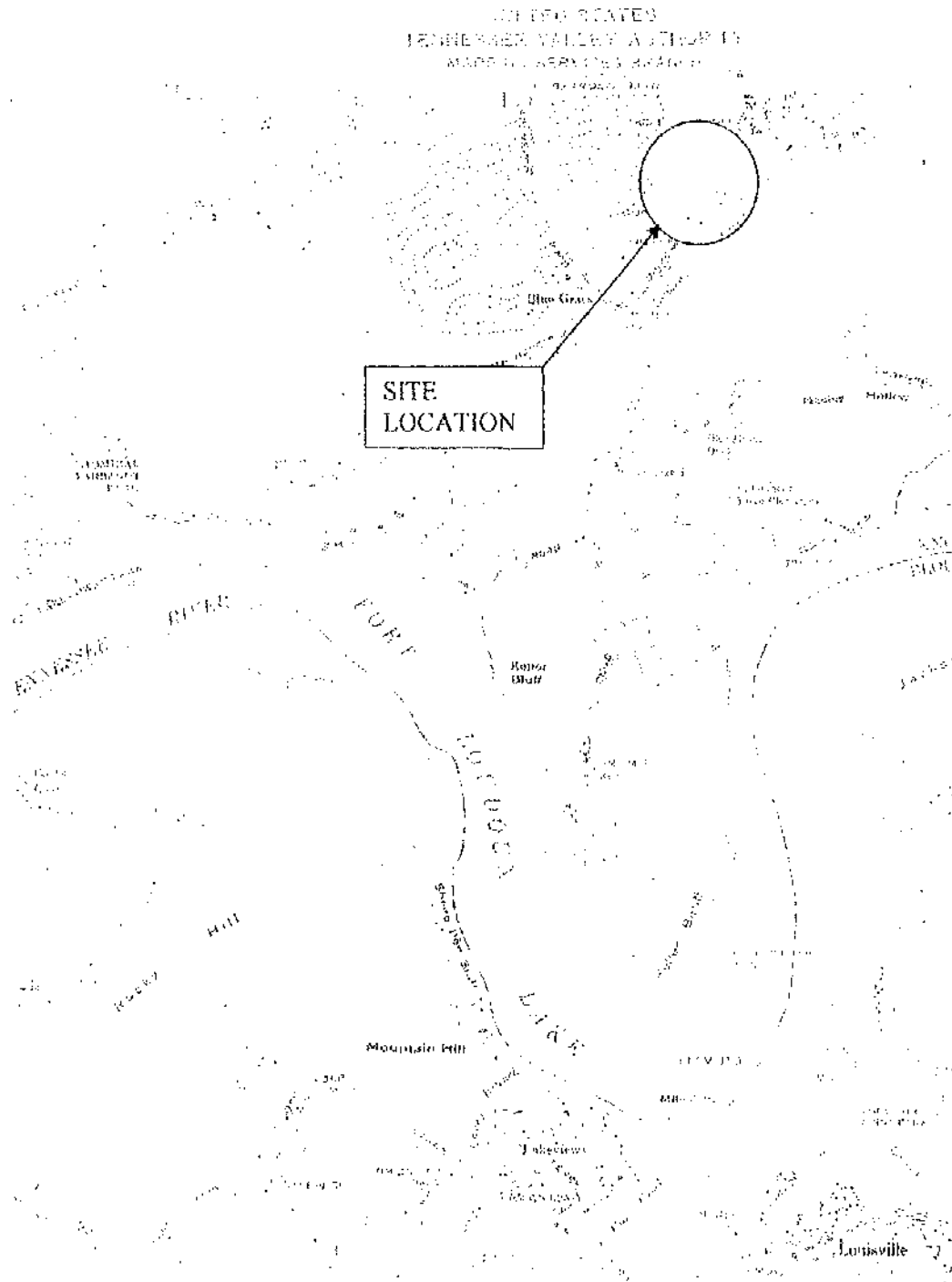
Address: _____

COPY

STATE USE ONLY	FOR OFFICE USE ONLY	
PROJECT #: <u>KNX-343</u>	Postmark Date: <u>10/15/04</u>	Date Received: <u>10/18/04</u>
Comments:	Check #: <u>1601</u>	Cash Deposit #: <u>710-135698</u>
	Receipt #: <u>29992</u>	Cash Deposit #: <u>*500.00</u>

KNX 000168

ATTACHMENT 2: USGS QUADRANGLE
(Louisville Quad)



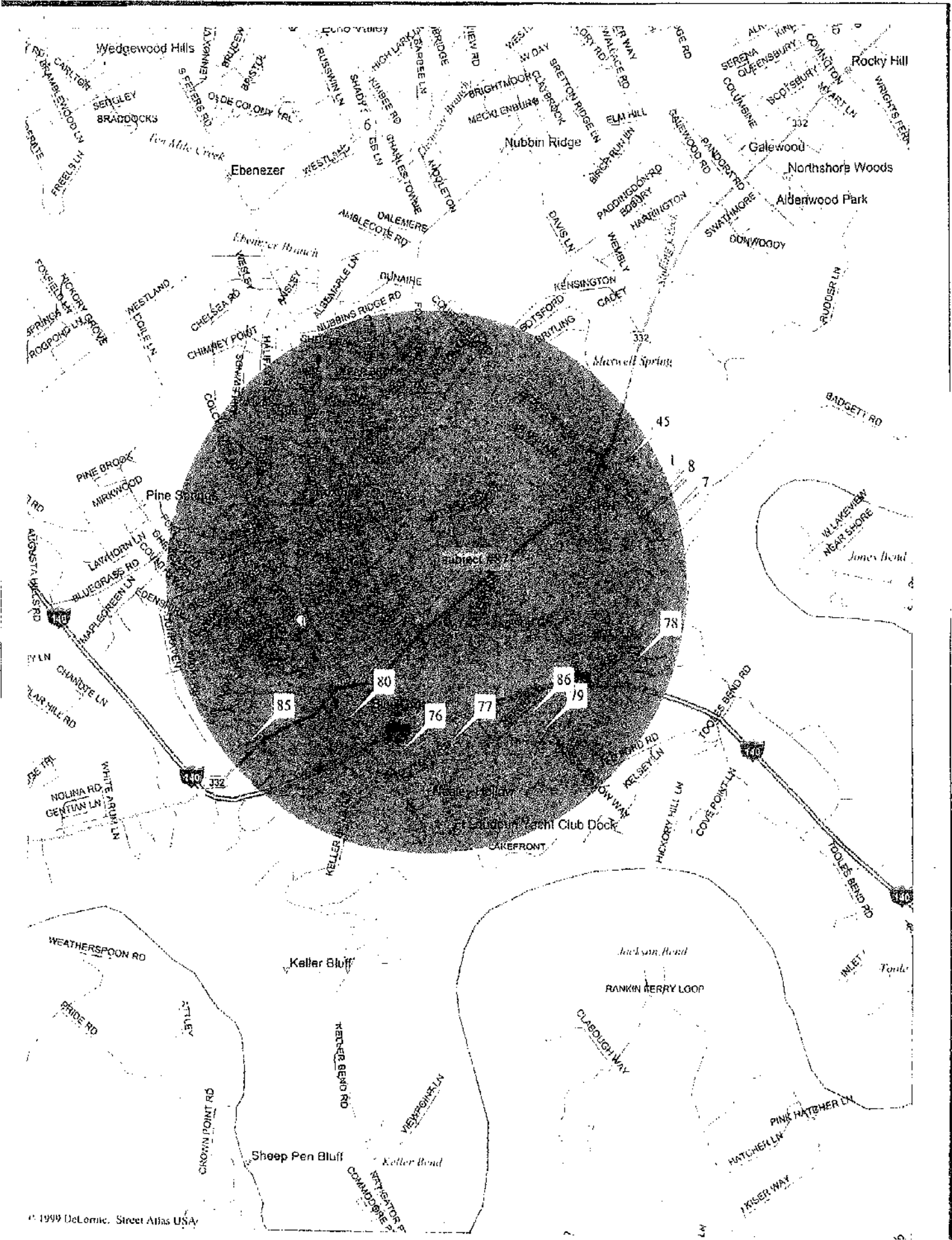


EXHIBIT 4



October 15, 2004

Mr. Bruce Craig
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DIVISION OF WATER SUPPLY
401 Church Street
Life & Casualty Tower, 6th Floor
Nashville, Tennessee 37243-1549

Re: Application to Discharge Stormwater into the Subsurface
Ashland Creek Subdivision – Knox County, TN

Dear Mr. Craig:

Thank you for meeting Jeff Sims and I on-site to review the proposed Ashland Creek Subdivision. Please recall that there were a total of 6 sinkholes and/or depressions located in various positions on the site. These features have been numbered and labeled on the drawing included in the application.

Please find enclosed the application for the above referenced project (Ashland Creek Subdivision). All of the pertinent attachments and figures have been included in the packet. Also included with the application is a check for the review fee in the amount of \$500.00.

If you have any questions or require any further information please do not hesitate to call. Your time and attention to this project is greatly appreciated.

Sincerely,

Aaron M. Gray, P.E.

Enclosures

cc: Mr. Travis Fuller, Mr. Jeff Sims
FMA Project No. 255.003

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C LOC USE	DRILLER USE
0138NE BLOUNT	8 00901673	LAKEVIEW NURSER HATCHER	06/04/1988	100 85	20 30	43 Steel	Open Hole 43 - 100	Good	355230 840230	NO	383 Commercial
0138NE KNOX	8 09300041	BOWEN M	01/29/1964	90 83	10 61	51 Steel	-	Good	355236 840349	NO	228 Residential
0138NE KNOX	8 09300165	PARKER H NORTHSHORE	03/03/1985	143 135	15 60	83 Steel	-			NO	152 Residential
0138NE KNOX	8 09300238	BROWN C	03/01/1966	145 120	16 40	41 Steel	-		355251 840440	NO	152 Residential
0138NE KNOX	8 09300500	HODGE D	05/22/1969	313 305	142 160	42 Steel	-	Good	355315 840330	NO	293 Residential
0138NE KNOX	8 09301377	COLE H	07/01/1980	110 60	50 20	62 Steel	-	Good		NO	437 Residential
0138NE KNOX	8 09301667	DOUGALL, DON BEECHWOOD	03/11/1983 07/28/1983	270 172	84 65	Open Hole Steel 84 - 270		Good	355215 833830	S NO	385 Heat Pump
0138NE KNOX	8 09301709	HUMPHREYS, LEE EBENEZER	11/01/1983	205 150	35 120	64 Steel	Open Hole 64 - 205	Good	355343 940413	S NO	152 Residential
0138NE KNOX	8 09301822	TURNER, MILTON EBENEZER	08/05/1985	230 112	60 100	84 Steel	Open Hole -	Good	355230 840230	NO	152 Residential
0138NE KNOX	8 09301891	DOUAGH, SUSAN KILLER BEND	05/23/1986	150 140	35 80	72 Steel	Open Hole 72 - 150		355230 840230	NO	152 Residential
0138NE KNOX	8 09301892	MCREYNOLDS, W E LAKEFRONT	05/08/1986	280 260	15 150	53 Steel	Open Hole 53 - 280		355230 940230	NO	152 Residential
0138NE KNOX	8 09301900	MCMILLIAN, ARCHIE WINDFIELD ESTAT	08/04/1986	370 352	12 71	Open Hole Steel		Good	355230 940230	NO	622 Residential
0138NE KNOX	8 09309078	GETTYS JR R E 0-777		179	12	66		Good	355315 840445	S NO	740 Residential

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C DRILLER LOG USE
0138NE KNOX	8 09309084	STOWER M C 0-82 0-82		92 92	12	20	-	Good	355453 840445	S 740 No Residential
0138NE KNOX	8 20004678	DUNCAN, DON PLANTATION ON SPRINGS	08/07/2000	510 450	90 70	41 Steel 0	Open Hole - 510	Clear		536 Yes Irrigation
0138NE KNOX	8 20004679	JORDON, MARK 5900 HOLSTON HILLS RD	08/09/2000	305 135	50 40	Steel 0	Open Hole - 305	Clear		536 Yes Irrigation
0138NE KNOX	8 20022995	BROWDER, JOHN 957 HAYSLOPE DR	07/10/2002	360 340	27 90	Steel 126	Open Hole - 360	Clear		608 Yes Residential
0138NE KNOX	8 90000502	OVERHOLT, DR LYNS VIEW RD	03/07/1990	281 124	72 4	Steel 83	Open Hole - 281	Unknown		385 No Heat Pump
0138NE KNOX	8 90000771	SCOTT, FRED TOOLE'S BEND RD	03/17/1990	273 210	4 8	Steel 77	Open Hole - 273	Good		622 No Residential
0138NE BLOUNT	8 90000998	CLARKE, RICKY HATCHER	02/26/1990	250 235	10 6	Steel 125	Open Hole - 250	Good		383 No Residential
0138NE BLOUNT	8 90001978	HARMON, SCOTT HATCHER	05/29/1990	275 260	30 5	Steel 167	Open Hole - 275	Good		383 No Residential
0138NE KNOX	8 92001407	PHILLIPS, CURT NUBBIN RIDGE	03/06/1992	225 165	15 80	Steel 84	Open Hole - 225	Good		608 No Residential
0138NE BLOUNT	8 92003408	STONE, DAVID PRIDE	07/24/1992	230 200	50 60	Steel 42	Open Hole - 230	Good		385 No Residential
0138NE BLOUNT	8 92004003	COOPER, RON HATCHER	10/03/1992	290 280	50 80	Steel 252	Open Hole - 290	Good		383 No Residential
0138NE KNOX	8 95001670	GETTYSVIEW GOLF WESTLAND	03/26/1995	585 135	15 10	Steel 125	Open Hole - 585	Unknown	355320 840441	S 264 No Irrigation
0138NE KNOX	8 95001671	GETTYSVIEW GOLF WESTLAND	03/28/1995	505 168	120 15	Steel 42	Open Hole - 505	Unknown	355318 840437	S 264 No Irrigation

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C DRILLER LOG USE
0138NE KNOX	8 95001672 D0009446	GETTYSVIEW GOLF WESTLAND	03/29/1995 07/27/1995	505 80	10 30	41 Steel	Open Hole 41 - 505	Unknown 010751	355316 840441	\$ 264 No Irrigation
0138NE KNOX	8 95001674 D0009447	GETTYSVIEW GOLF WESTLAND DR	04/03/1995 07/27/1995	705 340	20 35	104 Steel	Open Hole 104 - 705	Unknown 010749	355314 840451	\$ 264 No Irrigation
0138NE KNOX	8 95001814 D0011491	BUNDREN, SHEILA EVERETT	04/14/1995	290 280	15 20	20 Steel	Open Hole 20 - 290			385 No Residential
0138NE KNOX	8 95004017 D0007899	RECHENBACH, RICK BUENA	08/17/1995	480 435	10	134 Steel	Open Hole 134 - 480			385 No Residential
0138NE KNOX	8 96004506 D0020185	GETTYSVIEW GOLF COUR LINKVIEW DRIVE	09/19/1996	360 55	380	35 Steel	Open Hole 35 - 360			385 No Irrigation

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 01388NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A/C DRILLER LOG USE		
0138NE KNOX	9 09300006	ELLIS E	08/21/1963	125 120	30 30	70 steel	-	Good	355400 840050	S NO	40 Residential	29
0138NE KNOX	9 09300040	COWDEN G	01/24/1964	179 145	20 140	120 steel	-		355407 840055	S NO	138 Residential	30
0138NE KNOX	9 09300049	ELY M	03/27/1964	445 420	25 240	217 steel 210	212	Bad	355330 840115	S NO	138 Residential	31
0138NE KNOX	9 09300163	GORDON L NUBBON RIDGE	01/25/1965	235 232	23 108	105 steel	-			NO	152 Residential	32
0138NE KNOX	9 09300420	WYATT C	07/11/1968	167	97	152 steel	-	Good	355441 840104	S NO	241 Residential	33
0138NE KNOX	9 09300511	JONES C	06/30/1969	260 245	15	35 steel	-	Bad	355353 840055	S NO	138 Residential	34
0138NE KNOX	9 09300775	CHESTNUT J	09/12/1972	260 227	12 100	62 steel	-	Good		NO	31 Farm	35
0138NE KNOX	9 09301618	ABERNETH HARVEY	07/15/1982	425 395	108 200	96 steel	-	Bad	355329 840137	S NO	152 Residential	36
0138NE KNOX	9 09301795	PHILLIPS, CURT DOGWOOD DR	12/27/1984	410 395	17 50	44 steel 44	Open Hole - 410		355230 840000	NO	368 Residential	37
0138NE KNOX	9 09301893	BIGGS, ELEANOR WRIGHT'S FERRY	05/08/1986	250 228	105 150	105 steel 105	Open Hole - 250		355230 840000	NO	152 Residential	38
0138NE KNOX	9 09301921	MCCORY, MARION DOGWOOD LN	01/27/1987	125 118	30 50	47 steel 47	Open Hole - 125	Good	355230 840000	NO	622 Residential	39
0138NE KNOX	9 09302059	JOHNSTON, DR STEVE USEPY CHURCH RD	02/03/1988	245 180	15 140	115 steel 116	Open Hole - 245	Good	355230 840000	NO	31 Residential	40
0138NE KNOX	9 09309073	ROBERTS J L O-4 O-4		400	10 100	60		Good	355422 840003	S NO	740 Residential	41

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAY QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C DRILLER LOG USE
0138NE KNOX	9 09309074	KELLEY S H O-62 0-62		86	45	30		Good	355257 840122	S 740 No Residential
0138NE KNOX	9 09309075	JONESANNIE O-610-61		152	100			Unknown	355246 840034	S 740 No Residential
0138NE KNOX	9 09309076	BURLESON T M O-69-69		108	2	20		Good	355405 840115	S 740 No Residential
0138NE KNOX	9 09309077	KIRBYSSAM O-68 0-53		94	6			Good	355232 840245	S 740 No Residential
0138NE KNOX	9 20000161	REED, STEVE	11/11/1999	360	75	168	Open Hole		355302 840138	F 383 Yes Residential
0138NE KNOX	9 D0038094	1928 RUDDER LN.	03/11/2000	370	85	380	Steel	025397		Yes Residential
0138NE KNOX	9 20023297	HANKINS, JERRY	09/20/2002	785	3	210	Open Hole	Clear	355353 840033	536 Yes Residential
0138NE KNOX	9 D0060938	DOGWOOD RD		300	120		Steel			Yes Residential
0138NE KNOX	9 20032501	DAVIS, SCOTT	07/28/2003	450	6	103	Open Hole			383 Yes Residential
0138NE KNOX	9 D0060859	NORTHSHORE		420	80		Steel	105 450		Yes Residential
0138NE GIBSON	9 20042190	ELLIS, KEN LONNIE HOLT RD.	05/20/2004	380						767 Yes
0138NE KNOX	9 90000442	FAULKNER, FRANK BADGETT RD	01/25/1990	190	30	83	Open Hole	Good		622 No Residential
0138NE KNOX	9 90002767	STARRETT, RON SCHRIVER RD	08/31/1990	95	2	83	Open Hole	190		622 No Residential
0138NE KNOX	9 92003853	BLAKLEY, TOM FOOLES BEND	10/15/1991	172	10	62	Open Hole	Good		622 No Residential
0138NE KNOX	9 92003853	ELLISON, JOHNNY A ELLISON 1618	02/19/1993	662	25	83	Open Hole	Sulphur		335 No Residential
0138NE KNOX	9 92003853	ELLISON, JOHNNY A ELLISON 1618	02/19/1993	246	10	81	Open Hole	Good		335 No Residential
0138NE KNOX	9 92003853	ELLISON, JOHNNY A ELLISON 1618	02/16/1994	130	85	210	Open Hole	008222		264 No Residential
0138NE KNOX	9 93002274	BAILEY, ADRAIN RUDDER ST	06/05/1993	510	12	35	Open Hole	Unknown		437 No Residential
0138NE KNOX	9 93002274	BAILEY, ADRAIN RUDDER ST	07/24/1995	120	60	35	Open Hole	008942		437 No Residential

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C LOG USE	DRILLER
0138NE KNOX	9 93004115	O'CONNOR, JAMES E 1608 ELLISON	05/24/1993 03/11/1994	455 305	8 80	89 Steel	Open Hole 89	Unknown 004115	355405 840036	\$ No	264 Residential
0138NE KNOX	9 93004727	BROWDER, JOE 7317 MISTY MEADOW	05/19/1992 03/11/1994	362 108	40 10	63 Steel	Open Hole 63	Unknown 008246	355447 840111	\$ No	385 Irrigation
0138NE SEVIER	9 94000669	HUDGENS, JAMES RUDDER LN 1942	10/25/1993 05/15/1994	580 400	12 171	209 Steel	Open Hole 209	Sulphur 008358	351300 840144	\$ No	536 Residential
0138NE KNOX	9 94004099	MAYFIELD, CATHERINE RUDDER LANE	10/18/1994	600 108	64 66	83 Steel	Open Hole 83	Sulphur 600		No	622 Residential
0138NE KNOX	9 94004119	HUDGENS, JAMES RUDDER LANE	07/20/1994 03/20/1995	565 250	25 85	189 Steel	Open Hole 189	Unknown 008690	355259 840148	\$ No	536 Residential
0138NE BLOUNT	9 94004381	GARLAND, SAM DE VAULT	10/27/1994	210 185	20 35	50 Steel	Open Hole 50			No	383 Residential
0138NE KNOX	9 95001236	WILSON, W G RUDDER LN 1937	03/22/1995 04/17/1995	485 450	12 120	294 Steel	Open Hole 294	Unknown 008733	355304 840145	\$ No	264 Residential
0138NE KNOX	9 95002370	TESTERMAN, BEN RUDDER RD	05/25/1995	301 150	25 45	93 Steel	Open Hole 93	Iron 501		No	385 Residential
0138NE KNOX	9 97004961	HARRINGTON, GLENNARD BADGETT ROAD	10/13/1997	350 185	8 96	126 Steel	Open Hole 126	Good 350		No	622 Residential
0138NE KNOX	9 98003479	SHUBERT, ALEX NORTHSHORE DR	06/19/1996	475 226	15 59	57 Steel	Open Hole 57	Good 475		No	622 Residential
0138NE KNOX	9 98003480	SHUBERT, ALEX NORTHSHORE DR	06/23/1996	650 169	20 54	52 Steel	Open Hole 52	Good 650		No	622 Residential
0138NE KNOX	9 98003481	SHUBERT, JOHN NORTHSHORE DR	06/24/1996	135 106	45 23		Open Hole	Good		No	622 Residential
0138NE KNOX	9 98004471	REYNOLDS, JOE TRIPLETT LANE	08/27/1996	440 197	25 114	83 Steel	Open Hole 83	Good 440		No	622 Residential

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE BEARDEN QUADRANGLE 0138NE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AD DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATTITUDE LONGITUDE	A / C LOC USE	
0138NE KNOX	9 99002618 D0088915	THOMPSON, ROBERT HARRISON KEEPE	05/28/1999	305 90	30 40	41 Steel	Open Hole 41	Unknown 305	536 Residential	68	
0138NE KNOX	9 99006099 D0038074	LAWSON, PAULA 1917 DOGWOOD LA	10/11/1999 01/13/2000	470 451	30 100	210 Steel	Open Hole 210	470 025357	355410 840024	F No Residential	69

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 01385E TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C DRILLER LOG USE
01385E BLOUNT	2 09301224	BREEDEN, JIM CHANNEL DR	03/07/1982	75 60	50 20	23 Steel	Open Hole 23	Good 75	355000 840230	383 No Residential
01385E KNOX	2 09300196	GRAWLEY L KELLEY BEND	08/13/1985	200	100	35 Steel		Good		241 No Residential
01385E KNOX	2 09300590	GRIFFITT D TOAD BEND	06/15/1970	165 150	24 70	110 Steel		Good		152 No Residential
01385E KNOX	2 09300668	AUERA J BLUEGRASS	03/25/1971	136 180	100 60	84 Steel		Unknown		152 No Residential
01385E KNOX	2 09301072	ELISON J.	08/05/1976	250 175	2 150	20 Steel		Unknown		536 No Residential
01385E KNOX	2 09301073	DUNCAN V.	08/03/1976	280 160	3 60	60 Steel		Unknown		536 No Residential
01385E KNOX	2 09301545	TEDFORD O.H.	10/21/1981	510 500	4 155	42 Steel		Good	355126 840350	S 152 No Residential
01385E KNOX	2 09301564	GARCIA J.	04/08/1982	165 145	120	21 Steel		Good	555129 840335	S 152 No Residential
01385E KNOX	2 09301565	NEELY R.	06/13/1982	150 100	20	80 Steel		Good	355150 840246	S 581 No Residential
01385E KNOX	2 09301594	COX JOHN	06/10/1982	300 280	25 200	104 Steel		Good	555131 840310	S 152 No Residential
01385E KNOX	2 09301595	ROGERS A.G.	06/09/1982	190 175	15 150	34 Steel		Good	355140 840400	S 152 No Residential
01385E KNOX	2 09301611	FARMER B.J.J.R.	03/24/1982	155 135	10	81 Steel		Good	355015 840320	S 264 No Residential
01385E KNOX	2 09301835	PLUBY, CHARLES TEDFORD	08/30/1985	180 130	12 100	21 Steel	Open Hole	Good	355000 840230	152 No Residential

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 0138SE TN

QUAD / NTH COUNTY	WELL NUM REC NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AO DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C LOG USE	DRILLER USE
0138SE KNOX	2 09301906	VARNELL RAY BLUEGRASS	09/03/1986	328 250	6 54	167 Steel	Open Hole	Good	355000 840230	No	622 Irrigation
0138SE KNOX	2 09301922	GROSSEN, JIM VIEW POINT	01/16/1987	272 80	7 52	69 Steel	Open Hole	Good	355000 840230	No	622 Residential
0138SE KNOX	2 09309106	STERCHI H 0-67 0-67		130	30			Good	355129 840433	S No	740 Residential
0138SE KNOX	2 09309107	TEDFORD J H 0-64-64		125	30	40		Good	355135 840322	S No	740 Residential
0138SE KNOX	2 09309108	SCOTT4J F 0-63 0-63		87	10 40	40		Good	355212 840314	S No	740 Residential
0138SE BLOUNT	2 20011562	YOUNGS, LYNN PRIDE RD	04/08/2001	150 120	83 12	104 Steel	Open Hole	Cloudy		Yes	622 Residential
0138SE KNOX	2 20032432	KOEFOOT, BRUCE 8672 S. NORTHSHORE DRIVE	07/30/2003	140 129	60 72	41 Steel	Open Hole	Clear		Yes	622 Farm
0138SE KNOX	2 20041926	BAILEY, ADRIAN 1909 RUDDER LANE	06/03/2004	605 200	77 140	104 Steel	Open Hole	Clear	355318 84 143	Yes	264 Residential
0138SE KNOX	2 90003455	ELMORE, JOE TED FORD RD	08/15/1989	262 150	70 4	41 Steel	Open Hole			No	385 Residential
0138SE KNOX	2 90000497	HOLLS, DR BILL 9017 MADISON LN	08/18/1989	461 145	17					No	385 Other
0138SE KNOX	2 92000867	RULE, KENNETH KELLER BEND	10/08/1991	722 270	4	188 Steel	Open Hole			No	385 Residential
0138SE BLOUNT	2 94004379	RIVERWOOD CHRISTIAN COF LOWES FERRY	09/22/1994 07/24/1995	370 320	20 60	114 Steel	Open Hole	008941	355025 840420	S No	385 Residential
0138SE KNOX	2 94003556	PHILLIPS BUILDERS IN NORTHSHORE	09/08/1994	225 145	15 30	42 Steel	Open Hole	225		No	608 Residential

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 0138SE TN

QUAD / NTH COUNTY	WELL NUM REC NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C LOG USE	DRILLER
0138SE BLOUNT	2 95000661 D0010068	CRAIG, RON PRIDE ROAD	03/02/1995 07/24/1995	125 101	48 52	98 Steel	Open Hole 98	Good 008894	355030 840421	S NO	622 Residential
0138SE KNOX	2 95002374 D0007876	LIBERMAN, HARVEY HUNTER VALLEY R	04/27/1995	360 70	30	20 Steel	Open Hole 20	Unknown 360		NO	385 Residential
0138SE KNOX	2 95002375 D0007877	LIBERMAN, HARVEY HUNTER VALLEY R	04/28/1995	320 183	70	62 Steel	Open Hole 62	Good 320		NO	385 Residential
0138SE BLOUNT	2 95002389 D0011504	NICHOLS, ROBERT R LOWES FERRY	05/30/1995 07/24/1995	190 170	20 55	140 Steel	Open Hole 140	Good 008940	355034 840426	S NO	383 Residential
0138SE BLOUNT	2 95005599 D0010082	BENTZ, BOB CLEAR POINT	11/14/1995	200 148	42 54	147 Steel	Open Hole 147	Good 200		NO	622 Residential
0138SE KNOX	2 97004254 D0026556	MURRAY, JOHN BLUEGRASS ROAD	09/05/1997	175 151	25 112	148 Steel	Open Hole 148	Good 175		NO	622 Residential
0138SE KNOX	2 98003685 D0021200	DOSS, JIM SCOTT RD	09/01/1998	730 180	14 150	42 Steel	Open Hole 42	Sulphur 730		NO	581 Irrigation
0138SE KNOX	2 99001963 D0021200	DOSS, JIM SCOTT LN	04/20/1999	730 180	12	42	Open Hole 42	Good 730		NO	581 Irrigation

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY
 RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 0138SE TN

QUAD / MTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A/C DRILLER LOG USE
0138SE BLOUNT	3 00600113	HUBBARD R	08/01/1965	315	135	132 Steel	-	Unknown	355025 840205	S 69 NO Residential
0138SE BLOUNT	3 00900122	MCIBATH	09/30/1965	120	60	80 Steel	-	Unknown	355038 840003	S 69 NO Residential
0138SE KNOX	3 09300110	SCOTT F	11/05/1964	390 380	15 250	42 Steel	-			NO Residential 152
0138SE KNOX	3 09300589	YOUNG C KELLEY BEND	06/17/1970	328 278	8 145	34 Steel	-	Good		NO Residential 152
0138SE KNOX	3 09301074	FEECE B.	08/19/1976	145 135	15 40	122 Steel	-	Good		NO Residential 536
0138SE KNOX	3 09301080	CRUNK M.	10/25/1976	300 285	30	63 Steel	-	Good	355200 840200	S 537 NO Residential
0138SE KNOX	3 09301263	MITCHELL ELECTRIC	08/27/1978	280 260	10	132 Steel	-	Good		NO Residential 138
0138SE KNOX	3 09301675	DICKERSON, H.E. COVE POINT	03/31/1983 10/14/1983	205 125	115	97 Steel	Open Hole 97	Good	355132 840152	S 152 NO Residential
0138SE KNOX	3 09301785	ABERNATHY, HARVEY RUDDER RD	09/12/1984	570 180	20 180	63 Steel	Open Hole 63	Good	355000 840000	NO Heat Pump 152
0138SE KNOX	3 09301789	GETTYS, JIM TOOLS BEND	04/26/1984	125 115	30	86 Steel	Open Hole 86	Good	355000 840000	NO Irrigation 581
0138SE KNOX	3 09301962	GAMMON, JOE TOOLS BEND RD	04/23/1987	310 190	7 62	77 Steel	Open Hole 77	Good	355000 840000	NO Residential 622
0138SE KNOX	3 09302078	WEEKS, BOB TOOLS BEND RD	07/11/1988	650 300	5	126 Steel	Open Hole 126	Good	355230 840000	NO Residential 581
0138SE KNOX	3 09302145	STOCKSBY, ROB CHANNEL DR	02/15/1989	170 120	20 50	83 Steel	Open Hole 83	Good	355000 840000	NO Residential 536

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 01385E TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A/C DRILLER LOC USE
01385E KNOX	3 09309104	GETTUS PARK E 0-57-2		410	100	160		GOOD	355053 840110	S 740 NO Residential
01385E KNOX	3 09309105	NICHOLS R H 0-57-1-1			120			GOOD	355127 840142	S 740 NO
01385E KNOX	3 20003369	GENE WEBSTER CONSTRUCT	07/12/2000	230	100	187	Open Hole	Muddy	355113 840131	F 684 Yes Residential
01385E KNOX	3 00040860	3017 TOOLS BEND RD	08/21/2000	225	20	Steel 187	- 250	027605		
01385E KNOX	3 20003382	GENE WEBSTER CONST	07/08/2000	140	0		Open Hole			684 Yes Residential
01385E KNOX	3 20003383	3017 TOOLS BEND			0	0	- 140			
01385E KNOX	3 20003385	GENE WEBSTER CONST	07/09/2000	220	150					684 NO
01385E KNOX	3 20022702	3017 TOOLS BEND RD		50	20					
01385E KNOX	3 20022702	PINKARD, W D	06/24/2002	285	25	147	Open Hole			383 Yes Residential
01385E KNOX	3 20057633	8566 RIVER CLUB WAY		235	100	Steel 147	- 285			
01385E KNOX	3 20031199	ELIASON, CHARLES	03/20/2003	385	90	148	Open Hole			383 Yes Residential
01385E KNOX	3 00057720	3557 CHARTER OAK WAY		365	40	Steel 148	- 385			
01385E KNOX	3 20032054	MARTIN, JAMES	05/18/2003	190	50	126	Open Hole			385 Yes Residential
01385E KNOX	3 00060852	CHARTER OAK WAY RD		153	93	Steel 126	- 190			
01385E BLOUNT	3 20040402	DENSO MANUFACTURING TT	12/17/2003	280	100	65	Open Hole			383 Yes Industrial
01385E KNOX	3 00064467	1720 ROBERT C JACKSON DF		245	30	Steel 65	- 280			
01385E KNOX	3 90002660	STOKES, EDDIE	08/17/1990	605	12	104	Open Hole			264 No Residential
01385E KNOX	3 90003240	PATTERSON, MIKE	04/06/1990	150	3	Steel 104	- 605			
01385E KNOX	3 93004723	LIBERMAN, HARVEY	05/05/1992	282	50	21	Open Hole	Good		536 No Residential
01385E KNOX	3 93004723	COVE POINT DR		95	60	Steel 21	- 282			
01385E KNOX	3 94004680	MCREYNOLDS, BILL	10/27/1994	200	20	50	Open Hole	sulphur		622 No Residential
01385E KNOX	3 00005195	LAKE FRONT		169	54	Steel 50	- 200			

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TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION - DIVISION OF WATER SUPPLY

RECORDS OF WATER WELLS ON THE LOUISVILLE QUADRANGLE 0138SE TN

QUAD / NTH COUNTY	WELL NUM REG NUM	OWNER'S NAME LOCATION ROAD	COMP DATE INSP DATE	TOT DEPTH AQ DEPTH	TOT YIELD STAT LEVEL	CSE DEPTH CSE TYPE	WELL FINISH INTERVAL	WAT QUAL INSP NUMBER	LATITUDE LONGITUDE	A / C LOG USE	DRILLER
0138SE KNOX	3 95000891 D0008250	MIKE PATTERSON CONST ASHLAND SPRINGS	12/25/1994	625 300	20 125	83 Steel	Open Hole 83 - 625	Unknown			536 No Residential
0138SE KNOX	3 95004558 D0007806	CORBETT, JAMES	09/14/1995	150 98	70 30	72 Steel	Open Hole 72 - 150				385 No Residential
0138SE BLOUNT	3 96001523 D0017937	WASILEW, JIM HATCHER LANE	04/17/1996	270 265	30 165	84 Steel	Open Hole 84 - 270				383 No Residential
0138SE BLOUNT	3 97000711 D0022472	HAGAN, RICK HATCHER LANE	02/24/1997	290 290	7 105	95 Steel	Open Hole 95 - 290				383 No Residential
0138SE KNOX	3 97003102 D0022453	CHAMPION CONSTRUCTO TOOLS BEND ROAD	07/10/1997	110 108	40 40	105 Steel	Open Hole 105 - 110				383 No Residential
0138SE KNOX	3 97003325 D0020218	OGLE	04/18/1997	160 98	40 40	85 Steel	Open Hole 85 - 160				385 No Residential
0138SE BLOUNT	3 98001400 D0026042	SCOTT, RICHARD J ATTLEY	03/25/1998	210 80	50 60	157 Steel	Open Hole 157 - 210				383 No Residential
0138SE BLOUNT	3 98006748 D0029596	TOMICZEK, JAMES ATTLEY DR	12/02/1998	250 205	75 55	172 Steel	Open Hole 172 - 250				383 No Residential
0138SE KNOX	3 99001486 D0035978	SEAGLE, SCOTT TOOLS BEND	04/22/1999	320 200	25 60	146 Steel	Open Hole 146 - 320	Unknown			684 No Residential



STATE OF TENNESSEE
 DEPARTMENT OF ENVIRONMENT AND CONSERVATION
 WATER SUPPLY
 9th Floor, 401 Church Street
 Nashville, Tennessee 37243-1549
 (615) 532-0191

APPLICATION FOR AUTHORIZATION TO OPERATE A CLASS V UNDERGROUND
 INJECTION WELL OR STORM WATER DISCHARGE TO THE SUBSURFACE

In accordance with the provisions of Tennessee Code Annotated Section 69-3-105 and Regulations of the Tennessee Water Quality Control Board, application is hereby made to operate:

- Class V Underground Injection Well
 Discharge of Storm Water into the Subsurface

Part A - General Information

1. Site or Facility Name Ashland Creek Subdivision
 Street or Highway Address 9117 S. Northshore Drive
 City Knoxville Zip Code 37922
 County Knox Telephone (865) 740-7434

2. Describe the activities conducted by the applicant which require it to obtain a Class V permit authorization:

The proposed subdivision (Ashland Creek) will consist of construction activities (house construction, roadways, driveways) associated with a typical subdivision. These activities will take place in and around the six sinkholes and/or depression that have been identified on the site (Reference attached drawing). The resultant construction activities will impact the sinkhole/depressions in the following way: sinkhole hole #1 will not be affected (no additional stormwater will be directed towards it, a headwall will be placed in depression #2 to facilitate stormwater drainage and prevent ponding, depression #3 will be rehabilitated and filled in to allow construction, depression #4 will also be rehabilitated and filled in to allow construction, depression #5 will be rehabilitated to prevent further expansion of the depression, sinkhole #6 will remain unchanged.

- 3. USGS topographic coordinates of the injection well or facility location (if multiple wells are at the same site, then give principal site latitude and longitude, and average elevation):

Quadrangle Name Louisville

Latitude 35 ° 52 ' 8 " North

Longitude 84 ° 3 ' 18 " West

Ground elevation at well location: 858 (KGIS)

- 4. Name and address of owner of injection well or facility:

Individual or Firm Name Fuller-Sims Development

Street or RFD 9050 Executive Park Drive, Suite 200A

City Knoxville State Tennessee

Zip Code 37923 Telephone (865) 740-7434

- 5. Type of Business: Federal State Public
 Private Other

- 6. Nature of Business:

 Residential Development

- 7. List up to four standard industrial codes (SIC) which best reflect the principal products or services provided by the facility: N/A

- a. _____
- b. _____
- c. _____
- d. _____

8. Name and address of legal contact or person responsible for the operation of the Class V injection well or facility:

Name Travis Fuller

Street or RFD 9050 Executive Park Drive, Suite 200A

P.O. Box _____

City Knoxville State Tennessee

Zip Code 37923 Telephone (865) 740-7434

9. Is the facility located on Indian Lands? _____ Yes No

10. Permit Status: a. new well or facility
_____ b. modification of existing well or facility
_____ c. reapplication for previously permitted well or facility

11. List all other permits or construction approvals received or applied for under any of the following programs:

- a. Hazardous waste management program under federal or state law
- b. UIC program under federal or state law
- c. NPDES program under federal or state law
- d. Prevention of Significant Deterioration (PSD) program under federal or state law
- e. Nonattainment area program under federal or state law
- f. National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under federal or state law
- g. Ocean dumping permits under the Marine Protection Research and Sanctuaries Act
- h. Dredge and fill permits under Section 404 of the Clean Water Act, 33 U.S.C. 1344
- i. Comprehensive Environmental Response, Compensation and Liability Act (Federal Superfund) or Tennessee Hazardous Waste Management Act (Tennessee Superfund)
- j. UST program under federal or state law
- k. Groundwater Protection permits from Tennessee Division of Ground Water Protection
- l. Other relevant environmental permits

<u>Permit No.</u>	<u>Type</u>	<u>Date Issued</u>
	NPDES - NOI	

Part B - Facility Description

- Nature, type or purpose of injection well:
Discharge of stormwater via surface flow

- Description of injection well or facility, including monitoring wells and other associated structures (attach additional information or diagrams, if necessary):
All sinkholes/depressions are existing low areas

- Depth of injection zone: N/A feet below ground level

4. Operating status of well or facility: _____ proposed active
 _____ inactive _____ abandoned
5. Date injection began (if not in operation, projected date of beginning) _____
 If inactive or abandoned well, approximate date injection ceased _____
6. For previously active facilities, give history of injection or operation:
All sinkholes/depressions receives stormwater runoff via surface flow.
Depressions #5 & #6 receive water via a blueline stream located on the north side
of the site. All stormwater originates from trees, fields, brush, houses, and
roadways.
7. Mode of operation: _____ continuous intermittent
8. Volume of injected fluid: _____ gallons _____ or cubic yards
 _____ per day _____ per month _____ per year
9. Nature of injected fluid, including physical, chemical, biological and/or
 radiological properties:
Stormwater Runoff
10. Origin of injected fluid:
No additional stormwater runoff will be added to sinkholes that are to remain
open and unaffected

11. Description of treatment of fluid prior to injection:

N/A

12. Type of injection: _____ pump gravity _____ other

Description of pump(s):

N/A

13. Operating parameters of injection well:

a. fluid flow _____ gpm

b. fluid pressure _____ psig

c. fluid temperature _____ 20+/- Celsius

d. other significant operating information (attach additional information or diagrams, if necessary):

Part C - Description of Area of Review

The area of review (AOR) for each authorized or permitted Class V injection well shall, unless otherwise specified by the Department, consist of the area lying within and below a one mile radius of the injection well pump site or facility, and shall include, but not be limited to surface geographic features, subsurface geology, and demographic and cultural features within the area. Attach to this part of the application a complete characterization of the AOR, including the following:

1. Description of all past and present uses of groundwater within the AOR, as documented by public record.
2. Description of the groundwater hydrology within the AOR, including characteristics of all subsurface aquifers, presence or absence of solution development features, general direction of groundwater movement, and chemical characteristics of the groundwaters in the AOR.
3. Description of the population and cultural development within the AOR, including the number of persons living within one mile of the well or facility, land uses within the AOR, and the existence of any community, state, regional or national parks, wildlife refuges, natural or wilderness areas, recreational or other public-use areas, or any other environmentally sensitive features within the area of review.
4. Identify all sources of publicly-supplied drinking water for persons living or working within the AOR.
5. Identify any single or multi-family residences, churches, schools, businesses or other inhabited structures within the AOR which do not have access to a public drinking water supply system.
6. If groundwater is used for drinking water within the area of review, then identify and locate on Attachment 1, all groundwater withdrawal points within the AOR which supply public or private drinking water systems.
7. Identify any surface water bodies or features within the area of review which may be impacted by groundwater discharge to surface waters.
8. Identify any surface water intake which supplies a public water distribution system and is located within the AOR or within three miles topographically downgradient from the well or facility. If any such intake(s) exist, then locate on Attachment 1.

Part D - Signature and Certification

This application should be signed by a person having responsibility for the operation of the injection well or facility as follows:

1. For a corporation, by a responsible corporate officer (i.e., president, secretary, treasurer, vice-president, or equivalent person) who performs policy or decision making functions; or
2. The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million if authority to sign documents has been assigned or delegated to the manager in accordance with operating procedures; or
3. For a partnership, by a general partner or the proprietor; or
4. By a duly authorized representative (a duly authorized representative may be either a named individual or any individual occupying a named position) only if:
 - a. The authorization is made in writing by a person described in (1), (2), or (3) above;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or well field, superintendent, or position of equivalent responsibility, or
 - c. For municipality, state, federal, or other public agency by either a principal executive officer or ranking elected official.
5. The owner of the property or facility on which the injection well is located.

I certify under penalty of law I have personally examined and am familiar with the information submitted in the attached document; and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Jeff Sims
Name & Title (print or type)

[Signature]
Signature

License No.

10-14-04
Date

TRAVIS Fuller
Name & Title (print or type)

[Signature]
Signature

License No.

10-14-04
Date

Attachments

1. USGS topographic quadrangle map showing the location of the Class V injection well or facility and a one-mile radius area surrounding the well or facility.
2. USGS geologic quadrangle or regional geologic map showing the subsurface structure in the area of the well or facility, from the surface to the injection zone.
3. Schematic diagram of the injection well showing construction details and materials of the injection well.
4. Chemical analysis data of injection fluid, if required.
5. Process description of the treatment or other process which is the source of the injection fluid, if required.
6. Procedure for operation and maintenance of the injection well or facility, if required.
7. Geologic/hydrogeologic information collected during the planning, construction and design phases of the facility and injection well.
8. Blueprints from the facility showing the injection well and portions of the facility which will or may contribute injectate to the injection well, including storm runoff waters.
9. Construction diagrams depicting erosion and sediment controls.

Part C – Description of Area of Review

1. The only known uses of groundwater in the A.O.R is for residential purposes. First Utility District (FUD) provides potable water to the area. There is a water line that runs along the north side of S. Northshore Drive
2. The topography shown on the Louisville Quadrangle depicts numerous karst features within the A.O.R. Blue line streams fall within the area that includes portions of Sinking Creek and the Fort Loudoun Reservoir. The general flow direction of these blue line streams would suggest that the groundwater hydrology within the A.O.R. might flow in a southerly direction toward Sinking Creek and the Reservoir.
3. The land use within the A.O.R. is primarily residential and commercial. It is estimated that there are thousands of residences within the A.O.R. and there are no known environmentally sensitive areas.
4. FUD provides potable water to all areas within the A.O.R. (see Attachment No. 1).
5. There are no known residences, businesses, commercial facilities, or other inhabited structures within the A.O.R., which do not have access to a public drinking water system.
6. Please Reference attachment for groundwater well locations.
7. The surface water for the Ashland Creek Subdivision project currently drains to Sinking Creek and a blueline stream that drains to Sinking Creek. Sinking Creek in this area is part of the Fort Loudoun Reservoir. The surface water is will continue to drain to the sinkhole and to the blueline stream. It is anticipated that the sinkhole drains to the groundwater and on to Sinking Creek therefore, no surface waters would be impacted.
8. There is no surface water intake within the A.O.R.

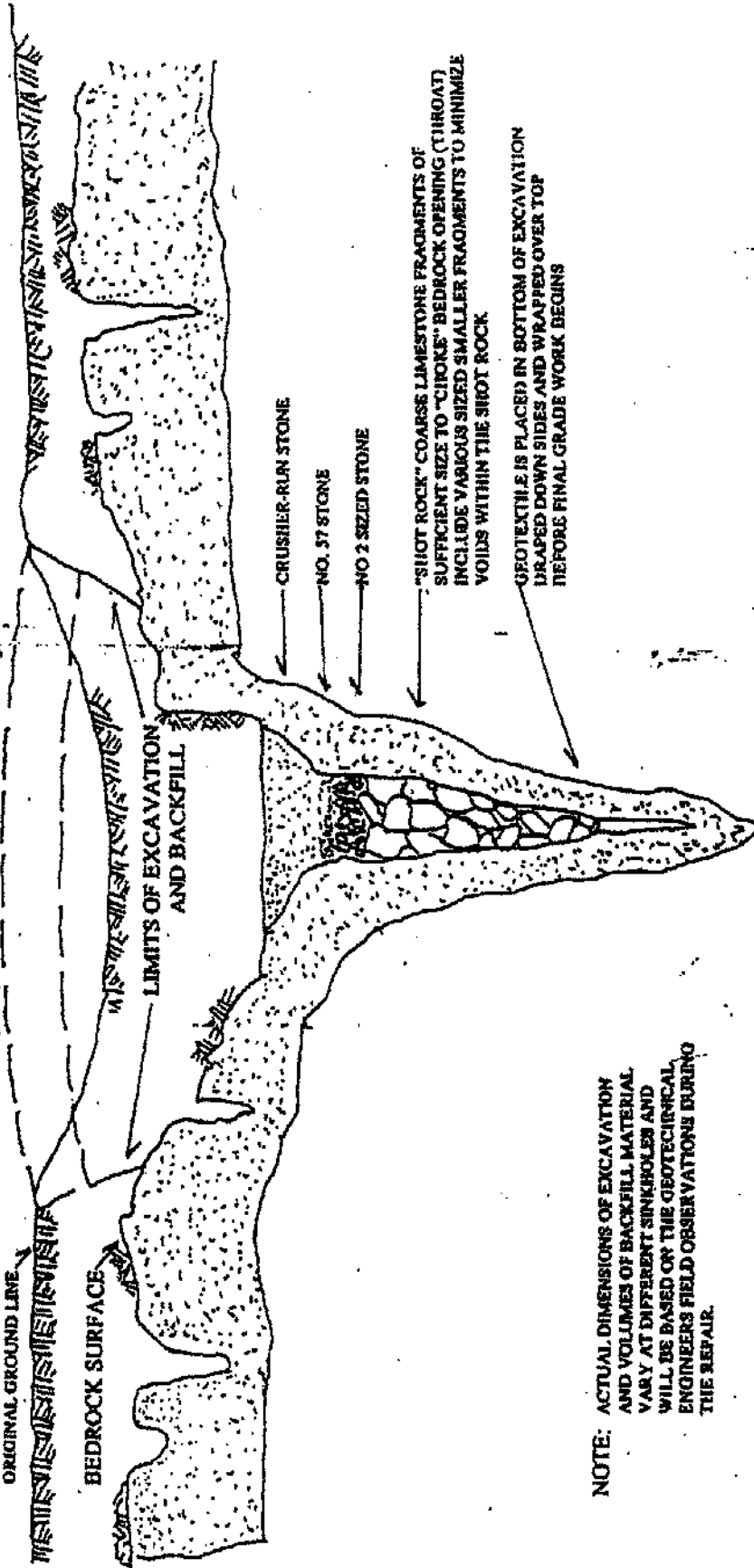
EXCAVATE TO BEDROCK SURFACE
WITHIN LIMITS OF CLOSED DEPRESSION
CLEAN SOIL FROM BEDROCK OPENING (THROAT)

ORIGINAL GROUND LINE

BEDROCK SURFACE

LIMITS OF EXCAVATION
AND BACKFILL

UPON COMPLETION OF BACKFILLING
GRADE TO PROMOTE POSITIVE SURFACE
DRAINAGE



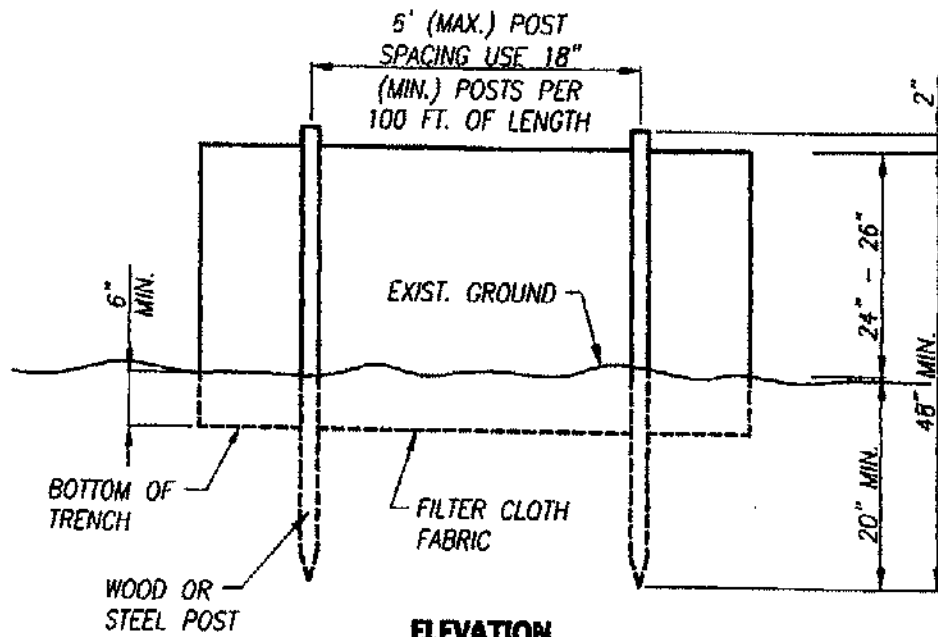
"SHOT ROCK" COARSE LIMESTONE FRAGMENTS OF
SUFFICIENT SIZE TO "CHOKE" BEDROCK OPENING (THROAT)
INCLUDE VARIOUS SIZED SMALLER FRAGMENTS TO MINIMIZE
VOIDS WITHIN THE SHOT ROCK

GEOTEXTILE IS PLACED IN BOTTOM OF EXCAVATION
DRAPED DOWN SIDES AND WRAPPED OVER TOP
BEFORE FINAL GRADE WORK BEGINS

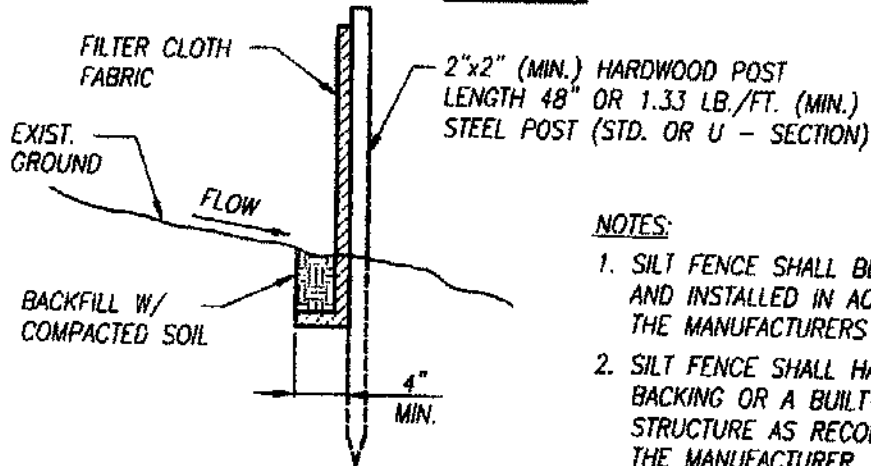
NOTE: ACTUAL DIMENSIONS OF EXCAVATION
AND VOLUMES OF BACKFILL MATERIAL
VARY AT DIFFERENT SINKHOLES AND
WILL BE BASED ON THE GEOTECHNICAL
ENGINEERS FIELD OBSERVATIONS DURING
THE REPAIR.

GENERALIZED SINKHOLE REPAIR

NOT TO SCALE



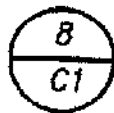
ELEVATION



SECTION

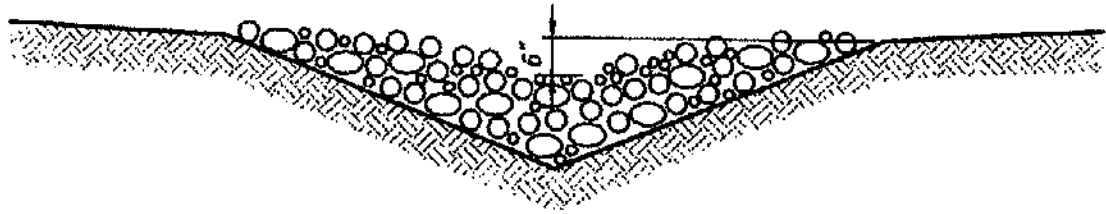
NOTES:

1. SILT FENCE SHALL BE PRE-ASSEMBLED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
2. SILT FENCE SHALL HAVE AN APPROVED BACKING OR A BUILT-IN REINFORCED STRUCTURE AS RECOMMENDED BY THE MANUFACTURER TO SUPPORT THE GEOTEXTILE FABRIC.

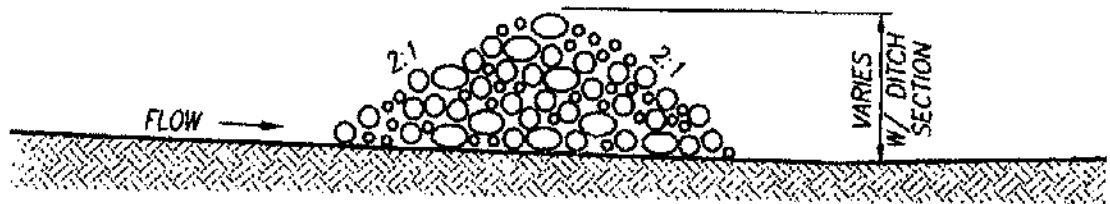


TEMPORARY SILT FENCE

N.T.S.



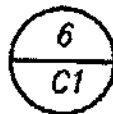
FRONT



SECTION

NOTES:

1. STONE SHALL BE 2"-3".
2. CONSTRUCT, MAINTAIN, AND REMOVE IN ACCORDANCE WITH THE TENNESSEE EROSION & SEDIMENT CONTROL HANDBOOK.



TEMPORARY ROCK CHECK DAM

N.T.S.

104/07

REPORT OF
GEOTECHNICAL EXPLORATION
CLOSED DEPRESSIONS AT
NORTHSHORE SUBDIVISION
9117 S. NORTHSHORE DRIVE
KNOXVILLE, TENNESSEE
S&ME PROJECT NO. 1431-04-503

Prepared for:

Fuller-Sims Development
c/o Fulghum MacIndoe & Associates, Inc.
9237 Middlebrook Pike
Knoxville, Tennessee 37922

Prepared by:



1413 Topside Road
Louisville, Tennessee 37777

August 9, 2004

Known Data

TDEC #12

3/20/09

REPORT OF
GEOTECHNICAL EXPLORATION
CLOSED DEPRESSIONS AT
NORTHSHORE SUBDIVISION
9117 S. NORTHSHORE DRIVE
KNOXVILLE, TENNESSEE
S&ME PROJECT NO. 1431-04-503

Prepared for:

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c/o Fulghum MacIndoe & Associates, Inc.
9237 Middlebrook Pike
Knoxville, Tennessee 37922

Prepared by:



1413 Topside Road
Louisville, Tennessee 37777

August 9, 2004

DJL00192

#18



August 9, 2004

Fuller-Sims Development
c/o Fulghum MacIndoe & Associates, Inc.
9237 Middlebrook Pike
Knoxville, Tennessee 37922

Attention: Mr. Aaron Gray

Subject: **REPORT OF GEOTECHNICAL EXPLORATION**
Closed Depressions at Northshore Subdivision
9117 S. Northshore Drive
Knoxville, Tennessee
S&ME Project No. 1431-04-503

Dear Mr. Gray:

S&ME, Inc. (S&ME) has completed our exploration of the closed topographic depressions located at the subject project. The exploration was performed in accordance with our Proposal No. 3104667, dated July 13, 2004. The purpose of this geotechnical exploration was to determine the feasibility of construction within the closed depressions. This geotechnical exploration involved a site reconnaissance, field drilling, laboratory testing, and engineering analysis. The following sections of this report present discussions of the project requirements, field exploration, site conditions, and our conclusions. Following the text of this report, figures, test boring records, and laboratory test results are provided in the attachments.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, subsurface water, or air, on, or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

PROJECT AND SITE DESCRIPTION

The site for the proposed Northshore Subdivision is located at 9117 S. Northshore Drive in Knoxville, Tennessee. The development will include 31 residential lots and two paved roadways. At the time of the field exploration the site was primarily an open, grassed field with some moderately wooded areas located primarily along the site boundaries. Three closed depressions have been identified on the site. The closed depressions, however, are not shown on the USGS topographic map of this area. The closed depression near the southwest corner of the property (closed depression # 1) is approximately 200 feet in diameter and is a low-lying area which has been used for agriculture in the past. The closed depression near the southeast corner of the property (closed depression # 2) is approximately 100 feet in diameter and appears to have been formed during construction of the adjacent Whittington Creek Subdivision. The closed depression near the north end of the property (closed depression # 3) is approximately 80 feet in diameter and is composed of two connected depressions which have been filled in with lumber and waste materials by the previous property owner. Our exploration has been limited to exploring the closed depressions to determine the feasibility for construction in these areas.

FIELD EXPLORATION

The subsurface conditions were explored with four soil test borings drilled in the closed depressions. The boring locations and depths were selected by S&ME. The borings were located in the field by S&ME personnel by measuring distances from known site reference points provided on the site plan supplied by Fulghum MacIndoe & Associates, Inc. Drilling was performed on July 27 and 28, 2004 by S&ME. The borings were advanced using 3.25-inch inside diameter hollow stem augers (HSA) and a CME 550X drill rig. The drill crew worked in general accordance with ASTM D6151 (HSA Drilling). Sampling of overburden soils was accomplished using the standard penetration test

procedure (ASTM D1586). The borings were backfilled with soil cuttings and hole plugs were set just below the ground surface before leaving the site.

SUBSURFACE CONDITIONS

Geologic Conditions

The project site, as most of east Tennessee, lies in the Appalachian Valley and Ridge Physiographic Province. The Province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstones and shales. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestones, dolomites and shales.

Published geologic data indicates that the project site is underlain by bedrock from the Newala formation of the Knox Group. The Newala formation is made up of the Mascot Dolomite and the Kingsport formation and generally consists of siliceous dolomite with minor limestone. The silica is in the form of nodules and lenses of gray to white chert and varies greatly in quantity. The bedrock weathers to a reddish or orange brown clay soil with variable quantities of chert gravel.

Since the Newala formation consists of carbonate rock, the site is susceptible to the typical carbonate hazards of irregular weathering, cave and cavern conditions, and overburden sinkholes. Carbonate rock, while appearing very hard and resistant, is soluble in slightly acidic water. This characteristic, plus differential weathering of the bedrock mass, is responsible for the hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil-supported structures. In East Tennessee, sinkholes occur primarily due to differential weathering of the bedrock and "flushing" or "raveling" of overburden soils into the cavities in the bedrock. The loss of solids creates a cavity or "dome" in the overburden. Growth of the dome over time or excavation over the

dome can create a condition in which rapid, local subsidence or collapse of the roof of the dome occurs.

Subsurface Conditions

Borings B-1 and B-2 were drilled within the limits of closed depression # 1 and encountered a surface layer of topsoil approximately 1 to 2 inches in thickness. Below the topsoil, residual soils were encountered. Residual soils are formed from the in-place weathering of the underlying bedrock. The residual soils in these borings consisted of dark brown clay transitioning to reddish orange clay with varying amounts of chert and black staining. The N-values of the standard penetration resistance tests (SPT) are used to evaluate the relative consistency or density of the subsurface soils. The N-values in the residual clays ranged from 3 blows per foot (bpf) to 35 bpf. However, the N-value in excess of 30 bpf was recorded near the auger refusal depth. In boring B-1, the N-values were typically 3 to 4 throughout the boring depth. Soft N-values throughout the boring depth can be indicative of past or active sinkhole conditions. The residual soils in both borings typically exhibited a soft to firm soil consistency. The natural moisture content of the tested residual soils in these borings ranged from 23 to 36.8 percent.

Boring B-3 was drilled within the limits of closed depression # 2 and encountered a surface layer of topsoil and cultivated soil to a depth of approximately 18 inches. Below this surficial layer, residual soils were encountered. Residual soils are formed from the in-place weathering of the underlying bedrock. The residual soils in this boring consisted of reddish orange clay with varying amounts of chert and rock fragments. The N-values in the residual clays ranged from 6 to 13 bpf, which indicates a firm to stiff soil consistency. The natural moisture content of the tested residual soils in this boring ranged from 25 to 50.1 percent.

Boring B-4 was drilled within the limits of closed depression # 3 and encountered a surface layer of topsoil to a depth of approximately 2 inches. Below the topsoil, residual soils were encountered. The residual soils in this boring consisted of reddish orange clay with varying amounts of black staining, chert, and rock fragments. The N-values in the residual clays ranged from 5 bpf to 50 blows for 1 inch of penetration. However, the N-value in excess of 30 bpf was recorded near the auger refusal depth. The residual soils in this boring typically exhibited a firm to stiff soil consistency.

Refusal materials were encountered at each of the boring locations at depths ranging from 24 to 43 feet. Refusal is a designation applied to any material that cannot be penetrated by the power auger. Auger refusal may indicate dense cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. Rock coring was beyond the scope of this exploration; therefore, the character and continuity of the refusal materials were not determined.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the attachments should be reviewed for specific information at individual boring locations. The depth and thickness of the subsurface strata indicated on the test boring records were generalized from and interpolated between test locations. The transition between materials will be more or less gradual than indicated and may be abrupt. Information on actual subsurface conditions exists only at the specific boring locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between boring locations. The stratification lines were used for our analytical purposes and, unless specifically stated otherwise, should not be used as the basis for design or construction cost estimates.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our exploration, we do not recommend construction in closed depression # 1. Soft to firm soils were encountered from the ground surface to the refusal depth in boring B-1 and in portions of boring B-2. These soils are indicative of either past or on-going sinkhole activity. Closed depressions # 2 and # 3 appear to have been the result of construction activities around or on the site. We would expect construction in these areas would have sinkhole risk similar to other areas on the site. Stiff residual soils were typically encountered in these borings to the auger refusal depths. A relatively thick layer of topsoil/cultivated soil was encountered in boring B-3 in closed depression # 2. Additional stripping depth may be required in this area to achieve suitable subgrade for fill placement.

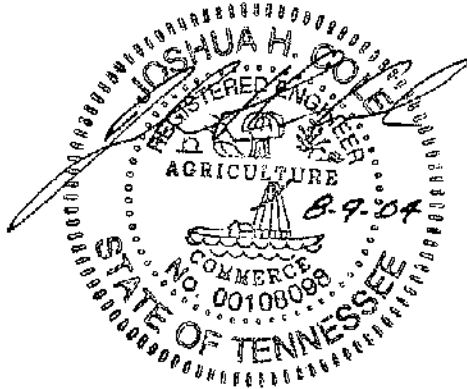
There is some inherent sinkhole risk associated with construction at sites underlain by carbonate rock. Considering the results of our field exploration and site reconnaissance, however, there does not appear to be elevated sinkhole risk in closed depressions # 2 and # 3. This is not to say that there is no risk of sinkhole activity in these areas, but rather that there are no indications of previous or current sinkhole activity. Nonetheless, to reduce the risk of sinkhole activity, we recommend that the depressed areas be filled and the construction grades be maintained to divert surface drainage off the site at all times during construction. In addition, water lines, storm sewers, roof drains, and other hydraulic structures should be designed to deter leaking and to divert flow away from these low lying areas. Granular backfill in utility trenches or other excavations should consist of compacted, well-graded material such as crusher run gravel. The use of an open graded stone such as No. 57 stone is not recommended due to the tendency for this material to act as a conduit for subsurface water. If sinkhole conditions are encountered, the type of corrective action should be determined by S&ME during subgrade construction.

LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

If you have any questions regarding the content of this report, or require additional information, please contact us at your convenience.

Sincerely,
S&ME, Inc.



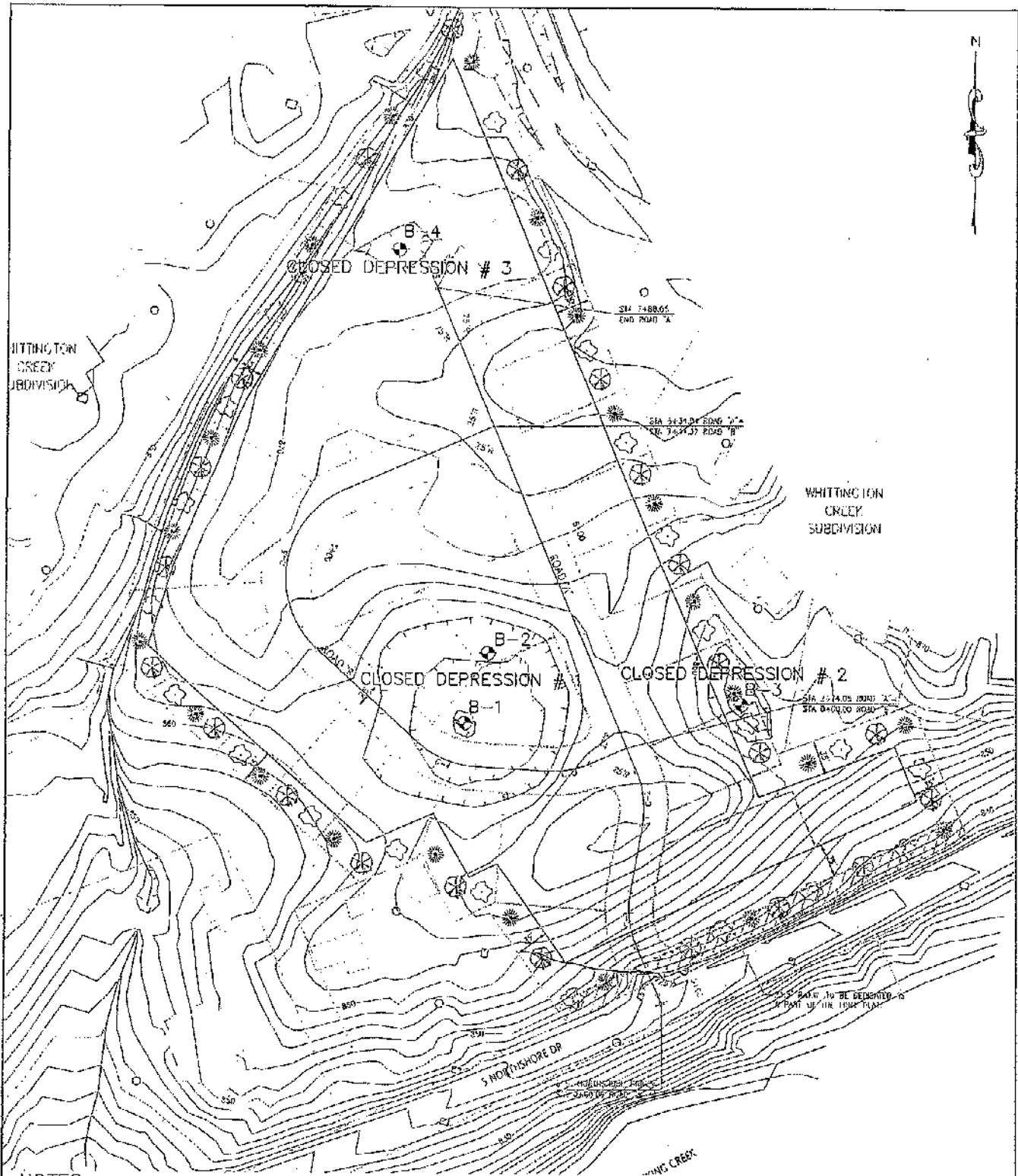
Joshua H. Cole, P.E.
Project Engineer
TN 108098

A handwritten signature in black ink, appearing to read "D. Huckaba".

Dennis A. Huckaba, P.E.
Geotechnical Department Manager
TN 102311

Attachments

ATTACHMENTS



NOTES:

- 1) Boring locations are shown in general arrangement only.
- 2) Do not use boring locations for determination of distances or quantities.
- 3) Base map provided by: Fulghum MacIndoe & Associates, Inc.

LEGEND

- B-1
- ⊕ APPROXIMATE LOCATION OF SOIL TEST BORING

SCALE:	NTS
CHECKED BY:	DAH
DRAWN BY:	JHC
DATE:	8-9-04



Boring Location Plan Northshore Subdivision 9117 S. Northshore Drive Knoxville, Tennessee	
JOB NO:	1431-04-503


















FIGURE NO:	1
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DJL00201

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS





SOIL TYPES

(Shown in Graphic Log)

	Fill
	Asphalt
	Concrete
	Topsoil
	Gravel
	Sand
	Silt
	Clay
	Organic
	Silty Sand
	Clayey Sand
	Sandy Silt
	Clayey Silt
	Sandy Clay
	Silty Clay
	Partially Weathered Rock
	Cored Rock

WATER LEVELS

(Shown in Water Level Column)

-  = Water Level At Termination of Boring
-  = Water Level Taken After 24 Hours
-  = Loss of Drilling Water
-  = Hole Cave

CONSISTENCY OF COHESIVE SOILS





<u>CONSISTENCY</u>	<u>STD. PENETRATION RESISTANCE BLOWS/FOOT</u>
Very Soft	0 to 2
Soft	3 to 4
Firm	5 to 8
Stiff	9 to 15
Very Stiff	16 to 30
Hard	31 to 50
Very Hard	Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

<u>RELATIVE DENSITY</u>	<u>STD. PENETRATION RESISTANCE BLOWS/FOOT</u>
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	Over 50

SAMPLER TYPES

(Shown in Samples Column)

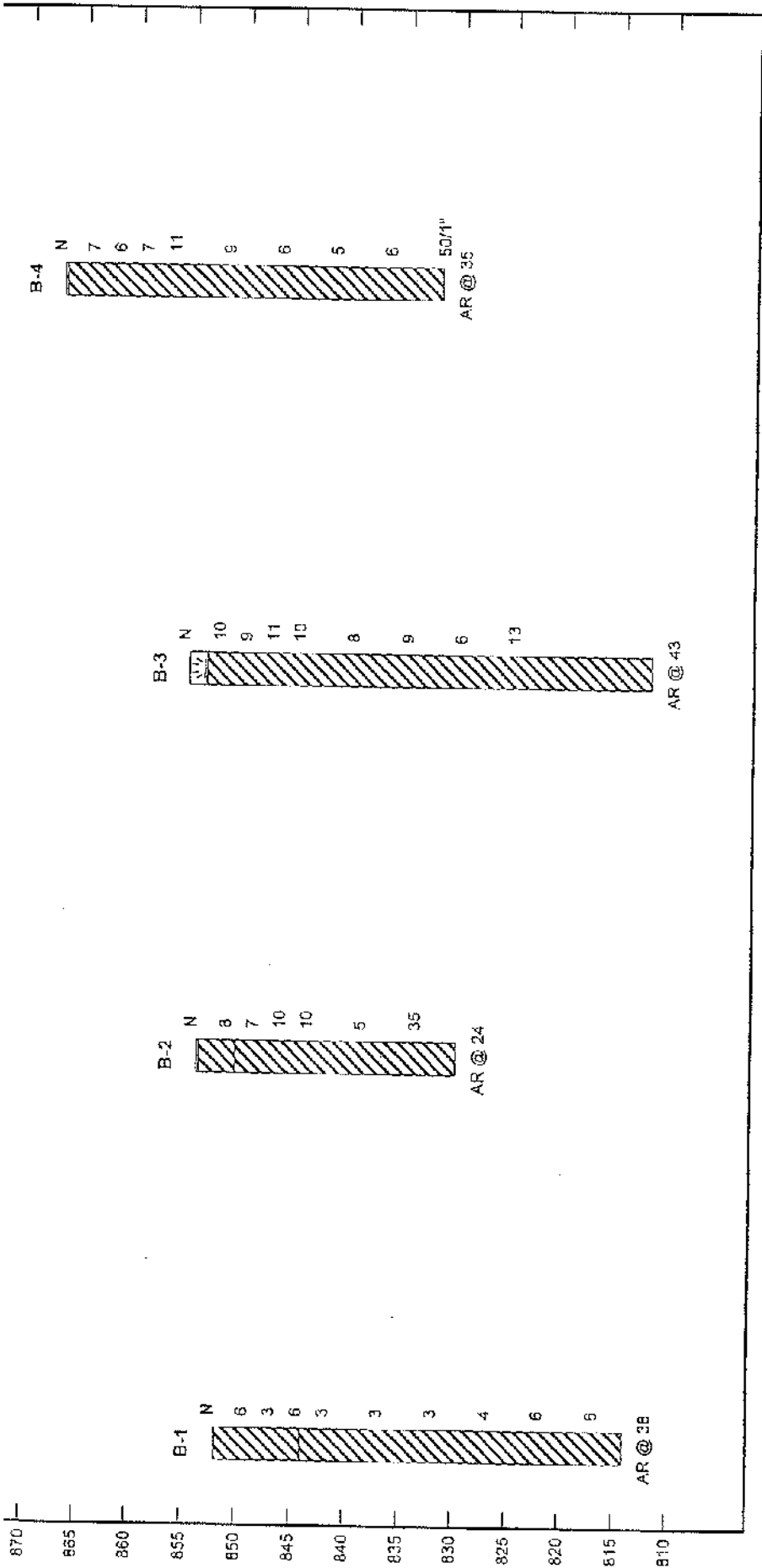
-  Shelby Tube
-  Split Spoon
-  Rock Core
-  No Recovery

TERMS

Standard Penetration Resistance - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586.

REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RQD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks excluded) Divided by the Total Length of the Core Run Times 100%.



= Water Level At Termination of Boring
 = Water Level Taken After 24 Hours
 BT = Boring Terminated
 AR = Auger Refusal
 CT = Coring Terminated

N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.



Project: Fuller-Sims Development / 9117 S. Noy
 Location: Knoxville, Tennessee

OB NO: 1431-04-503

DATE: 7/28/04

PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-1

DATE DRILLED: 7/27/04 ELEVATION: 852
 DRILLING METHOD: CME 550X, 3/4" H.S.A. BORING DEPTH: 38.0 feet
 LOGGED BY: J. Cole WATER LEVEL @ TOB: Dry
 DRILLER: D. Hedges WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE	
							10	20	30	60	80		
0 - 1		Topsoil (1 inch)			1	☒							6
1 - 5		Clay (CH) - dark brown; firm to soft; very moist; with trace sand; (Residuum)		847	2	☒							3
5 - 10					3	☒							6
10 - 15				842	4	☒							3
15 - 20				837	5	☒							3
20 - 25		Clay (CH) - reddish brown with black staining; soft to firm; very moist to moist; with chert and rock fragments; (Residuum)		832	6	☒							3
25 - 30				827	7	☒							4
30 - 35				822	8	☒							6
35 - 38				817	9	☒							6
38		Auger Refusal at 38 feet											

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

DJL00204



PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-2

DATE DRILLED: 7/27/04 ELEVATION: 854
 DRILLING METHOD: GME 550X, 3/4" H.S.A. BORING DEPTH: 24.0 feet
 LOGGED BY: J. Cole WATER LEVEL @ TOB: Dry
 DRILLER: D. Hedges WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE	
							10	20	30	60	80		
0 - 2		Topsoil (2 inches)			1	⊗							8
2 - 5		Clay (CH) - dark brown; firm; very moist; with trace sand; (Residuum)		849	2	⊗							7
5 - 10		Clay (CH) - reddish orange; stiff to firm; moist; with chert fragments; with rock fragments at depth; (Residuum) Note: Sample # 6 N-value inflated due to abundant rock fragments.		844	3	⊗							10
10 - 15			844	4	⊗								10
15 - 20				839	5	⊗							5
20 - 24				834	6	⊗							35
24 - 24		Auger Refusal at 24 feet											

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-3

DATE DRILLED: 7/28/04

ELEVATION: 855

DRIILLING METHOD: CME 550X, 3 1/2" H.S.A.

BORING DEPTH: 43.0 feet

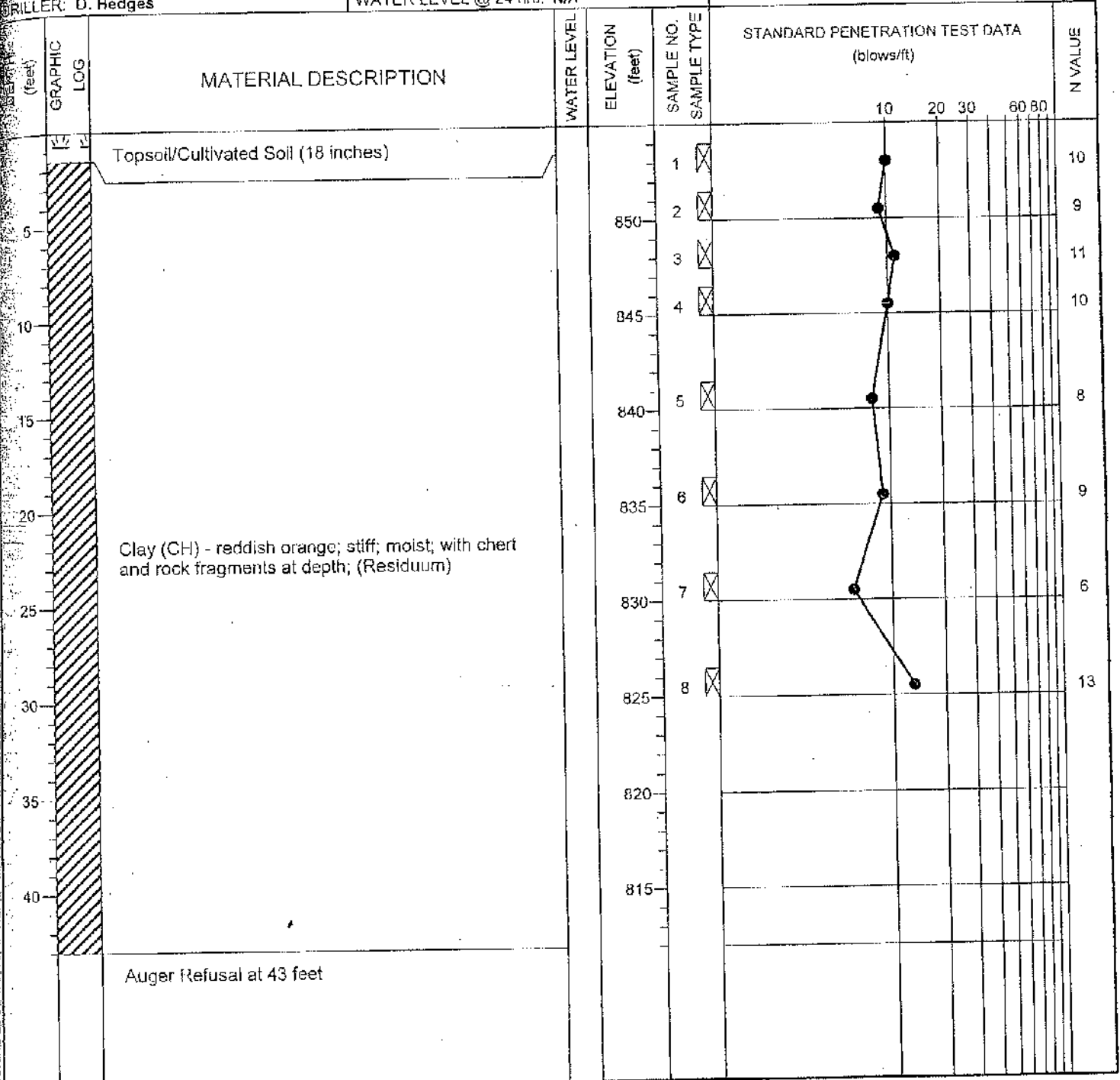
LOGGED BY: J. Cole

WATER LEVEL @ TOB: Dry

DRILLER: D. Hedges

WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.



NOTES:

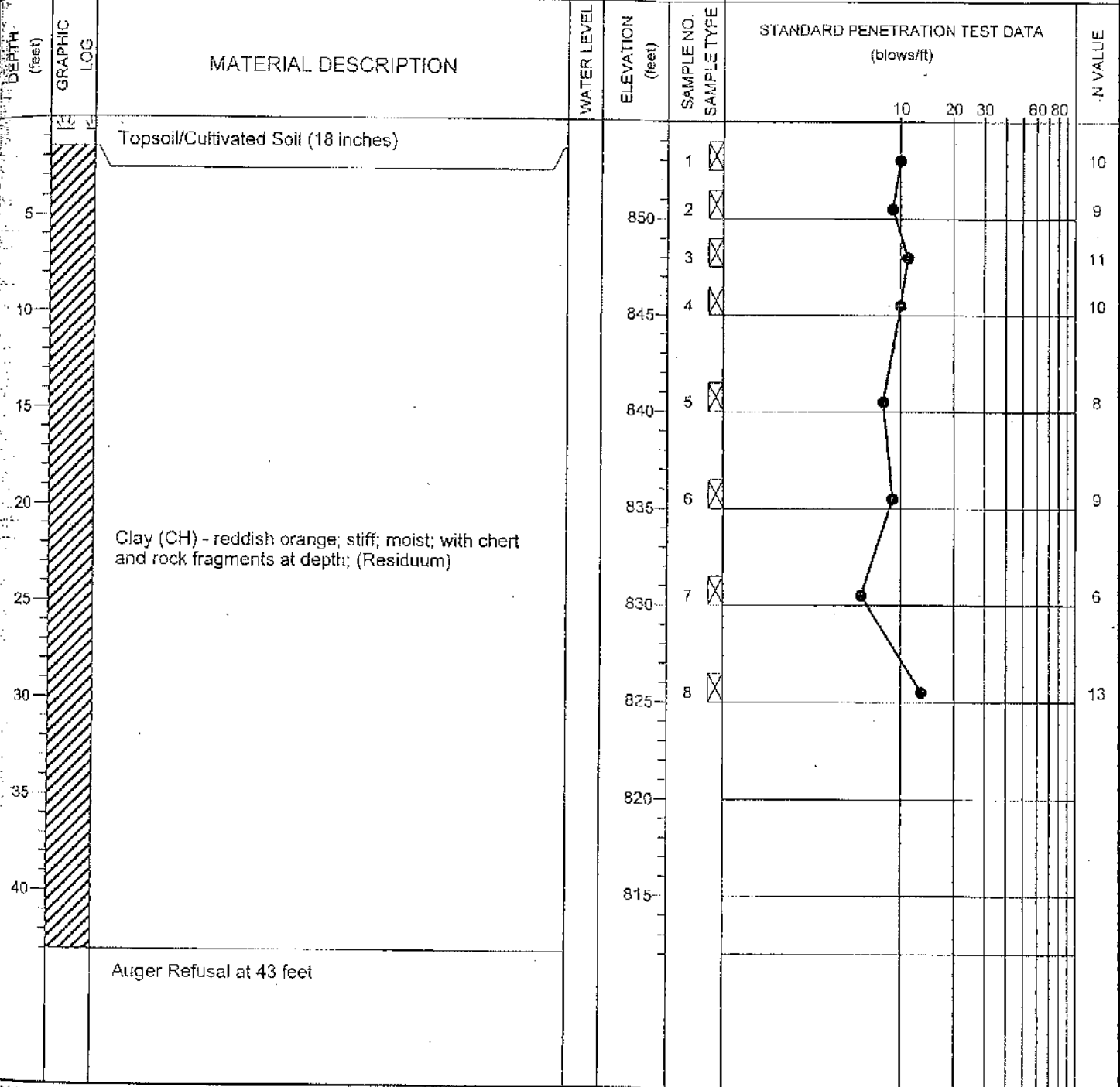
1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
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3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-3

DATE DRILLED: 7/28/04
 ELEVATION: 855
 DRILLING METHOD: CME 550X, 3 1/2" H.S.A.
 BORING DEPTH: 43.0 feet
 LOGGED BY: J. Cole
 WATER LEVEL @ TOB: Dry
 DRILLER: D. Hedges
 WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.



NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
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3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

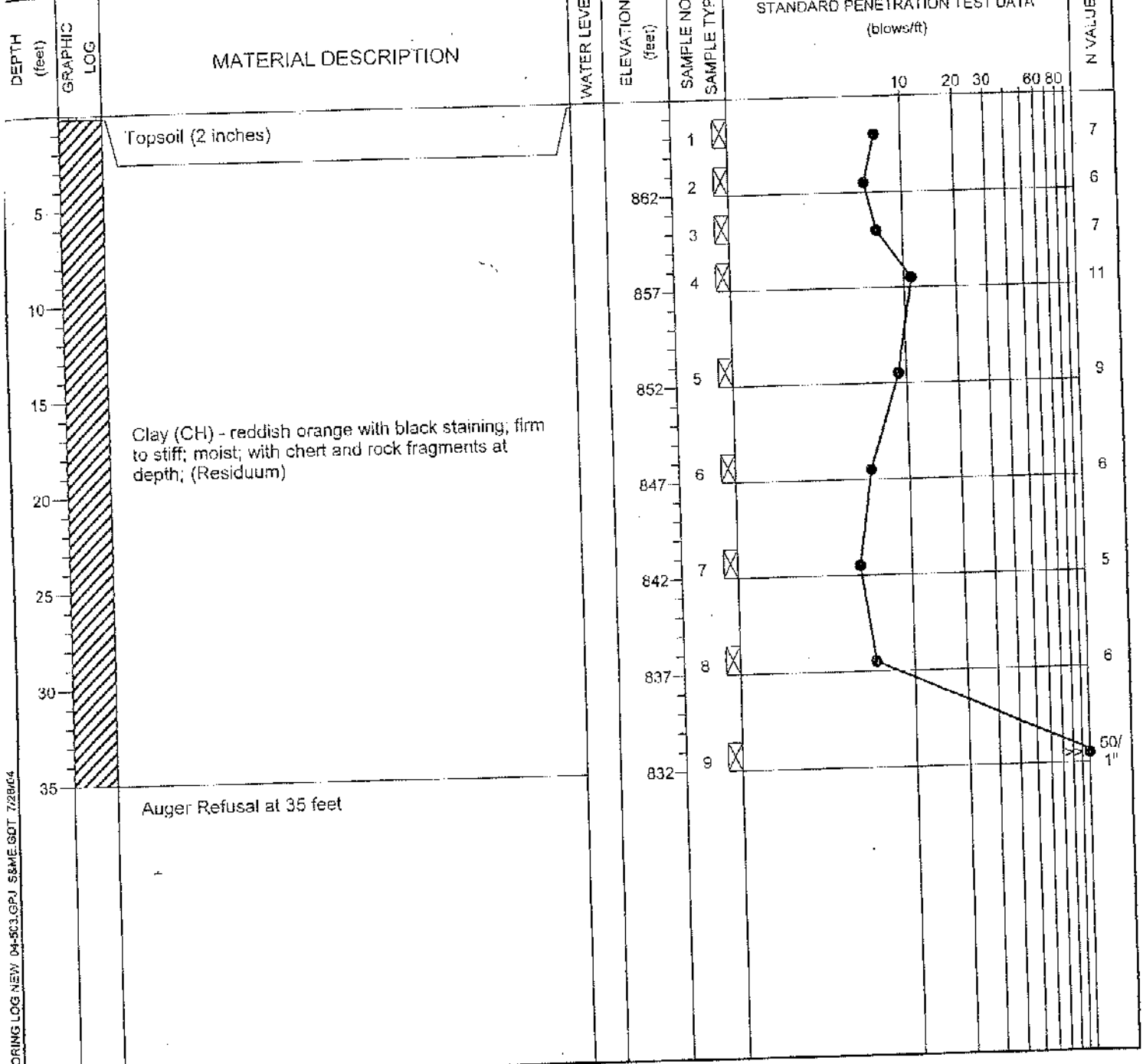


PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-4

DATE DRILLED: 7/28/04
 DRILLING METHOD: CME 550X, 3/4" H.S.A.
 LOGGED BY: J. Cole
 DRILLER: D. Hedges

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.



BORING LOG NEW D4-503.GPJ S&ME.GDT 7/28/04

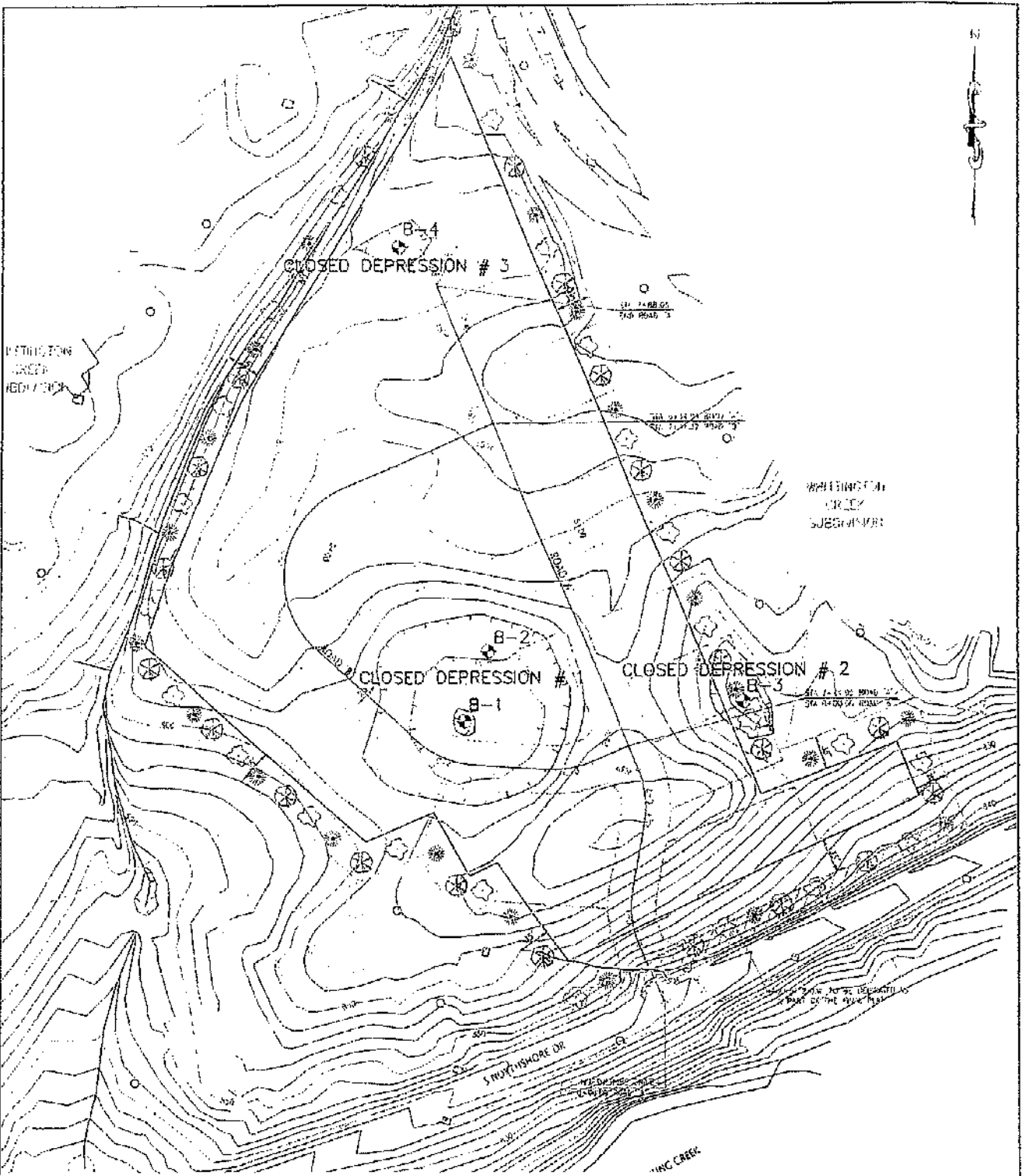
NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



SOIL DATA SUMMARY
Fuller Sims Development / 9117 S. Northshore
S&ME Project No. 1431-04-503
August 3, 2004

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-1	SS-1	1.0-2.5	25.7%				
B-1	SS-2	3.5-5.0	27.4%				
B-1	SS-3	6.0-7.5	27.4%				
B-1	SS-4	8.5-10.0	26.1%				
B-1	SS-5	13.5-15.0	28.1%				
B-1	SS-6	18.5-20.0	23.0%				
B-1	SS-7	23.5-25.0	26.7%				
B-1	SS-8	28.5-30.0	29.4%				
B-1	SS-9	33.5-35.0	36.8%				
B-3	SS-1	1.0-2.5	25.0%				
B-3	SS-2	3.5-5.0	30.3%				
B-3	SS-3	6.0-7.5	29.7%				
B-3	SS-4	8.5-10.0	28.2%				
B-3	SS-5	13.5-15.0	44.6%				
B-3	SS-6	18.5-20.0	31.9%				
B-3	SS-7	23.5-25.0	50.1%				
B-3	SS-8	28.5-30.0	42.1%				



NOTES:

- 1) Boring locations are shown in general arrangement only.
- 2) Do not use boring locations for determination of distances or quantities.
- 3) Base map provided by: Fulghum MacIndoe & Associates, Inc.

LEGEND

B-1

⊗ APPROXIMATE LOCATION OF SOIL TEST BORING

SCALE:	NTS
CHECKED BY:	DAH
DRAWN BY:	JHC
DATE:	8-9-04



Boring Location Plan Northshore Subdivision 9117 S. Northshore Drive Knoxville, Tennessee	
JOB NO:	1431-04-503

FIGURE NO:	1
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ASHLAND CREEK SUBDIVISION KNOXVILLE, TENNESSEE

104-169

Ashland Creek
Cottleston Court

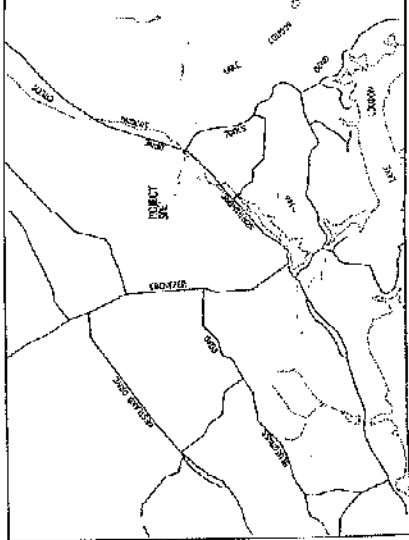
PREPARED BY:



FULGHUM, MACINDOE & ASSOCIATES, INC.
CONTACT: WILLIAM C. FULGHUM, JR.
9237 MIDDLEBROOK PIKE
KNOXVILLE, TENNESSEE 37131
TELEPHONE: (865) 650-6242
FAX: (865) 650-2188

*5/13/01
and middlebrook on public map*

SWIFT COUNTY
DEPARTMENT OF ENGINEERING
APPROVED
DATE: JUNE 11, 2001
BY: [Signature]



DEVELOPER:

FULLER - SIMS DEVELOPMENT
CONTACT: TRAVIS FULLER
9050 EXECUTIVE PARK DRIVE, SUITE 200A
KNOXVILLE, TENNESSEE 37923
TELEPHONE: (865) 740-7434
TELEPHONE: (865) 740-2017

DRAWING INDEX:

SHEET NO.	TITLE
C1	COVER SHEET
C2	ROADWAY LAYOUT AND PAVING PLAN
C3	GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C4	WATER SYSTEM PLAN
C5	SANITARY SWER PLAN AND PROFILE
C6	ROADWAY ROFILES
C7	SITE DETAIL
C8	SITE DETAIL

104-169

EXHIBIT 6

FULLER - SIMS DEVELOPMENT

NO.	REV.	DATE	BY	DESCRIPTION

C1

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMITS	12/10/01
2	REVISED	
3	REVISED	
4	REVISED	
5	REVISED	
6	REVISED	
7	REVISED	
8	REVISED	
9	REVISED	
10	REVISED	
11	REVISED	
12	REVISED	

SITE LAYOUT AND PAVING PLAN

FULLER, SIMS DEVELOPMENT
 8050 ENGINEERING PARK DRIVE, SUITE 200A
 KNOXVILLE, TENNESSEE 37923
 CONTRACT NUMBER: 270-2434
 TELEPHONE NO.: (615) 790-2434

ASHLAND CREEK SUBDIVISION
 9127 S. MONTICELLO DRIVE
 KNOXVILLE, TENNESSEE 37922



HORIZONTAL CURVE DATA TABLE

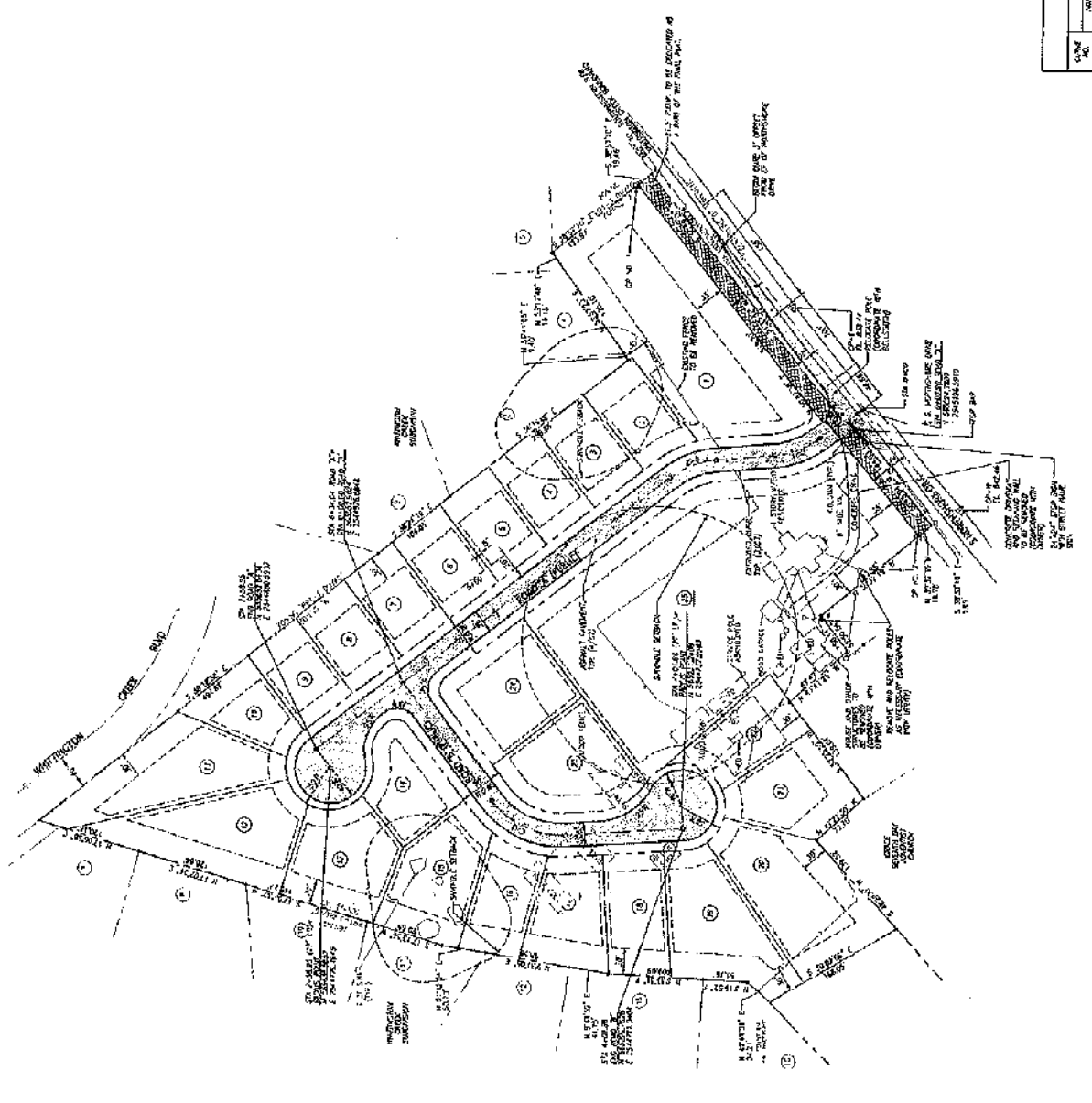
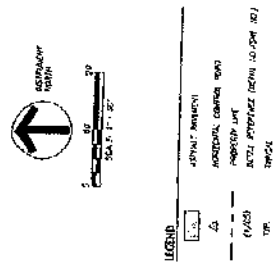
CURVE NO.	PI POINTS (ELEVATION)	PVI (ELEVATION)	PC (ELEVATION)	PT (ELEVATION)	STATIONING	LENGTH (FT)	DELTA (DEGREES)	RADIUS (FT)	CHORD BEARING
C-1	15884.1535	15884.1535	15884.1535	15884.1535	10+00	100	18.00	1588.4	S 81.00° E 100.00
C-2	15884.1535	15884.1535	15884.1535	15884.1535	10+100	100	18.00	1588.4	S 81.00° E 100.00

HORIZONTAL CONTROL POINT TABLE

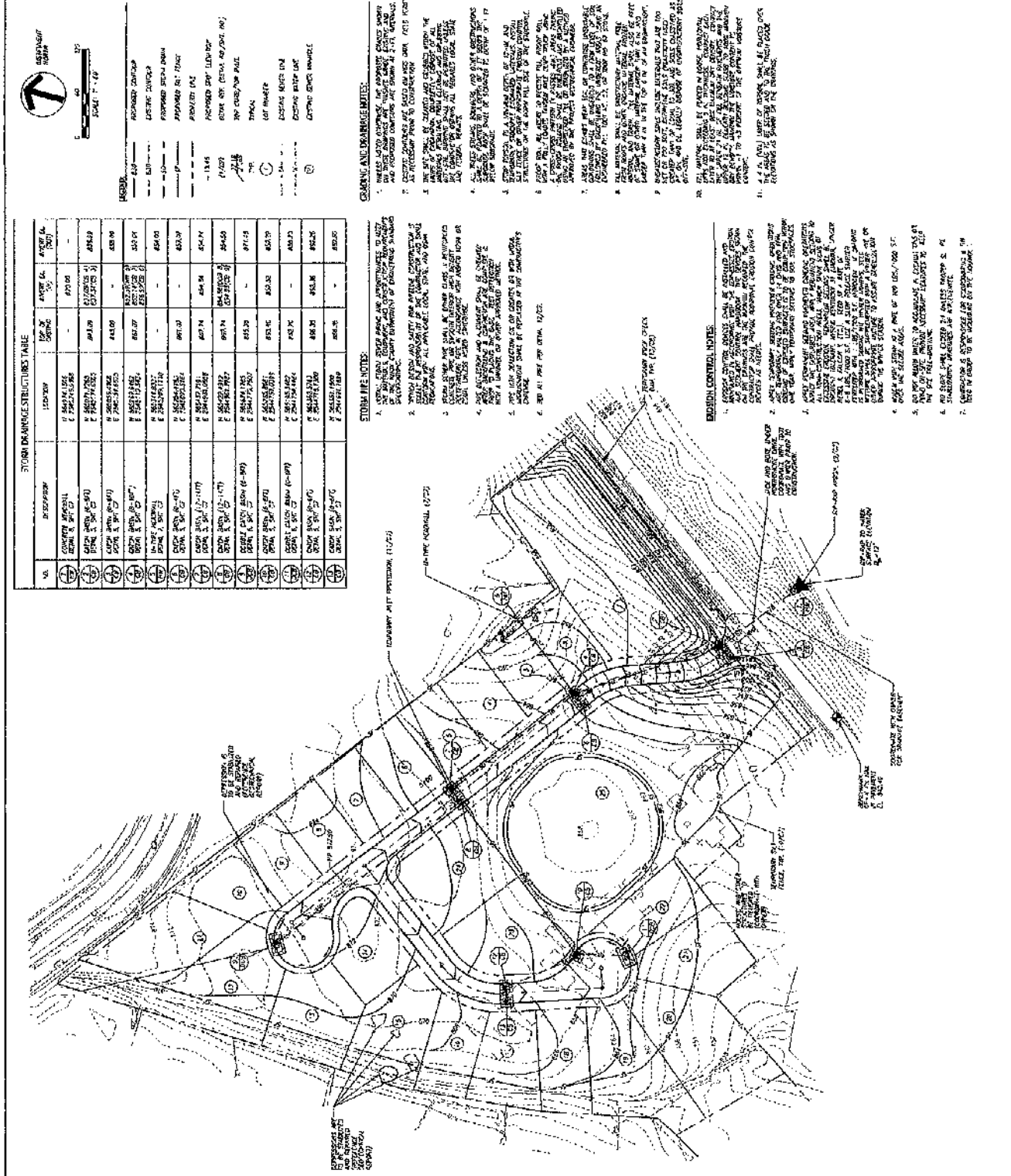
POINT NO.	POINT DESCRIPTION	EASTING	NORTHING
CP 1	STATION 10+00	25454.0000	8000.0000
CP 2	STATION 10+100	25454.0000	8000.0000
CP 3	STATION 10+200	25454.0000	8000.0000
CP 4	STATION 10+300	25454.0000	8000.0000
CP 5	STATION 10+400	25454.0000	8000.0000
CP 6	STATION 10+500	25454.0000	8000.0000
CP 7	STATION 10+600	25454.0000	8000.0000
CP 8	STATION 10+700	25454.0000	8000.0000
CP 9	STATION 10+800	25454.0000	8000.0000
CP 10	STATION 10+900	25454.0000	8000.0000
CP 11	STATION 11+000	25454.0000	8000.0000

SPECIAL NOTES:
 1. THIS PLAN IS TO BE CONSIDERED AS A PART OF THE SITE PLAN.
 2. THIS PLAN IS TO BE CONSIDERED AS A PART OF THE SITE PLAN.
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 19. THIS PLAN IS TO BE CONSIDERED AS A PART OF THE SITE PLAN.
 20. THIS PLAN IS TO BE CONSIDERED AS A PART OF THE SITE PLAN.

1. ALL DIMENSIONS ARE IN FEET AND DECIMALS THEREOF.
2. ALL DIMENSIONS ARE TO BE TAKEN AS SHOWN ON THIS PLAN.
3. ALL DIMENSIONS ARE TO BE TAKEN AS SHOWN ON THIS PLAN.
4. ALL DIMENSIONS ARE TO BE TAKEN AS SHOWN ON THIS PLAN.
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19. ALL DIMENSIONS ARE TO BE TAKEN AS SHOWN ON THIS PLAN.
20. ALL DIMENSIONS ARE TO BE TAKEN AS SHOWN ON THIS PLAN.



SITE LAYOUT AND PAVING PLAN



STORM DRAINAGE STRUCTURES TABLE

NO.	DESCRIPTION	150' X 75'	AVG. CA. (SQ. FT.)	AVG. CA. (SQ. FT.)
1	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
2	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
3	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
4	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
5	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
6	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
7	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
8	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
9	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
10	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
11	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
12	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
13	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
14	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
15	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
16	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
17	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
18	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
19	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250
20	CONCRETE STORM WATER STRUCTURE	150' X 75'	11250	11250

STORM PIPE TABLE

PIPE NO.	START STA.	END STA.	LENGTH (FT.)	DIAMETER (IN.)
1	15+00	15+50	50	18
2	15+50	16+00	50	18
3	16+00	16+50	50	18
4	16+50	17+00	50	18
5	17+00	17+50	50	18
6	17+50	18+00	50	18
7	18+00	18+50	50	18
8	18+50	19+00	50	18
9	19+00	19+50	50	18
10	19+50	20+00	50	18
11	20+00	20+50	50	18
12	20+50	21+00	50	18
13	21+00	21+50	50	18
14	21+50	22+00	50	18
15	22+00	22+50	50	18
16	22+50	23+00	50	18
17	23+00	23+50	50	18
18	23+50	24+00	50	18
19	24+00	24+50	50	18
20	24+50	25+00	50	18
21	25+00	25+50	50	18
22	25+50	26+00	50	18
23	26+00	26+50	50	18
24	26+50	27+00	50	18
25	27+00	27+50	50	18
26	27+50	28+00	50	18
27	28+00	28+50	50	18
28	28+50	29+00	50	18
29	29+00	29+50	50	18
30	29+50	30+00	50	18

- GENERAL AND REMARKS:**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE U.S. NATIONAL BUILDING CODES AND ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
 - ALL UTILITIES SHALL BE LOCATED AND DEPTH MARKED PRIOR TO CONSTRUCTION.
 - THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
 - ALL EXCAVATIONS SHALL BE PROTECTED AND SHORED TO PREVENT COLLAPSE.
 - ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION.
 - ALL MATERIALS SHALL BE STORED AND HANDLED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
 - ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 - ALL COSTS OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - ALL CHANGES SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
 - ALL UTILITIES SHALL BE DEPTH MARKED AND PROTECTED PRIOR TO CONSTRUCTION.
 - ALL EXCAVATIONS SHALL BE PROTECTED AND SHORED TO PREVENT COLLAPSE.
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 - ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
 - ALL COSTS OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - ALL CHANGES SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

- STORM PIPE NOTES:**
- ALL STORM PIPES SHALL BE CONCRETE PIPE WITH A MINIMUM WALL THICKNESS OF 4 INCHES.
 - ALL STORM PIPES SHALL BE INSTALLED WITH A MINIMUM COVER OF 18 INCHES.
 - ALL STORM PIPES SHALL BE INSTALLED WITH A MINIMUM SLOPE OF 0.5%.
 - ALL STORM PIPES SHALL BE INSTALLED WITH A MINIMUM SLOPE OF 0.5%.
 - ALL STORM PIPES SHALL BE INSTALLED WITH A MINIMUM SLOPE OF 0.5%.
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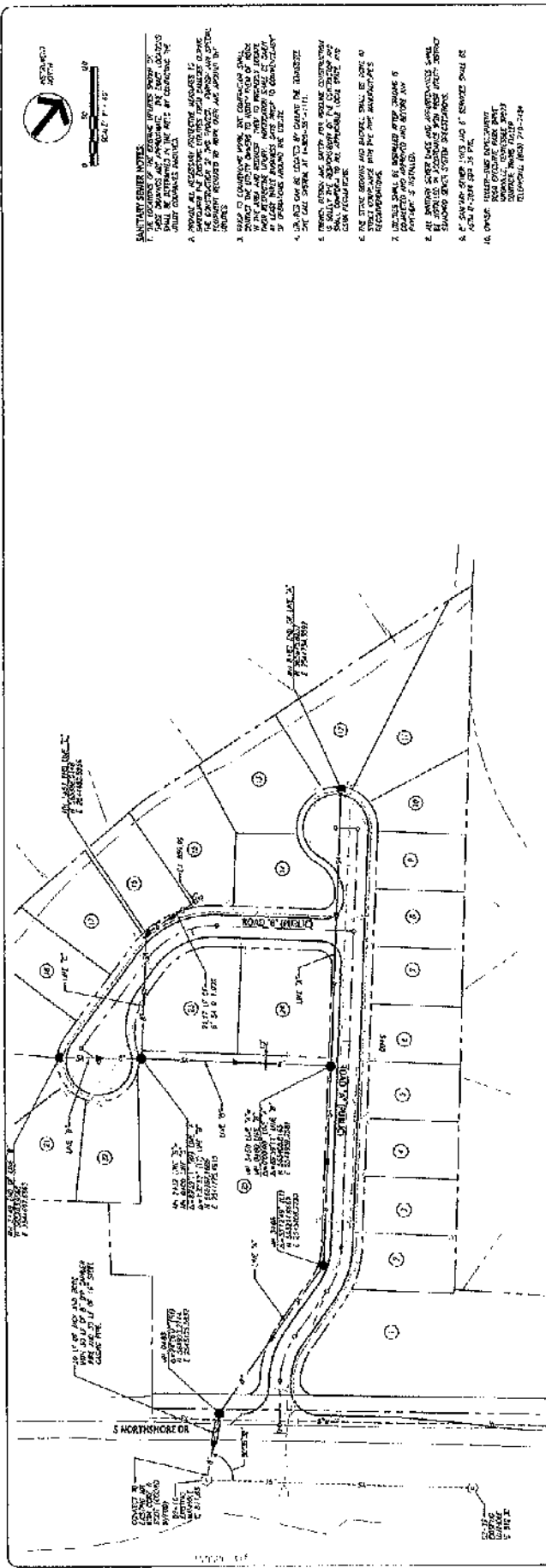
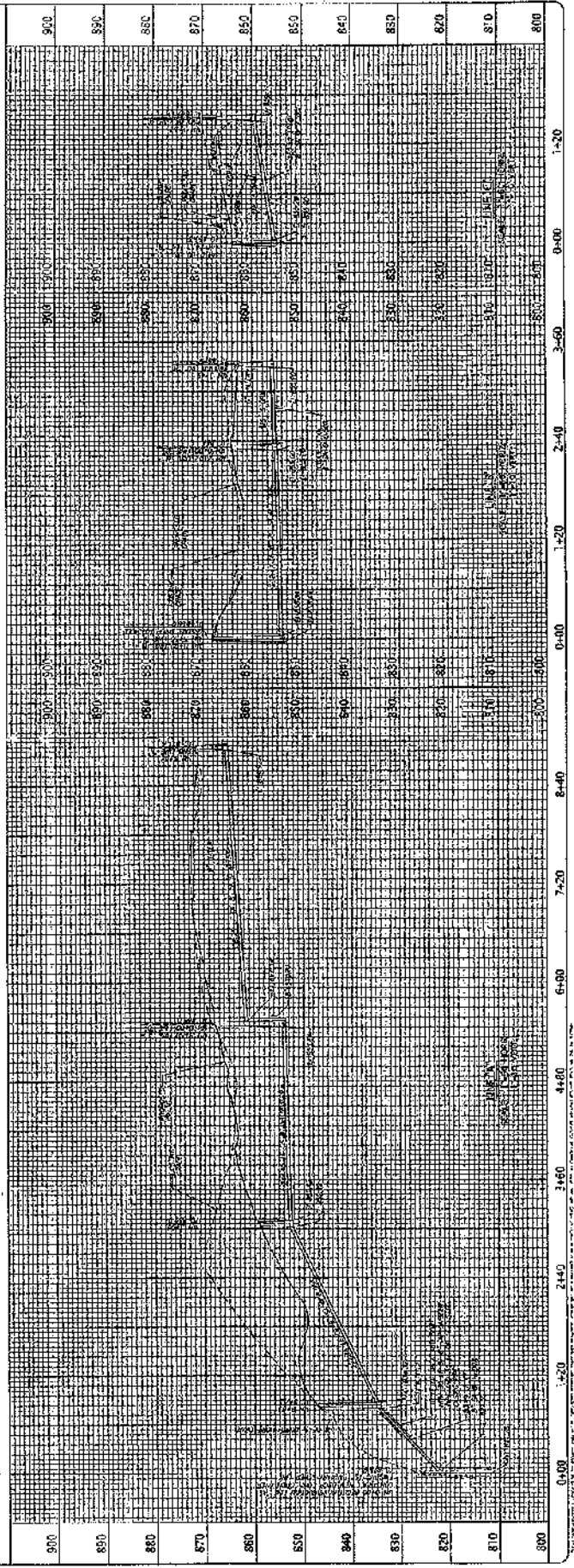
- ADDITIONAL NOTES:**
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE U.S. NATIONAL BUILDING CODES AND ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
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 - ALL CHANGES SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

Project No.	202408 04
Sheet No.	17/27
Date	1/13/24
Scale	AS SHOWN
Author	
Checker	
Project Name	FUELER, SIMS DEVELOPMENT
Project Location	9550 EXECUTIVE PARK DRIVE, SUITE 200A, KNOXVILLE, TENNESSEE 37923
Contract No.	202408 04
Client	TRAVIS EUBANK
Contractor	TRAVIS EUBANK
Engineer	TRAVIS EUBANK
Professional Seal	

PLAN AND PROFILE

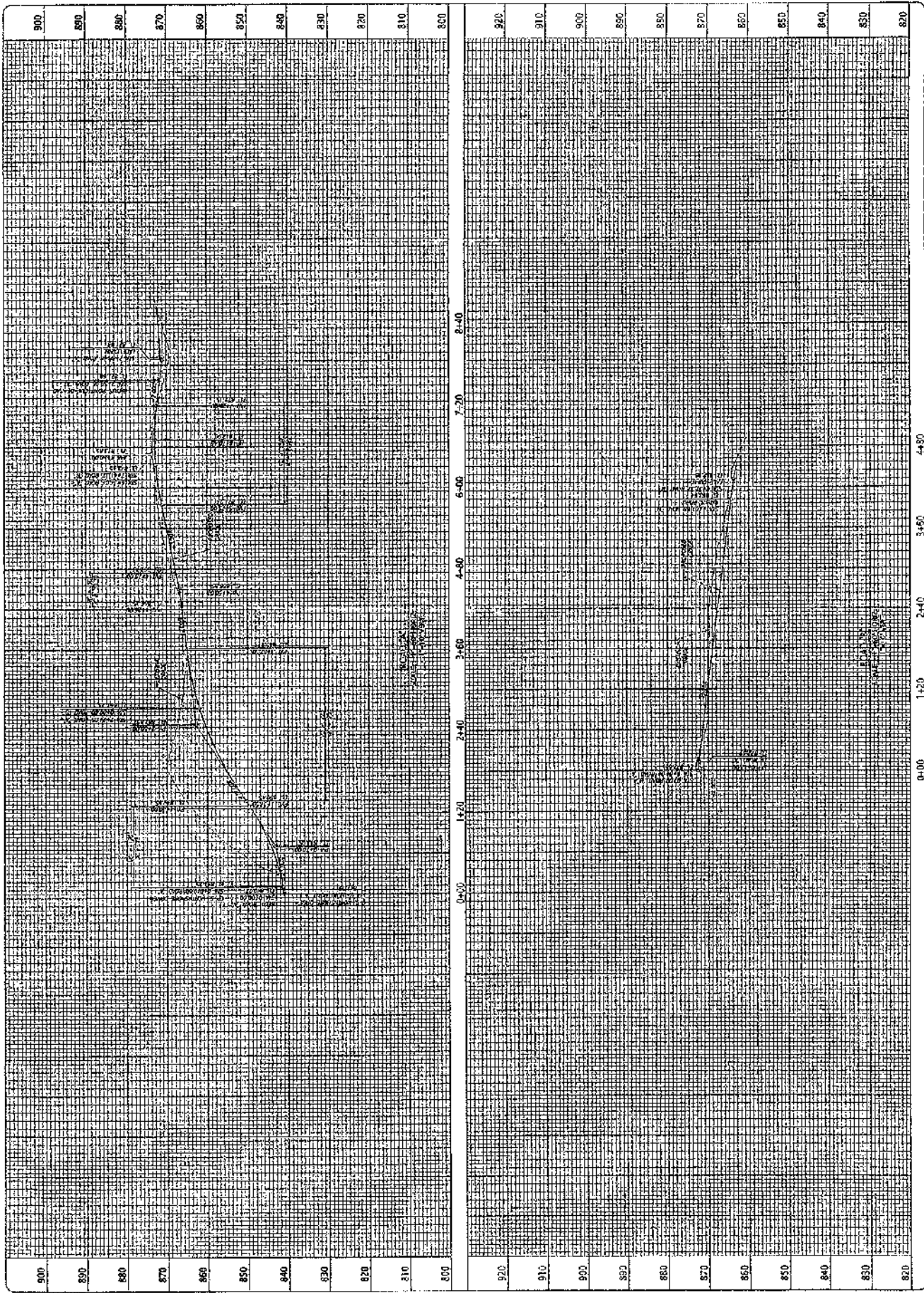
FUELER, SIMS DEVELOPMENT
 9550 EXECUTIVE PARK DRIVE, SUITE 200A
 KNOXVILLE, TENNESSEE 37923
 CONTACT: TRAVIS EUBANK
 TELEPHONE NO.: (605) 740-7434

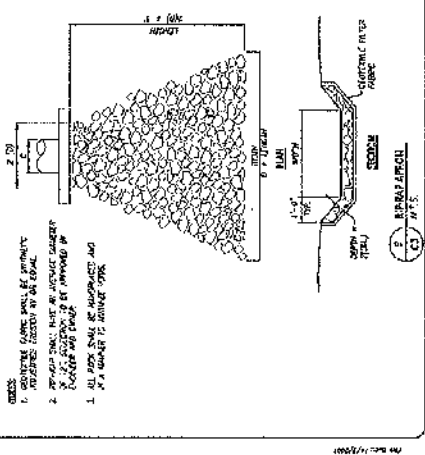
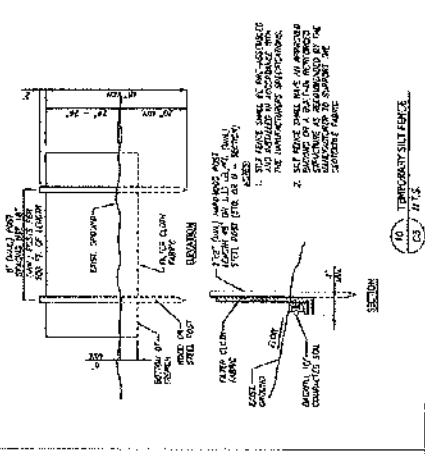
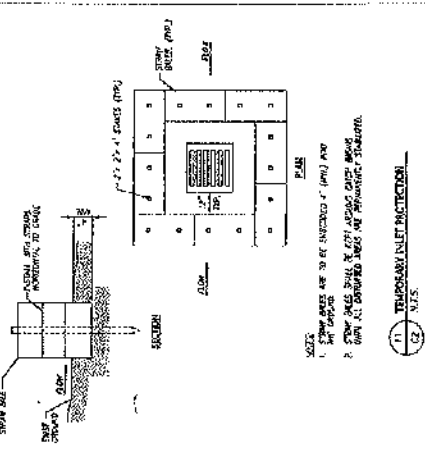
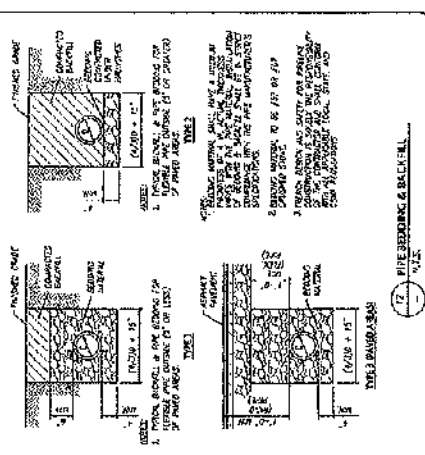
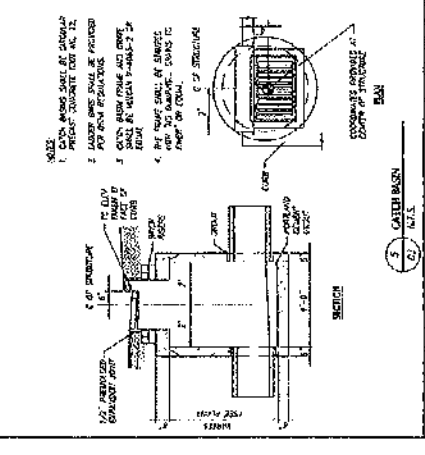
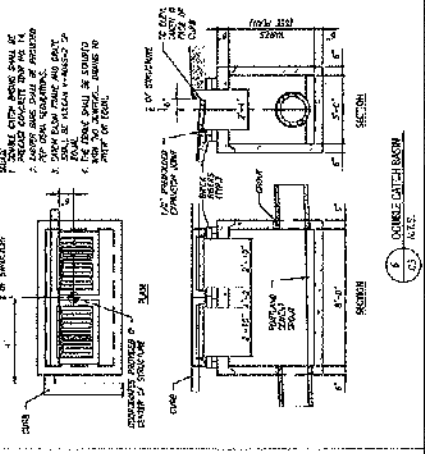
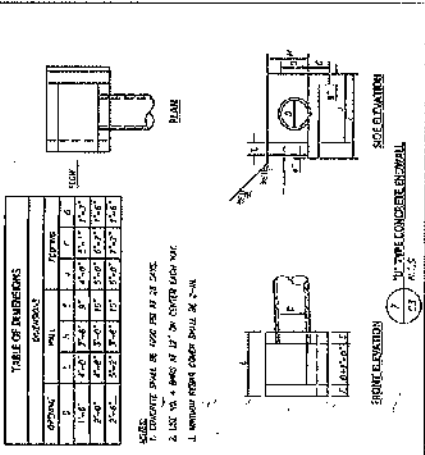
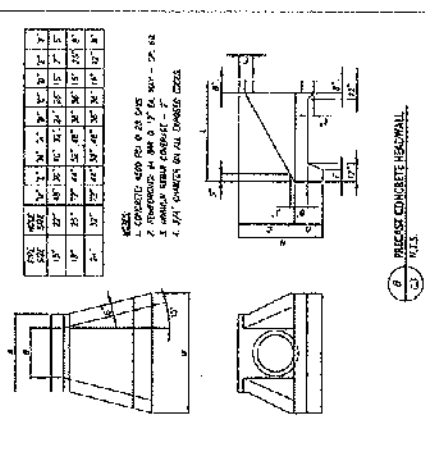
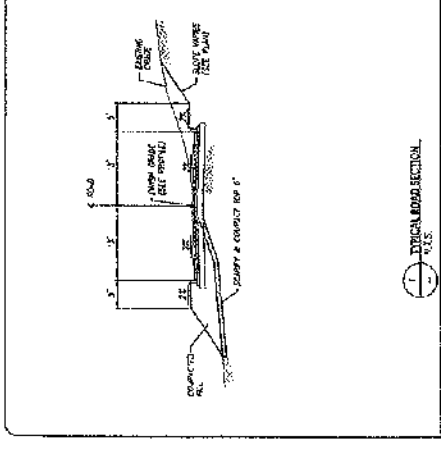
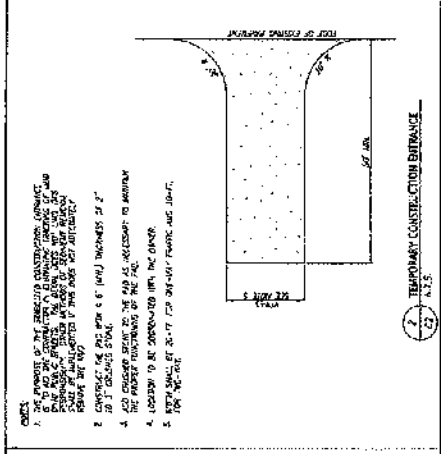
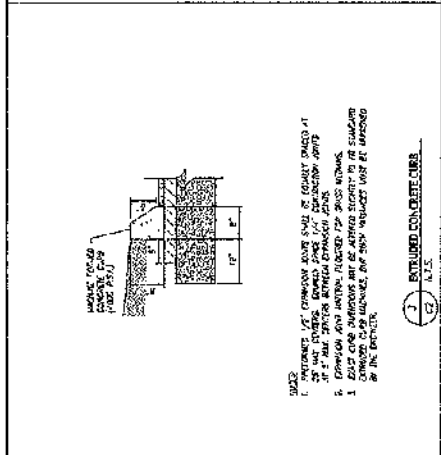
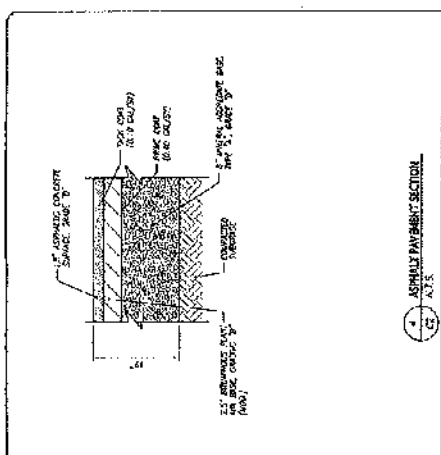
ASHLAND CREEK SUBDIVISION
 9117 NORTHRIDGE DRIVE
 KNOXVILLE, TENNESSEE 37922

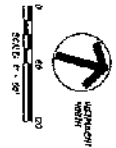
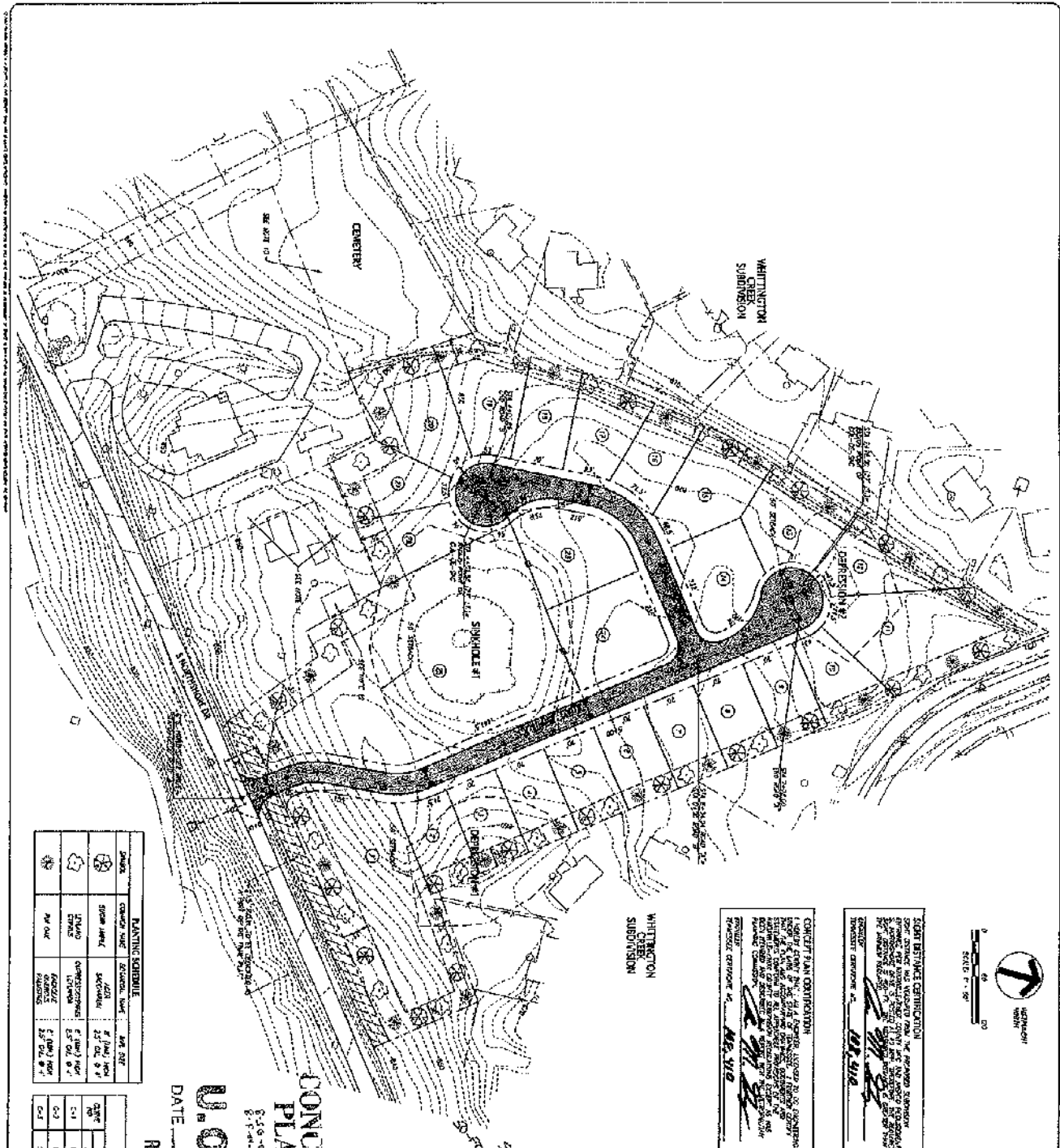


SANITARY ENGINE NOTES:

1. THE EXISTING OF THE EXISTING SEWER MAINS IS TO BE MAINTAINED AND NOT TO BE REMOVED OR ALTERED IN ANY MANNER.
2. ALL NEW SEWER MAINS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL PLUMBING CODE AND THE LATEST EDITIONS OF THE INTERNATIONAL SANITARY CODE.
3. ALL NEW SEWER MAINS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL PLUMBING CODE AND THE LATEST EDITIONS OF THE INTERNATIONAL SANITARY CODE.
4. ALL NEW SEWER MAINS SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL PLUMBING CODE AND THE LATEST EDITIONS OF THE INTERNATIONAL SANITARY CODE.
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SHORT NOTICE CERTIFICATION
 I, the undersigned, being a duly licensed Professional Engineer in the State of Tennessee, hereby certify that the above described plan was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer in the State of Tennessee.
 PROJECT: NORTHSHORE SUBDIVISION
 DRAWING NO. **101-018**

CONCEPT PLAN CERTIFICATION
 I, the undersigned, being a duly licensed Professional Engineer in the State of Tennessee, hereby certify that the above described plan was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer in the State of Tennessee.
 PROJECT: NORTHSHORE SUBDIVISION
 DRAWING NO. **101-018**

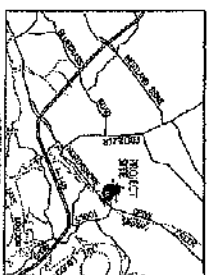
SYMBOL	DESCRIPTION	SCALE
(Symbol)	CONCRETE PAVEMENT	1" = 20'
(Symbol)	GRAVEL DRIVE	1" = 20'
(Symbol)	UTILITY TRENCH	1" = 20'
(Symbol)	PROPAGATION	1" = 20'
(Symbol)	PROPAGATION	1" = 20'
(Symbol)	PROPAGATION	1" = 20'

DATE	BY	REVISION
10/1/78	UOR	REVISED
10/1/78	UOR	REVISED
10/1/78	UOR	REVISED

UOR
 DATE: 10/1/78
 REVISED: 10/1/78

ADDED NOTES

1. THE PROPOSED DRIVE SHALL BE CONCRETE PAVED TO THE CURB AND GRAVEL DRIVE TO THE DRIVE.
2. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
3. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
4. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
5. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
6. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
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10. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
11. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.
12. THE DRIVE SHALL BE 12 FEET WIDE AT ALL TIMES.



CONCEPT PLAN 101 NORTHSHORE DRIVE, SUITE 200 KNOXVILLE, TENNESSEE 37918 CONTACT: TRAVIS SHELLEY TELEPHONE NO.: (615) 740-2434	NORTHSHORE SUBDIVISION 9117 S. NORTHSHORE DRIVE KNOXVILE, TN 37922	PRELIMINARY NOT FOR CONSTRUCTION	FULCRUM MACLEOD LABORATORIAL, INC.

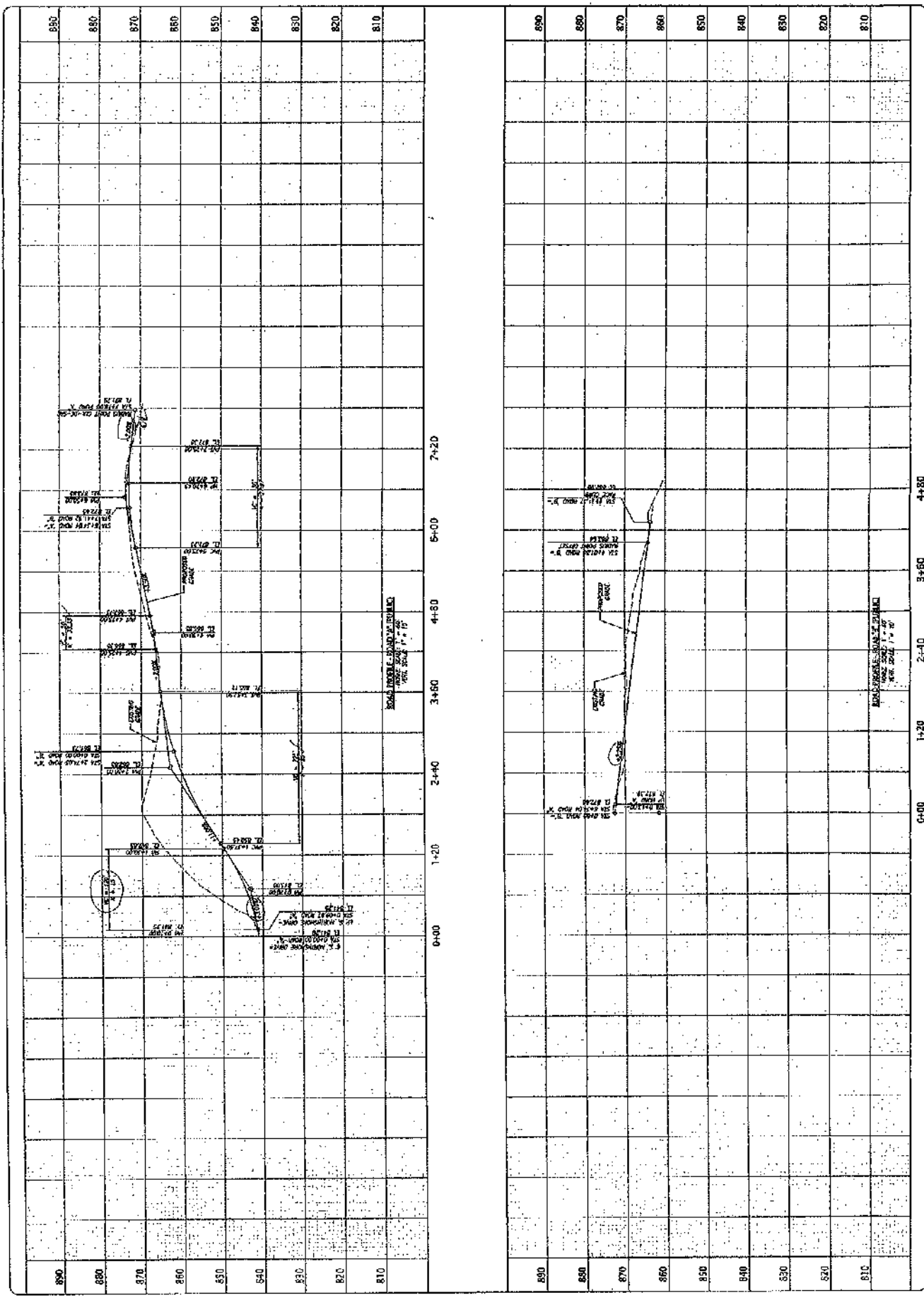
DATE	12/1/77
PROJECT NO.	23
PROJECT NAME	ROADWAY PROFILES
DESIGNED BY	TRAVIS FULLER
CHECKED BY	TRAVIS FULLER
DATE	12/1/77
SCALE	AS SHOWN
DRWG. NO.	100
DATE	12/1/77

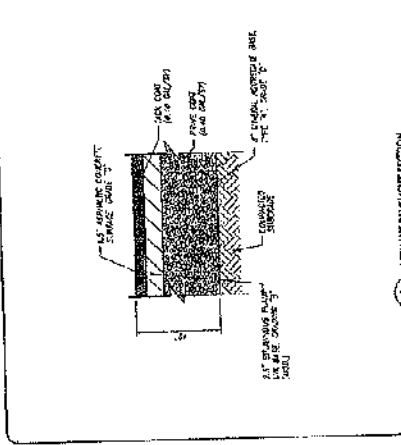
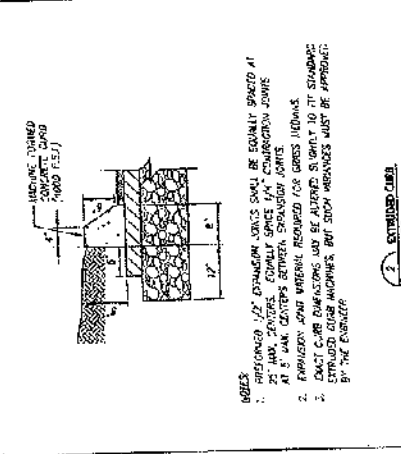
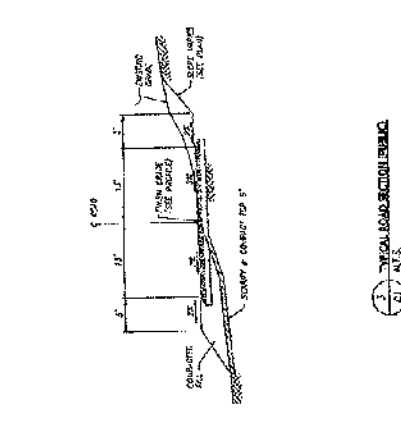
ROADWAY PROFILES

FULLER - SIMS DEVELOPMENT
 108 NORTH BISHOP DRIVE, SUITE 200
 ANOKVA, TENNESSEE 37018
 CONTACT: TRAVIS FULLER
 TELEPHONE NO.: (615) 492-2434

NORTHSHORE SUBDIVISION
 9117 S. NORTHSHORE DRIVE
 MONROE, TN 37222

PRELIMINARY
 NOT FOR
 CONSTRUCTION





NOTES:

1. DISTANCES BETWEEN LINES SHALL BE EQUALLY SPACED AT ALL POINTS.
2. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
3. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
4. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
5. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.

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2. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
3. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
4. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
5. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.

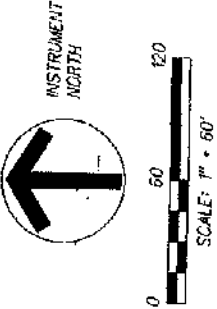
NOTES:

1. DISTANCES BETWEEN LINES SHALL BE EQUALLY SPACED AT ALL POINTS.
2. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
3. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
4. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.
5. ALL DISTANCES BETWEEN LINES SHALL BE MEASURED FROM CENTER TO CENTER.






APPROVED
 DATE 11-23-04
 Fred B. Gibson, Sr.
 REGIONAL DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
 REGION ONE - KNOXVILLE
 PAVEMENT TYPICAL SECTIONS

ROADWAY	PAVING
1 1/2" SURFACE (D MIX)	411-02
2 1/2" BINDER	307-02
3 1/2" (A-E MIX)	307-02.03
8" BASE STONE	205-01



LEGEND

-  ASPHALT PAVEMENT
-  HORIZONTAL CONTROL POINT
-  PROPERTY LINE
-  (1/CS)
-  TYP.

NOTES:

1. THE BOUNDARY AND COORDINATE DATA WAS REFERENCED FROM A BENCHMARK SURVEY DATED 15 OCTOBER, 2004.
2. UNLESS NOTED OTHERWISE, DIMENSIONS ARE TAKEN FROM THE CENTERLINE OF THE ROAD AND/OR THE FACE OF CURB.
3. THE MINERAL AGGREGATE BASE AND ASPHALTIC SURFACE COURSES SHALL MEET THE MATERIALS, EQUIPMENT, CONSTRUCTION AND TESTING REQUIREMENTS OF THESE DRAWINGS AND THE MISSISSIPPI COUNTY DEPARTMENT OF ENGINEERING STANDARD SPECIFICATIONS.
4. CONCRETE CURB AND PAVEMENT SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE CURB AND PAVEMENT SHALL MEET THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF THE MISSISSIPPI COUNTY DEPARTMENT OF ENGINEERING STANDARD SPECIFICATIONS.
5. TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL CONFORM TO THE FEDERAL HIGHWAY ADMINISTRATIONS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. PROPERTY CONCERNED REFLECTS PARCEL 3 AS SHOWN ON MISSISSIPPI COUNTY CLI TAX MAP 155. ZONING FOR PROPERTY IS PLANNED RESIDENTIAL DISTRICT. TOTAL AREA = 10.84 AC.
7. OWNER: SCOTT J. FRED AND DORA LOU WAITS
9109 S. NORTHSHORE DR.
KNOXVILLE, TN 37922
8. EXISTING BUILDINGS, BARNS AND SHEDS TO BE REMOVED. COORDINATE THESE ACTIVITIES WITH THE OWNER PRIOR TO CONSTRUCTION.

Work Zone Traffic Control City

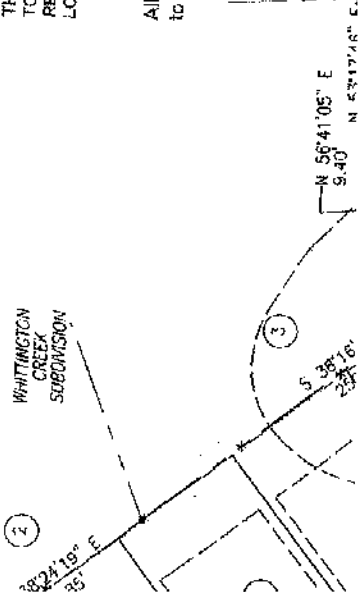
If construction of the Highway Access connection requires a Temporary Highway Lane closure, it will be necessary for the Contractor to call Mark D. Kers at least 24 hours in advance of the closing. Also, lane closures will be allowed only between the hours of 9:00 A.M. and 5:00 P.M. No equipment or machinery shall be parked within 30 feet of travel lane (unless protected by guardrail or barrier wall). Law enforcement will be used if necessary.

EXECUTION OF THIS PERMIT DOES NOT CONSTITUTE APPROVAL OF DRAINAGE PLAN. DRAINAGE PLAN MUST BE REVIEWED AND APPROVED BY DOD SLOAN 534-2452 SEE ATTACHED SHEET. FOR DRIVEWAY TYPICAL SECTION.

THIS PERMIT IS APPROVED SUBJECT TO COMPLIANCE WITH ANY RULES AND REGULATIONS ESTABLISHED BY THE LOCAL GOVERNING AGENCY.

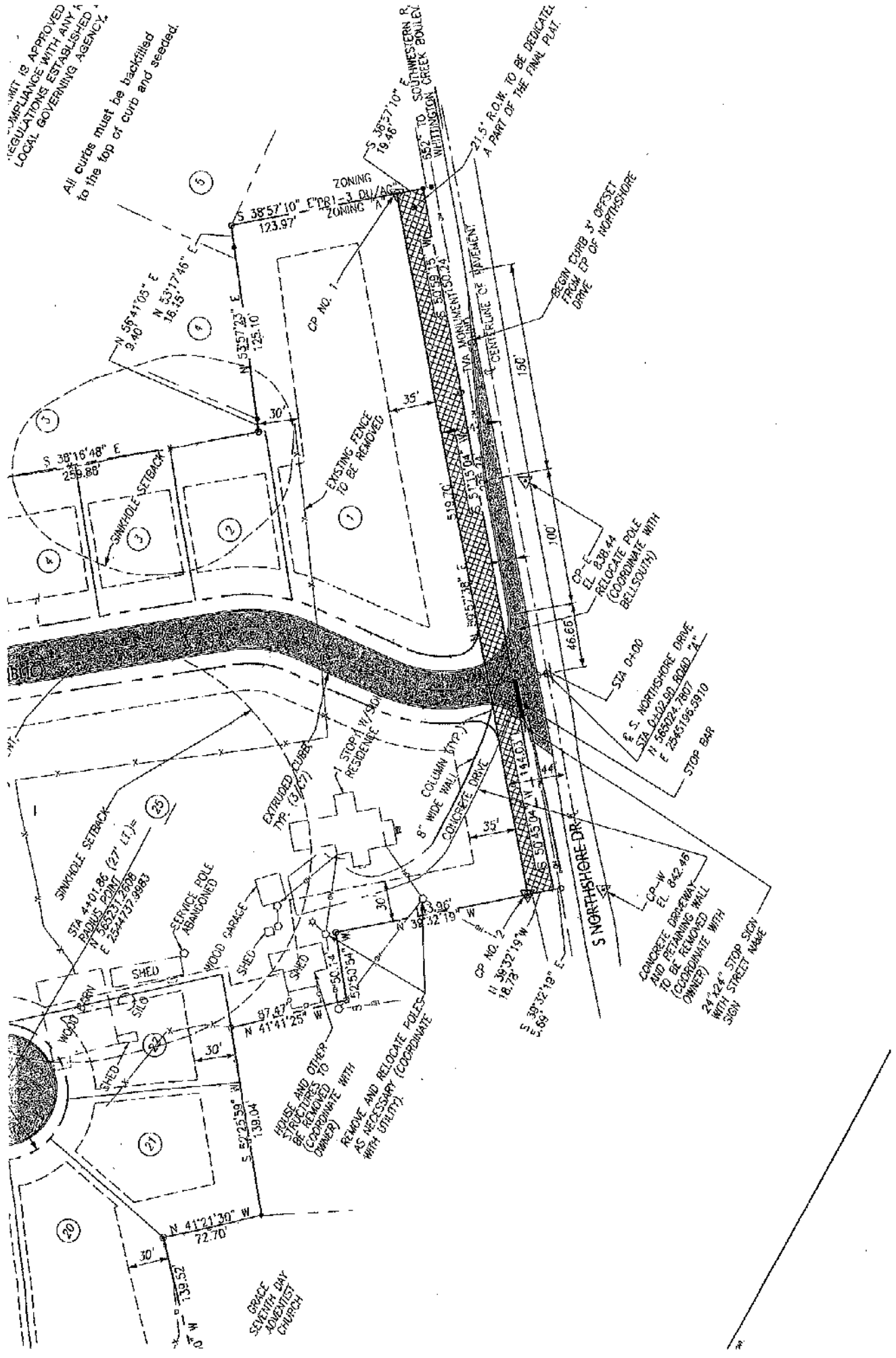
All curbs must be backfilled to the top of curb and seeded.

TA 64-34-04 ROAD "A"
 TA 0+00.00 ROAD "B"
 56532.9874
 25-44876.6648



PERMIT IS APPROVED
IN COMPLIANCE WITH ANY
LOCAL REGULATIONS ESTABLISHED BY
LOCAL GOVERNING AGENCY.

All curbs must be backfilled
to the top of curb and seeded.



ASHLAND CREEK SUBDIVISION KNOXVILLE, TENNESSEE

104-109

Ashland Creek
Cettinger Court

PREPARED BY:



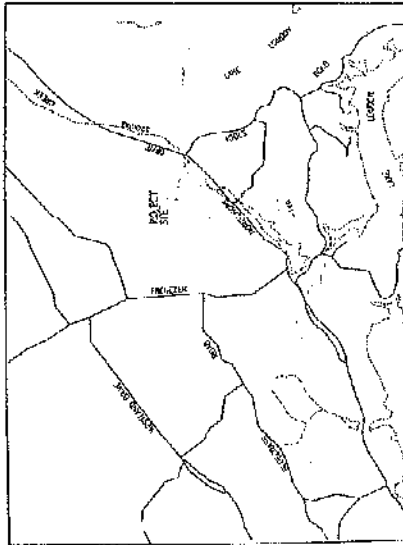
FULGHUM, MACINDOE, & ASSOCIATES, INC.
CONTACT: WILLIAM C. FULGHUM, JR.
9237 MIDDLEBROOK PIKE
KNOXVILLE, TENNESSEE 37931
TELEPHONE: (865) 890-6499
FAX: (865) 690-2018

*5/17/2011
each subdivision of one or two lots bounded by*

KNOX COUNTY
DEPARTMENT OF ENGINEERS
APPROVED
DESIGN
DATE: 5/17/2011
BY: [Signature]

DEVELOPER:

FULLER - SIMS DEVELOPMENT, LLC
CONTACT: TRAVIS FULLER
9050 EXECUTIVE PARK DRIVE, SUITE 200A
KNOXVILLE, TENNESSEE 37923
TELEPHONE: (865) 740-7454
TELEPHONE: (865) 740-2017



DRAWING INDEX:

SHEET NO.	TITLE
C1	COVER SHEET
C2	ROADWAY LAYOUT AND PAVING PLAN
C3	GRADING, DRAINAGE, AND EROSION CONTROL PLAN
C4	WATER SYSTEM PLAN
C5	SANITARY SWER PLAN AND PROFILE
C6	ROADWAY ROFILES
C7	SITE DETAIL
C8	SITE DETAIL

REG. PROFESSIONAL ENGINEERS
KNOX COUNTY, TENNESSEE
NO. 10878

STATE OF TENNESSEE
DEPARTMENT OF REVENUE
DIVISION 3

EXHIBIT 6

FULLER - SIMS DEVELOPMENT

PROJECT	104-109
DATE	5/17/2011
BY	[Signature]
CHECKED	[Signature]
DATE	5/17/2011

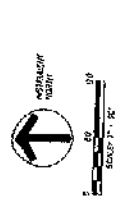


ASHLAND CREEK SUBDIVISION
 917 S. NORTHSIDE DRIVE
 MEMPHIS, TENNESSEE 38122

FULLER, SIMS DEVELOPMENT
 6075 PLYMOUTH PARK DRIVE, SUITE 200A
 MEMPHIS, TENNESSEE 38122
 TELEPHONE NO. (901) 749-7434

SITE LAYOUT AND PAVING PLAN

DATE	1/26/21
BY	ELIUM MAGINDOB CONSULTING
PROJECT NO.	22
SCALE	AS SHOWN



LEGEND

--- 1" = 20' (AS SHOWN)
 --- 1" = 40' (AS SHOWN)
 --- 1" = 80' (AS SHOWN)
 --- 1" = 160' (AS SHOWN)

- NOTES:**
1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
 3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.
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SPECIAL NOTES:

1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

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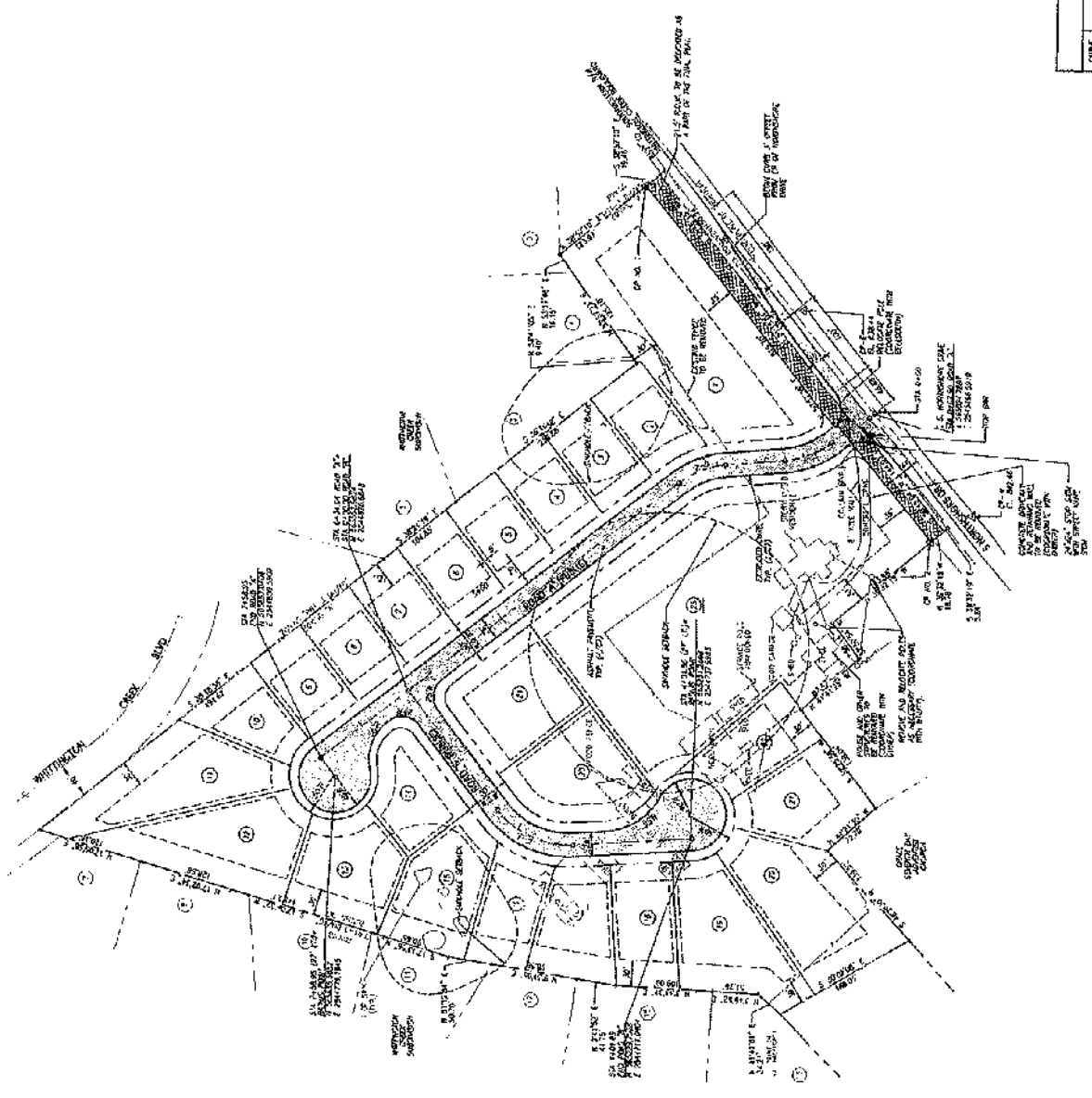
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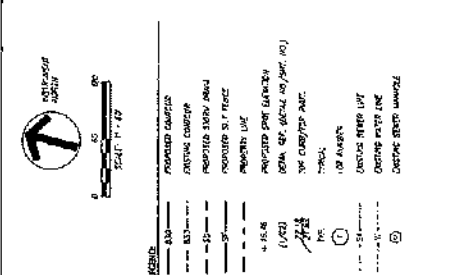


HORIZONTAL CONTROL POINTS TABLE

POINT NO.	PT. DESCRIPTION	COORDINATES
CP 1	10+00.00	10+00.00
CP 2	20+00.00	20+00.00
CP 3	30+00.00	30+00.00
CP 4	40+00.00	40+00.00
CP 5	50+00.00	50+00.00
CP 6	60+00.00	60+00.00
CP 7	70+00.00	70+00.00
CP 8	80+00.00	80+00.00
CP 9	90+00.00	90+00.00
CP 10	100+00.00	100+00.00

HORIZONTAL CURVE DATA TABLE

CURVE NO.	PT. OF BEGINNING	PT. OF ENDING	ANGLE	LENGTH	CHORD	PC	PT	PE	EA	EB	EC	ED
1-1	10+00.00	20+00.00	90°	100.00	141.42	10.00	10.00	10.00	10.00	10.00	10.00	10.00
1-2	20+00.00	30+00.00	90°	100.00	141.42	20.00	20.00	20.00	20.00	20.00	20.00	20.00
2-1	30+00.00	40+00.00	90°	100.00	141.42	30.00	30.00	30.00	30.00	30.00	30.00	30.00
2-2	40+00.00	50+00.00	90°	100.00	141.42	40.00	40.00	40.00	40.00	40.00	40.00	40.00



STORM DRAINAGE STRUCTURES TABLE

NO.	DESCRIPTION	LOCATION	DEPTH OF STRUCTURE	INLET ELEVATION	OUTLET ELEVATION
1	24\"/>				

STORM PAVEMENT TABLE

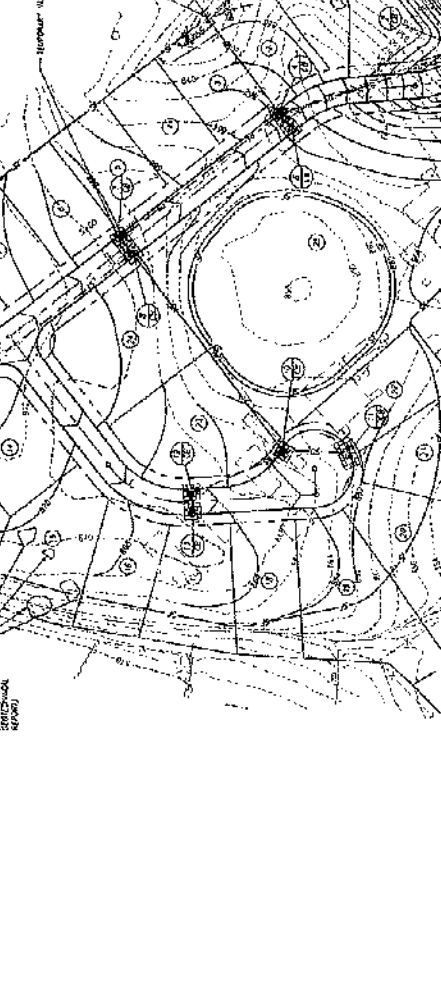
NO.	DESCRIPTION	AREA (SQ. FT.)	THICKNESS (IN.)	EST. COST	MARKING
1	24\"/>				

GENERAL NOTES:

- ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
- ALL UTILITIES SHALL BE LOCATED AND DEPTH MARKED PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES.
- ALL MATERIALS SHALL BE OF THE BEST QUALITY AND SHALL BE SUBJECT TO INSPECTION AND TESTING.
- ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION.
- ALL WASTE MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED LOCATION.
- ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE ENGINEER.

STORM LINE NOTES:

- ALL STORM DRAINAGE STRUCTURES SHALL BE CONSTRUCTED TO THE ELEVATIONS SHOWN ON THIS PLAN.
- THE STORM DRAINAGE SYSTEM SHALL BE DESIGNED TO HANDLE THE DESIGN STORM FLOW.
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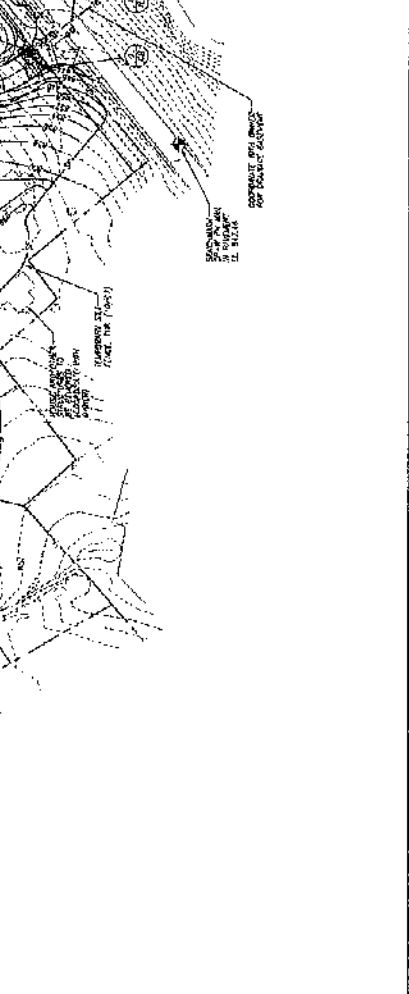


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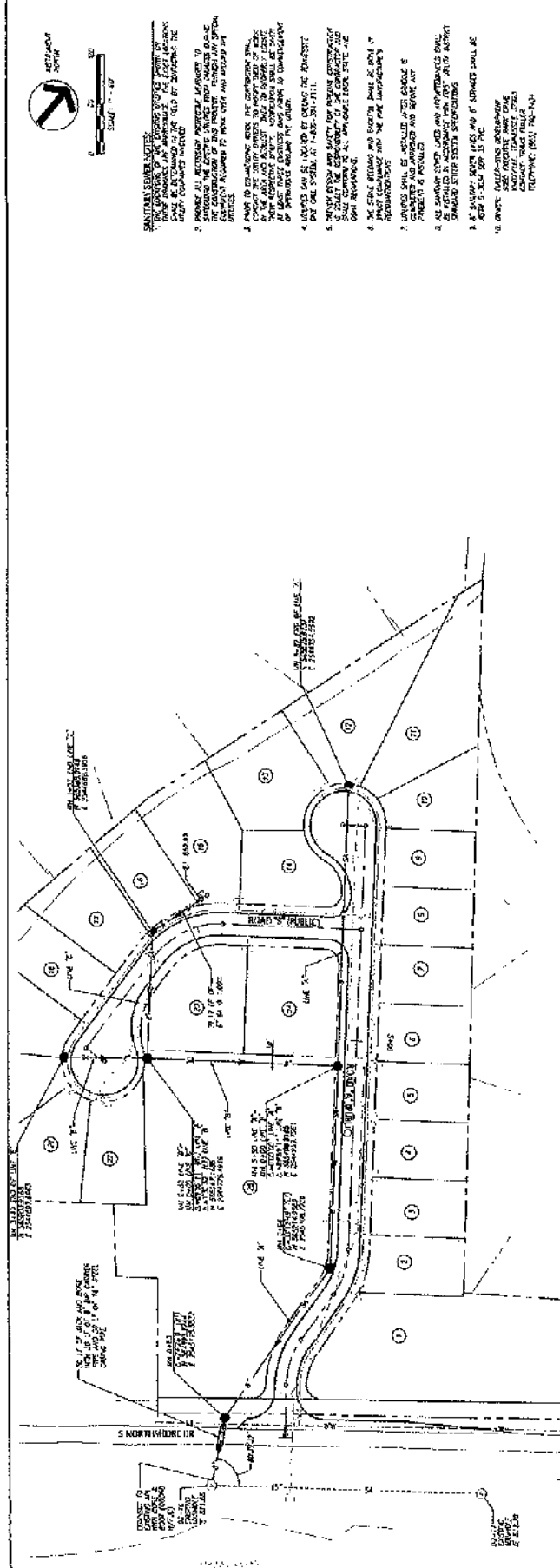
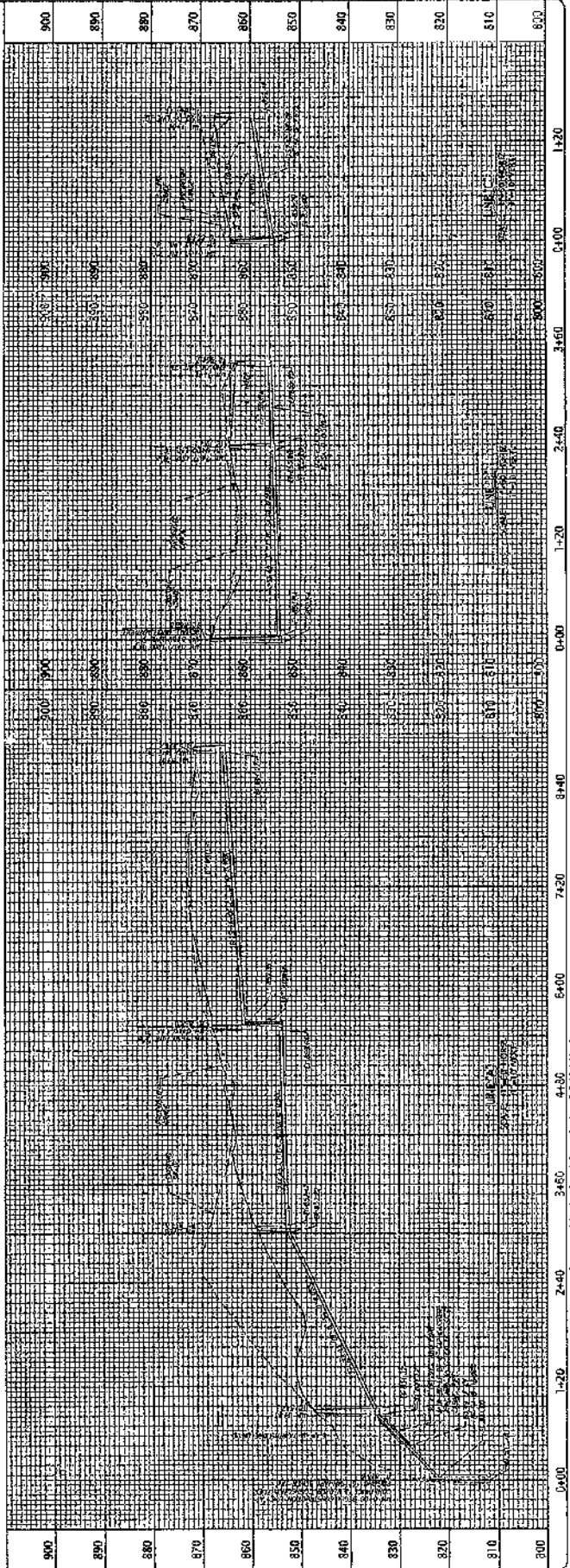


Sheet No.	05
Project No.	11/2/01
Date	11/2/01
Scale	AS SHOWN
Author	DESIGN FOR CONSTRUCTION
Checked	
Reviewed	
Approved	

**SANITARY SEWER
PLAN AND PROFILE**

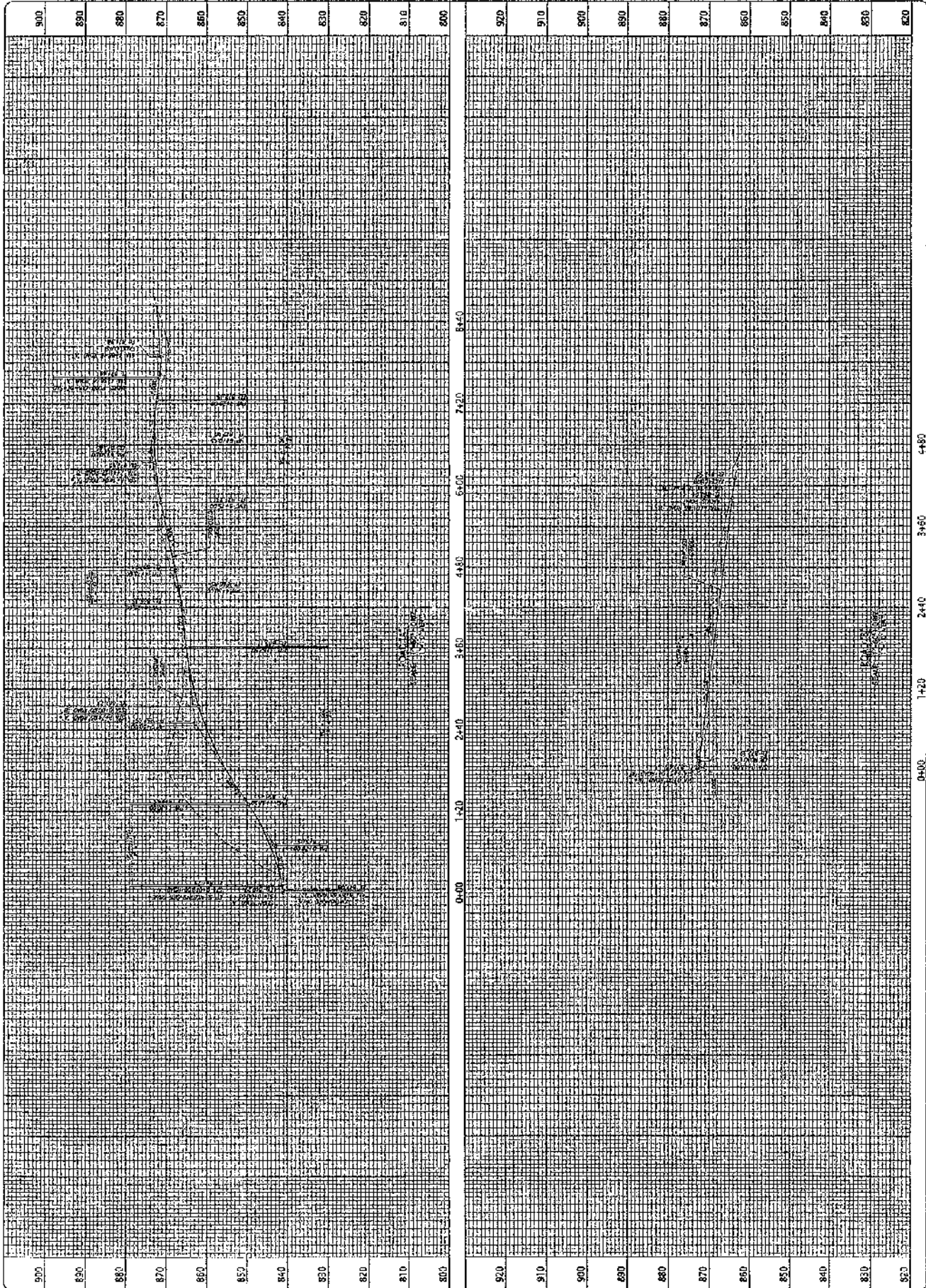
FILLER, SIMS DEVELOPMENT
8850 EXECUTIVE PARK DRIVE, SUITE 200A
KNOXVILLE, TENNESSEE 37923
CONTACT: TREVOR FULLER
TELEPHONE NO.: (615) 750-7344

ASHLAND CREEK SUBDIVISION
117 S. NORTHSHORE DRIVE
KNOXVILLE, TENNESSEE 37922



SANITARY SEWER NOTES:

- SEE PLAN FOR LOCATION OF SEWER LINE.
- SEE PLAN FOR LOCATION OF MANHOLE.
- SEE PLAN FOR LOCATION OF EASEMENT.
- SEE PLAN FOR LOCATION OF SETBACK.
- SEE PLAN FOR LOCATION OF CURB.
- SEE PLAN FOR LOCATION OF SIDEWALK.
- SEE PLAN FOR LOCATION OF DRIVE.
- SEE PLAN FOR LOCATION OF LOT.
- SEE PLAN FOR LOCATION OF ADJACENT PROPERTY.
- SEE PLAN FOR LOCATION OF NEIGHBORHOOD.
- SEE PLAN FOR LOCATION OF CITY.
- SEE PLAN FOR LOCATION OF STATE.
- SEE PLAN FOR LOCATION OF COUNTRY.
- SEE PLAN FOR LOCATION OF UNIVERSE.
- SEE PLAN FOR LOCATION OF GOD.



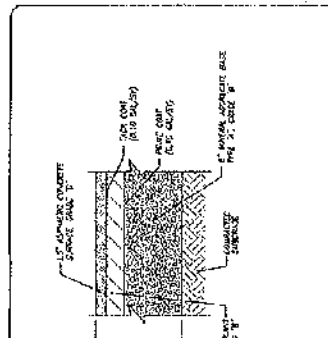
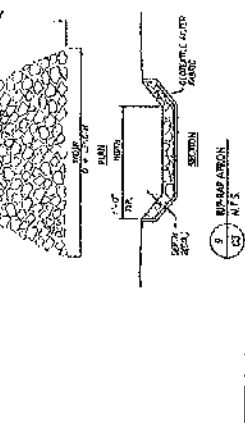
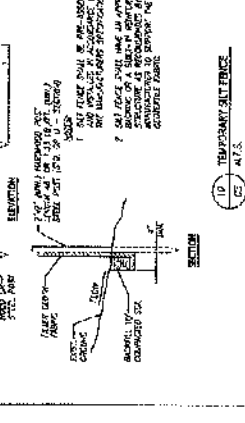
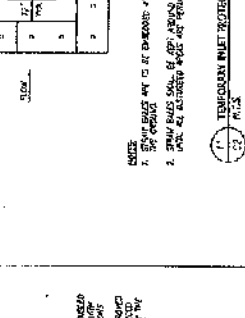
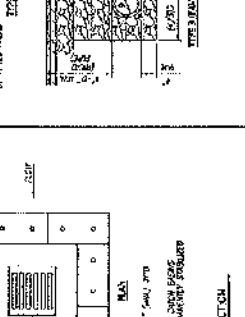
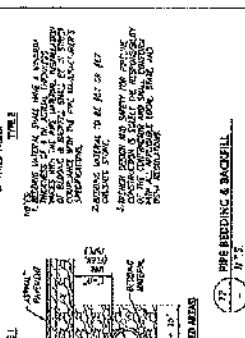
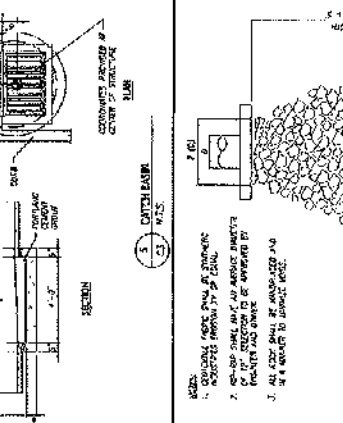
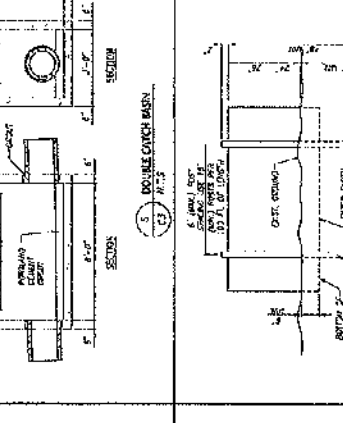
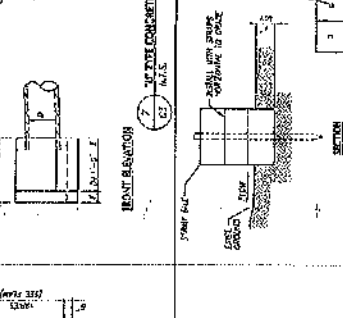
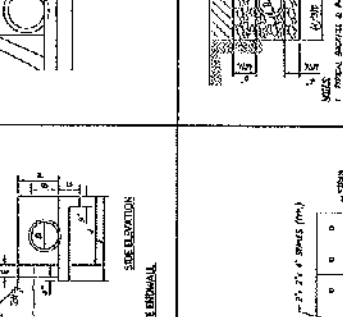
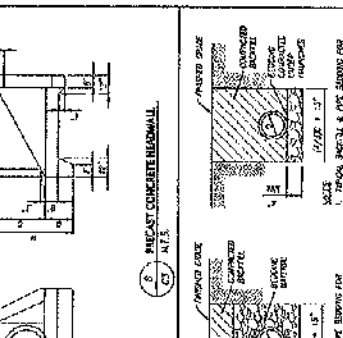
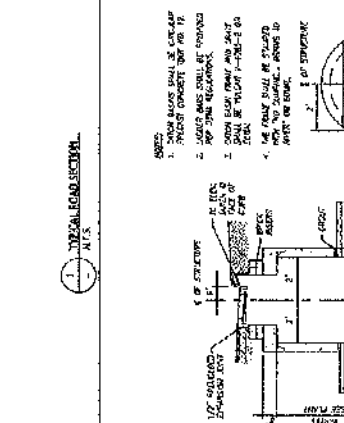
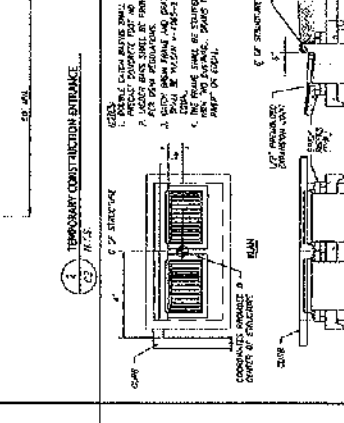
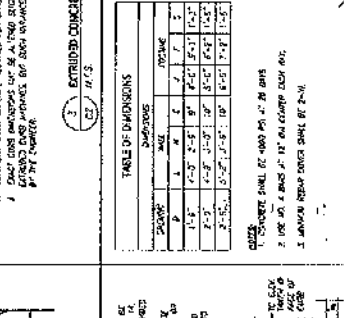
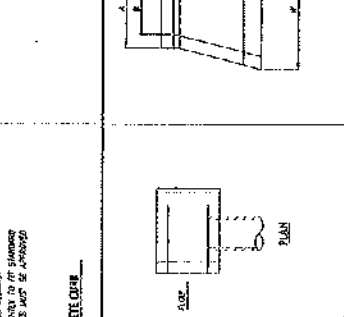
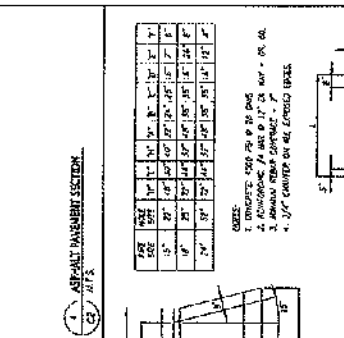
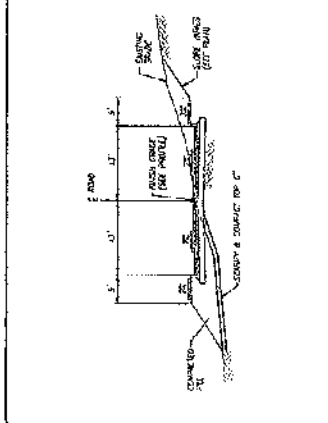
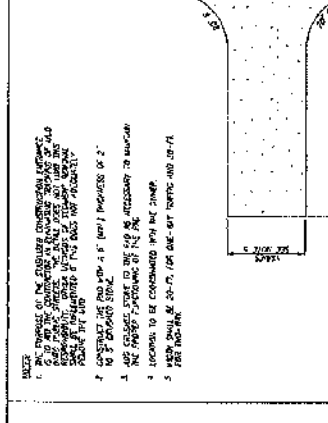
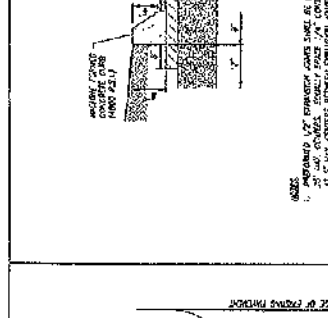
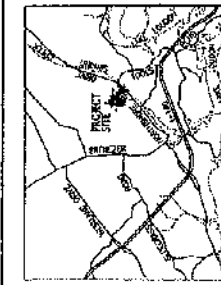


TABLE OF DIMENSIONS

SECTION	MAX. W. CURB	MIN. W. CURB	MIN. W. CURB	MIN. W. CURB
1	18"	18"	18"	18"
2	18"	18"	18"	18"
3	18"	18"	18"	18"
4	18"	18"	18"	18"
5	18"	18"	18"	18"
6	18"	18"	18"	18"
7	18"	18"	18"	18"
8	18"	18"	18"	18"
9	18"	18"	18"	18"
10	18"	18"	18"	18"





UTILITY OWNERS:
 WATER & SEWER: THE CITY OF FORT WORTH (F&S)
 GAS: TEXAS GAS COMPANY
 ELECTRIC: TEXAS ELECTRIC TRANSMISSION AND DISTRIBUTION COMPANY
 TELEPHONE: SBC COMMUNICATIONS
 CABLE: COMCAST

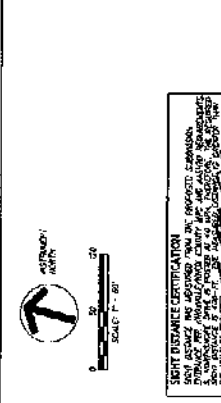
CONCEPT PLAN CERTIFICATION
 I, **DAVID J. WILSON**, being duly sworn, depose and say that I am the duly licensed Professional Engineer in the State of Texas, No. 11111, and I am the author of the above and foregoing CONCEPT PLAN, and I certify that the same are true and correct to the best of my knowledge and belief.

CONCEPT PLAN CERTIFICATION
 I, **DAVID J. WILSON**, being duly sworn, depose and say that I am the duly licensed Professional Engineer in the State of Texas, No. 11111, and I am the author of the above and foregoing CONCEPT PLAN, and I certify that the same are true and correct to the best of my knowledge and belief.

LEGEND

--- PROPOSED LANE
 --- EXISTING LANE
 --- PROPOSED SIDEWALK
 --- EXISTING SIDEWALK
 --- PROPOSED DRIVEWAY
 --- EXISTING DRIVEWAY

NOTES:
 1. ALL PROPOSED DRIVEWAYS SHALL BE CONFORMANT WITH THE LATEST EDITION OF THE TEXAS CONSTRUCTION SPECIFICATIONS FOR DRIVEWAYS.
 2. ALL PROPOSED DRIVEWAYS SHALL BE CONFORMANT WITH THE LATEST EDITION OF THE TEXAS CONSTRUCTION SPECIFICATIONS FOR DRIVEWAYS.
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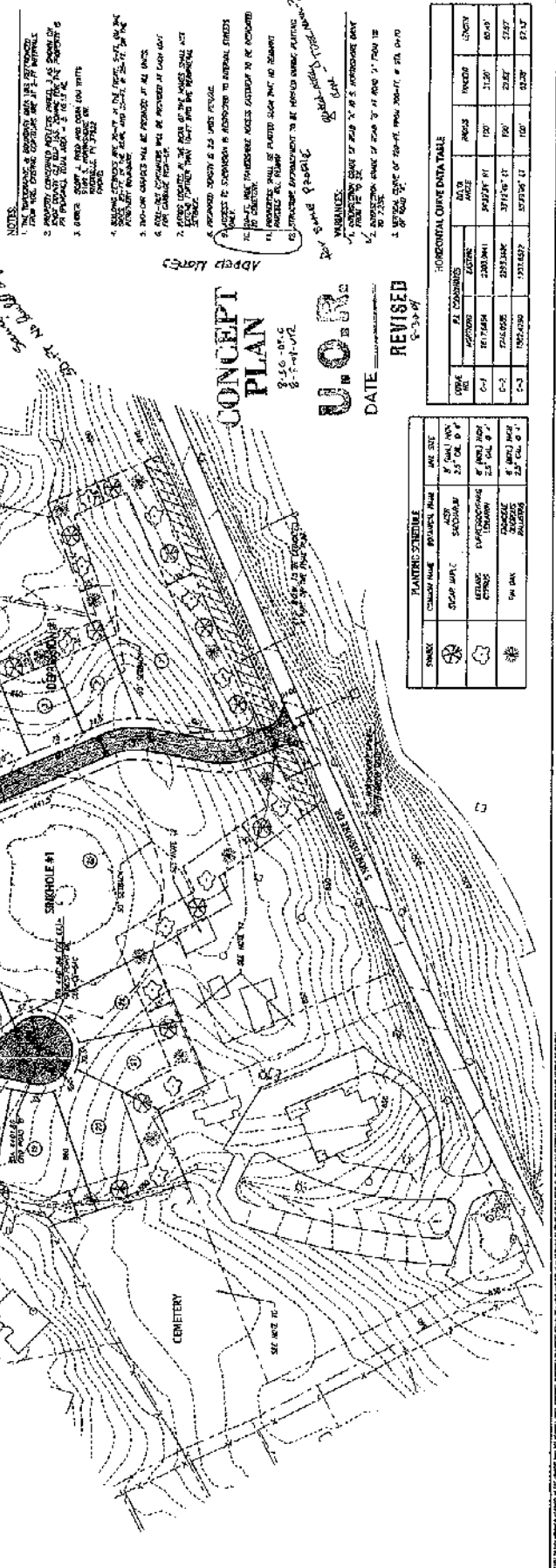


WHITTINGTON CREEK SUBDIVISION

CONCEPT PLAN CERTIFICATION
 I, **DAVID J. WILSON**, being duly sworn, depose and say that I am the duly licensed Professional Engineer in the State of Texas, No. 11111, and I am the author of the above and foregoing CONCEPT PLAN, and I certify that the same are true and correct to the best of my knowledge and belief.

LEGEND

--- PROPOSED LANE
 --- EXISTING LANE
 --- PROPOSED SIDEWALK
 --- EXISTING SIDEWALK
 --- PROPOSED DRIVEWAY
 --- EXISTING DRIVEWAY



CONCEPT PLAN
 11111 MAGIMBO DRIVE
 1/27/04

UOR
 DATE: 1/27/04

REVISIONS

NO.	DATE	DESCRIPTION
1	1/27/04	ISSUED FOR CONCEPT PLAN
2	1/27/04	REVISION: 1/27/04

GENERAL CURVE DATA TABLE

STATION	PC	PT	PI	TS	STATION	PC	PT	PI	TS
100+00	100+00	100+00	100+00	100+00	100+00	100+00	100+00	100+00	100+00

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REGISTERED PROFESSIONAL ENGINEER
STATE OF TENNESSEE
NO. 12345
EXPIRES 12/31/2025

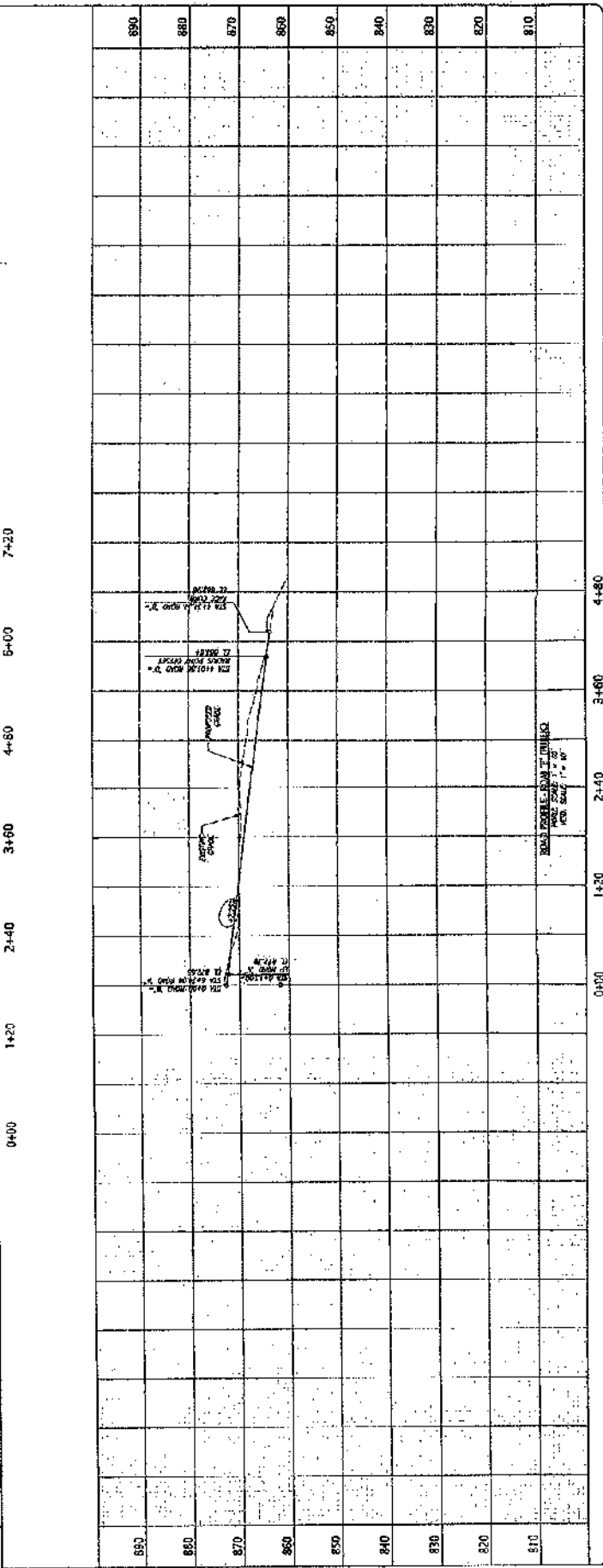
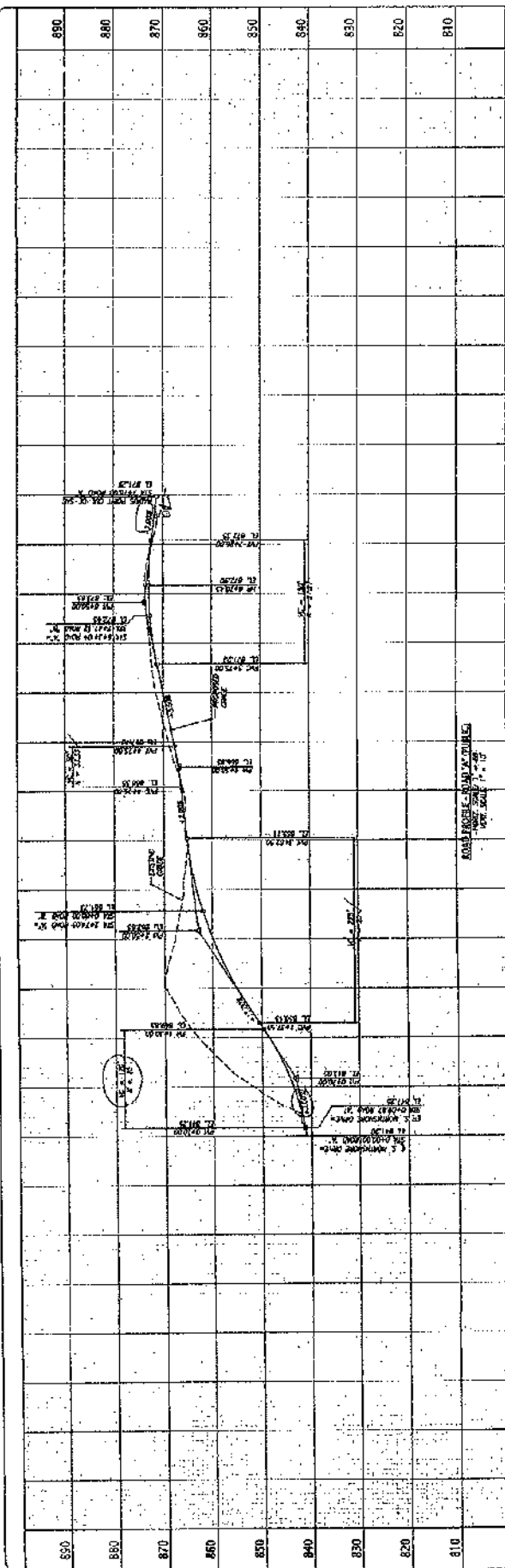
**PRELIMINARY
NOT FOR
CONSTRUCTION**

NORTHSHORE SUBDIVISION
3117 S. KENTWOOD DRIVE
KNOXVILLE, TN 37922

FILIER - SIMS DEVELOPMENT
101 NORTHSIDE DRIVE, SUITE 200
KNOXVILLE, TN 37919
CONTACT: TRAVIS ELLER
TELEPHONE NO.: (615) 742-7343

ROADWAY PROFILES

DATE	12/15/24
DESIGNER	TRAVIS ELLER
CHECKED	TRAVIS ELLER
SCALE	1" = 40'
PROJECT NO.	24-001
SHEET NO.	1 OF 2
TITLE	ROADWAY PROFILES
DATE	12/15/24
SCALE	1" = 40'
PROJECT NO.	24-001
SHEET NO.	1 OF 2
TITLE	ROADWAY PROFILES



890
880
870
860
850
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SITE DETAILS

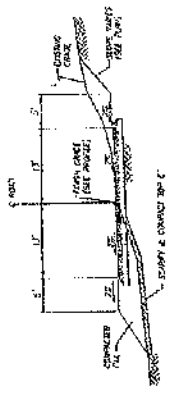
FILLER - SIMS DEVELOPMENT
 189 NORTHSHORE DRIVE, SUITE 200
 KNOXVILLE, TENNESSEE 37918
 CONTACT: TRAVIS FULLER
 TELEPHONE NO.: (662) 40-7434

NORTHSHORE SUBDIVISION
 9777 S. NORTHSHORE DRIVE
 KNOXVILLE, TN 37922

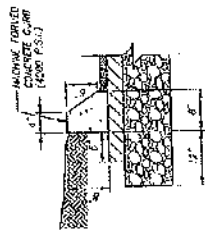
PRELIMINARY
 NOT FOR
 CONSTRUCTION



ASSOCIATES, INC.
 1000 UNIVERSITY AVENUE
 SUITE 1000
 KNOXVILLE, TN 37916
 THE FULGHUM MACINDOE GROUP

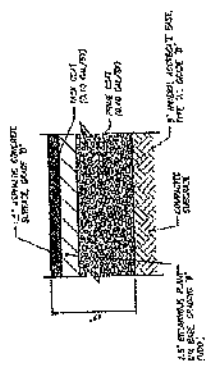


3. TECHNICAL CROSS-SECTION, CURB AND GUTTER
 (C) N.T.S.



- NOTE:
1. THE TOP SURFACE OF THE CURB SHALL BE EQUALLY FINISHED AT ALL POINTS. THE CURB SHALL BE FINISHED WITH A CONCRETE FINISH.
 2. THE CURB SHALL BE FINISHED WITH A CONCRETE FINISH.
 3. THE CURB SHALL BE FINISHED WITH A CONCRETE FINISH.

2. FORWARD CURB
 (C) N.T.S.



1. ASPHALT PAVEMENT SECTION
 (C) N.T.S.

APPROVED
 DATE: 11-28-04
 [Signature] REGIONAL DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
 REGION ONE - KNOXVILLE
 PAYMENT TYPICAL SECTIONS

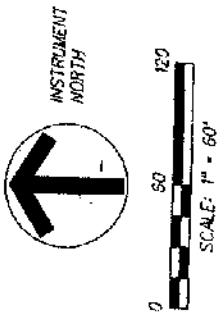
ROADWAY	PAVING
1 1/2" SURFACE (D MIX)	411-01
2 1/2" BINDER	807-02
3 1/2" (A-S MIX)	807-01.03
8" BASE STONE	803-01

Work Zone Traffic Control City
 If construction of the Highway Access connection requires a Temporary Highway Lane Closure, it will be necessary for the Contractor to call Mark Dukes at least 24 hours in advance of the closing. Also, lane closures will be allowed only between the hours of 9:00 A.M. and 3:00 P.M. No equipment or machinery shall be parked within 30 feet of travel lanes (unless protected by guard rail or barrier wall). Law enforcement will be used if necessary.

EXECUTION OF THIS PERMIT DOES NOT CONSTITUTE APPROVAL OF DRAINAGE PLAN. DRAINAGE PLAN MUST BE REVIEWED AND APPROVED BY DSD. SEE ATTACHED SHEET FOR DRIVEWAY TYPICAL SECTION.

THIS PERMIT IS APPROVED SUBJECT TO COMPLIANCE WITH ANY RULES AND REGULATIONS ESTABLISHED BY THE LOCAL GOVERNING AGENCY.

All curbs must be backfilled to the top of curb and seeded.



LEGEND

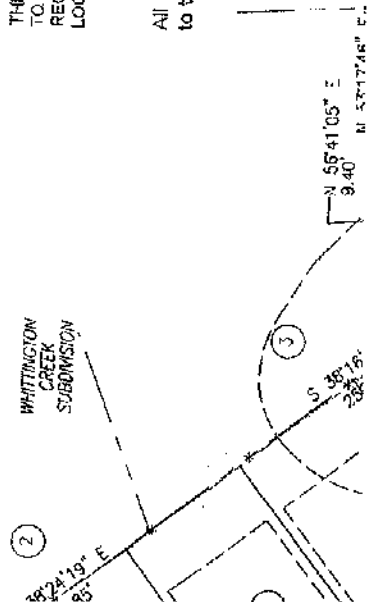
- ASPHALT PAVEMENT
- HORIZONTAL CONTROL POINT
- PROPERTY LINE
- DETAIL REFERENCE (DETAIL NO./SHT. NO.)
- TYPICAL

NOTES:

1. THE BOUNDARY AND COORDINATE DATA WAS REFERENCED FROM A BENCHMARK SURVEY DATED 15 OCTOBER, 2004.
2. UNLESS NOTED OTHERWISE, DIMENSIONS ARE TAKEN FROM THE CENTERLINE OF THE ROAD AND/OR THE FACE OF CURB.
3. THE MINERAL AGGREGATE BASE AND ASPHALTIC SURFACE COURSES SHALL MEET THE MATERIALS, EQUIPMENT, CONSTRUCTION AND TESTING REQUIREMENTS OF THESE DRAWINGS AND THE KNOX COUNTY DEPARTMENT OF ENGINEERING STANDARD SPECIFICATIONS.
4. CONCRETE CURB AND PAVEMENT SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 4000 PSI AT 28 DAYS. CONCRETE CURB AND PAVEMENT SHALL MEET THE MATERIALS, EQUIPMENT AND CONSTRUCTION REQUIREMENTS OF THE KNOX COUNTY DEPARTMENT OF ENGINEERING STANDARD SPECIFICATIONS.
5. TRAFFIC CONTROL DEVICES AND PAVEMENT MARKINGS SHALL CONFORM TO THE FEDERAL HIGHWAY ADMINISTRATIONS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
6. PROPERTY CONCERNED REFLECTS PARCEL 3 AS SHOWN ON KNOX COUNTY CLT TAX MAP 155. ZONING FOR PROPERTY IS "R-1" PLANNED RESIDENTIAL DISTRICT. TOTAL AREA = 10.64 AC.
7. OWNER: SCOTT J. FRED AND DORA LOU WATTS
9108 S. NORTHSIDE DR.
KNOXVILLE, TN 37923
8. EXISTING BUILDINGS, BARNS AND SHEDS TO BE REMOVED. COORDINATE THESE ACTIVITIES WITH THE OWNER PRIOR TO CONSTRUCTION.

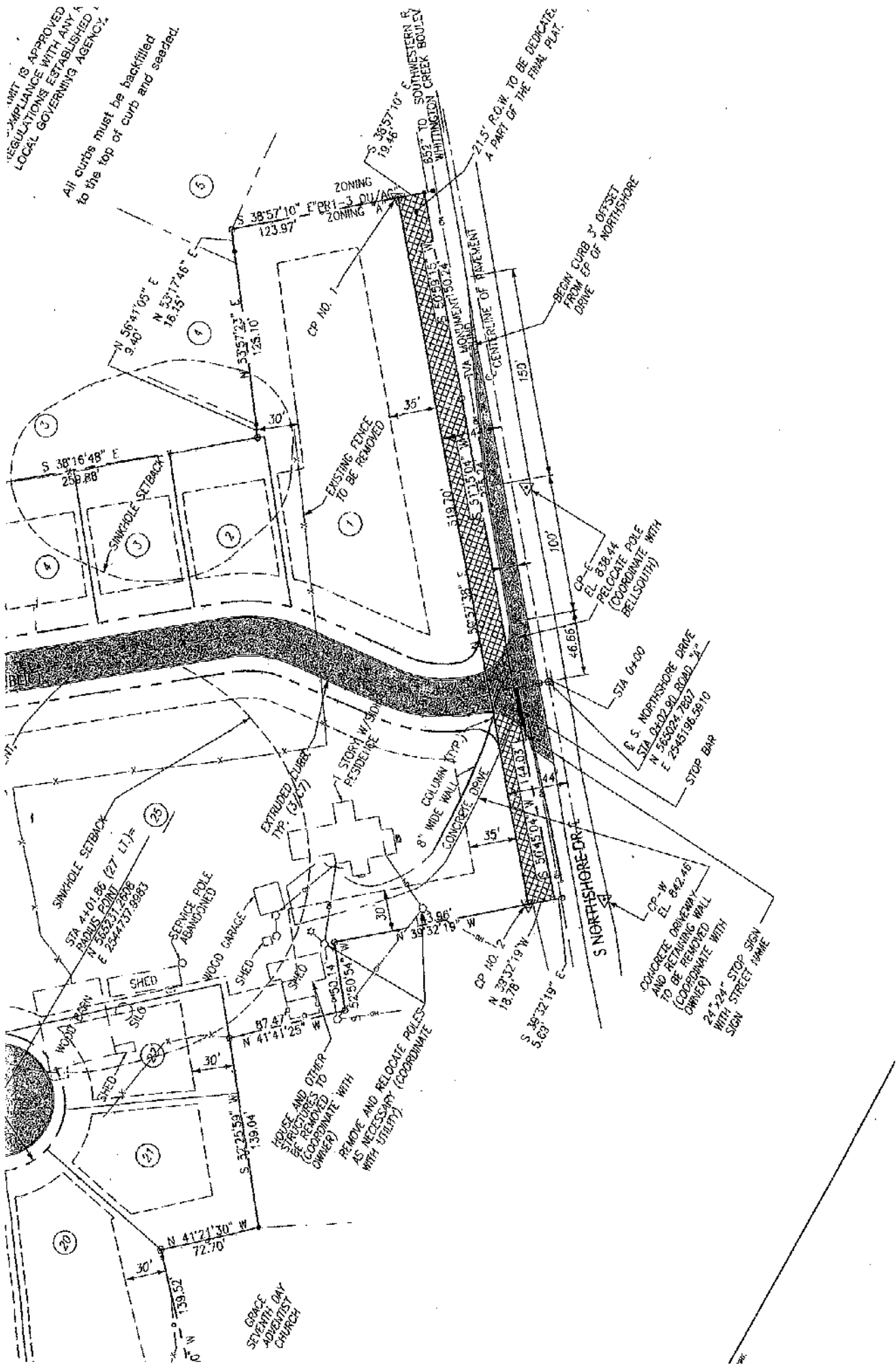
Dukes 594-4572

TA 5434.04 ROAD "A"
 TA 0190.00 ROAD "B"
 2855219824
 25-44876.6848



PERMIT IS APPROVED
IN COMPLIANCE WITH ANY
REGULATIONS ESTABLISHED BY
A LOCAL GOVERNING AGENCY.

All curbs must be backfilled
to the top of curb and seeded.





STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
WATER SUPPLY
6th Floor, 401 Church Street
Nashville, Tennessee 37243-1549

April 9, 2009

Mr. Travis Fuller
Saddlebrook Homes, LLC
10627 Deerbrook Drive
Knoxville, Tennessee 37922

RE: Observations made on this day March 17, 2009
Ashland Creek Subdivision UIC File: KNX 0000168
Cottington Court UIC File: KNX 0000253
Knoxville, Knox County, Tennessee

Mr. Fuller:

According to our records, you are currently listed as the responsible person for the former Ashland Creek Subdivision on the application dated October 14, 2004. Staff from the Division inspected the former Ashland Creek Subdivision as part of the initial inspection for Cottington Court on March 17, 2009. During this inspection, problems were noted on lots 15 (9109 British Station Lane) and 16 (9113 British Station Lane).

The sinkholes on lots 15 and 16 need to be addressed. One of the sinkholes is reportedly located within the drainage easement owned by Knox County. At this time, we are requesting that you contact the division and discuss the following situations:

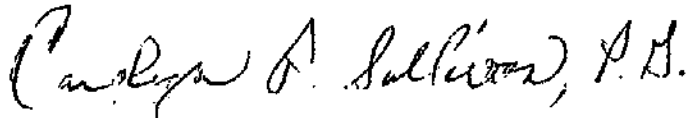
1. The sinkholes located on lot 15 and 16 are in need of repair. What methods do you propose to address these sinkholes?
2. As to the sinkhole located within the Knox County Drainage Easement, you need to contact the County and work out an agreement as to how the sinkhole will be repaired and maintained.
3. The current authorization for Ashland Creek is expired. You will need to renew the existing authorization or provide a change of ownership showing the new name of Cottington Court and a current responsible parties signature.

Mr. Fuller
Observations made on this day March 17, 2009
Ashland Creek Subdivision UIC File: KNX 0000168
Cottingham Court UIC File: KNX 0000253
April 9, 2009
Page 2

Please respond within two (2) weeks of the receipt of this letter.

Any questions may be directed to Carolyn Sullivan at (615) 532-0180.

Sincerely,



Carolyn P. Sullivan, P.G.
UIC Program
Tennessee Division of Water Supply

c: DWS File
Bruce Wuethrich-Knox County Stormwater

7006 0810 0000 1057 7648

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

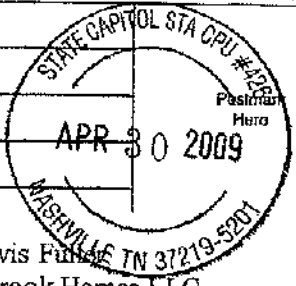
For delivery information visit our website at www.usps.com

OFFICIAL USE

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage &	

Sent to: Mr. Travis Fuller
 Saddlebrook Homes LLC
 10627 Deerbrook Dr
 Knoxville, TN 37922

PS Form 3811, February 2004



SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Travis Fuller
 Saddlebrook Homes LLC
 10627 Deerbrook Dr
 Knoxville, TN 37922

COMPLETE THIS SECTION ON DELIVERY

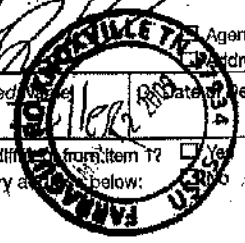
A. Signature Agent Addressee

B. Received by (Printed Name) Travis Fuller Date of Delivery 4/30/09

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below:

3. Service Type
 Certified Mail Express Mail
 Registered Return Receipt for Merchandise
 Insured Mail C.O.D.

4. Restricted Delivery? (Extra Fee) Yes



Memo

To: Robert L. Mohney
From: Travis Fuller
Date: April 18, 2009
Re: Closed Depression 1

Dear Robert,

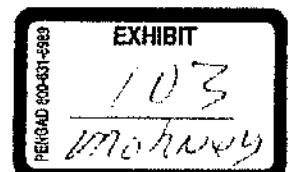
Closed depression one (#1) was identified by S&ME and we ordered additional geological testing to be conducted. The depression is approximately two hundred (200) feet in diameter. S&ME instructed field technicians to drill borings B-1 and B-2 (page 4 of report) within the limits of closed depression one (#1) to determine the consistency of the soils. Based on their findings they recommended that no construction take place within the limits on Closed depression one (#1). After review of the report, I ordered an additional report to determine the feasibility of construction on lots. The report states that all lots tested are suited for residential construction. The developers also followed the recommendations of the county, Tennessee Department of Environment and Conservation by filling Closed Depression one (#1) which would reduce further sinkhole activity. The way we minimize the risk of increased sinkhole activity is to minimize the amount of storm water the sinkhole takes in. We filled in Closed Depression one (#1) to construction grades that would create sheet flow drainage away from the lowest area of the depression so that all water run-off would collect into the storm drain system that was installed per Fulghum-MacIndoe's design and move the water off site into Bluegrass Lake. We also installed storm drain pipe and drainage structures along the rear property lines of Lot twenty-three (23) and twenty-four (24) to ensure that no sheet flow drainage from the house on those lots would add additional water to Closed Depression one (#1).

If you have any questions or require any additional information please feel free to talk to me or any of my representatives.

Sincerely,



Travis Fuller



SB0122

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DEPOSITION OF TRAVIS FULLER

September 23, 2013

IN THE CHANCERY COURT FOR KNOX COUNTY, TENNESSEE

BRIAN DALE; BRIAN LAWHORN AND)	
WIFE, PAMELA LAWHORN; AND WILLIAM)	
JENKINS AND WIFE, ELAINE JENKINS,)	
)	
Plaintiffs,)	NO. 175314-2
)	
vs.)	
)	
B&J ENTERPRISES, ROBERT L. MOHNEY,)	
SADDLEBROOK HOMES, LLC;)	
SADDLEBROOK REALTY, LLC; TRAVIS)	
FULLER, INDIVIDUALLY, AND D/B/A)	
FULLER & SIMS DEVELOPMENT, LLC;)	
JEFF SIMS, INDIVIDUALLY AND D/B/A)	
FULLER & SIMS DEVELOPMENT, LLC;)	
FULLER & SIMS DEVELOPMENT, LLC;)	
AND FULGHUM MACINDOE & ASSOCIATES,)	
INC.,)	
)	
Defendants.)	

FOR THE PLAINTIFFS:

G. KEITH ALLEY, ESQ.
Kizer & Black
329 Cates Street
Maryville, Tennessee 37902

FOR THE DEFENDANTS B&J ENTERPRISES,
ROBERT L. MOHNEY, SADDLEBROOK HOMES,
SADDLEBROOK REALTY:

JON MICHAEL COPE, ESQ.
Stokes, Williams, Sharp, Davies,
Cope & Mann
920 Volunteer Landing Lane, Suite 100
Knoxville, Tennessee 37901-2644

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**FOR THE DEFENDANTS TRAVIS FULLER
AND FULLER & SIMS DEVELOPMENT, LLC:**

JAMES Y. (BO) REED, ESQ.
720 South Gay Street
Knoxville, Tennessee 37902-1708

**FOR THE DEFENDANT FULGHUM MACINDOE &
ASSOCIATES, INC.:**

W. PAUL WHITT, ESQ.
Lewis, King, Krieg & Waldrop, P.C.
620 Market Street, 5th Floor
Knoxville, Tennessee 37902

I N D E X

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EXAMINATION BY MR. COPE	168
EXAMINATION BY MR. WHITT	194
EXAMINATION BY MR. ALLEY	199

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	Exhibit 120 - Late Filed - Travis Fuller's wallet-sized real estate license.	11
	Exhibit 121 - 5/27/2003 Warranty Deed between James Scott and Travis Fuller and Jeffrey Sims, three pages.	32
	Exhibit 122 - 8-12-2004 MPC Report, FMA 0009 and 0010.	55
	Exhibit 123 - 9-9-2004 MPC Report, FMA 0013 through 0015.	59
	Exhibit 124 - Excerpt from the MPC minutes 9/9/2004, SB1581 through SB1583.	69
	Exhibit 125 - Documents relating to Yates Construction, 23 pages.	82

1 what was done to -- if anything was done to
2 rehabilitate those three depressions, are you saying we
3 would have to ask Mr. Sims because he was in charge of
4 that?

5 A. No. I would say that he initially was in
6 charge of that, as I said earlier.

7 Q. Okay. I don't mean to put words in your
8 mouth.

9 A. No, no. It's okay. We are all trying to
10 understand. He was initially in charge of that. But
11 his lack of ability to get this thing finished dictated
12 towards the end that I had to fire Johnny Yates which
13 is one of the contractors on that renegotiated deal.
14 We brought in Sharp Contracting to finish the job so
15 that we could actually turn over lots to Mr. Mohney.

16 Q. All right.

17 A. B&J Enterprises or Saddlebrook.

18 Q. However that worked?

19 A. Yes, sir.

20 Q. All right. And to bring you to my next
21 point that I'm going to ask you about, let me return
22 these.

23 A. Okay. Yes, sir.

24 Q. I'm going to hand you this next document
25 which I will tell you was produced in response to a

1 subpoena from Yates Construction Company.

2 MR. ALLEY: This is a complete copy of
3 everything you sent me, Mr. Cope.

4 **BY MR. ALLEY:**

5 Q. I'm going to hand you those documents.

6 A. Yes.

7 Q. I ask you to look through that. And
8 while you are looking through it, you will agree with
9 me that in terms of doing the initial grading work for
10 this project, that Fuller & Sims Development, LLC,
11 hired Yates Construction to do that at the outset; is
12 that correct?

13 A. That's correct.

14 Q. All right. And please look through that
15 document real quick.

16 A. Okay.

17 Q. In terms of those documents, they show
18 what Yates Construction was hired to do and what they
19 billed you for. Is that accurate?

20 A. That is accurate.

21 Q. And in looking through those documents,
22 the only reference to any sinkhole work in there at all
23 is with regard to filling in sinkhole #1 which is the
24 200-foot in diameter sinkhole right there as you come
25 into the subdivision on the left?

1 A. That's correct.

2 Q. All right. So, in terms of anyone being
3 hired at the outset to do any remediation work of any
4 sinkhole, the only thing that was done was Yates
5 Construction was hired to fill in sinkhole #1?

6 A. Well, I'm not sure they were hired to
7 fill in sinkhole #1, but they were hired to grade and
8 construct the site.

9 Q. All right. Well, let me --

10 A. I see the exhibit where it says that one
11 of their invoices says that they undercut sinkhole area
12 and fill up. I see that.

13 MR. ALLEY: Okay. Let's go ahead and
14 mark this as the next collective exhibit, please.
15 It will be 125.

16 (Exhibit 125 - Documents relating to Yates
17 Construction, 23 pages.)

18 MR. COPE: I believe those would be bound
19 from the -- what counsel is telling me that would
20 be from the subpoena duces tecum that was issued
21 on March 13, 2013, and returned sometime
22 thereafter. He doesn't have a date on the
23 affidavit from Yates Construction.

24 **BY MR. ALLEY:**

25 Q. All right. In looking at Collective

1 Exhibit 125, I have gone through it again, and again,
2 I'm not trying to mislead you. I welcome you to look
3 through it anywhere you want to, but on the third page
4 is the only reference I see to a sinkhole. That's a
5 change order dated 8-31-2005, and in the description
6 says, "Undercut sinkhole area and fill up," and it
7 says, "Truck time for hauling dirt, base stone and
8 No. 4 stone." I ask you to look at that.

9 A. I did.

10 Q. All right. And there is a second red tab
11 place. If you will go down to that red tab.

12 A. Uh-huh.

13 Q. Is that your signature on that check?

14 A. It is not.

15 Q. Okay. Who's signature is that?

16 A. It looks to be Mr. Sims.

17 Q. All right. Does it reference the invoice
18 that I just mentioned? The 8-31-05 invoice number? It
19 looks like it's 0406 or something like that.

20 A. It does, yes, sir.

21 Q. All right. So, in terms of paying
22 someone to do something, it's clear that your company
23 paid Yates Construction to do the work that's shown in
24 that exhibit; correct?

25 A. That's correct.

1 Q. All right. Do you know whether filling
2 in sinkhole #1 impacted the sinkhole by changing the
3 direction of any storm water towards it?

4 MR. COPE: I'm going to object to the
5 form. Go ahead.

6 THE WITNESS: My understanding -- and
7 this is based on what I have read today, not my
8 recollection, too, is that our duty was to make
9 sure that no more storm water was put into that
10 area. And that's, hence, the headwall that lies
11 behind Lots 23 and '4 that keeps any -- you know,
12 any more water going into that from the rear
13 drainage of our development.

14 **BY MR. ALLEY:**

15 Q. You are not aware of any headwalls in
16 relation to sinkhole #1 that you constructed, are you?

17 A. There is a rear drainage area that
18 carries the water away from sinkhole #2. So not a
19 headwall, but there is rear drainage on those lots.

20 Q. I'm just talking about sinkhole #1. You
21 jumped down and you were talking about the sinkhole
22 around Lot 2 and 3, I thought.

23 A. No. I'm talking about #1.

24 MR. COPE: Can we stop for the record? I
25 just want to clarify. Sinkhole #1 is what we have

1 been talking about on Lot 25. Can we agree on
2 that?

3 THE WITNESS: Yeah. Lot 23, 24 or 25.
4 Once again, I am yet to see a plat in front of me
5 today.

6 **BY MR. ALLEY:**

7 Q. Any time you want something, let me know
8 and we will give it to you, to the best we have.

9 A. Yeah, 23 and 24. Yeah. Okay? The only
10 construction in my recollection that we had to do for
11 sinkhole #1 is to not put any more water in that
12 sinkhole. And so we put rear drainage, and in those
13 that take -- if I had a set of plans, but I do remember
14 that we had to come back in and put rear drainage at
15 Lots 23 and 24 that carried it over to road A and out,
16 not into the sinkhole.

17 Q. With regard to that drainage that you are
18 talking about and drainage plan, I mean, there are
19 drainage plans in Exhibit 88.

20 A. Correct.

21 Q. Is that what you are referencing?

22 A. Do you guys have a set of as-builts?

23 Q. I will represent to you that is the only
24 plans that I have purporting to be the final plans from
25 Fulghum MacIndoe. So, if there is anything in between,

1 you know, or after that, I don't have anything at this
2 point.

3 A. Okay.

4 Q. So, in terms of getting back to looking
5 at that, does that help you remember any more, anything
6 else that was done in relation to sinkhole #1, the
7 200-foot diameter sinkhole?

8 A. No, sir.

9 Q. Handing you this next document, it's got
10 a little number at the bottom of the ten that I will
11 represent is probably from our office. That looks like
12 one of my partner's handwriting.

13 A. Okay.

14 Q. You will agree with me that that is the
15 permit that you pulled with regard to starting the
16 actual physical process of development work on this
17 subdivision. Is that correct?

18 A. I would say it's correct, yes, sir.

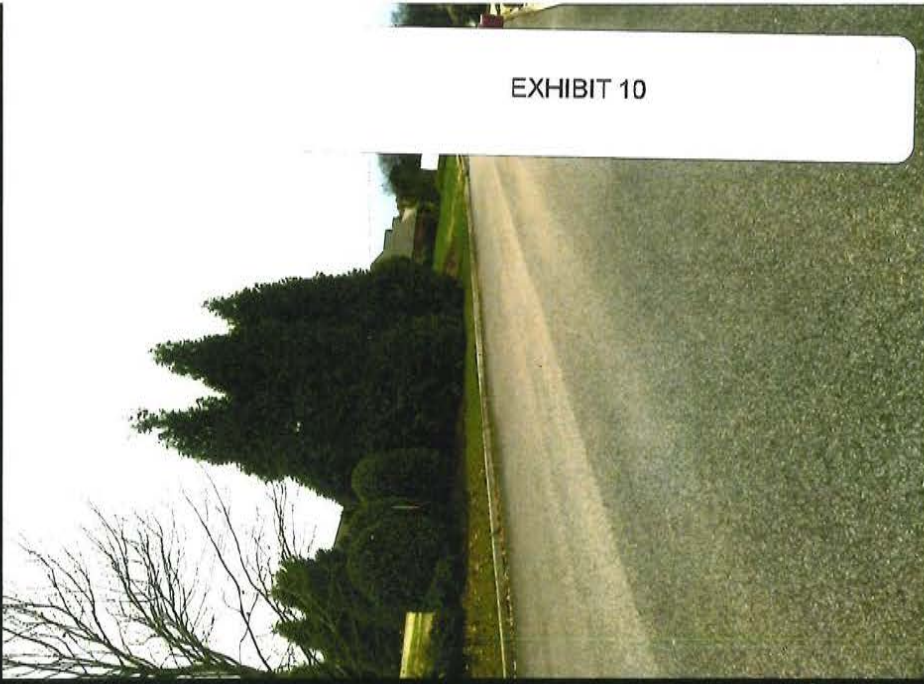
19 Q. All right. It has your signature on it;
20 is that true?

21 A. It does.

22 Q. All right. And is it dated 12-2-2005 or
23 2004?

24 A. It's 12-2-04 at the top. There is not a
25 date by my signature.

EXHIBIT 10













December 3, 2018

Mr. William Jenkins
9100 British Station Ln
Knoxville, TN 37922

Phone: 865-805-1388
Email: wljenks@comcast.net

**Subject: Review of Report of Limited Geotechnical Exploration
Cottington Court Development
Knoxville, Tennessee
Shield Project No.: 1185000-01**

Dear Mr. Jenkins;

This letter is written in regard to the "Report of Limited Geotechnical Exploration" issued by Geoservices, LLC on July 30, 2018. As you are aware, Shield Engineering, Inc (Shield), has previous experience consulting on the Cottington Court development due to litigation surrounding numerous sinkholes that dropped out post development of the subdivision. Most notably, multiple sinkholes were removed from the Benchmark Surveying's survey that resulted in development of several lots which later resulted in damage to property both in the form of land and structures. As such, Shield has reviewed previous documents generated during design and development of the subdivision, documents generated during litigation and the most recent geotechnical report.

Literature Review and Previous Site Experience

Attached is the expert testimony of Mr. Tant regarding Lot 15 owned by Mr. Brian Dale, survey conducted by Benchmark Surveying prior to the removal of sinkholes from the survey, the Fulghum & MacIndoe (F&M) proposed layout and various boring location plans and borings from the previous reports. As part of the expert testimony, Shield reviewed numerous geotechnical reports issued by Mr. Dennis Huckaba, P.E. while he was at S&ME, Inc. as well as GEOservices, LLC. It was Mr. Huckaba's initial conclusion in the "Report of Geotechnical Exploration" issued by S&ME on August 9, 2004 that the large closed depression identified on F&M's concept plan as Sinkhole #1 and surrounding borings number B-1 and B-2, was in fact a sinkhole and should not be developed. An excerpt of his conclusions from that report is below:

*Report of Geotechnical Exploration
Closed Depressions at Northshore Subdivision/Knoxville, Tennessee
S&ME August 9, 2004*

Based on the results of our exploration, we do not recommend construction in closed depression # 1. Soft to firm soils were encountered from the ground surface to the refusal depth in boring B- 1 and in portions of boring B-2. These soils are indicative of either past or on-going sinkhole activity. Closed depressions # 2 and # 3 appear to have been the result of construction activities around or on the site. We would expect construction in these areas would have sinkhole risk similar to other areas on the site. Stiff residual soils were typically encountered in these borings to the auger refusal depths. A relatively thick layer of topsoil/cultivated soil was encountered in boring B-3 in closed depression # 2. Additional stripping depth may be required in this area to achieve suitable subgrade for fill placement.

Mr. Huckaba later performed additional subsurface explorations at Geoservices for both lot number 15 and lot number 16. Mr. Huckaba concluded that the area surrounding Lot number 15 was “not at any greater risk than other previous developed lots site in the same area”. However, it was his conclusion that Lot number 16 had “greater potential for sinkhole activity and recommended remedial grouting. The conclusions of both of these reports are below:

*Report of Geotechnical Exploration
Cottingham Court-Lot 15 Knoxville, Tennessee
GEOServices - June 20, 2006*

Although a potential for sinkhole formation and subsidence is present at any site within limestone geologic regions, the results of our field exploration indicate that the upper clay residuum is generally stiff at this site. We anticipate that the areas within the 50 foot buffer included in this study for lot 15 may be developed for light residential construction. There are areas of soft soils near bedrock which can be indicative of karst activity. However, there is also a relatively thick overburden of stiff soils prior to encountering the soft layers. This is common in this geology and we expect the sinkhole risk to be no greater than other previously developed sites in the same geologic setting.

*Report of Geotechnical Exploration
Cottingham Court-Lot 16 Knoxville, Tennessee
GEOServices - June 28, 2006*

Although a potential for sinkhole formation and subsidence is present at any site within limestone geologic regions, the results of our field exploration indicate that the upper 15 feet of clay residuum is generally stiff on lot 16 and soft from 15 feet to refusal of about 33 feet. The thicker layer of soft soil can be indicative of more advanced karst activity. To reduce the sinkhole risk in such areas, we recommend a ground improvement process known as "cap grouting" to reduce the sinkhole risk. Cap grouting consists of pumping low slump grout through steel casing to the top of bedrock to plug openings in the rock and support the overlying soil. For grouting projects, effective engineering observation is as important as the proper equipment and materials.

The area of concern for the planned construction area identified to us by Saddlebrook Homes was cap grouted on June 23 and 26, 2006. The cap grouting locations were determined by GEOServices and the operations were observed by a representative of GEOServices. The cap grouting was performed by

Hayward Baker. Based on our observations of the cap grouting operations, it is our opinion that the area of concern has been properly remediated and the sinkhole risk is now no greater than other sites in the same geologic setting.

More recently in the 2018 GEOServices report it is concluded that the large closed depression identified as Sinkhole #1 on the subdivision concept plan was now acceptable for building. As shown on both the survey plat and concept plan the depression is rather large and well developed. The survey plat shows the large sinkhole identified as Sinkhole #1 as well as several other limits of sinkholes along the rear of the property. It should be noted that several of these sinkholes were removed from the drawings at the direction of Mr. Huckaba. Later these sinkholes impacted the property and/or homes located on lot number 13, 15 and 16.

The current state of the closed depression as shown on the attached 2018 GEOS boring location plan does not reflect the severity of Sinkhole #1 as shown on the previous drawings. In fact during our review for litigation in 2012, sinkholes are clearly visible in numerous generations of aerial photography available on Google earth.

Shield has also attached the soil test borings from the previously referenced geotechnical reports during the development and investigation of the neighborhood. A comparison of the soil test borings show that similar soils have been identified by Mr. Huckaba during every phase of his investigative work. Furthermore it should be noted that borings number B-1 & B-5 performed in 2004 were drilled in the limits of Sinkhole number #1 and clearly show a karst profile as identified and described in GEOS's most recent geotechnical report. GEOS's recent conclusions are referenced below:

*Report of Limited Geotechnical Exploration
1933 Cottingham Lane / Knoxville, Tennessee
GEOServices - July 30, 2018*

Typical characteristics of karst solutioning consist of SPT N-values decreasing to a soft or very soft consistency (N-values of 4 bpf, or lower) with depth and moisture contents typically increasing significantly with depth. The results of our laboratory testing indicated the moisture contents of the existing fill as well as the underlying residual soils generally remained consistent. Moreover, the SPT N-values observed in the soil test borings conducted on site did not significantly decrease with an increase in depth, although zones of very soft to soft soil were present.

Given our site observations and the results of our field exploration, it is our professional opinion that the site does not present a greater risk of karst solutioning (i.e. sinkholes) than other sites located in the immediate vicinity. Moreover, the fact that the site has been filled previously, somewhat decreases the risk of sinkhole development. This is because the placement of a cohesive soil fill over the area effectively caps the area with a relatively impervious "blanket" of remolded soil. Based on the results of this exploration, it is our professional opinion that the mapped closed contour noted on the plat entitled "Subdivision Plat of Cottingham Court" dated September 27, 2005 and prepared by Benchmark Associates, Inc. is not the result of soil migration thorough an active sinkhole.

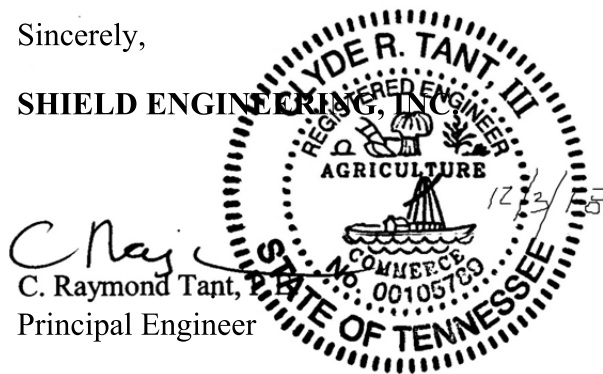
Conclusions

Based on Shields review of the previous geotechnical reports issued by S&ME and GEOServices as well as the more recent geotechnical report and our extensive knowledge of the site due to serving as an expert witness supporting numerous homeowners affected by the miss identified sinkholes, it is our opinion that Sinkhole #1 is not developable land. The 2018 data collected by GEOS only continues to show that the profile of the soil is similar to that of other soil's previously investigated. Furthermore Sinkhole #1 is part of a very large ancient sinkhole collapse. In the past the sinkhole collapse created the very large depression that is present now. Borings B-1 and B-2 from the S&ME report in 2004 show the classic reverse stiffness profile that occurs as sinkholes form. This has not changed; the current drilling only missed these areas a second time. Furthermore, sinkholes form from water migration from both the top down and bottom up. Although a layer of clay fill has been placed in Sinkhole #1, the site is very close to large bodies of water and the local groundwater is most likely very close to the surface elevation of the bodies of water. Fluctuations in the groundwater table due to increased rainfall as well as drought will eventually cause a drop in the water table which has the same effect at the soil bedrock interface where sinkholes begin as the downward migration of surface water. It is the duty of engineers to hold paramount the safety, health and welfare of the general public. We do not believe any additional information has been presented that justifies development or would be in the interest of the health, safety or welfare of the general public (the future homeowner).

Shield appreciates the opportunity to provide you with geotechnical evaluation services. If you have any questions concerning our proposal, please contact the undersigned at (865) 544-5959.

Sincerely,

SHIELD ENGINEERING, INC.



C. Raymond Tant, P.E.
Principal Engineer

Justin A. Goss, P.E.
Project Engineer

Attachments: Expert Testimony
Benchmark Plat
FM Concept Plan
Geo-Services Geotechnical Report 20180730
Pages from GEOS Study re Lot 15 6-25-06
Pages from GEOS Study re Lot 16 6-28-06
Pages from S&ME Geotech Study 8-9-04

Expert Testimony

EXPERT REPORT/DISCLOSURE OF RAYMOND TANT, P.E.

After a review of various documents and reports prepared by others, I have concluded that numerous sinkholes were present at the Cottingham Court development. More specifically, it is my opinion that sinkholes were present on lot 15 that were not correctly identified and later removed from design drawings at the direction of S&ME, Inc. (S&ME) and GEO Services, LLC (GEOS). Overall, the project site is situated in a well developed karst topography as evidenced by numerous locally mapped closed topographic depressions both off and on the site as well as depressions that were once mapped and since removed. Closed topographic depressions may not always be due to sinkhole formation (e.g. remnants of old structures, buried debris piles, etc.). However, in a karst topography as well developed as this site, the observed depressions on lot 15 were most likely the ancient remnants of a collapsed dome due to sinkhole activity. Once these sinkholes collapsed, the formation process begins again. Borings conducted by S&ME and GEOS were either not placed in close enough proximity to the depressions in lot 15 or did not have consistent interpretation from one report to the next.

During the preparation of my opinion, I reviewed the following drawings and reports:

- Fulghum, MacIndoe & Associates (FM&A)
 - Sheet C1 entitled “Concept Plan” dated September 9, 2004
 - Sheet C2 entitled “Site Layout and Paving Plan” dated September 24, 2004
 - Sheet C3 entitled “Site Layout and Paving Plan” dated September 24, 2004
 - Sheet C2 entitled “Site Layout and Paving Plan” dated November 9, 2004
 - Sheet C3 entitled “Site Layout and Paving Plan” dated November 9, 2004
- Benchmark Surveying, Inc.
 - Sheet 1 of 1 “General Property Survey” dated October 15, 2004
 - Sheet 1 “Subdivision Plat” dated January 31, 2005
 - Sheet 1 of 1 “Subdivision Plat” dated March 21, 2005
 - Sheet 1 of 1 “Subdivision Plat” dated September 27, 2005
- S&ME Proposal for Services July 13, 2004
- S&ME Geotechnical Report Dated August 9, 2004 & Project Files
- S&ME Geotechnical Report Dated November 11, 2004 & Project Files
- November 23, 2004 S&ME Addendum Report & Project Files
- Field Testing Data S&ME
- GEOS Geotechnical Report June 20, 2006 - Lot 15
- GEOS Field Reports
- Engineering & Testing Solutions (ETS) Field Reports
- Foundations Systems
 - “Proposal for Geotechnical Exploration” dated November 15, 2010
 - “Subsurface Exploration” dated May 10, 2011
- Don W. Byerly “Report of Investigation” dated April 20, 2009.
- TTL & Subsurface Evaluations, Inc. “Combined Geophysical Survey Report” dated March 22, 2010
- Structural Engineering Assessments, PC report dated June 28, 2012
- Correspondence between the Tennessee Department of Environment and Conservation (TDEC) and the Fuller Group as well as GEOS relating to the Class V Injection Well Permit

- Vision Engineering “Sinkhole Location Exhibit” dated October 3, 2013
- Class V Injection Well Permits dated October, 14, 2004 and February 2009

1. **STATEMENT OF OPINIONS:**

A. Project Drawings

I have reviewed drawings prepared by FM&A as well as Benchmark Surveying and have determined that early on during the development, numerous depressions and sinkholes were identified during design. The location of some of these depressions and sinkholes can be confirmed by aerial photographs from Google Earth as well as other reports prepared by S&ME and GEOS. Based on these drawings, the Dale Residence has been placed inside of the 50 foot buffer zone as defined by the City of Knoxville. At some point prior to the Dale Residence being constructed, the depressions and sinkholes were removed from the design drawings. The removed depressions on Lot 15 are located directly beneath the Dale Residence.

B. S&ME Proposal for Services July 13, 2004

It is my expert opinion that a critical step in reviewing a site for the potential for sinkhole development is the closure of the bore holes. Nowhere is it mentioned or suggested in S&ME’s proposal that either bentonite pellets or a cement bentonite grout mixture would be utilized to seal and abandon the boreholes. If the boreholes are not abandoned properly and the method as described by S&ME used, it could possibly lead to future subsidence. The soft soils placed back into the boring will be a conduit for both ground and surface water to infiltrate down into the soil bedrock interface thus resulting in the aggravation of an existing sinkhole feature or the creation of a new dropout.

C. Review of S&ME Geotechnical Report Dated August 9, 2004

In reviewing S&ME’s geotechnical report entitled “Report of Geotechnical Exploration” it was noted in the geotechnical logs and report that the holes were abandoned using the standard method (backfilling with soil cuttings) and no grout or bentonite was used for abandonment as previously discussed.

The geology of the site as identified in the report is the Newala formation which weathers to a reddish or orange-brown clay). As recorded by S&ME in boring B-1, there is an upper 8 foot thick layer of soil that does not match the description for the Newala formation soils. This is the same for boring B-2 that has a 3 ½ foot thick layer.

When investigating a sinkhole or depression it is important to recognize the presence of colluvial soils. Colluvial soils are materials that have been transported to their current location by gravity and are typically a darker coloring such as brown or black due to the inclusion of organic materials (leaves, grass, etc.). When a sinkhole collapses the resulting funnel or depression often traps organic debris.

This layer resides above the residuum and is a tell-tale sign of previous or current activity. It is my opinion the soils above residuum in borings B-1 and B-2 were not identified.

Boring B-3 included a layer of topsoil/cultivated soil 18 inches in thickness. Considering no other borings had topsoil to this depth, it should have raised a red flag. Often when land is cultivated or maintained as a farm, over a long period of time, a cultivated or plow zone of highly organic soil may be formed across the site. The absence of this plow zone layer in other borings but presence, depth and thickness of other dark materials above the residuum in boring B-1 and B -2 should have been red flags. It is very common for farmers to fill collapsed domes, sinkholes or depressions with debris. It would be unusual for a farmer or land owner to excavate numerous pits of these dimensions on their property to waste materials.

Typically, in a karst setting, the resulting soil profile is typically a stiffer crust with a softening soil profile with depth. Although S&ME did not recognize the potential colluvial soils above residuum in B-1 and B-2, B-1 was recognized as being a sinkhole due to the softening with depth and moist profile.

S&ME did not backfill the borings with bentonite or a cement/bentonite mixture.

This report was written and stamped by Joshua Cole, P.E. and reviewed by Dennis Huckaba, P.E.

D. Review of S&ME Geotechnical Report Dated November 11, 2004

In the geotechnical report issued by S&ME dated November 11, 2004 there appears to be 2 versions. One version includes a Figure 1 that is centered on Lot 12 and another version that includes a Figure 1 that shows the entire development with the exception of Lot 12. In the Figure 1 that shows the entire development, numerous closed depressions are present on Lots 15 & Lot 16. Although S&ME did drill a boring (B-9) inside of the property boundaries for Lot 15, it appears the boring was drilled at a considerable distance from the two closed topographic depressions located in the building footprint. A review of aerial photography from Google Earth clearly shows in 2003 the two surface features, present in what is now the building pad, are located in a field. Drilling directly adjacent to these surface features should have been easily accomplished and would be critical to evaluating the site.

It is my opinion that boring B-9 was drilled too far of a distance from the two surface features. In addition, the soil profile drilled in B-9 is a very soft to soft soil profile. This is a softer soil profile than was observed in B-1 in the August 9, 2004 S&ME Geotechnical Report which was described as “typically indicative of past or ongoing sinkhole activity”. However in this report that is not considered to be an issue and the recommendation is to move forward with the development of Lot 15. It is my experience when investigating sinkholes that the borings be taken to refusal to obtain a full soil profile. The boring at Lot 15 was terminated at 20 feet in soft soils.

On the field log for B-9, the driller indicates that the boring was stopped due to another boring being located within 10 feet of this boring. A review of the remaining field logs and typed boring logs in this report do not reference or indicate that boring.

S&ME did not backfill the borings with bentonite or a cement/bentonite mixture.

There is no reference to the previous geotechnical report that was issued on August 9, 2004. It should also be noted that the reviewing and stamping engineer for S&ME was Dennis Huckaba, P.E.

E. Review of S&ME Addendum Report dated November 23, 2004

Shield has reviewed an Addendum Report issued by S&ME regarding Lot Number 12. Although it is obvious this report does not relate to the property owner in question, it does show a continued lack of understanding of S&ME's writers. As previously mentioned, the soils described in S&ME's Geology Section of their previous reports indicates residual soils should be reddish or orange-brown clay. A simple review of the boring log B-12 for Lot 12 does not show that consistency. Instead, the full column of the soil is a dark brown and black clay. Typically colluvial soils that are found in the throat of a collapsed dome of a sinkhole are dark brown or black from the collection of highly organic material into the open cone of the formed depression after a dome collapse.

Mr. Dennis Huckaba is the reviewing engineer for S&ME on this project.

F. Review of Field Testing Data S&ME

A review of S&ME's field testing reports indicates that they were responsible for testing and monitoring of soils and preparation of the site. However, there are inconsistencies and what appears to be missing information between the reports. Information provided thus far, either includes field reports referencing density tests that were not attached or field density tests that did not have the daily report with it. In addition, there are loose references to areas of work on the site without clear discussion as to where that was performed or maps to show the locations. Mr. Dennis Huckaba made a visit on July 21, 2005 to observe two cleaned out "trash pits" at the rear of the property. It is ambiguous which depressions were cleaned out.

G. Review of GEOS Services, LLC Geotechnical Report June 20, 2006 - Lot 15

During a review of GEOS Service's LLC (GEOS) Report for Lot 15, I have noted several inconsistencies. Mr. Dennis Huckaba, the reviewing engineer for S&ME on two previous reports, states in the project description that two additional depressions have been identified on Lot 15. This is confusing, considering Mr. Huckaba's involvement with previous geotechnical studies and the availability of drawings detailing the existence of these two depressions on Lot 15. A previous

report on this property reviewed and stamped by Mr. Huckaba clearly shows a total of four closed depressions located directly in the vicinity of or on Lot 15.

Although borings were conducted on Lot 15, I do not believe their location is correctly represented in GEOS's Figure 1 – Boring Location Map. As mentioned previously, Mr. Huckaba had previous access to site layouts, subdivision plans and had visited the site to observe remediation or site preparation of this development. The Figure 1 drawing showing the locations of the borings does not correspond with the shape and location of the property layouts.

GEOS did not reference backfilling the borings with bentonite or a cement/bentonite mixture.

In a separate geotechnical report issued for Lot 16, GEOS recommends the use of cap grouting around the depression that straddles Lot 15 and 16.

H. Review of GEOS Field Reports

Shield reviewed the daily records from GEOS Services for June 26, 2006. Representatives of GEOS were present on the site during the cap grouting; however, no drawings or map locations are attached and thus the report has almost no meaning or value relative to Lot 15.

I. ETS Reports and Installation of Helical Piers

Documentation has been provided that helical piers were installed along the rear foundation wall of the Dale Residence. There is no information indicating why this was recommended or needed. Mr. Ray Faust with Engineering Testing and Solutions (ETS) recommended and observed the installation of these piers as documented in his letter dated June 18, 2008. Mr. Faust also observed the excavation of the foundations for the home as well as oversaw the undercut of poor soils in the foundation area and backfilling with flowable fill. Mr. Faust also indicated the site had been remediated for the depressions (presumably the ones investigated by S&ME and repairs observed by GEOS) prior to his involvement. To date, no documentation regarding these repairs has been provided by other parties.

There appears to be no documentation presented by any party to date as to the repairs that were made on Lot 15 prior to Mr. Faust consulting on the Dale residence.

J. General Opinion of Geotechnical Work to Date

Shield has reviewed reports from S&ME, GEOS, Foundations Systems, Don Byerly, TTL, Subsurface Evaluations, Inc. and Structural Engineering Assessments. As of now, it appears that a hodgepodge of geotechnical and structural report evaluations have been performed on the Dale Residence. It is evident either the borings that were used have either not been in appropriate locations to evaluate the

subsurface conditions or methods that have not been suitable, not useful to render opinions of the structure or recommendations for additional studies followed up. It should be noted that Foundation Systems did backfill the borings with a bentonite mixture. It is my opinion that additional geotechnical studies need to be performed on the Dale Residence located on Lot 15 prior to making any more repairs. This investigation should utilize a drilling system such as hollow stem augers in conjunction with continuous sampling using standard penetration testing or undisturbed sampling as dictated and accepted by ASTM Standards. The use of a dynamic cone penetrometer (DCP) should not be used unless absolutely necessary and only on the inside of the home due to access restrictions. Conventional soil test borings should be performed along the perimeter of the rear half of house, the south side of the home as recommended by TTL/Subsurface Evaluations, Inc. as well as on the interior where areas of distress have been noted. It may be possible to sample the interior of the home utilizing a geo-probe drill rig that has been equipped with standard penetration test capabilities. I recommend continuous sampling be performed until residual soils are encountered. Once residual soils are encountered standard penetration sampling intervals may be changed to 5 foot centers thereafter.

K. Review of TDEC Permit Files

Reviewing the 2004 Class 5 Injection Well Permit submitted on behalf of Fuller, reference was made to filling the depressions located on Lot 15, as designated numbers 3 and 4. The permit clearly shows the method to be used in backfilling which is a reverse graded filter. There is no documentation that this repair method was ever utilized. A second permit was also issued in February 2009, but as indicated by TDEC the recommendations in this permit were never completed. In addition, the referenced Figure 3A is missing from documentation.

L. Vision Engineering "Sinkhole Location Exhibit" dated October 3, 2013

Shield has reviewed the Mediation Exhibit prepared by Vision Engineering. In review of the sinkhole locations as surveyed by Vision Engineering and FM&A, it is apparent that there was not good control over the location of the drilling or the sinkholes shown in the GEOS reports for Lots 15 and 16. Most likely GEOS did not have a good understanding of the location of the house seat relative to the property lines and the depressions. Most likely the depression that was investigated by GEOS is the same sinkhole located most recently by Vision Engineering that straddles the property line between Lots 15 and 16. In addition, the drawing confirms the location of the depressions that are now under the Dale residence that were eliminated at the direction of S&ME and their November 11, 2004 Report.

2. **FACTS OR DATA CONSIDERED BY WITNESS:**

Information gained from personal observations of the site, information from geotechnical reports, field testing reports and project drawings as previously referenced.

3. **EXHIBITS THAT THE WITNESS ANTICIPATES USING AT ANY HEARING IN THIS CAUSE:**

Project site photos and sketches, survey drawings, reports, and standards, including the documents as previously listed.

4. **WITNESS QUALIFICATIONS AS EXPERT WITNESS:**

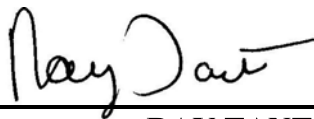
I am a licensed engineer in Tennessee with extensive training and experience in geotechnical engineering. A copy of my curriculum vitae is attached.

5. **LIST OF CASES IN WHICH WITNESS HAS TESTIFIED BY DEPOSITION OR AT TRIAL WITHIN THE PAST FOUR YEARS:**

- A. Fugate v. Tenn. Farmers Ins. Co., Claiborne County – Docket No. 16,128, trial testimony
- B. Mountain Timbers v. Shield Engineering, Inc. Knox County
- C. Iglis v. Auto Owners, Knox County

6. **WITNESS' COMPENSATION:**

I am an employee of Shield Engineering, Inc. and I am receiving compensation from Kizer & Black Attorneys, PLLC to be a witness in this case.



RAY TANT, P.E.

Date: 12/4/13

G. Keith Alley, esq
Kizer & Black, Attorneys, PLLC
329 Cates Street
Maryville, Tennessee 37801-4903
Direct Telephone: (865) 980-1643
Direct Facsimile: (865) 980-6143

Benchmark Plat

FM Concept Plan



9217 AMHERST DRIVE
NASHVILLE, TN 37228
OFFICE PHONE: (615) 996-6419
FAX: (615) 990-6488

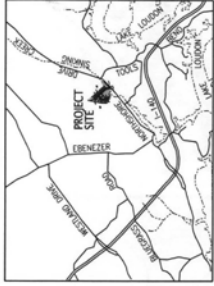
PRELIMINARY
NOT FOR
CONSTRUCTION

NORTHSHORE SUBDIVISION
9117 S. NORTHSHORE DRIVE
KNOXVILLE, TN 37922

FULLER - SIMS DEVELOPMENT
109 NORTHSHORE DRIVE, SUITE 200
KNOXVILLE, TENNESSEE 37919
TELEPHONE NO.: (615) 740-7434

CONCEPT PLAN

No.	Revision/Issue
1	ISSUED FOR CONCEPT PLAN
2	REVISED CONCEPT PLAN
3	REVISED CONCEPT PLAN
PROJECT SHEET PROJECT NO. 255.003 DATE 7/12/04 SCALE 1"=60' C1	



LOCATION MAP
(NOT TO SCALE)

UTILITY OWNERS:

WATER & SEWER
SOUTH WEST DISTRICT OF WASH. COUNTY (I-60)
222 DOWNWOOD ROAD
KNOXVILLE, TN 37922
OFFICE PHONE: (615) 996-2744

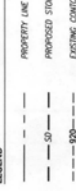
ELECTRIC

LENOIR CITY UTILITY BOARD (LCUB)
1449 S. WOODWARD AVENUE
LENOIR CITY, TN 37771
OFFICE PHONE: (615) 295-9299

GAS

PACIFIC UTILITIES BOARD (PUB)
P.O. BOX 58017
KNOXVILLE, TN 37957
CONTACT: MR. CAROL MCCLIMOCK
OFFICE PHONE: (865) 558-2123

LEGEND



NOTES:

- EXISTING CURVE AND BOUNDARY DATA ARE REFERENCED FROM ACSS. EXISTING CONTOURS ARE AT 2'-FT INTERVALS.
- PROJECTIONS CONCERNED REFLECTS PANEL J AS SHOWN ON PLAT 2001-11-04, FOR THE PROPERTY IS 10.15 FT.
- OWNER: SCOTT J. REED AND DONNA LOU MATTS, 3108 S. NORTHSHORE DR., KNOXVILLE, TN 37922
- BULGING SIDEWALKS ARE 20'-FT. IN THE FRONT, 5'-FT. ON THE SIDEWALK, 5'-FT. ON THE CURB, 15'-FT. ON THE SIDEWALK, 15'-FT. ON THE FRONT YARD, REAR AND 15'-FT. & 20'-FT. ON THE FRONT AND REAR YARDS.
- TRUCK DRIVE CHANGES WILL BE PROVIDED AT ALL LINES.
- BOX-CURB CHANGES WILL BE PROVIDED AT EACH UNIT FOR GARAGE PICK-UP.
- PARKS LOCATED IN THE REAR OF THE HOMES SHALL NOT BE OPEN TO TRAFFIC, TURNER THAN 10'-FT AND THE PROVISIONAL SIDEWALK.
- PROPOSED DENSITY IS 2.5 UNITS PER/AC.
- ACCESS TO SUBDIVISION IS RESTRICTED TO INTERNAL STREETS ONLY.
- 20'-FT. WIDE TRANSFERABLE ACCESS EASEMENT TO BE DEEDATED TO CEMETERY.
- PROPERTIES SHALL BE PLATTED SUCH THAT NO REMAINING ACCESS TO THE CEMETERY WILL BE LEFT.
- STRUCTURE FOOTINGS/FOUNDATION TO BE VERIFIED DURING PLATTING.

VARIANCES:

- INTERSECTION GRADE OF ROAD "X" AT S. NORTHSHORE DRIVE TO BE 2.25%.
- INTERSECTION GRADE OF ROAD "X" AT ROAD "X" FROM 18 TO 22.25%.
- VERTICAL CURVE OF 120'-FT. FROM 200'-FT. @ STA. 0+70 TO 0+190.

PI. COORDINATES	Easting	NORTHING	CURVE NO.
2303.9417	3476.74	817.6854	C-1
2293.3876	3372.49	1746.0885	C-2
1937.6522	3559.96	1863.4290	C-3

HORIZONTAL CURVE DATA TABLE			
BELLA ANGLES	ANGLE	TANGENT	LENGTH
3476.74	100'	21.20'	66.49'
3372.49	100'	29.82'	53.91'
3559.96	100'	52.78'	97.13'

SIGHT DISTANCE CERTIFICATION
SIGHT DISTANCE WAS MEASURED FROM THE PROPOSED SUBDIVISION TO THE NEAREST OBSTACLE. THE MEASURED DISTANCE IS GREATER THAN THE MINIMUM REQUIRED.
ENGINEER: [Signature]
TENNESSEE CERTIFICATE NO. _____

CONCEPT PLAN CERTIFICATION
I, [Signature], ENGINEER, LICENSED TO DO ENGINEERING IN THE STATE OF TENNESSEE, CERTIFY THAT I AM A LICENSED PROFESSIONAL ENGINEER AND I AM THE AUTHOR OF THIS PLAN AND ACCOMPANYING DOCUMENTS, AND THAT THE PLAN AND ACCOMPANYING DOCUMENTS COMPLY WITH ALL APPLICABLE REGULATIONS OF THE ENGINEERING BOARD AND THE METROPOLITAN GOVERNMENT.
ENGINEER: [Signature]
TENNESSEE CERTIFICATE NO. _____



SCALE: 1" = 60'

WHITTINGTON
CREEK
SUBDIVISION

SUBDIVISION	COMMON NAME	BOTANICAL NAME	MIN. SIZE
(S)	ACER	FR. (6-8) INCH	2.5' CAL. @ 4'
(K)	SPYRIDIUM	SPYRIDIUM	2.5' CAL. @ 4'
(L)	COMPOSITOPHYTES	LEITANR	FR. (6-8) INCH
(C)	FRAXINUS	FRAXINUS	2.5' CAL. @ 4'
(P)	FRAXINUS	FRAXINUS	2.5' CAL. @ 4'



Handwritten notes:
02 St - 639
945 - 950
SLL - 950
950 - 950
SLL - 950
SLL - 950
SLL - 950

Geo-Services Geotechnical Report 20180730



July 30, 2018

Hartson Construction
PO Box 22640
Knoxville, Tennessee 37933

ATTENTION: Mr. Christopher Hare
charejr@hartsonconstruction.com

Subject: **REPORT OF LIMITED GEOTECHNICAL EXPLORATION**
1933 Cottington Lane
Knoxville, Tennessee
GEO Services Project No. 21-18546

Dear Mr. Hare:

GEO Services, LLC has completed the report of limited geotechnical exploration performed for the subject project. Our services were performed in accordance with our phone and email correspondence dating from July 13, 2018, and authorized by you. The purpose of our exploration was to explore the site subsurface conditions and provide geotechnical recommendations regarding the potential risk of sinkhole development and for the development of the site.

PROJECT INFORMATION

The project site is 1933 Cottington Lane in Knoxville, Tennessee. It is our understanding that there are concerns regarding the development of the site including a documented “sinkhole” occupying a portion of the lot. A plat entitled “Subdivision Plat of Cottington Court” dated September 27, 2005 and prepared by Benchmark Associates, Inc. indicates the location of a closed contour depression and designates this feature as a sinkhole. Additionally, it is our understanding that the project is to consist of the construction of up to three residential structures and its associated parking and drive area. Therefore, the purpose of this exploration is to explore the site subsurface conditions and provide geotechnical recommendations for the development of the site and to provide an opinion of the presence of a sinkhole onsite.

The site is relatively level. Based on a review of available aerial photography, it appears the site has been graded previously. The amount of earthwork (i.e. cut or fill) which has been performed to reach the existing site grades is unknown. Information regarding finished grades for the site was not provided at this time. However, we anticipate maximum earthwork cuts and fills of less than 5 feet may be required to reach planned elevations.

FIELD EXPLORATION

The site subsurface conditions were explored with five (5) soil test borings spread across the site. The boring locations were marked in the field by GEOServices personnel. All depths in this report reference the ground surface that existed at the time of this exploration. Drilling was performed on July 20 and 21, 2018. The borings were advanced using 3.5-inch inside diameter hollow stem augers (HSA) with a Diedrich D-120 track-mounted drill rig. Within each boring, standard penetration test (SPT) and split-spoon sampling were performed at 2.5 foot intervals in the upper 10 feet, and 5 foot intervals thereafter. The drill crew worked in general accordance with ASTM International (ASTM) D 6151 method for HSA drilling. Sampling of overburden soil was performed in general accordance with ASTM D 1586, per the SPT procedure. The borings were backfilled with soil cuttings. Detailed information pertaining to each boring location can be found on the boring logs provided as an attachment to this report.

After completion of the field drilling and sampling phase of this project, the soil samples were returned to our laboratory where they were visually classified in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedures – ASTM D 2488) by a GEOServices geotechnical professional. Selected soil samples were then tested for natural moisture content (ASTM D 2216). The results of the testing program are provided on the boring logs.

GEOLOGIC CONDITIONS

The project site lies within the Appalachian Valley and Ridge Physiographic Province of East Tennessee. This Province is characterized by elongated, northeasterly-trending ridges formed on highly resistant sandstone and shale. Between ridges, broad valleys and rolling hills are formed primarily on less resistant limestone, dolomite and shale.

Published geologic information indicates that the site is underlain by bedrock of the Knox Group, which is not differentiated into its individual formations in this area. The Knox Group, where undivided, consists of siliceous dolomite and interbedded limestone. These rock units weather to produce a thick residual clay overburden. Silica in the form of chert is resistant to weathering and is scattered in various quantities throughout the clay residuum.

SUBSURFACE CONDITIONS

The following subsurface description is of a generalized nature to highlight the subsurface stratification features and material characteristics at the boring locations. The boring logs included at the end of this report should be reviewed for specific information at each boring location. Information on actual subsurface conditions exists only at the specific boring locations and is relevant only to the time that this exploration was performed. Variations may occur and should be expected at the site.

Surficial

A surficial layer of topsoil, approximately 6 inches in thickness was encountered in each of the soil test borings performed on site.

Fill

Beneath the topsoil, fill material was encountered in all of the borings conducted on site to a depth ranging from approximately 5 to 13 feet beneath the existing ground surface. We note that boring B-2 encountered refusal material within the fill. Fill material is classified as soils that have been transported and placed in their current location by man. The existing fill material generally

consisted of brown and reddish brown lean clay (CL) with varying amounts of rock fragments. The SPT N-values used to evaluate the fill materials ranged from 4 to 17 blows per foot (bpf) indicating soft to very stiff consistencies. The moisture contents of the existing fill ranged from about 19 to 30 percent.

Residual Soil

Beneath the existing fill, residual soils were encountered to depths ranging from 34 to 46 feet beneath the existing ground surface. Residual soils are formed from the in-place weathering of the parent bedrock. The residual soil generally consisted of orangish brown and reddish brown lean clays (CL) and fat clays (CH) with varying amounts of chert fragments throughout and some fine root structures were observed in the upper portion of the residual samples. The SPT N-value used to evaluate the consistency of the residual soil ranged from weight of hammer (W.O.H.), essentially 0 bpf to 50 blows to penetrate 3 inches, indicating a consistency of very soft to very hard. However, the very soft and very hard materials were encountered near auger refusal elevations, therefore, the residual soils were judged to be firm to stiff in consistency with isolated soft zones.

FINDINGS AND RECOMMENDATIONS

The conclusions and recommendations presented in this report are based on our site reconnaissance and the results of this exploration. Actual subsurface conditions may vary between or away from the boring locations. If it becomes apparent during site grading / foundation construction that encountered conditions vary substantially from those presented herein, this office should be notified at once. At that time, the conditions can be evaluated and the recommendations of this report can be modified in written form if necessary.

The results of our exploration indicate that the project site is generally overlain by a layer of existing fill soils overlying residual soils. Fill soils were encountered in each of the soil test borings performed on site to depths ranging from 5 to 13 feet below the existing ground surface. The fill soil was relatively clean of deleterious materials and was generally firm to stiff in consistency, with an isolated soft zone near the ground surface in boring B-5. Based on the subsurface

conditions encountered, it is in our professional opinion that the development of this site could possibly present geotechnical challenges that would hinder the proposed construction, including the undocumented fill. However, with the presence of the undocumented fill, there are risks of encountering unsuitable material between our borings. As mentioned, boring B-2 encountered refusal materials within the fill. As such, it is likely that buried concrete or rock boulders could be present.

We recommend GEOServices perform foundation subgrade observations prior to concrete placement to confirm the bearing soils are adequate for support of the structure. Should unsupportive soils be encountered, over-excavation through the lower consistency soils to expose the underlying stiff residual soils will be required.

Typical characteristics of karst solutioning consist of SPT N-values decreasing to a soft or very soft consistency (N-values of 4 bpf, or lower) with depth and moisture contents typically increasing significantly with depth. The results of our laboratory testing indicated the moisture contents of the existing fill as well as the underlying residual soils generally remained consistent. Moreover, the SPT N-values observed in the soil test borings conducted on site did not significantly decrease with an increase in depth, although zones of very soft to soft soil were present.

Given our site observations and the results of our field exploration, it is our professional opinion that the site does not present a greater risk of karst solutioning (i.e. sinkholes) than other sites located in the immediate vicinity. Moreover, the fact that the site has been filled previously, somewhat decreases the risk of sinkhole development. This is because the placement of a cohesive soil fill over the area effectively caps the area with a relatively impervious “blanket” of remolded soil. Based on the results of this exploration, it is our professional opinion that the mapped closed contour noted on the plat entitled “Subdivision Plat of Cottingham Court” dated September 27, 2005 and prepared by Benchmark Associates, Inc. is not the result of soil migration through an active sinkhole.

Based on our experience, corrective actions can be performed to reduce the potential for future sinkhole development at this site. These corrective actions would decrease but not eliminate the

potential for sinkhole development. Much can be accomplished to decrease the potential of future sinkhole activity by proper grade selection and through the establishment of positive site drainage. Although it is our opinion that the risk of ground subsidence associated with sinkhole formation cannot be eliminated, however, we have found that several measures are useful in site design and development to reduce this potential risk. These measures include:

- Maintaining positive site drainage to route surface waters well away from structural areas both during construction and for the life of the structure.
- The scarification and re-compaction of the upper 6 to 10 inches of soil in earthwork cut areas.
- Verifying that subsurface piping beneath structures is carefully constructed and pressure tested prior to its placement in service.
- The use of pavement or lined ditches, particularly in cut areas, to collect and transport surface water to areas away from structures.

Considerations when building within a sinkhole prone area are to provide positive surface drainage away from proposed building or parking areas both during and after construction. Backfill in utility trenches or other excavations should consist of compacted, well-graded material such as dense graded aggregate or compacted on site soils. The use of an open graded stone (such as No. 57 stone) is not recommended unless the stone backfill is provided an exit path and not allowed to pond. If sinkhole conditions are observed, the type of corrective action is most appropriately determined by a geotechnical engineer on a case by case basis.

LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. This report is for our geotechnical work only. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.

CLOSURE

We appreciate the opportunity to provide these services. If you have any questions, please feel free to contact us at your convenience.

Sincerely,
GEOServices, LLC



Matthew B. Haston, P.E.
Senior Geotechnical Engineer



T. Brian Williamson, P.E.
Geotechnical Department Manager

Attachments: Site Vicinity Map, Boring Location Plan, Boring Legend, and Boring Logs

ATTACHMENTS



DRAWN BY:	MRB	FIGURE	1
APPROVED BY:	TBW		
SCALE:	N.T.S.		
JOB NO.:	21-18546		
DATE:	7/25/18		

SITE VICINITY MAP
 1933 COTTINGTON LANE
 KNOXVILLE, TENNESSEE

GEOS
 GEOS ENGINEERS, INC. - Geotechnical and Materials Engineers
 2561 Willow Point Way
 Knoxville, Tennessee 37931
 Office: 865-539-9242
 Fax: 865-539-9252

- NOTES:**
- 1.) BASE MAP: USGS QUADRANGLE (LOUISVILLE, TENNESSEE)
 - 2.) BASE MAP: USGS QUADRANGLE (BEARDEN, TENNESSEE)

SOIL TEST BORING LOCATION PLAN

1933 COTTINGTON LANE
KNOXVILLE, TENNESSEE

DATE: 7/25/18
JOB NO.: 21-18546
SCALE: N.T.S.
APPROVED BY: T.B.W.
DRAWN BY: M.R.B.

2581 WOODBURN ROAD
KNOXVILLE, TENNESSEE 37911
OFFICE: 865-539-4332
FAX: 865-539-8232

Figure 2

NOTES:

- 1) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGMENT ONLY.
- 2) DO NOT USE BORING LOCATIONS FOR DETERMINATIONS OF DISTANCES OR QUANTITIES.
- 3) BASE MAP PROVIDED BY: Michael Brady Inc.

LOCATIONS OF SOIL TEST BORINGS

CURVE TABLE			
CURVE	LENGTH	RADIUS	CHORD
C1	28.53	46.08	24.85
C2	49.32	128.91	74.28
C3	22.92	17.78	23.58
C4	22.92	17.78	23.58

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KNOXVILLE, TN
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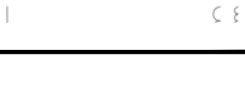
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- ### Legend
- monument (old)
 - monument (new)
 - spot elevation
 - light pole
 - air conditioner unit
 - electric box
 - electric vault
 - electric meter
 - utility pole
 - guy wire
 - overhead utility line
 - telephone pedestal
 - underground telephone line
 - underground fiber optic line
 - sanitary sewer manhole
 - clean out
 - grease trap
 - sanitary sewer line
 - water meter
 - water valve
 - fire hydrant
 - auto sprinkler
 - post indicator valve
 - irrigation valve
 - monitoring well
 - water line
 - gas valve
 - gas meter
 - gas line
 - catch basin
 - storm lid
 - down spout
 - storm drain line
 - corrugated metal pipe
 - corrugated plastic pipe
 - ductile iron pipe
 - plastic pipe
 - reinforced concrete pipe
 - bollard
 - sign
 - # of regular parking spaces
 - mailbox
 - flagpole
 - tree
 - fence
 - landscaping



GENERAL NOTES

FINE AND COARSE GRAINED SOIL PROPERTIES

PARTICLE SIZE

BOULDERS:	GREATER THAN 300 mm
COBBLES:	75 mm to 300 mm
GRAVEL:	4.74 mm to 75 mm
COARSE SAND:	2 mm to 4.74 mm
MEDIUM SAND:	0.425 mm to 2 mm
FINE SAND:	0.075 mm to 0.425 mm
SILTS & CLAYS:	LESS THAN 0.075 mm

COARSE GRAINED SOILS (SANDS & GRAVELS)

N-VALUE	RELATIVE DENSITY
0 - 4	VERY LOOSE
5 - 10	LOOSE
11 - 30	MEDIUM DENSE
31 - 50	DENSE
OVER 50	VERY DENSE

FINE GRAINED SOILS (SILTS & CLAYS)

N-VALUE	CONSISTENCY	Qu, PSF
0 - 2	VERY SOFT	0 - 500
3 - 4	SOFT	500 - 1000
5 - 8	FIRM	1000 - 2000
9 - 15	STIFF	2000 - 4000
16 - 30	VERY STIFF	4000 - 8000
OVER 31	HARD	8000 +

STANDARD PENETRATION TEST (ASTM D1586)

THE STANDARD PENETRATION TEST AS DEFINED BY ASTM D1586 IS A METHOD TO OBTAIN A DISTURBED SOIL SAMPLE FOR EXAMINATION AND TESTING AND TO OBTAIN RELATIVE DENSITY AND CONSISTENCY INFORMATION. THE 1.4 INCH I.D./2.0 INCH O.D. SAMPLER IS DRIVEN 3-SIX INCH INCREMENTS WITH A 140 LB. HAMMER FALLING 30 INCHES. THE BLOW COUNTS REQUIRED TO DRIVE THE SAMPLER THE FINAL 2 INCREMENTS ARE ADDED TOGETHER AND DESIGNATED THE N-VALUE. AT TIMES, THE SAMPLER CAN NOT BE DRIVEN THE FULL 18 INCHES. THE FOLLOWING REPRESENTS OUR INTERPRETATION OF THE STANDARD PENETRATION TEST WITH VARIATIONS.

BLOWS/FOOT (N-VALUE)

DESCRIPTION

25.....25 BLOWS DROVE SAMPLER 12" AFTER INITIAL 6" SEATING
75/10".....75 BLOWS DROVE SAMPLER 10" AFTER INITIAL 6" SEATING
50/PR.....PENETRATION REFUSAL OF SAMPLER AFTER INITIAL 6" SEATING

SAMPLING SYMBOLS

ST:	UNDISTURBED SAMPLE
SS:	SPLIT SPOON SAMPLE
CORE:	ROCK CORE SAMPLE
AU:	AUGER OR BAG SAMPLE

SOIL PROPERTY SYMBOLS

N:	STANDARD PENETRATION, BPF
M:	MOISTURE CONTENT %
LL:	LIQUID LIMIT %
PI:	PLASTICITY INDEX %
Qp:	POCKET PENETROMETER VALUE, TSF
Qu:	UNCONFINED COMPRESSIVE STRENGTH, TSF
DUW:	DRY UNIT WEIGHT, PCF

ROCK PROPERTIES

ROCK HARDNESS

ROCK QUALITY DESIGNATION (RQD)

PERCENT	QUALITY
90 TO 100	EXCELLENT
75 TO 90	GOOD
50 TO 75	FAIR
25 TO 50	POOR
0 TO 25	VERY POOR

VERY SOFT:	ROCK DISINTEGRATES OR EASILY COMPRESSES TO TOUCH: CAN BE HARD TO VERY HARD SOIL.
SOFT:	ROCK IS COHERANT BUT BREAKS EASILY TO THUMB PRESSURE AT SHARP EDGES AND CRUMBLES WITH FIRM HAND PRESSURE.
MODERATELY HARD:	SMALL PIECES CAN BE BROKEN OFF ALONG SHARP EDGES BY CONSIDERABLE HARD THUMB PRESSURE: CAN BE BROKEN BY LIGHT HAMMER BLOWS.
HARD:	ROCK CAN NOT BE BROKEN BY THUMB PRESSURE, BUT CAN BE BROKEN BY MODERATE HAMMER BLOWS.
VERY HARD:	ROCK CAN BE BROKEN BY HEAVY HAMMER BLOWS.



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-1**
 SHEET 1 OF 2

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-1 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 33.0 FT. ELEV. -33.0 FT.
 SAMPLED 33.0 FT. 10.1 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 33.0 FT. ELEV. -33.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION	
	FT.	ELEV.			FROM	TO	N-Value	Qu	LL		PI
-											Topsoil (6 Inches)
2.5	-2.5		1	SS	2 - 5 - 5 N = 10					28.6	Lean CLAY (CL) - with gravel - dark reddish brown - moist (FILL)
5.0	-5.0		2	SS	2 - 3 - 4 N = 7					21.6	
7.5	-7.5		3	SS	4 - 6 - 7 N = 13					39.8	
10.0	-10.0		4	SS	4 - 4 - 6 N = 10					40.0	
12.5	-12.5										Fat CLAY (CH) - with chert gravel - orangish brown and reddish brown - moist - very stiff to very soft (RESIDUUM)
15.0	-15.0		5	SS	2 - 3 - 4 N = 7					51.1	
17.5	-17.5										
20.0	-20.0		6	SS	2 - 3 - 5 N = 8					48.7	

Continued

REMARKS: _____



1933 Cottingham Lane
Knoxville, Tennessee
GEOServices Project # 21-18546

LOG OF BORING **B-1**
SHEET 2 OF 2

DRILLER R. Brock
ON-SITE REP. _____

BORING NO. / LOCATION B-1 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
REFUSAL: Yes DEPTH 33.0 FT. ELEV. -33.0 FT.
SAMPLED 33.0 FT. 10.1 M
TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
FOOTAGE CORED (LF) _____ FT.
BOTTOM OF HOLE DEPTH 33.0 FT. ELEV. -33.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH DRY FT.
ELEV. _____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. _____ FT.
AFTER 24 HRS: DEPTH TNP FT.
ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
22.5 - 22.5										(continued) Fat CLAY (CH) - with chert gravel - orangish brown and reddish brown - moist - very stiff to very soft (RESIDUUM)
25.0 - 25.0			7	SS	3 - 4 - 14 N = 18				44.1	
27.5 - 27.5										
30.0 - 30.0			8	SS	4 - W.O.H. - W.O.H. N = 0					
32.5 - 32.5										
35.0 - 35.0										
37.5 - 37.5										
40.0 - 40.0										
Auger Refusal at 33.0 Feet										

REMARKS: W.O.H. - Weight Of Hammer



1933 Cottingham Lane
Knoxville, Tennessee
GEOServices Project # 21-18546

LOG OF BORING **B-2**
SHEET 1 OF 1

DRILLER R. Brock
ON-SITE REP. _____

BORING NO. / LOCATION B-2 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
REFUSAL: Yes DEPTH 6.0 FT. ELEV. -6.0 FT.
SAMPLED 6.0 FT. 1.8 M
TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
FOOTAGE CORED (LF) _____ FT.
BOTTOM OF HOLE DEPTH 6.0 FT. ELEV. -6.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH DRY FT.
ELEV. _____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. _____ FT.
AFTER 24 HRS: DEPTH TNP FT.
ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH		SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
FT.	ELEV.	FROM FT.	TO FT.			N-Value	Qu	LL	PI	%M	
-	-										Topsoil (6 Inches)
2.5	-2.5	1.0	2.5	1	SS	2 - 4 - 4 N = 8				22.4	Fat CLAY (CH) - with gravel - reddish brown - moist (FILL)
5.0	-5.0	3.5	5.0	2	SS	3 - 5 - 12 N = 17				25.1	
7.5	-7.5										Auger Refusal at 6.0 Feet
10.0	-10.0										
12.5	-12.5										
15.0	-15.0										
17.5	-17.5										
20.0	-20.0										

REMARKS: Offset 5 and 15 feet toward B-1 after initial refusals at 5.0 and 6.0 feet, respectively.



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-3**
 SHEET 1 OF 3

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-3 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 46.0 FT. ELEV. -46.0 FT.
 SAMPLED 46.0 FT. 14.0 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 46.0 FT. ELEV. -46.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
0.0 - 0.5										Topsoil (6 Inches)
2.5 - 2.5			1	SS	3 - 4 - 4 N = 8				22.3	Lean CLAY (CL) - with gravel - dark reddish brown and dark brown - moist (FILL)
5.0 - 5.0			2	SS	4 - 5 - 8 N = 13				21.6	
7.5 - 7.5			3	SS	3 - 3 - 4 N = 7				28.6	
10.0 - 10.0			4	SS	3 - 4 - 6 N = 10				36.7	
15.0 - 15.0			5	SS	3 - 3 - 6 N = 9				35.5	
20.0 - 20.0			6	SS	3 - 3 - 3 N = 6				40.2	

Continued

REMARKS: _____



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-3**
 SHEET 2 OF 3

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-3 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 46.0 FT. ELEV. -46.0 FT.
 SAMPLED 46.0 FT. 14.0 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 46.0 FT. ELEV. -46.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION	
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL		PI
22.5 - 22.5											(continued) Lean CLAY (CL) - with chert gravel - orangish brown and reddish brown - moist to wet - soft to very hard (RESIDUUM)
25.0 - 25.0			7	SS	1 - 1 - 2 N = 3				50.7		
27.5 - 27.5											
30.0 - 30.0			8	SS	1 - 1 - 3 N = 4				45.7		
32.5 - 32.5											
35.0 - 35.0			9	SS	2 - 2 - 2 N = 4				41.9		
37.5 - 37.5											
40.0 - 40.0			10	SS	2 - 2 - 2 N = 4				53.9		

Continued

REMARKS: _____



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-3**
 SHEET 3 OF 3

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-3 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 46.0 FT. ELEV. -46.0 FT.
 SAMPLED 46.0 FT. 14.0 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 46.0 FT. ELEV. -46.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
42.5	-42.5									(continued)
										Lean CLAY (CL) - with chert gravel - orangish brown and reddish brown - moist to wet - soft to very hard (RESIDUUM)
43.5		43.5	44.3	11	SS	5 - 50/3" N = 50/3"				44.4
45.0	-45.0									Auger Refusal at 46.0 Feet
47.5	-47.5									
50.0	-50.0									
52.5	-52.5									
55.0	-55.0									
57.5	-57.5									
60.0	-60.0									

REMARKS: _____



1933 Cottingham Lane
Knoxville, Tennessee
GEOServices Project # 21-18546

LOG OF BORING **B-4**
SHEET 1 OF 2

DRILLER R. Brock
ON-SITE REP. _____

BORING NO. / LOCATION B-4 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
REFUSAL: Yes DEPTH 43.0 FT. ELEV. -43.0 FT.
SAMPLED 43.0 FT. 13.1 M
TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
FOOTAGE CORED (LF) _____ FT.
BOTTOM OF HOLE DEPTH 43.0 FT. ELEV. -43.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
COMPLETION: DEPTH DRY FT.
ELEV. _____ FT.
AFTER 1 HRS: DEPTH TNP FT.
ELEV. _____ FT.
AFTER 24 HRS: DEPTH TNP FT.
ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM	TO	N-Value	Qu	LL	
0.0 - 0.5										Topsoil (6 Inches)
2.5 - 2.5			1	SS	2 - 4 - 5 N = 9					26.9
5.0 - 5.0			2	SS	2 - 3 - 5 N = 8					29.4
7.5 - 7.5			3	SS	5 - 5 - 6 N = 11					23.4
10.0 - 10.0			4	SS	1 - 2 - 3 N = 5					25.6
15.0 - 15.0			5	SS	3 - 5 - 6 N = 11					40.9
20.0 - 20.0			6	SS	2 - 4 - 6 N = 10					43.9

Lean CLAY (CL) - with gravel - dark reddish brown, reddish brown and dark brown - moist (FILL)

Lean CLAY (CL) - with chert gravel throughout and trace root structures in the upper foot - orangish brown and reddish brown - moist - stiff to very soft (RESIDUUM)

Continued

REMARKS: _____



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-4**
 SHEET 2 OF 2

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-4 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 43.0 FT. ELEV. -43.0 FT.
 SAMPLED 43.0 FT. 13.1 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 43.0 FT. ELEV. -43.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
22.5 - 22.5										(continued) Lean CLAY (CL) - with chert gravel throughout and trace root structures in the upper foot - orangish brown and reddish brown - moist - stiff to very soft (RESIDUUM)
25.0 - 25.0			7	SS	2 - 3 - 4 N = 7				45.4	
27.5 - 27.5										
30.0 - 30.0			8	SS	2 - 3 - 4 N = 7				46.0	
32.5 - 32.5										
35.0 - 35.0			9	SS	3 - 6 - 5 N = 11				41.9	
37.5 - 37.5										
40.0 - 40.0			10	SS	5 - W.O.H. - W.O.H. N = 0				49.9	

Auger Refusal at 43.0 Feet

REMARKS: W.O.H. - Weight Of Hammer



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-5**
 SHEET 1 OF 2

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-5 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 34.0 FT. ELEV. -34.0 FT.
 SAMPLED 34.0 FT. 10.4 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 34.0 FT. ELEV. -34.0 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
0.0 - 0.5										Topsoil (6 Inches)
2.5 - 2.5			1	SS	2 - 2 - 2 N = 4				21.9	
5.0 - 5.0			2	SS	6 - 6 - 9 N = 15				19.0	
7.5 - 7.5			3	SS	3 - 4 - 5 N = 9				27.3	Lean CLAY (CL) - with gravel - dark brown and dark reddish brown - moist (FILL)
10.0 - 10.0			4	SS	3 - 3 - 4 N = 7				23.5	
15.0 - 15.0			5	SS	2 - 2 - 2 N = 4				28.8	Lean CLAY (CL) - with chert gravel throughout and trace root structures in the upper foot - dark brown and orangish brown - moist - soft to very hard (RESIDUUM)
20.0 - 20.0			6	SS	3 - 3 - 4 N = 7				38.3	

Continued

REMARKS: _____



1933 Cottingham Lane
 Knoxville, Tennessee
 GEOServices Project # 21-18546

LOG OF BORING **B-5**
 SHEET 2 OF 2

DRILLER R. Brock
 ON-SITE REP. _____

BORING NO. / LOCATION B-5 DRY ON COMPLETION ? Yes

DATE July 21, 2018 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 34.0 FT. ELEV. -34.0 FT.
 SAMPLED 34.0 FT. 10.4 M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 34.0 FT. ELEV. -34.0 FT.

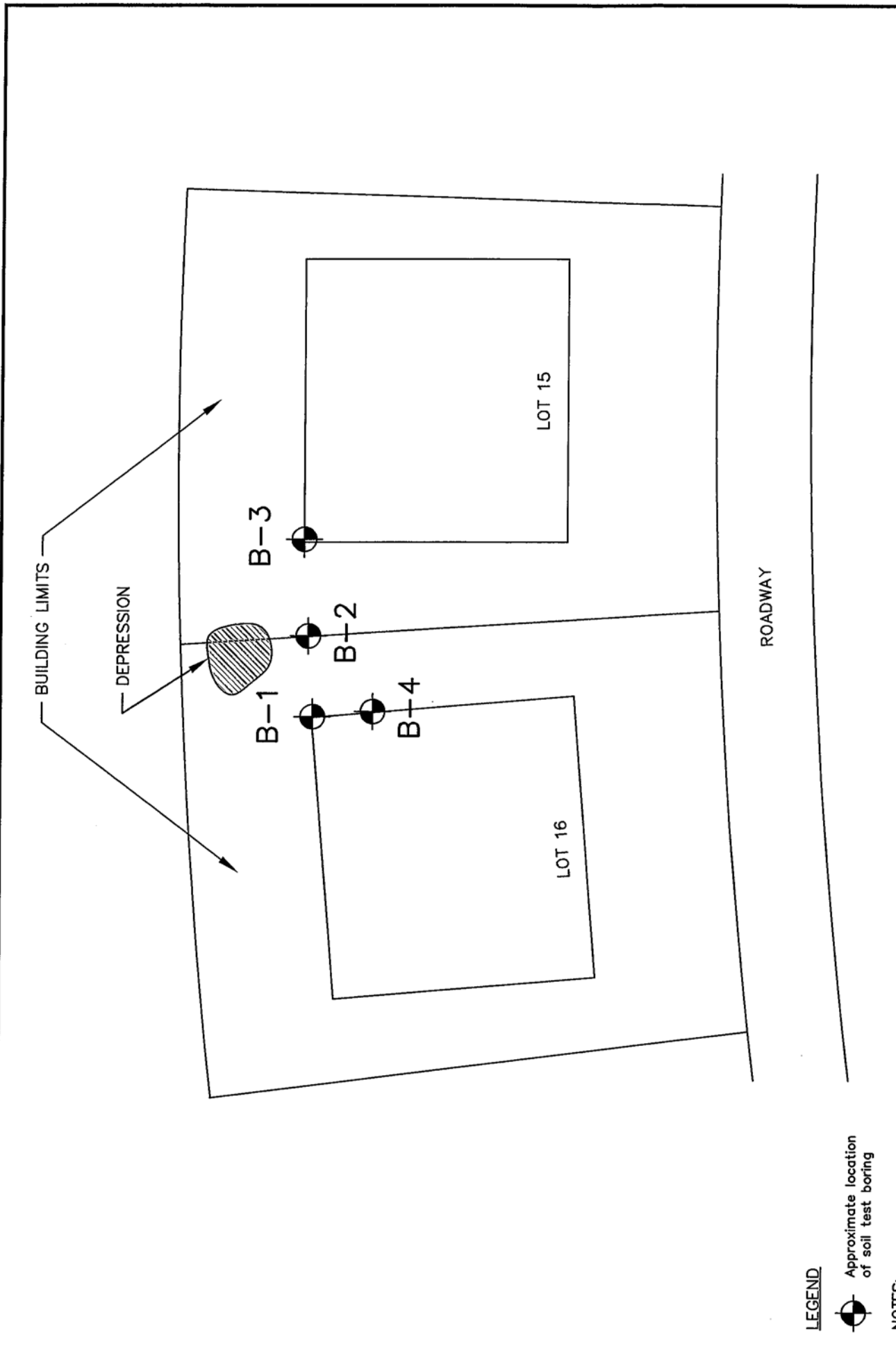
WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH DRY FT.
 ELEV. _____ FT.
 AFTER 1 HRS: DEPTH TNP FT.
 ELEV. _____ FT.
 AFTER 24 HRS: DEPTH TNP FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X PROPOSED FFE: _____ FT.


STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qu	LL	
22.5 - 22.5										(continued)
25.0 - 25.0			7	SS	2 - 4 - 4 N = 8				46.8	
27.5 - 27.5										
30.0 - 30.0			8	SS	3 - 15 - 50/3" N = 65/9"				40.7	
32.5 - 32.5										
35.0 - 35.0										Auger Refusal at 34.0 Feet
37.5 - 37.5										
40.0 - 40.0										

REMARKS: _____

Pages from GEOS Study re Lot 15 6-25-06
& GEOS Study re Lot 16 6-28-06



LEGEND

 Approximate location of soil test boring

NOTES:

- 1) Boring locations are shown in general arrangement only.
- 2) Do not use locations or sketch for determination of distances or quantities.

SCALE:	NTS
CHECKED BY:	DAH
DRAWN BY:	RMS
DATE:	06/20/2006

GEES
 GEEServices, LLC-Geotechnical and Materials Engineers
 500 Maryville Highway
 Building 1, Suite B
 Smyrna, Tennessee 37865
 Phone: (615) 572-6130
 Fax: (615) 572-6132

Boring Location Map
 Cottingham Court Lots 15 & 16
 Knoxville, Tennessee

FIGURE NO:
1

JOB NO: 21-06176



Cottingham Court Lots 15 and 16
 Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING B-1
 SHEET 1 OF 2

DRILLER LJ/JAL
 ON-SITE REP. _____

BORING NO. / LOCATION B-1 DRY ON COMPLETION ? Yes

DATE June 8, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 33.6 FT. ELEV. -33.6 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 33.6 FT. ELEV. -33.6 FT.

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: POWER AUGERING X WASHBORING _____

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qp	LL	
2.5	-2.5		1	SS	15					Silty CLAY (CL) with trace root structure and chert fragments - reddish brown, moist, stiff. (Residuum)
5.0	-5.0		2	SS	14					
7.5	-7.5		3	SS	7					
10.0	-10.0		4	SS	6					
12.5	-12.5									
15.0	-15.0		5	SS	8					
17.5	-17.5									
20.0	-20.0		6	SS	6					

REMARKS: _____



Cottingham Court Lots 15 and 16
 Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING B-1
 SHEET 2 OF 2

DRILLER LJ/AL
 ON-SITE REP. _____

BORING NO. / LOCATION B-1 DRY ON COMPLETION? Yes

DATE June 8, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 33.6 FT. ELEV. -33.6 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 33.6 FT. ELEV. -33.6 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: POWER AUGERING X WASHBORING _____

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qp	LL	
22.5	-22.5									
23.5	-25.0	23.5	25.0	7	SS	5				Silty CLAY (CL) with chert fragments - brown, very moist, firm to very soft. (Residuum)
25.0	-27.5									
27.5	-30.0	28.5	30.0	8	SS	2				
30.0	-32.5									
32.5	-35.0									
35.0	-37.5									Auger Refusal at 33.6 feet
37.5	-40.0									
40.0	-40.0									

REMARKS: _____



Cottingham Court Lots 15 and 16
 Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING B-2
 SHEET 1 OF 1

DRILLER LJ/AL
 ON-SITE REP. _____

BORING NO. / LOCATION B-2 DRY ON COMPLETION ? Yes

DATE June 8, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 18.9 FT. ELEV. -18.9 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 18.9 FT. ELEV. -18.9 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: POWER AUGERING X WASHBORING _____

DEPTH FT. ELEV.	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM FT.	TO FT.			N-Value	Qp	LL	PI	%M	
2.5 -2.5	1.0	2.5	1	SS	15					Silty CLAY (CL) with trace root structure - reddish brown, moist, stiff. (Residuum)
5.0 -5.0	3.5	5.0	2	SS	13					Silty CLAY (CL) with chert fragments - dark reddish brown, moist, stiff. (Residuum)
7.5 -7.5	6.0	7.5	3	SS	10					
10.0 -10.0	8.5	10.0	4	SS	8					Silty CLAY (CL) with chert fragments and black staining - reddish brown, very moist, firm to soft. (Residuum)
12.5 -12.5										
15.0 -15.0	13.5	15.0	5	SS	4					Silty CLAY (CL) with chert fragments - light brown, very moist, soft. (Residuum)
17.5 -17.5										
20.0 -20.0	18.5	18.9	6	SS	50/0"					Auger Refusal at 18.9 feet

REMARKS: _____



Cottingham Court Lots 15 and 16
Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING **B-3**
 SHEET 1 OF 2

DRILLER LJ/AL
 ON-SITE REP. _____

BORING NO. / LOCATION B-3 DRY ON COMPLETION? Yes

DATE June 9, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 37.1 FT. ELEV. -37.1 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 37.1 FT. ELEV. -37.1 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FT.	ELEV.			FROM FT.	TO FT.	N-Value	Qp	LL	
2.5	-2.5		1	SS	17					Silty CLAY (CL) with trace root structure, black staining, and chert fragments - reddish brown, moist, very stiff to stiff. (Residuum)
5.0	-5.0		2	SS	9					
7.5	-7.5		3	SS	12					
10.0	-10.0		4	SS	17					Silty CLAY (CL) with black staining and chert fragments - reddish brown, moist, very stiff to stiff. (Residuum)
12.5	-12.5		5	SS	12					
15.0	-15.0		6	SS	6					Silty CLAY (CL) with black staining and chert fragments - reddish brown and brown, moist, firm. (Residuum)
17.5	-17.5									
20.0	-20.0									

REMARKS: _____



Cottington Court Lots 15 and 16
Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING **B-3**
 SHEET 2 OF 2

DRILLER LJ/AL
 ON-SITE REP. _____

BORING NO. / LOCATION B-3 DRY ON COMPLETION ? Yes

DATE June 9, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 37.1 FT. ELEV. -37.1 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 37.1 FT. ELEV. -37.1 FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

STRATUM DEPTH		SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
FT.	ELEV.	FROM FT.	TO FT.			N-Value	Qp	LL	PI	%M	
22.5	-22.5										Silty CLAY (CL) with black staining and chert fragments - reddish brown and brown, moist, firm. (Residuum)
		23.5	25.0	7	SS	7					
25.0	-25.0										Silty CLAY (CL) with chert fragments - brown, very moist, firm to soft. (Residuum)
		28.5	30.0	8	SS	8					
30.0	-30.0										Auger Refusal at 37.1 feet
		33.5	35.0	9	SS	4					
35.0	-35.0										
37.5	-37.5										
40.0	-40.0										

REMARKS: _____



Cottington Court Lots 15 and 16
Knoxville, Tennessee
 GEOServices Project No. 21-06176

LOG OF BORING **B-4**
 SHEET 1 OF 1

DRILLER LJ/JAL
 ON-SITE REP. _____

BORING NO. / LOCATION B-4 DRY ON COMPLETION ? Yes

DATE June 9, 2006 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 12.0 FT. ELEV. -12.0 FT.
 SAMPLED _____ FT. _____ M
 TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 12.0 FT. ELEV. -12.0 FT.

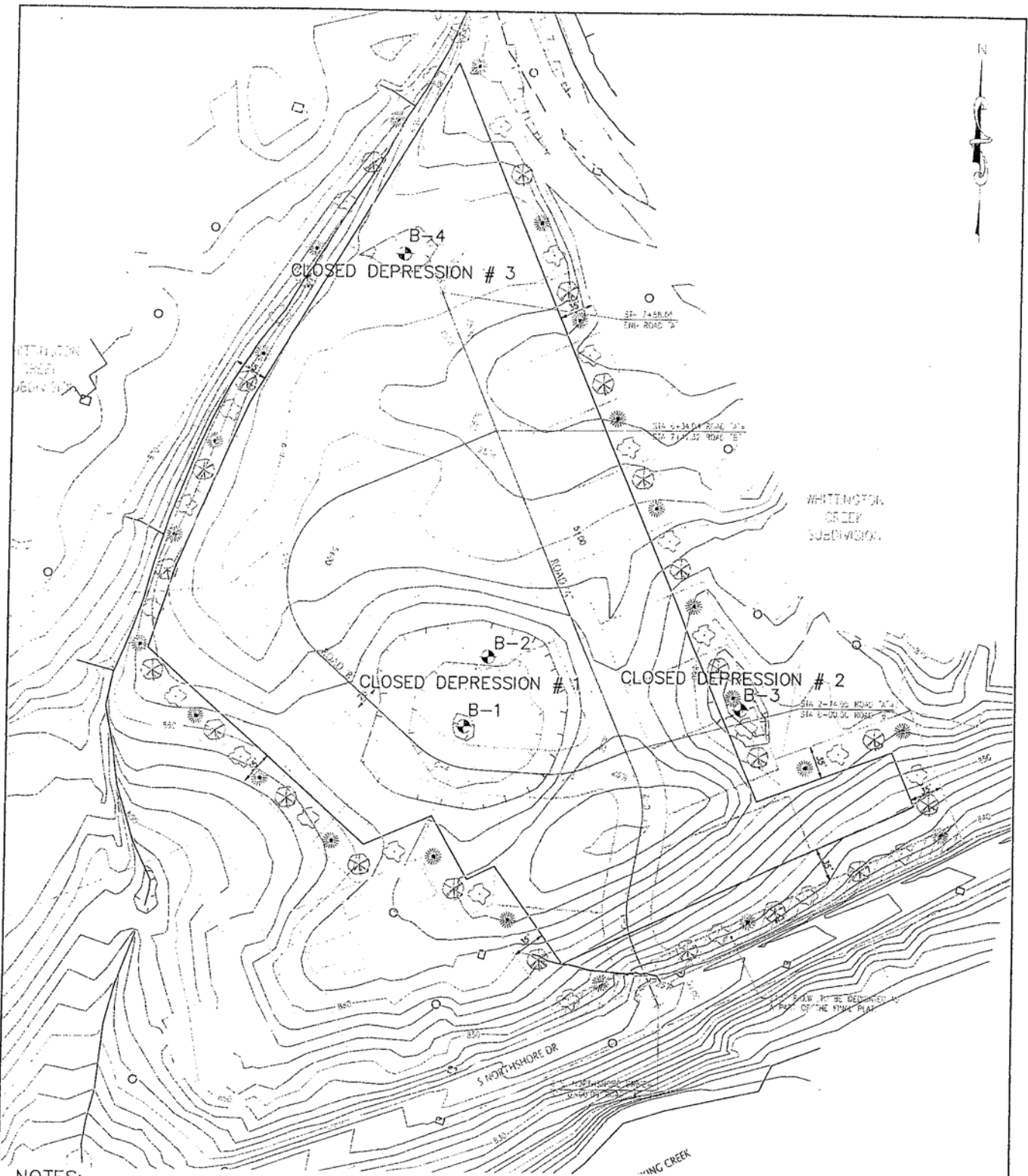
WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH _____ FT.
 ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO			N-Value	Qp	LL	PI	%M	
	FT.	FT.								
0.0 - 2.5	1.0	2.5	1	SS	11					Silty CLAY (CL) with black staining and chert fragments - dark reddish brown, moist, stiff. (Residuum)
2.5 - 5.0	3.5	5.0	2	SS	13					Silty CLAY (CL) with chert fragments - dark reddish brown, moist, stiff. (Residuum)
5.0 - 7.5	6.0	7.5	3	SS	8					Silty CLAY (CL) with black staining and chert fragments - tan and dark brown, moist, firm. (Residuum)
7.5 - 10.0	8.5	10.0	4	SS	3					Silty CLAY (CL) - reddish brown and brown, very moist, soft.
10.0 - 12.5										Auger Refusal at 12 feet
12.5 - 15.0										
15.0 - 17.5										
17.5 - 20.0										

REMARKS: _____

Pages from S&ME Geotech Study 8-9-04



NOTES:

- 1) Boring locations are shown in general arrangement only.
- 2) Do not use boring locations for determination of distances or quantities.
- 3) Base map provided by: Fulghum MacIndoe & Associates, Inc.

LEGEND

- B-1
 APPROXIMATE LOCATION OF SOIL TEST BORING

SCALE:	NTS
CHECKED BY:	DAH
DRAWN BY:	JHC
DATE:	8-9-04



Boring Location Plan	
Northshore Subdivision	
9117 S. Northshore Drive Knoxville, Tennessee	
JOB NO:	1431-04-503

FIGURE NO:	1
------------	---

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS

SOIL TYPES

(Shown in Graphic Log)



Fill



Asphalt



Concrete



Topsoil



Gravel



Sand



Silt



Clay



Organic



Silty Sand



Clayey Sand



Sandy Silt



Clayey Silt



Sandy Clay



Silty Clay



Partially Weathered Rock



Cored Rock

WATER LEVELS

(Shown in Water Level Column)



= Water Level At Termination of Boring



= Water Level Taken After 24 Hours



= Loss of Drilling Water

HC = Hole Cave

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY

Very Soft
Soft
Firm
Stiff
Very Stiff
Hard
Very Hard

STD. PENETRATION RESISTANCE BLOWS/FOOT

0 to 2
3 to 4
5 to 8
9 to 15
16 to 30
31 to 50
Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

RELATIVE DENSITY

Very Loose
Loose
Medium Dense
Dense
Very Dense

STD. PENETRATION RESISTANCE BLOWS/FOOT

0 to 4
5 to 10
11 to 30
31 to 50
Over 50

SAMPLER TYPES

(Shown in Samples Column)



Shelby Tube



Split Spoon



Rock Core



No Recovery

TERMS

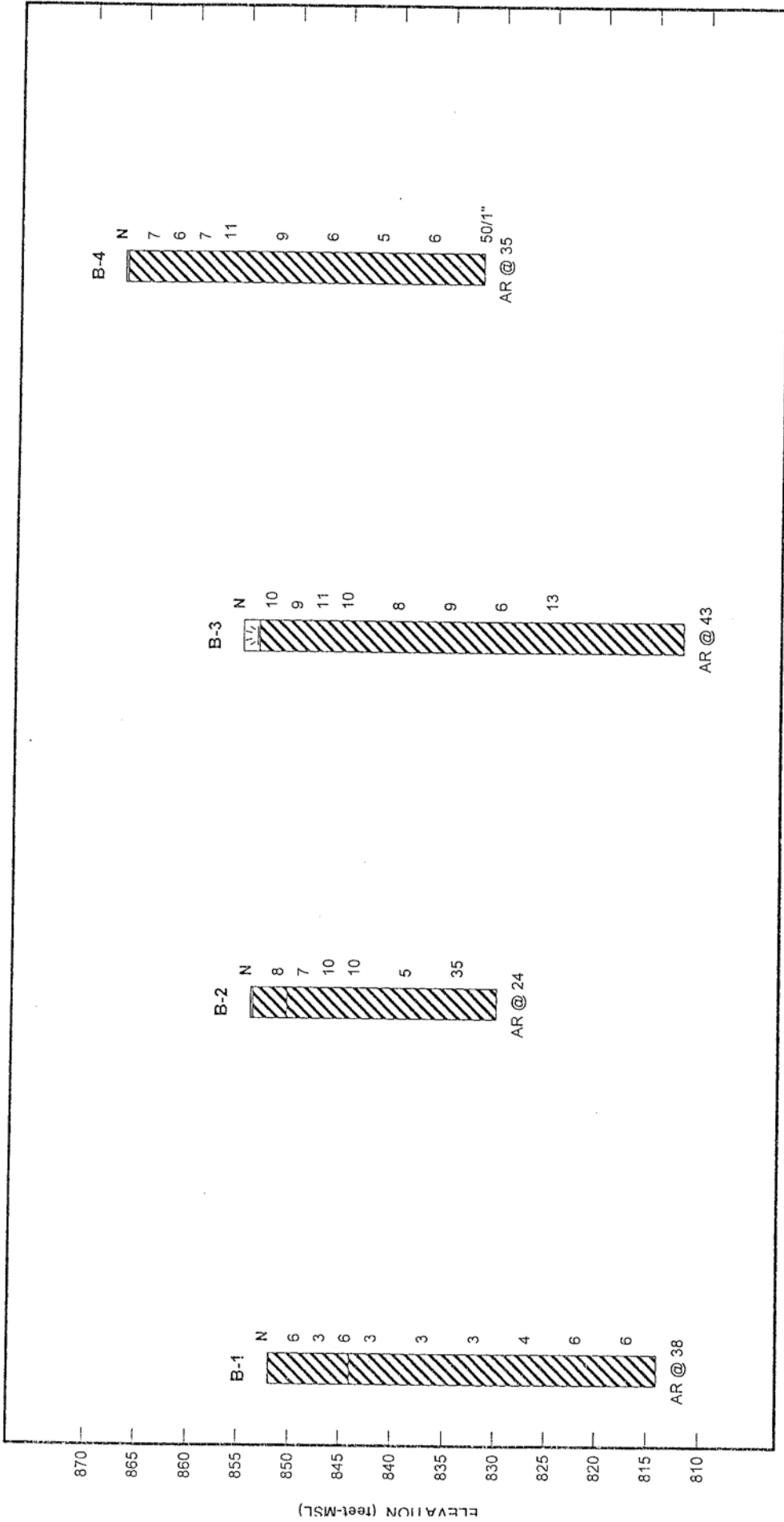
Standard Penetration Resistance - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586.

REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RQD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks excluded) Divided by the Total Length of the Core Run Times 100%.



ENGINEERING • TESTING
ENVIRONMENTAL SERVICES



N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.



JOB NO: 1431-04-503

DATE: 7/28/04

Project: Fuller-Sims Development / 9117 S. Nol
 Location: Knoxville, Tennessee

PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-1

DATE DRILLED: 7/27/04 ELEVATION: 852
 DRILLING METHOD: CME 550X, 3/4" H.S.A. BORING DEPTH: 38.0 feet
 LOGGED BY: J. Cole WATER LEVEL @ TOB: Dry
 DRILLER: D. Hedges WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE	
							10	20	30	60	80		
0 - 1		Topsoil (1 inch)			1	☒							6
1 - 5		Clay (CH) - dark brown; firm to soft; very moist; with trace sand; (Residuum)		847	2	☒							3
5 - 10					3	☒							6
10 - 15				842	4	☒							3
15 - 20				837	5	☒							3
20 - 25				832	6	☒							3
25 - 30		Clay (CH) - reddish brown with black staining; soft to firm; very moist to moist; with chert and rock fragments; (Residuum)		827	7	☒							4
30 - 35				822	8	☒							6
35 - 38				817	9	☒							6
38 - 38		Auger Refusal at 38 feet											

BORING LOG NEW 04-503.GPJ S&ME.GDT 7/28/04

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

ST0017



PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-2

DATE DRILLED: 7/27/04 ELEVATION: 854
 DRILLING METHOD: CME 550X, 3/4" H.S.A. BORING DEPTH: 24.0 feet
 LOGGED BY: J. Cole WATER LEVEL @ TOB: Dry
 DRILLER: D. Hedges WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)					N VALUE
							10	20	30	60	80	
0 - 2		Topsoil (2 inches)			1	⊗						8
2 - 5		Clay (CH) - dark brown; firm; very moist; with trace sand; (Residuum)		849	2	⊗						7
5 - 10		Clay (CH) - reddish orange; stiff to firm; moist; with chert fragments; with rock fragments at depth; (Residuum) Note: Sample # 6 N-value inflated due to abundant rock fragments.		844	3	⊗						10
10 - 15			844	4	⊗							10
15 - 20				839	5	⊗						5
20 - 24				834	6	⊗						35
24 - 24		Auger Refusal at 24 feet										

BORING LOG NEW 04-503.GPJ S&ME_GDT 7/28/04

NOTES:

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2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.



PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-3

DATE DRILLED: 7/28/04

ELEVATION: 855

DRILLING METHOD: CME 550X, 3 1/4" H.S.A.

BORING DEPTH: 43.0 feet

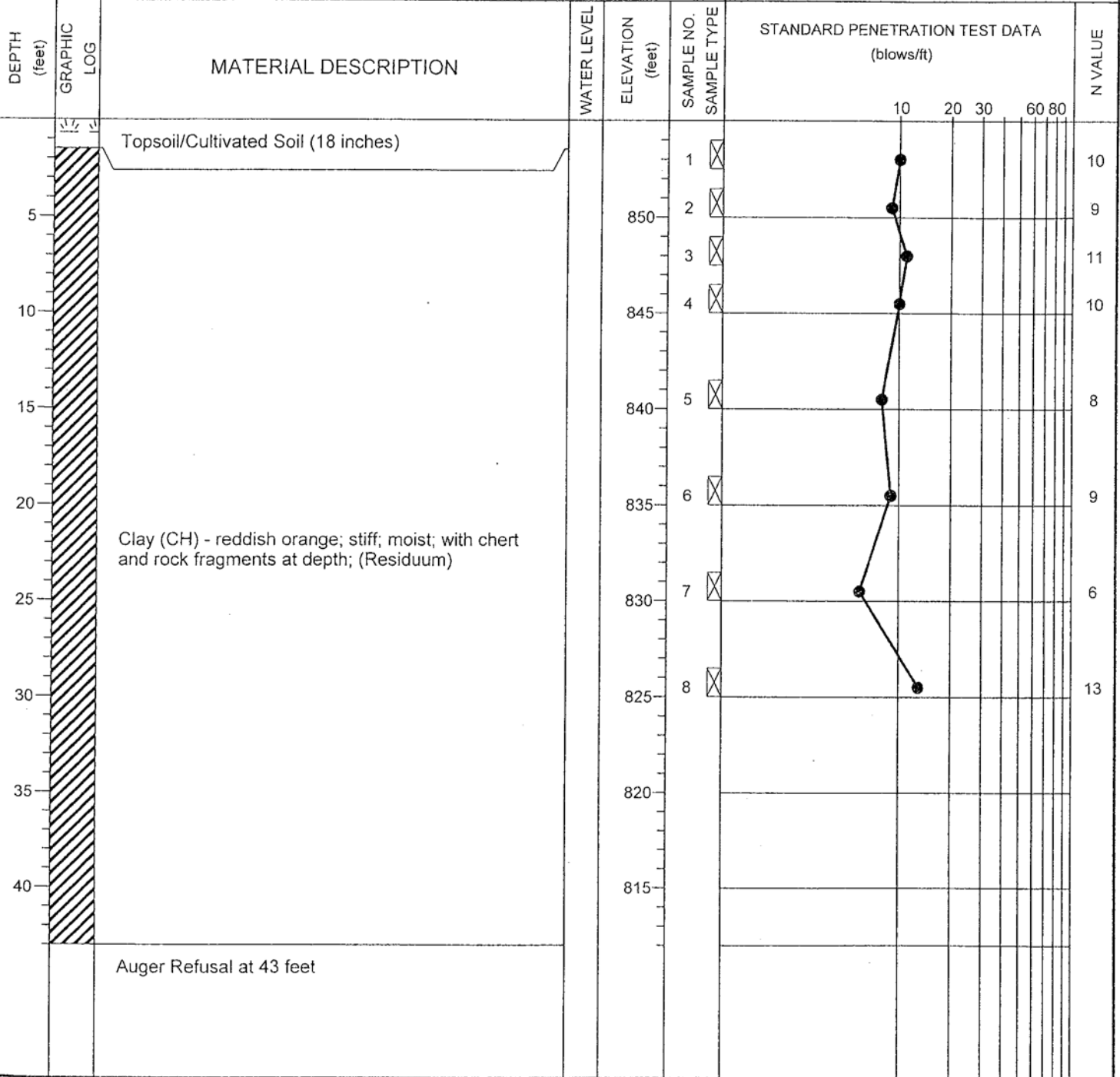
LOGGED BY: J. Cole

WATER LEVEL @ TOB: Dry

DRILLER: D. Hedges

WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.



BORING LOG NEW 04-503.GPJ S&ME.GDT 7/28/04

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
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4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

PROJECT: Fuller-Sims Development / 9117 S. Northshore Dr.
 Knoxville, Tennessee
 S&ME Project No. 1431-04-503

BORING LOG B-4

DATE DRILLED: 7/28/04	ELEVATION: 867
DRILLING METHOD: CME 550X, 3/4" H.S.A.	BORING DEPTH: 35.0 feet
LOGGED BY: J. Cole	WATER LEVEL @ TOB: Dry
DRILLER: D. Hedges	WATER LEVEL @ 24 hrs: N/A

NOTES: Soil descriptions based on visual observation of obtained samples. Top of boring elevations interpolated off of site plan from Fulghum MacIndoe & Associates.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	ELEVATION (feet)	SAMPLE NO.	SAMPLE TYPE	STANDARD PENETRATION TEST DATA (blows/ft)				N VALUE	
							10	20	30	60 80		
0 - 2		Topsoil (2 inches)			1	⊗						7
2 - 5		Clay (CH) - reddish orange with black staining; firm to stiff; moist; with chert and rock fragments at depth; (Residuum)		862	2	⊗						6
5 - 7			3	⊗								7
7 - 10			4	⊗	857							11
10 - 15			5	⊗	852							9
15 - 20			6	⊗	847							6
20 - 25			7	⊗	842							5
25 - 30			8	⊗	837							6
30 - 35			9	⊗	832							>> 50/1"
35		Auger Refusal at 35 feet										

BORING LOG NEW 04-503.GPJ S&ME.GDT 7/28/04

NOTES:

1. THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.
2. BORING, SAMPLING AND PENETRATION TEST DATA IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
4. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

ST0020





Dori Caron <dori.caron@knoxplanning.org>

[MPC Comment] Fwd: MPC Case No. 12-E-18- UR - Cottington Court Lot 25 Issue

Gerald Green <gerald.green@knoxplanning.org>
Reply-To: gerald.green@knoxplanning.org
To: Planning Commissioners <commission@knoxmpc.org>

Mon, Jan 28, 2019 at 10:09 AM

FYI

Gerald Green AICP
Executive Director
Knoxville-Knox County Planning | KnoxPlanning.org
400 Main Street, Suite 403 | Knoxville, TN 37902
865.215.3758



----- Forwarded message -----

From: **Jim Snowden** <Jim.Snowden@knoxcounty.org>
Date: Fri, Jan 25, 2019 at 5:47 PM
Subject: MPC Case No. 12-E-18- UR - Cottington Court Lot 25 Issue
To: Chris Hare <charejr@hartsonconstruction.com>, Ron German <rgerman9108@comcast.net>
Cc: William Jenkins <wjenks@comcast.net>, Ritchie <writchie@ritlaw.com>, Tom Brechko <tom.brechko@knoxplanning.org>, mike.reynolds@knoxmpc.org <mike.reynolds@knoxmpc.org>, Chris Granju <Chris.Granju@knoxcounty.org>, DANIEL BOLES <DBoles@smeinc.com>, dhuckaba@geoservicesllc.com <dhuckaba@geoservicesllc.com>, Mandi Benedict <mandi.benedict@knoxcounty.org>, Gerald Green <gerald.green@knoxplanning.org>, Ray Tant <rtant@shieldengineering.com>

All,

As you may recall, a discussion took place at the December MPC meeting regarding the referenced case and whether or not the closed depression was the result of sinkhole activity. At this time, experts from both sides (Developer and

HOA) presented information for and against the matter. As stated at the meeting, Knox County has no staff expertise to refute the analysis of either GEOS (developer's Geotech) or Shields Engineering (HOA's Geotech).

Therefore, based on direction given by the Planning Commissioners, our Department asked our on-call geotechnical consultant (S&ME) to review the information provided by both parties. I have attached their summary letter to this email for everyone's review.

In summary, S&ME has opined that the closed depression in question is related to sinkhole activity. We hope this information is useful and assists Planning Commissioners to make the best decision for all parties involved.

Jim Snowden, P.E.

Senior Director

Knox County and Public Works

205 West Baxter Avenue

Knoxville, TN 37917

P (865) 215-5800

F (865) 215-5810

--

This message was directed to commission@knoxmpc.org



1243-19-002 Cottington Court Letter.pdf

302K



January 17, 2019

Knox County Public Works
205 West Baxter Avenue
Knoxville, Tennessee 37917

Attention: Mr. Jim Snowden, P.E., Chief Engineer

Reference: **Letter Discussing Potential Sinkhole
Cottingham Court Development**
Cottingham Lane
Knoxville, Tennessee
S&ME Project No. 1243-19-002

Dear Mr. Snowden:

S&ME, Inc. (S&ME) is pleased to provide our *Letter Discussing Potential Sinkhole* for the above referenced project. S&ME performed these services in accordance with the S&ME Work Authorization, dated January 15, 2019.

◆ Project Information

Knox County has been provided two separate opinions regarding the development of Lot 25 on Cottingham Lane in Knoxville, Tennessee. GEO Services, LLC (GEOS) has provided a professional opinion that Lot 25 is developable in accordance with Knox County Building Code within the closed depression located on the lot because the closed depression is not related to sinkhole activity. Shield Engineering (Shield) has provided a professional opinion that Lot 25 is not developable in accordance with Knox County Building Code within the closed depression because the depression is related to sinkhole activity. Knox County has been provide two separate opinions and has asked S&ME to review the data and provide a recommendation regarding the risk of development within the closed depression. It should be noted the depression has since been filled with soil and is no longer readily visible. The discussion is centered on the identification of a closed depression/sinkhole labeled on the Benchmark Associates, Inc. survey dated September 27, 2005 and the Fulghum MacIndoe & Associates Concept Plan dated August 30, 2004.

S&ME was provided the following documents by Knox County, Cottingham Court Homeowners Association, Shield, and GEOS for review:

- Case Summary, dated July 12, 2004 to the Knoxville/Knox County Metropolitan Planning Commission from Applicant, Travis Fuller and Owner, Fuller-Sims Development.
- Use on Review Report, dated December 13, 2018 to the Knoxville/Knox County Metropolitan Planning Commission from Applicant, Michael Brady, Inc. and Owner Hartson Construction, LLC.
- Letter from Shield Engineering, *Meeting with Knox County Engineering, Review of Geotechnical Explorations at Cottingham Court*, dated January 3, 2019.



- A packet of information and documentation titled *Knox County Engineering & Public Works Jim Snowden, Senior Director and Cottingham Court HOA Ron German and William Jenkins*, dated January 2, 2019, containing past explorations by numerous different engineering firms, meeting minute, depositions, boring logs, and drawings.
- *Report of Geotechnical Exploration Closed Depressions at Northshore Subdivision*, dated August 9, 2004, by S&ME, Inc. to Fuller-Sims Development.
- *Report of Limited Geotechnical Exploration*, dated November 11, 2004 by S&ME, Inc. to Fuller-Sims Development.
- Several photographs of sinkhole repair with no date were provided by the Cottingham Court HOA during a January 3, 2019 meeting with Knox County Public Works.
- A series of USGS topographic maps and aerial photographs of Lot 25.

In addition, Mr. Dan Boles of S&ME and Mr. Jim Snowden of Knox County met with the Cottingham Court Homeowners Associate and their engineering representative on January 3, 2019 to listen their position regarding the development of Lot 25. Subsequently, on January 10, 2018, Mr. Boles and Mr. Snowden met with Mr. Dennis Huckaba with GEOS to listen to their position regarding the development of Lot 25.

◆ **Opinion**

Based on the information provided, the history of the site, the boring data provided, and the karst geology of the site, it is our professional opinion this closed depression is related to sinkhole activity. Borings performed in and around the closed depression have material indicative of prior sinkhole activity and in general have a lower material consistency with depth. We understand there has been sinkhole remediation in and around the Cottingham Court neighborhood. Based on this previous sinkhole activity in the immediate area, it our opinion the risk of additional sinkhole activity at this site is greater than other similar areas without known sinkhole remediation or closed depressions in the immediate area. Development of the site not only places risk on the subject property but also has the potential to increase risk to the properties immediately adjacent if storm water is not properly managed.

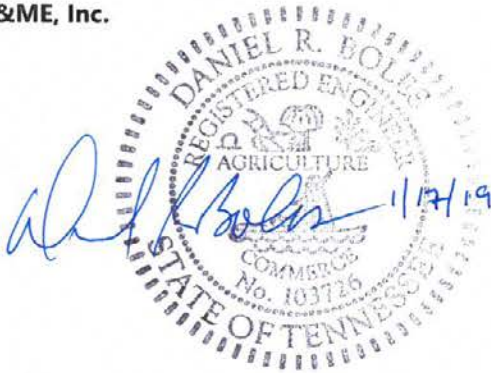


Letter Discussing Potential Sinkhole
Cottingham Court Development
Knoxville, Tennessee
S&ME Project No. 1243-19-002

S&ME appreciates the opportunity to be of service. If you have questions about this letter please don't hesitate to call.

Sincerely,

S&ME, Inc.



Daniel R. Boles, P.E.
Geotechnical Group Leader
Registration No. 103726

A blue ink signature of Timothy S. Lawrence.

Timothy S. Lawrence, P.E.
Senior Geotechnical Engineer
Registration No. 101548