



SUBDIVISION REPORT - CONCEPT/DEVELOPMENT PLAN

▶ **FILE #:** 12-SD-23-C
12-D-23-DP

AGENDA ITEM #: 31
AGENDA DATE: 12/14/2023

▶ **SUBDIVISION:** FRETZ ROAD SUBDIVISION

▶ **APPLICANT/DEVELOPER:** ERIC MOSELEY AND SCOTT SMITH

OWNER(S): Eric Moseley, S&E Properties, LLC

TAX IDENTIFICATION: 130 066, 067 [View map on KGIS](#)

JURISDICTION: County Commission District 6

STREET ADDRESS: 1103 FRETZ RD (1109 FRETZ RD)

▶ **LOCATION:** West side of Fretz Rd, south of N. Campbell Station Rd

SECTOR PLAN: Northwest County

GROWTH POLICY PLAN: Farragut Urban Growth Boundary

WATERSHED: Turkey Creek

▶ **APPROXIMATE ACREAGE:** 12.72 acres

▶ **ZONING:** PR (k) (Planned Residential) up to 4.5 du/ac

▶ **EXISTING LAND USE:** Rural Residential

▶ **PROPOSED USE:** Detached residential subdivision

SURROUNDING LAND USE AND ZONING: North: Single family residential, agriculture/forestry/vacant - R-2 (General Single-Family Residential) in Farragut
South: Single family residential - PR (Planned Residential) up to 5 du/ac in Knox County
East: Agriculture/forestry/vacant, single family residential - A (Agricultural) in Knox County
West: Single family residential - R-2 (General Single-Family Residential) in Farragut

▶ **NUMBER OF LOTS:** 46

SURVEYOR/ENGINEER: Aaron Gray, Ardurra

ACCESSIBILITY: Access is via Fretz Road, a local street with a 24-ft pavement width within a 40-ft right-of-way

▶ **SUBDIVISION VARIANCES REQUIRED:** None

STAFF RECOMMENDATION:

▶ **Approve the Concept Plan subject to 12 conditions.**

- 1) Connection to sanitary sewer and meeting other relevant utility provider requirements.
- 2) Installing a Type 'B' landscape screen along the south and northwest boundaries of the development per the condition of the PR (Planned Residential) zone, 9-K-23-RZ (see Exhibit D). The detailed landscape plan shall

be reviewed and approved by Planning staff during the design plan phase.

3) Approval of a stormwater management plan by Knox County Engineering and Public Works during the design plan phases per the condition of the rezoning.

4) All access strips must have a minimum width of 25 ft for the entire depth, measured at a 90-degree angle to the parallel lot lines of the access strip.

5) The submitted geotechnical report (GEOservices, LLC, November 16, 2023) must be reviewed and approved by Knox County Engineering and Public Works during the design plan phase to determine if either of the areas shown as closed contour sinkholes on the concept plan are required to be shown on the final plat as a closed contour sinkhole with a 50 ft buffer as required by Section 3.06.B. If any building construction proposed within the 50 ft buffer area around the designated sinkholes/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 a review of the report. Engineered footings must be designed for these areas. For those lots that do not have a building site outside of the 50 ft buffer, approval by Knox County will be required prior to final plat approval. The sinkholes/depressions and 50 ft buffer shall be designated on the final plat even if they are approved to be filled.

6) If a submitted geotechnical report, reviewed and approved by Knox County Engineering and Public Works, determines that a closed contour identified by Knox County Engineering and Public Works is not a sinkhole, the certification to be provided by Knox County Engineering and Public Works must be placed on the final plat and sealed by the applicant's engineer.

7) Implementing the recommendations of the Transportation Impact Letter (TIL) for Fretz Road (Ardurra, 11/17/2023) as required by Knox County Engineering and Public Works during the design plan phase.

8) Installing a sidewalk along the Fretz Road frontage per Chapter 54, Article IV of the Knox County Code. The final design of the sidewalk will be determined by Knox County Engineering and Public Works during the design plan phase.

9) Providing a note on the final plat that lot 31 shall have an on-site vehicle turnaround if access is provided from Fretz Road.

10) All double frontage lots must meet the requirements of Section 3.02.A.4. of the Subdivision Regulations.

11) Meeting all applicable requirements of the Knox County Department of Engineering and Public Works.

12) Meeting all applicable requirements of the Knox County Zoning Ordinance, including the four (4) conditions of the rezoning (9-K-23-RZ).

► **Approve the development plan for a residential subdivision with up to 46 detached dwellings on individual lots and reduction of the peripheral setback from 35 ft to 25 ft per condition #2, subject to 2 conditions.**

1) Meeting all applicable requirements of the Knox County Zoning Ordinance.

2) The peripheral setback along the Fretz Road frontage shall be a minimum of 50 ft from the centerline of Fretz Road.

With the conditions noted, this plan meets the requirements for approval in the PR zone and the criteria for approval of a development plan.

COMMENTS:

This proposal is for a 46-lot subdivision on this 12.72-acre site. The property was rezoned from A (Agricultural) to PR(k) (Planned Residential) up to 4.5 du/ac subject to 4 conditions, in October 2023 (9-K-23-RZ).

ZONING CONDITIONS

The four conditions of the rezoning are: 1) submit and adhere to findings of a transportation impact letter (Exhibit B), 2) submit stormwater management plan to Knox County Engineering and Public Works, 3) provide a 50-ft buffer around the largest closed contour lines, and 4) provide a type B landscape buffer around the entire boundary of the development facing existing homes.

-- TRANSPORTATION

The Transportation Impact Letter (TIL) studied the proposed access point to Fretz Road for adequate sight distance and whether turn lanes are warranted (Exhibit B). The study concludes that the proposed access point can obtain the minimum sight distance of 300 ft and turn lanes on Fretz Road are not warranted.

-- STORMWATER MANAGEMENT PLAN

The Subdivision Regulations require a preliminary stormwater plan with a concept plan submittal, which has been provided. The full stormwater management plan will be submitted to Knox County Engineering and Public Works during the design plan phase.

-- SINKHOLE (CLOSED CONTOUR) BUFFERS

The concept plan shows the location of two potential sinkholes and the required 50-ft buffer. The applicant submitted a "report of limited geotechnical exploration" that must be reviewed and approved by Knox County Engineering and Public Works during the design plan phase. If either of these are determined to be a sinkhole, the uppermost contour line of the sinkhole and the 50-ft buffer must be shown on the final plat. Any proposed lots that do not have buildable area outside of the sinkhole must be eliminated or combined with other lots with buildable area. Any structures proposed within a 50-ft sinkhole buffer must have foundations designed by a registered engineer. No structures are allowed within a sinkhole (closed contour) identified on the final plat.

-- LANDSCAPE SCREENING

The concept plan shows where the Type B landscape screening is required. The landscape shown is not representative of the actual number of trees and spacing recommended by the Type B landscape screening guidelines. The landscape plan is required to be reviewed and approved by Planning staff during the design plan phase and before clearing and grading commence on the site if concept plan condition # 2 is approved as recommended.

PERIPHERAL SETBACK REDUCTION

The applicant is requesting a reduction of the 35-ft peripheral setback to 25 ft on all external boundaries of the development. A 25-ft peripheral setback was approved by the Planning Commission for the Brandywine at Turkey Creek subdivision to the south. There are four lots in the Ridgeland subdivision, located in the Town of Farragut, with structures that are close to the northwest boundary of the subject development. The proposed lots that adjoin the Ridgeland subdivision are approximately 130 ft deep and will have a Type B landscape screen along this boundary per the zoning condition.

The applicant is voluntarily proposing to dedicate 25 ft of right-of-way from the centerline of Fretz Road so the required 5 ft wide sidewalk along the Fretz Road frontage is fully within the public right-of-way. If the right-of-way dedication does not happen, or if less than 25 ft from the centerline of Fretz Road is dedicated, development plan condition #2 ensures that the peripheral setback line, as proposed and recommended for approval by staff, would not change locations.

If development plan condition #2 is approved as recommended and the landscape screening is provided per the zoning condition, Planning staff is recommending approval of the peripheral setback reduction to 25 ft.

DEVELOPMENT PLAN ANALYSIS PER ARTICLE 6, SECTION 6.50.06 (APPROVAL OR DENIAL)

In the exercise of its administrative judgment, the Planning Commission shall determine if the proposed plan is in harmony with the general purpose and intent of the zoning ordinance and adopted plans.

1) ZONING ORDINANCE

PR(k) (Planned Residential) up to 4.5 du/ac:

- a) The PR zone allows houses as a permitted use. The administrative procedures for the PR zone require the Planning Commission to approve the development plan before permits can be issued (Article 5, Section 5.13.15).
- b) This PR(k) zone district is approved for a maximum of 4.5 du/ac, subject to 4 conditions. The proposed density is 3.62 du/ac.
- c) The four (4) conditions of the PR zoning have been addressed by the applicant as outlined in the staff comments above and the conditions of approval.
- d) The Planning Commission has the authority to reduce the 35-ft peripheral setback to 15 ft when adjacent to residential zones. The applicant is requesting a 25-ft peripheral setback. See the staff comments above for additional information.

2) GENERAL PLAN – DEVELOPMENT POLICIES

a) Policy 9.3, Ensure that the context of new development, including scale and compatibility, does not impact existing neighborhoods and communities – The development will consist of detached houses, which is consistent with the nearby residential development. A Type B landscape screen will be provided along the boundaries adjacent to the existing residential development.

3) NORTHWEST COUNTY SECTOR PLAN

- a) The property is classified as LDR (Low Density Residential), which allows consideration of up to 5 du/ac. The proposed density is 3.62 du/ac.
- B) Phase 2 has approximately 2.5 acres of Hillside Protection (HP) area and the slope analysis recommends disturbing no more than 2.0 acres of the HP area. The HP area is split into two areas, along the Fretz Road

frontage with slopes that are largely 0-15%, and in the southwest corner with slopes that are largely 15-25%. This proposal assumes all of the HP areas will be disturbed, however, some areas may be preserved depending on the final grading plan. These HP areas have low to moderate steepness of slope and are not on significant ridge features.

4) KNOXVILLE – FARRAGUT – KNOX COUNTY GROWTH POLICY PLAN

a) The property is within the Urban Growth Boundary. The purposes of the Urban Growth Boundary designation are to encourage a reasonably compact pattern of development, promote the expansion of the Knoxville-Knox County economy, offer a wide range of housing choices, and coordinate the actions of the public and private sectors, particularly with regard to the provision of adequate roads, utilities, schools, drainage and other public facilities and service.

ESTIMATED TRAFFIC IMPACT: A traffic impact study was prepared by the applicant. The findings of that study were used in formulating the recommendations of this staff report.

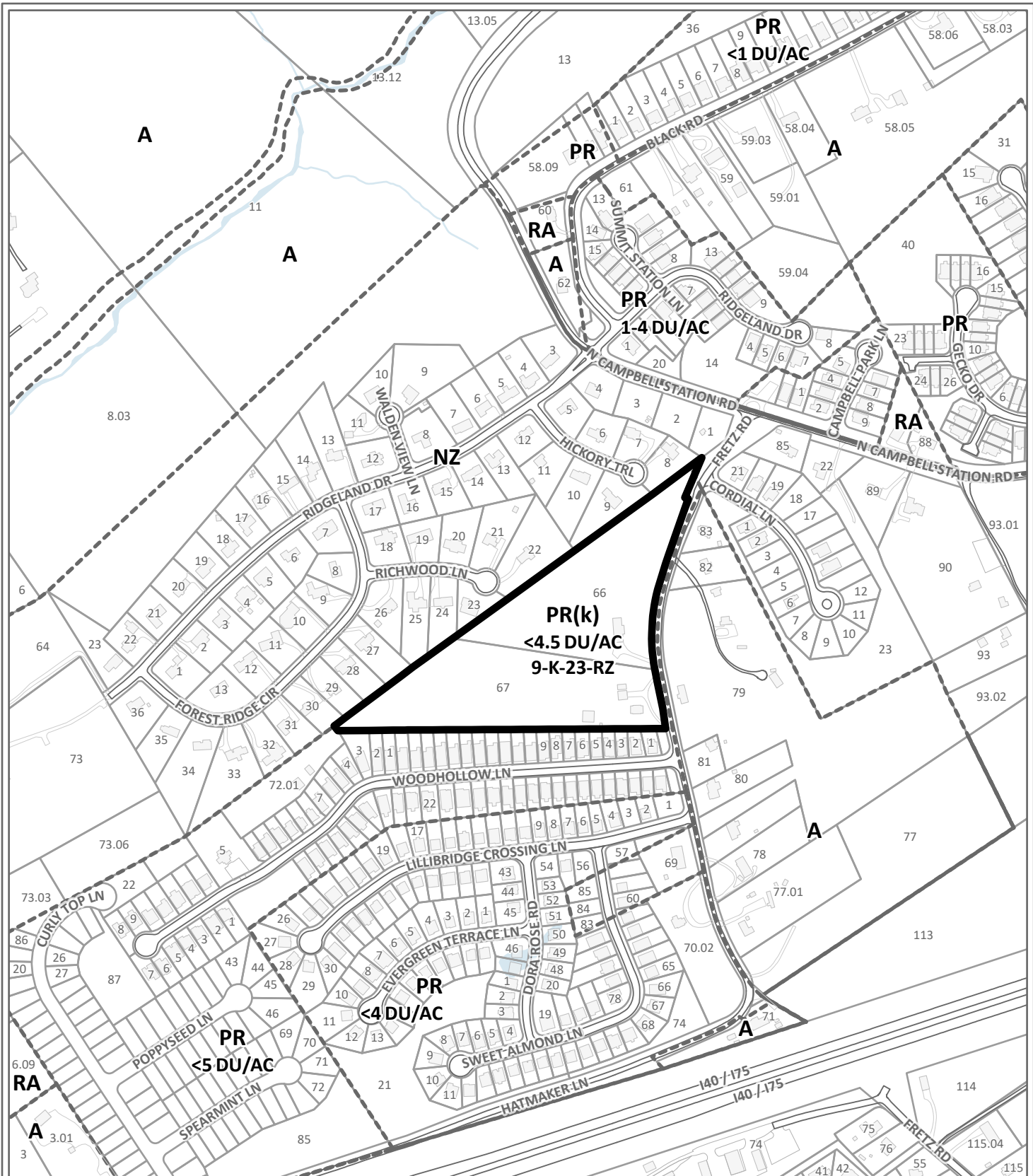
ESTIMATED STUDENT YIELD: 19 (public school children, grades K-12)

Schools affected by this proposal: Farragut Primary/Intermediate, Hardin Valley Middle, and Hardin Valley Academy.

- Potential new school population is estimated using locally-derived data on public school student yield generated by new housing.
- Students are assigned to schools based on current attendance zones as determined by Knox County Schools. Students may request transfers to different zones, and zone boundaries are subject to change.
- Estimates presume full build-out of the proposed development. Build-out is subject to market forces, and timing varies widely from proposal to proposal.
- Student yields from new development do not reflect a net addition of children in schools. Additions occur incrementally over the build-out period. New students may replace current population that ages through the system or moves from the attendance zone.

Knoxville-Knox County Planning Commission's approval or denial of this concept plan request is final, unless the action is appealed to Knox County Chancery Court. The date of the Knox County Chancery Court hearing will depend on when the appeal application is filed.

The Planning Commission's approval or denial of this development plan request is final, unless the action is appealed either to the Board of Zoning Appeals or to a court of competent jurisdiction within thirty (30) days of the decision being appealed (Knox County, Tennessee Code of Ordinances, Appendix A, Zoning, 6.50.08).



CONCEPT PLAN / DEVELOPMENT PLAN

12-SD-23-C / 12-D-23-DP

Petitioner: Eric Moseley and Scott Smith



Detached residential subdivision in
PR (k) (Planned Residential) up to 4.5 du/ac

Map No: 130

Jurisdiction: County

Original Print Date: 11/6/2023

Knoxville - Knox County Planning Commission * City / County Building * Knoxville, TN 37902

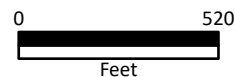
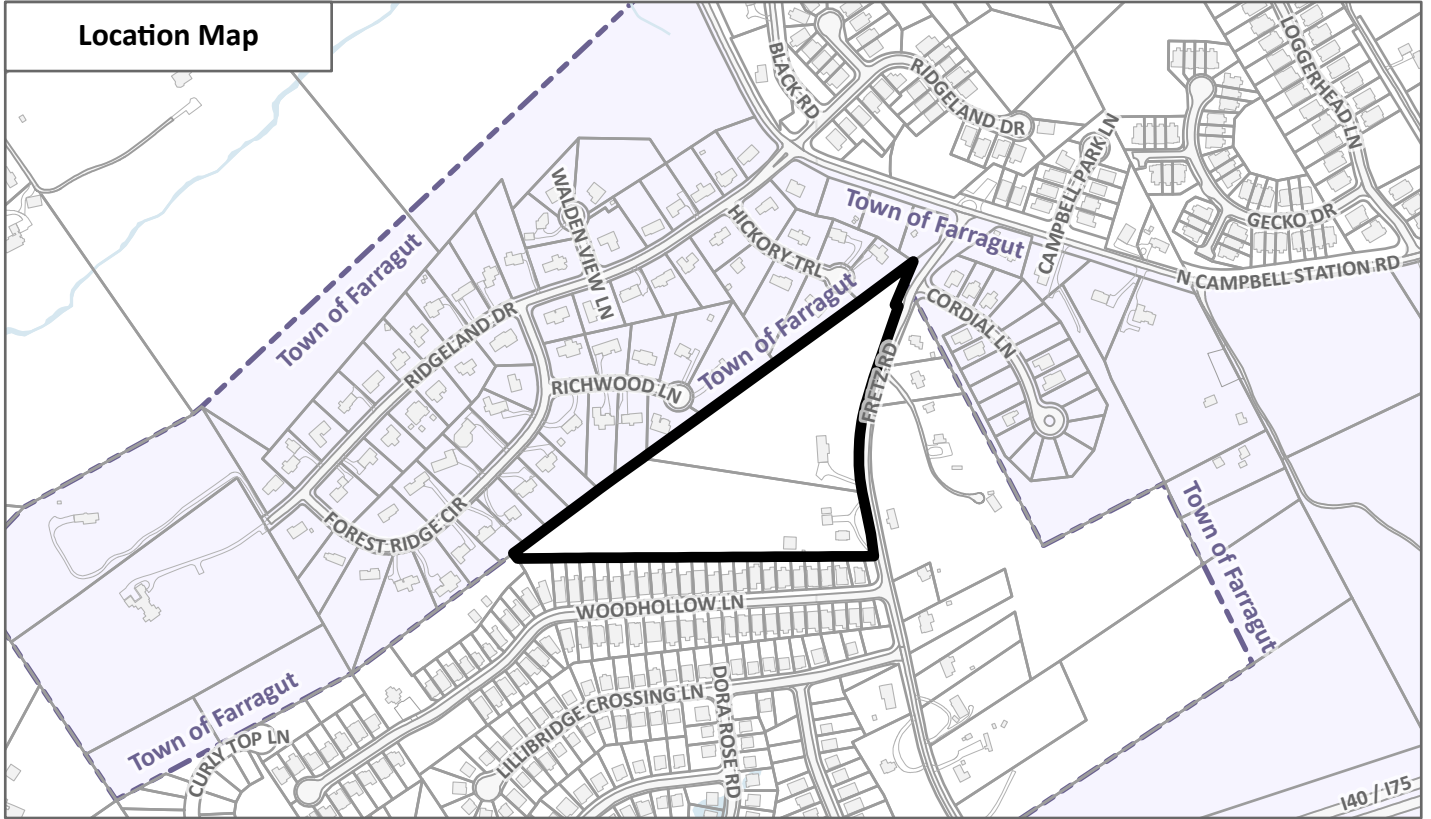
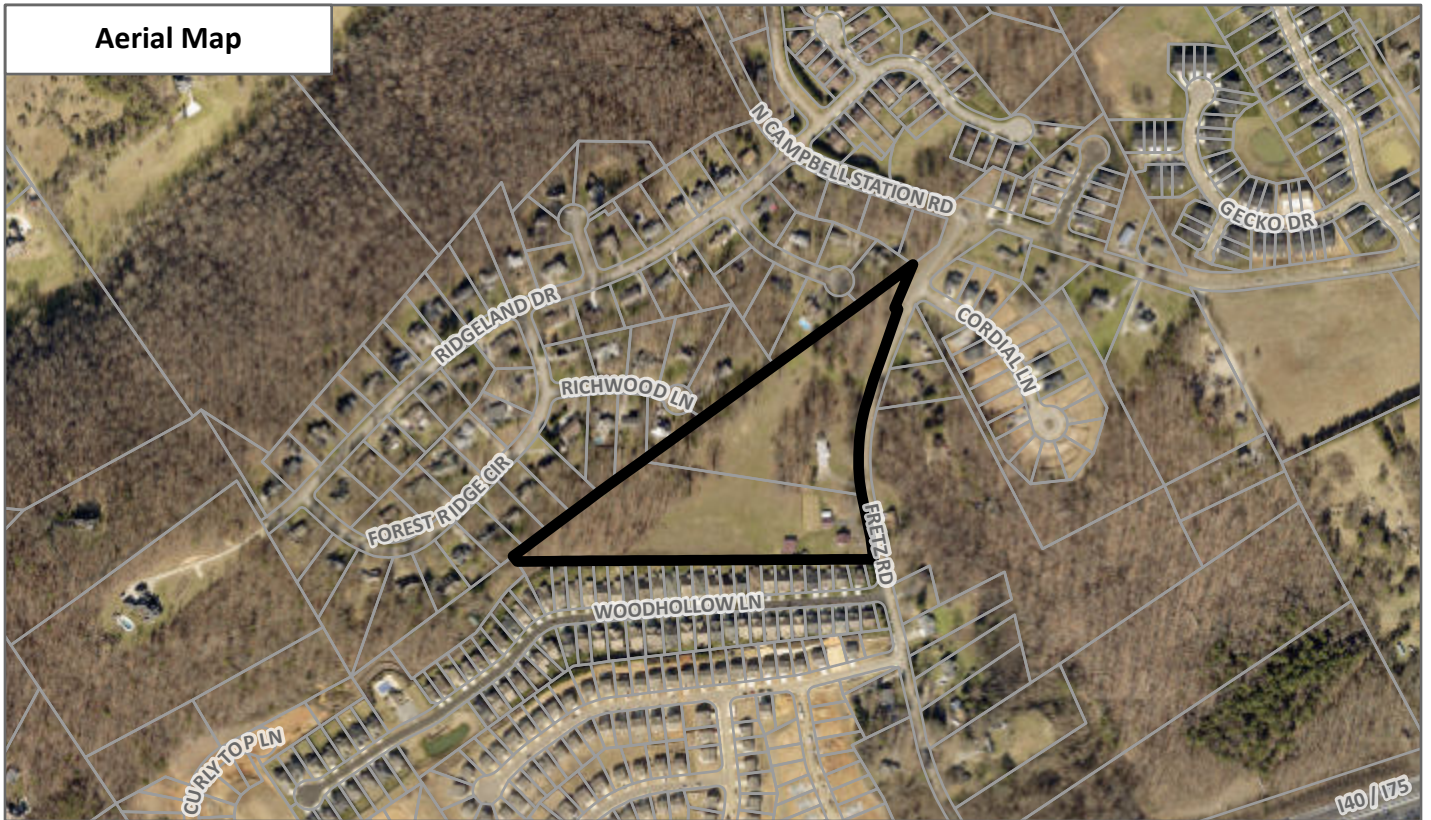


Exhibit A. Contextual Images

Location Map



Aerial Map



CONTEXTUAL MAPS 1

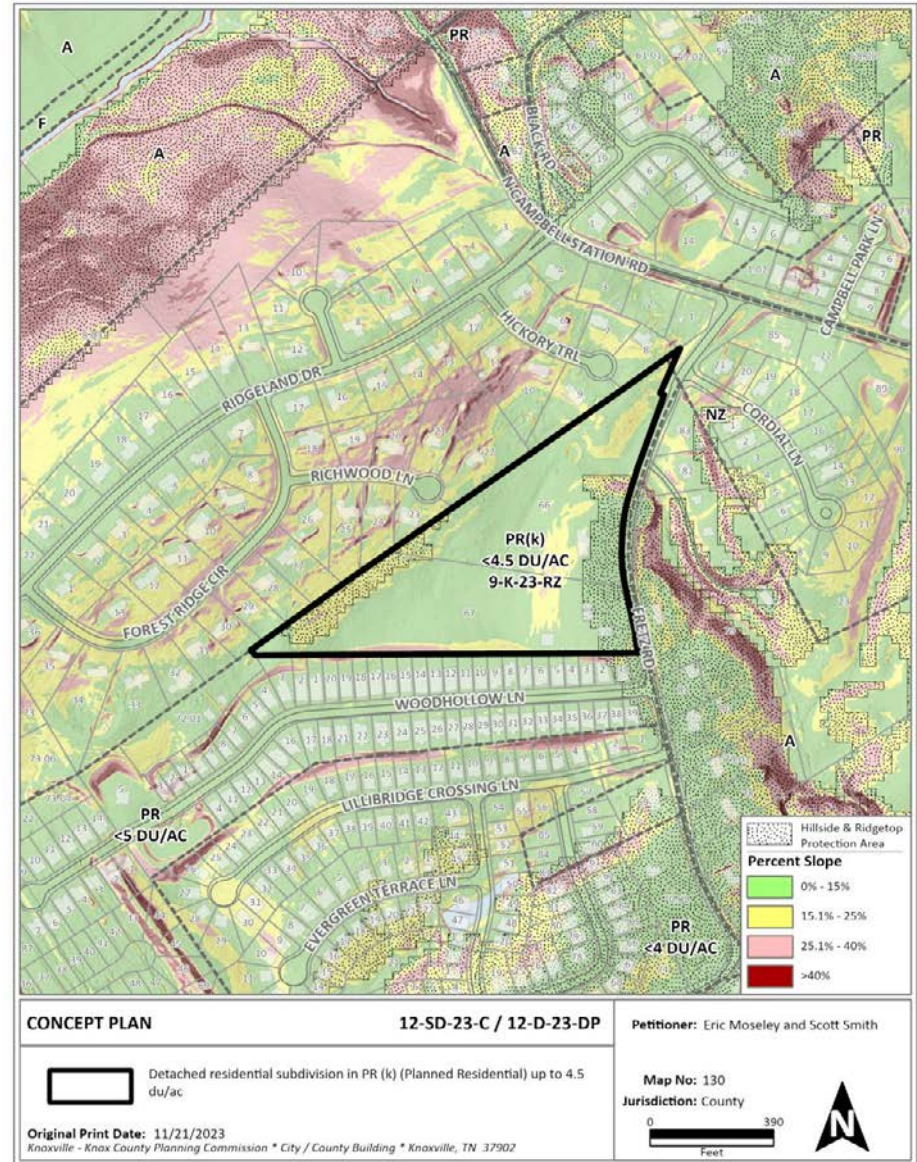
12-D-23-DP / 12-SD-23-C



Case boundary



CATEGORY	ACRES	RECOMMENDED DISTURBANCE BUDGET (Percent)	DISTURBANCE AREA (Acres)
Total Area of Site	12.9		
Non-Hillside	10.4	N/A	
0-15% Slope	1.5	100%	1.5
15-25% Slope	0.9	50%	0.5
25-40% Slope	0.1	20%	0.0
Greater than 40% Slope	0.0	10%	0.0
Ridgetops			
Hillside Protection (HP) Area	2.5	Recommended disturbance budget within HP Area (acres)	2.0
		Percent of HP Area	78.5%



GENERAL NOTES:

1. THE BOUNDARY DATA WAS TAKEN FROM KGIS
2. PROPERTY CONCERNED REFLECTS PARCELS 130 067 AND D130 066 AS SHOWN IN KNOX COUNTY CLT MAP 130. ZONING FOR THE PROPERTY IS PR, PLANNED RESIDENTIAL. TOTAL PARCEL AREA = 12.72 AC.
- OWNER: S&E PROPERTIES, LLC
405 MONTBROOK LANE
KNOXVILLE, TN 37919
3. BUILDING SETBACKS ARE 20-FT. IN FRONT, 5-FT. ON SIDE, AND 15-FT. IN REAR. THE PERIPHERAL SETBACK IS 25-FT.
4. ACCESS TO LOTS IS RESTRICTED TO INTERNAL STREETS, WITH THE EXCEPTION OF LOT 31 WHICH WILL HAVE DIRECT ACCESS TO FRETZ ROAD.
5. 10' UTILITY & DRAINAGE EASEMENT INSIDE ROAD FRONTAGE AND 5/0 PERIMETER LOT LINES. 5' EACH SIDE OF ALL INTERIOR LOT LINES.
6. PROPOSED IMPROVEMENTS INCLUDE: 26' WIDE PUBLIC ROAD, EXTRUDED CURB, STORM SEWER, SANITARY SEWER, WATER, ELECTRIC, TELEPHONE, AND CABLE TV
7. ALL HOUSES FRONTING FRETZ ROAD MUST CONTAIN A TURNAROUND.

PROPOSED DENSITY:

TOTAL PR AREA:	12.72 AC.
TOTAL PROPOSED UNITS:	46 UNITS
TOTAL PROPOSED DENSITY:	3.62 UNITS/AC.

UTILITY OWNERS:

WATER & SEWER

FIRST UTILITY DISTRICT
122 DURWOOD RD
KNOXVILLE, TN 37922
CONTACT: MR. EDWIN DEYTON
OFFICE PHONE: 865.966.9741

GAS

KNOXVILLE UTILITIES BOARD (KUB)
P.O. BOX 59017
KNOXVILLE, TN 37950-9017
CONTACT: MR. CHRIS MCDORMICK
OFFICE PHONE: 865.558.2123

ELECTRIC

LENDOR CITY UTILITY BOARD (LCUB)
P.O. BOX 448
LENDOR CITY, TN 37771
CONTACT: MR. MITCH LEDBETTER
OFFICE PHONE: 865.888.0707

TELEPHONE

AT&T
9733 PARKSIDE DRIVE
KNOXVILLE, TN 37922
CONTACT: MS. VICKIE DAILEY
OFFICE PHONE: 865.539.8571

LEGEND:

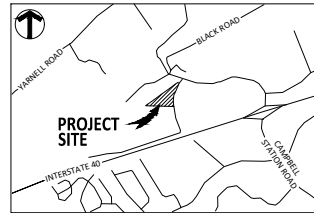
- PROPOSED ASPHALT PAVEMENT
- PROPOSED LOT NUMBER
- PROPOSED PROPERTY BOUNDARY
- PROPOSED ROW LINE
- EXISTING ROW LINE
- ROAD CENTERLINE
- EXISTING OVERHEAD POWER
- EXISTING NATURAL GAS
- EXISTING WATER MAIN
- EXISTING SANITARY SEWER
- LANDSCAPE BUFFER (TYPE B #2)
1676 LF NORTH PROPERTY LINE
1205 LF SOUTH PROPERTY LINE

ENGINEERING CERTIFICATION:

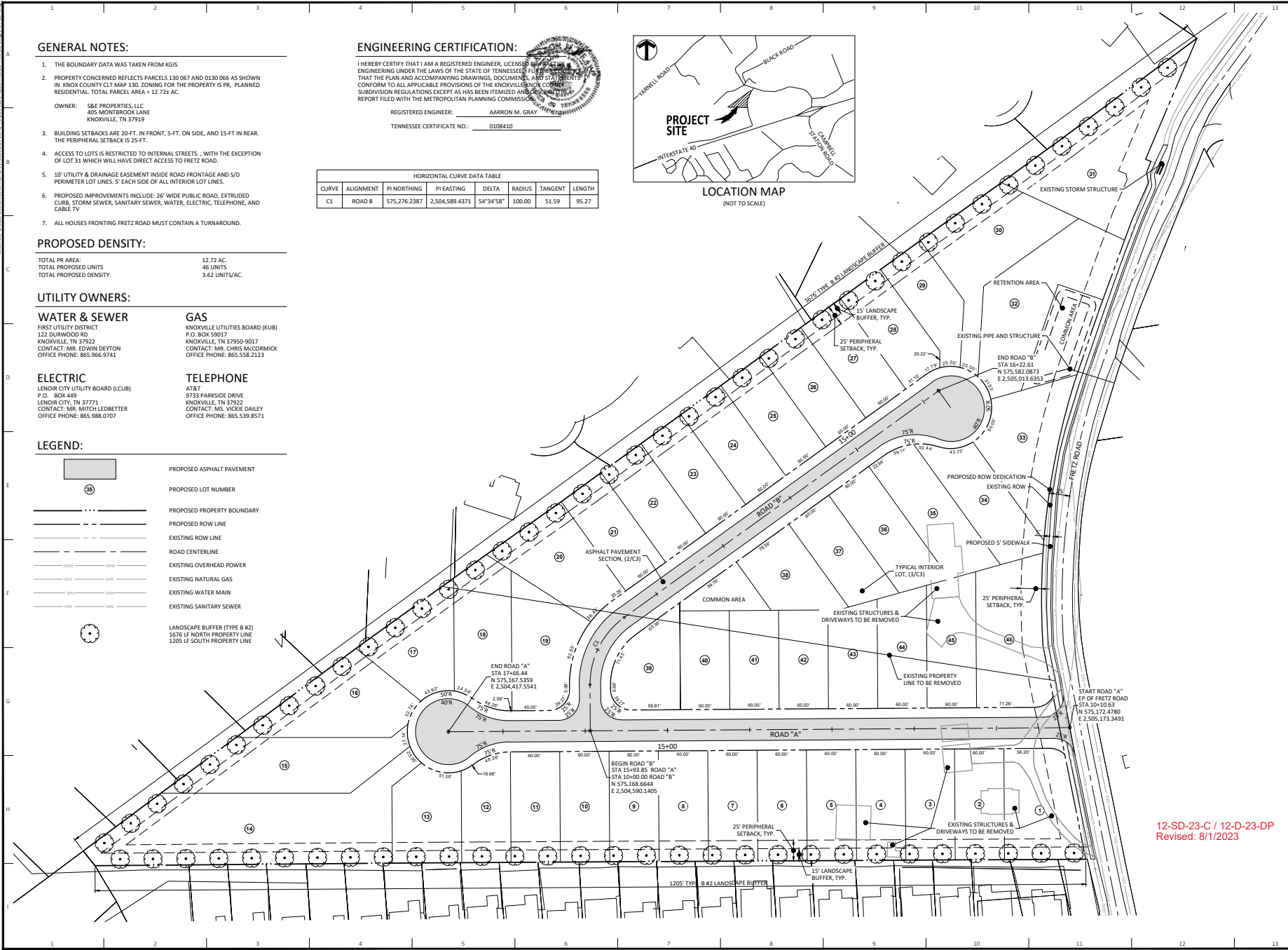
I HEREBY CERTIFY THAT I AM A REGISTERED ENGINEER, LICENSED IN THE STATE OF TENNESSEE, AND THAT THE PLAN AND ACCOMPANYING DRAWINGS, DOCUMENTS, AND STATEMENTS CONFORM TO ALL APPLICABLE PROVISIONS OF THE KNOXVILLE LOCAL GOVERNMENT SUBDIVISION REGULATIONS EXCEPT AS HAS BEEN ITEMIZED AND NOTED IN THIS REPORT FILED WITH THE METROPOLITAN PLANNING COMMISSION.

REGISTERED ENGINEER: AARON M. GRAY
TENNESSEE CERTIFICATE NO.: 0108410

HORIZONTAL CURVE DATA TABLE						
CURVE	ALIGNMENT	PI NORTHING	PI EASTING	DELTA	RADIUS	TANGENT LENGTH
C1	ROAD B	575,276.2387	2,504,589.4371	54°34'58"	100.00	95.27



LOCATION MAP
(NOT TO SCALE)



12-SD-23-C / 12-D-23-DP
Revised: 8/1/2023

0 50 100
SCALE FEET

2160 Lakeside Centre Way, Suite 201
Knoxville, TN 37922
Phone: (865) 690-6419
www.ardurra.com

S&E PROPERTIES, LLC
405 MONTBROOK LANE
KNOXVILLE, TN 37919

CONTACT: MR. ERIC MOSELEY
EMAIL: ERICMOSELEY@BELLSOUTH.COM
TELEPHONE NO.: 865.539.1122

NO.	DATE	REVISION

CONCEPT PLAN OF FRETZ ROAD SUBDIVISION
1103 FRETZ RD ROAD (PARCEL 130 066 & 130 067)
KNOXVILLE, TN 37931

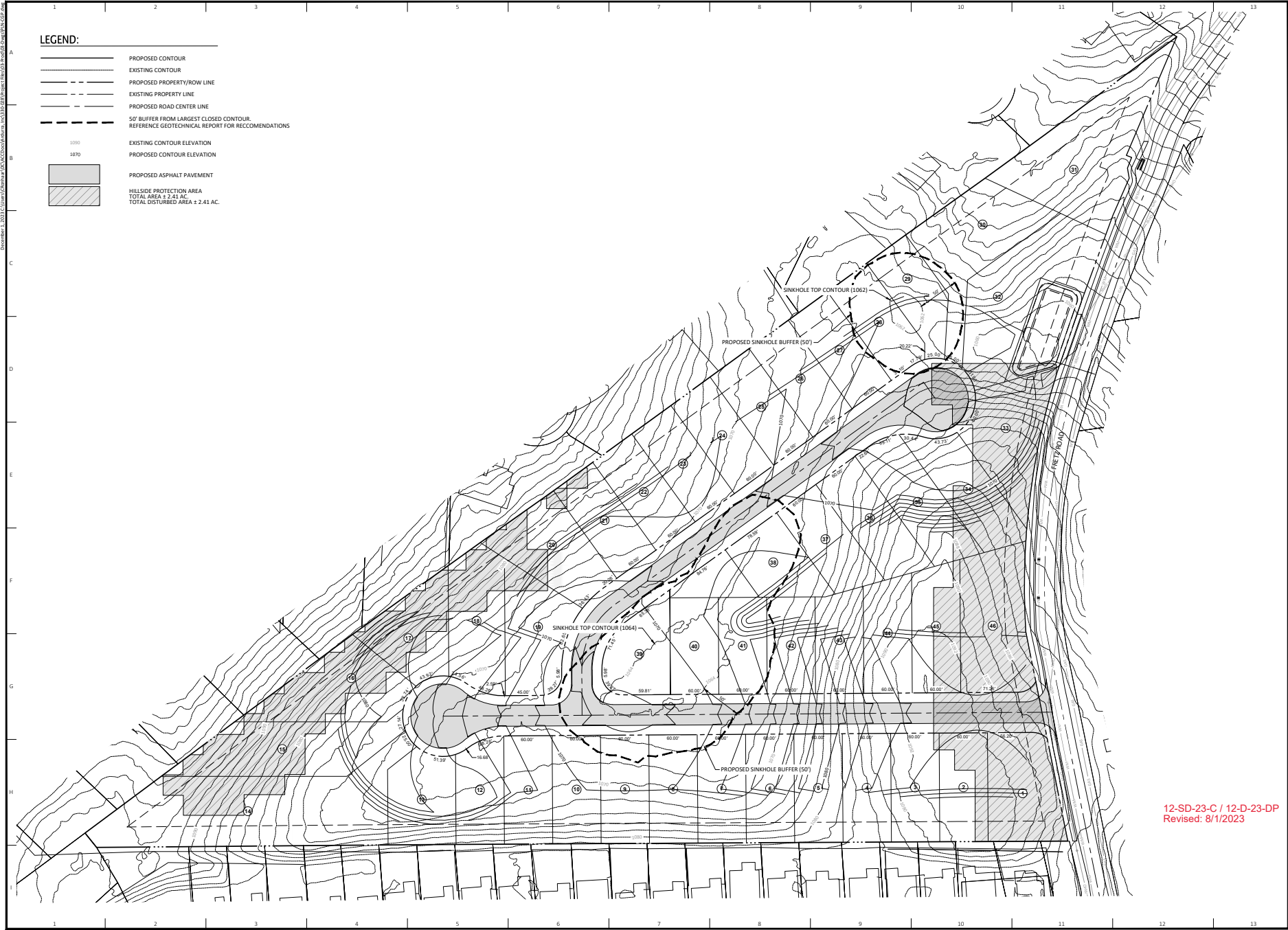
CONCEPT PLAN
PLANNING FILE NUMBERS: 12-SD-23-C/12-D-23-DP

JOB NO: 330028
DATE: 12/1/23

CO.00

CONCEPT PLAN

Drawings 1: 2023/12/22 11:03 AM [Drawing File Path]



LEGEND:

	PROPOSED CONTOUR
	EXISTING CONTOUR
	PROPOSED PROPERTY/ROW LINE
	EXISTING PROPERTY LINE
	PROPOSED ROAD CENTER LINE
	EXISTING ROAD CENTER LINE
	50' BUFFER FROM LARGEST CLOSED CONTOUR. REFERENCE GEOTECHNICAL REPORT FOR RECOMMENDATIONS
	EXISTING CONTOUR ELEVATION
	PROPOSED CONTOUR ELEVATION
	PROPOSED ASPHALT PAVEMENT
	HILLSIDE PROTECTION AREA TOTAL AREA ± 2.41 AC. TOTAL DISTURBED AREA ± 2.41 AC.

0 50 100
SCALE FEET

ARDURRA
CONSULTING ENGINEERS, INC.
2180 Lakeside Centre Way, Suite 201
Knoxville, TN 37922
Phone: (865) 690-6419
www.ardurra.com

S&E PROPERTIES, LLC
405 MONTBROOK LANE
KNOXVILLE, TN 37919

CONTACT: MR. ERIC MOSELEY
EMAIL: ERICMOSELEY@BELLSOUTH.COM
TELEPHONE NO.: 865.539.1122

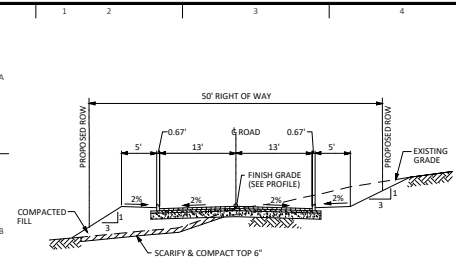
NO.	DATE	CONCEPT PLAN	REVISIONS

CONCEPT PLAN OF FRETZ ROAD SUBDIVISION
1103 FRETZ RD ROAD (PARCEL 130 066 & 130 067)
KNOXVILLE, TN 37931

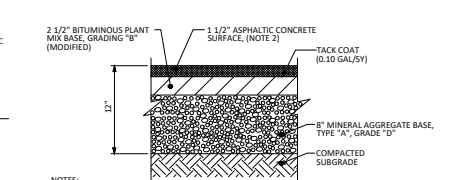
CONCEPT GRADING PLAN
PLANNING FILE NUMBERS: 12-SD-23-C/12-D-23-DP

12-SD-23-C / 12-D-23-DP
Revised: 8/1/2023

12-SD-23-C/12-D-23-DP - 12-SD-23-C/12-D-23-DP - 12-SD-23-C/12-D-23-DP - 12-SD-23-C/12-D-23-DP

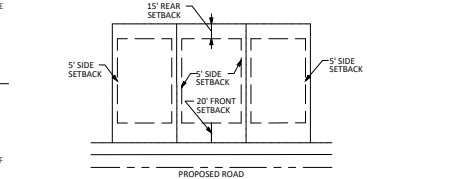


1 TYPICAL 26' PUBLIC ROAD SECTION
NTS

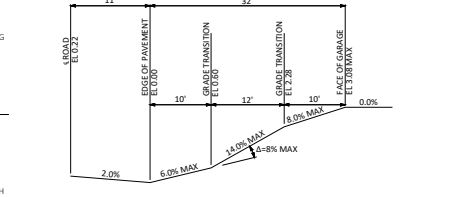


2 ASPHALT PAVEMENT SECTION
NTS

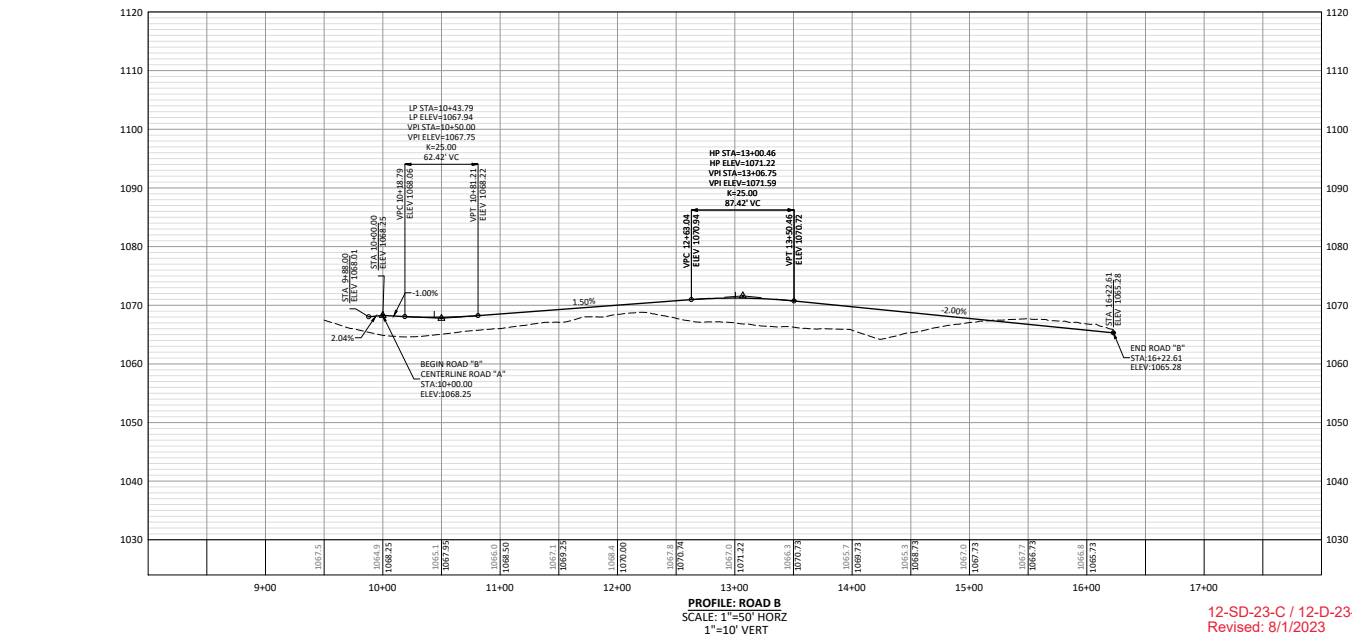
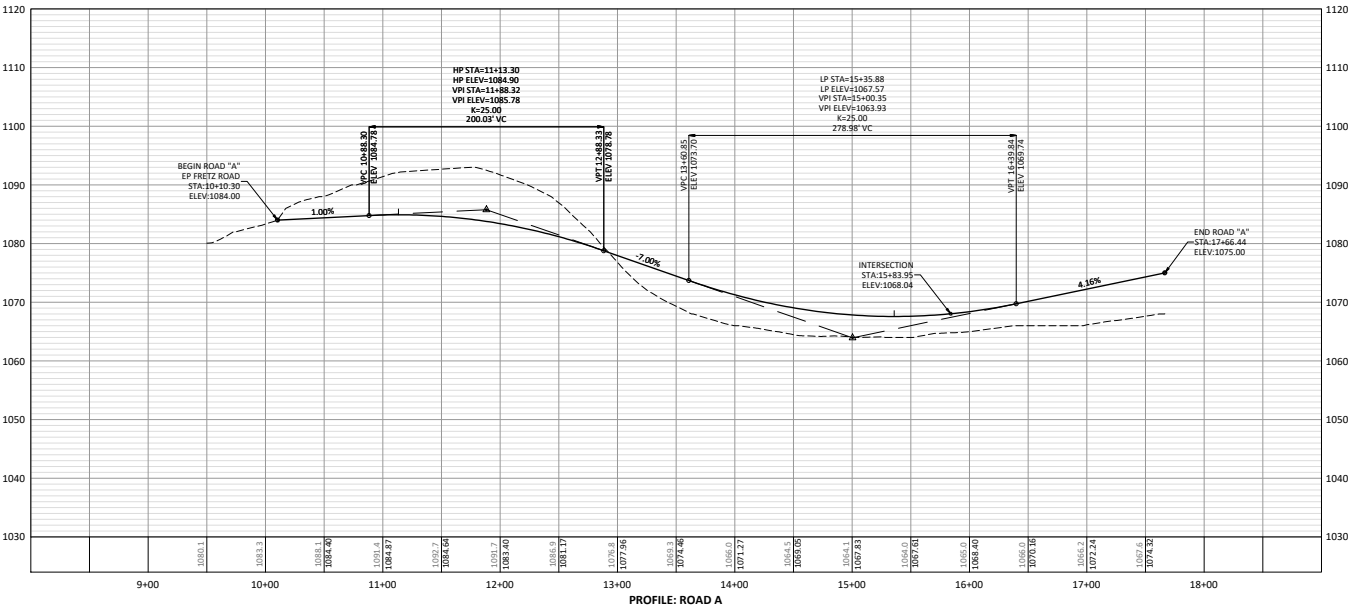
NOTES:
 1. PAVEMENT HAS NOT BEEN DESIGNED FOR CONSTRUCTION TRAFFIC ACTIVITIES. USE OF THESE SURFACES FOR CONSTRUCTION ACTIVITIES SHALL BE DONE AT THE CONTRACTOR'S CONVENIENCE AND RISK. DAMAGE TO PAVEMENT RESULTING FROM THESE ACTIVITIES SHALL BE REPAIRED IN CONFORMANCE WITH THE INITIAL PAVEMENT SPECIFICATIONS.
 2. ASPHALTIC CONCRETE SURFACE COURSE SHALL BE GRADE "E" MIX FOR ROADS WITH A SLOPE LESS THAN OR EQUAL TO 10%; FOR SLOPES GREATER, USE GRADE "D" MIX.



3 TYPICAL INTERIOR LOT
NTS



4 TYPICAL DRIVEWAY PROFILE
NTS



S&E PROPERTIES, LLC
 405 MONTBROOK LANE
 KNOXVILLE, TN 37919
 CONTACT: MR. ERIC MOSELEY
 EMAIL: ERICMOSELEY@BELL.SOUTH.COM
 TELEPHONE NO: 865.539.1122

NO.	DATE	REVISION

CONCEPT PLAN OF FRETZ ROAD SUBDIVISION
1103 FRETZ RD ROAD (PARCEL 130 066 & 130 067)
 KNOXVILLE, TN 37931
 CONCEPT ROAD PROFILES & DETAILS
 PLANNING FILE NUMBERS: 12-SD-23-C/12-D-23-DP

JOB NO: 330228
 DATE: 12/1/23

C2.00
 CONCEPT PLAN

12-SD-23-C / 12-D-23-DP
 Revised: 8/1/2023



November 17, 2023

Mr. Mike Conger
Knoxville-Knox County Planning
400 Main Street, Suite 403
Knoxville, TN 37902

Re: Transportation Impact Letter for Fretz Road Subdivision

Dear Mr. Conger:

S&E Properties, LLC is proposing a residential development with 57 single family detached lots. The development is located at 1103 Fretz Road in Knoxville, Tennessee. The total area of development is approximately 12.72 acres and the property is currently zoned PR (Planned Residential) with a proposed density of 4.48 DU/AC. Construction is proposed to take place this year and this analysis assumes full build out for the development will occur in 2026.

The concept plan layout shows a single roadway connection to Fretz Road. The location of the proposed roadway connection (Road "A") is approximately 790 feet south of Cordial Lane and 290 feet north of Woodhollow Lane. A copy of the concept plan is included in the attachments.

The purpose of this report is to conduct a Transportation Impact Letter for the proposed Fretz Road Subdivision.

Existing Site Conditions

N Campbell Station Road is a two-way road at the intersection with Fretz Road. The road width is approximately 20 feet. Knoxville-Knox County Planning classifies N Campbell Station Road as a Minor Arterial with an 88 foot right-of-way per the Major Road Plan. The posted speed limit on N Campbell Station Road is 35 mph.

Fretz Road is a two-way road at the intersection with Woodhollow Lane. The road width is approximately 21 feet. Knoxville-Knox County Planning does not classify Fretz Road; therefore, it is considered a local street. The posted speed limit on Fretz Road is 30 mph.

Aerial photos of the existing intersections of N Campbell Station Road at Fretz Road and Fretz Road at Woodhollow Lane are included in the attachments.

Pedestrian / Bicycle Network

Fretz Road has an existing sidewalk on the west side of Fretz Road and an existing paved trail on the east side of the road between NCampbell Station Road and Cordial Lane. Fretz Road also has existing striped crosswalks at both the intersection with N Campbell Station Road and Cordial Lane.

Snyder Road has an existing bike lane and the closest greenways to the proposed development are the Grigsby Chapel Greenway and the Parkside Greenway located south of Interstate 40.

Traffic Volumes

Ardurra conducted a peak hour turning movement count at the intersection of Fretz Road at Woodhollow Lane on November 9, 2023. The AM peak hour occurred between 7:15 a.m. and 8:15 a.m. with a peak hour factor (PHF) of 0.81 and an AM peak hour volume of 223 vehicles per hour and the PM peak hour occurred between 3:30 p.m. and 4:30 p.m. with a peak hour factor (PHF) of 0.90 and a PM peak hour volume of 190 vehicles per hour.

The traffic data collected is included in the attachments.

Background Growth

TDOT count station #47000303 is located on N Campbell Station Road south of Edison Road and north of the proposed residential development. The annual growth rate for this station over the last ten years is approximately 2.87%. The 2022 ADT was 6,153 vehicles per day.

Knoxville Regional TPO count station #093M082 is located on N Campbell Station Road north of Snyder Road and south of the proposed residential development. The annual growth rate for this station over the last ten years is approximately 3.04%. The 2022 ADT was 8,770 vehicles per day.

In order to calculate traffic for the background year 2026, Ardurra assumed an annual growth rate of 3.0%. Figure 1: 2023 Existing Peak Hour Traffic, Figure 2: 2026 Background Peak Hour Traffic, and the ADT trend line growth charts are included in the attachments.

Knox County Improvement Project

Knox County Engineering and Public Works has prepared plans for intersection improvements at N Campbell Station Road at Fretz Road. The intersection improvements include widening N Campbell Station Road to add a two-way left turn lane between Fretz Road and Campbell Park Lane. The preliminary engineering phase is complete and the project is currently undergoing ROW acquisition.

Trip Generation

The Fretz Road residential development proposes 57 single-family detached housing lots.

Single-Family Detached Housing or Land Use 210 was used to calculate the daily trips, AM and PM peak hour trips. The site trips were calculated using the fitted curve equations from the *Trip Generation, 11th Edition*, published by the Institute of Transportation Engineers.

The land use worksheets are included in the attachments. A trip generation summary is shown below in Table 1 – Trip Generation Summary.

**Table 1 - Trip Generation Summary
Fretz Road Subdivision**

Land Use	Density	Daily Trips	AM Peak Hour		PM Peak Hour	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (LUC 210)	57 lots	602	12	33	37	22

The total new trips generated by the Fretz Road Subdivision residential development were estimated to be 602 daily trips. The estimated trips are 45 trips during the AM peak hour and 59 trips during the PM peak hour.

Trip Distribution

The existing trip distribution on Fretz Road north of the intersection with Woodhollow Lane is approximately 65% northbound and 35% southbound during the AM peak hour and approximately 40% northbound and 60% southbound during the PM peak hour.

The directional distribution of the trips generated by the Fretz Road Subdivision was determined using the existing traffic volumes at the intersection of Fretz Road at Woodhollow Lane in combination with the concept plan layout. Ardurra assumed an entering trip distribution that is 100% southbound from N Campbell Station Road and an exiting trip distribution that is 100% northbound towards N Campbell Station Road during both the AM and PM peak hours.

Figure 3: Peak Hour Subdivision Trip Distribution, Figure 4: Peak Hour Subdivision Site Traffic, and Figure 5: 2026 Full Buildout Site Traffic are included in the attachments.

Turn Lane Warrant

The intersection of Fretz Road at the proposed roadway connection was evaluated to determine if a northbound left turn lane or a southbound right turn lane are warranted. The Knox County Department of Engineering and Public Works handbook, "Access Control and Driveway Design Policy," was used to analyze the information.

At the intersection of Fretz Road at the proposed roadway connection (Road "A") neither a northbound left turn lane nor a southbound right turn lane are warranted during either the AM or PM peak hours after the full buildout of the Fretz Road Subdivision residential

development. The turn lane warrant worksheets and analysis are included in the attachments.

Sight Distance

The minimum required sight distance for a road with a posted speed limit of 30 mph is 300 feet in each direction in accordance with the "Knoxville-Knox County Subdivision Regulations" amended through March 9, 2023. Ardurra measured the sight distance at the proposed intersection of Fretz Road at the roadway connection (Road "A") in November 2023. At 15 feet from the edge of pavement the sight distance is approximately 470 feet looking to the north and approximately 775 feet looking to the south.

Photos of the intersection sight distance at the proposed intersection of Fretz Road at Road "A" are included in the attachments.

Ardurra recommends that the intersection sight distance be certified by a land surveyor prior to construction in order to verify that Fretz Road has adequate intersection sight distance at the proposed roadway connection (Road "A") in order to comply with Knoxville-Knox County Subdivision Regulations.

Intersection Spacing

Fretz Road is classified as a local street by the Major Road Plan. The minimum intersection spacing required on a local street is 125 feet per the "Knoxville-Knox County Subdivision Regulations" amended through March 9, 2023. Fretz Road at the proposed roadway connection (Road "A") is located approximately 790 feet south of Cordial Lane and 290 feet north of Woodhollow Lane; therefore, the minimum required separation on a local street is met and no change is necessary.

ROW Signage

For northbound traffic between Hatmaker Lane and N Campbell Station Road the signage includes a W7-6 "Hill Blocks View" sign with a "20 MPH" plaque attached below, a W1-2R "Arrow Curving to the Right" and a R1-1 "Stop Sign" at the intersection at N Campbell Station Road. For southbound traffic the signs include a R2-1 "Speed Limit 30 MPH" sign, a W7-6 "Hill Blocks View" sign with a "20 MPH" plaque attached below and a W1-2R "Arrow Curving to the Right".

The existing signs located in the right-of-way are shown on Figure 6: Existing Right-of-Way Signage.

Conclusion and Recommendations

The total new trips generated by the Fretz Road Subdivision residential development were estimated to be 602 daily trips. The estimated trips are 45 trips during the AM peak hour and 59 trips during the PM peak hour. Ardurra estimated that 100% of the trips from the proposed subdivision would enter/exit from the existing intersection of Fretz Road at N Campbell Station Road.

At the intersection of Fretz Road at the roadway connection (Road "A") a northbound left

Mr. Conger
November 17, 2023
Page 5 of 5

turn lane and a southbound right turn lane are not warranted during either the AM or PM peak hour per the Knox County Department of Engineering and Public Works handbook, "Access Control and Driveway Design Policy."

The minimum required sight distance for a road with a posted speed limit of 30 mph is 300 feet in each direction in accordance with the "Knoxville-Knox County Subdivision Regulations" amended through March 9, 2023. Ardurra measured the sight distance at the proposed intersection of Fretz Road at the roadway connection (Road "A") in November 2023 and at 15 feet from the edge of pavement the sight distance at the proposed intersection is approximately 470 feet looking to the north and approximately 775 feet looking to the south.

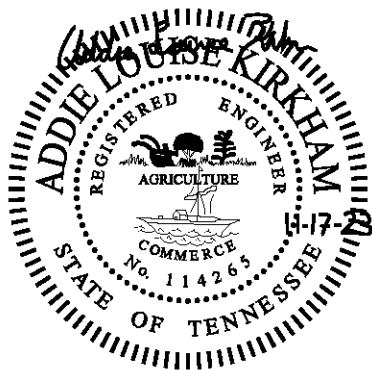
Ardurra recommends that the intersection sight distance be certified by a land surveyor prior to construction in order to verify that Fretz Road has adequate intersection sight distance at the proposed roadway connection (Road "A") to comply with Knoxville-Knox County Subdivision Regulations.

The existing ROW on Fretz Road has a southbound warning sign prior to the horizontal curve but there are no eastbound warning signs on Hatmaker Lane. Ardurra recommends that consideration be made to adding an eastbound W1-2 "Arrow Curving to the Left" prior to the horizontal curve on Hatmaker Lane. The Fretz Road Subdivision is not expected to add any measurable traffic to Hatmaker Lane; therefore, the recommendation is not a result of the proposed development.

All signs and pavement markings should be installed in accordance with the standards provided in the *Manual on Uniform Traffic Control Devices* (MUTCD).

I hope that this is helpful. Please contact me if you have any questions.

Thank you,



Addie Kirkham, P.E.

Enclosure: Attachments

Attachments

Fretz Road Subdivision
Transportation Impact Letter
November 17, 2023



Subdivision Site Layout

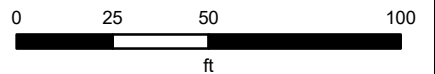


N Campbell Station Rd

Knoxville - Knox County - KUB Geographic Information System



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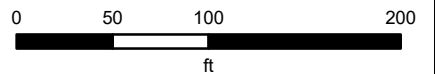
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Fretz Rd

Knoxville - Knox County - KUB Geographic Information System



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Fretz Road Subdivision
Transportation Impact Letter
November 17, 2023

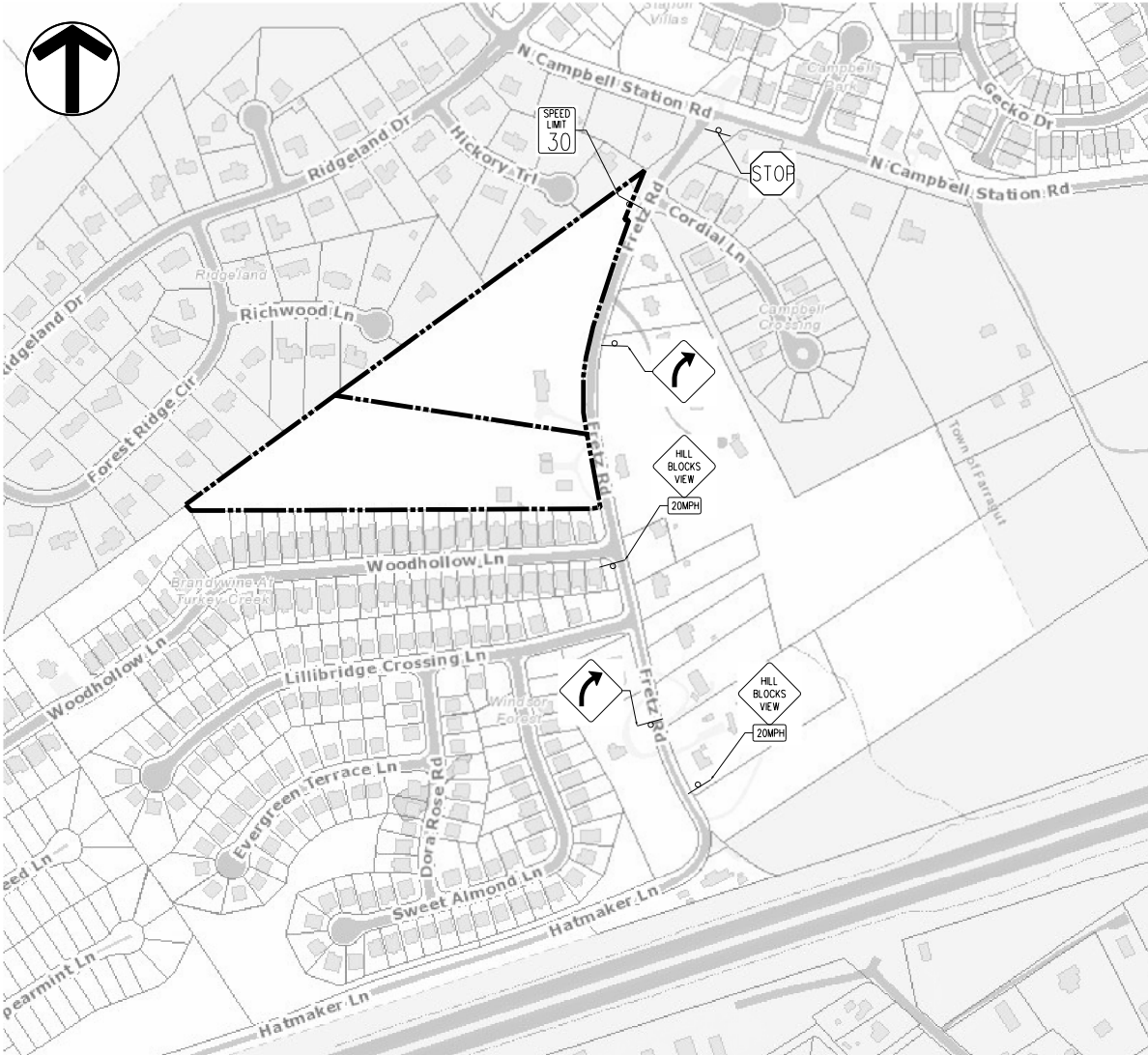


Figure 6: Existing Right-of-Way Signage



Fretz Road at Roadway Connection (Road "A") – Looking Left



Fretz Road at Roadway Connection (Road "A") – Looking Right

November 16, 2023

S & E Properties, LLC
405 Montbrook Lane
Knoxville, Tennessee 37923

ATTENTION: Mr. Eric Moseley
emoseley@icloud.com

Subject: **REPORT OF LIMITED GEOTECHNICAL EXPLORATION**
Fretz Road Development – Sinkhole Determination
1109 Fretz Road
Farragut, Tennessee
GEOServices Project No. 21-231451

Dear Mr. Moseley:

We are submitting the results of the limited geotechnical exploration performed for the subject project. The geotechnical exploration was performed in accordance with our proposal No. 11-23878 dated October 24, 2023. The purpose of our limited geotechnical exploration was to explore the subsurface conditions in the vicinity of the existing closed contours and to provide discussion on possible karst activity and future development.

PROJECT INFORMATION AND SITE DESCRIPTION

Project information was provided via email correspondence between Mr. Eric Moseley of S&E Properties, LLC, and Mr. Ros Kingery of GEOServices, LLC on October 24, 2023. We were provided with a topographic map (undated/untitled), which indicated possible areas of sinkhole activity due to closed contours within it. These areas are also shown on the Knoxville, Knox County, KUB Geographic Information System (KGIS) topographic maps.

Based on the provided topographic map, the closed contours occur along the northern portion of the site and extend into an apparent drainage swale through the central portion of the property. The surface elevations within the closed contour in the south portion of the property ranges from approximately 1066 to 1064 feet MSL (Mean Sea Level), while the surface elevations of the closed contours in the north portion of the property range from approximately 1064 to 1058 feet MSL (Mean Sea Level).

At this time, we have not been provided with proposed grading information; however, we anticipate the site will require maximum cuts/fills of 10 feet to facilitate the development.

The project site is immediately bordered by residential properties to the south and west, Fretz Road to the east, and North Campbell Station Road to the north. Currently, a residential structure and a few agricultural structures occupy the eastern portion of the site. The remainder of the site is grass covered, while some scattered mature trees exist along the northern portion. Based on our review of available historical aerial images (Google Earth & KGIS), the majority of the was utilized for agricultural purposes since prior to 1959. Over the years, the northwestern closed contour was utilized as a farm pond. In addition, the northern portion of the site was graded sometime between 1969 and 1985 during the construction of the existing structures. Then, the southern portion of the site was graded in 2010 during the construction of the neighboring development. The site has remained unchanged since then.

FIELD EXPLORATION

The site subsurface conditions were explored by drilling nine (9) soil test borings. Five borings (B-1 through B-5) were drilled in the vicinity of the closed depressions. The borings were located in the field by GEOServices personnel using a handheld GPS unit and the provided drawing. Drilling was performed between November 6 and 7, 2023, by our subcontractor. The borings were advanced using 2¼-inch inside diameter hollow stem augers (HSA) and a DPT7 drill rig.

The depths in this report reference the ground surface at the site that existed at the time of the exploration. The ground surface elevations indicated on the boring logs were estimated by interpolating between contours on the provided topographic information and should be considered approximate. The approximate locations of the soil test borings are shown in Figure 2 in the attachments of this report. Detailed logs for the soil test borings can be found in the attachments of this report.

Within each soil test boring, Standard Penetration Testing (SPT) and split-spoon sampling were performed on approximately 2½-foot intervals in the upper 10 feet and at 5-foot intervals thereafter. The drilling was performed in accordance with ASTM D 6151 (hollow stem auger drilling). SPT and split-spoon sampling were performed in accordance with ASTM D 1586.

In split–spoon sampling, a standard 2-inch O.D. split-spoon sampler is driven into the soil at the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of the standard 18 inches of total penetration is recorded as the SPT N-value. These N-values are indicated on the boring logs at the testing depth and provide an indication of the consistency of the fine-grained soil or relative density of coarse-grained soil.

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 information indicates that the project site is underlain by bedrock from the Chepultepec Dolomite formation of the Knox Group. This formation is primarily composed of light-gray, fine-grained, and well-bedded dolomite with minor amounts of limestone and quartz sandstone. The Chepultepec Dolomite formation typically weathers to produce a thick residual clay overburden. Silica in the form of chert is resistant to weathering and is typically scattered throughout the residuum.

Since the bedrock underlying this site contains carbonate rock (i.e., limestone/dolomite), 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 these hazards. Of these hazards, the occurrence of sinkholes is potentially the most damaging to overlying soil-supported structures. Sinkholes occur primarily due to differential weathering of the bedrock mass and flushing of overburden soil into the cavities within the bedrock. This loss of solids creates a cavity, or dome, within the overburden. Growth of the cavity over time, or excavation over the dome, can create a condition in which rapid subsidence, or collapse, of the roof of the dome occurs. Such a feature is termed a sinkhole.

The process of bedrock solutioning including the formation of bedrock pinnacles, slots, fissures, caves, and sinkholes has been occurring for a long period of time. The result of this solutioning is evidenced by

the undulating topography of present-day East Tennessee. Such topography is often referred to as “Karst” topography which is a term used to describe landforms, geologic features, and subsurface conditions resulting from the solutioning of carbonate bedrock. Some of the features associated with karst topography include internally drained depressions (closed depressions), springs, sinking creeks, caves, and underground springs.

Closed depressions are features which formed during the geologic past and have subsequently filled naturally with soil by the processes of running water or gravity. The process of solution weathering and raveling of soil is ongoing and the present day closed depressions may have undergone several iterations of sinkhole formation and refilling. Closed depressions may be recognized as having a saucer or bowl-shaped bottom with no open hole at the bottom. For comparison, a sinkhole is an active feature with an open hole at the bottom of the depressed area, often exposing the underlying bedrock. Active sinkholes were not observed during the site reconnaissance performed as part of this project.

The closed depressions are internally drained, meaning surface water within the highest closed contour interval of the depression flows to the bottom of the depression where it infiltrates into the subsurface. Closed depressions are indicated on United States Geologic Survey (USGS) topographic maps by a hatched contour interval. During our review of the United States Geological Survey (USGS – Lovell Quadrangle, TN), a few closed depressions were noted within a ¼ -mile radius of the proposed site. However, surficial indications were not observed during our site reconnaissance. Figure 1 in the attachments shows a section of the USGS topographic maps in the site vicinity.

After completion of the field drilling and sampling phase of this project, the soil samples were returned to our laboratory where they were visually-manually classified in general accordance with the Unified Soil Classification System (USCS – ASTM D2487) by a GEOServices geotechnical professional.

SUBSURFACE CONDITIONS

The following subsurface description is of a generalized nature to highlight the subsurface stratification features and material characteristics at the testing locations. The boring logs included as an attachment to this report should be reviewed for specific information at each 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 Materials

Upon completion of the limited clearing activities, five borings (B-2 through B-4, B-6, and B-7) initially encountered 2 inches of surficial topsoil. Although the depth of surficial layer is relatively uniform, we anticipate the actual thickness of the surficial materials to vary across the site, as the site has been previously graded. Therefore, we recommend the contractor determine the actual thickness for bidding and construction purposes.

Residuum

Underlying the surficial materials and from the ground surface (B-1, B-5, B-8, and B-9), apparent residual materials were encountered. The residual soils generally consisted of tan, reddish brown, orangish brown, brown, and gray lean (low plasticity) and fat (high plasticity) clayey soils with varying amounts of silt, sand, and chert fragments. We note that three borings (B-1, B-6, and B-7) encountered organic odors in their initial samples.

The SPT N-values within the residual materials generally ranged from 5 to 30 bpf (blows per foot), indicating firm to very stiff consistencies within the fine-grained soils. The exceptions were the isolated samples encountered in boring B-5 from 20 to 25 feet and the initial samples in boring B-6 at 5 feet. These samples had SPT N-values between 3 and 4 bpf, indicating soft consistencies in the fine-grained materials. We note that SPT N-values greater than 20 bpf may have been influenced by denser materials, such as chert fragments within the soil matrix or the upper surface of bedrock.

Auger Refusal

Auger refusal was encountered in one boring (B-1) at approximately 42.5 feet below existing grade. The remaining eight borings were extended to predetermined termination depths of approximately 10 and 50 feet below existing grade without encountering auger refusal materials. Auger refusal is a designation applied to materials that cannot be penetrated by the power auger. Auger refusal may indicate hard materials, such as rock boulders, ledges or pinnacles, or the top of continuous bedrock.

Ground Water

Groundwater was encountered in one boring (B-1) at approximately 42.5 feet below existing grade. We note that stabilized water levels can sometimes be difficult to obtain as the encountered soils are known to be relatively impermeable. In addition, each boring was backfilled upon completion in consideration of safety so delayed water levels were not recorded.

It is possible for groundwater to exist within the depths explored during other times of the year depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials. The groundwater information presented in this report is the information that was collected at the time of our field activities. The following table summarizes the approximate surficial layer thickness, groundwater depths, and refusal depths relative to the estimated ground surface elevation.

Table 1 –Soil Test Boring Summary Information

Boring	Estimated Ground Surface Elevation (feet MSL)	Approximate Surficial Layer Thickness (Inches)	Approximate Groundwater Depth (feet)	Approximate Refusal Depth (feet)	Approximate Refusal Elevation (feet MSL)
B-1	1058	NE	40	42.5	1015.5
B-2	1064	2" Topsoil	NE	50*(T)	1014*(T)
B-3	1066	2" Topsoil	NE	50*(T)	1016*(T)
B-4	1064	2" Topsoil	NE	50*(T)	1014*(T)
B-5	1064	NE	NE	50*(T)	1014*(T)
B-6	1072	2" Topsoil	NE	10*(T)	1062*(T)
B-7	1070	2" Topsoil	NE	10*(T)	1060*(T)
B-8	1081	NE	NE	10*(T)	1071*(T)
B-9	1075	NE	NE	10*(T)	1065*(T)

Notes: NE – Not Encountered / *(T) - Terminated prior to encountering refusal materials. Elevations interpolated from provided/available topographic information. Should be considered approximate.

SITE ASSESSMENT

The results of the field exploration indicate that the site is generally adaptable for the proposed construction. However, there will likely be geotechnical-related challenges to the development of this site. These challenges identified during the exploration should be understood and will likely affect construction costs and schedule.

Lower Consistency and High Plasticity Materials

While we anticipate the existing materials appear to be suitable for re-use as structural soil fill, lower consistency materials were encountered at various depths. We note that the majority of these materials were encountered in the initial samples which were likely influenced by recent rain events prior to our mobilization or clearing activities. Therefore, while these materials will likely be encountered during construction activities, the amount will be based on final grades and time of year of construction, especially since beyond the initial samples, the majority of the soils were noted to be stiff, or better.

We recommend performing close construction observations during earthwork and foundation excavations activities to observe the consistency and suitability to support the proposed construction. Any areas observed to be unsuitable for use as foundation or subgrade support should be remediated accordingly. Generally, remediation of these types of soils consists of undercutting and replacing with properly compacted structural soil fill or compacted dense graded aggregate. The depth of undercutting should be determined based upon observations and tests performed at the time of construction.

In addition, some of the encountered materials were classified as high plasticity (fat) clayey soils at various depths. Therefore, we anticipate these materials will be encountered during construction activities, especially in cut areas. Typically, these materials are marginally suitable for foundation, slab, or pavement support and will likely impede site grading activities as they are susceptible to moisture changes. We have provided recommendations pertaining to the fat clayey soils in this report.

Subgrades for lightly loaded slabs can typically be supported on materials which proofroll successfully. Proofrolling should be observed by a geotechnical engineer or by a qualified representative in order to help identify areas requiring subgrade support correction. Where the subgrade does not pass proofrolling, remediation should be anticipated.

As previously mentioned, we anticipate the majority of the residual soils will be suitable for reuse as structural soil fill; however, the client should understand that some variation should be expected between our widely spaced borings and selective undercut and replacement may be necessary during construction activities. This may include the lower consistency materials, free of deleterious materials, if the soils are scarified (or undercut) and recompacted.

Karst Geology -Closed Depression

Based on the provided/available KGIS topographic maps, closed contours exist in the northern portion of the site and extend into an apparent drainage swale through the central portion of the property. Based on our review of available historical aerial images (Google Earth & KGIS), the majority of the was utilized for agricultural purposes since prior to 1959 and farm pond use to exist in northwestern corner. In addition, the northern portion of the site was graded sometime between 1969 and 1985 during the construction of the existing structures. Then, the southern portion of the site was graded in 2010 during the construction of the neighboring development. As such, it is possible the contours may have been closed during previous grading actives. During our exploration, the borings were completed in the vicinity of the closed depression to assess the potential for ongoing solution activity.

As described previously, the bedrock underlying the site consists of carbonate rock (i.e. limestone and dolomite). A certain degree of risk with respect to sinkhole formation and subsidence should be considered at any site located within carbonate geologic settings. The present standard of practice of geotechnical engineering cannot definitely predict where or when solution features will occur. In such a setting, the soil overburden is typically stiffer near the ground surface and becomes softer and wetter with increased depth. Therefore, during our field exploration, we looked for characteristics of active conditions, such as elevated moisture contents, soft soils (typically SPT N-values less than 4), which decrease in consistency with depth, and apparent open voids within the soil.

In general, the borings did not encounter a significant amount of soft soils or elevated moisture contents with depth. While two locations (B-5 and B-6) encountered a layer of lower consistency soils between 5 and 25 feet, we anticipate this was likely influenced by existing recent rain events and/or perched water, which is known to exist around the soil/rock interface. We note that the SPT N-values increased in the next sampling interval. Based on the results of our exploration, we did not encounter subsurface conditions which would

indicate an elevated risk of sinkhole development. Therefore, we anticipate the existing closed depressions are not sinkhole related and grades may have been altered during previous grading activities.

It is our professional opinion this area should not be platted as a sinkhole. The risk of sinkhole development can be reduced by following the recommendations provided in the following section. The present standard of practice of geotechnical engineering cannot definitely predict where or when solution features will occur. The recommendations are based on the field work completed in November of 2023.

We strongly encourage the client to confer with the design team and a contractor with regard to the findings and preliminary grading recommendations contained in this report, in an effort to assess potential costs and schedule for implementing the anticipated course of action. The recommendations provided herein should be considered preliminary.

SITE PREPARATION RECOMMENDATIONS

Subgrade

Site stripping within proposed construction areas (building and pavement) should include the removal of topsoil, unsuitable fill (if encountered), deleterious materials (if encountered), organics, and rock fragments greater than 6 inches. The stripping operations should extend a minimum of 5 feet beyond the limits of proposed pavement areas and 10 feet beyond building footprints. A geotechnical engineer should observe these areas upon grading to confirm that the recommendations in this report are followed.

The site also contains some large, mature trees. Along with the trees, the respective root system should also be removed. Removal of trees and their root system upturns and loosens the surrounding soils. If the disturbed soils are suitable and are to remain, then they will require additional compactive effort and testing prior to proof-roll testing and fill placement. The client should budget for additional removal of these root systems and replacement with structural soil fill.

After the completion of stripping operations and excavation to reach the planned subgrade elevation, we recommend that the subgrade be proofrolled with a fully loaded, tandem-axle dump truck or other pneumatic-tired construction equipment of similar weight. The geotechnical engineer or a representative should observe proofrolling. Areas judged to perform unsatisfactorily (e.g., pumping and/or rutting) by the

engineer should be undercut and replaced with structural soil fill or remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled before the placement of new fill. Proofrolling operations should extend a minimum distance of 10 feet beyond the building perimeter and 5 feet beyond pavement areas.

Structural Soil Fill

Material considered suitable for use as structural fill should be clean soil free of organics and other deleterious material, containing no rock fragments greater than 6 inches in dimension. Structural soil fill material should preferably have a standard Proctor maximum dry density of 90 pounds per cubic foot (pcf) or greater and a PI value of 35 percent or less. The geotechnical engineer should test the material used as structural fill to confirm that it meets the project requirements before being placed.

Based on our exploration, the onsite materials, free of deleterious materials, may be suitable for re-use as structural soil fill. Further assessment of the onsite materials can be made during observation of the undercut and earthwork activities performed on-site.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 98 percent of the soil's maximum dry density per the standard Proctor method (ASTM D698) and within the range of minus (-) 2 percent to plus (+) 3 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractors' method can achieve the project requirements before placing subsequent lifts. Areas that have become soft or frozen should be removed before the additional structural fill is placed.

Dense Graded Aggregate

Dense graded aggregate (DGA) fill may be used as a backfill in undercut excavations and utility trench excavations. The DGA used for this section should be Type A and Grading D or E in accordance with Section 903.05 of the Tennessee Department of Transportation (TDOT) specifications. The DGA fill should be placed in loose, horizontal lifts not exceeding 8 inches in loose thickness. Each lift should be compacted to at least 98 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted, tested by geotechnical personnel, and approved before placing subsequent lifts.

High Plasticity Soil Considerations

Based on our experience in the Tennessee area, soils with plasticity indices (PI) less than 30 percent have a slight potential for volume changes with changes in moisture content, and soils with a PI greater than 50 percent are highly susceptible to volume changes. Between these values, we consider the soils to be moderately susceptible to volume changes.

Plastic soils have the potential to shrink or swell with significant changes in moisture content. Unlike other areas of the country where high plasticity soils cause considerable foundation problems, Tennessee does not typically endure long periods of severe drought or wet weather. However, in recent years drought conditions have been sufficient to cause soil shrinkage and related structural distress of buildings, floor slabs and pavements at sites underlain by high plasticity soils.

At sites that have high plasticity soils, certain precautions should be considered to minimize or eliminate the potential for volume changes. The most effective way to eliminate the potential for volume changes is to remove highly plastic soils and replace them with compacted fill of non-expansive material. Testing and recommendations for the required depth of removal can be provided, if needed. If removal of the highly plastic soils is not desirable, then measures should be taken to protect the soils from excessive amounts of wetting or drying. In addition, modification of the soils by lime or cement treatment can be utilized to reduce the soil plasticity.

Several construction considerations may reduce the potential for volume changes in the subgrade soils. Foundations should be excavated, checked, and concreted in the same day to prevent excessive wetting or drying of the foundation soils. The floor subgrade should be protected from excessive drying and wetting by covering the subgrade prior to slab construction. The site should be graded in order to drain surface water away from the building both during and after construction.

Installing moisture barriers around the perimeter of the slab will help limit the moisture variation of the soil and reduce the potential for shrinking or swelling. In addition, roof drains should discharge water away from the building area and foundations. Heat sources should be isolated from foundation soils to minimize drying of the foundation soils. Trees and large shrubs can draw large amounts of moisture from the soil during dry weather and should be kept well away from the building to prevent excessive drying of the foundation soils.

Watering of lawns or landscaped areas should be performed to maintain moisture levels during dry weather. Structural details to make the building flexible should be considered to accommodate potential volume changes in the subgrade. Floor slabs should be liberally jointed to control cracking, and the floor slab should not be structurally connected to the walls. Walls should incorporate sufficient expansion/contraction joints to allow for differential movement.

SINKHOLE RISK REDUCTION AND CORRECTIVE ACTIONS

Based on our experience, corrective actions can also be performed to reduce the potential for 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 positive site drainage.

In general, the portions of a site that are excavated to achieve the desired grades will have a higher risk of sinkhole development than the areas that are filled, because of the exposure of relic fractures in the soil to rainfall and runoff. On the other hand, those portions of a site that receive a modest amount of fill (or that have been filled in the past) will have a decreased risk of sinkhole development caused by rainfall or runoff because the placement of a cohesive soil fill over these areas effectively caps the area with a relatively impervious “blanket” of remolded soil. Therefore, the recommendations that are designed to make the surface of the soil in excavated areas less permeable.

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 geosynthetic clay 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.

FOUNDATION RECOMMENDATIONS

While finalized design plans are not complete at this time, we anticipate the proposed structures will be relatively light, (i.e., maximum column loads of 75 kips or less). Therefore, it is our opinion the structures can likely be supported on conventional spread footing foundations bearing on properly compacted structural soil fill or suitable residual soils following the undercut and replacement of unsuitable materials as discussed in the Site Preparation section of this report. Spread and continuous footings supported on properly placed and compacted structural soil fill or suitable residual soils can be designed for an allowable soil bearing pressure of 2,000 psf.

We recommend that continuous foundations be a minimum of 18 inches wide and isolated spread footings be a minimum of 24 inches wide to reduce the possibility of a localized punching shear failure. Exterior foundations should be designed to bear at least 18 inches below finished exterior grade to develop the design bearing pressure and to protect against frost heave.

A geotechnical representative should be retained to perform foundation subgrade tests to confirm that the recommendations provided in this report are consistent with the site conditions encountered. Some undercutting of lower consistency soils where encountered in foundation excavations should be anticipated. A dynamic cone penetrometer (DCP) is commonly utilized to provide information that is compared to the data obtained in the geotechnical report. Where unacceptable materials are encountered, the material should be excavated to stiff, suitable soils or remediated at the geotechnical engineer's direction.

FLEXIBLE PAVEMENT RECOMMENDATIONS

Flexible (asphalt) pavements should be designed and constructed to meet the requirements of Knox County. In addition, the pavement subgrade should be prepared per the recommendations presented in this report.

All paved areas should be constructed with positive drainage to direct water off-site and minimize surface water seeping into the pavement subgrade. The subgrade should have a minimum slope of 1 percent. The basestone should extend through the slope to allow any water entering the basestone to exit in downgrade areas. If the surface course of the roadway will be left off during the construction of any structures, consideration should be given to increasing the basestone thickness or binder thickness to reduce the potential for roadway repairs during construction.

RECOMMENDED ADDITIONAL EXPLORATIONS

We understand that grading and designs have not been finalized as the project is still in the preliminary design phases. Therefore, following review of this report, we would be glad to discuss the proposed construction types and potential means and methods for design. The client should understand an additional geotechnical exploration may be necessary as the design progresses.

At a minimum, site specific subsurface explorations should be conducted at proposed building and pavement areas to determine if additional recommendations are necessary. An additional exploration will likely consist of Standard Penetration Testing (SPT) to sample the overburden materials. Rock coring may also be necessary, depending on final grades, to assess the character and composition of the underlying bedrock.

LIMITATIONS

This report has been prepared following generally accepted geotechnical engineering practices 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.

The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the observation pits will not become evident until construction. Therefore, we recommend that GEOServices be retained to observe the project construction in the field. GEOServices cannot accept responsibility for conditions that deviate from those described in this report if not retained to perform construction observation and testing. If variations appear evident, then we will re-evaluate the recommendations of this report. If any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed, and conclusions modified or verified in writing. Also, if the project scope should change significantly from that described herein, these recommendations may need to be re-evaluated.

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



Stephen R. Martin, P.E.
Geotechnical Department Manager
TN PE 122,250

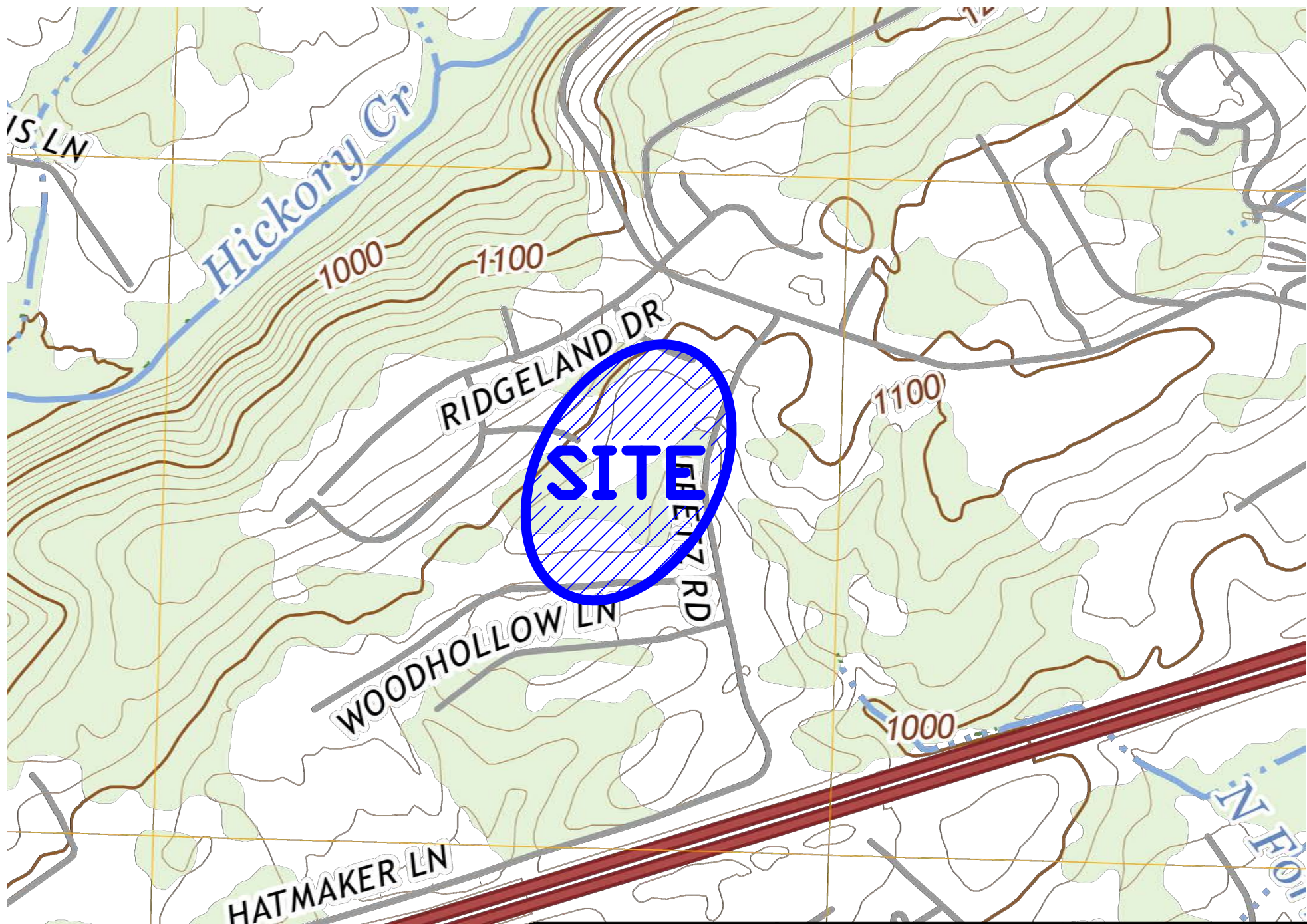


Ibrahim M. Aklouk, P.E.
Geotechnical Project Manager
TN PE 127,662

ATTACHMENTS: Site Vicinity Map
Soil Test Boring Location Plan
General Notes and Soil Test Boring Logs

The background image is a dark blue-tinted photograph. The top portion shows a close-up of soil sampling equipment, including a cylindrical sampler and a metal tray containing several soil samples. The bottom portion shows a larger tray filled with numerous soil samples, each labeled with a small tag. The overall scene is dimly lit, emphasizing the textures of the soil and the metallic surfaces of the equipment.

ATTACHMENTS



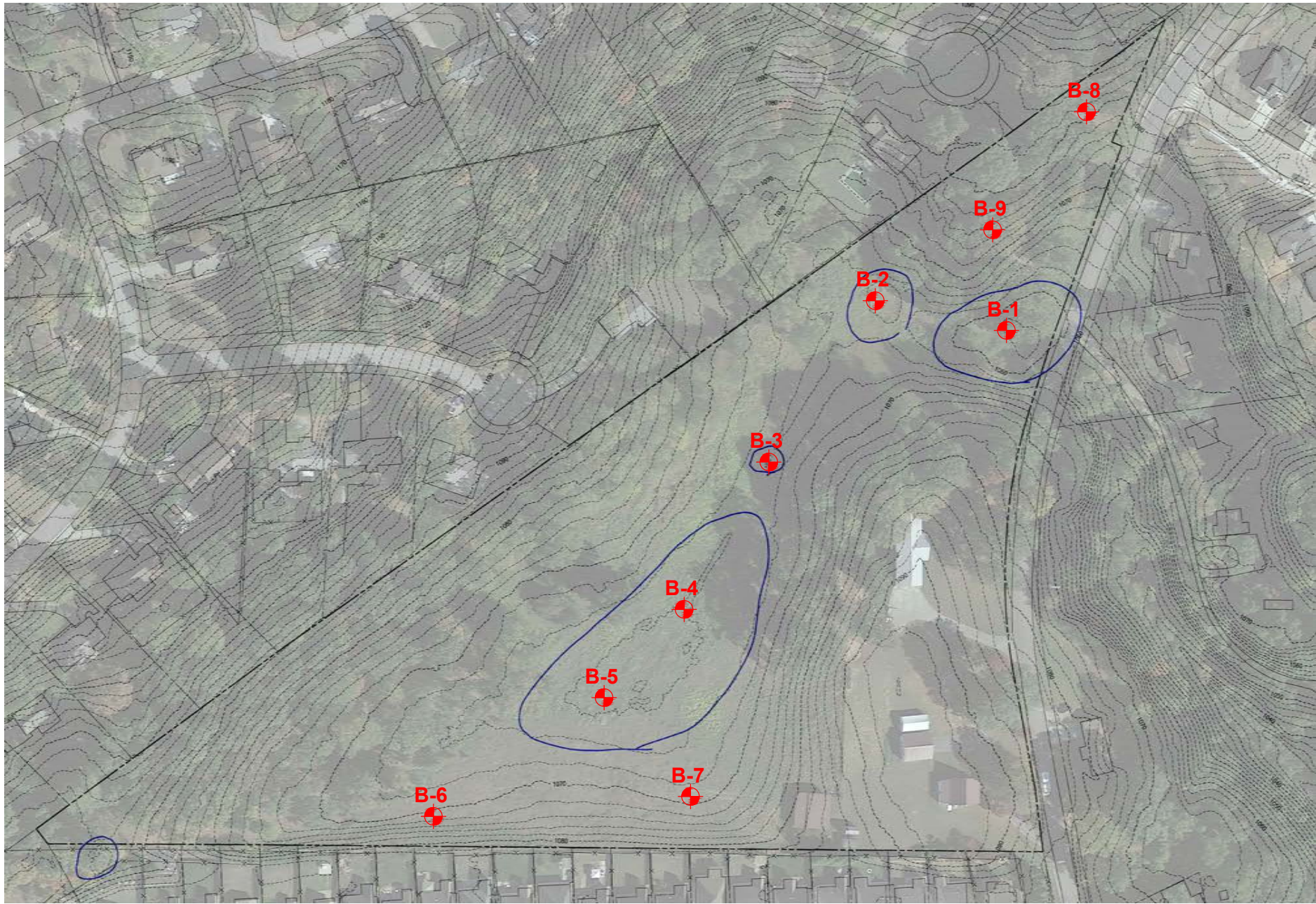
NOTES:
 1.) BASE MAP: USGS QUADRANGLE (LOVELL, TENNESSEE)

GEOS
 A UES COMPANY
 2561 Willow Point Way, Knoxville, TN 37931
 Office: 865-539-8242 Fax: 865-539-8252

SITE VICINITY MAP
 FRETZ ROAD DEVELOPMENT
 SINKHOLE DETERMINATION
 1109 FRETZ ROAD, KNOXVILLE, TN 37932

DRAWN BY:	KSR
APPROVED BY:	SRM
SCALE:	N.T.S.
JOB NO.:	21-231451
DATE:	11/9/23

FIGURE
 1



NOTES:

- 1.) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGEMENT ONLY.
 - 2.) DO NOT USE BORING LOCATIONS FOR DETERMINATIONS OF DISTANCES OR QUANTITIES.
 - 3.) BASE MAP PROVIDED BY: S&E Properties
- 📍 LOCATION OF SOIL TEST BORINGS

**SOIL TEST BORING
LOCATION PLAN**

**FRETZ ROAD DEVELOPMENT
SINKHOLE DETERMINATION**

1109 FRETZ ROAD, KNOXVILLE, TN 37932

Drawn by:	KSR
Approved by:	SRM
Scale:	N.T.S.
Job No.:	21-231451
Date:	11/9/23

GEOS
A **UES** COMPANY

2561 Willow Point Way, Knoxville, TN 37931
Office: 865-538-6242 Fax: 865-594-6262

Figure 2

Type “B” Screen: Continuous

APPROPRIATE LOCATION: Screening parking and loading areas from adjoining residential and office districts

NOTE: Landscape buffer strips should be a minimum of 12 feet in width, and sown with grass or ground cover for their full width, allowing for mulch at the base of plantings.

INTRODUCTION

Landscape screening reduces the impact of intense development upon adjacent land uses by providing visual separation, reducing the transmission of glare and air pollution, and limiting access. Screening also promotes the aesthetic appeal of a neighborhood and promotes higher property values.

This series of design guidelines defines several types of landscape screen. Each type is applicable to a certain intensity of conflict between adjacent land uses. Each screen type is illustrated by several planting schemes with an equivalent height, density and opacity of landscaping.

Planning uses these guidelines to illustrate desirable levels of screening appropriate to various site planning situations. Creative alternatives which achieve a comparable effect are encouraged.

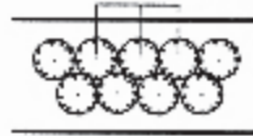
The contents of these guidelines are advisory and are intended to supplement, but not replace, the requirements of the Knoxville Zoning Ordinance and the Knox County Zoning Ordinance.

SHRUB HEIGHT
Installed: 4 ft.
Mature: 6 ft.

- Two offset rows of evergreen shrubs

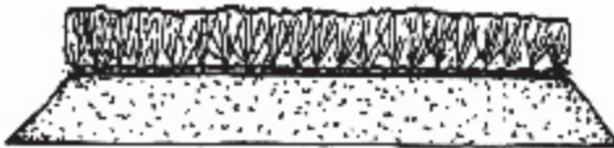


Maximum 4' Centers



SHRUB HEIGHT
Installed: 2 ft.
Mature: 3 ft.

- A continuous row of evergreen shrubs on a 3 ft. high earth berm



Maximum 3' Centers



TREE HEIGHT
Installed: 8 ft.
Mature: 15 ft.

- A 5 ft. high masonry wall or timber fence with evergreen trees and low shrubs or climbing vines



Maximum 50' Centers

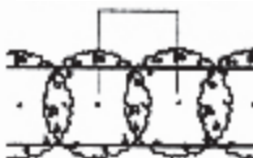


TREE HEIGHT
Installed: 8 ft.
Mature: 20 ft.

- One row of evergreen trees with branches touching the ground



Maximum 10' Centers





Development Request

DEVELOPMENT

- Development Plan
- Planned Development
- Use on Review / Special Use
- Hillside Protection COA

SUBDIVISION

- Concept Plan
- Final Plat

ZONING

- Plan Amendment
 - Sector Plan
 - One Year Plan
- Rezoning

Eric Moseley and Scott Smith

Applicant Name

Affiliation

10/30/2023

12/14/2023

12-SD-23-C / 12-D-23-DP

Date Filed

Meeting Date (if applicable)

File Number(s)

CORRESPONDENCE

All correspondence related to this application should be directed to the approved contact listed below.

Eric Moseley S&E Properties, LLC

Name / Company

405 Montbrook Lane Knoxville TN 37919

Address

865-454-3727 / ericmoseley@icloud.com

Phone / Email

CURRENT PROPERTY INFO

Eric Moseley

405 Montbrook Ln Knoxville TN 37919

865-454-3727 / ericmoseley@icl

Owner Name (if different)

Owner Address

Owner Phone / Email

1103 FRETZ RD / 1109 FRETZ RD

Property Address

130 066, 067

12.89 acres

Parcel ID

Part of Parcel (Y/N)?

Tract Size

First Knox Utility District

First Knox Utility District

Sewer Provider

Water Provider

Septic (Y/N)

STAFF USE ONLY

Fretz Rd and N Campbell Station Rd

General Location

City **Commission District 5, PR (k) (Planned Residential) up to 4.5 du/ac**

Rural Residential

County District

Zoning District

Existing Land Use

Northwest County

LDR (Low Density Residential), HP (Hillside Protection)

Farragut Urban Growth Boundary

Planning Sector

Sector Plan Land Use Classification

Growth Policy Plan Designation

DEVELOPMENT REQUEST

<input checked="" type="checkbox"/> Development Plan <input type="checkbox"/> Planned Development <input type="checkbox"/> Use on Review / Special Use	Related City Permit Number(s)
<input type="checkbox"/> Hillside Protection COA <input type="checkbox"/> Residential <input type="checkbox"/> Non-residential	
Home Occupation (specify) _____	
Other (specify) _____	

SUBDIVISION REQUEST

Fretz Road Development	Related Rezoning File Number
Proposed Subdivision Name	
Unit / Phase Number	57 Total Number of Lots Created
Additional Information _____	
<input checked="" type="checkbox"/> Attachments / Additional Requirements	

ZONING REQUEST

<input type="checkbox"/> Zoning Change	Proposed Zoning	Pending Plat File Number
<input type="checkbox"/> Plan Amendment		
Proposed Plan Designation(s)		
Proposed Density (units/acre) Previous Zoning Requests		
Additional Information _____		

STAFF USE ONLY

PLAT TYPE

Staff Review Planning Commission

ATTACHMENTS

Property Owners / Option Holders Variance Request

ADDITIONAL REQUIREMENTS

- COA Checklist (Hillside Protection)
 Design Plan Certification (Final Plat)
 Site Plan (Development Request)
 Traffic Impact Study
 Use on Review / Special Use (Concept Plan)

Fee 1	Total
\$3,200.00	
Fee 2	
Fee 3	

AUTHORIZATION

I declare under penalty of perjury the foregoing is true and correct: 1) He/she/it is the owner of the property, AND 2) the application and all associated materials are being submitted with his/her/its consent.

Applicant Signature: **Eric Moseley and Scott Smith** Please Print **10/30/2023** Date

Phone / Email _____
Property Owner Signature: **Eric Moseley** Please Print **10/30/2023** Date



Development Request

DEVELOPMENT

- Development Plan
- Planned Development
- Use on Review / Special Use
- Hillside Protection COA

SUBDIVISION

- Concept Plan
- Final Plat

ZONING

- Plan Amendment
 - SP
 - OYP
- Rezoning

Eric Moseley, S&E Properties, LLC

Owner

Applicant Name

Affiliation

10/30/2023

12/14/2023

Date Filed

Meeting Date (if applicable)

File Number(s)

12-SD-23-C
12-D-23-DP

CORRESPONDENCE

All correspondence related to this application should be directed to the approved contact listed below.

- Applicant
- Property Owner
- Option Holder
- Project Surveyor
- Engineer
- Architect/Landscape Architect

Eric Moseley and Scott Smith

S&E Properties, LLC

Name

Company

405 Montbrook Lane

Knoxville

TN

37919

Address

City

State

ZIP

(865) 454-3727

ericmoseley@icloud.com & ssmith@volrealty.com

Phone

Email

CURRENT PROPERTY INFO

Property Owner Name (if different)

Property Owner Address

Property Owner Phone

1103 and 1109 Fretz Road

130 066; 130 067

Property Address

Parcel ID

FUD

FUD

N

Sewer Provider

Water Provider

Septic (Y/N)

STAFF USE ONLY

General Location

Tract Size

City County

District

Zoning District

Existing Land Use

Planning Sector

Sector Plan Land Use Classification

Growth Policy Plan Designation

DEVELOPMENT REQUEST

<input type="checkbox"/> Development Plan <input type="checkbox"/> Use on Review / Special Use <input type="checkbox"/> Hillside Protection COA <input checked="" type="checkbox"/> Residential <input type="checkbox"/> Non-Residential Home Occupation (specify) Single Family Residential	Related City Permit Number(s)
Other (specify) _____	

SUBDIVISION REQUEST

Fretz Road Subdivision	Related Rezoning File Number
Proposed Subdivision Name NA	
Unit / Phase Number	Total Number of Lots Created
<input checked="" type="checkbox"/> Combine Parcels <input checked="" type="checkbox"/> Divide Parcel 57	
<input type="checkbox"/> Other (specify) _____ <input checked="" type="checkbox"/> Attachments / Additional Requirements	

ZONING REQUEST

<input type="checkbox"/> Zoning Change Proposed Zoning _____	Pending Plat File Number
<input type="checkbox"/> Plan Amendment Change Proposed Plan Designation(s) _____	
Proposed Density (units/acre) _____	Previous Rezoning Requests _____
<input type="checkbox"/> Other (specify) _____	

STAFF USE ONLY

PLAT TYPE

Staff Review Planning Commission

ATTACHMENTS

Property Owners / Option Holders Variance Request

ADDITIONAL REQUIREMENTS

- Design Plan Certification (*Final Plat*)
 Use on Review / Special Use (*Concept Plan*)
 Traffic Impact Study
 COA Checklist (*Hillside Protection*)

Fee 1		Total
0102	\$1,600.00	\$3,200.00
Fee 2		
0404	\$1600.00	
Fee 3		

AUTHORIZATION

- I declare under penalty of perjury the foregoing is true and correct:
 1) He/she/it is the owner of the property AND 2) The application and all associated materials are being submitted with his/her/its consent



Applicant Signature

Eric Moseley, S&E Properties, LLC

Please Print

10/30/23

Date

(865) 454-3727

Phone Number

ericmoseley@icloud.com

Email



Property Owner Signature

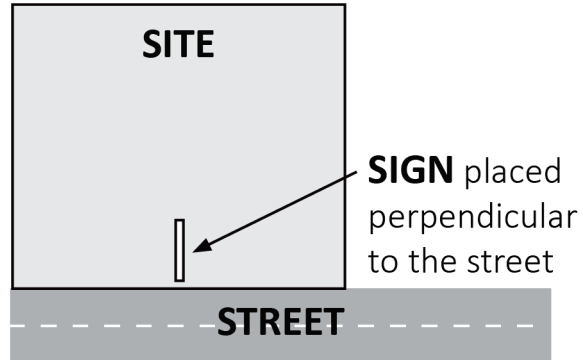


Please Print

10/30/2023, SG

Date Paid

The Administrative Rules and Procedures of the Knoxville-Knox County Planning Commission require a sign to be posted on the property for each application subject to consideration by the Planning Commission, including the following applications: rezoning, plan amendment, concept plan, use on review/special use, planned development, right-of-way closure, and name change.



The required public notice sign(s) will be provided by Planning to the applicant when an application is submitted. If an application is submitted electronically, Planning staff will post the required sign. If a replacement sign(s) is needed, the applicant is responsible for picking up the new sign(s) from Planning and will be charged \$10 for each replacement.

LOCATION AND VISIBILITY

The sign must be posted on the nearest adjacent/frontage street and in a location clearly visible to vehicles traveling in either direction. If the property has more than one street frontage, the sign should be placed along the street that carries more traffic. Planning staff may recommend a preferred location for the sign to be posted at the time of application.

TIMING

The sign(s) must be posted **not less than 12 days prior to the scheduled Planning Commission public hearing** and must remain in place until the day after the meeting. In the case of a postponement, the sign can either remain in place or be removed and reposted not less than 12 days prior to the next Planning Commission meeting. The applicant is responsible for removing the sign after the application has been acted upon by the Planning Commission.

The individual below is responsible for posting and removing the sign(s) provided consistent with the above guidelines and between the dates of:

_____ 12/01/2023 _____ and _____ 12/15/2023 _____
 (applicant or staff to post sign) (applicant to remove sign)

Applicant Name: Eric Moseley and Scott Smith

Date: 10/30/2023

File Number: 12-SD-23-C & 12-D-23-DP

- Sign posted by Staff
- Sign posted by Applicant