

MURFREESBORO CITY COUNCIL
AGENDA

March 10, 2016

7:00 p.m.

City Council Chambers

PRAYER

VICE-MAYOR DOUG YOUNG

PLEDGE OF ALLEGIANCE

CEREMONIAL ITEMS

***STARS Award: Mr. Jason Reed, Solid Waste Department**

Consent Agenda

1. A. Consider recommendations of the Parks & Recreation Director: Homeschool in the Wilderness Program fee increase and request for sibling discount.
- B. Consider recommendations of the Airport Commission: Approval of Work Authorization with ATKINS for Engineering & Project Administrative Services associated with the Approach Lighting and Clearing Project for Runway 18.
- C. City Recorder/Finance Director: Acknowledgement of receipt of City Manager's approved Budget Amendments for Fiscal Year 2016.
- D. Consider recommendations of the City Engineer: West Lytle Street Appraisal Contract.
- E. Consider recommendations of the Assistant City Manager: Planning Department Renovations.

Minutes

2. March 3, 2016 - Special Meeting.

Second Readings

3. Consider for passage on second reading ORDINANCE 16-OZ-04 to amend an area in the Cedar Retreat PRD located along Florence Road.
4. Consider for passage on second reading ORDINANCE 16-OZ-07 to rezone an area at 3281 Siegel Road (Academy at Siegel) to Planned Commercial Development (PCD) District (Revised Program Book attached).

New Business

5. Consider for approval a renewal of Certificate of Compliance for Ankit D. Patel at Victory Village Liquor & Wines, 4167 Franklin Road, Suite 5-A.
6. Consider for approval a Certificate of Compliance for Wine in Retail Stores for Troy K. Layne at Kroger #532, 2449 Old Fort Parkway; Kroger #543, 2946 S. Church Street; Kroger #529, 1776 W. Northfield Boulevard; Kroger #539, 2325 Memorial Boulevard; Kroger #564, 2050 Lascassas Pike; and Kroger #521, 1622 Middle Tennessee Boulevard.
7. A. Pursuant to RESOLUTION 15-R-PH-56.1 adopted by the City Council on February 11, 2016, conduct a public hearing to consider zoning approximately 17.3 acres located at 3726 Manson Pike as Planned Residential Development (PRD) District (Springfield Apartments) and Gateway Design Overlay One (GDO-1) District; Hunter/McDowell Development, applicant [2016-403]. Notice of said public hearing was published in the February 22, 2016 issue of a local newspaper.
B. Consider for passage on first reading ORDINANCE 15-OZ-56 to zone an area at 3726 Manson Pike as Planned Residential Development (PRD) District (Springfield Apartments) and Gateway Design Overlay (GDO-1) District.
8. Consider recommendations of the Airport Commission: Approve a Professional Services Agreement with Michael Baker to provide inventory and programming for a new General Aviation Terminal at the Murfreesboro Municipal Airport.
9. Consider recommendations of the Planning Commission: Schedule public hearings for zoning (RM-16) at 1710 E. Northfield Blvd; rezoning along Conference Center Blvd & Avenue Way (PRD); rezoning in Liberty Cove Subdivision (RS-10) & (RS-15); Annexation Plan of Services & annexation petition along Blackman Rd & Florence Rd; zoning along Blackman Rd & Florence Rd (PRD); Annexation Plan of Services & annexation petition west of Manchester Pike; zoning west of Manchester Pike (L-I); Annexation Plan of Services & annexation petition along New Salem Hwy; and zoning along New Salem Hwy (CF) & (RM-16).

MURFREESBORO CITY COUNCIL
A G E N D A

March 10, 2016

(Continued)

10. Consider recommendations of the Assistant City Manager:
 - A. Employ Bass, Berry and Sims to serve as Bond Counsel.
 - B. Consider for adoption RESOLUTION NO. 16-R-05 Initial Resolution authorizing issuance of General Obligation Bonds not to exceed Seventy-Nine Million Dollars (\$79,000,000) to provide funding for certain public works projects, and to fund the incidental and necessary expenses related thereto.
 - B. Consider for adoption RESOLUTION NO. 16-R-06 authorizing issuance of General Obligation Bonds not to exceed \$79,000,000 in one or more series, making provision for the issuance, sale and payment of said bonds, establishing the terms thereof and the disposition of proceeds therefrom; and providing for the levy of taxes for the payment of principal of, premium if any, and interest on the bonds.

Beer Permits

Board & Commission Appointments

Payment of Statements

Other Business from Staff or City Council

Adjourn



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March 10, 2016



Honorable Mayor and Members of City Council:

RE: Homeschool in the Wilderness Program Fee Increase and Request for Sibling Discount

As an item for the **Consent Agenda**, it is recommended that Council approve a Homeschool program fee increase and a sibling discount.

Background

Homeschool in the Wilderness is a program that started in 2004 and is an intensive supplemental science curriculum held over 8 months for 3 hours at a time (24 hours of total instruction time during that period), which also involves several more hours of preparation time by the Murfreesboro Parks and Recreation Department (MPRD) staff in order to offer high quality lessons to the participants.

Fiscal Impact

MPRD staff has determined that the current program fee of \$50 per homeschool participant does not cover the costs for supplies and staffing for the 8-month program. Therefore, staff would like to charge \$75 per participant, which would be more in-line with many other department programs at approximately \$3.00 per hour. There has only been one fee increase for this program during the 12 years that it has been offered. Additionally, staff would like to offer a \$10 sibling discount due to the fee increase.

Concurrence

At its March 2, 2016, meeting, the Murfreesboro Parks and Recreation Commission unanimously approved the Homeschool in the Wilderness program fee increase from \$50 to \$75 and a \$10 discount for siblings participating in the program.

Recommendation

I respectfully request Council's approval of the program fee increase and the sibling discount as requested.

Respectfully,

Lanny Goodwin, CPRP
Director



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March 3, 2016

Honorable Mayor McFarland and Members of the City Council:

RE: Consent Agenda: Consider approval of Work Authorization with ATKINS for engineering and project administrative services associated with the Approach Lighting and Clearing Project for Runway 18

As an item for the consent agenda of March 10th, it is recommended that City Council approve the Work Authorization with ATKINS for work associated with the Approach Lighting and Clearing Project for Runway 18

The services that ATKINS will be providing with this Work Authorization will include survey work associated with the Approach for Runway 18 and the Federal Aviation Regulation Part 77 Surfaces, coordination with city and state agencies regarding any and all environmental issues, bid preparation, and any project administrative services required.

Background Information

With the completion of the extension of the runway, new approaches and approach procedures must be created for Runway 18. Surveys of the areas from the end of the new runway revealed a number of items that needed to be addressed to support the new approaches into the Murfreesboro Municipal Airport including:

- Lowering or lighting four telephone and light poles on DeJarnette Lane,
- Removal and or trimming of select trees in approximately seven acres north of the Airport
- Coordination with the FAA regarding several ballfield lights at Star-Plex and McKnight Softball Fields to investigate if obstruction lighting is required.

ATKINS and the Airport are in coordination with the Tennessee Aeronautics Division, Federal Aviation Administration, Murfreesboro Electric Department, Murfreesboro Parks and Rec Department, and our neighbors.

Fiscal Impact

The cost of this Work Authorization is \$27,127.00 The Federal Aviation Administration is providing 90% funding (\$24,14.30). The Tennessee Aeronautics is providing 5% funding (\$1,356.35) and the local Airport share is 5% (\$1,356.35).

Concurrences

The Airport Commission recommends approval of the ATKINS Work Authorization.

Recommendation

It is recommended that City Council approve the ATKINS Work Authorization.

Thank you for your consideration of this Work Authorization.

Sincerely,

Chad L. Gehrke
Airport Manager



Murfreesboro Municipal Airport



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CONSENT AGENDA

March 2, 2016

Honorable Mayor and Members of City Council:

RE: Fiscal Year 2016 Budget Amendment

Attached you will find two budget transfers as approved by the City Manager on February 29, 2016.

The transfer in Exhibit A below is a transfer within the General Fund. It is moving funds from Other Operating Expenses roll up category, Unforeseen Contingencies object code, into the Legal Department, Salary roll up category and Operating Expenses roll up category (see attachment for detailed line item). This transfer will have no effect on Fund Balance.

The transfer in Exhibit B below is a transfer within the General Fund. It is moving funds from Other Operating Expenses roll up category, Unforeseen Contingencies object code, into the Street Division, Fixed Assets roll up category (see attachment for detailed line item). This transfer will have no effect on Fund Balance.

This is being placed on Consent Agenda as a proof of notification to Council as required by Ordinance 15-O-48.

A handwritten signature in blue ink that reads "Melissa B. Wright". The signature is written in a cursive style.

Melissa B. Wright
City Recorder, Finance Director



Inter-Fund Budget Amendment Request

Mr. Lyons,

Submitted for your approval, per Ordinance 15-O-48, is the following budget amendment requesting a transfer within the same fund.

Budget Fiscal Year: 2016

Move funds from:

Org 10130008
 Object 599909
 Acct Name Unforeseen Contingencies
 Amount \$ 22,000.00

Move funds to:

Org 10114007
 Object 511100
 Acct Name Salary - Full-Time - Regular

Move funds from:

Org 10130008
 Object 599909
 Acct Name Unforeseen Contingencies
 Amount \$ 5,000.00

Move funds to:

Org 10114007
 Object 514200
 Acct Name Hospital and Health Ins.

Move funds from:

Org 10130008
 Object 599909
 Acct Name Unforeseen Contingencies
 Amount \$ 22,000.00

Move funds to:

Org 10114008
 Object 599900
 Acct Name Miscellaneous Expense

Explanation: Expenses related to the hiring of the new City Attorney were not known at the time the

FY16 Budget was approved. These transfers are needed to be able to pay for those costs.

[Signature]
 Department Head Signature

2/25/16
 Date

[Signature]
 Reviewed by Finance

2/25/16
 Date

Approved	<input checked="" type="checkbox"/>	<u>[Signature]</u> City Manager
Declined	<input type="checkbox"/>	<u>2/29/16</u> Date

Please return to Ana Maria Stovall, Finance & Tax Dept., once all signatures have been obtained.



Inter-Fund Budget Amendment Request

Mr. Lyons,

Submitted for your approval, per Ordinance 15-O-48, is the following budget amendment requesting a transfer within the same fund.

Budget Fiscal Year: 2016

Move funds from:

Org 10130008
 Object 599909
 Acct Name Unforeseen Contingencies
 Amount \$ 7,500.00

Move funds to:

Org 10312109
 Object 593900
 Acct Name Other Improvements

Explanation: for the replacement of eight wooden slat downtown benches with eight steel slat metal
benches; these items were not previously budgeted therefore the request is to move funds from
unforeseen into an account in streets; streets will receive and install the benches

[Signature]
 Department Head Signature

2-26-16
 Date

[Signature]
 Reviewed by Finance

2-29-16
 Date

Approved	<input checked="" type="checkbox"/>	<u>[Signature]</u> City Manager
Declined	<input type="checkbox"/>	<u>2/29/16</u> Date

Please return to Ana Maria Stovall, Finance & Tax Dept., once all signatures have been obtained.

<u>Company</u>	<u>Quote #</u>	<u>Date</u>	<u>Address</u>	<u>Contact</u>	<u>Product</u>	<u>Description</u>
Belson Outdoors	WQ 165592	1/14/2016	111 North River Road North Aurora, IL 60542	sales@belson.com 1-800-323-5664	Model # PC6	Classique 6' Bench with steel slats; black
Victor Stanley	SQ77951	1/14/2016	P.O. Drawer 330 Dunkirk, MD 20754	1-800-368-2573	Model No. CBF-12	City Sites Series Contoured Bench, 6ft horizontal steel slats; black
Canaan Site Furnishings	20160114811	1/14/2016	140 Bentley Street, Unit 3 Markham, ON L3R3L2	sales@canaanmf.com 1-877-305-6638	CAL-858	Standard metal park bench
<u>Quantity</u>		8				8
<u>Unit Price</u>	\$	1,049.00				\$ 1,448.00
<u>Unit Total</u>	\$	8,392.00				\$ 11,584.00
<u>Tax</u>	\$	-				\$ -
<u>Shipping</u>	\$	918.50				\$ 1,180.00
<u>Grand Total</u>	\$	9,310.50				\$ 12,764.00
<u>Delivery Time</u>		5-6 weeks				6-8 weeks





Consent Agenda

March 10, 2016

Honorable Mayor McFarland and Members of City Council:

West Lytle Street Appraisal Contract

Staff recommends City Council approval of obtaining professional services from Marvin Maes, Rhett Turner and Gregory Peck for appraisals on West Lytle Street from Barker Street to North Church Street.

Background

The reconstruction of Lytle Street from Barker Street to North Church Street includes two travel lanes, bike lanes, curb and gutter and sidewalks. In addition to Lytle Street, the project will also include the streets immediately adjacent to the new judicial building and parking garage. The project also includes underground utilities, decorative lighting signals and landscape. Wisser Consultants is currently completing the design of the roadway improvements and has determined the amount of property/easements required for the construction of the project.

Staff has requested and received a proposal from Marvin Maes for appraisals of the impacted properties. The appraiser has selected the type of appraisal based on the expected impact of the project on the adjacent properties. A memo detailing the appraisal types has been included for your review. In addition, an outline of the appraisal fee has been attached for your review. The total fee for the 16 appraisals will be completed for \$70,000.00.

Fiscal Impact

The proposal price for the appraisals was \$70,000.00. Staff recommends the construction be funded initially by the City's General Fund with reimbursement to be provided from a future bond sale.

Recommendation

Staff recommends obtaining professional services from Marvin Maes, Rhett Turner and Gregory Peck for appraisals on West Lytle Street from Barker Street to North Church Street.

Attachments

1. Memorandum from Marvin Maes
2. Outline of appraisal fee

Sincerely,

Chris Griffith
City Engineer

Memorandum

Date: February 23, 2016
To: David Ives, City of Murfreesboro
From: Marvin A. Maes, MAI, CRE
Subject: **West Lytle Street Project**

1. Enclosed is a summary of the bid for the appraisal work on this project.
2. Rhett Turner, MAI; Gregory O. Peck, CCIM, SRPA and myself may do one or more of the appraisal reports.
3. The project is broken down into Phases. Phase I consist of Tracts 55 thru 72 around the new Justice Center block and the proposed parking garage site. These 10 appraisals will be completed ASAP following completion of the Market Data Brochure. We will need the ROW Taking and TCE's on all of the parcels. To date we have four of seven: Tracts 58, 62, 71 & 72.
4. **Formal-** A complete before and after appraisal of the entire tract including all land and improvements and considering damages and benefits to the remainder(s) where applicable. The appraisal must include all three approaches to value where appropriate. The exclusion of one or more approaches must be adequately explained and justified. The "Formal" appraisal is most appropriate for use
 - a. The highest and best use is in transition or different from the existing use, either before or after the acquisition
 - b. Damages may accrue to the remainder(s)
5. **Formal Part Affected:** Where minor or strip acquisitions are involved, the appraiser may determine that a Formal Appraisal of the "part-affected" is all that is required, and will contract for a Formal Part-Affected (FPA) appraisal. In this case, the appraiser is required to identify and appraise the "larger parcel(s)" and any improvements affected. It is the appraiser's responsibility to determine what is affected. Preparation of an FPA appraisal does not preclude consideration of Damages.
6. **Restricted Appraisal Repots [RAR]:** For acquisitions less than \$10,000 that are simple and non-complex. These are very short reports [Nine (9±) pages including photographs, sketch, etc.] and does not include consideration of Damages.

We reserve the right to upgrade or downgrade the type of report and adjust the fee accordingly depending upon our determination of the most appropriate type of report.
7. We plan on writing letters to the property owners and giving them a reasonable period to respond to an offer to meet the appraiser on site and discuss the plans and acquisition.
8. **Market Data Brochure [MDB];** While the City of Murfreesboro does not require a brochure, this project involves nineteen parcels and a brochure is a more efficient way of conveying the needed information on neighborhood, zoning, and sales data versus repetitively copying the same information. The brochure will be completed in approximately two (2) weeks.

**City of Murfreesboro
West Lytle Street Widening**

Tract No.:	Tenant	Address	Owner	Tax Map No.:	Total Area (Acres)	Acquisition Fee (SF)	TCE	Description	Bldg SF	Appraisal fee	Type Report	
Phase I												
55	Courthouse Parking Gar	224 N Walnut	Rutherford County	91K-H-13	1.220	3,670	8,189	Two Story Office bld 1998	33,280	N/A		
56	Rutherford City Offices	319 N Maple	Rutherford County	91K-H-4	2.237	2,917	366	Two Story Office bld 1924	3,296	N/A		
58		200 Burton Ste	McCartner, Cartron, East	91K-D-1	0.230	22	1,305	One Story Chrch		2,500	RAR	
59	Mtt. Zion Missionary Bap	228 N. Maple	Mtt. Zion Missionary Bap	81K-G-15	1.000			One Story Retail Store bld 1945	1,116	2,750	RAR	
60		113 W. Lytle St	Michael S. Morrison, et ux	81K-G-16	0.030					2,750	RAR	
62	South Central Bell	221 N. Church St	South Central Bell	91L-G-19	1.000	159	1,304	Multi-Story Office bld 1972	38,198	2,750	RAR	
63	Pinnacle Bank	411 College St	Pinnacle Rutherford Towers, Incl	91K-G-14	1.100	1,075	405			N/A		
64	Proposed City Courthouse	302 North Maple	Rutherford County	91K-G-25	0.282					N/A		
69		300 Church St	Rutherford County	91K-G-24	0.508					N/A		
70	Health Dept	100 W Burton	City of Murfreesboro	91K-E-1	2.90	81,00	4,748	One Story Med Office Bld 2002	32,577	N/A		
71	Midsouth Bank	1 E. College St	Midsouth Bank	91K-G-8	1.55		707	Methodist Chrch Bldg	6,135	2,750	RAR	
72	Apartment	302 Chyrch St	Sidney E. Salmons	91K-G-22	0.16	74,00	298	Three Story Apt bld in 1900	5,936	2,750	RAR	
				Count	12	7	10			\$ 19,000		
Phase II												
14	Vacant	502 College St	Kious & Rogers Properties	91K-J-11	0.610	N/A	N/A	One story masonry bld 1939	12,600		Formal	
29	Wide Open Design	500 W Lytle St	Jack L. Russel	91K-J-19	0.710	N/A	N/A	One story masonry bld 1965	4,804	5,000	Formal	
40	Tennpenny Heat & Air Yoga	423 W Lytle St	Lee P. Tennpenny, et al	91K-J-13	0.156	1,205					Formal	
41	The Hamery	411 W Lytle St	Robert Hamilton Woods	91K-J-14	0.213	1,281	682	One story & Bsmt bld 1949	1,806	5,000	Formal	
42	Guitar Mill	401 W Lytle St	Fayne Haynes	91K-J-7	0.383	2,611	1,345	One story masonry bld 1950	7,728	6,500	Formal	
43	Florida Brothers NAPA	412 W Lytle St	Edwin Florida, Jr	91K-J-17	0.397	2,964	593	One story masonry bld 1984	7,500	6,500	Formal	
44	Kwik Mart	315 North Front	Khaled Hissan, et ux	91K-J-6-01	0.475	2,117	1,530	One story masonry bld 1948	5,796	4,000	Formal	
45	Greenhouse Ministries	410 W Lytle St	Edwin Florida, Jr, et ux	91K-J-16	0.148	2,162	322	One Story Office bld 1958	4,140	6,000	Formal	
46	Murfreesboro Electric	205 N Walnut	City of Murfreesboro	91K-H-22	2.549	7,362	3,160	One Story Office bld 1998	33,290	N/A	Formal	
47	Durham Realty & Auction	316 W Lytle St	Fed Investments C/O Ted Durhan	91K-H-28	0.499	2,577	943	Two Story Office bld 1973	15,488	7,500	Formal	
52	Executive Building	307 North Walnut	Laure Ann Alsup, et al	91K-H-20	0.327		1,942	One Story & Bsmt Office bld 1968	6,216	3,000	FFA	
53	Bennett & Scarlett	303 North Walnut	Ben E. Bennett, et ux	91K-H-21	0.251	3,966	1,103	One Story Office bld 1956	4,080	7,500	Formal	
				Count	12	9	9			\$ 51,000		
								Severe Damages to Buildings				
								Less Severe Damages				
								Need for Appraisals to be Determined				



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CONSENT

March 7, 2016

Honorable Mayor and Members of the City Council:

RE: Renovation of Planning Department

It is recommended that City Council approve change order #1 in the amount of \$64,141.00 to the painting and carpeting bids for the remodeling of the counter area and the addition of several offices to the Planning Department.

Background

Keystone Construction Services is the successful bidder on the painting and carpeting work for City Hall. In January, Keystone was asked to price the remodeling of the Planning Department counter area and the addition of several hard and soft wall offices. Change order #1 in the amount of \$64,141.00 is Keystone's response to request for pricing on the remodeling of the counter area and the addition of several offices to the Planning Department.

Fiscal Impact

The \$64,141.00 cost will be funded from savings in the 2012 and 2014 bond issues.

Recommendation

It is the recommendation of Staff and the Planning Department that City Council approve change order #1 in the amount of \$64,141.00 to the painting and carpeting bids for the remodeling of the counter area and the addition of several offices to the Planning Department.

Attachment

Letter from Griggs and Maloney
Change Order #1

Sincerely,

James H. Crumley
Assistant City Manager

Administration Department

111 West Vine Street * P. O. Box 1139 * Murfreesboro, Tennessee 37133-1139 Phone 615 849 2629 * Fax 615 849 2679
TDD 615 849 2689 www.murfreesborotn.gov

March 3, 2016

The City Council of the City of Murfreesboro, Rutherford County, Tennessee, met in special session in the Council Chambers at City Hall at 6:30 p.m. on Thursday, March 3, 2016, with Mayor Shane McFarland present and presiding and with the following Council Members present and in attendance, to wit:

Bill Shacklett
Eddie Smotherman
Ron Washington
Doug Young

Council Members Madelyn Scales Harris and Rick LaLance were absent and excused from this meeting.

The following representatives of the City were also present:

Rob Lyons, City Manager
James Crumley, Assistant City Manager
Melissa Wright, City Recorder/
Finance Director/City Treasurer
David Ives, City Attorney
Craig Tindall, City Attorney
Georgia A. Meshotto, Administrative Aide II

Mayor McFarland announced that this special meeting is being held to hear from the citizens of Murfreesboro. He reviewed the procedures for speaking and invited those present to step up to the podium.

Mr. Jeff Rainwater, 1030 Brinxton Run, addressed the red light camera system and his opposition to any further commitment to a long term contract. He also inquired about the progress of the Murfreesboro 2035 Plan and upcoming projects with Lytle Street and the "Bottoms" area and how they will weave in with that plan.

Mr. Steve Lane, 6624 Scenic Drive, addressed the red light camera system and his opposition to how red light cameras are operated and not the cameras in themselves. He would not be opposed to it if only law enforcement individuals looked at the footage, the City operated the cameras and the money stayed here in the community.

Mr. Jacob Bogle, 1211 Hazelwood Street, said he would like to work with the City to find out why people run red lights and commit to making our roads safer in a way that addresses all the different concerns.

There were no others present who wished to speak.

Council discussed the questions and comments made by those who spoke.

Mayor McFarland adjourned this session of the public comment meeting at 6:56 p.m.

SHANE MCFARLAND - MAYOR

ATTEST:

MELISSA B. WRIGHT - CITY RECORDER

ORDINANCE 16-OZ-04 amending the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as heretofore amended and as now in force and effect, to amend the conditions applicable to approximately 25.6 acres in the Planned Residential Development (PRD) District located along Florence Road in the Cedar Retreat PRD as indicated on the attached map; Donald Henley Construction, applicant [2016-405].

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MURFREESBORO, TENNESSEE, AS FOLLOWS:

SECTION 1. That the same having been heretofore recommended to the City Council by the City Planning Commission, the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as herein referred to, adopted and made a part of this Ordinance as heretofore amended and as now in force and effect, be and the same are hereby amended so as to modify the conditions of the Planned Residential Development (PRD) District, as indicated on the attached map, for the purpose of reducing the total dwelling units from 123 to 57, to eliminate single-family attached dwelling units, to increase the minimum lot size to 12,000 sq. ft., to eliminate alleys, to increase the minimum house size to 1,900 sq. ft., to establish front set-backs of 25 ft. and front-entry garage setbacks of 35 ft., and to provide for sidewalks and common open space.

SECTION 2. That, from and after the effective date hereof, the area depicted on the attached map shall be subject to all the terms and provisions of said Ordinance applicable to such districts, the plans and specifications filed by the applicant, and any additional conditions and stipulations set forth in the minutes of the Planning Commission and City Council relating to this zoning request. The City Planning Commission be and it is hereby authorized and directed to make such changes in and additions to said Zoning Map as may be necessary to show thereon that said area of the City is zoned as indicated on the attached map. This zoning change shall not affect the applicability of any overlay zone to the area.

SECTION 3. That this Ordinance shall take effect fifteen (15) days after its passage upon third and final reading, the public welfare and the welfare of the City requiring it.

Passed:

1st reading _____

2nd reading _____

3rd reading _____

Shane McFarland, Mayor

ATTEST:

APPROVED AS TO FORM:

Melissa B. Wright
City Recorder

David A. Ives
City Attorney

SEAL

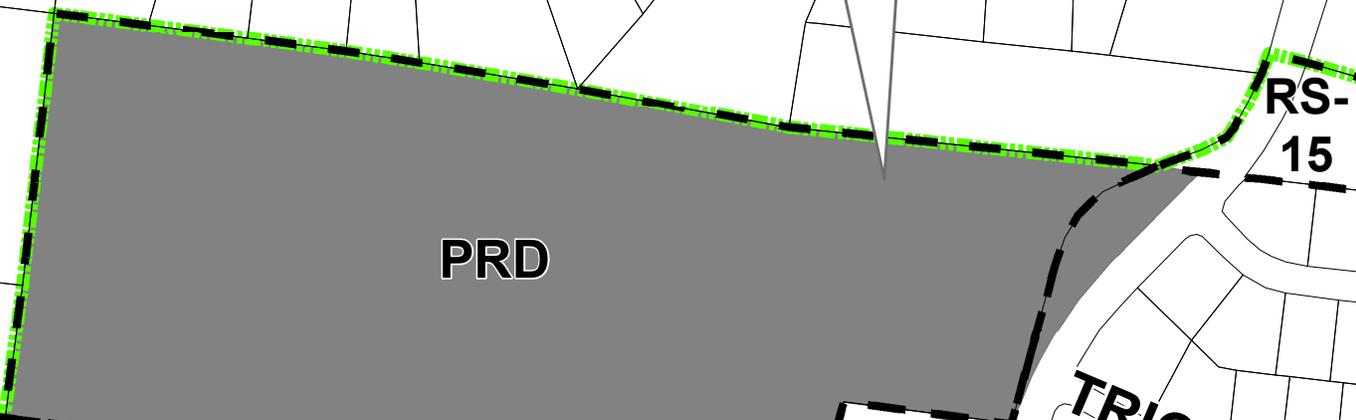


GRASSLAND DR

BANKS ST

KEYSTONE CT

PRD
Amended



PRD

RS-15

HONEYBEE DR

RS-15

TRICIA PL

RS-10

RZ

FLORENCE RD

RS-12

Ordinance 16-OZ-04

PUD

RS-15

BOYD DR

COR.

LIGHTNING BUG DR
ASBURY RD



ORDINANCE 16-OZ-07 amending the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as heretofore amended and as now in force and effect, to rezone approximately 2.3 acres at 3281 Siegel Road from Single-Family Residential (RS-15) District to Planned Commercial Development (PCD) District (Academy at Siegel); Cornerstone Development, applicant [2016-402].

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MURFREESBORO, TENNESSEE, AS FOLLOWS:

SECTION 1. That, the same having been heretofore recommended to the City Council by the City Planning Commission, the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as herein referred to, adopted and made a part of this Ordinance as heretofore amended and as now in force and effect, be and the same are hereby amended so as to rezone the territory indicated on the attached map.

SECTION 2. That, from and after the effective date hereof, the area depicted on the attached map be zoned and approved as Planned Commercial Development (PCD) District, as indicated thereon, and shall be subject to all the terms and provisions of said Ordinance applicable to such districts, the plans and specifications filed by the applicant, and any additional conditions and stipulations referenced in the minutes of the Planning Commission and City Council relating to this zoning request. The City Planning Commission be and it is hereby authorized and directed to make such changes in and additions to said Zoning Map as may be necessary to show thereon that said area of the City is zoned as indicated on the attached map. This zoning change shall not affect the applicability of any overlay zone to the area.

SECTION 3. That this Ordinance shall take effect fifteen (15) days after its passage upon third and final reading, the public welfare and the welfare of the City requiring it.

Passed:

1st reading _____

2nd reading _____

3rd reading _____

Shane McFarland, Mayor

ATTEST:

APPROVED AS TO FORM:

Melissa B. Wright
City Recorder

David A. Ives
City Attorney

SEAL

PRD



W-THOMPSON-LN

Area
Rezoned from
RS-15 to PCD

RS-15

PARK HILL RD

SIEGEL RD



Ordinance 16-OZ-07



INTRODUCTION

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PROPOSED CONCEPTUAL SITE PLAN 4
UTILITIES, TOPOGRAPHY, AND RIGHT-OF-WAY..... 5

EXISTING CONDITIONS

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N

NOT TO SCALE

	OPEN SPACE		DAYCARE BUILDING
	STORMWATER FACILITY		SIDEWALK
	PLAY YARD		ROADWAY
	VEGETATIVE STRIP		TRASH



CURRENT AERIAL OF THE SITE

CORNERSTONE DEVELOPMENT, LLC RESPECTIVELY REQUESTS TO REZONE A PORTION OF THE BRUCE HOOPER PROPERTY FROM RS-15 TO PLANNED COMMERCIAL DEVELOPMENT (PCD). THE PROPERTY IS LOCATED ALONG THE WEST SIDE OF SIEGEL ROAD DIRECTLY ACROSS FROM THE NORTHERN ENTRANCE INTO SIEGEL HIGH SCHOOL. THE SITE IS IDENTIFIED AS A PORTION OF PARCEL 20.02 OF TAX MAP 69. THE ENTIRE PROPERTY IS APPROXIMATELY 14.2 ACRES, HOWEVER ONLY 2.32 ACRES IS THE SUBJECT OF THIS REQUEST.

THE SURROUNDING AREA CONSISTS OF NORTHSIDE BAPTIST CHURCH'S CAMPUS TO THE NORTH AND WEST, A SINGLE FAMILY RESIDENCE TO THE NORTH, A SINGLE FAMILY RESIDENCE TO THE SOUTH (OWNED BY MR. BRUCE HOOPER AS WELL), AND SIEGEL HIGH SCHOOL TO THE EAST ACROSS SIEGEL ROAD.

THE REQUEST FOR THE PCD ZONING IS TO SPECIFICALLY ALLOW FOR A DAYCARE FACILITY TO BE CONSTRUCTED. THE GUIDELINES ESTABLISHED WITHIN THIS BOOKLET WILL ALLOW FOR A NEED IN THE COMMUNITY TO BE FULFILLED WHILE MITIGATING IMPACT TO THE SURROUNDING AREA THROUGH SENSITIVE AND QUALITY DESIGN AND CONSTRUCTION BY A KNOWN ENTITY THAT HAS CONSTRUCTED 2 PREVIOUS FACILITIES WITHIN MURFREESBORO (ACADEMY AT GATEWAY AND ACADEMY ON JOHN R. RICE BLVD).



CURRENT GIS OF THE SITE AND SURROUNDING PROPERTY LINES

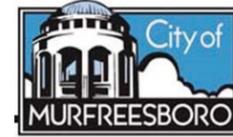
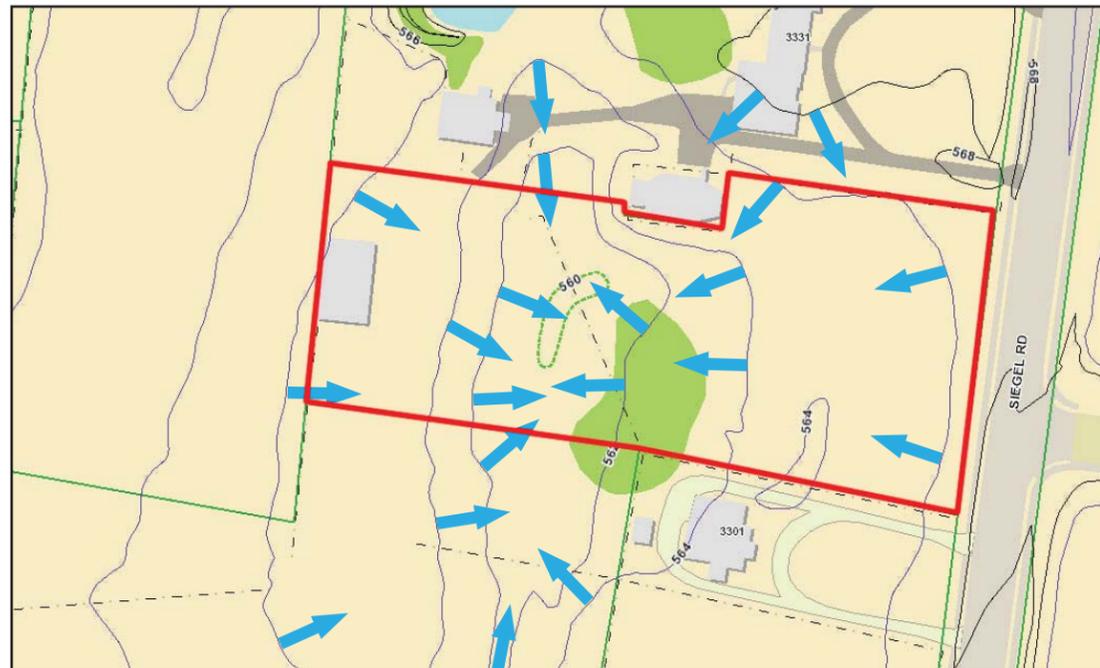


SCALE: 1" = 60'

	OPEN SPACE		DAYCARE BUILDING
	STORMWATER FACILITY		SIDEWALK
	PLAY YARD		ROADWAY
	VEGETATIVE STRIP		TRASH



- NOT TO SCALE
- | | | | |
|--|---------------------|--|------------------|
| | OPEN SPACE | | DAYCARE BUILDING |
| | STORMWATER FACILITY | | SIDEWALK |
| | PLAY YARD | | ROADWAY |
| | VEGETATIVE STRIP | | TRASH |



CITY OF MURFREESBORO

THE PROPERTY HAS/WILL HAVE ACCESS TO PUBLIC RIGHTS-OF-WAY ON SIEGEL ROAD. THE MAIN ENTRANCE WILL BE AT THE CURRENT INTERSECTION OF THE ENTRANCE DRIVE FOR SIEGEL HIGH SCHOOL AND SIEGEL ROAD.



MURFREESBORO WATER AND SEWER DEPARTMENT

SANITARY SEWER SERVICE WILL CONNECT TO AN 8" GRAVITY SEWER LIINE LOCATED IN THE ROW OF SIEGEL ROAD.CONSTRUCTION WILL EXTEND THE SEWER SERVICE INTO THE SITE AND THE DEVELOPER WILL BE RESPONSIBLE FOR EXTENDING THE SEWER INTO THIS PROPERTY. SANITARY SEWER SERVICE WILL BE PROVIDED BY THE MURFREESBORO WATER & SEWER DEPARTMENT.

A 8" WATER MAIN LOCATED IN THE R.O.W. OF SIEGEL ROAD. WATER SERVICE WILL BE CONNECTED TO THE MAIN. THE DEVELOPER WILL BE RESPONSIBLE FOR EXTENDING THE WATERLINE INTO THE SITE FOR DOMESTIC AND FIRE WATER SERVICE. WATER SERVICE WILL BE PROVIDED BY THE M.W.S.D.



MURFREESBORO ELECTRIC DEPARTMENT

MURFREESBORO ELECTRIC DEPARTMENT WILL BE PROVIDING ELECTRICAL SERVICE. ALL ELECTRIC SERVICE WILL BE UNDERGROUND. ELECTRICITY IS CURRENTLY LOCATED ALONG THE WESTERN R.O.W. OF SIEGEL ROAD.

THE EXISTING TOPOGRAPHY OF THE SITE SHOWS THE SITE'S DRAINAGE IS GENERALLY FROM THE EDGES OF THE SITE INTO THE CENTER OF THE PROPERTY. AN OVERFLOW DITCH WILL BE REQUIRED TO ALLOW THE PROPERTY TO DRAIN APPROPRIATELY.



 NOT TO SCALE
 SITE PHOTOS
 SITE



IMAGE #5
 VIEW EAST OF ENTRANCE TO SIEGEL
 HIGH SCHOOL.



IMAGE #6
 VIEW NORTH ALONG SIEGEL ROAD.



IMAGE #1
 VIEW WEST, ACROSS SIEGEL ROAD, ONTO
 RESIDENTIAL DRIVEWAY.



IMAGE #2
 VIEW EAST, ACROSS SIEGEL ROAD, ONTO
 SIEGEL HIGH SCHOOL.



IMAGE #3
 VIEW WEST, ACROSS SIEGEL ROAD, ONTO
 RESIDENTIAL PROPERTY.



IMAGE #4
 VIEW SOUTH, DOWN SIEGEL ROAD
 TOWARD SIEGEL HIGH SCHOOL, WITH
 PUBLIC SIDEWALK AND TREE ROW.



 NOT TO SCALE
 SITE PHOTOS
 SITE



IMAGE #11

VIEW NORTH, ACROSS W THOMPSON LANE, ONTO CLASSIC TURNOUT STABLES.



IMAGE #12

VIEW EAST, ALONG W THOMPSON LANE, WITH LARGE POWER LINES PARALLEL TO THE ROADWAY.



IMAGE #7

VIEW WEST, ACROSS SIEGEL ROAD, ONTO A SECTION OF THE SITE.



IMAGE #8

VIEW WEST, ACROSS SIEGEL ROAD, ONTO RESIDENTIAL PROPERTY ADJACENT TO THE NORTHERN SIDE OF THE SITE.



IMAGE #9

VIEW SOUTH, DOWN SIEGEL ROAD TOWARD SIEGEL HIGH SCHOOL, WITH STOP SIGN BEFORE W THOMPSON LANE AND A PUBLIC SIDEWALK UNDER A TREE ROW.



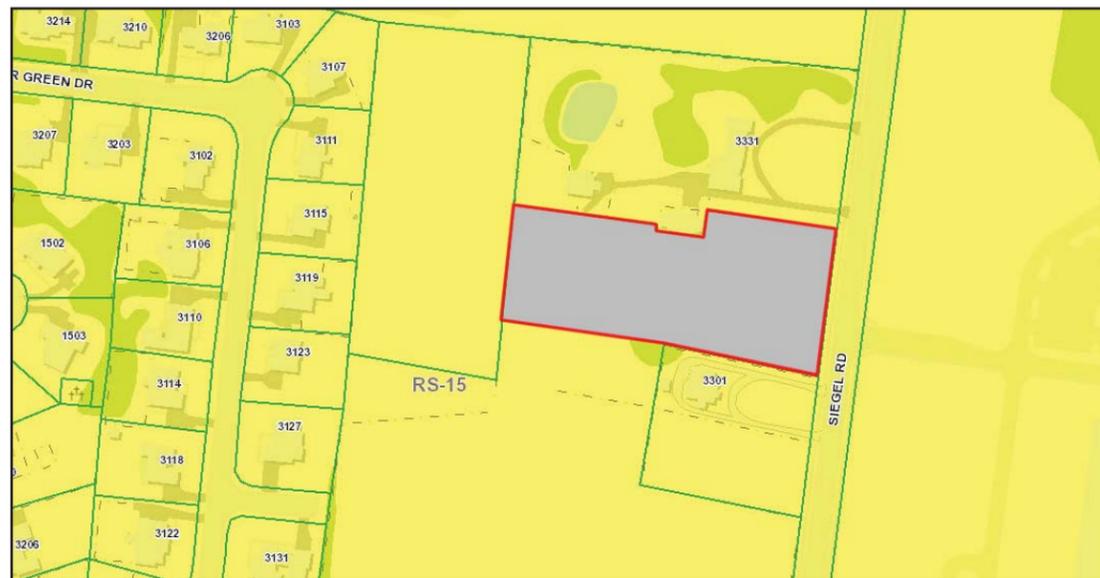
IMAGE #10

VIEW WEST, ALONG W THOMPSON LANE, WITH LARGE POWER LINES PARALLEL TO THE ROADWAY.



NOT TO SCALE

	OPEN SPACE		DAYCARE BUILDING
	STORMWATER FACILITY		SIDEWALK
	PLAY YARD		ROADWAY
	VEGETATIVE STRIP		TRASH



NOT TO SCALE

RS

SYNOPSIS

ACADEMY AT SIEGEL ROAD CONSISTS OF A SINGLE STORY STRUCTURE OF APPROXIMATELY 16,000 S.F. IN SIZE ON 2.32 ACRES. THE SITE PROVIDES FOR ADEQUATE PARKING, CIRCULATION, SOLID WASTE, PLAY-GROUNDS, STORMWATER AND LANDSCAPING. THESE FEATURES WILL BE ACCOMPANIED BY A DISTINCTIVE MONUMENT SIGN ALONG SIEGEL ROAD.

PROPOSED SITE CHARACTERISTICS:

- ALL PARKING WILL HAVE CURBING
- BUILDING WILL HAVE PEDESTRIAN CONNECTION TO SIEGEL ROAD
- SITE WILL HAVE OVER 20.00% PERVIOUS AREA
- ALL PARKING WILL BE LOCATED AT LEAST 10 FEET FROM PROPERTY LINES (SIDE, REAR, AND R.O.W.)
- ALL PARKING AREAS TO BE SCREENED FROM PUBLIC RIGHT-OF-WAY BY LANDSCAPING
- SOLID WASTE ENCLOSURE WILL BE CONSTRUCTED OF MATERIALS CONSISTENT WITH BUILDING ARCHITECTURE AND BE AT LEAST 8 FEET TALL WITH OPAQUE GATES
- TYPE B BUFFER ACCOMPANIED BY A 6 FOOT TALL SOLID OPAQUE FENCE TO BE CONSTRUCTED ALONG A PORTION OF THE NORTHERN PROPERTY LINE TO SCREEN NEIGHBOR'S POOL AND LIVING AREA FROM THE SITE'S PARKING LOT
- TYPE B BUFFER WILL BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE WESTERN, NORTHERN, AND SOUTHERN BOUNDARIES.
- BUILDING WILL HAVE STRONG BASE ESTABLISHED WITH USE OF LANDSCAPING
- MONUMENT SIGN LOCATED AT SIEGEL ROAD ENTRANCE TO HAVE MATERIALS CONSISTENT WITH BUILDING ARCHITECTURE
- ALL MECHANICAL EQUIPMENT (I.E. HVAC AND TRANSFORMERS) TO BE SCREENED
- ALL ON-SITE UTILITIES WILL BE UNDERGROUND
- BUSINESS HOURS WILL BE LIMITED TO 6:00 AM TO 8:00 PM, HOWEVER EMPLOYEES MAY BE AT THE FACILITY DURING OTHER HOURS.
- ON-SITE LIGHTING WILL COMPLY WITH GDO STANDARDS TO PREVENT LIGHT POLLUTION
- PARKING WILL COMPLY WITH MURFREESBORO'S ZONING ORDINANCE FOR USES THAT COMPLY WITH OFFICE GENERAL (OG) DISTRICT AND THOSE OUTLINED ON PAGE 9.
- PLAYGROUND FENCING WILL BE A DECORATIVE ALUMINUM FENCING STYLE W/ LANDSCAPING ON THE OUTSIDE OF THE FENCE.
- CONSTRUCTION IS ANTICIPATED TO BEGIN WITHIN 90-120 DAYS AFTER ZONING IS COMPLETED
- CONSTRUCTION IS ANTICIPATED TO REQUIRE APPROXIMATELY 9 MONTHS
- THE ENTIRE PROJECT WILL BE CONSTRUCTED AT ONE TIME IN ONE PHASE
- THE PROJECT WILL BE CONSTRUCTED IN ONE BUILDOUT
- CONSTRUCTION OF PHASE 1 IS PLANNED TO BEGIN WITHIN 120-150 DAYS AFTER THE COMPLETION OF THE REZONING PROCESS.

- **SETBACKS:**
FRONT: 30-FOOT
SIDE: 10-FOOT
REAR: 20-FOOT

WHILE THE IMMEDIATE USE OF THE SITE WILL BE A DAYCARE, THE COMMERCIAL ZONING INDICATES THAT ADDITIONAL USES COULD BE REQUIRED OR DESIRED IN THE FUTURE. THEREFORE, ADDITIONAL STANDARDS FOR THOSE ANTICIPATED USES HAVE BEEN OUTLINED HERE INCLUDING THE ALLOWABLE USES FOR THE SITE. THE ALLOWABLE USES LISTED HERE WERE TAKEN FROM THE ALLOWABLE USES FOR OFFICE GENERAL (OG) DISTRICT WHICH IS INTENDED TO ALLOW LOW IMPACT COMMERCIAL USES IN RELATIVE CLOSE PROXIMITY TO RESIDENTIAL TO PROVIDE COMMERCIAL RETAIL USES AND PERSONAL SERVICE FOR A RELATIVELY SMALL AREA.

ALLOWABLE USES

- BED & BREAKFAST FACILITY
- BED & BREAKFAST HOMESTAY
- ADULT DAY CARE CENTER
- CHURCH
- DAY CARE CENTER
- ~~MENTAL HEALTH FACILITY~~
- NURSING HOME
- NURSERY SCHOOL
- PARK
- PHILANTHROPIC INSTITUTION
- ~~PUBLIC BUILDING~~
- RECREATION FIELD
- SENIOR CITIZENS CENTER
- SCHOOL
- ~~FARM LABOR AND MANAGEMENT SERVICES~~
- ART OR PHOTO STUDIO OR GALLERY
- ~~BARBER OR BEAUTY SHOP~~
- ~~BOOK OR CARD SHOP~~
- ~~CATERING ESTABLISHMENT~~
- PROFESSIONAL OFFICE
- FLOWER OR PLANT STORE
- ~~HEALTH CLUB~~
- INTERIOR DECORATOR
- OFFICES
- ~~REDUCING & WEIGHT CONTROL SERVICE~~
- ~~POST OFFICE OR POSTAL FACILITY~~
- ADDITIONAL PARKING SPACES MAY BE NEEDED FOR SOME OF THESE USES.

MINIMUM SITE CHARACTERISTICS

- ALL PARKING WILL HAVE CURBING
- BUILDING WILL HAVE PEDESTRIAN CONNECTION TO SIEGEL ROAD
- SITE WILL HAVE MINIMUM 20% OPEN SPACE
- ALL PARKING WILL BE LOCATED AT LEAST 10 FEET FROM PROPERTY LINES (SIDE, REAR, AND R.O.W.)
- ALL PARKING AREAS TO BE SCREENED FROM PUBLIC RIGHT-OF-WAY BY LANDSCAPING A MINIMUM 24 INCHES IN HEIGHT.
- SOLID WASTE ENCLOSURE WILL BE CONSTRUCTED OF BRICK OR STONE MATERIALS CONSISTENT WITH THE BUILDING ARCHITECTURAL ELEVATIONS AND BE AT LEAST 8 FEET TALL WITH OPAQUE GATES
- TYPE B BUFFER ACCOMPANIED BY SOLID OPAQUE FENCE TO BE CONSTRUCTED ALONG A PORTION OF THE NORTHERN PROPERTY LINE TO SCREEN NEIGHBOR'S POOL AND LIVING AREA FROM THE SITE'S PARKING LOT
- TYPE B BUFFER WILL BE CONSTRUCTED ALONG THE ENTIRE LENGTH OF THE WESTERN, NORTHERN, AND SOUTHERN BOUNDARIES.
- BUILDING WILL HAVE STRONG BASE ESTABLISHED WITH USE OF LANDSCAPING
- MONUMENT SIGN LOCATED AT SIEGEL ROAD ENTRANCE TO BE CONSTRUCTED OF MASONRY MATERIALS.



PROPOSED NORTH ELEVATION A (RIGHT)



PROPOSED SOUTH ELEVATION C (LEFT)



NOT TO SCALE

	OPEN SPACE		DAYCARE BUILDING		VEGETATIVE STRIP
	STORMWATER FACILITY		SIDEWALK		TRASH
	PLAY YARD		ROADWAY		

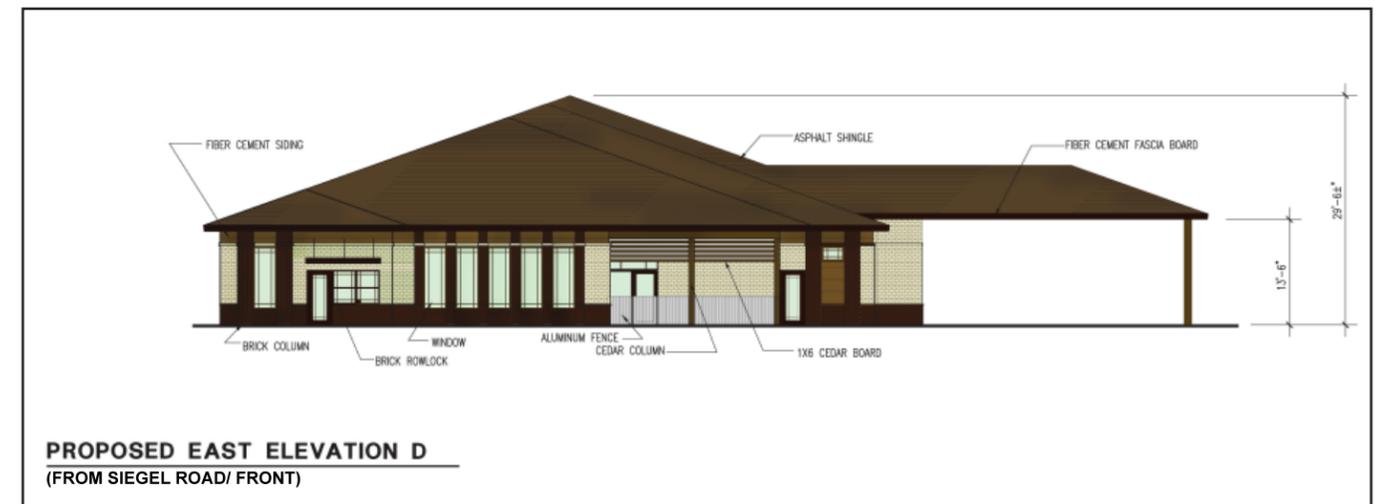
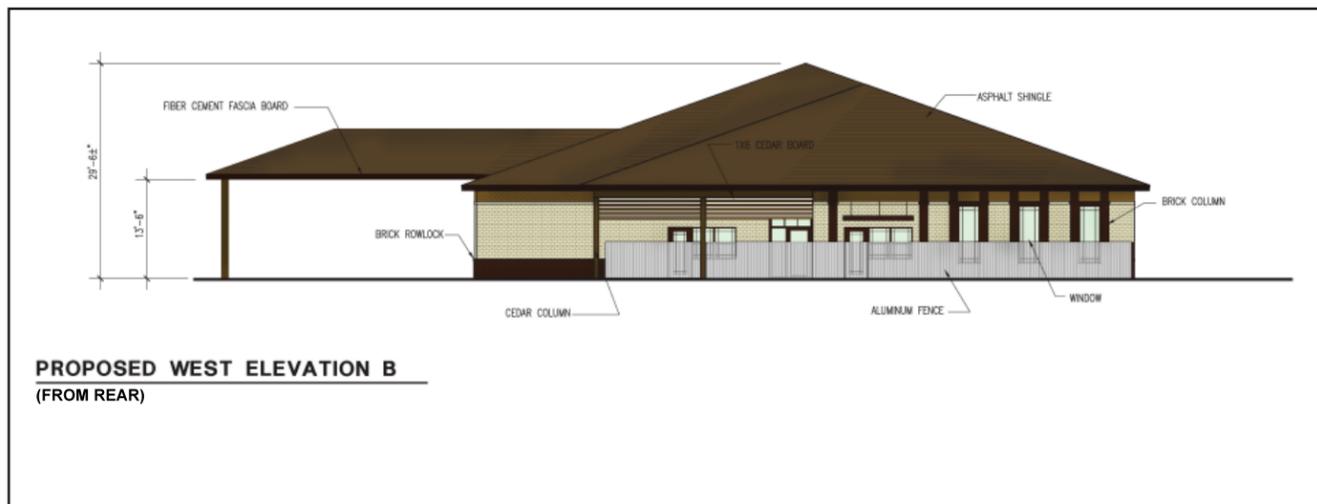
THE BUILDING ARCHITECTURE HAS BEEN DESIGNED TO BE FUNCTIONAL FOR THE INTENDED USES WHILE MAINTAINING A RESIDENTIAL CHARACTER TO BLEND WITH ADJOINING PROPERTIES.

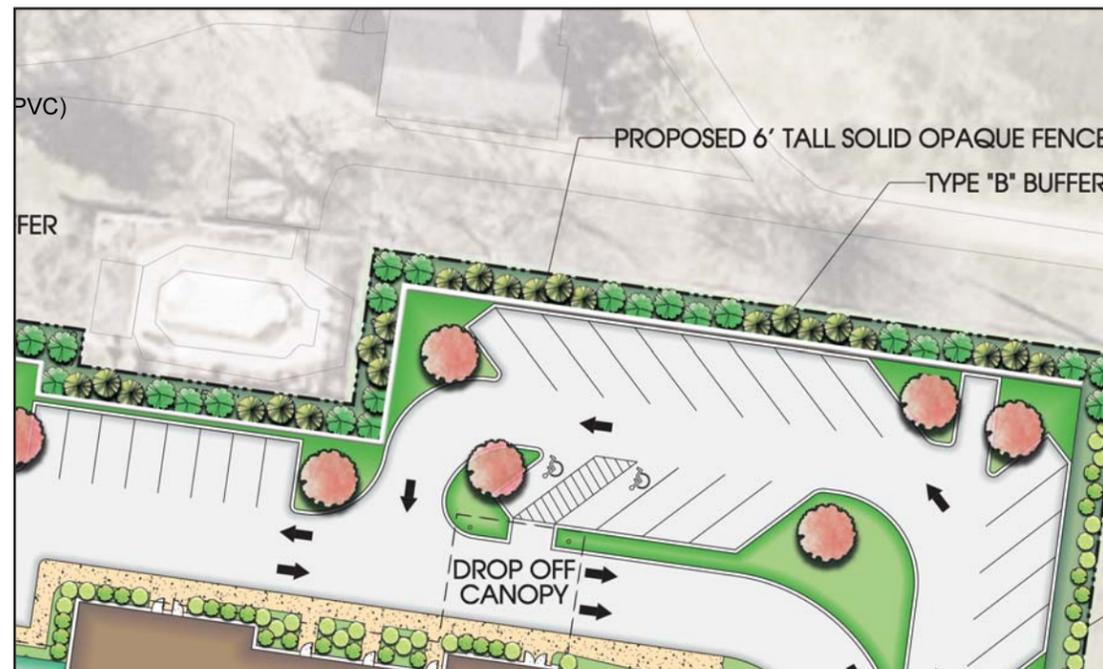
ARCHITECTURE CHARACTERISTICS

- MAXIMUM BUILDING HEIGHT OF 35-FEET AS DEFINED BY ZONING ORDINANCE
- SINGLE STORY BUILDING
- HIP, GABLED, OR PITCHED ROOF
- DIMENSIONAL ASPHALT SHINGLES
- CANOPY SHALL BE MINIMUM OF 13'-6" TALL TO ALLOW FOR EMERGENCY RESPONDERS

MIXTURE OF HIGH QUALITY MATERIALS CONSISTING OF

- BRICK
 - CEMENT BOARD SIDING
 - CEDAR BOARD SIDING
 - ASPHALT SHINGLES
 - WINDOWS
 - METAL IN TRIM AND SOFFIT AREAS
- COLORS WILL BE REVIEWED WITH PLANNING STAFF AND BY PLANNING COMMISSION, BUT ARE INTENDED TO BE NEUTRAL IN NATURE
 - ARCHITECTURAL BASE BY USE OF DIFFERENT MATERIAL, DIFFERENT COLORS, OR CHANGE IN PATTERN OR COMBINATION OF THESE TECHNIQUES
 - MULTIPLE BUILDING PLANES ON EAST, WEST, AND NORTH ELEVATIONS
 - MULTIPLE ROOFLINES
 - PRIMARY ENTRY WAYS TO BE WELL DEFINED BY ROOF LINES CHANGES, CANOPY FEATURES.
 - FENCING MATERIAL AROUND PLAY YARDS WILL BE ALUMINUM PRODUCT AT LEAST 4 FEET IN HEIGHT.





ENLARGED PLAN - OPAQUE PVC FENCE BETWEEN PARKING AND VEGETATIVE BUFFER

THE SITE HAS BEEN DESIGNED WITH AMPLE LANDSCAPING TO PROVIDE NOT ONLY AN AESTHETICALLY PLEASING EXPERIENCE, BUT TO AID IN MITIGATING IMPACTS TO THE SURROUNDING AREAS. TO ENSURE THESE CHARACTERISTICS, SOME STANDARDS ARE OUTLINED BELOW AS WELL AS A SAMPLE PALETTE PROVIDED.

LANDSCAPING CHARACTERISTICS

- 10 FEET OF LANDSCAPE AREA BETWEEN PARKING AND ALL PROPERTY LINES
- PUBLIC RIGHT-OF-WAY SCREENED FROM PARKING BY USE OF LANDSCAPING AND/OR BERMING
- SOUTH, NORTH, AND WEST PERIMETER WILL HAVE A TYPE B LANDSCAPE BUFFER PLANTED
- THE ENTIRE NORTHERN PROPERTY LINE WILL HAVE A SOLID OPAQUE PVC FENCE(MINIMUM 6-FOOT TALL) TO PROVIDE SCREENING FOR THE NEIGHBORS POOL AND LIVING AREA
- THE BUFFER FENCE WILL BE LOCATED ON THE PARKING LOT SIDE WITH THE LANDSCAPE BUFFER MATERIALS BETWEEN THE FENCE AND ADJACENT PROPERTY.
- ALL MECHANICAL EQUIPMENT SCREENED WITH LANDSCAPING AND/OR WALLS
- SOLID WASTE ENCLOSURE SCREENED WITH MASONRY WALL AND LANDSCAPING
- BASE OF THE BUILDING WILL HAVE AT LEAST 3 FOOT LANDSCAPE STRIP
- SITE HAS OVER 20% OPEN SPACE
- MONUMENT SIGN WILL BE SUPPLEMENTED WITH LANDSCAPING
- LANDSCAPING WILL BE IN CONFORMANCE WITH CITY OF MURFREESBORO'S LANDSCAPING ORDINANCE
- ALL LANDSCAPE AREAS TO HAVE FULLY AUTOMATIC IRRIGATION SYSTEM
- ALL LAWN AREAS FROM THE REAR PLAYGROUND TO THE STREET WILL BE SODDED



TYPICAL OPAQUE PVC FENCE



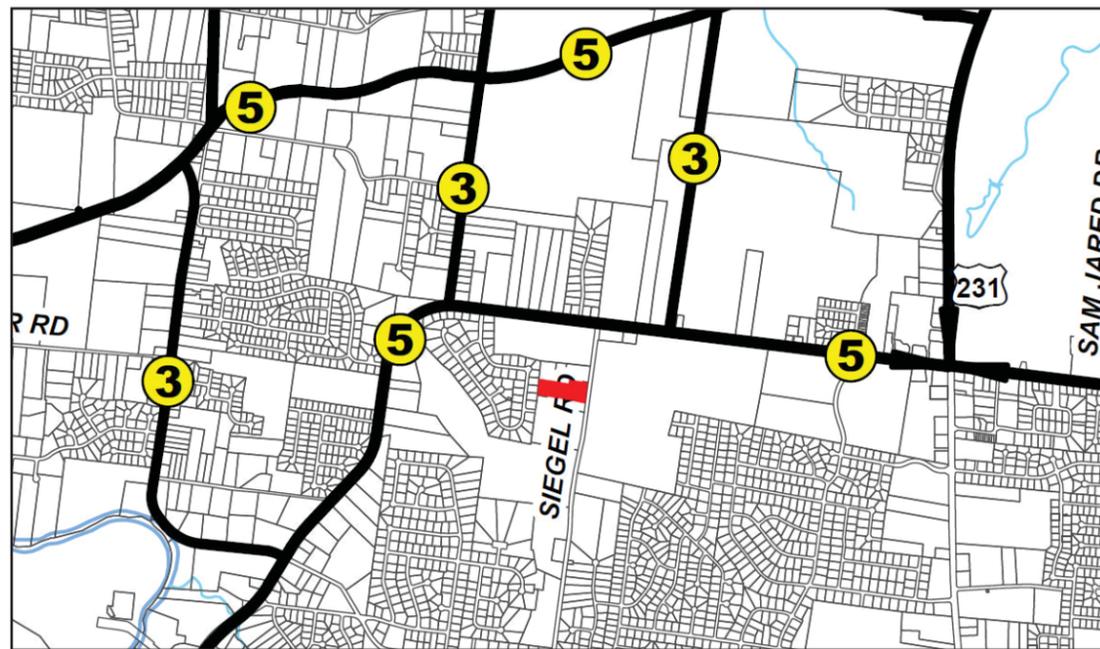
TYPICAL EVERGREEN TREES





NOT TO SCALE

	OPEN SPACE		DAYCARE BUILDING
	STORMWATER FACILITY		SIDEWALK
	PLAY YARD		ROADWAY
	VEGETATIVE STRIP		TRASH



THOROUGHFARE PLAN

PURSUANT TO THE MURFREESBORO MAJOR THOROUGHFARE PLAN, SIEGEL ROAD IS NOT PLANNED TO BE UPGRADED. HOWEVER, IT WAS PREVIOUSLY CONSTRUCTED AS A 3-LANE SECTION AND IS SUFFICIENT FOR THIS USE.

ACADEMY AT SIEGEL IS PROPOSED TO HAVE A SINGLE POINT OF INGRESS/EGRESS OFF SIEGEL ROAD. THAT ACCESS POINT WILL ALIGN WITH THE NORTHERN MOST ENTRANCE INTO SIEGEL HIGH SCHOOL. THIS ALIGNMENT IS THE OPTIMAL LOCATION TO CONTINUE TO ALLOW ADEQUATE TURNING MOVEMENTS FOR THIS SITE AS WELL AS FROM SIEGEL HIGH SCHOOL AT PEAK TIMES.

ON-SITE TURNING MOVEMENTS HAVE BEEN PLANNED TO PROVIDE MAXIMUM STACKING DISTANCES AND THE OPTIMAL DESIGN TO MINIMIZE IMPACT TO THE CITY'S RIGHT-OF-WAY.

ALL ON-SITE DRIVE LANES AND PARKING SPACES WILL BE DESIGNED TO COMPLY WITH THE CITY OF MURFREESBORO'S ZONING ORDINANCE, DIMENSIONALLY AND QUANTITIES.

ALL VEHICULAR AREAS WILL BE SURFACED WITH ASPHALT PAVEMENT OR CONCRETE PAVEMENT AND WILL BE DETERMINED AT CONSTRUCTION PLAN PHASE.

1.) A MAP SHOWING AVAILABLE UTILITIES, EASEMENTS, ROADWAYS, RAIL LINES AND PUBLIC RIGHT-OF-WAY CROSSING AND ADJACENT TO THE SUBJECT PROPERTY.

RESPONSE: AN EXHIBIT IS GIVEN ON PAGE 5 ALONG WITH DESCRIPTIONS OF EACH.

2.) A GRAPHIC RENDERING OF THE EXISTING CONDITIONS AND/OR AERIAL PHOTOGRAPH(S) SHOWING THE EXISTING CONDITIONS AND DEPICTING ALL SIGNIFICANT NATURAL TOPOGRAPHICAL AND PHYSICAL FEATURES OF THE SUBJECT PROPERTY; LOCATION AND EXTENT OF WATER COURSES, WETLANDS, FLOODWAYS, AND FLOODPLAINS ON OR WITHIN ONE HUNDRED (100) FEET OF THE SUBJECT PROPERTY; EXISTING DRAINAGE PATTERNS; LOCATION AND EXTENT OF TREE COVER; AND COMMUNITY GREENWAYS AND BICYCLE PATHS AND ROUTES IN PROXIMITY TO THE SUBJECT PROPERTY.

RESPONSE: AN EXHIBIT IS GIVEN ON PAGE 5 THAT SHOWS THE EXISTING CONTOURS AND DRAINAGE PATTERNS ALONG WITH AN AERIAL PHOTOGRAPH OF THE AREA. NO PORTION OF THE PROPERTY IS SUBJECT TO FLOODPLAINS OR FLOODWAYS.

3.) A PLOT PLAN, AERIAL PHOTOGRAPH, OR COMBINATION THEREOF DEPICTING THE SUBJECT AND ADJOINING PROPERTIES INCLUDING THE LOCATION OF STRUCTURES ON-SITE AND WITHIN TWO HUNDRED (200) FEET OF THE SUBJECT PROPERTY AND THE IDENTIFICATION OF THE USE THEREOF.

RESPONSE: EXHIBITS AND PHOTOGRAPHS ON PAGES 3, 5, 6, 7, & 8 GIVE THE LOCATION OF EXISTING STRUCTURES ON THE SUBJECT PROPERTY AND THE SURROUNDING PROPERTIES. AN EXHIBIT ON PAGE 5A GIVES THE ZONING OF THOSE SAME PROPERTIES.

4.) A DRAWING DEFINING THE LOCATION AND AREA PROPOSED TO BE DEVELOPED FOR BUILDINGS AND PARKING; STANDARDS FOR PEDESTRIAN AND VEHICULAR CIRCULATION; THE PROPOSED POINTS OF INGRESS AND EGRESS TO THE DEVELOPMENT; THE PROVISION OF SPACES FOR LOADING; PROPOSED SCREENING TO BE MADE IN RELATION TO ABUTTING LAND USES AND ZONING DISTRICTS; AND THE EXTENT OF PROPOSED LANDSCAPING, PLANTING AND OTHER TREATMENT ADJACENT TO SURROUNDING PROPERTY.

RESPONSE: PAGES 8-12 LISTS STANDARDS AND EXHIBITS SHOWING THE CONCEPT PLAN WHICH SHOWS EACH OF THESE ITEMS.

5.) A CIRCULATION DIAGRAM INDICATING THE PROPOSED PRINCIPAL MOVEMENT OF VEHICLES, GOODS AND PEDESTRIAN WITHIN THE DEVELOPMENT TO AND FROM EXISTING THOROUGHFARE.

RESPONSE: THE SITE PLAN ON PAGE 4 INDICATES ACCESS POINTS.

6.) IF THE PLANNED DEVELOPMENT IS PROPOSED TO BE CONSTRUCTED IN STAGES OR UNITS DURING A PERIOD EXTENDING BEYOND A SINGLE CONSTRUCTION SEASON, A DEVELOPMENT SCHEDULE INDICATING:

(AA) THE APPROXIMATE DATE WHEN CONSTRUCTION OF THE PROJECT CAN BE EXPECTED TO BEGIN; RESPONSE: THE PHASING OF THE DEVELOPMENT IS DISCUSSED ON PAGE 8

(BB) THE ORDER IN WHICH THE PHASES OF THE PROJECT WILL BE BUILT; RESPONSE: THE PHASING OF THE DEVELOPMENT IS DISCUSSED ON PAGE 8

(CC) THE MINIMUM AREA AND THE APPROXIMATE LOCATION OF COMMON SPACE AND PUBLIC IMPROVEMENTS THAT WILL BE REQUIRED AT EACH STAGE; RESPONSE: THE PHASING OF THE DEVELOPMENT IS DISCUSSED ON PAGE 8

(DD) A BREAKDOWN BY PHASE FOR SUBSECTIONS[5] AND [6] ABOVE; RESPONSE: THE PHASING OF THE DEVELOPMENT IS DISCUSSED ON PAGE 8

FLOOR AREA RATIO (F.A.R.)

TOTAL MAXIMUM FLOOR AREA = 16, 000 SF
TOTAL SITE AREA = 101, 059 SF

LIVABILITY SPACE RATIO (L.S.R.)

TOTAL FLOOR AREA = 16,000 SF
TOTAL SITE AREA = 101,059 SF
TOTAL DRIVE/PARKING AREA = 32,828 SF
TOTAL LIVABLE SPACE = (101,059) - (32,828) = 68,231 SF
LIVABILITY SPACE RATIO = (68,231)/ (16,000) = 4.26

OPEN SPACE RATIO (O.S.R.)

TOTAL OPEN SPACE = 29,746 SF
TOTAL FLOOR AREA = 16,000 SF
OPEN SPACE RATIO = (29,746)/ (16,000) = 1.86

7.) A WRITTEN STATEMENT GENERALLY DESCRIBING THE RELATIONSHIP OF THE PROPOSED PLANNED DEVELOPMENT TO THE CURRENT POLICIES AND PLANS OF THE CITY AND HOW THE PROPOSED PLANNED DEVELOPMENT IS TO BE DESIGNED, ARRANGED AND OPERATED IN ORDER TO PERMIT THE DEVELOPMENT AND USE OF NEIGHBORING PROPERTY IN ACCORDANCE WITH THE APPLICABLE REGULATIONS OF THIS ARTICLE.

RESPONSE: THE PROPERTY IS CURRENTLY ZONED RS-15. THE SURROUNDING AREA HAS A MIXTURE OF USES CONSISTING OF RESIDENTIAL DETACHED STRUCTURES, CHURCHES, AND SCHOOLS. THE SCHOOL AND CHURCH ARE INSTITUTIONAL USES, WHICH ARE TYPICALLY CONSIDERED TO BE COMPLIMENTARY AND COHESIVE WITH THE SURROUNDING NEIGHBORHOODS. LIKE THOSE USES, THIS PROPOSED PCD WILL PROVIDE AMENITIES AND NEEDS FOR THE LOCAL RESIDENTS. THE CONCEPT PLAN AND DEVELOPMENT STANDARDS COMBINED WITH THE ARCHITECTURAL REQUIREMENTS SHOWN WITHIN THIS BOOKLET WILL ALLOW THIS SITE TO FILL A NEED IN THE SIEGEL AREA.

- 8.) A STATEMENT SETTING FORTH IN DETAIL EITHER (1) THE EXCEPTIONS WHICH ARE REQUIRED FROM THE ZONING AND SUBDIVISION REGULATIONS OTHERWISE APPLICABLE TO THE PROPERTY TO PERMIT THE DEVELOPMENT OF THE PROPOSED PLANNED DEVELOPMENT OR (2) THE BULK, USE, AND/OR OTHER REGULATIONS UNDER WHICH THE PLANNED DEVELOPMENT IS PROPOSED.
RESPONSE: THE FRONT SETBACKS REQUESTED ARE THE SAME AS REQUIRED SETBACK FOR A (OG) DEVELOPMENT. THE SIDE SETBACKS REQUESTED ARE SAME AS REQUIRED FOR A (OG) DEVELOPMENT. THE REAR SETBACKS ARE SAME AS REQUIRED SETBACK FOR A (OG) DEVELOPMENT. THE MAXIMUM HEIGHT IS SAME AS ALLOWED IN A (OG) DEVELOPMENT.
- 9.) A TABULATION OF THE MAXIMUM FLOOR AREA PROPOSED TO BE CONSTRUCTED, THE F.A.R. (FLOOR AREA RATIO), THE L.S.R. (LIVABILITY SPACE RATIO) AND THE O.S.R. (OPEN SPACE RATIO). THESE TABULATIONS ARE FOR THE PCD
- 10.) THE NATURE AND EXTENT OF ANY OVERLAY ZONE AS DESCRIBED IN SECTION 24 OF THIS ARTICLE AND ANY SPECIAL FLOOD HAZARD AREA AS DESCRIBED IN SECTION 34 OF THIS ARTICLE
RESPONSE: THIS PROPERTY IS IN THE AIRPORT OVERLAY DISTRICT (AOD), BATTLEFIELD PROTECTION DISTRICT (BPD), GATEWAY DESIGN OVERLAY DISTRICT (GDO), HISTORIC DISTRICT (H-1), OR PLANNED SIGNAGE OVERLAY DISTRICT (PS). NO PORTION OF THIS PROPERTY LIES WITHIN THE 100-YEAR FLOODPLAIN, ACCORDING TO THE CURRENT FEMA MAP PANEL.
- 11.) THE LOCATION AND PROPOSED IMPROVEMENTS OF ANY STREET DEPICTED ON THE MURFREESBORO MAJOR THOROUGHFARE PLAN AS ADOPTED AND AS IT MAY BE AMENDED FROM TIME TO TIME.
RESPONSE: PAGE 12 DISCUSSES THE MAJOR THOROUGHFARE PLAN.
- 12.) THE NAME, ADDRESS, TELEPHONE NUMBER, AND FACSIMILE NUMBER OF THE APPLICANT AND ANY PROFESSIONAL ENGINEER, ARCHITECT, OR LAND PLANNER RETAINED BY THE APPLICANT TO ASSIST IN THE PREPARATION OF THE PLANNED DEVELOPMENT PLANS. A PRIMARY REPRESENTATIVE SHALL BE DESIGNATED.
RESPONSE: THE PRIMARY REPRESENTATIVE IS MATT TAYLOR OF SEC, INC.

City of Murfreesboro

Request for Certificate of Compliance for Retail Liquor Store

Summary of information from the application:

Owners/Partners/Stockholders/Officers:

Name	Ankit D. Patel
Age	38
Home Address	755 St. Andrews Dr., Apt. #3-208
Residency City/State	Murfreesboro, TN
Race/Sex	Asian/M

10 Year Background Check Findings:

City of Murfreesboro:	None
Rutherford County:	None
Nashville/Davidson County:	None

Name of Business Entity	Jai Varahi Mata, Inc.
Name of Business	Victory Village Liquor & Wines
Business Location	4167 Franklin Road, Suite 5-A

Type of Application:

New Location	_____
Ownership Change	_____
Name Change	_____
Renewal	_____ X _____
Corporation	_____ X _____
Partnership	_____
Sole Proprietor	_____

Application Completed Properly? Yes

The actual application is available in the office of the City Recorder.

**City of Murfreesboro
Request for Six Certificates of Compliance for
Wine in Retail Stores**

Summary of information from the six applications:

Name of Business Entity Kroger Limited Partnership 1

Type of Application:

New - wine sale in retail store

Corporation X
Partnership
Sole Proprietor

District Manager

Name Troy K. Layne
Age 50
Home Address 353 Reider Lane
Residency City/State Pelham, TN
Race/Sex Caucasian/M

10 Year Background Check Findings:

City of Murfreesboro: 8/20/2010 Speeding 56/40 Appearance bond pd
Rutherford County: None
Nashville/Davidson County: None
FBI: None

Name of Business Kroger #532
Business Location 2449 Old Fort Parkway

Name of Business Kroger #543
Business Location 2946 S Church St.

Name of Business Kroger #529
Business Location 1776 W Northfield Blvd.

Name of Business Kroger #539
Business Location 2325 Memorial Blvd.

Name of Business Kroger #564
Business Location 2050 Lascassas Pike

Name of Business Kroger #521
Business Location 1622 Middle Tennessee Blvd.

Application Completed Properly? Yes

All six locations meet zoning and distance requirements? Yes

The actual applications are available in the office of the City Recorder.



... creating a better quality of life.

Agenda

March 3, 2016

Honorable Mayor and Members of City Council

Re: Public Hearing to be held March 10, 2016

Background

Attached is additional information for the public hearing to be held by the City Council. The item is as follows:

- a. Zoning application [2016-403] for approximately 17.3 acres located at 3726 Manson Pike to be zoned as Springfield Apartments PRD & GDO-1 simultaneous with annexation, Hunter/McDowell Development applicant. The Planning Commission voted to recommend approval unanimously.

Recommendation

The City Council will need to conduct a public hearing on this matter after which it will consider an ordinance for its adoption. The City Council adopted a resolution for the Plan of Services and annexation petition for this property on November 5, 2015; the annexation resolution will become effective on the effective date of this rezone.

Concurrences

The Murfreesboro Planning Commission conducted a public hearing on this item during its regular meeting on February 3, 2016. The Planning Commission is recommending approval of this item. (Note: The February 3, 2016 Planning Commission meeting minutes have not yet been prepared and are not available for the review of the City Council at this time.)

Attachments

1. Staff Comments from the Planning Commission meeting
2. Illustrations of the areas
3. PRD program book
4. Miscellaneous exhibits and materials

Respectfully Submitted,

Margaret Ann Green, AICP
Principal Planner

**MURFREESBORO PLANNING COMMISSION
STAFF COMMENTS, PAGE 1
FEBRUARY 3, 2016**

3.h. Zoning application [2016-403] for approximately 17.3 acres located at 3726 Manson Pike to be zoned as Springfield Apartments PRD & GDO-1 simultaneous with annexation, Hunter/McDowell Development applicant

The subject property consists of one parcel, which was the subject of an annexation petition and zoning change request to RM-16 (multi-family district) considered in 2015. The Planning Commission recommended approval of the annexation and the matter of zoning change was deferred indefinitely at the City Council public hearing. In response to the concerns of the City Council, the applicant is now making an application to zone the property PRD (Planned Residential District) and GDO-1. This tract is 17.9 acres and is located at 3726 Manson Pike. The area being studied for annexation and rezoning is 17.3 acres as a 10' strip of the requested area has been left out of the study area. The properties to the east and west are in the unincorporated area of Rutherford County. Interstate 24 borders the property along its northern property line. The properties to the south, across Manson Pike, are zoned RM-16 (Integra Creek Apartments) and CL (Commercial Local District) and are located within the GDO-1 overlay district. A cemetery is located along the southeastern corner of this property and is a separate parcel.

The applicant, Hunter/McDowell, has a contract to purchase the property with intentions to develop it as a multi-family community. The applicants have requested that the land be zoned PRD (Planned Residential District) simultaneous with annexation. It is staff recommendation to also zone this property GDO-1 simultaneous with annexation. Included with the agenda materials is a PRD program book for the Springfield Apartments. The plan commits to preserving the existing house in its current form and to renovate the front porch and ceiling, to install new roof and perform maintenance to allow it to serve as a single-family home. The plan also states that a 100-foot strip will be maintained along the rear lot line to separate the development from I-24 and Military Cave.

The PRD allows a maximum of 270 dwelling units with a density just over 15 dwelling units per acre. The buildings are a mix of two and three stories which will consist of brick and cement fiber board. The dwellings will consist of one, two and three bedrooms units. The two-story "townhome" units are parallel along the eastern property line while the taller three-story buildings are pulled into the site.

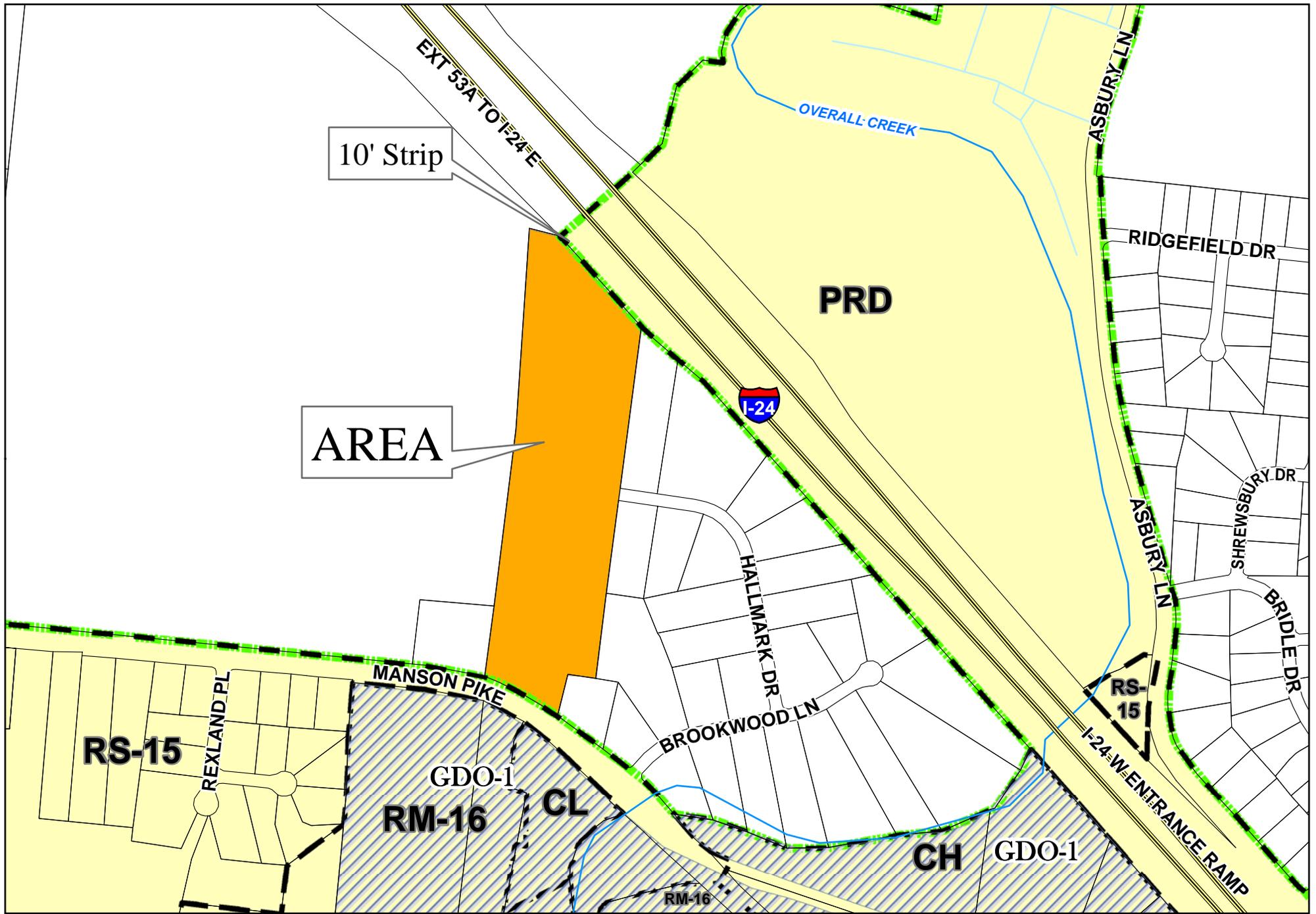
The applicants have asked for three exceptions to the Zoning Ordinance. First, they would like a reduction in the amount of required, off-street parking spaces. The Zoning Ordinance would require 570 regular, off-street parking spaces and the proposed PRD would provide 520 spaces. A chart has been provided on page 15 of the program book with parking calculations. Secondly, the Zoning Ordinance does not allow access to one

parking space through one other parking space in multi-family residential. The applicant is providing parking spaces in front of the garage doors and refers to these type spaces as “tandem” parking spaces. They would like to count 75% (51) of these “tandem” spaces toward the minimum required parking. Thirdly, they are requesting building 4 to be 28 feet from the southern property line.

The subject property is also located within the General Development Plans for the Blackman Community; an excerpt has been included in the agenda materials. The community plan recommends that this parcel develop as “Planned Mixed Use area centering on technology-based uses (i.e. educational, office, research park and limited commercial) and anchored by a redeveloped MTSU agricultural campus site.” The proposed multi-family use is not consistent with the plan however the Planning Commission may view the use as an appropriate transitional use.

The applicants held a neighborhood meeting at Cason Lane Academy on January 21, 2016. It is expected that the applicants will provide a presentation at the Planning Commission meeting to describe the proposed PRD amendment.

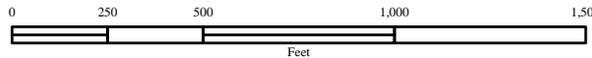
The Planning Commission will need to conduct a public hearing, after which it will need to discuss this matter and then formulate a recommendation for City Council.



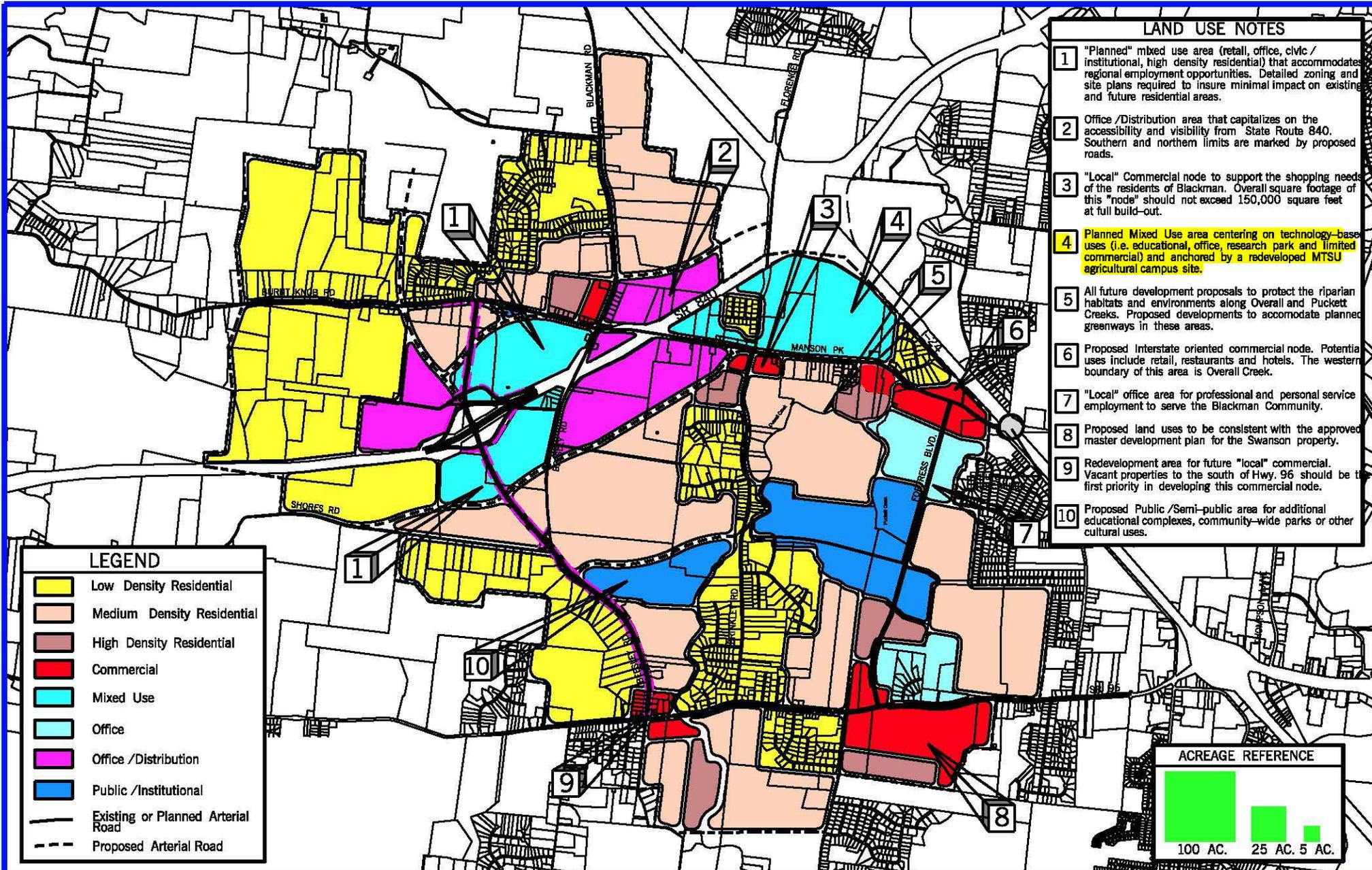
**Zoning Request for Property Along Manson Pk.
PRD and GDO-1 Simultaneous with Annexation**



Path: G:\planning\rezon\mansonpk08_2015z.mxd



GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov

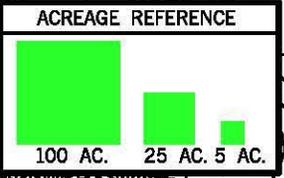


LAND USE NOTES

- 1 "Planned" mixed use area (retail, office, civic / institutional, high density residential) that accommodates regional employment opportunities. Detailed zoning and site plans required to insure minimal impact on existing and future residential areas.
- 2 Office /Distribution area that capitalizes on the accessibility and visibility from State Route 840. Southern and northern limits are marked by proposed roads.
- 3 "Local" Commercial node to support the shopping needs of the residents of Blackman. Overall square footage of this "node" should not exceed 150,000 square feet at full build-out.
- 4 Planned Mixed Use area centering on technology-based uses (i.e. educational, office, research park and limited commercial) and anchored by a redeveloped MTSU agricultural campus site.
- 5 All future development proposals to protect the riparian habitats and environments along Overall and Puckett Creeks. Proposed developments to accommodate planned greenways in these areas.
- 6 Proposed Interstate oriented commercial node. Potential uses include retail, restaurants and hotels. The western boundary of this area is Overall Creek.
- 7 "Local" office area for professional and personal service employment to serve the Blackman Community.
- 8 Proposed land uses to be consistent with the approved master development plan for the Swanson property.
- 9 Redevelopment area for future "local" commercial. Vacant properties to the south of Hwy. 96 should be a first priority in developing this commercial node.
- 10 Proposed Public /Semi-public area for additional educational complexes, community-wide parks or other cultural uses.

LEGEND

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Mixed Use
- Office
- Office /Distribution
- Public /Institutional
- Existing or Planned Arterial Road
- Proposed Arterial Road



BLACKMAN COMMUNITY



planning\blackman\landuse\FinalLandUse.pdf

BWSC BRADY WARDEN BUNNER & CLARKSON, INC.
 DESIGN ARCHITECTS PLANNERS
 LANDSCAPE ARCHITECTS AND SURVEYORS

RPM ASSOCIATES
 MANAGERIAL AND ENGINEERING

FUTURE LAND USE MAP

**BLACKMAN COMMUNITY
 LAND USE PLAN**

EXHIBIT VIII PAGE 3-8

BONAVIC
DEVELOPMENT

Submitted for City Council public hearing on
March 10, 2016

SPRINGFIELD LUXURY APARTMENTS
PLANNED RESIDENTIAL DISTRICT
MURFREESBORO, TENNESSEE



SHEET INDEX

3. DEVELOPMENT TEAM
4. PROJECT SUMMARY
5. SITE LOCATION AND AERIAL MAP
6. UTILITIES
7. ADJACENT ZONING
8. MAJOR THOROUGHFARE PLAN
9. EXISTING CONDITIONS
11. SITE PLAN
12. SITE PLAN-EXISTING TOPOGRAPHY
13. OPEN SPACE CALCULATIONS
14. PLANNED DEVELOPMENT CRITERIA
15. PARKING CALCULATIONS
16. TANDEM PARKING ENLARGEMENT
17. SECTIONS-ADJACENT CONTEXT
19. SITE DATA/SITE UNITS
20. ARCHITECTURE-ELEVATIONS AND FOOTPRINTS
28. FENCE AND GATE EXHIBIT
29. SIGNAGE
30. LUXURY OUTDOOR AMENITIES
31. CLUBHOUSE CHARACTER
32. LOCAL PLANT PALETTE
33. LANDSCAPE COMPLIANCE PLAN
34. TREE PRESERVATION PLAN
35. PLANNED DEVELOPMENT CRITERIA

SUBMITTED TO PLANNING COMMISSION
DECEMBER 31ST, 2015

REVISION SUBMITTED JANUARY 19, 2016

SECOND REVISION SUBMITTED JANUARY 29, 2016

SUBMITTED FOR CITY COUNCIL PUBLIC HEARING ON MARCH 10, 2016

DEVELOPMENT TEAM

ENGINEERING



2115 N.W. BROAD STREET, MURFREESBORO, TN 37129
TELEPHONE: 615-893-4084 FAX: 615-893-0080

Huddleston-Steele Engineering, Inc.
Attention: Clyde Rountree, RLA
2115 N.W. Broad Street
Murfreesboro, TN 37129

ARCHITECTS



Bernard L. Weinstein & Associates, Architects
95 White Bridge Road, Suite #200
Nashville, TN 37205

OWNERS

Louis and Elizabeth Jennings
PO Box 1017
Cookeville, TN 38503

DEVELOPER



Bonavic Development
Charles Haskett
6045 Southern Industrial Drive. Suite 200
Birmingham, AL 35232

PLANNING/LANDSCAPE ARCHITECTURE



Dix.Hite + Partners
Landscape Architects, Planners
200 Century Park South, Suite 114
Birmingham, Alabama 35226

PROJECT SUMMARY



This property is being developed by Charles Haskett of Bonavic Development on behalf of the applicants Mr. Bill Hunter and Mr. Michael McDowell. Mr. Hunter has decades of experience in residential, office, and commercial development in the middle Tennessee region. In Rutherford County he has developed over 200 custom homes, several multi-family communities such as Hunters Court, Georgetown Condos, Rivermont Apartments, Riverchase Condos, Charleston Apartments, and most recently in a partnership with Mr. McDowell developed Copperfield, a 288 unit luxury apartment community in Smyrna, TN. Mr. Haskett assisted Mr. Hunter and Mr. McDowell in the development of Copperfield and has over a decade in the multi-family construction and development industry and has worked on several multi-family communities across the Southeastern United States representing over 3,000 rental units. All members of the development team share the common goal of creating an engaged community and providing the highest quality homes.

While challenging, this site presents a unique opportunity to create a community that blends the old with the new in harmony, full of character, and provides an unmatched community experience for its residents. The existing house is being preserved in its current form and will undergo an extensive renovation to the front porch and ceiling, receive a new roof, and a long list of other relatively minor items so that it can continue to be a home for the property manager and their family. Along with the home, approximately 2 acres of mature hardwood trees are being saved to preserve the beautiful setting as it is today and has been for decades.

The entire site plan, building architecture, and amenity programming are being developed in such a way to be harmonious and complimentary to the existing

home. The main entrance drive is lined with an abundance of trees on either side of the aisle and is on axis with the home to provide picturesque views from Manson Pike. The buildings themselves are unique in that even the three story buildings are planned and designed in such a way to break the buildings into sections resembling luxury townhomes with varying exterior materials, colors, and roof lines.

With ten different floor plans, this development will meet the needs of many of Murfreesboro's residents. Four 1 Bedroom options, three 2 bedroom options, and three 3 bedroom options offer both open and more traditional floor plans and will feature top of the market finishes including granite counters, high efficiency stainless appliances, and designer flooring. The property will also feature your traditional flat style units as well as 2 story townhome style units with direct entry garages. Attached garages and detached garage buildings are also available.

At the rear of the site a strip of approximately 100' will be left undeveloped creating a scenic natural preserve and buffer. The area around Military Spring will carefully be cleaned up to provide a private scenic hiking trail for residents (not a public park).

SITE LOCATION AND AERIAL MAP

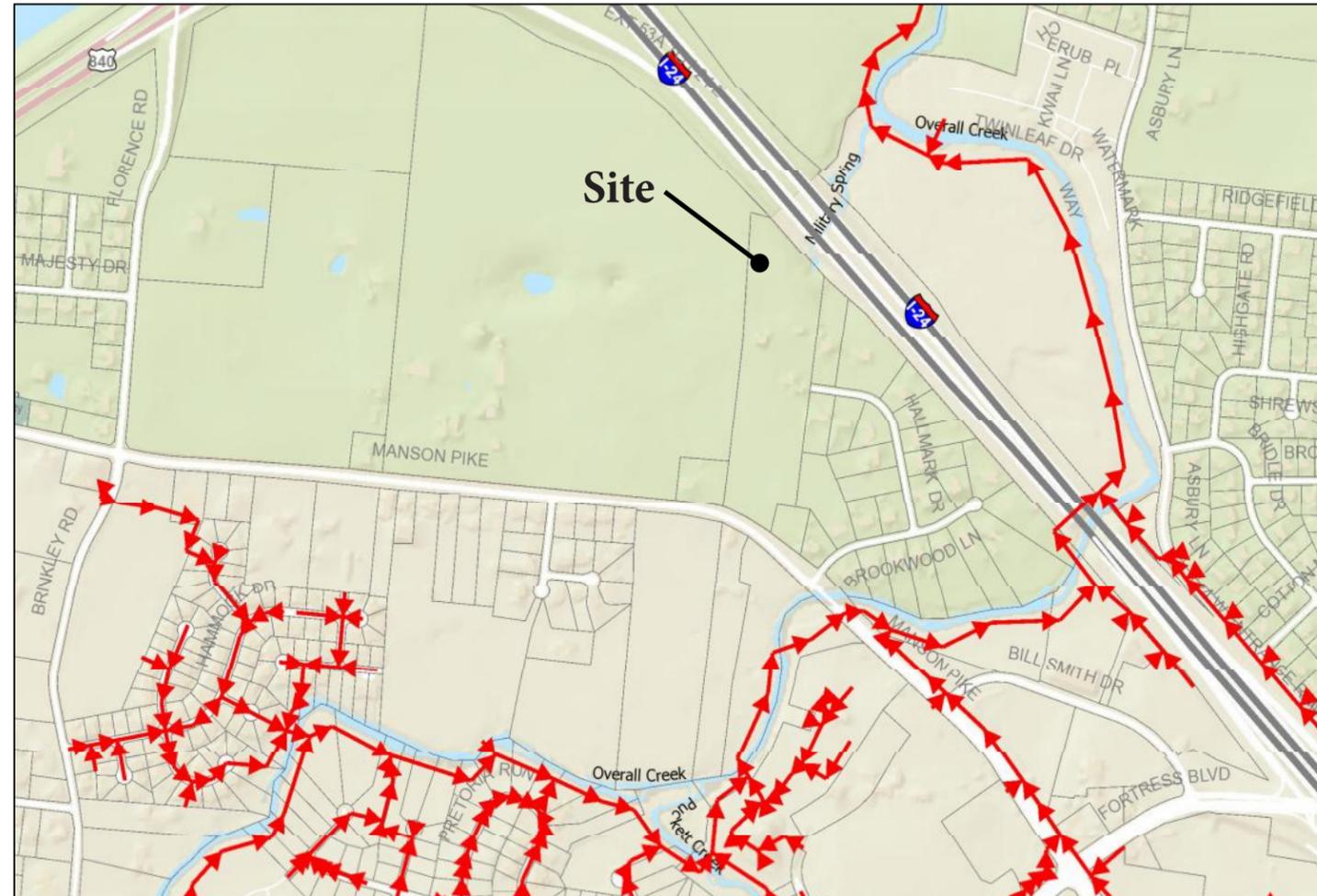


Site Location Map



Aerial Location Map

UTILITIES



Existing Utilities

Legend

Red = Sanitary Sewer

Blue = Water

Local Utility Providers

City of Murfreesboro

The property has access to the public the right –of-way along Manson Pike however, due to projected road expansion additional right-of-way may be necessary.

MWSD

Sanitary Sewer will be supplied by Murfreesboro Water and Sewer

Murfreesboro Electric

Electricity will be supplied by Murfreesboro Electric.

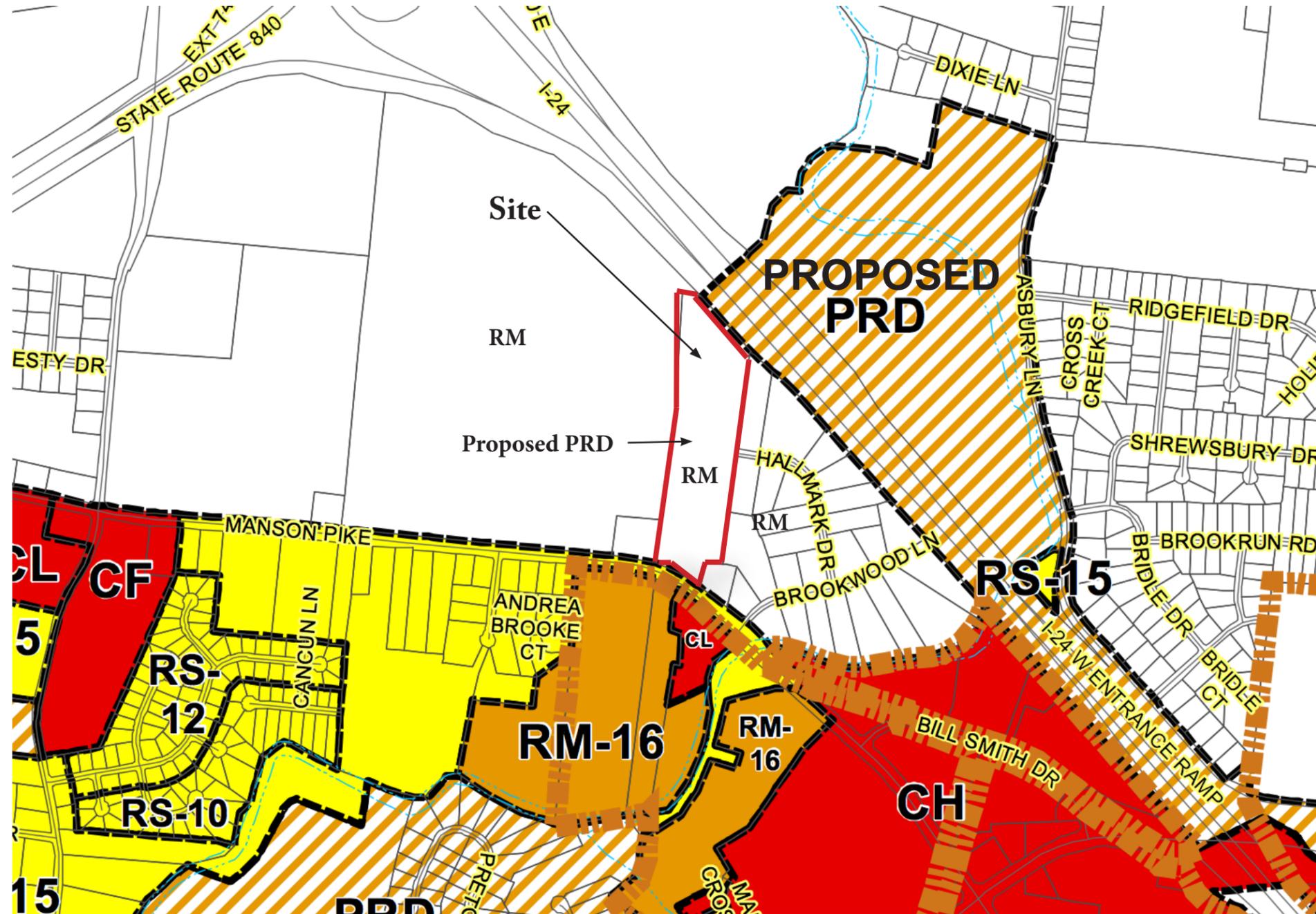
CUD

Water will be supplied by Consolidated Utility District

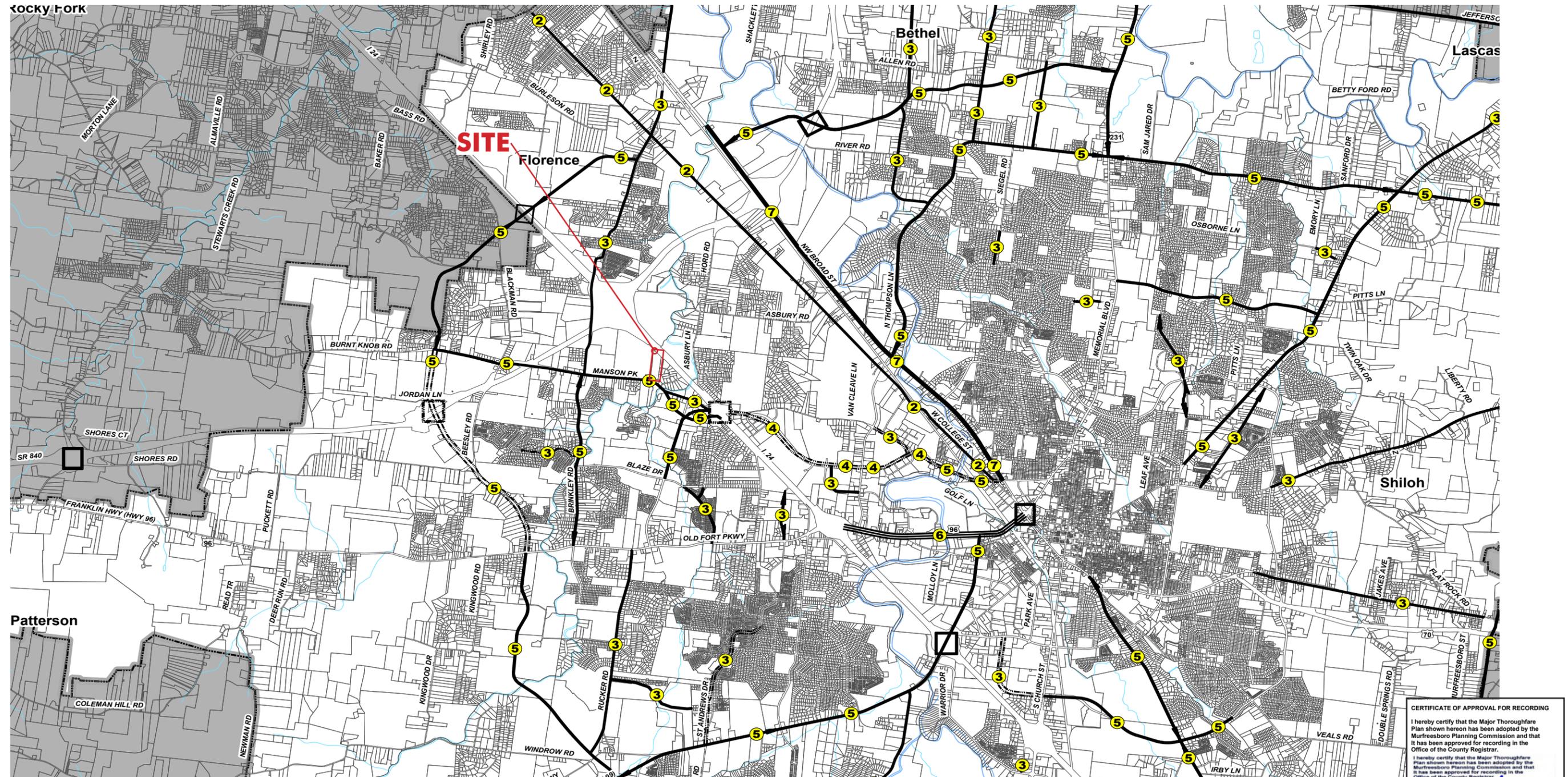
Atmos Energy

Natural gas will be supplied by Atmos Energy

ADJACENT ZONING



MAJOR THOROUGHFARE PLAN



CERTIFICATE OF APPROVAL FOR RECORDING

I hereby certify that the Major Thoroughfare Plan shown hereon has been adopted by the Murfreesboro Planning Commission and that it has been approved for recording in the Office of the County Registrar.

I hereby certify that the Major Thoroughfare Plan shown hereon has been adopted by the Murfreesboro Planning Commission and that it has been approved for recording in the Office of the County Registrar.

10-14 2008 *[Signature]*
 10-14 2008 *[Signature]*
 Chairman, Planning Commission
 Mayor, Planning Commission
 City of Murfreesboro

PLAT BOOK: 34 PAGE: 111
 THIS PLAT VOIDS, VACATES AND REPLACES THE PREVIOUS MAJOR THOROUGHFARE PLANS RECORDED IN P.B. 19 PG-184, P.B. 21 PG-123, P.B. 24 PG-224, P.B. 26 PG-131

EXISTING CONDITIONS



1. ENTRANCE TO PROPERTY LOOKING FROM MANSON PIKE TOWARD EXISTING HOME



2. TOWARD EXISTING HOME SHOWING MATURE TREES TO PRESERVE



3. FROM EXISTING HOME TOWARD MANSON PIKE



4. FROM EXISTING DRIVE TOWARD EXISTING HOME



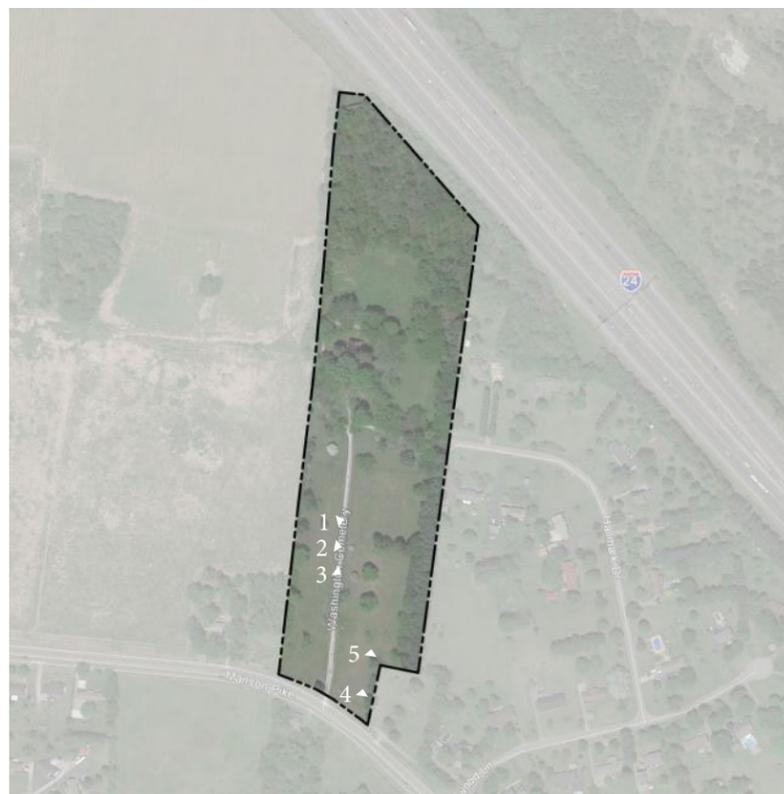
1. EAST PROPERTY LINE SHOWING EXISTING EVERGREEN BUFFER ADJACENT TO ABUTTING SINGLE FAMILY PROPERTY



2. EAST PROPERTY LINE SHOWING EXISTING EVERGREEN BUFFER ADJACENT TO ABUTTING SINGLE FAMILY PROPERTY



3. EAST PROPERTY LINE SHOWING EXISTING EVERGREEN BUFFER ADJACENT TO ABUTTING SINGLE FAMILY PROPERTY



4. EAST PROPERTY LINE SHOWING EXISTING EVERGREEN BUFFER ADJACENT TO ABUTTING SINGLE FAMILY PROPERTY



5. EAST PROPERTY LINE SHOWING EXISTING EVERGREEN BUFFER ADJACENT TO ABUTTING SINGLE FAMILY PROPERTY

SITE PLAN

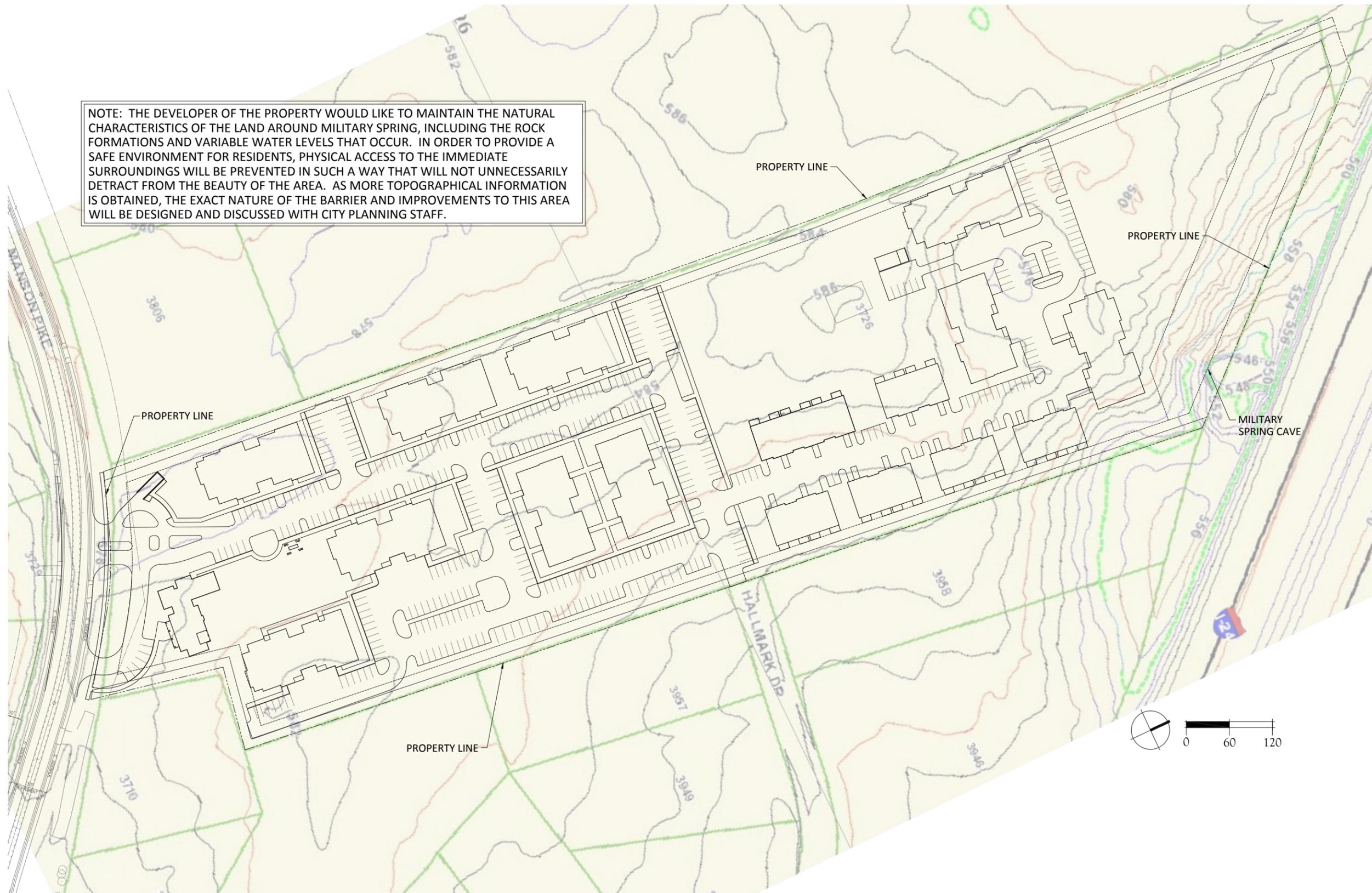
The heart of the Springfield development is the Springfield historic mansion, a house built by Colonel John Smith in 1805. Preserved within two acres of open space, it will remain a home to one of Springfield's residents, and the grounds will become a park area for the Springfield community. The historic approach from Manson Pike to the home will serve as the "main street" of the community, connecting residents to the clubhouse amenity center, and provides an important visible link to the property's history. The architecture and layout of the new residences have been thoughtfully designed to respect the scale and character of the historic home.

The development has been carefully planned to preserve significant natural features and groupings of existing vegetation throughout the site, most notably around the perimeter and near the Springfield home. Building, drives, and parking islands have been located to avoid specimen mature trees in the site interior which contribute to the aesthetics and sense of place. A sense of privacy will be established through the existing perimeter trees augmented with tall evergreen shrubs. The community will be buffered from Interstate 24 by over one hundred feet of preserved forest which includes the cave at Military Spring.

Vehicular access to the site will use the gated entrance on Manson Pike, and an emergency connection to Hallmark road will be gated to every day traffic. Parking lots are kept to the site interior and will be screened from exterior views.



SITE PLAN-EXISTING TOPOGRAPHY



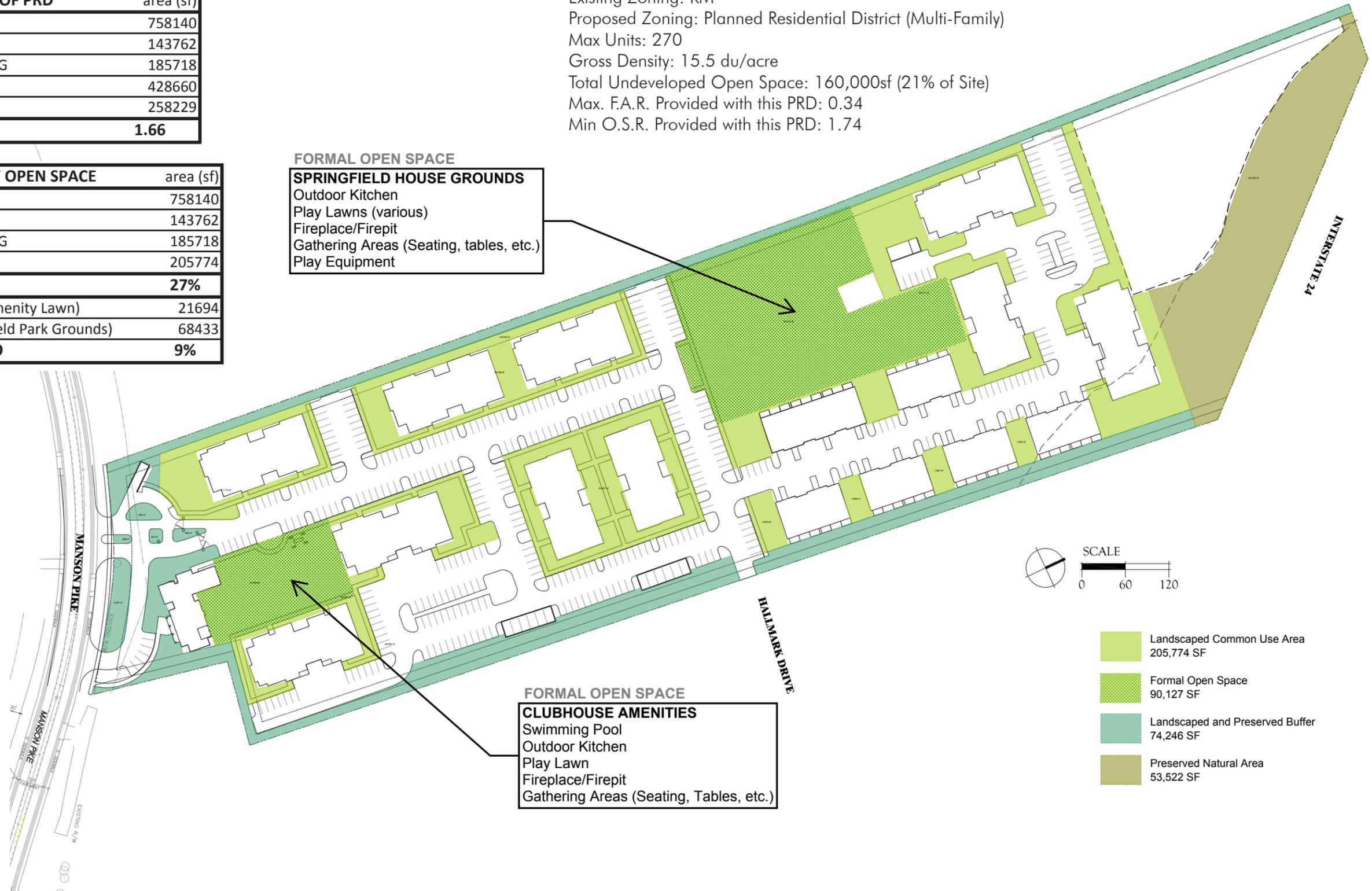
OPEN SPACE CALCULATIONS

(O.S.R.) OPEN SPACE RATIO OF PRD	area (sf)
TOTAL SITE	758140
TOTAL BUILDING COVERAGE	143762
TOTAL DRIVEWAY AND PARKING	185718
TOTAL OPEN SPACE	428660
TOTAL FLOOR AREA	258229
OPEN SPACE RATIO	1.66

GATEWAY DESIGN OVERLAY OPEN SPACE	area (sf)
TOTAL SITE	758140
TOTAL BUILDING COVERAGE	143762
TOTAL DRIVEWAY AND PARKING	185718
TOTAL COMMON USE AREA	205774
OPEN SPACE RATIO	27%
FORMAL OPEN SPACE (Pool, Amenity Lawn)	21694
FORMAL OPEN SPACE (Springfield Park Grounds)	68433
FORMAL OPEN SPACE RATIO	9%

SITE DATA:

Total Acres: +/- 17.4
 Existing Zoning: RM
 Proposed Zoning: Planned Residential District (Multi-Family)
 Max Units: 270
 Gross Density: 15.5 du/acre
 Total Undeveloped Open Space: 160,000sf (21% of Site)
 Max. F.A.R. Provided with this PRD: 0.34
 Min O.S.R. Provided with this PRD: 1.74



FORMAL OPEN SPACE
SPRINGFIELD HOUSE GROUNDS
 Outdoor Kitchen
 Play Lawns (various)
 Fireplace/Firepit
 Gathering Areas (Seating, tables, etc.)
 Play Equipment

FORMAL OPEN SPACE
CLUBHOUSE AMENITIES
 Swimming Pool
 Outdoor Kitchen
 Play Lawn
 Fireplace/Firepit
 Gathering Areas (Seating, Tables, etc.)

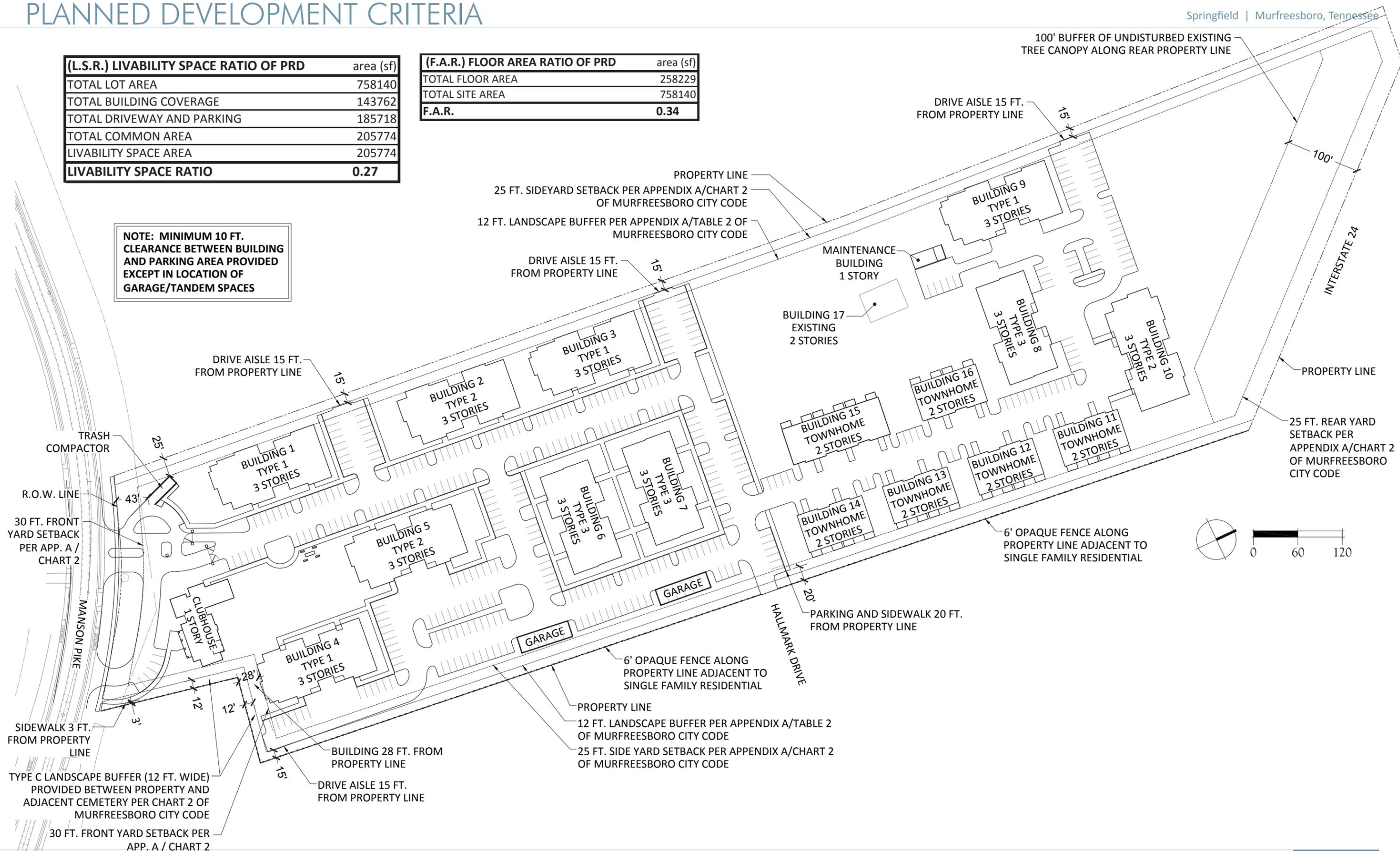
- Landscaped Common Use Area
205,774 SF
- Formal Open Space
90,127 SF
- Landscaped and Preserved Buffer
74,246 SF
- Preserved Natural Area
53,522 SF

PLANNED DEVELOPMENT CRITERIA

(L.S.R.) LIVABILITY SPACE RATIO OF PRD	area (sf)
TOTAL LOT AREA	758140
TOTAL BUILDING COVERAGE	143762
TOTAL DRIVEWAY AND PARKING	185718
TOTAL COMMON AREA	205774
LIVABILITY SPACE AREA	205774
LIVABILITY SPACE RATIO	0.27

(F.A.R.) FLOOR AREA RATIO OF PRD	area (sf)
TOTAL FLOOR AREA	258229
TOTAL SITE AREA	758140
F.A.R.	0.34

NOTE: MINIMUM 10 FT. CLEARANCE BETWEEN BUILDING AND PARKING AREA PROVIDED EXCEPT IN LOCATION OF GARAGE/TANDEM SPACES



PARKING CALCULATIONS

PARKING SUMMARY PROPOSED FOR THIS PRD	
Surface	388
Garage (To be regulated for parking only)	81
Tandem (Exception to allow for tandem spaces)	69
Tandem (25% not credited)	-18
TOTAL	520

REQUIRED PER MURFREESBORO ZONING ORDINANCE		
# UNITS	Parking Code	Totals
91	1 BEDROOM X 1.5	137
144	2 BEDROOMS X 2.2	317
35	3 BEDROOMS X 3.3	116
TOTAL =		570

ADA Parking Required	
Parking Need	530
2% ADA	11
Van Accessible	2

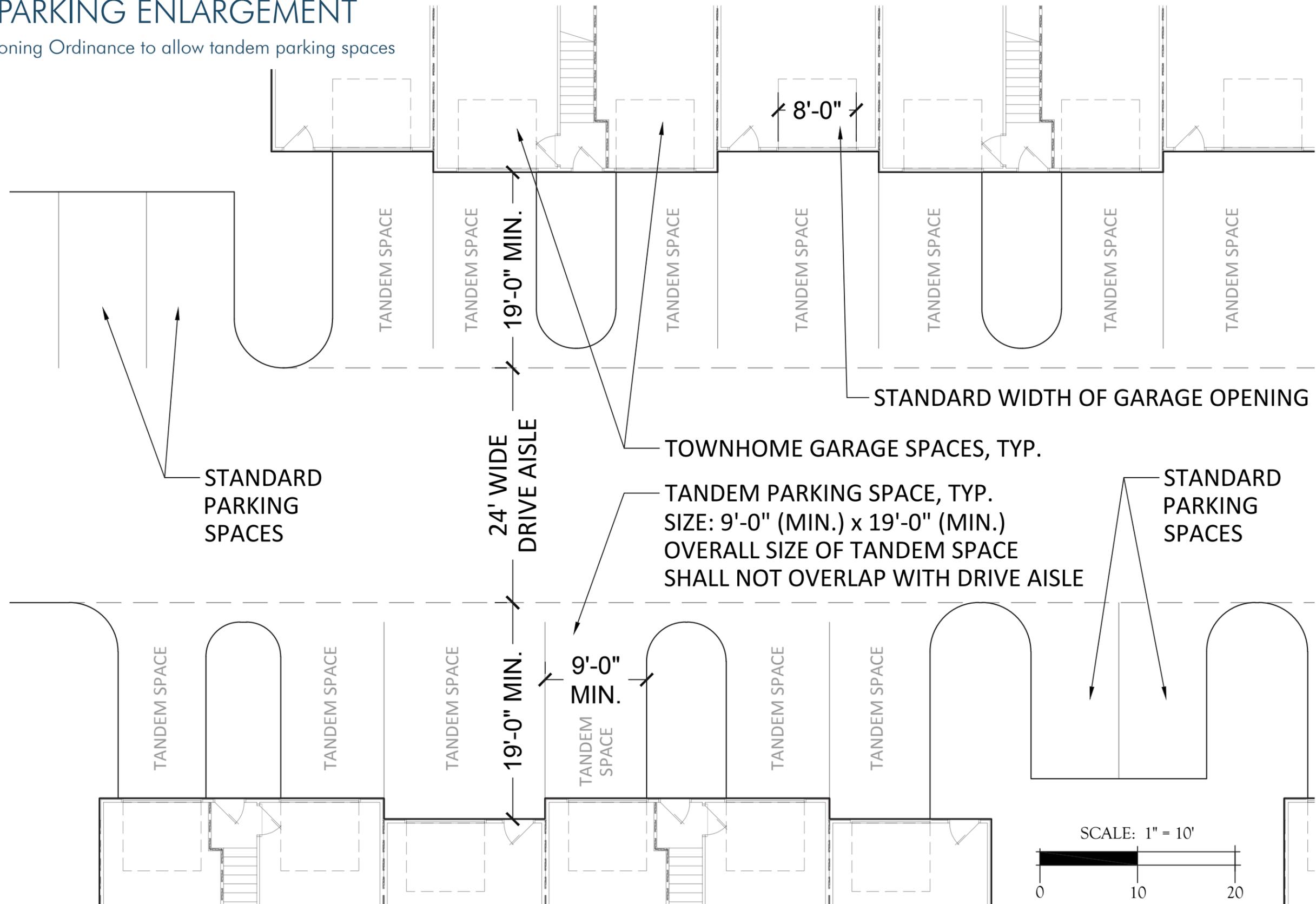
Note:

- Garage primary use shall be vehicular parking.
- Zoning Ordinance to allow tandem parking spaces

PARKING COMPARISONS TO SIMILAR MULTI-FAMILY DEVELOPMENTS												
Project Name	Location	Number of Bedrooms			Total Units	Total Bedrooms	Surface	Garage	Tandem	Total	Total Parking/Unit	Total Parking/Bedroom
		1	2	3								
SPRINGFIELD APARTMENTS	Murfreesboro, TN	91	144	35	270	484	388	81	51	520	1.93	1.07
Tapestry Park	Birmingham, AL	78	42	11	131	195	225	0	0	225	1.72	1.15
Tapestry at Citrus Park	Tampa, FL	132	204	64	400	732	397	184	176	757	1.89	1.03
Tapestry Lake Park	Tampa, FL	60	93	24	177	318	222	65	49	336	1.90	1.06
Tapestry at Hollingsworth Park	Greenville, SC	82	122	38	242	440	289	58	58	405	1.67	0.92
Tapestry Long Farms	Baton Rouge, LA	99	141	36	276	489	381	49	49	479	1.74	0.98
Velo Verdae	Greenville, SC	86	126	50	262	488	286	77	77	440	1.68	0.90

TANDEM PARKING ENLARGEMENT

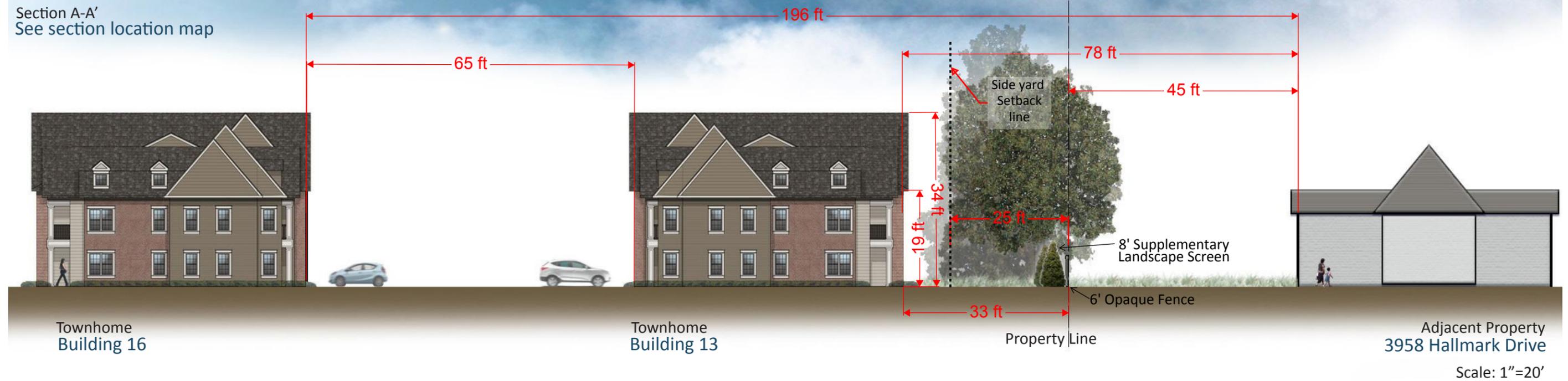
Exception from Zoning Ordinance to allow tandem parking spaces



SECTIONS-ADJACENT CONTEXT

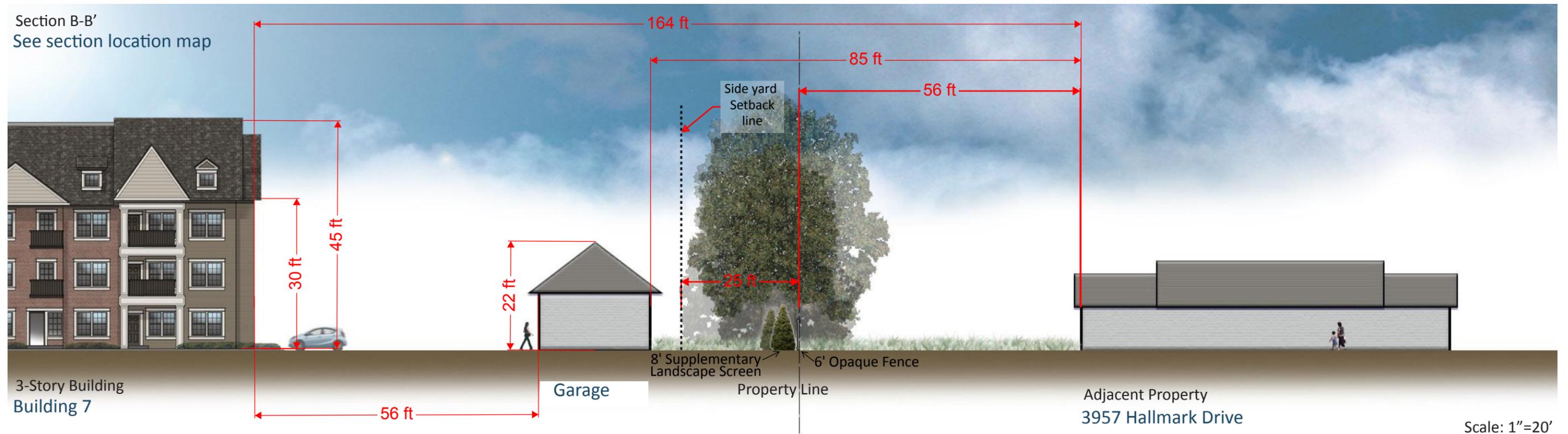
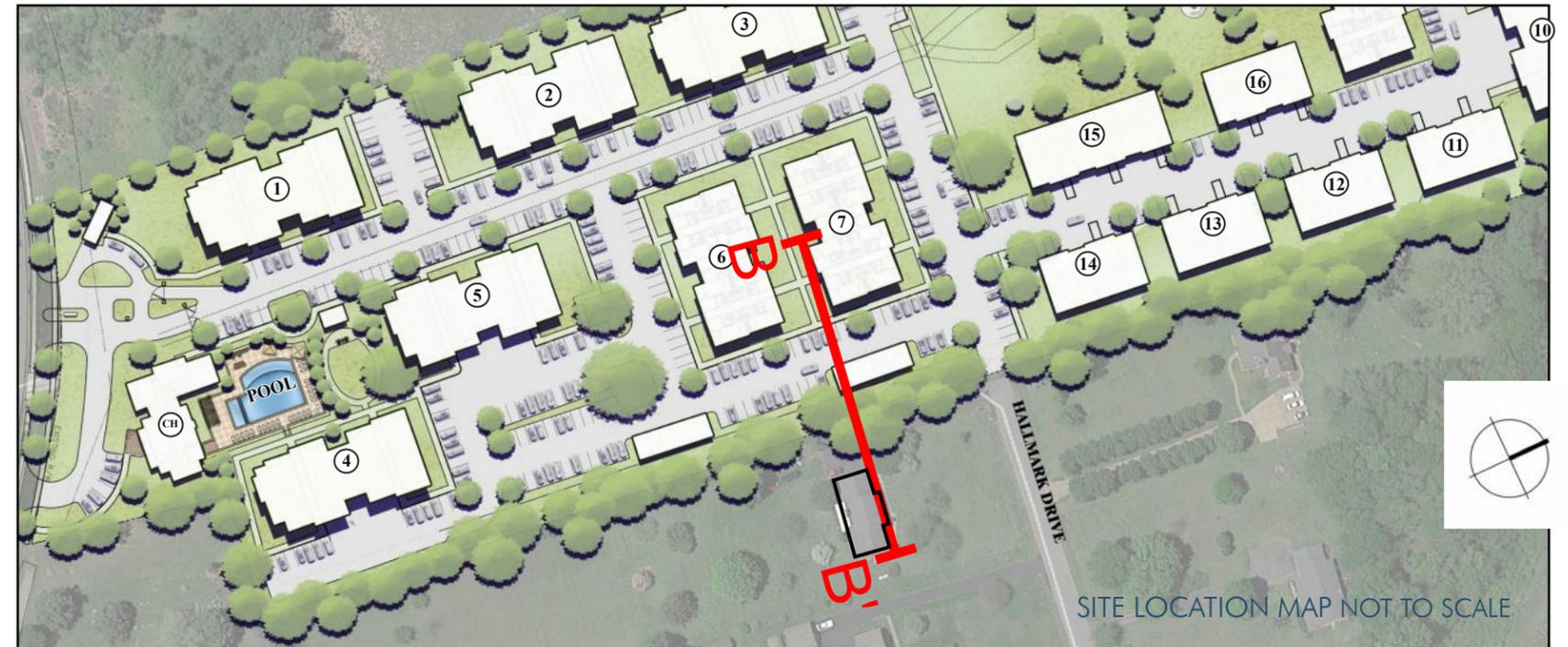


Section A-A'
See section location map



NOTE: All dimensions are approximate

SECTIONS-ADJACENT CONTEXT



NOTE: All dimensions are approximate

SITE DATA / SITE UNITS

SITE DATA:

Total Acres: +/- 17.4
 Existing Zoning: RM
 Proposed Zoning: Planned Residential District (Multi-Family)
 Max Units: 270
 Gross Density: 15.5 du/acre
 Total Undeveloped Open Space: 160,000sf (21% of Site)
 Max. F.A.R. Provided with this PRD: 0.34
 Min O.S.R. Provided with this PRD: 1.74



TYPE 1 UNITS: 3 Story Building



TYPE 3 UNITS: 3 Story Building



NOTE: dormers are not windows into inhabitable space, shown for architectural detail only



TYPE 2 UNITS: 3 Story Building

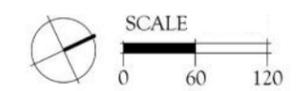


TOWNHOME UNITS: 2 Story Building



DWELLING UNITS:

TYPE 1 UNITS:	92
TYPE 2 UNITS:	68
TYPE 3 UNITS:	70
TOWNHOME UNITS:	39
SINGLE FAMILY RESIDENCE:	1
TOTAL:	270



CLUBHOUSE-ELEVATION

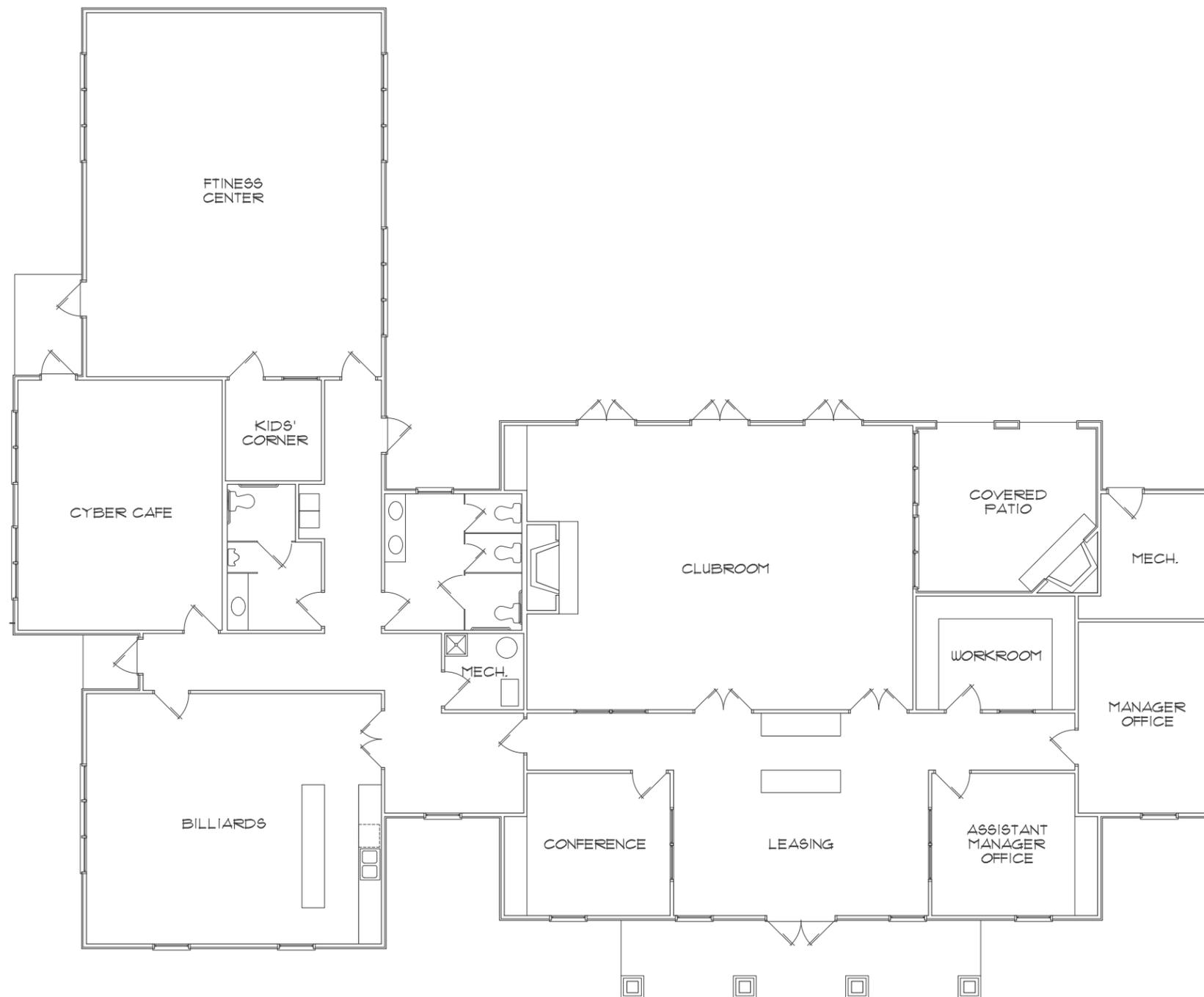


Inspiration Image

The Clubhouse

- Primarily brick and Hardie board
- The style and character of the clubhouse is consistent with the existing home.

CLUBHOUSE PLAN



NOTE: SLABS ARE 1' ABOVE FINISH GRADE ON ALL BUILDINGS

CLUBHOUSE

GROSS: 4,972 SQ. FT.

Clubhouse Amenities

- The clubroom invites residents to engage in a more formal, but comfortable setting and enjoy the views out onto the pool or enjoy a nice warm fire during cool winter days.
- The game room provides a more casual atmosphere where residents can relax, unwind, and enjoy a game of pool or watch their favorite TV programming.
- The Cyber Café is a great alternative to the conventional utilitarian Business Center. Here residents can enjoy the same functionality with a small town coffee house feel.
- A well-equipped fitness center with free weights, cardio, and resistance equipment provides something for people of all ages and physiques. The kids' corner provides plenty of entertainment so that mom and dad can get caught up on their new year's resolution.
- The covered patio provides an all year all weather amenity. Whether it's shade from the sun or the warmth of the fireplace you are seeking.

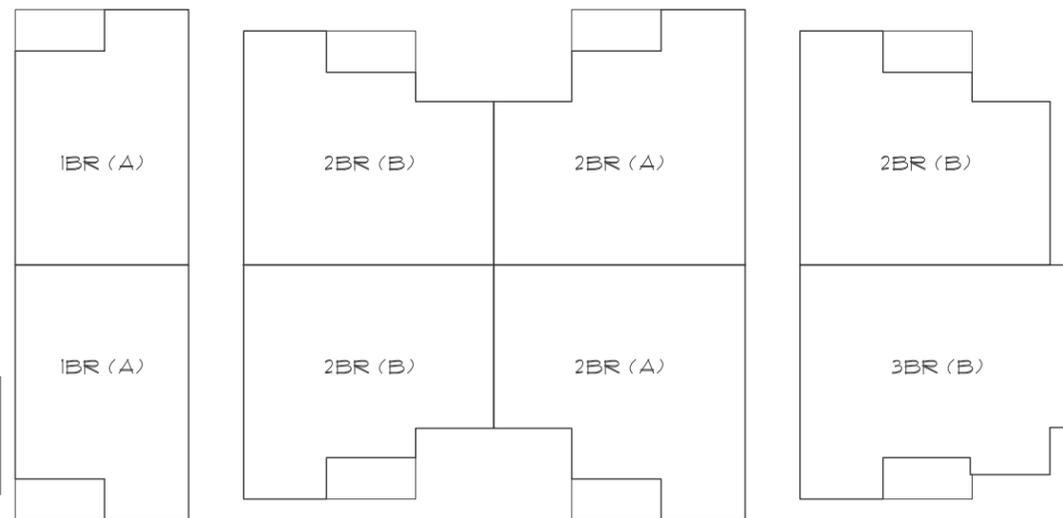
ARCHITECTURE-BUILDING TYPES 1 & 2



TYPE 1 FRONT ELEVATION
FACING INTERNAL PARKING



TYPE 1 SIDE ELEVATION
FACING MANSON PIKE



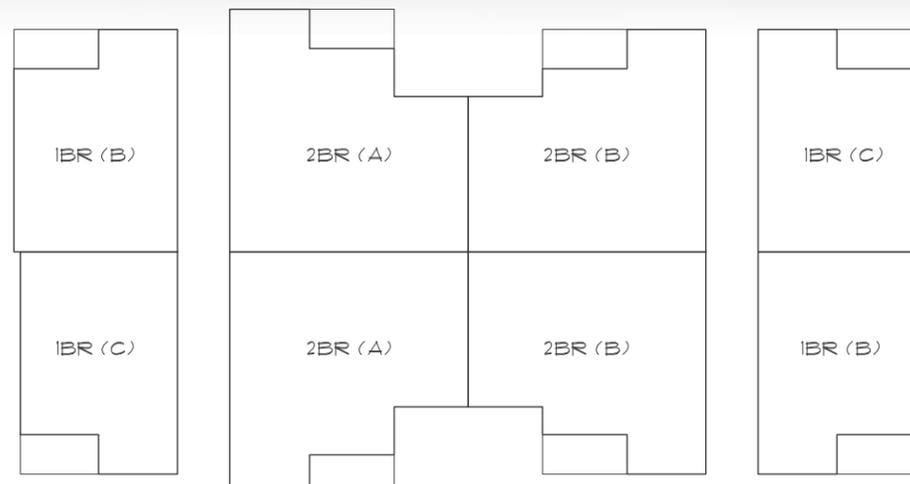
FLOOR PLAN

NOTE: SLABS ARE 1' ABOVE FINISH GRADE ON ALL BUILDINGS

Architectural Characteristics

- Primarily brick and Hardie board
- The style of architecture is designed to stay in character with the historic nature of the site and the existing home.

ARCHITECTURE-BUILDING TYPE 3



FLOOR PLAN

NOTE: SLABS ARE 1' ABOVE FINISH GRADE ON ALL BUILDINGS

Architectural Characteristics

- Buildings are a mixture of one, two and three bedroom units
- Buildings will be two or three stories in height with the building height being influenced by their location to the property lines and adjacent neighborhoods.

ARCHITECTURE-TOWNHOUSE

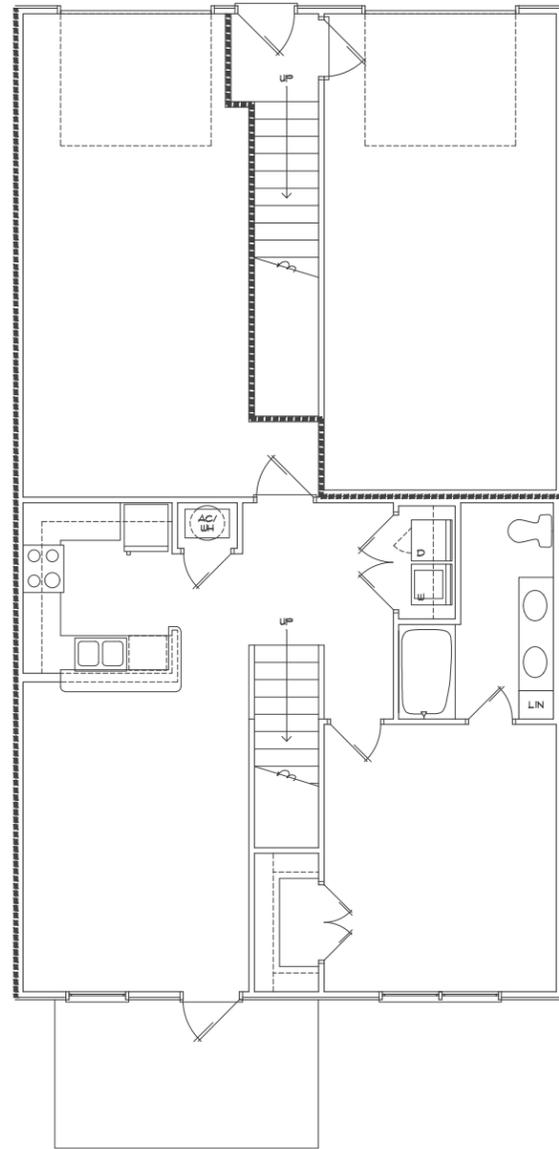


TOWNHOUSE REAR ELEVATION

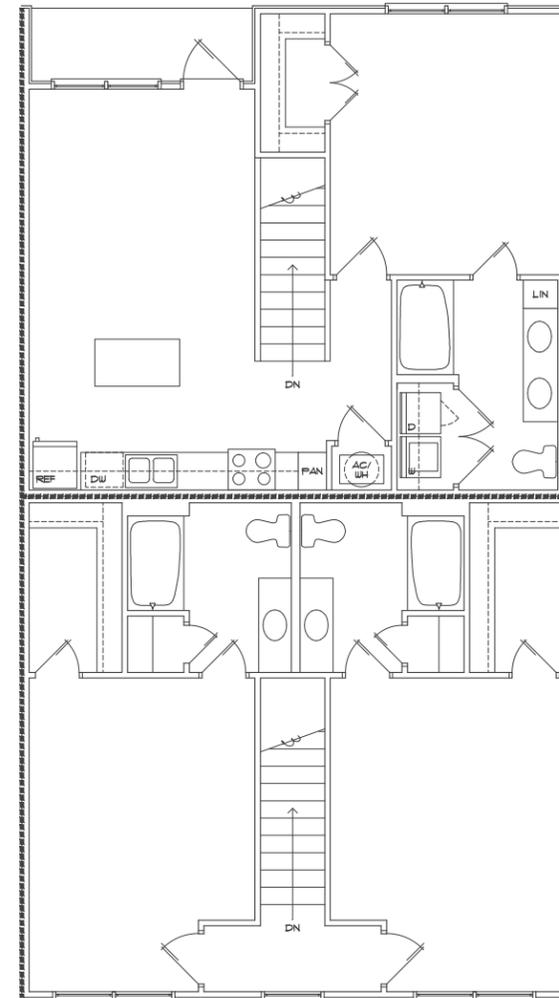


TOWNHOUSE FRONT ELEVATION

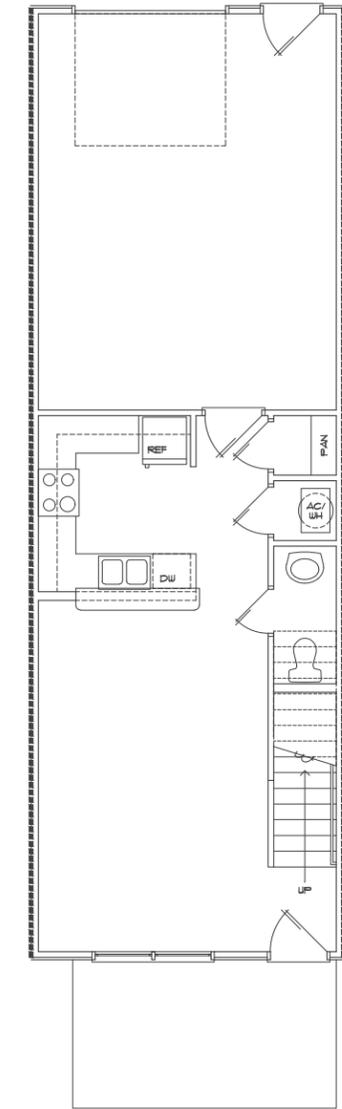
ARCHITECTURE-TOWNHOUSE FLOOR PLANS



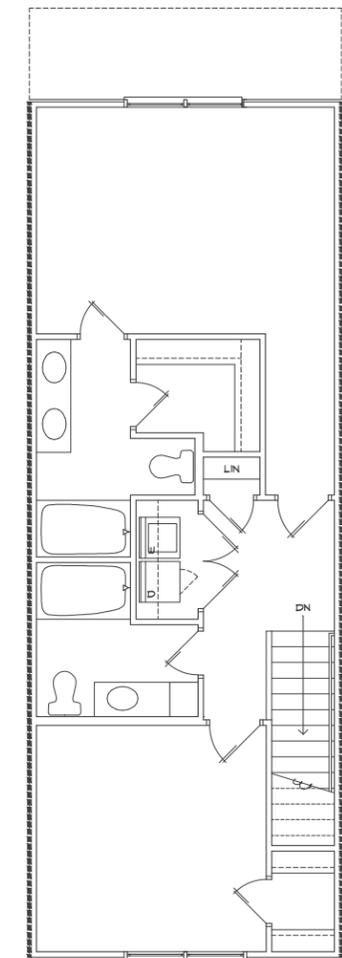
FIRST FLOOR PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN



SECOND FLOOR PLAN

3BR / 1BR TOWNHOUSE

3BR UNIT
 GROSS: 1,504 SQ. FT.
 NET: 1,420 SQ. FT.
 GARAGE: 330 SQ. FT.

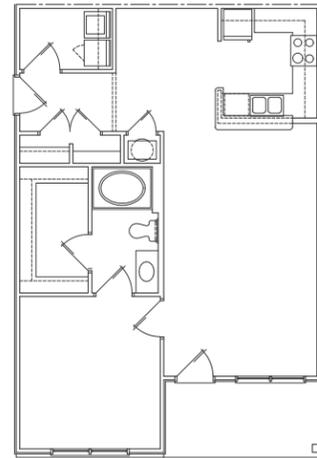
1BR UNIT
 GROSS: 737 SQ. FT.
 NET: 698 SQ. FT.
 GARAGE: 330 SQ. FT.

2BR TOWNHOUSE

GROSS: 1,206 SQ. FT.
 NET: 1,122 SQ. FT.
 GARAGE: 353 SQ. FT.

NOTE: SLABS ARE 1' ABOVE FINISH GRADE ON ALL BUILDINGS

ARCHITECTURE-UNIT FLOOR PLAN



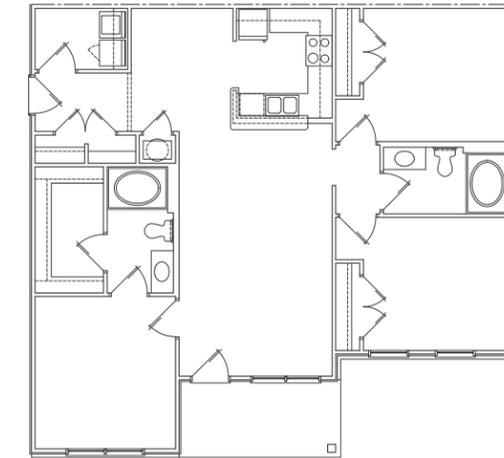
1BR (A)

GROSS: 841 SQ. FT.
NET: 811 SQ. FT.



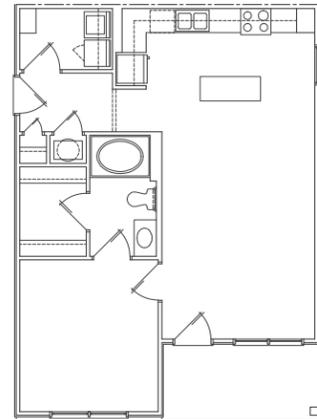
2BR (A)

GROSS: 1,122 SQ. FT.
NET: 1,070 SQ. FT.



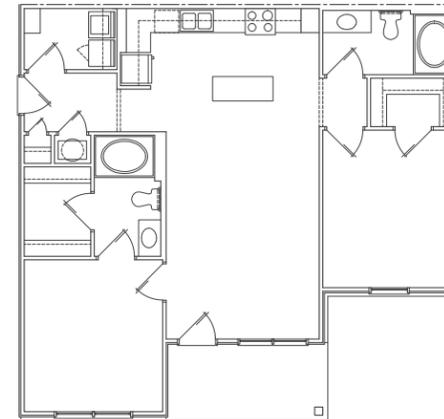
3BR (A)

GROSS: 1,276 SQ. FT.
NET: 1,221 SQ. FT.



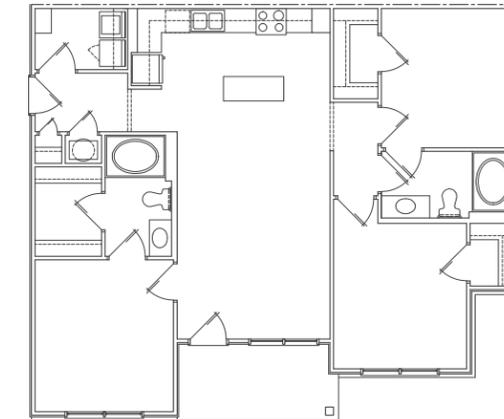
1BR (B)

GROSS: 110 SQ. FT.
NET: 130 SQ. FT.



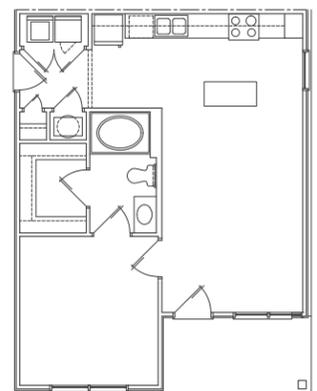
2BR (B)

GROSS: 1,038 SQ. FT.
NET: 986 SQ. FT.



3BR (B)

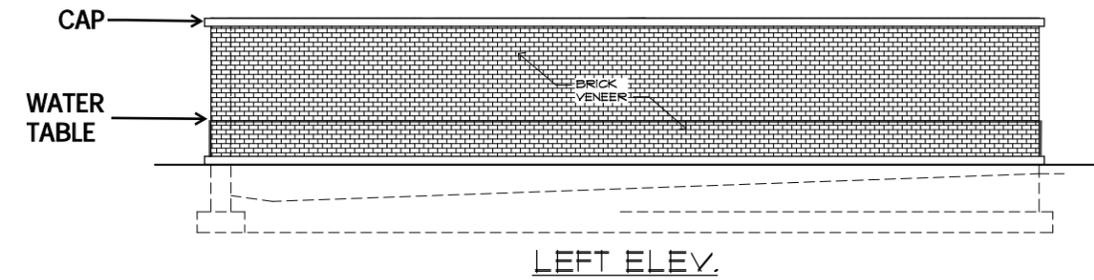
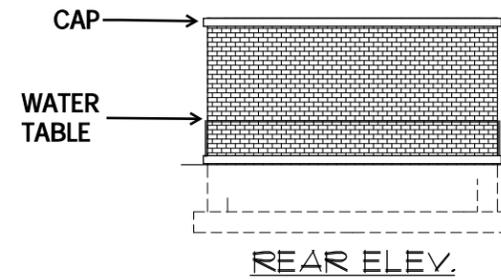
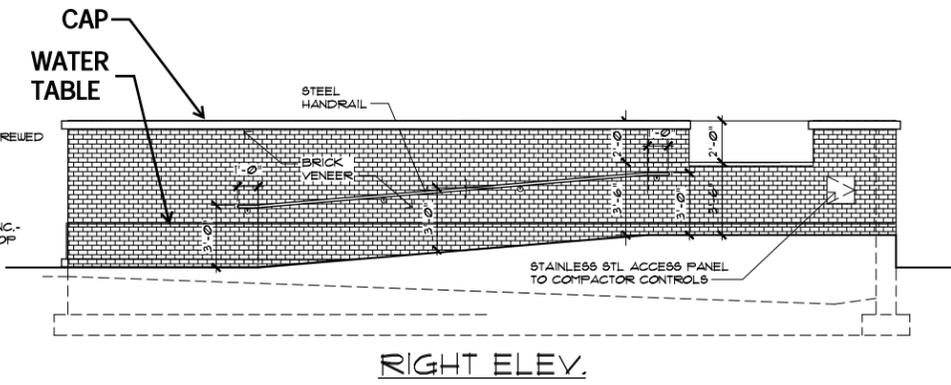
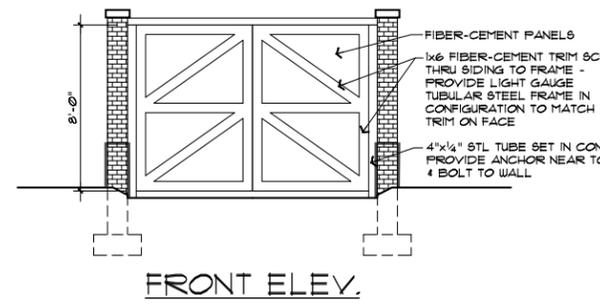
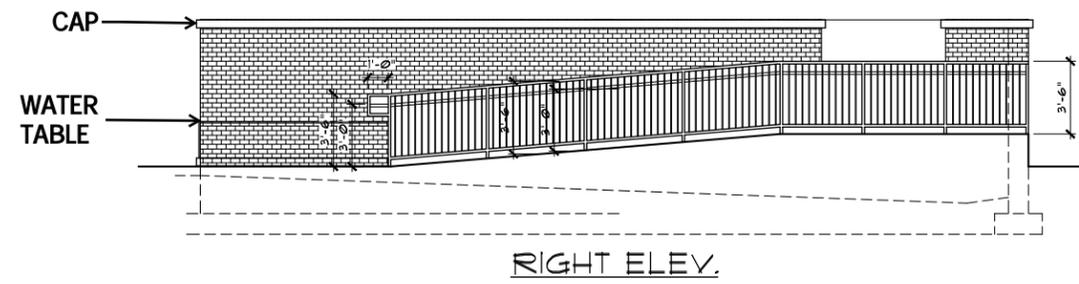
GROSS: 1,207 SQ. FT.
NET: 1,154 SQ. FT.



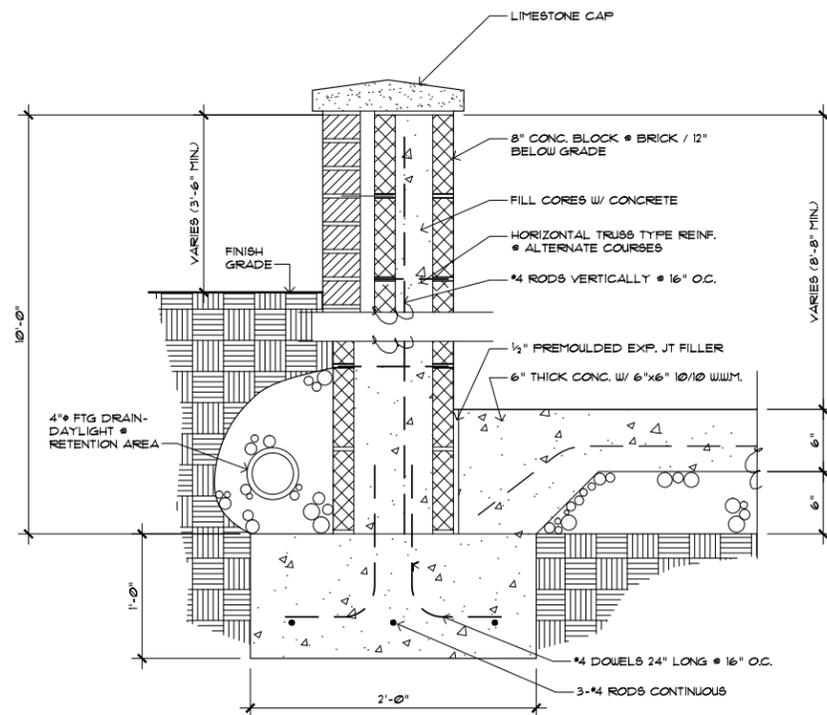
1BR (C)

GROSS: 679 SQ. FT.
NET: 641 SQ. FT.

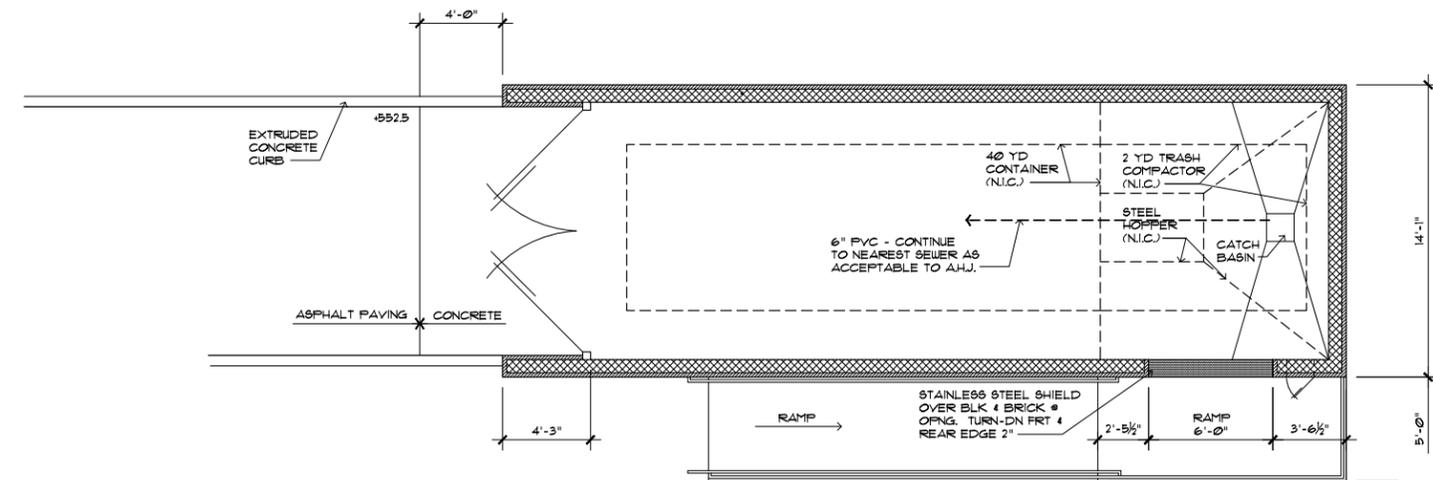
ARCHITECTURE-TRASH COMPACTOR



TRASH COMPACTOR ENCLOSURE ELEVATIONS



ENCLOSURE SECTION 'A'



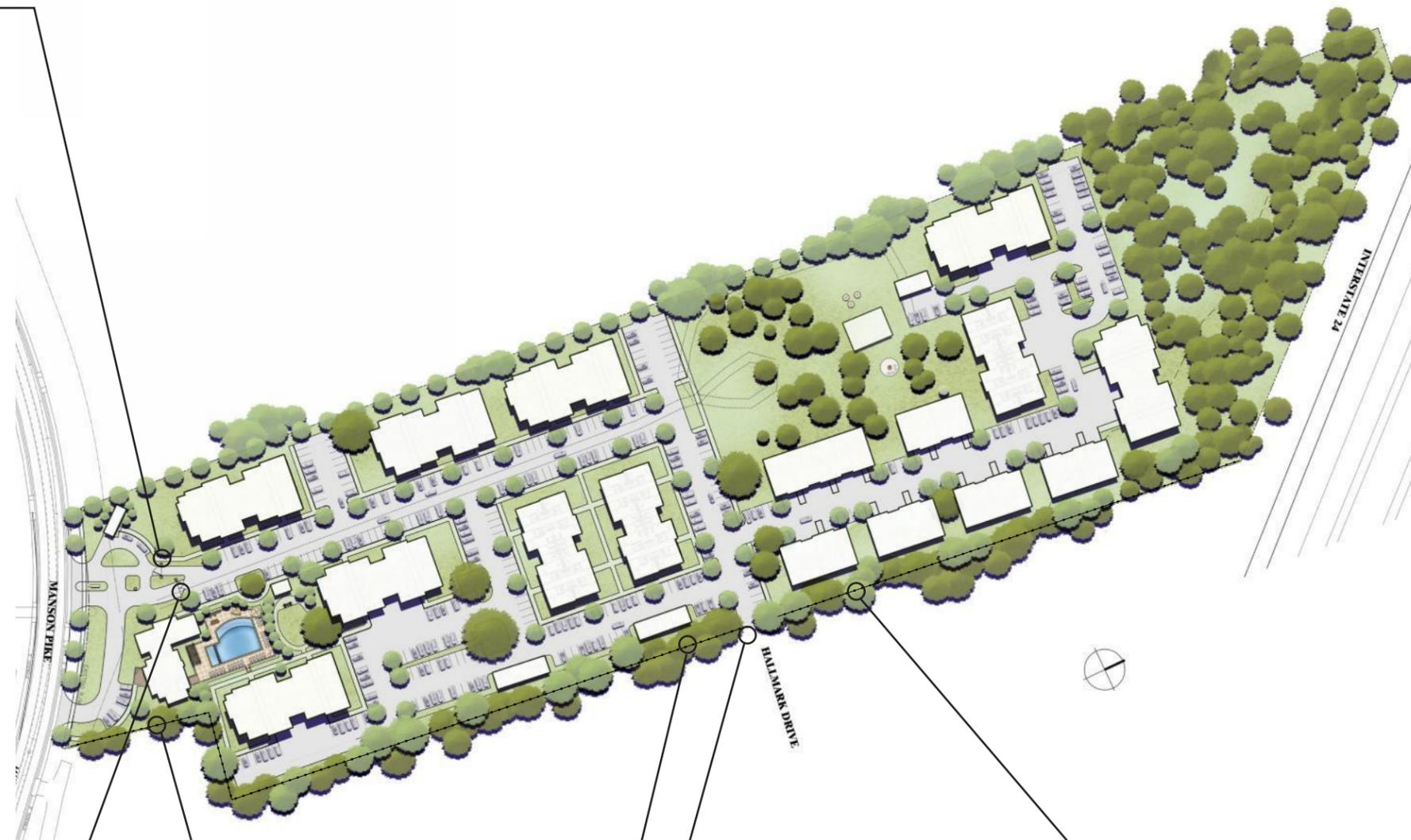
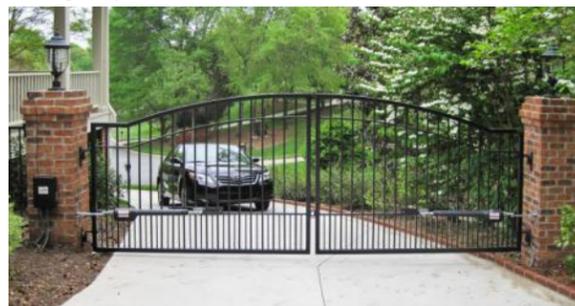
TRASH COMPACTOR ENCLOSURE PLAN

FENCE AND GATE EXHIBIT

IRON FENCE AT ENTRY DRIVE:
Gates are accessible via controlled access cards for residents and via yelp mode for emergency vehicles



IRON FENCE AT ENTRY DRIVE:
Gates are accessible via controlled access cards for residents and via yelp mode for emergency vehicles



6' HT. WOODEN PRIVACY FENCE
ALONG PROPERTY LINE ADJACENT
TO SINGLE FAMILY RESIDENTIAL

WOODEN ENTRY GATE: Gate is only operable via yelp mode for emergency vehicle access. No other vehicular traffic is allowed.



6' HT. WOODEN PRIVACY FENCE
ALONG PROPERTY LINE ADJACENT
TO SINGLE FAMILY RESIDENTIAL

SIGNAGE



Signage Character

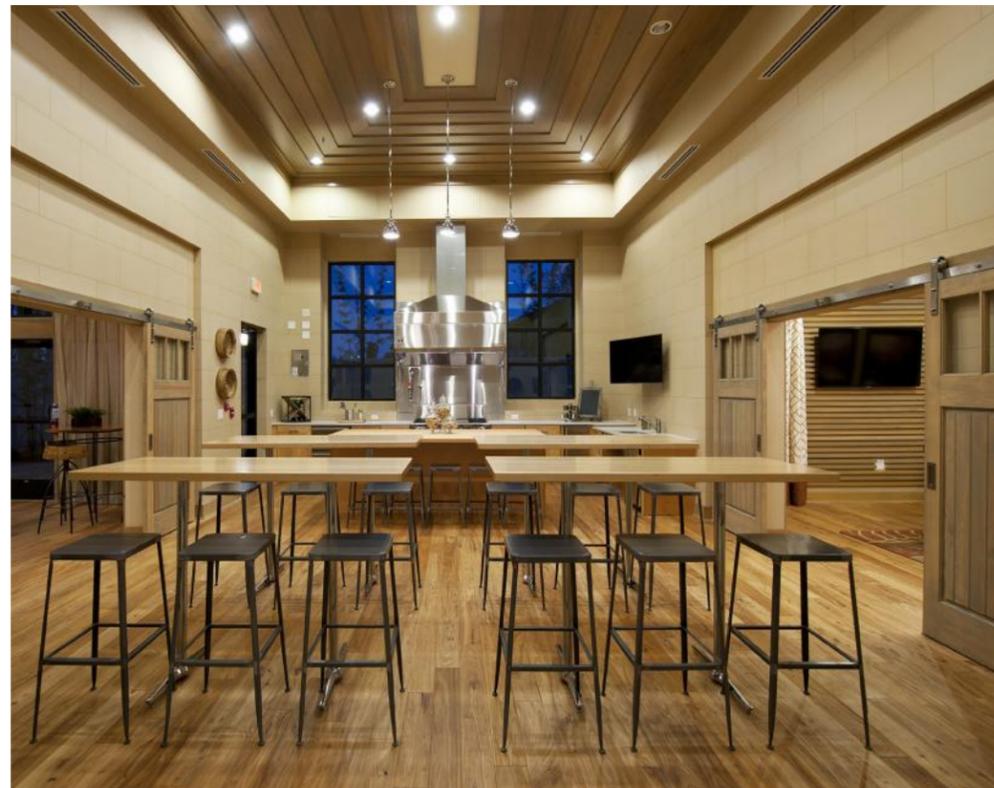
Unique, sculptural development signage, to tie in with local character, accented by striking landscaping; and to comply with GDO requirements.

LUXURY OUTDOOR AMENITIES



- Resort style pool area with multiple gathering areas to build community among the residents
- Outdoor dining, fire pit, and custom arbors provide multi-purpose gathering spaces for residents
- Green space to include open lawn activity areas to provide residents with an opportunity to be active outdoors.
- A designated pet area

CLUBHOUSE CHARACTER



LOCAL PLANT PALETTE



Regal Mist Muhly
Muhlenbergia capillaris 'Lenca'



Adagio Maiden Grass
Miscanthus sinensis 'Adagio'



Carissa Holly
Ilex cornuta 'Carissa'



Natchez Crape Myrtle
Lagerstroemia indica x fauriei 'Natchez'



Oakleaf Hydrangea
Hydrangea quercifolia



Yew, *Taxus x media 'Densiformis'*



Eastern Redbud
Cercis canadensis



Claudia Wannamaker Magnolia
Magnolia grandiflora 'Claudia Wannamaker'



Nellie R. Stevens Holly
Ilex 'Nellie R. Stevens'



Encore Azalea Autumn Lily
Azalea x Encore Azalea 'Autumn Lily'



Emerald Snow Loropetalum
Loropetalum chinense 'Shang white'



Arborvitae
Thuja 'Green Giant'



Australis Bay Magnolia
Magnolia virginiana 'Australis'



Willow Oak
Quercus phellos



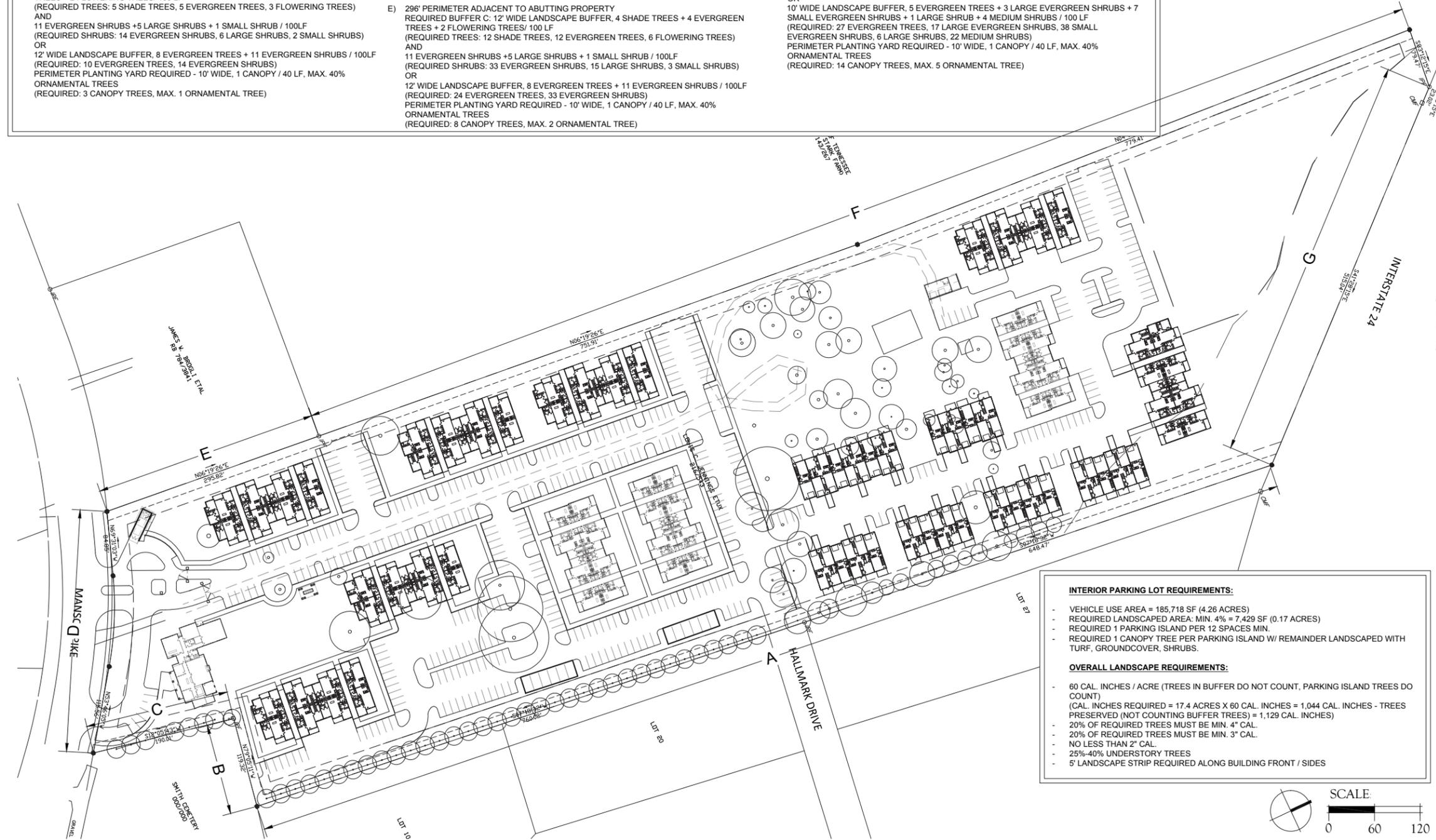
Nuttall Oak
Quercus nuttallii



Idyllwild Eastern Red Cedar
Juniperus virginiana 'Idyllwild'

SECTION 27 LANDSCAPE COMPLIANCE PLAN

LANDSCAPE BUFFER / PERIMETER LANDSCAPE REQUIREMENTS:		
<p>A) 1408' PERIMETER ADJACENT TO ABUTTING PROPERTY REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES / 100 LF (REQUIRED TREES: 57 SHADE TREES, 57 EVERGREEN TREES, 29 FLOWERING TREES) AND 11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF (REQUIRED SHRUBS: 155 EVERGREEN SHRUBS, 71 LARGE SHRUBS, 15 SMALL SHRUBS) OR 12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF (REQUIRED: 113 EVERGREEN TREES, 155 EVERGREEN SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 36 CANOPY TREES, MAX. 14 ORNAMENTAL TREES)</p> <p>B) 120' PERIMETER ADJACENT TO ABUTTING PROPERTY REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES / 100 LF (REQUIRED TREES: 5 SHADE TREES, 5 EVERGREEN TREES, 3 FLOWERING TREES) AND 11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF (REQUIRED SHRUBS: 14 EVERGREEN SHRUBS, 6 LARGE SHRUBS, 2 SMALL SHRUBS) OR 12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF (REQUIRED: 10 EVERGREEN TREES, 14 EVERGREEN SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 3 CANOPY TREES, MAX. 1 ORNAMENTAL TREE)</p>	<p>C) 191' PERIMETER ADJACENT TO ABUTTING PROPERTY REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES / 100 LF (REQUIRED TREES: 8 SHADE TREES, 8 EVERGREEN TREES, 4 FLOWERING TREES) AND 11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF (REQUIRED SHRUBS: 22 EVERGREEN SHRUBS, 10 LARGE SHRUBS, 2 SMALL SHRUBS) OR 12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF (REQUIRED: 16 EVERGREEN TREES, 22 EVERGREEN SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 5 CANOPY TREES, MAX. 2 ORNAMENTAL TREE)</p> <p>D) 321' STREET FRONTAGE - 68' ENTRANCE DRIVES = 253' STREET FRONTAGE LANDSCAPE AS REQUIRED BY GATEWAY STREETSCAPE MASTER PLAN REQUIRED 30' FRONT YARD: 1 CANOPY TREE / 50 LF OF STREET FRONTAGE LANDSCAPE (REQUIRED FRONTAGE TREES: 6 CANOPY TREES)</p> <p>E) 296' PERIMETER ADJACENT TO ABUTTING PROPERTY REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES / 100 LF (REQUIRED TREES: 12 SHADE TREES, 12 EVERGREEN TREES, 6 FLOWERING TREES) AND 11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF (REQUIRED SHRUBS: 33 EVERGREEN SHRUBS, 15 LARGE SHRUBS, 3 SMALL SHRUBS) OR 12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF (REQUIRED: 24 EVERGREEN TREES, 33 EVERGREEN SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 8 CANOPY TREES, MAX. 2 ORNAMENTAL TREE)</p>	<p>F) 1531' PERIMETER ADJACENT TO ABUTTING PROPERTY REQUIRED BUFFER A: 10' WIDE LANDSCAPE BUFFER, 4 EVERGREEN TREES + 2 SHADE TREES + 2 ORNAMENTAL TREES / 100LF (REQUIRED TREES: 62 EVERGREEN TREES, 31 SHADE TREES, 31 ORNAMENTAL TREES) OR 10' WIDE LANDSCAPE BUFFER, 5 EVERGREEN TREES + 3 LARGE EVERGREEN SHRUBS + 7 SMALL EVERGREEN SHRUBS + 1 LARGE SHRUB + 4 MEDIUM SHRUBS / 100 LF (REQUIRED: 77 EVERGREEN TREES, 46 LARGE EVERGREEN SHRUBS, 108 SMALL EVERGREEN SHRUBS, 16 LARGE SHRUBS, 62 MEDIUM SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 39 CANOPY TREES, MAX. 15 ORNAMENTAL TREE)</p> <p>G) 539' PERIMETER ADJACENT TO I-24 REQUIRED BUFFER A: 10' WIDE LANDSCAPE BUFFER, 4 EVERGREEN TREES + 2 SHADE TREES + 2 ORNAMENTAL TREES / 100LF (REQUIRED TREES: 22 EVERGREEN TREES, 11 SHADE TREES, 11 ORNAMENTAL TREES) OR 10' WIDE LANDSCAPE BUFFER, 5 EVERGREEN TREES + 3 LARGE EVERGREEN SHRUBS + 7 SMALL EVERGREEN SHRUBS + 1 LARGE SHRUB + 4 MEDIUM SHRUBS / 100 LF (REQUIRED: 27 EVERGREEN TREES, 17 LARGE EVERGREEN SHRUBS, 38 SMALL EVERGREEN SHRUBS, 6 LARGE SHRUBS, 22 MEDIUM SHRUBS) PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES (REQUIRED: 14 CANOPY TREES, MAX. 5 ORNAMENTAL TREE)</p>



INTERIOR PARKING LOT REQUIREMENTS:

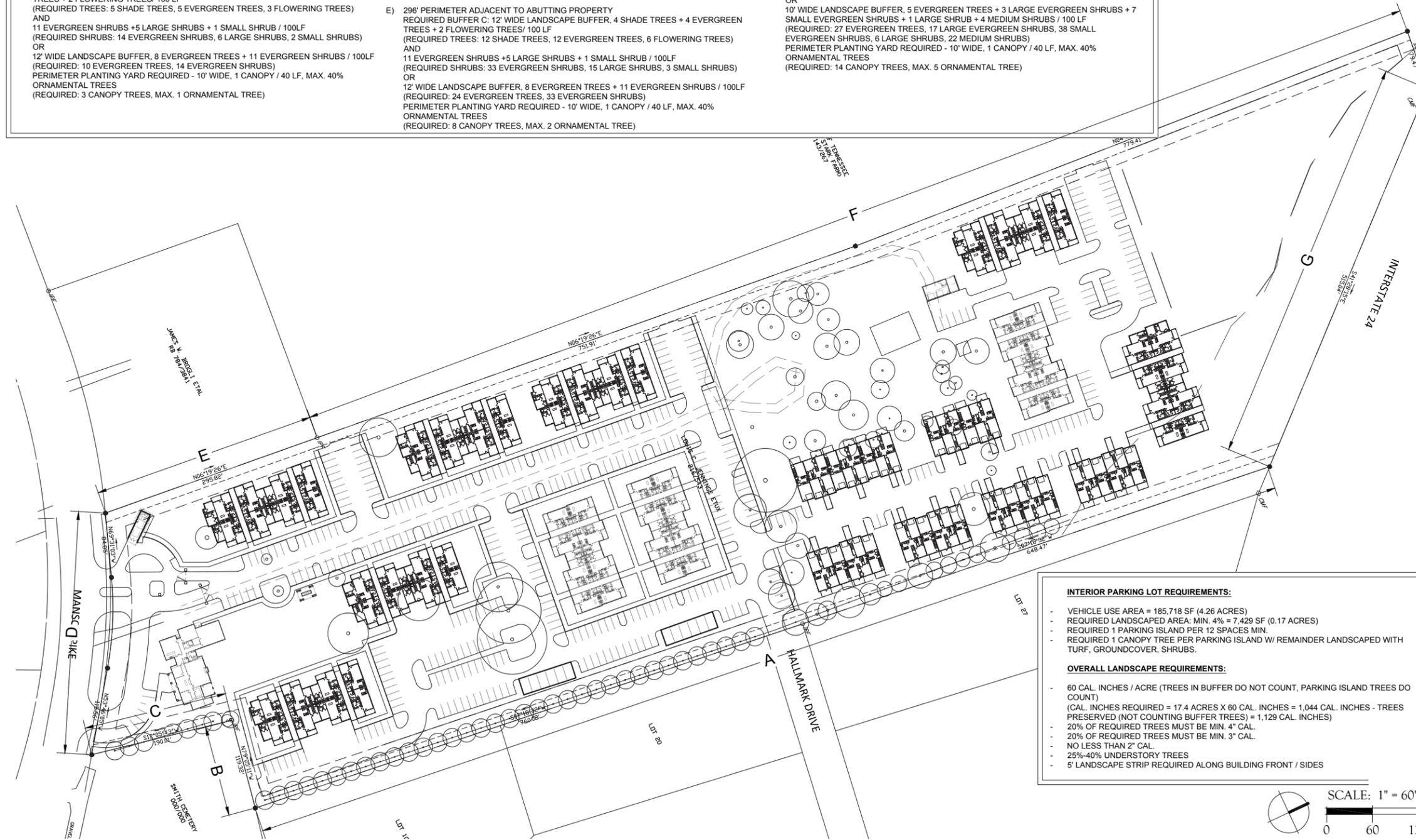
- VEHICLE USE AREA = 185,718 SF (4.26 ACRES)
- REQUIRED LANDSCAPED AREA: MIN. 4% = 7,429 SF (0.17 ACRES)
- REQUIRED 1 PARKING ISLAND PER 12 SPACES MIN.
- REQUIRED 1 CANOPY TREE PER PARKING ISLAND W/ REMAINDER LANDSCAPED WITH TURF, GROUNDCOVER, SHRUBS.

OVERALL LANDSCAPE REQUIREMENTS:

- 60 CAL. INCHES / ACRE (TREES IN BUFFER DO NOT COUNT, PARKING ISLAND TREES DO COUNT)
- (CAL. INCHES REQUIRED = 17.4 ACRES X 60 CAL. INCHES = 1,044 CAL. INCHES - TREES PRESERVED (NOT COUNTING BUFFER TREES) = 1,129 CAL. INCHES)
- 20% OF REQUIRED TREES MUST BE MIN. 4" CAL.
- 20% OF REQUIRED TREES MUST BE MIN. 3" CAL.
- NO LESS THAN 2" CAL.
- 25%-40% UNDERSTORY TREES
- 5' LANDSCAPE STRIP REQUIRED ALONG BUILDING FRONT / SIDES

SECTION 27 TREE PRESERVATION PLAN

- LANDSCAPE BUFFER / PERIMETER LANDSCAPE REQUIREMENTS:**
- A) 1408' PERIMETER ADJACENT TO ABUTTING PROPERTY
REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES/ 100 LF
(REQUIRED TREES: 57 SHADE TREES, 57 EVERGREEN TREES, 29 FLOWERING TREES)
AND
11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF
(REQUIRED SHRUBS: 155 EVERGREEN SHRUBS, 71 LARGE SHRUBS, 15 SMALL SHRUBS)
OR
12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF
(REQUIRED: 113 EVERGREEN TREES, 155 EVERGREEN SHRUBS)
PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES
(REQUIRED: 36 CANOPY TREES, MAX. 14 ORNAMENTAL TREES)
 - B) 120' PERIMETER ADJACENT TO ABUTTING PROPERTY
REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES/ 100 LF
(REQUIRED TREES: 5 SHADE TREES, 5 EVERGREEN TREES, 3 FLOWERING TREES)
AND
11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF
(REQUIRED SHRUBS: 14 EVERGREEN SHRUBS, 6 LARGE SHRUBS, 2 SMALL SHRUBS)
OR
12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF
(REQUIRED: 10 EVERGREEN TREES, 14 EVERGREEN SHRUBS)
PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES
(REQUIRED: 3 CANOPY TREES, MAX. 1 ORNAMENTAL TREE)
 - C) 191' PERIMETER ADJACENT TO ABUTTING PROPERTY
REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES/ 100 LF
(REQUIRED TREES: 8 SHADE TREES, 8 EVERGREEN TREES, 4 FLOWERING TREES)
AND
11 EVERGREEN SHRUBS + 5 LARGE SHRUBS + 1 SMALL SHRUB / 100LF
(REQUIRED SHRUBS: 22 EVERGREEN SHRUBS, 10 LARGE SHRUBS, 2 SMALL SHRUBS)
OR
12' WIDE LANDSCAPE BUFFER, 8 EVERGREEN TREES + 11 EVERGREEN SHRUBS / 100LF
(REQUIRED: 16 EVERGREEN TREES, 22 EVERGREEN SHRUBS)
PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES
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 - D) 321' STREET FRONTAGE - 68' ENTRANCE DRIVES = 253' STREET FRONTAGE LANDSCAPE AS REQUIRED BY GATEWAY STREETSCAPE MASTER PLAN
REQUIRED 30' FRONT YARD: 1 CANOPY TREE / 50 LF OF STREET FRONTAGE LANDSCAPE
(REQUIRED FRONTAGE TREES: 6 CANOPY TREES)
 - E) 296' PERIMETER ADJACENT TO ABUTTING PROPERTY
REQUIRED BUFFER C: 12' WIDE LANDSCAPE BUFFER, 4 SHADE TREES + 4 EVERGREEN TREES + 2 FLOWERING TREES/ 100 LF
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REQUIRED BUFFER A: 10' WIDE LANDSCAPE BUFFER, 4 EVERGREEN TREES + 2 SHADE TREES + 2 ORNAMENTAL TREES / 100LF
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10' WIDE LANDSCAPE BUFFER, 5 EVERGREEN TREES + 3 LARGE EVERGREEN SHRUBS + 7 SMALL EVERGREEN SHRUBS + 1 LARGE SHRUB + 4 MEDIUM SHRUBS / 100 LF
(REQUIRED: 27 EVERGREEN TREES, 17 LARGE EVERGREEN SHRUBS, 38 SMALL EVERGREEN SHRUBS, 6 LARGE SHRUBS, 22 MEDIUM SHRUBS)
PERIMETER PLANTING YARD REQUIRED - 10' WIDE, 1 CANOPY / 40 LF, MAX. 40% ORNAMENTAL TREES
(REQUIRED: 14 CANOPY TREES, MAX. 5 ORNAMENTAL TREE)



- INTERIOR PARKING LOT REQUIREMENTS:**
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 - REQUIRED LANDSCAPED AREA: MIN. 4% = 7,429 SF (0.17 ACRES)
 - REQUIRED 1 PARKING ISLAND PER 12 SPACES MIN.
 - REQUIRED 1 CANOPY TREE PER PARKING ISLAND W/ REMAINDER LANDSCAPED WITH TURF, GROUNDCOVER, SHRUBS.
- OVERALL LANDSCAPE REQUIREMENTS:**
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 - 20% OF REQUIRED TREES MUST BE MIN. 4" CAL.
 - 20% OF REQUIRED TREES MUST BE MIN. 3" CAL.
 - NO LESS THAN 2" CAL.
 - 25%-40% UNDERSTORY TREES
 - 5' LANDSCAPE STRIP REQUIRED ALONG BUILDING FRONT / SIDES

PLANNED DEVELOPMENT CRITERIA

General Applicability Per Section 13 - Planned Development Regulations

1. **Ownership and division of land:** The site is owned by Louis and Elizabeth Jennings. The lot is currently zoned RM in Rutherford County.
2. **Waiver of BZA action:** No action of the BZA shall be required for approval of this planned commercial development.
3. **Common open space:** Formal open space will be provided as required by the Gateway Overlay District
4. **Accessibility to site:** The property is accessible from Manson Pike.
5. **Off street parking .** The developer will provide ample parking spaces provided at a rate of 1.5 spaces for a one bedroom, 2 spaces for a two bedroom unit and 3 spaces for a three bedroom unit. This is an exception from the Zoning Ordinance.
6. **Pedestrian circulation:** A sidewalk will be provided along Manson Pike and connect to a network of walkways throughout the development.
7. **Privacy and screening:** Surrounding land uses to the West is owned by Middle Tennessee State University, the property to the North is Interstate 24, the property to the East is an established subdivision, the property is bordered by Manson Pike to the South. The property has substantial vegetation to the North and the East. The buffer to the East is to be preserved in order to provide a substantial separation from the adjacent neighborhood.
8. **Zoning and subdivision modifications proposed:** The property owner is requesting the property be rezoned from the current RM designation to a Planned Residential Development. Once approved as a PRD only the uses specified in this document will be permitted.
9. **Phasing:** The project shall be completed in one phase.

10. **Annexation:** Annexation is requested with this zoning request.

11. **Landscaping:** Landscaping buffers, and perimeter yard planting will be included with the site plan.

12. **Major Thoroughfare Plan:** The PRD is consistent with the Major thoroughfare plan.

13. **Applicant contact information:** Contact information is located on sheet 3

14. **Proposed Signage:** Signage location is depicted on the Conceptual Master Section 13 – Project Development Criteria Requirements

1. **Identification of existing utilities:** Shown in pattern book sheet 6

2/3. **Graphics, renderings, maps and or aerial photography showing existing conditions and natural features of the site:** Shown in pattern book sheet 5-10, 12

4/5. **Drawing and/or diagrams identifying areas of development, proposed buildings, screening, proposed landscaping and pedestrian and vehicular circulation:** Shown in pattern book 17,18,32-34

6. **Development schedule:** The project is currently being projected to start immediately upon permit acquisitions.

7. **Relationship of the planned development to current city polices and plans:** The development is consistent with the growth in the area however, it is a different use than what is projected within the Blackman Land Use Study.

8. **Proposed deviation from zoning and subdivision ordinance:** See exceptions below.

Exceptions:

- Reduced overall parking requirements as 1.5 spaces for 1 bedroom units, 2 spaces per 2 bedroom unit, and 3 spaces per 3 bedroom unit.
- Tandem parking spaces shall be included toward the overall parking requirements.
- Front building setback requirement at building 4 as indicated on the site plan.

9. **Site tabulation data for land area, FAR, LSR, and OSR:** Data provided on sheets 13, 14.

10. **The nature and extent of any overlay zones as described in Section 24 and 34:** The PRD will be in compliance with the Gateway Overlay District (GDO1)



January 4, 2016

Bonavic Development
6045 Southern Industrial Drive
Suite 200
Birmingham, Alabama 35235

Attention: Mr. Charles E. Haskett
chaskett@bonavic.com

Subject: **REPORT OF GEOTECHNICAL EXPLORATION**
Proposed Murfreesboro Apartment Site
Murfreesboro, Tennessee
GEO Services Project No. 31-151425

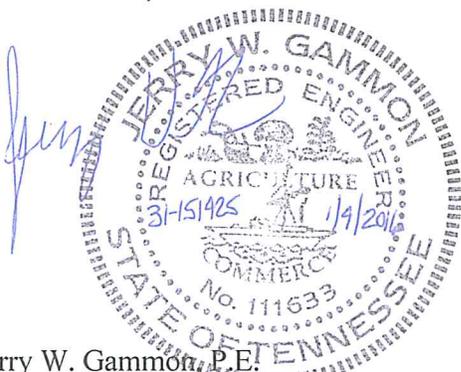
Dear Mr. Haskett:

We are submitting the results of the geotechnical exploration performed for the proposed Murfreesboro Apartment Site located in Murfreesboro, Tennessee. The geotechnical exploration was performed in accordance with GEO Services Proposal No. 13-151325Rev.1 dated November 17, 2015 and authorized by you.

The following report presents our findings and recommendations for the proposed Murfreesboro Apartment Site development. Should you have any questions regarding this report, or if we can be of any further assistance, please contact us at your convenience.

Sincerely,

GEO Services, LLC



Jerry W. Gammon, P.E.
VP, Nashville Area Manager
TN 111,633

Sammy Joe Allison
Staff Professional

Submitted to:

**Bonavic Development
6045 Southern Industrial Drive
Suite 200
Birmingham, Alabama 35235**

**REPORT OF
GEOTECHNICAL
EXPLORATION**

**PROPOSED
MURFREESBORO
APARTMENT SITE**

MURFREESBORO, TENNESSEE

Submitted by:

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**GEOSERVICES, LLC
PROJECT NO. 31-151425**

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APPENDICES

- APPENDIX A – Figures, Observation Trench Records, and Borings Logs**
- APPENDIX B – Summary of Laboratory**
- APPENDIX C – Representative Photographs**

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to characterize the subsurface conditions for the design and construction of the proposed Murfreesboro Apartment Site development in Murfreesboro, Tennessee. This report provides recommendations for general site preparation, excavation and fill requirements, and asphalt pavement thicknesses.

1.2 PROJECT INFORMATION AND SITE DESCRIPTION

Project information and a site layout plan were provided by Bonavic Development. The project will consist of a club house, fifteen multi-family buildings, and associated parking and drive areas. The proposed development is located along Manson Pike in Murfreesboro, Tennessee. Based on the supplied information, each of the multi-family structures will be two- to three-story structures. Information on the type of construction was not provided. However, based on our experience with similar construction we have assumed that the proposed structures will consist of load bearing wood framed walls with brick veneer supported by a post tension slab-on-grade within integrated foundations. We have also assumed that the proposed structures (clubhouse and apartments buildings) will have maximum column and continuous foundation loads on the order of 60 kips and 2- to 3-kips per linear foot (kpf), respectively.

Currently, the project site is occupied by two residential structures located in the center of the project site. The remainder of the site is covered with vegetation and sparse tree foliage and underbrush on the southern portion of the site, while the northern portion of the site was observed to have moderate to thick underbrush with tree foliage. Localized areas of rock outcropping were observed within the project area. The site is generally flat with a slope down

from the northern portion of the property towards the southern portion of the property. At this time, we have not been provided a proposed grading plan. Based on our site reconnaissance and the significant change in elevation across the site, we anticipate cut and fills depth of 10 feet, or less, will be required to establish anticipated planned subgrade elevation.

1.3 SCOPE OF STUDY

This geotechnical exploration involved a site reconnaissance, field exploration, and engineering analysis. The following sections of this report present discussions of the field exploration, site conditions, and conclusions and recommendations. Following the text of this report, Appendix A presents figures, observation trench test records, and boring logs. Appendix B provides laboratory tests performed and the results of these tests. Appendix C provides representative photographs of the project site

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

2.0 EXPLORATION

2.1 FIELD EXPLORATION

The site subsurface conditions were explored with thirty-two soil test borings (B-1 through B-32) and fourteen observation trenches (OT-1 through OT-14) at the approximate locations shown by Figure 3 in Appendix A. Each of the boring and observation trenches were completed within the proposed roadway infrastructure and/or planned building locations. The observation trench and boring locations and depths were selected by GEOServices. The observation trenches and borings were located in the field by GEOServices personnel by measuring distances from known site reference points.

Observation trenches were performed first on November 23rd, 2015. The depths reference the ground surface elevations at the site that existed at the time of the exploration. The observation trench locations were advanced using a mini-excavator provided by sub-contractor to GEOServices. Sampling of overburden soils was accomplished using a dynamic cone penetrometer (DCP). The observation trenches were loosely backfilled upon completion. Detailed observation trench records are presented in Appendix A.

In dynamic cone penetrometer (DCP) testing, a 1.5 inch diameter cone (45° vertex angle) is driven into the subgrade soil with a 15 pound steel mass falling 20 inches. The blows required to drive the embedded cone a depth of 1-3/4 inch have been correlated to N-values derived from the Standard Penetration Test (SPT). These DCP-values are indicated on the summary of observation trench logs at the testing depth, and provide an indication of the relative density of granular materials and strength of cohesive materials.

Drilling was performed on December 3rd through 8th, 2015. The soil test borings were advanced using 3.25-inch inside diameter hollow stem augers (HSA) and a Geoprobe mounted 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 prior to leaving the site.

In split-spoon sampling, a standard 2-inch O.D. split-spoon sampler is driven into 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 Standard Penetration Resistance (N-value). These N-values are indicated on the boring logs at the testing depth, and provide an indication of the relative density of granular materials and strength of cohesive materials.

2.2 LABORATORY TEST PROGRAM

Soil samples collected during excavation were transported to our laboratory for visual classification and laboratory testing. The following laboratory testing was performed on select samples to determine various properties of the soil:

- Natural Moisture Content (ASTM D 2216): One hundred fifty nine moisture content determinations were performed. The natural moisture content is defined as the ratio of the weight of water present in the soil to the dry weight of soil.
- Atterberg Limits (ASTM D 4318): Five Atterberg Limits tests were performed. These tests help us to confirm our visual classifications according to the AASHTO Classification System and the Unified Soil Classification System (USCS). The plastic limit and liquid limit represent the moisture content at which a cohesive soil changes from a semi-solid to a plastic state and from a plastic state to liquid state, respectively.

The test results are presented in the Soil Data Summary enclosed in Appendix B.

3.0 SUBSURFACE CONDITIONS

3.1 GEOLOGIC CONDITIONS

The subject site is located within the Central Basin Physiographic Province of Middle Tennessee. The Central Basin is an elliptical basin surrounded by the Highland Rim. The Basin is subdivided into inner and outer sections. The inner section is generally smooth and gently rolling in contrast to the higher and more deeply dissected outer Basin. Bedrock is primarily Ordovician limestone, shale and dolomite in the outer Basin. The inner basin is generally covered with limestone with patches of bare platy rock and thin topsoil with glade areas supporting red cedar trees. The region is moderate in karst development with many sinkholes and some large caves present, notably in the glade areas.

Published geologic information indicates that the areas in question lie within the Ridley Limestone of the Stones River Group. The Ridley Limestone formation is typically a brownish-gray, fine-grained limestone with minor mottling of magnesium and chert.

Since the bedrock underlying the site 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 Middle 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.

3.2 SUBSURFACE CONDITIONS

A surface layer of topsoil was encountered in each of the thirty-two soil test borings to depths ranging from 3 to 12 inches in thickness and in each of the fourteen observation trenches to depths ranging from 7 to 24 inches in thickness. Beneath the surficial layers in the soil test borings, residual soils were encountered to predetermined termination and/or auger refusal depths ranging from 5.1 to 20 feet below the existing ground surface elevation. Beneath the surficial layers in the observation trenches, residual soils were encountered to predetermined termination and/or excavator depths ranging from 4.5 to 9 feet below the existing ground surface elevation.

3.2.1 Residual Soils

Soil Test Borings

Beneath the surficial layers, residual soils were encountered to predetermined termination and/or auger refusal depths ranging from 5.1 to 20 feet below the existing ground surface elevation. Residual soils are formed from the in-place weathering of the underlying bedrock. The residual soils generally consisted of brown, light brown, reddish brown, and dark brown clays with varying amounts of black mottling, trace organics, and chert fragments. The N-values for the residual clays ranged from 1 blow per foot (bpf) to 50 blows per 1 inch of penetration, indicating a consistency of very soft to hard. The consistency of the residual soils were most commonly firm to stiff. It is our opinion that the soil samples with N-values greater than 50 blows are inflated due to encountering bedrock conditions or rock fragments prior to finishing the drive sample interval. The natural moisture content of the residual samples tested ranged from 16.2 to 43.0 percent. Atterberg limits testing on three selected samples of the residual soils retrieved from the soil test borings indicated liquid limits (LL) ranging from of 46 to 82 percent and plasticity indices (PI) ranging from of 28 to 58 percent. The tested soil is classified as CL (lean clay) and CH (fat clay) in accordance with the Unified Soil Classification System (USCS).

Observation Trenches

Beneath the surficial layers, residual soils were encountered to predetermined termination and/or excavator depths ranging from 4.5 to 9 feet below the existing ground surface elevation. The residual soils generally consisted of brown, light brown, and reddish brown clays with varying amounts of black mottling and rock fragments. A dynamic cone penetrometer (DCP) is used to evaluate the consistency or density of the subsurface soils encountered in the observation trenches. Dynamic Cone Penetrometer testing of the residual soils ranged from 4 blows per increment (bpi) to greater than 20 bpi, indicating a consistency of soft to very stiff. The consistency of the residual soils were most commonly firm to stiff. The natural moisture content of the residual soils retrieved from the observation trenches ranged from 12.6 to 30.3 percent. Atterberg limits testing on two selected samples of the residual soils retrieved from the observation trenches revealed liquid limits (LL) ranging from 33 to 57 percent and plasticity indices (PI) ranging from 19 to 33 percent, respectively. These soils are classified as lean clay (CL) and fat clay (CH) in accordance with the Unified Soil Classification System (USCS).

3.2.2 Refusal Conditions

Auger refusal materials were encountered in thirty-one of the thirty-two soil test borings at depths ranging from 5.1 to 17.7 feet below the existing ground surface elevation. Observation trench refusal materials were encountered in eight of the fourteen observation trenches at depths ranging from 4.5 to 9 feet below existing ground surface elevation. Refusal is a designation applied to any material that cannot be penetrated by the power auger and/or the bucket of the mini-excavator. Auger and/or observation trench refusal may indicate dense gravel or cobble layers, boulders, rock ledges or pinnacles, or the top of continuous bedrock. Based on our observations during the observation trench excavations, we anticipate the refusals are due to encountering limestone bedrock.

The following table presents the auger refusal and/or termination depths at each of the soil test boring locations:

AUGER REFUSAL DEPTHS			
Location	Refusal Depth (feet)	Location	Refusal Depth (feet)
B-1	7.3	B-17	>20
B-2	8.3	B-18	10.9
B-3	7.1	B-19	5.5
B-4	14.1	B-20	10.4
B-5	8.1	B-21	17.2
B-6	6.7	B-22	9.8
B-7	11.6	B-23	8.4
B-8	8.4	B-24	5.8
B-9	14.9	B-25	16.6
B-10	8.4	B-26	10.3
B-11	10.8	B-27	17.7
B-12	10.7	B-28	10.2
B-13	11.0	B-29	10.9
B-14	12.0	B-30	10.4
B-15	5.1	B-31	8.4
B-16	12.2	B-32	10.2

Note: Refusal depths are taken from the ground surface elevation at time of exploration.

The following table presents the observation trench refusal depths at each observation trench locations:

OBSERVATION TRENCH REFUSAL DEPTHS			
Location	Refusal Depth (feet)	Location	Refusal Depth (feet)
OT-1	7.0	OT-8	4.5
OT-2	7.0	OT-9	>9.0
OT-3	5.5	OT-10	9.0
OT-4	>9.0	OT-11	>9.0
OT-5	8.0	OT-12	>8.5
OT-6	4.5	OT-13	>9.0
OT-7	>9.0	OT-14	8.0

Note: Refusal depths are taken from the ground surface elevation at the time of exploration.

3.2.3 Subsurface Water

Subsurface water was not observed in any of the fourteen observation trenches or the thirty-two soil test borings during or at the completion of exploration activities with exception to soil test boring B-22. Boring B-22 encountered water at a depth of 9.8 feet below the existing ground surface elevation during drilling activities. Additionally, discontinuous zones of perched water may exist within the overburden and/or at the contact with bedrock. Subsurface water levels may fluctuate due to seasonal change in precipitation amounts or due to construction activities in the area. The groundwater presented in this report is the information that was collected at the time of our field activities.

3.2.4 General

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs and observation trench

summary included in Appendix A should be reviewed for specific information at individual test locations. The depth and thickness of the subsurface strata indicated on the boring logs and observation trench 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 log and observation trench locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between soil test boring and observation trench 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.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SITE ASSESSMENT

Based on the results of our subsurface exploration this site is generally adaptable for the proposed development. However, as with most sites, some inherent geotechnical issues should be considered during the construction phases. These issues include karst geology, soft surficial soil conditions, shallow refusal conditions, moisture sensitive soils, and moderately plastic clays.

4.1.1 Karst Geology

A certain degree of risk with respect to sinkhole formation and subsidence should be considered with any site located within geologic areas underlain by potentially soluble rock units. While a rigorous effort to assess the potential for sinkhole formation on this site was beyond the scope of this evaluation, we did observe a closed depression in the north portion of the property outside the current planned development area. It should be noted that active karst activities were NOT encountered in any of the borings and/or observation trenches at the time of this exploration. The borings and observation trenches encountered firm or better soils in consistency near the refusal depths. In addition to the onsite closed depression, additional closed depression is shown on the USGS topographic map of the area to the north and west of the subject property.

4.1.2 Soft Surficial Soil Conditions

During site reconnaissance, soft, saturated, and disturbed surficial soil conditions were observed across the site. Soft soil conditions were encountered in seven of the thirty-two soil test borings (B-5 through B-7, B-16, B-23, B-25, and B-30) to depths ranging of approximately 2.5 to 5 feet below the existing ground surface elevation. Soft soil conditions were also encountered in one of the fourteen observation trenches (OT-11) to a depth of 4 feet below the existing ground surface elevation. These soft zones observed during site reconnaissance and encountered within

the observation trenches can potentially impact the performance of the proposed drive and building pad areas. We anticipate that localized soft areas will be encountered during site grading that will require additional undercutting and replacement.

4.1.3 Shallow Refusal Conditions

Shallow auger refusal conditions were encountered in thirty-one of the thirty-two soil test borings at depths ranging from 5.1 to 17.7 feet below the existing ground surface elevation. Shallow observation trench refusal conditions were encountered in eight of the fourteen observation trenches at depths ranging from 4.5 to 9 feet below existing ground surface elevation. As such, we anticipate excavation of the refusal materials will require blasting or hoe-ramming for removal.

All blast-disturbed rock should also be removed from the mass excavation prior to the placement of rock fill. GEOServices should be retained to observe the final subgrade conditions and provide any appropriate subgrade remedial procedures.

4.1.4 Moisture Sensitive Soils

Moisture sensitive soils are present on this site as determined during site reconnaissance and exploration activities. The clay encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities.

4.1.5 Moderately to Highly Plastic Clays

Based on our experience in the Middle 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. The laboratory test results indicate that the soils at this site are slightly to highly susceptible with PI values of 19 to 58 percent.

At sites that have high plasticity soils, certain precautions should be considered to minimize or eliminate the potential for volume changes. We recommend the soils directly beneath pavement and building slabs undergo rigorous plasticity testing during construction to determine the plasticity of the underlying soils. Once this has been completed, 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.

4.2 SITE PREPARATION

4.2.1 Subgrade

All vegetation, topsoil, organic soils, loose rock fragments greater than 6 inches, existing foundations, utilities and other debris should be removed from the proposed construction areas. The actual depth of removal should be determined by a representative of the geotechnical engineer at the time of construction.

After completion of stripping operations and any required excavations to reach 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 his representative should observe proofrolling. Areas judged to perform unsatisfactorily by the engineer should be remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled prior to the placement of any fill. We anticipate that near surface soft soils will be encountered that will require remediation. Depending upon the time of

year, typical remedial of saturated soils could consist of aerating and drying and/or undercutting and replacement.

4.2.2 Structural Soil Fill

Material considered suitable for use as compacted fill should be clean soil free of organics, trash, and other deleterious material, containing no rock fragments greater than 6 inches in any one dimension. Preferably, structural soil fill material should have a standard Proctor maximum dry density of 90 pcf or greater and a plasticity index (PI) of 30 percent or less. Materials with a PI greater than 30 percent are susceptible to volume changes with changes in moisture content. Volume changes in the subgrade can cause structural distress in buildings, floor slabs, and pavements. All material to be used as structural fill should be tested by the geotechnical engineer to confirm that it meets the project requirements before being placed.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 95 percent of the soil's maximum dry density per the standard Proctor method (ASTM D698) and within the range of minus (-) 1 percent to plus (+) 3 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing any subsequent lifts. Any areas, which have become soft or frozen, should be removed before additional structural fill is placed.

4.2.3 Rock Fill

Rock fill, with acceptable gradation, can be used as structural fill. Shotrock utilized as structural fill should be well graded with a maximum rock size of 18 inches and be placed in lifts not to exceed 24 inches thick. Shotrock of this size should be placed at depths deeper than 2 feet below planned subgrade levels in the building pads. Within the upper 2 feet of proposed subgrade, the rock or stone

fill should have a maximum particle size of 8-inches in largest dimension when mixed with satisfactory material.

Rock fill should have adequate fines to effectively "choke" the larger rock pieces, filling all voids or open spaces. The larger rock pieces should lie flat and not overlap each other. The percentage of soil in the fill should be limited to a maximum of 10 percent. Rock fill should be compacted using 6 to 8 complete passes of a D-8 class crawler tractor. A pass is defined as a complete coverage of the surface with the D-8 track overlapping 50 percent. Half of the passes should be in each perpendicular direction. Rock fill placement should be accomplished under the full time observation of a representative of the geotechnical engineer.

4.2.4 Compacted Crushed Stone Fill

Compacted crushed stone fill should be Type A, Class A, and Grading D in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The crushed stone fill should be placed in loose, horizontal lifts not exceeding 10 inches in loose thickness. Each lift should be compacted to at least 95 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted and tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing any subsequent lifts.

4.3 FOUNDATIONS

4.3.1 Shallow Foundations

Foundations for the proposed construction will be located in areas of properly compacted structural fill or stiff residual soils. Based on the results of the field activities, the recommended allowable bearing capacity for design of the foundations is 2,000 pounds per square foot (psf) or less. Even if design loads would allow smaller sizes, we recommend that continuous footings 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. All exterior footings should be designed to bear at least 18 inches below finished exterior grade to protect against frost heave.

At this time, the possibility exists that foundation activities for residential construction may be situated upon engineered fill or natural soil, and a portion of the structure may be supported upon rock. This combination bearing condition can cause differential footing settlement that can result in unsatisfactory performance of the structure. In order to provide a more uniform bearing stratum, it is recommended that the bedrock materials be undercut as to provide at least a 18-inch layer of crushed aggregate stone to reduce differential stresses due to hard points (point loading).

GEOServices should be retained to perform foundation subgrade observations to confirm that the recommendations provided in this report are consistent with the site conditions encountered. Foundation excavations should be opened, the subgrade evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction.

4.3.2 Slabs-on-Grade

For slab-on-grade construction, the site should be prepared as previously described. We recommend that the subgrade be topped with a minimum 4-inch layer of crushed stone to act as a capillary moisture layer. The subgrade should be proofrolled and approved prior to the placement of the crushed stone. Based on the conditions encountered on this site, we recommend that the floor slabs be designed using a subgrade modulus of 125 pounds per cubic inch (pci). This modulus is appropriate for small diameter loads (i.e. a 1ft x 1ft plate) and should be adjusted for wider loads.

4.3.3 Seismic Conditions

In accordance with the International Building Code (2012), we have provided the following table of seismic design information. After evaluating the subsurface conditions at the site, it was determined that the site would be located in seismic site class C. A table follows, showing the calculated spectral response accelerations for both a short and 1-second period.

STRUCTURE	IBC Site Class	S _s	S ₁	S _{DS}	S _{D1}
		G	g	G	G
Proposed Murfreesboro Apartments	C	0.259	0.130	0.207	0.145

4.4 PAVEMENT RECOMMENDATIONS

4.4.1 Flexible Pavement Design

AASHTO flexible pavement design methods have been utilized for pavement recommendations. Our recommendations are based on the assumptions that the subgrade has been properly prepared as described previously. Traffic intensities were unavailable at the time this report was prepared, however, based on our experience with similar projects with flexible pavement we recommend the following light duty and heavy duty flexible pavement section:

Pavement Materials	Recommended Thickness (Inches)	
	Light Duty	Heavy Duty
Bituminous Asphalt Surface Mix	1.5	1.5
Bituminous Asphalt Base Mix	2.5	3.0
Compacted Crushed Aggregate Base	6.0	8.0

We recommend a base stone equivalent to a Type A, Class A and Grading D in accordance with Section 903.05 of the Tennessee Department of Transportation specifications. The bituminous asphalt pavement should be Grading "E" as per Section 411 for the surface mix and Grading "B" as per section 307 for the binder mix. Compaction requirements for the crushed aggregate base and the bituminous asphalt pavement should generally follow Tennessee Department of Transportation specifications.

4.4.2 Rigid Pavement Design

Areas of the project site with anticipated heavy vehicle loads, should utilize the use of rigid pavement.

We recommend the following rigid pavement section:

Pavement Materials	Recommended Thickness (Inches)
4,000 psi Type I Concrete	6.0
Compacted Crushed Aggregate Base	6.0

Concrete should be reinforced with welded wire fabric or reinforcing bars to assist in controlling cracking from drying shrinkage and thermal changes. Sawed or formed control joints should be included for each 225 sq. ft of area or less (15 ft by 15 ft). Saw cuts should not cut through the welded wire fabric or reinforcing steel and dowels should be utilized at formed and/or cold joints.

4.4.3 General

Our recommendations are based upon the assumption that the subgrade has been properly prepared (as per previous sections) and that any off-site soil borrow to be used to backfill to the final subgrade meets the requirements of structural soil fill section for off-site borrow. Site

grading is generally accomplished early in the construction phase. As construction proceeds, the subgrade may be disturbed or degraded due to utility construction, construction traffic, or wetting or drying. As a result, the pavement subgrade may not be suitable for pavement construction and remedial repair may be required prior to pavement construction. The subgrade should be evaluated immediately prior to pavement construction by proofrolling, as discussed earlier in this report. Particular attention should be given to check for weak materials in anticipated high traffic areas, areas that were degraded by construction traffic, or where backfilled trenches are located. Weak materials identified should be repaired by undercutting the weak materials and backfilling the undercut with compacted fill. We also recommend the moisture content of the subgrade materials be checked immediately prior to pavement construction. If the soil moisture content is not within the ranges recommended in this report, the upper 8 inches should be scarified, moisture conditioned to the recommended moisture content range and recompacted. Stability should then be evaluated by proofrolling.

All paved areas should be constructed with positive drainage to direct water off-site and to minimize surface water seeping into the pavement subgrade. The subgrade should have a minimum slope of 1 percent. In down grade areas, the basestone should extend through the slope to allow any water entering the basestone a path to exit.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 EXCAVATIONS

Auger refusal materials were encountered in thirty-one of the thirty-two soil test borings at depths ranging from 5.1 to 17.7 feet below the existing ground surface elevation. Observation trench refusal materials were encountered in eight of the fourteen observation trenches at depths ranging from 4.5 to 9 feet below existing ground surface elevation. Auger and observation trench refusal conditions generally correspond to materials which require blasting and/or hoe-ramming for removal. Typically, soils penetrated by the power auger and/or the bucket of the min-excavator can be removed with conventional earthmoving equipment. However, excavation equipment varies, and field refusal conditions may vary. Generally, the weathering process is erratic and variations in the rock profile can occur in small lateral distances. Therefore, it is possible that some partially weathered rock and/or rock pinnacles or ledges requiring difficult excavation techniques may be encountered in site areas between our boring and observation trench locations. If these materials are encountered, we expect blasting or mechanical breaker (hoe-ram) for removal will be required.

Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service and under no circumstances should GEOServices be assumed to be responsible for construction site safety.

5.2 MOISTURE SENSITIVE SOILS

The fine-grained soils encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support

capabilities. Construction traffic patterns should be varied to prevent the degradation of previously stable subgrade. In addition, plastic soils which become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. We caution if site grading is performed during the wet weather season, methods such as discing and allowing the material to dry will be required to meet the required compaction recommendations. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather. Climate data consisting of the average monthly precipitation for Murfreesboro, Tennessee was obtained from Weatherbase, is presented in the following table. The average amount of precipitation does not vary much throughout the year. However, November through March is typically the difficult grading period due to the limited drying conditions that exist.

PRECIPITATION AVERAGES

Month	Monthly Precipitation Average (Inches)	Month	Monthly Precipitation Average (Inches)
January	4.6	July	4.5
February	4.3	August	3.7
March	5.3	September	3.5
April	4.4	October	2.9
May	4.7	November	4.0
June	3.9	December	4.7

5.3 HIGH PLASTICITY SOIL CONSIDERATIONS

Based on our experience in the Middle 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. The laboratory test results indicate that the soils at this site are slightly to highly susceptible with PI values of 19 to 58 percent.

Highly 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, Middle Tennessee does not typically endure long periods of severe drought or wet weather. However, in some years drought conditions can be severe enough to cause soil shrinkage and related structural distress of buildings, floor slabs and pavements at sites underlain by high plasticity soils. Following these dry periods, the soils will generally swell as the moisture levels return to normal.

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.

5.4 SINKHOLE CORRECTIVE ACTIONS AND CONSIDERATIONS

As mentioned previously, a closed depression is present in the approximate north portion of the development. We understand that current plans are not to develop in the immediate area of the closed depression. However, if development changes are made to consist of developing across the known closed depression, we recommend that any soft soils be removed from and around the depressed area to bedrock and evaluated by GEOServices. At that time, recommendations will be provided for backfill, which will likely consist of an injection well and/or an inverted filter.

During construction and 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 because that 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 follow incorporate a modest remedial treatment program 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, we have found that several measures are useful in site design and development to reduce this potential risk. These measures include:

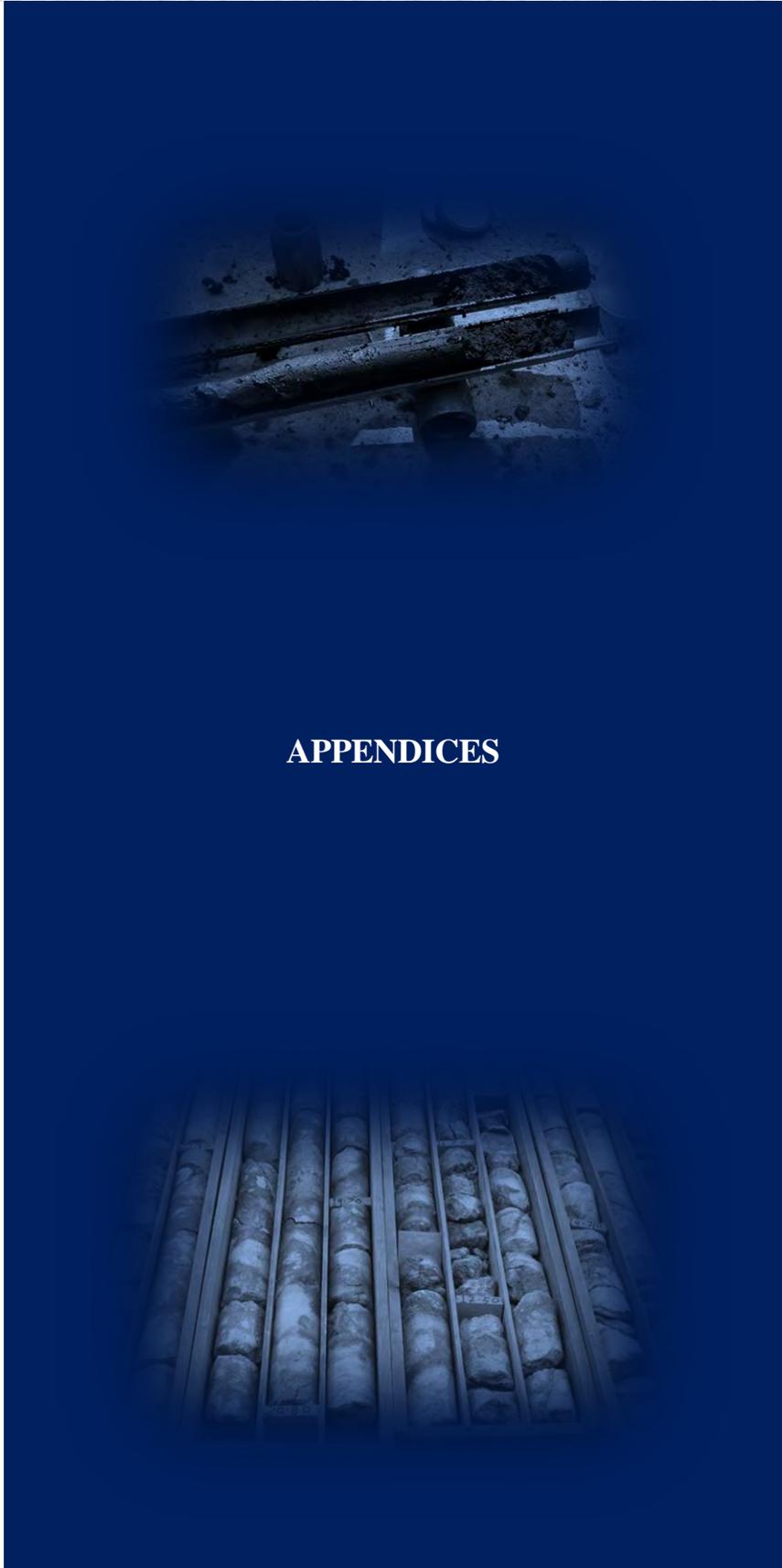
- Maintaining positive site drainage to route surface waters well away from structural areas both during construction and for the life of the structure.
- The scarification and re-compaction of the upper 6 to 10 inches of soil in earthwork cut areas.
- Verifying that subsurface piping beneath structures 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 any proposed building or parking area both during and after construction. Backfill in utility trenches of 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 GEOServices on a case-by-case basis.

6.0 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.

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 borings and observation trenches will not become evident until construction. We recommend that GEOServices be retained to observe the project construction in the field. GEOServices cannot accept responsibility for conditions which 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. In the event that 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 scope of the project should change significantly from that described herein, these recommendations may have to be re-evaluated.



APPENDICES

GS



EE

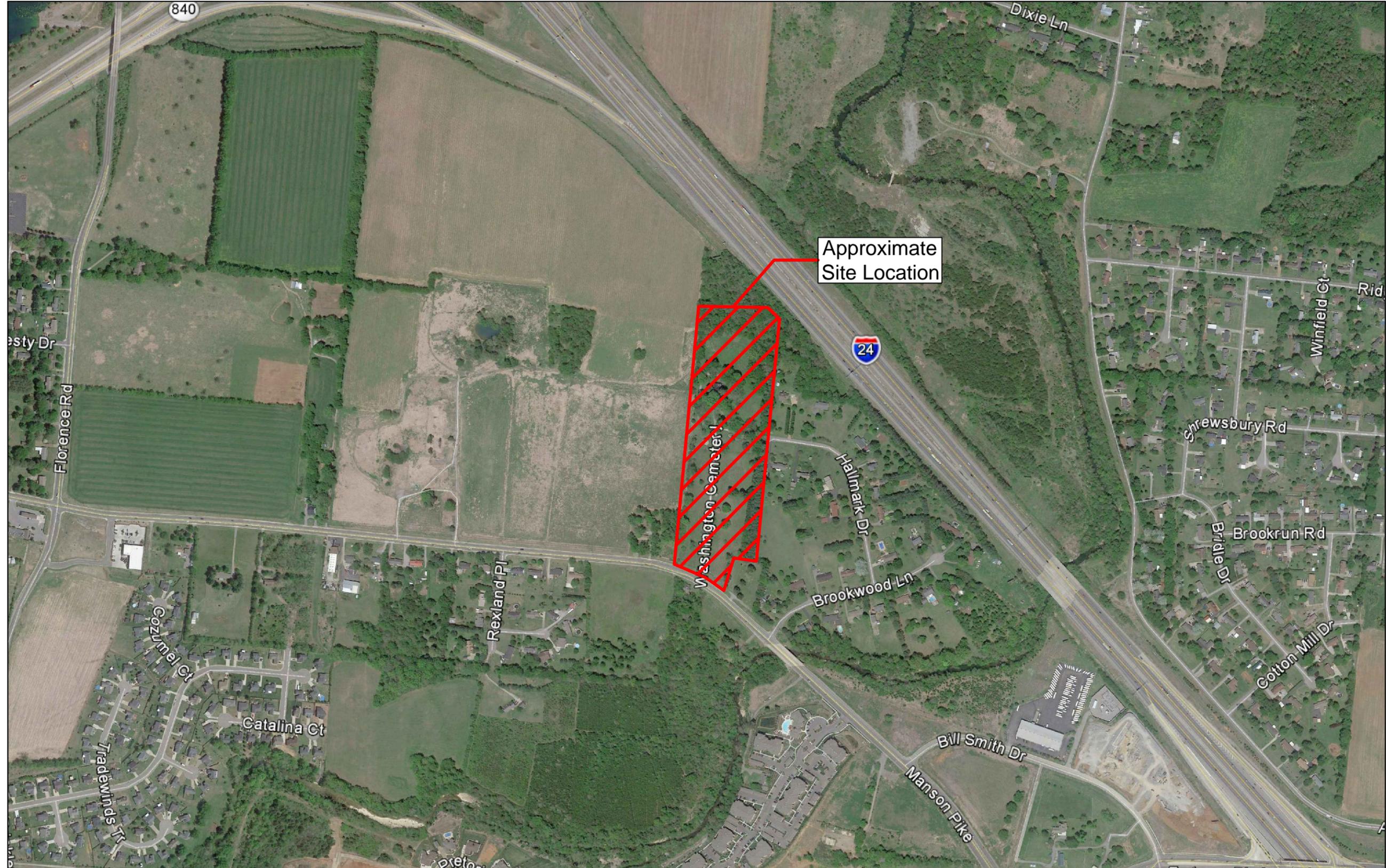
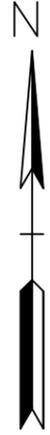
GE

GEOServices, LLC-Geotechnical and Materials Engineers

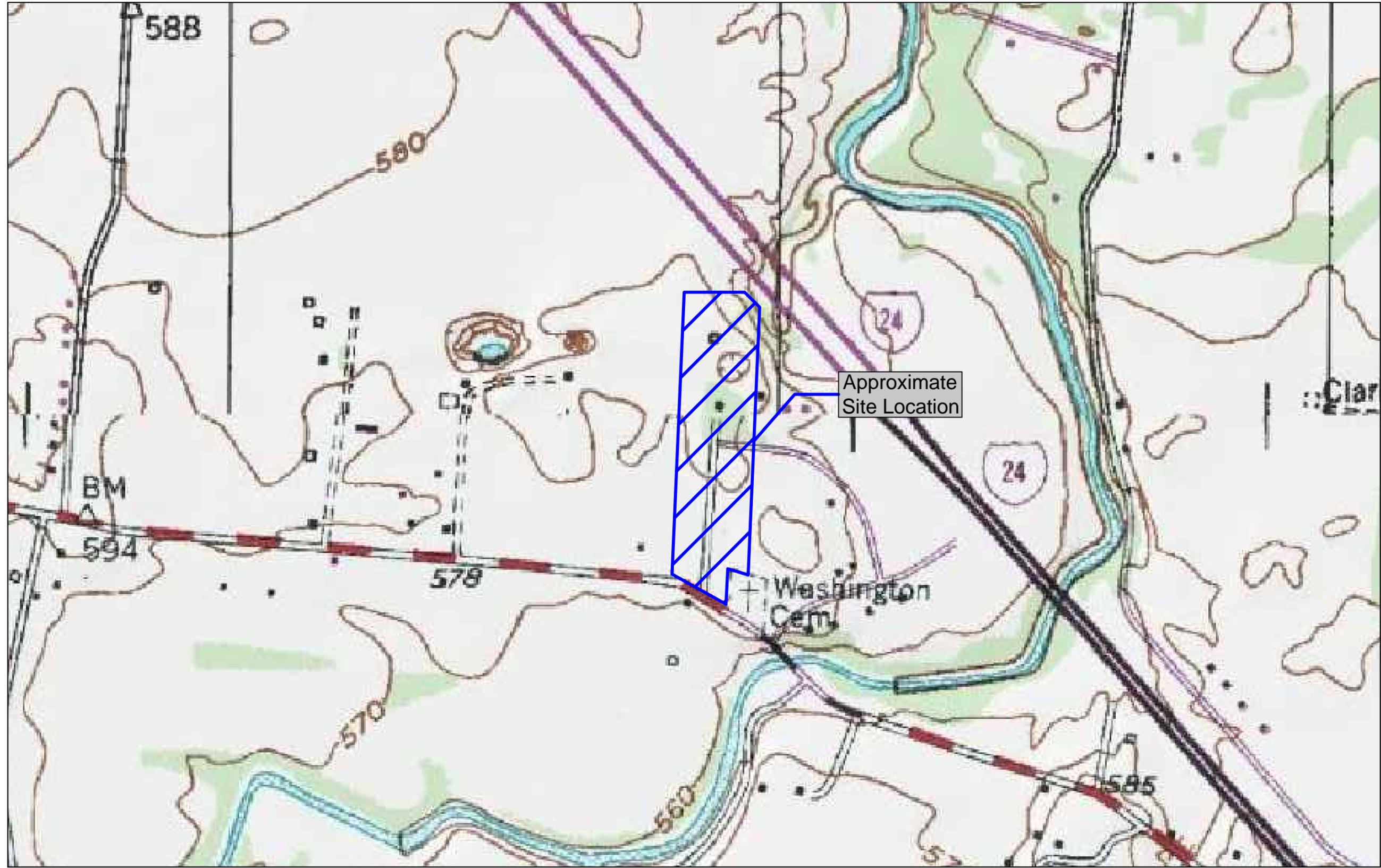


APPENDIX A

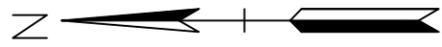




Notes:
1) Aerial Provided by: Google Earth Pro, (04/25/2014)



Source Provided by: MYTOPO



Notes:

- 1) Site Source Drawing Provided By: Bonavic Development (09/14/15)
- 2) Boring & Observation Trench Locations are shown in general arrangement only

3) Do Not use Boring & Observation Trench Locations for determinations of Distance or Quantities



Boring Location & Identifier



Observation Trench Location & Identifier

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.



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-2

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-2

DATE December 3, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 8.3 FT. ELEV. _____ FT.

SAMPLED 8.3 FT. 2.5 M

TOP OF ROCK DEPTH 8.3 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 8.3 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.3										Topsoil (3 inches)
2.5 - 2.5			1	SS	2-3-3 N=6					32.9
5.0 - 5.0			2	SS	2-3-4 N=7					31.8
7.5 - 7.5			3	SS	2-5-7 N=12					30.4
10.0 - 10.0										
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

Fat CLAY (CH) - brown to brown and light brown with black mottling; firm to stiff; moist;
(RESIDUUM)

AUGER REFUSAL AT 8.3 FEET

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-3
 SHEET 1 OF 1

DRILLING CO Tri-State Drilling
 DRILLER Chris McDonald
 LOGGED BY S. Allison

BORING NO. / LOCATION B-3

DATE December 4, 2015 SURFACE ELEV. FT.
 REFUSAL: Yes DEPTH 7.1 FT. ELEV. FT.
 SAMPLED 7.1 FT. 2.2 M
 TOP OF ROCK DEPTH 7.1 FT. ELEV. FT.
 BEGAN CORING DEPTH FT. ELEV. FT.
 FOOTAGE CORED (LF) FT.
 BOTTOM OF HOLE DEPTH 7.1 FT. ELEV. FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. FT.
 AFTER 24 HRS. DEPTH N/A 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	
0.0 - 0.5										Topsoil (6 inches)
2.5 - 2.5			1	SS	2-3-5 N=8					26.0 Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; moist; (RESIDUUM)
5.0 - 5.0			2	SS	3-6-7 N=13					22.9
7.5 - 7.5			3	SS	4-5-50/1" N=50/1"					35.2 Fat CLAY (CH) - brown with black mottling; hard; moist; (RESIDUUM)
7.5 - 7.5										AUGER REFUSAL AT 7.1 FEET
10.0 - 10.0										
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS:



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-4
 SHEET 1 OF 1

DRILLING CO Tri-State Drilling
 DRILLER Chris McDonald
 LOGGED BY S. Allison

BORING NO. / LOCATION B-4

DATE December 3, 2015 SURFACE ELEV. FT.
 REFUSAL: Yes DEPTH 14.1 FT. ELEV. FT.
 SAMPLED 14.1 FT. 4.3 M
 TOP OF ROCK DEPTH 14.1 FT. ELEV. FT.
 BEGAN CORING DEPTH FT. ELEV. FT.
 FOOTAGE CORED (LF) FT.
 BOTTOM OF HOLE DEPTH 14.1 FT. ELEV. FT.

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. FT.
 AFTER 24 HRS. DEPTH N/A 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	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (4 inches)
2.5 -2.5	1.0	2.5	1	SS	3-4-4 N=8				23.1
5.0 -5.0	3.5	5.0	2	SS	3-5-7 N=12				30.8
7.5 -7.5	6.0	7.5	3	SS	3-7-8 N=15				30.0
10.0 -10.0	8.5	10.0	4	SS	3-6-7 N=13				27.3
12.5 -12.5									Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; moist; (RESIDUUM)
15.0 -15.0	13.5	14.1	5	SS	5-50/1" N=50/1"				43.0
17.5 -17.5									Fat CLAY (CH) - brown to brown and light brown with black mottling; hard; moist; (RESIDUUM)
20.0 -20.0	18.5	20.0	6	SS					AUGER REFUSAL AT 14.1 FEET

REMARKS:



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-5

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-5

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 8.1 FT. ELEV. _____ FT.

SAMPLED 8.1 FT. 2.5 M

TOP OF ROCK DEPTH 8.1 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 8.1 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

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. / ELEV.	FT.	FT.								
0.0 - 0.0										Topsoil (8 inches)
2.5 - -2.5	1.0	2.5	1	SS	Weight of Hammer - 2 N=2		46	28	25.2	Lean CLAY (CL) with trace chert fragments at depth - brown; very soft to stiff; very moist to moist; (RESIDUUM)
5.0 - -5.0	3.5	5.0	2	SS	2-2-2 N=4				25.3	
7.5 - -7.5	6.0	7.5	3	SS	4-6-8 N=14				21.3	
10.0 - -10.0										AUGER REFUSAL AT 8.1 FEET
12.5 - -12.5										
15.0 - -15.0										
17.5 - -17.5										
20.0 - -20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-6

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-6

DATE December 3, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 6.7 FT. ELEV. _____ FT.

SAMPLED 6.7 FT. 2.0 M

TOP OF ROCK DEPTH 6.7 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 6.7 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (12 inches)
0.5 - 1.0			1	SS	2-2-2 N=4					26.7
1.0 - 2.5										
2.5 - 3.5			2	SS	2-3-3 N=6					23.2
3.5 - 5.0										
5.0 - 6.0			3	SS	7-50/1" N=50/1"					38.3
6.0 - 6.7										
6.7 - 7.5										
7.5 - 10.0										
10.0 - 12.5										
12.5 - 15.0										
15.0 - 17.5										
17.5 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-7

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-7

DATE December 4, 2015 SURFACE ELEV. FT.

REFUSAL: Yes DEPTH 11.6 FT. ELEV. FT.

SAMPLED 11.6 FT. 3.5 M

TOP OF ROCK DEPTH 11.6 FT. ELEV. FT.

BEGAN CORING DEPTH FT. ELEV. FT.

FOOTAGE CORED (LF) FT.

BOTTOM OF HOLE DEPTH 11.6 FT. ELEV. FT.

BORING ADVANCED BY: POWER AUGERING X WASHBORING

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

STRATUM DEPTH FT. ELEV.	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS N-Value Qp	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				LL	PI	%M	
	FT.	FT.							
0.0 -0.0									Topsoil (5 inches)
2.5 -2.5	1.0	2.5	1	SS	Weight of Hammer - 1 N=1				25.7
5.0 -5.0	3.5	5.0	2	SS	2-2-2 N=4				31.2
7.5 -7.5	6.0	7.5	3	SS	4-3-7 N=10				29.0
10.0 -10.0	8.5	10.0	4	SS	3-4-7 N=11				30.1
12.5 -12.5									
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

Fat CLAY (CH) with trace organics near surface brown with black mottling; very soft to stiff; very moist; **(RESIDUUM)**

AUGER REFUSAL AT 11.6 FEET

REMARKS:



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-8

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-8

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 8.4 FT. ELEV. _____ FT.

SAMPLED 8.4 FT. 2.6 M

TOP OF ROCK DEPTH 8.4 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 8.4 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

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. ELEV.	FT.	FT.								
0.0 0.0										Topsoil (6 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-3 N=6				22.5	Lean CLAY (CL) with chert fragments - brown; firm; moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	2-3-3 N=6				37.1	Fat CLAY (CH) with trace chert fragments - brown with black mottling; very moist; (RESIDUUM)
7.5 -7.5	6.0	7.5	3	SS	2-6-10 N=16				31.4	
10.0 -10.0										AUGER REFUSAL AT 8.4 FEET
12.5 -12.5										
15.0 -15.0										
17.5 -17.5										
20.0 -20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING B-9

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-9

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 14.9 FT. ELEV. _____ FT.

SAMPLED 14.9 FT. 4.5 M

TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 14.9 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (8 inches)
2.5 -2.5	1.0	2.5	1	SS	2-2-3 N=5				
5.0 -5.0	3.5	5.0	2	SS	3-3-5 N=8				
7.5 -7.5	6.0	7.5	3	SS	2-2-3 N=5				Lean CLAY (CL) with chert fragments - reddish brown and brown; firm; moist; (RESIDUUM)
10.0 -10.0	8.5	10.0	4	SS	2-4-3 N=7				
15.0 -15.0	13.5	14.3	5	SS	2-50/3" N=50/3"				Fat CLAY (CH) with trace chert fragments - brown with black mottling; hard; moist; (RESIDUUM)
20.0 -20.0									AUGER REFUSAL AT 15.0 FEET

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-10**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-10

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 8.4 FT. ELEV. _____ FT.

SAMPLED 8.4 FT. 2.6 M

TOP OF ROCK DEPTH 8.4 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 8.4 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (5 inches)
2.5 - 2.5			1	SS	1-3-4 N=7					22.9
5.0 - 5.0			2	SS	3-4-6 N=10					23.9
7.5 - 7.5			3	SS	5-5-7 N=12					19.6
10.0 - 10.0										
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; moist;
(RESIDUUM)

AUGER REFUSAL AT 8.4 FEET

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-11**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-11

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.8 FT. ELEV. _____ FT.

SAMPLED 10.8 FT. 3.3 M

TOP OF ROCK DEPTH 10.8 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.8 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (5 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-5 N=8				Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	3-3-5 N=8				
7.5 -7.5	6.0	7.5	3	SS	3-4-6 N=10				
10.0 -10.0	8.5	10.0	4	SS	4-5-7 N=12				
12.5 -12.5									AUGER REFUSAL AT 10.8 FEET
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-12**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-12

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.7 FT. ELEV. _____ FT.

SAMPLED 10.7 FT. 3.3 M

TOP OF ROCK DEPTH 10.7 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.7 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.

ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.

ELEV. _____ FT.

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. ELEV.	FT.	FT.								
0.0 0.0										Topsoil (5 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-4 N=7				31.1	Fat CLAY (CH) with trace organics near surface and chert fragments - brown to brown and dark brown; firm to very stiff; moist to very moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	3-4-5 N=9				29.4	
7.5 -7.5	6.0	7.5	3	SS	3-4-6 N=10				34.0	
10.0 -10.0	8.5	10.0	4	SS	2-6-12 N=18				37.5	
12.5 -12.5										AUGER REFUSAL AT 10.7 FEET
15.0 -15.0										
17.5 -17.5										
20.0 -20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
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LOG OF BORING **B-13**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-13

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 11.0 FT. ELEV. _____ FT.

SAMPLED 11.0 FT. 3.4 M

TOP OF ROCK DEPTH 11.0 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 11.0 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (5 inches)
2.5 - 2.5			1	SS	2-3-4 N=7					21.2
5.0 - 5.0			2	SS	2-3-3 N=6					24.2
7.5 - 7.5			3	SS	3-6-7 N=13					22.5
10.0 - 10.0			4	SS	3-6-8 N=14					25.9
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-14**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-14

DATE December 4, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 12.0 FT. ELEV. _____ FT.

SAMPLED 12.0 FT. 3.7 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. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (6 inches)
2.5 - 2.5			1	SS	2-3-3 N=6					27.8
5.0 - 5.0			2	SS	3-4-6 N=10					29.2
7.5 - 7.5			3	SS	3-6-9 N=15					27.6
10.0 - 10.0			4	SS	4-7-8 N=15					26.0
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-15**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-15

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 5.1 FT. ELEV. _____ FT.

SAMPLED 5.1 FT. 1.6 M

TOP OF ROCK DEPTH 5.1 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 5.1 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

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 - 0.5										Topsoil (4 inches)
0.5 - 1.0										
1.0 - 2.5	1.0	2.5	1	SS	2-3-4 N=7				22.1	Fat CLAY (CH) with chert fragments - brown; firm; very moist; (RESIDUUM)
2.5 - 3.5										
3.5 - 5.0	3.5	5.0	2	SS	3-3-4 N=7				28.6	
5.0 - 5.1										AUGER REFUSAL AT 5.1 FEET
5.1 - 7.5										
7.5 - 10.0										
10.0 - 12.5										
12.5 - 15.0										
15.0 - 17.5										
17.5 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-16**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-16

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 12.2 FT. ELEV. _____ FT.

SAMPLED 12.2 FT. 3.7 M

TOP OF ROCK DEPTH 12.2 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 12.2 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (3 inches)
2.5 -2.5	1.0	2.5	1	SS	1-2-2 N=4				Lean CLAY (CL) with large amounts of chert fragments - brown; soft; very moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	2-2-2 N=4				
7.5 -7.5	6.0	7.5	3	SS	2-2-3 N=5				Fat CLAY (CH) with trace chert fragments - brown; firm; very moist; (RESIDUUM)
10.0 -10.0	8.5	10.0	4	SS	2-4-3 N=7				
12.5 -12.5									AUGER REFUSAL AT 12.2 FEET
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-17**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-17

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: No DEPTH _____ FT. ELEV. _____ FT.

SAMPLED 20.0 FT. 6.1 M

TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 20.0 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM FT.	TO FT.			N-Value	Qp	LL	PI	%M	
0.0 - 0.5										Topsoil (5 inches)
0.5 - 1.0										Lean CLAY (CL) with chert fragments - reddish brown and brown; firm; moist; (RESIDUUM)
1.0 - 2.5	1.0	2.5	1	SS	3-3-5 N=8				17.9	
2.5 - 3.5										
3.5 - 5.0	3.5	5.0	2	SS	3-6-6 N=12				27.5	
5.0 - 6.0										
6.0 - 7.5	6.0	7.5	3	SS	3-5-6 N=11				20.6	
7.5 - 8.5										Fat CLAY (CH) with trace chert fragments - brown and light brown with black mottling; stiff to very stiff; moist; (RESIDUUM)
8.5 - 10.0	8.5	10.0	4	SS	4-8-11 N=19				18.1	
10.0 - 12.5										
12.5 - 15.0	13.5	15.0	5	SS	5-10-13 N=23				16.2	
15.0 - 17.5										BORING TERMINATED AT 20.0 FEET
17.5 - 20.0	18.5	20.0	6	SS	5-8-10 N=18				28.2	

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-18**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-18

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.9 FT. ELEV. _____ FT.

SAMPLED 10.9 FT. 3.3 M

TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.9 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (5 inches)
2.5 - 2.5			1	SS	1-2-4 N=6					Lean CLAY (CL) with trace organics near surface and trace chert fragments - brown; firm; moist; (RESIDUUM)
5.0 - 5.0			2	SS	2-3-5 N=8					
7.5 - 7.5			3	SS	3-5-9 N=14					Fat CLAY (CH) with trace chert fragments - brown with black mottling; stiff to very stiff; moist; (RESIDUUM)
10.0 - 10.0			4	SS	4-8-10 N=18					
10.0 - 10.9										AUGER REFUSAL AT 10.9 FEET
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
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LOG OF BORING **B-19**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-19

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 5.5 FT. ELEV. _____ FT.

SAMPLED 5.5 FT. 1.7 M

TOP OF ROCK DEPTH 5.5 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 5.5 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (4 inches)
0.5 - 1.0			1	SS	1-3-4 N=7				22.1	Fat CLAY (CH) with trace organics near surface brown and dark brown; firm; moist; (RESIDUUM)
1.0 - 2.5			2	SS	2-3-3 N=6		57	38	19.6	
2.5 - 3.0										AUGER REFUSAL AT 5.5 FEET
3.0 - 3.5										
3.5 - 4.0										
4.0 - 4.5										
4.5 - 5.0										
5.0 - 5.5										
5.5 - 6.0										
6.0 - 6.5										
6.5 - 7.0										
7.0 - 7.5										
7.5 - 8.0										
8.0 - 8.5										
8.5 - 9.0										
9.0 - 9.5										
9.5 - 10.0										
10.0 - 10.5										
10.5 - 11.0										
11.0 - 11.5										
11.5 - 12.0										
12.0 - 12.5										
12.5 - 13.0										
13.0 - 13.5										
13.5 - 14.0										
14.0 - 14.5										
14.5 - 15.0										
15.0 - 15.5										
15.5 - 16.0										
16.0 - 16.5										
16.5 - 17.0										
17.0 - 17.5										
17.5 - 18.0										
18.0 - 18.5										
18.5 - 19.0										
19.0 - 19.5										
19.5 - 20.0										

REMARKS: _____



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LOG OF BORING **B-20**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling
 DRILLER Chris McDonald
 LOGGED BY S. Allison

BORING NO. / LOCATION B-20

DATE December 8, 2015 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 10.4 FT. ELEV. _____ FT.
 SAMPLED 10.4 FT. 3.2 M
 TOP OF ROCK DEPTH 10.4 FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 10.4 FT. ELEV. _____ FT.

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A 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	
0.0 - 0.5										Topsoil (4 inches)
2.5 - 2.5			1	SS	1-3-4 N=7					26.1 Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; moist; (RESIDUUM)
5.0 - 5.0			2	SS	3-4-6 N=10					28.1
7.5 - 7.5			3	SS	3-5-7 N=12					25.8 Fat CLAY (CH) - brown with black mottling; stiff; moist; (RESIDUUM)
10.0 - 10.0			4	SS	3-5-5 N=10					29.6
10.0 - 10.4										AUGER REFUSAL AT 10.4 FEET
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



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LOG OF BORING **B-21**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-21

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 17.2 FT. ELEV. _____ FT.

SAMPLED 17.2 FT. 5.2 M

TOP OF ROCK DEPTH 17.2 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 17.2 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (6 inches)
0.5 - 1.0										Lean CLAY (CL) with large amounts of chert fragments - brown with black mottling; firm; moist; (RESIDUUM)
1.0 - 2.5			1	SS	1-3-3 N=6				25.4	
2.5 - 3.5			2	SS	3-4-4 N=8				22.4	
3.5 - 5.0			3	SS	3-4-6 N=10				23.2	
5.0 - 7.5			4	SS	4-5-8 N=13				27.8	
7.5 - 10.0			5	SS	5-7-9 N=16				28.5	Fat CLAY (CH) - brown and light brown with black mottling; stiff to very stiff; moist; (RESIDUUM)
10.0 - 12.5										
12.5 - 15.0										
15.0 - 17.5										AUGER REFUSAL AT 17.2 FEET
17.5 - 20.0										

REMARKS: _____



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Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-22**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-22

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 9.8 FT. ELEV. _____ FT.

SAMPLED 9.8 FT. 3.0 M

TOP OF ROCK DEPTH 9.8 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 9.8 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)
 COMPLETION: DEPTH 9.8 FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (4 inches)
2.5 - 2.5			1	SS	2-4-5 N=9					27.5
5.0 - 5.0			2	SS	3-4-7 N=11					24.5
7.5 - 7.5			3	SS	4-6-9 N=15					26.5
10.0 - 10.0			4	SS	2-6-50/4" N=50/4"					26.6
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

Fat CLAY (CH) - brown and light brown with black mottling; stiff to hard; moist; **(RESIDUUM)**

AUGER REFUSAL AT 9.8 FEET

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-23**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-23

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 8.4 FT. ELEV. _____ FT.

SAMPLED 8.4 FT. 2.6 M

TOP OF ROCK DEPTH 8.4 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 8.4 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM FT.	TO FT.			N-Value	Qp	LL	PI	%M	
0.0 - 0.5										Topsoil (4 inches)
2.5 - 2.5	1.0	2.5	1	SS	1-2-2 N=4				22.4	Lean CLAY (CL) with chert fragments - brown; soft to firm; moist; (RESIDUUM)
5.0 - 5.0	3.5	5.0	2	SS	2-2-3 N=5				18.3	
7.5 - 7.5	6.0	7.5	3	SS	5-7-10 N=17				24.9	Fat CLAY (CH) - brown and light brown; very stiff; moist; (RESIDUUM)
10.0 - 10.0										AUGER REFUSAL AT 8.4 FEET
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-24**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-24

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 5.8 FT. ELEV. _____ FT.

SAMPLED 5.8 FT. 1.8 M

TOP OF ROCK DEPTH 5.8 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 5.8 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ 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	Qp	LL	
0.0 - 0.5										Topsoil (4 inches)
1.0 - 1.5			1	SS	1-2-3 N=5					Lean CLAY (CL) with large amounts of chert fragments - brown; firm; moist; (RESIDUUM)
2.5 - 3.0	-2.5		2	SS	2-4-3 N=7					
3.5 - 4.0										AUGER REFUSAL AT 5.8 FEET
4.5 - 5.0	-5.0									
5.5 - 6.0										
6.5 - 7.0										
7.5 - 8.0	-7.5									
8.5 - 9.0										
9.5 - 10.0	-10.0									
10.5 - 11.0										
11.5 - 12.0										
12.5 - 13.0	-12.5									
13.5 - 14.0										
14.5 - 15.0	-15.0									
15.5 - 16.0										
16.5 - 17.0										
17.5 - 18.0	-17.5									
18.5 - 19.0										
19.5 - 20.0	-20.0									

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-25**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-25

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 16.6 FT. ELEV. _____ FT.

SAMPLED 16.6 FT. 5.1 M

TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 16.6 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. / ELEV.	FT.	FT.							
0.0 - 0.0									Topsoil (8 inches)
2.5 - -2.5	1.0	2.5	1	SS	1-1-1 N=2				26.7
5.0 - -5.0	3.5	5.0	2	SS	Weight of Hammer-1-2 N=3				23.0
7.5 - -7.5	6.0	7.5	3	SS	1-2-3 N=5				25.1
10.0 - -10.0	8.5	10.0	4	SS	2-3-5 N=8				24.9
15.0 - -15.0	13.5	15.0	5	SS	3-5-6 N=11				28.2
17.5 - -17.5									
20.0 - -20.0									

Lean CLAY (CL) with chert fragments at depth - brown; very soft to stiff; very moist; (RESIDUUM)

AUGER REFUSAL AT 16.6 FEET

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-26**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-26

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.3 FT. ELEV. _____ FT.

SAMPLED 10.3 FT. 3.1 M

TOP OF ROCK DEPTH 10.3 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.3 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS		LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM FT.	TO FT.			N-Value	Qp	LL	PI	%M	
0.0 - 0.5										Topsoil (5 inches)
2.5 - 2.5	1.0	2.5	1	SS	2-3-4 N=7				27.2	Lean CLAY (CL) with chert fragments - brown and reddish brown; firm to stiff; very moist; (RESIDUUM)
5.0 - 5.0	3.5	5.0	2	SS	3-4-7 N=11				21.6	
7.5 - 7.5	6.0	7.5	3	SS	3-5-8 N=13				25.7	
10.0 - 10.0	8.5	10.0	4	SS	6-10-10 N=20				21.0	Fat CLAY (CH) - brown and light brown; very stiff; moist; (RESIDUUM)
10.0 - 10.3										AUGER REFUSAL AT 10.3 FEET
12.5 - 12.5										
15.0 - 15.0										
17.5 - 17.5										
20.0 - 20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-28**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-28

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.2 FT. ELEV. _____ FT.

SAMPLED 10.2 FT. 3.1 M

TOP OF ROCK DEPTH 10.2 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.2 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (4 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-2 N=5				Lean CLAY (CL) with large amounts of chert fragments - brown; firm; moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	2-3-5 N=8				
7.5 -7.5	6.0	7.5	3	SS	4-4-6 N=10				Fat CLAY (CH) - brown and light brown with black mottling; stiff; moist; (RESIDUUM)
10.0 -10.0	8.5	10.0	4	SS	4-4-7 N=11				AUGER REFUSAL AT 10.2 FEET
12.5 -12.5									
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-29**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-29

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.4 FT. ELEV. _____ FT.

SAMPLED 10.4 FT. 3.2 M

TOP OF ROCK DEPTH _____ FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.4 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.

ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.

ELEV. _____ FT.

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. ELEV.	FT.	FT.								
0.0 0.0										Topsoil (3 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-4 N=7				25.6	Lean CLAY (CL) with large amounts of chert fragments - brown; firm to stiff; moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	3-6-7 N=13		82	58	27.6	Fat CLAY (CH) - brown and light brown with black mottling; stiff to very stiff; moist; (RESIDUUM)
7.5 -7.5	6.0	7.5	3	SS	6-9-13 N=22				25.2	
10.0 -10.0	8.5	10.0	4	SS	4-8-11 N=19				26.5	
12.5 -12.5										AUGER REFUSAL AT 10.9 FEET
15.0 -15.0										
17.5 -17.5										
20.0 -20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-30**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-30

DATE December 8, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.4 FT. ELEV. _____ FT.

SAMPLED 10.4 FT. 3.2 M

TOP OF ROCK DEPTH 10.4 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.4 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

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

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (4 inches)
2.5 -2.5	1.0	2.5	1	SS	1-2-1 N=3				Lean CLAY (CL) with chert fragments - reddish brown and brown; soft to very stiff; very moist to moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	2-4-5 N=9				
7.5 -7.5	6.0	7.5	3	SS	5-9-13 N=22				
10.0 -10.0	8.5	10.0	4	SS	5-14-10 N=24				
12.5 -12.5									AUGER REFUSAL AT 10.4 FEET
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-31**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling
 DRILLER Chris McDonald
 LOGGED BY S. Allison

BORING NO. / LOCATION B-31

DATE December 3, 2015 SURFACE ELEV. _____ FT.
 REFUSAL: Yes DEPTH 8.4 FT. ELEV. _____ FT.
 SAMPLED 8.4 FT. 2.6 M
 TOP OF ROCK DEPTH 8.4 FT. ELEV. _____ FT.
 BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.
 FOOTAGE CORED (LF) _____ FT.
 BOTTOM OF HOLE DEPTH 8.4 FT. ELEV. _____ FT.

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.
 AFTER 24 HRS. DEPTH N/A 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. ELEV.	FT.	FT.								
0.0 0.0										Topsoil (3 inches)
2.5 -2.5	1.0	2.5	1	SS	2-3-4 N=7				24.3	Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to stiff; very moist to moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	3-4-8 N=12				29.5	
7.5 -7.5	6.0	7.5	3	SS	3-7-5 N=12				25.7	
10.0 -10.0										AUGER REFUSAL AT 8.4 FEET
12.5 -12.5										
15.0 -15.0										
17.5 -17.5										
20.0 -20.0										

REMARKS: _____



Proposed Murfreesboro Apartments Site
Murfreesboro, Tennessee
 GEOServices Project No.: 31-151425

LOG OF BORING **B-32**

SHEET 1 OF 1

DRILLING CO Tri-State Drilling

DRILLER Chris McDonald

LOGGED BY S. Allison

BORING NO. / LOCATION B-32

DATE December 3, 2015 SURFACE ELEV. _____ FT.

REFUSAL: Yes DEPTH 10.2 FT. ELEV. _____ FT.

SAMPLED 10.2 FT. 3.1 M

TOP OF ROCK DEPTH 10.2 FT. ELEV. _____ FT.

BEGAN CORING DEPTH _____ FT. ELEV. _____ FT.

FOOTAGE CORED (LF) _____ FT.

BOTTOM OF HOLE DEPTH 10.2 FT. ELEV. _____ FT.

BORING ADVANCED BY: _____ POWER AUGERING X WASHBORING _____

WATER LEVEL DATA (IF APPLICABLE)

COMPLETION: DEPTH Dry FT.
 ELEV. _____ FT.

AFTER 24 HRS. DEPTH N/A FT.
 ELEV. _____ FT.

STRATUM DEPTH	SAMPLE DEPTH		SAMPLE OR RUN NO.	SAMPLE TYPE	FIELD RESULTS	LABORATORY RESULTS			STRATUM DESCRIPTION
	FROM	TO				N-Value	Qp	LL	
FT. ELEV.	FT.	FT.							
0.0 0.0									Topsoil (5 inches)
2.5 -2.5	1.0	2.5	1	SS	2-2-4 N=6				Lean CLAY (CL) with chert fragments - reddish brown and brown; firm to very stiff; very moist to moist; (RESIDUUM)
5.0 -5.0	3.5	5.0	2	SS	2-3-4 N=7				
7.5 -7.5	6.0	7.5	3	SS	3-6-7 N=13				
10.0 -10.0	8.5	10.0	4	SS	3-6-10 N=16				
10.2 -10.2									AUGER REFUSAL AT 10.2 FEET
12.5 -12.5									
15.0 -15.0									
17.5 -17.5									
20.0 -20.0									

REMARKS: _____

Observation Trench Summary
Proposed Murfreesboro Apartment Site/ Murfreesboro, Tennessee

GEOServices Project No. 31-151425
November 23, 2015

DATE	TEST LOCATION	DEPTH (feet)	SOIL DESCRIPTION	Dynamic Cone Penetrometer
11/23	OT-1	0.0 – 0.6	Topsoil (7 inches)	2' / 6-7-7
		0.6 – 7.0	Fat CLAY with rock fragments – brown and light brown with black mottling; very moist; (RESIDUUM)	4' / 6-6-7
		7.0	Observation Trench Refusal	6' / 12-14-14
11/23	OT-2	0.0 – 0.8	Topsoil (9 inches)	2' / 6-6-6
		0.8 – 7.0	Lean CLAY with rock fragments – brown with black mottling; moist; (RESIDUUM)	4' / 6-9-9
		7.0	Observation Trench Refusal	6' /
			Note: Rock ledge was observed 5 feet below surface elevation	
11/23	OT-3	0.0 – 1.0	Topsoil (12 inches)	2' / 20+
		1.0 – 5.5	Lean CLAY with rock fragments – brown with black mottling; moist; (RESIDUUM)	
		5.5	Observation Trench Refusal Due to Immovable Boulder	
			Note: Rock ledge was observed 2 feet below surface elevation	
11/23	OT-4	0.0 – 1.0	Topsoil (12 inches)	2' / 5-5-6
		1.0 – 9.0	Lean CLAY with trace rock fragments – brown and reddish brown with black mottling; moist; (RESIDUUM)	4' / 5-6-7
		9.0	Observation Trench Terminated	6' / 6-6-7
11/23	OT-5	0.0 – 0.8	Topsoil (10 inches)	2' / 4-5-5
		0.8 – 6.0	Fat CLAY with rock fragments – brown and reddish brown with black mottling; moist; (RESIDUUM)	4' / 5-5-5
		6.0 – 8.0	Fat CLAY with rock fragments – brown with black mottling; moist; (RESIDUUM)	6' / 7-7-8
		8.0	Observation Trench Refusal	
11/23	OT-6	0.0 – 0.7	Topsoil (8 inches)	2' / 6-6-7
		0.7 – 4.5	Lean CLAY with trace rock fragments – brown; moist; (RESIDUUM)	4' / 6-20+
		4.5	Observation Trench Refusal	
11/23	OT-7	0.0 – 2.0	Topsoil (24 inches)	2' / 5-6-6
		2.0 – 9.0	Lean CLAY – brown; moist to very moist; (RESIDUUM)	4' / 7-7-8
		9.0	Observation Trench Terminated	6' / 7-8-8

Observation Trench Summary
Proposed Murfreesboro Apartment Site/ Murfreesboro, Tennessee

GEOServices Project No. 31-151425
November 23, 2015

DATE	TEST LOCATION	DEPTH (feet)	SOIL DESCRIPTION	Dynamic Cone Penetrometer
11/23	OT-8	0.0 – 0.7	Topsoil (8 inches)	2' / 6-6-6
		0.7 – 4.5	Lean CLAY – brown and reddish brown with black mottling; moist; (RESIDUUM)	
		4.5	Observation Trench Refusal	
11/23	OT-9	0.0 – 1.0	Topsoil (12 inches)	2' / 6-6-6
		1.0 – 9.0	Lean CLAY with trace rock fragments – brown and reddish brown with black mottling; moist; (RESIDUUM)	4' / 6-6-7
		9.0	Observation Trench Terminated	6' / 8-7-7
11/23	OT-10	0.0 – 1.0	Topsoil (12 inches)	2' / 5-5-6
		1.0 – 9.0	Lean CLAY with rock fragments – brown and reddish brown with black mottling; moist; (RESIDUUM)	4' / 5-6-6
		9.0	Observation Trench Refusal	6' / 5-6-6
11/23	OT-11	0.0 – 1.0	Topsoil (12 inches)	2' / 4-4-5
		1.0 – 9.0	Lean CLAY with rock fragments – brown and reddish brown with black mottling; moist; (RESIDUUM)	4' / 5-5-6
		9.0	Observation Trench Terminated	6' / 5-6-6
11/23	OT-12	0.0 – 0.6	Topsoil (7 inches)	2' / 6-7-8
		0.6 – 6.0	Lean CLAY with rock fragments – brown and reddish brown; moist; (RESIDUUM)	4' / 7-7-8
		6.0 – 8.5	Fat CLAY with rock fragments – brown and light brown; moist; (RESIDUUM)	6' / 8-9-9
		8.5	Observation Trench Terminated	
			Note: Rock ledge was observed 1 feet below surface elevation	
11/23	OT-13	0.0 – 0.8	Topsoil (10 inches)	2' / 7-7-7
		0.8 – 6.0	Lean CLAY with rock fragments – brown and reddish brown; moist; (RESIDUUM)	4' / 9-8-8
		6.0 – 9.0	Fat CLAY with rock fragments – brown and light brown; moist; (RESIDUUM)	6' / 12-12-13
		9.0	Observation Trench Terminated	
11/23	OT-14	0.0 – 0.8	Topsoil (9 inches)	2' / 5-5-5
		0.8 – 8.0	Lean CLAY with rock fragments – brown and reddish brown; moist; (RESIDUUM)	4' / 5-6-7
		8.0	Observation Trench Refusal	6' / 6-6-7

Observation Trench: OT-1



Observation Trench: OT-2



Observation Trench: OT-3



Observation Trench: OT-4



Observation Trench: OT-5



Observation Trench: OT-6



Observation Trench: OT-7



Observation Trench: OT-8



Observation Trench: OT-9



Observation Trench: OT-10



Observation Trench: OT-11



Observation Trench: OT-12

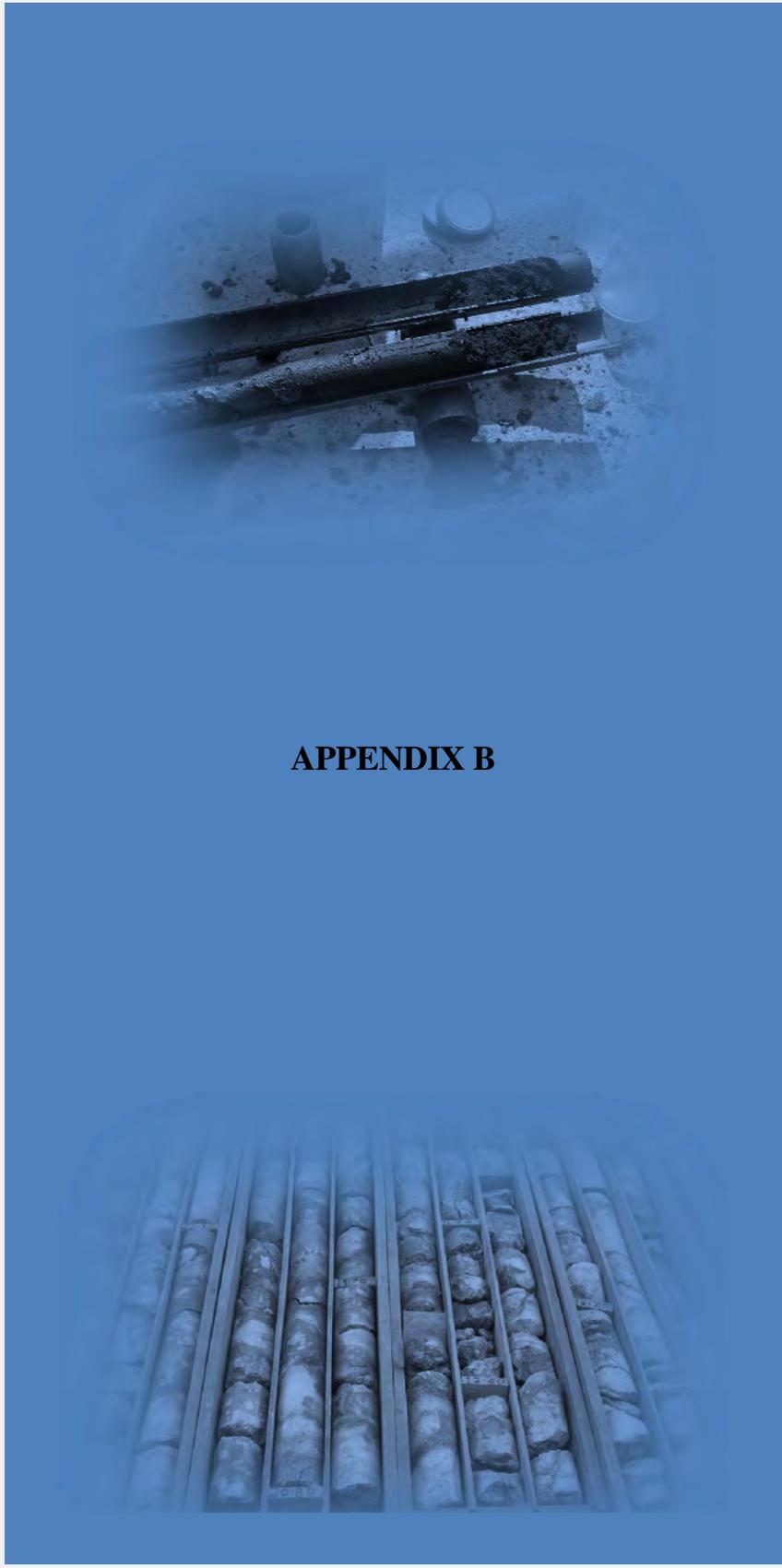


Observation Trench: OT-13



Observation Trench: OT-14





APPENDIX B

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOServices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
OT-1	1	2	23.5%				
	2	4	28.4%				
	3	6	29.0%				
OT-2	1	2	25.6%				
	2	4	22.7%				
	3	6	24.4%				
OT-3	1	2	14.3%				
	2	4	23.5%				
OT-4	1	2	22.1%				
	2	4	28.9%				
	3	6	30.3%				
OT-5	1	2	24.9%				
	2	4	24.1%	53	20	33	CH
	3	6	29.0%				
OT-6	1	2	20.0%				
	2	4	13.8%				
OT-7	1	2	25.1%	37	18	19	CL
	2	4	21.6%				
	3	6	21.1%				
OT-8	1	2	27.5%				
	2	4	26.1%				
OT-9	1	2	24.8%				
	2	4	23.5%				
	3	6	23.7%				
OT-10	1	2	26.6%				
	2	4	26.7%				
	3	6	28.5%				
OT-11	1	2	26.1%				
	2	4	25.6%				
	3	6	25.9%				
OT-12	1	2	28.0%				
	2	4	24.5%				
	3	6	22.1%				

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOServices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
OT-13	1	2	20.7%				
	2	4	21.1%				
	3	6	27.4%				
OT-14	1	2	22.8%				
	2	4	13.2%				
	3	6	12.6%				

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOServices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-1	1	1.0 - 2.5	26.6%				
	2	3.5 - 5.0	27.6%				
	3	6.0 - 7.3	26.8%				
B-2	1	1.0 - 2.5	32.9%				
	2	3.5 - 5.0	31.8%				
	3	6.0 - 7.5	30.4%				
B-3	1	1.0 - 2.5	26.0%				
	2	3.5 - 5.0	22.9%				
	3	6.0 - 7.1	35.2%				
B-4	1	1.0 - 2.5	23.1%				
	2	3.5 - 5.0	30.8%				
	3	6.0 - 7.5	30.0%				
	4	8.5 - 10.0	27.3%				
	5	13.5 - 14.1	43.0%				
B-5	1	1.0 - 2.5	25.2%	46	18	28	CL
	2	3.5 - 5.0	25.3%				
	3	6.0 - 7.5	21.3%				
B-6	1	1.0 - 2.5	26.7%				
	2	3.5 - 5.0	23.2%				
	3	6.0 - 6.6	38.3%				
B-7	1	1.0 - 2.5	25.7%				
	2	3.5 - 5.0	31.2%				
	3	6.0 - 7.5	29.0%				
	4	8.5 - 10.0	30.1%				
B-8	1	1.0 - 2.5	22.5%				
	2	3.5 - 5.0	37.1%				
	3	6.0 - 7.5	31.4%				
B-9	1	1.0 - 2.5	25.4%				
	2	3.5 - 5.0	29.3%				
	3	6.0 - 7.5	29.2%				
	4	8.5 - 10.0	23.0%				
	5	13.5 - 14.3	29.6%				

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOservices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-10	1	1.0 - 2.5	22.9%				
	2	3.5 - 5.0	23.9%				
	3	6.0 - 7.5	19.6%				
B-11	1	1.0 - 2.5	23.0%				
	2	3.5 - 5.0	20.2%				
	3	6.0 - 7.5	28.9%				
	4	8.5 - 10.0	26.8%				
B-12	1	1.0 - 2.5	31.0%				
	2	3.5 - 5.0	29.4%				
	3	6.0 - 7.5	34.0%				
	4	8.5 - 10.0	37.5%				
B-13	1	1.0 - 2.5	21.2%				
	2	3.5 - 5.0	24.2%				
	3	6.0 - 7.5	22.5%				
	4	8.5 - 10.0	25.9%				
B-14	1	1.0 - 2.5	27.8%				
	2	3.5 - 5.0	29.2%				
	3	6.0 - 7.5	27.6%				
	4	8.5 - 10.0	26.0%				
B-15	1	1.0 - 2.5	22.1%				
	2	3.5 - 5.0	28.6%				
B-16	1	1.0 - 2.5	23.5%				
	2	3.5 - 5.0	28.7%				
	3	6.0 - 7.5	29.5%				
	4	8.5 - 10.0	33.5%				
B-17	1	1.0 - 2.5	17.9%				
	2	3.5 - 5.0	27.5%				
	3	6.0 - 7.5	20.6%				
	4	8.5 - 10.0	18.1%				
	5	13.5 - 15.0	16.2%				
	6	18.5 - 20.0	28.2%				
B-18	1	1.0 - 2.5	22.0%				
	2	3.5 - 5.0	24.4%				
	3	6.0 - 7.5	29.8%				
	4	8.5 - 10.0	22.0%				

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOServices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-19	1	1.0 - 2.5	22.1%				
	2	3.5 - 5.0	19.6%	57	19	38	CH
B-20	1	1.0 - 2.5	26.1%				
	2	3.5 - 5.0	28.1%				
	3	6.0 - 7.5	25.8%				
	4	8.5 - 10.0	29.6%				
B-21	1	1.0 - 2.5	25.4%				
	2	3.5 - 5.0	22.4%				
	3	6.0 - 7.5	23.2%				
	4	8.5 - 10.0	27.8%				
	5	13.5 - 15.0	28.5%				
B-22	1	1.0 - 2.5	27.5%				
	2	3.5 - 5.0	24.5%				
	3	6.0 - 7.5	26.5%				
	4	8.5 - 9.8	26.6%				
B-23	1	1.0 - 2.5	22.4%				
	2	3.5 - 5.0	18.3%				
	3	6.0 - 7.5	24.9%				
B-24	1	1.0 - 2.5	24.2%				
	2	3.5 - 5.0	23.8%				
B-25	1	1.0 - 2.5	26.7%				
	2	3.5 - 5.0	23.0%				
	3	6.0 - 7.5	25.1%				
	4	8.5 - 10.0	24.9%				
	5	13.5 - 15.0	28.2%				
B-26	1	1.0 - 2.5	27.2%				
	2	3.5 - 5.0	21.6%				
	3	6.0 - 7.5	25.7%				
	4	8.5 - 10.0	21.0%				
B-27	1	1.0 - 2.5	30.8%				
	2	3.5 - 5.0	27.1%				
	3	6.0 - 7.5	28.1%				
	4	8.5 - 10.0	27.8%				
	5	13.5 - 15.0	25.1%				

SOIL DATA SUMMARY
Proposed Murfreesboro Apartments - Murfreesboro, Tennessee
GEOServices Project No. 31-151425
December 1, 2015

Boring Number	Sample Number	Depth (feet)	Natural Moisture Content	Atterberg Limits			Soil Type
				LL	PL	PI	
B-28	1	1.0 - 2.5	28.5%				
	2	3.5 - 5.0	31.6%	82	24	58	CH
	3	6.0 - 7.5	32.5%				
	4	8.5 - 10.0	30.6%				
B-29	1	1.0 - 2.5	25.6%				
	2	3.5 - 5.0	27.6%				
	3	6.0 - 7.5	25.2%				
	4	8.5 - 10.0	26.5%				
B-30	1	1.0 - 2.5	26.8%				
	2	3.5 - 5.0	24.0%				
	3	6.0 - 7.5	18.7%				
	4	8.5 - 10.0	18.0%				
B-31	1	1.0 - 2.5	24.3%				
	2	3.5 - 5.0	29.5%				
	3	6.0 - 7.5	25.7%				
B-32	1	1.0 - 2.5	25.3%				
	2	3.5 - 5.0	33.2%				
	3	6.0 - 7.5	28.6%				
	4	8.5 - 10.0	27.9%				

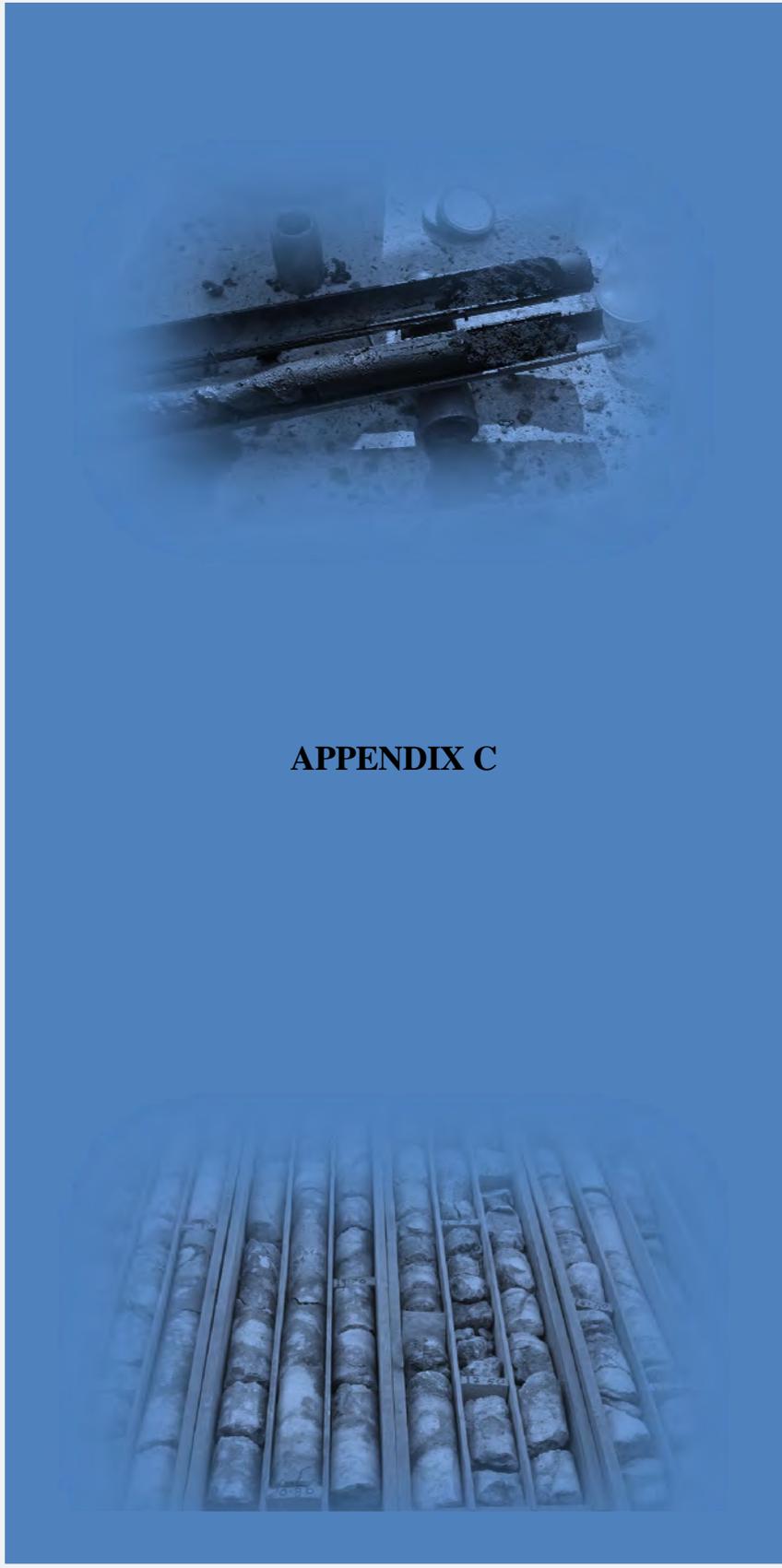
SS



GEE

GE

GEServices, LLC-Geotechnical and Materials Engineers



APPENDIX C



Photo: 6



Photo: 5



Photo: 1



Photo: 2



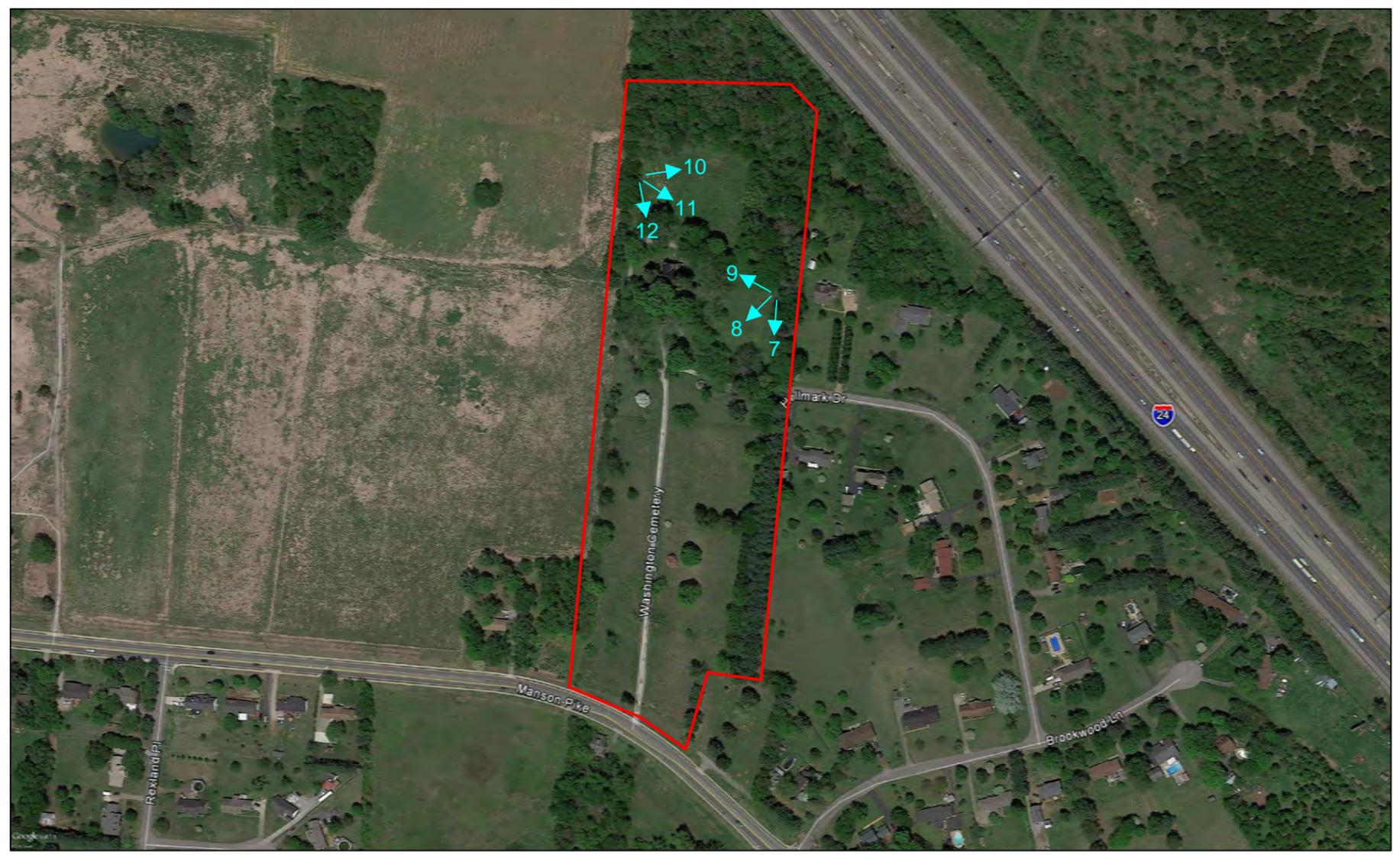
Photo: 3



Photo: 4



Notes:
1) Site Source Drawing Provided By: Bonavic Development (09/14/15)



Notes:
1) Site Source Drawing Provided By: Bonavic Development (09/14/15)



Notes:

1) Site Source Drawing Provided By: Bonavic Development (09/14/15)

File 2016-403

JASON RICHARDS

National Speleological Society Fellow

Tennessee Cave Survey
Cave Cartographer and Explorer

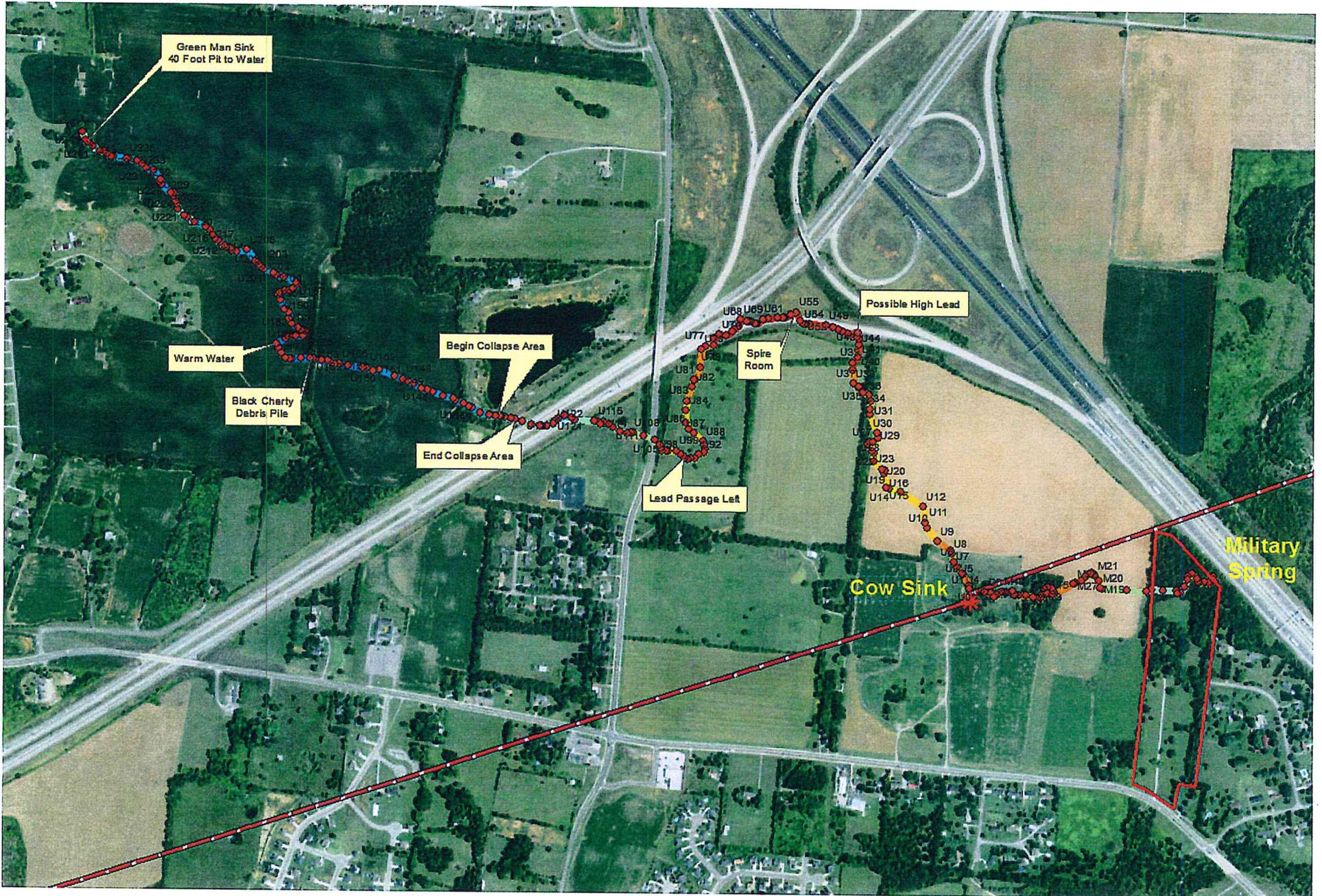
J@rchrds.org

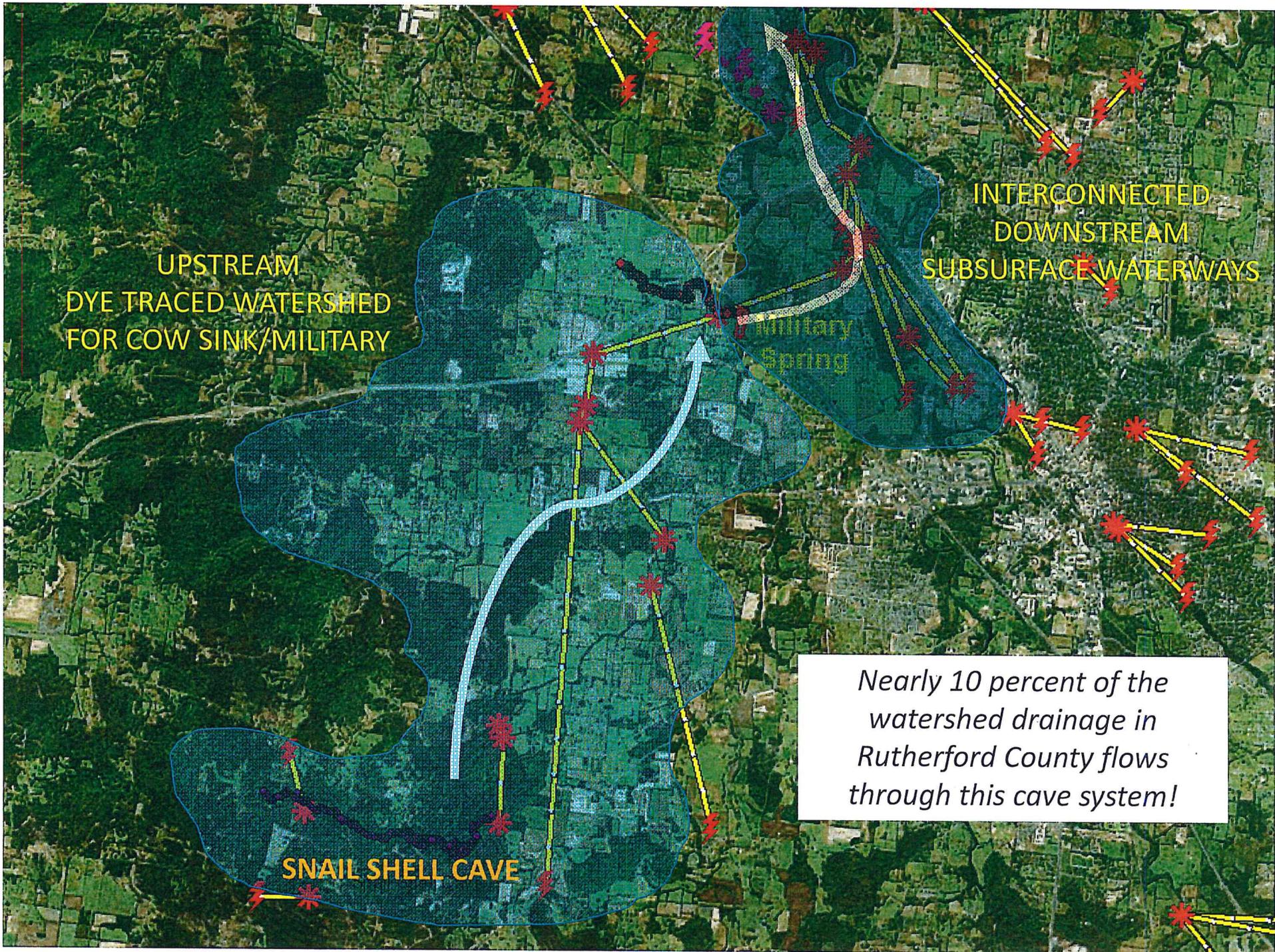
931-436-3633



COW SINK CAVE SYSTEM

SECOND LONGEST UNDERWATER CAVE IN TENNESSEE!





UPSTREAM
DYE TRACED WATERSHED
FOR COW SINK/MILITARY

INTERCONNECTED
DOWNSTREAM
SUBSURFACE WATERWAYS

Military
Spring

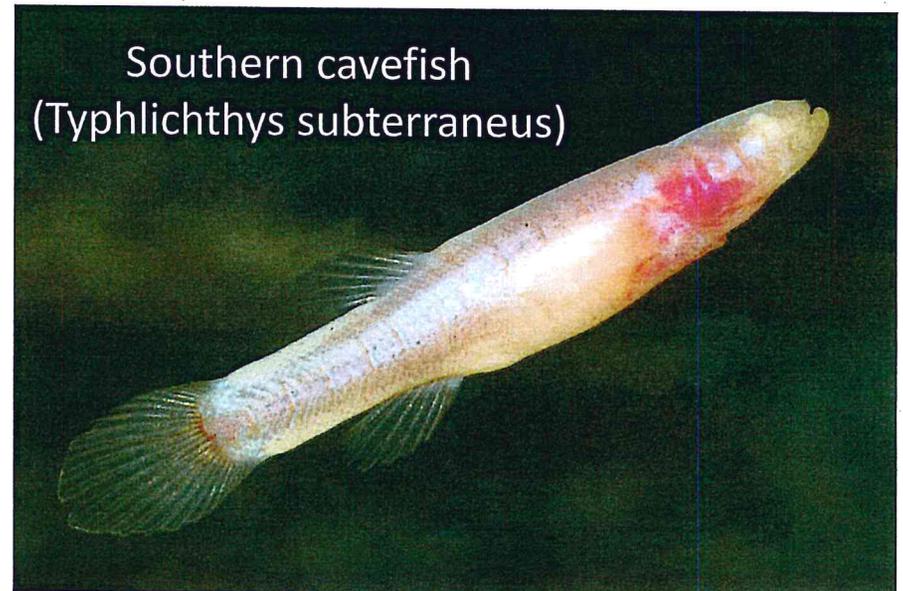
SNAIL SHELL CAVE

Nearly 10 percent of the watershed drainage in Rutherford County flows through this cave system!

KNOWN SPECIES WITHIN THE CAVE
(none listed)



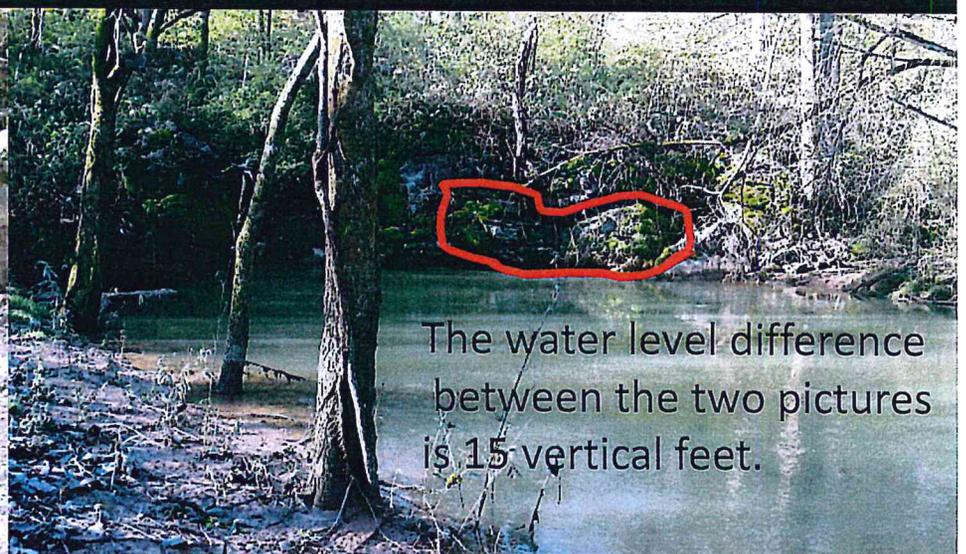
TDEC and TWRA are actively involved in protecting the cave species and cave environments in Rutherford county. Cow Sink Cave, along with Snail Shell Cave, harbor a diverse biota within their fragile, high quality subsurface waterways and are listed within state databases.



The entrance room at military
illustrates the standard 50 foot passage width.

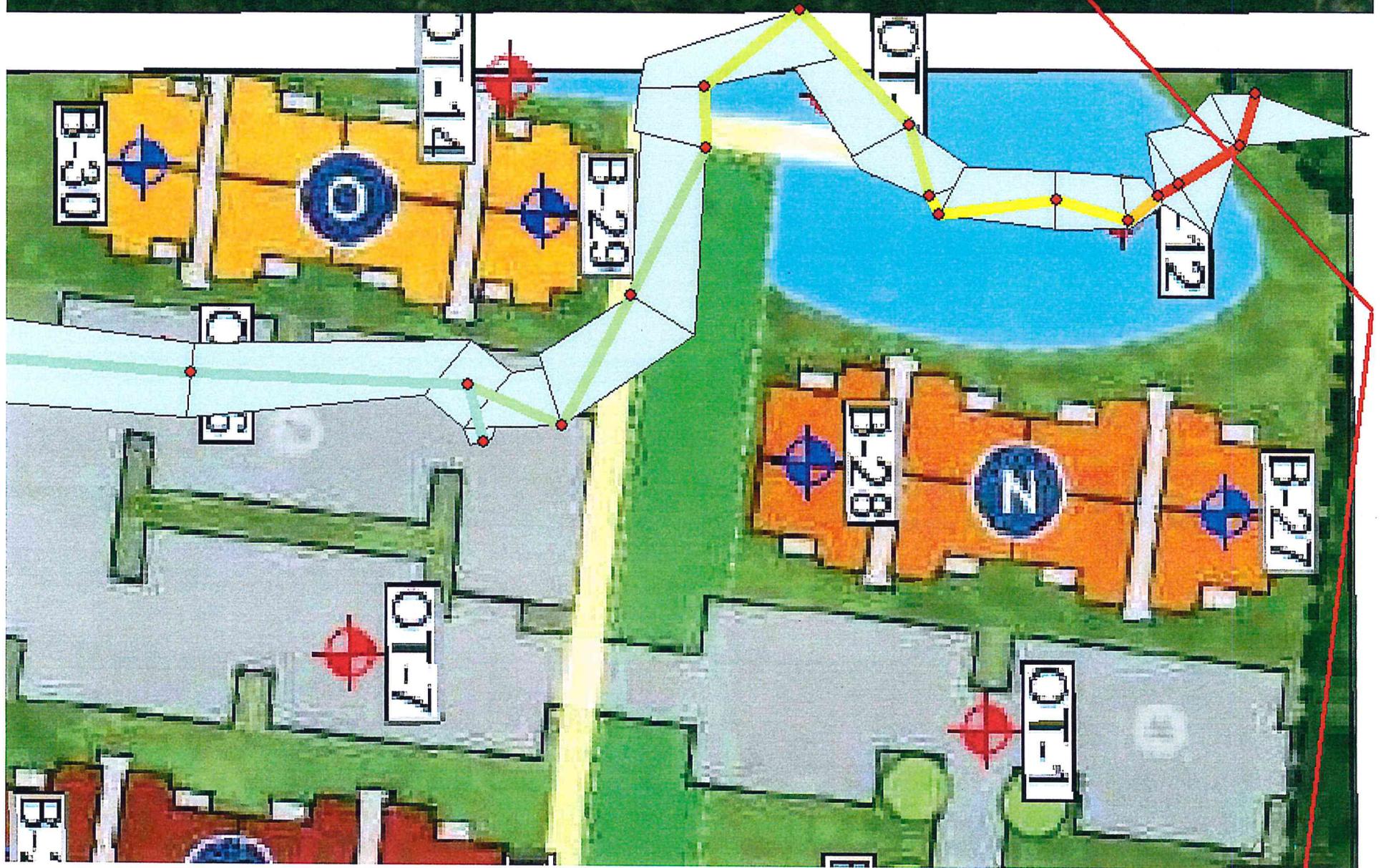


FLOATING IN 20'
DEEP WATER
AFTER DIVE

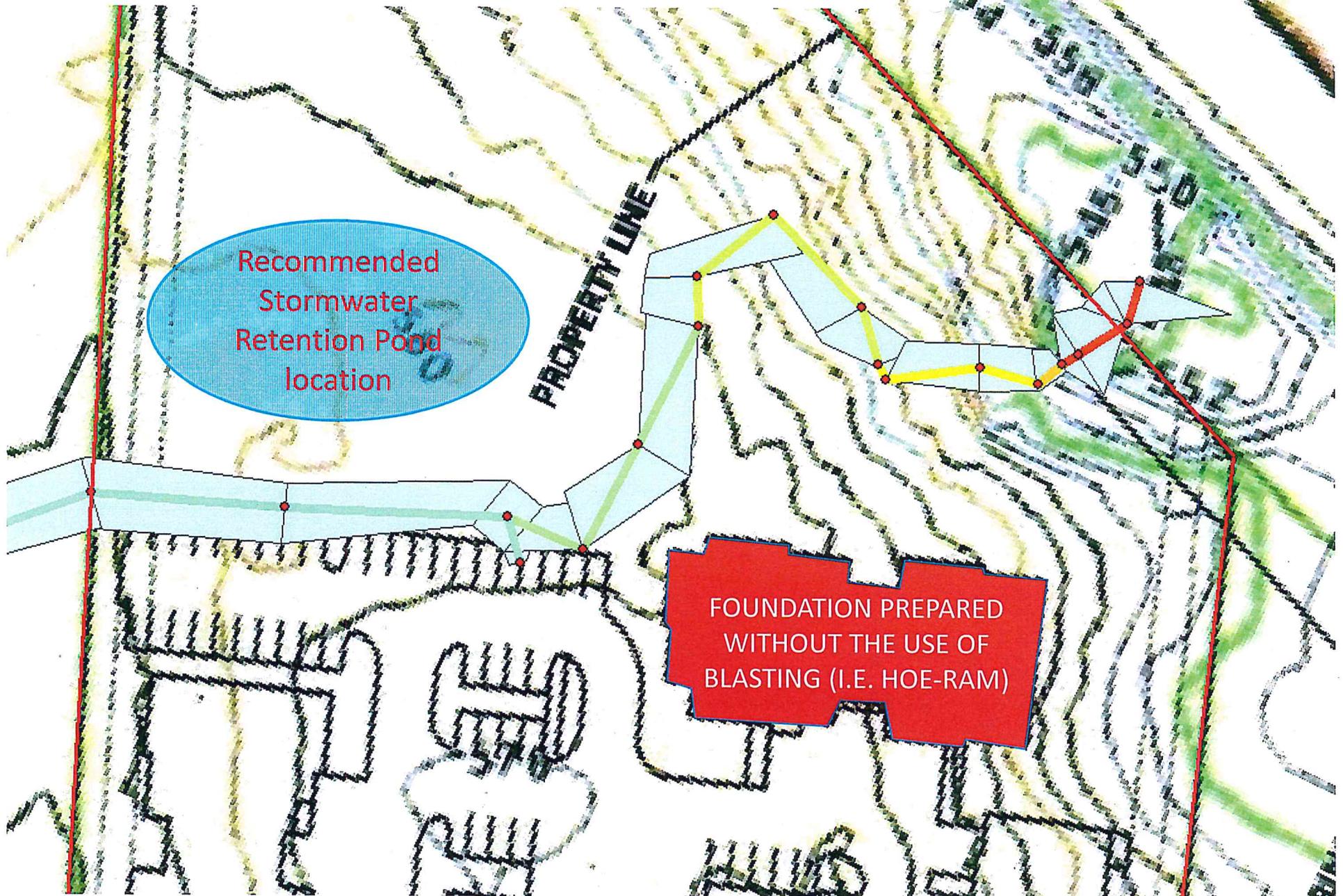


The water level difference
between the two pictures
is 15 vertical feet.

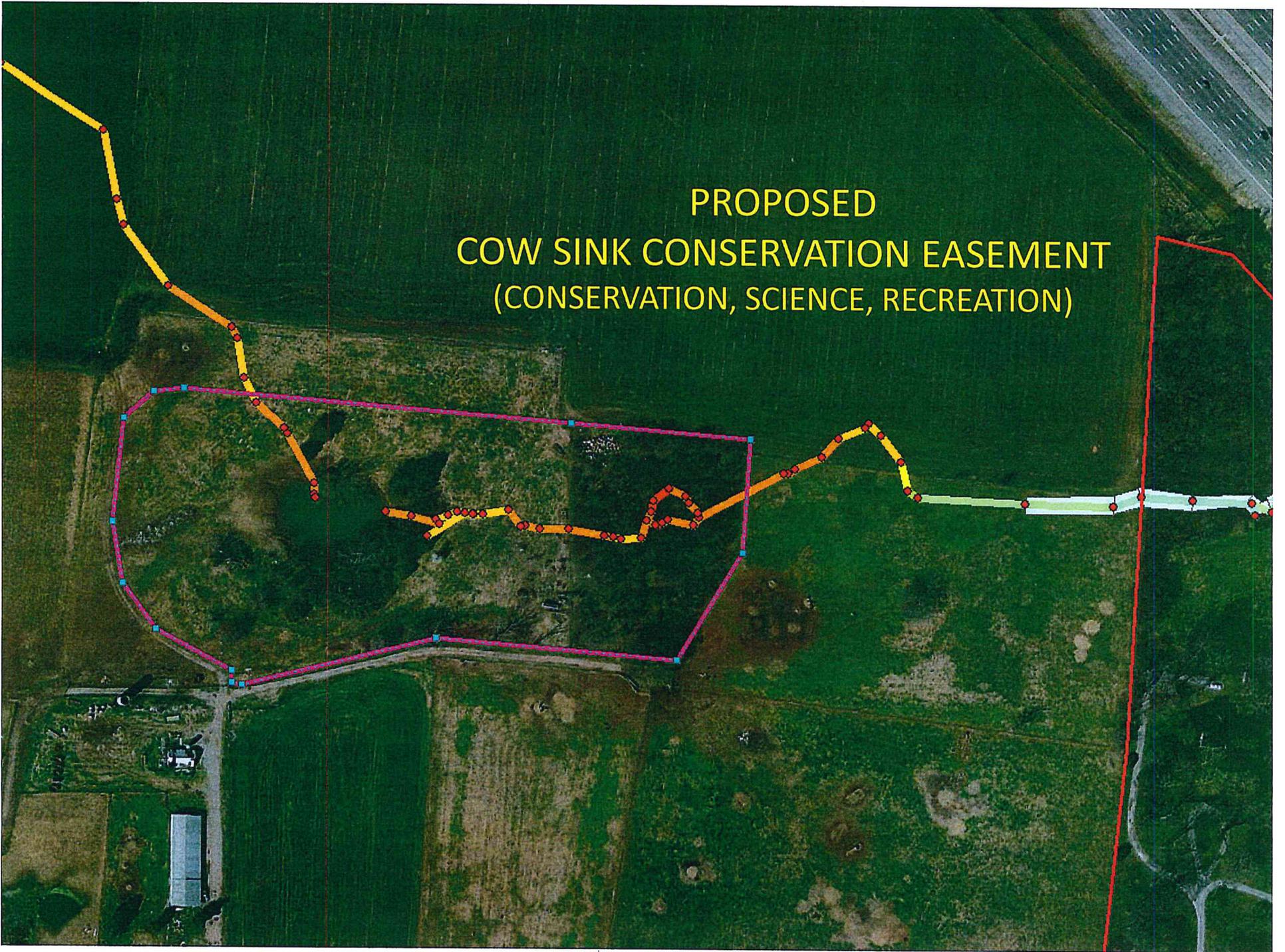
ORIGINAL SITE PLAN VS CAVE LOCATION



UPDATED SITE PLAN VS CAVE LOCATION



PROPOSED
COW SINK CONSERVATION EASEMENT
(CONSERVATION, SCIENCE, RECREATION)



ORDINANCE 15-OZ-56 amending the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as heretofore amended and as now in force and effect to zone approximately 17.3 acres at 3726 Manson Pike as Planned Residential Development (PRD) District (Springfield Apartments) and Gateway Design Overlay (GDO-1) District; Hunter/McDowell Development, applicants. [2016-403]

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MURFREESBORO, TENNESSEE, AS FOLLOWS:

SECTION 1. That the same having been heretofore recommended to the City Council by the City Planning Commission, the Zoning Ordinance and the Zoning Map of the City of Murfreesboro, Tennessee, as herein referred to, adopted and made a part of this Ordinance as heretofore amended and as now in force and effect, be and the same are hereby amended so as to zone the territory indicated on the attached map.

SECTION 2. That, from and after the effective date hereof, the area depicted on the attached map be zoned and approved as Planned Residential Development (PRD) District and Gateway Design Overlay (GDO-1) District, as indicated thereon, and shall be subject to all the terms and provisions of said Ordinance applicable to such districts, the plans and specifications filed by the applicant, and the conditions and stipulations referenced in the minutes of the Planning Commission and City Council relating to this zoning request. The City Planning Commission be and it is hereby authorized and directed to make such changes in and additions to said Zoning Map as may be necessary to show thereon that said area of the City is zoned as indicated on the attached map. This zoning change shall not affect the applicability of any overlay zone to the area.

SECTION 3. That this Ordinance shall take effect fifteen (15) days after its passage upon third and final reading, the public welfare and the welfare of the City requiring it.

Passed:

1st reading _____

2nd reading _____

3rd reading _____

Shane McFarland, Mayor

ATTEST:

APPROVED AS TO FORM:

Melissa B. Wright
City Recorder

David A. Ives
City Attorney

SEAL



Ordinance 15-OZ-56

EXT 53A TO I-24 E

OVERALL CREEK

10' Strip

PRD



Area Zoned PRD and GDO-1

Murfreesboro City Limits

HALLMARK DR

MANSON PIKE

BROOKWOOD LN

RS-15

ANDREA BROOKE CT

RM-16

CL

OVERALL CREEK

CH

RM-16





... creating a better quality of life

March 3, 2016

Honorable Mayor McFarland and Members of the City Council:

RE: Consider approval of a Professional Services Agreement with Michael Baker to provide inventory and programming for a new General Aviation Terminal at the Murfreesboro Municipal Airport

As an item of the March 10th agenda it is recommended that City Council approve a Professional Services Agreement with Michael Baker to provide inventory and programming services for a new Terminal at the Murfreesboro Municipal Airport

Michael Baker has provided a Professional Services Agreement to provide some initial planning services to assist the Terminal Design Team in their efforts to develop the scope of architectural work required for the design, bid, and construction of the new Terminal at the Murfreesboro Municipal Airport.

Background Information

Members of the Terminal Design Team served on a Selection Committee to go through an architect selection process interviewing five firms. Michael Baker was selected but before the Terminal Design Team can agree on a scope of work with Michael Baker, there are a number of options and concerns regarding location, layout, flow, etc. that need to be resolved before a scope of work can be agreed upon. Michael Baker representatives have provided an Agreement and action plan that should take up to six weeks to provide these planning efforts answering these excellent questions and concerns.

Fiscal Impact

The cost of this Professional Services Agreement with Michael Baker is \$27,675.00.

Concurrences

The Airport Commission and its Terminal Design Team recommends the approval of this Professional Services Agreement.

Recommendation

It is recommended that City Council approve the Professional Services Agreement with Michael Baker.

Thank you for your consideration of this Professional Services Agreement.

Sincerely,

Chad L. Gehrke
Airport Manager



Murfreesboro Municipal Airport

1930 Memorial Boulevard * P. O. Box 4145 * Murfreesboro, Tennessee 37129-4145 * Phone 615 848 3254 * Fax 615 848 3256
TDD 615 849 2689 www.murfreesborotn.gov



... creating a better quality of life.

Regular Agenda

March 3, 2016

Honorable Mayor and Members of City Council

Re: Planning Commission recommendations for scheduling public hearings.

Background

During its regular meeting on March 2, 2016, the Planning Commission conducted public hearings on the matters listed below. After the public hearings the Planning Commission discussed the matters and then took action to recommend their approval:

- a. Zoning application [2016-409] for approximately 1 acre located at 1710 E Northfield Blvd to be rezoned from RS-15 to RM-16, Murfreesboro Leased Housing Associates I applicant.
- b. Zoning application [2016-411] for approximately 5.5 acres located along Conference Center Boulevard and Avenue Way to be rezoned from PCD and CH to Vasari Lofts PRD, TDK construction applicant.
- c. Zoning application [2016-410] for approximately 14 acres located within the Liberty Cove subdivision to be rezoned from RS-15 to RS-10 (approx. 7 acres) & from RS-10 to RS-15 (approx. 7 acres), Howard Wall & Jim Obrien applicants.
- d. Annexation Plan of Services and annexation petition [2016-504] for approximately 285.4 acres located along Blackman Road & Florence Road, Shelton Family & Saraswat Family Trust applicants.
- e. Zoning application [2016-406] for approximately 242 acres located along Blackman Road & Florence Road to be zoned Shelton Springs PRD simultaneous with annexation, Parks Development applicant.
- f. Annexation Plan of Services and annexation petition [2016-501] for approximately 31.9 acres located west of Manchester Pike, Swanson Development applicant.
- g. Zoning application [2016-408] for approximately 31.9 acres located west of Manchester Pike to be zoned L-I simultaneous with annexation, Swanson Development.

- h. Annexation Plan of Services and annexation petition [2016-501] for approximately 30.6 acres located along New Salem Highway, World Outreach Church & Jackson Family General Partnership applicants.
- i. Zoning application [2016-407] for approximately 25.4 acres located along New Salem Highway to be zoned CF (approx. 7 acres) and RM-16 (approx. 18.4 acres) simultaneous with annexation, Jackson Family General Partnership applicant.

Recommendation

It is recommended that the City Council schedule the matters for public hearings.

Concurrences

The Murfreesboro Planning Commission has studied and conducted public hearings on each matter and recommends their approval.

Fiscal Impact

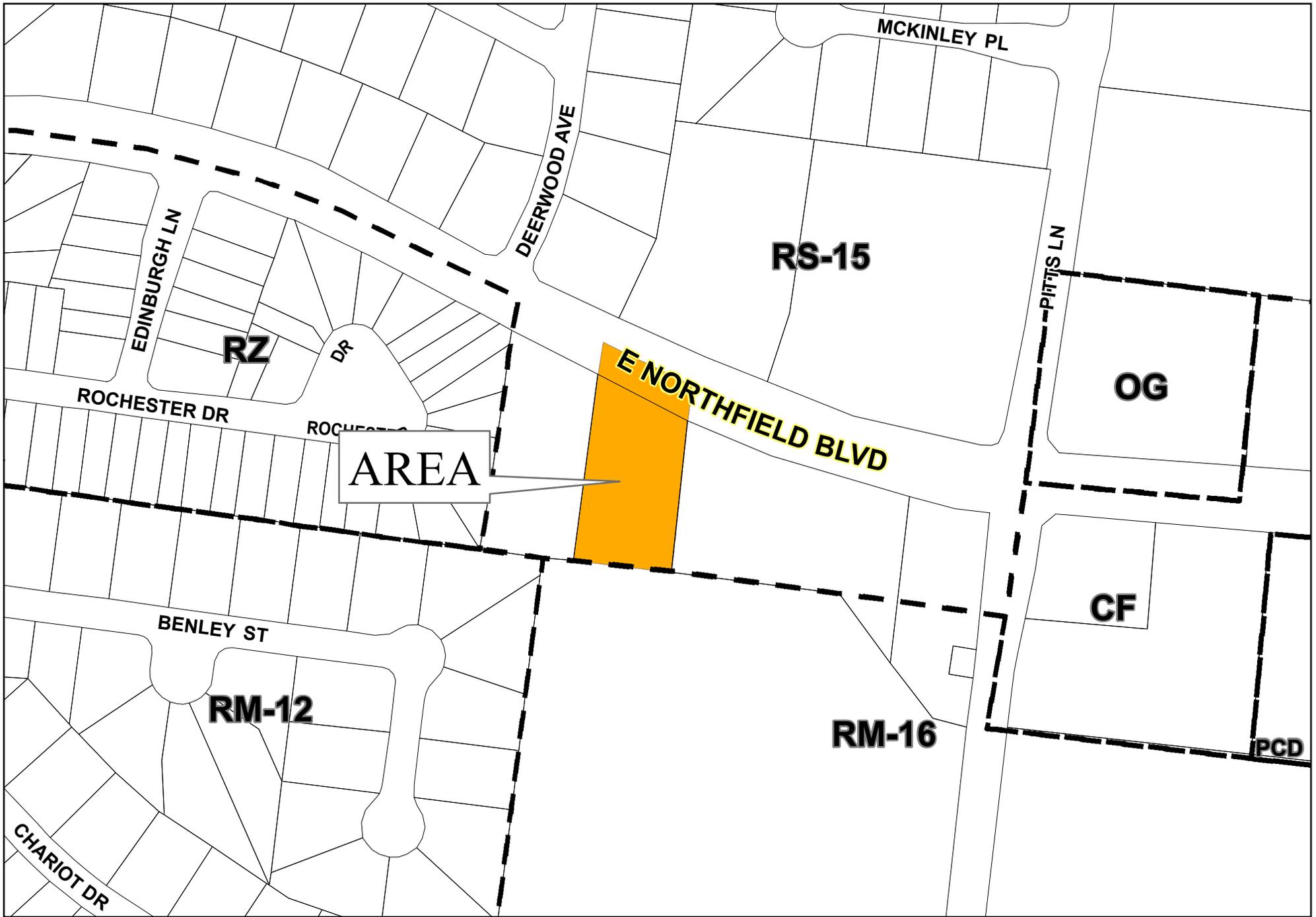
Staff is not aware of any fiscal impact that will result directly from this recommendation.

Attachments

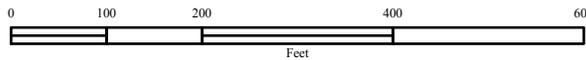
1. Illustrations of the areas.

Respectfully Submitted,

Margaret Ann Green, AICP
Principal Planner

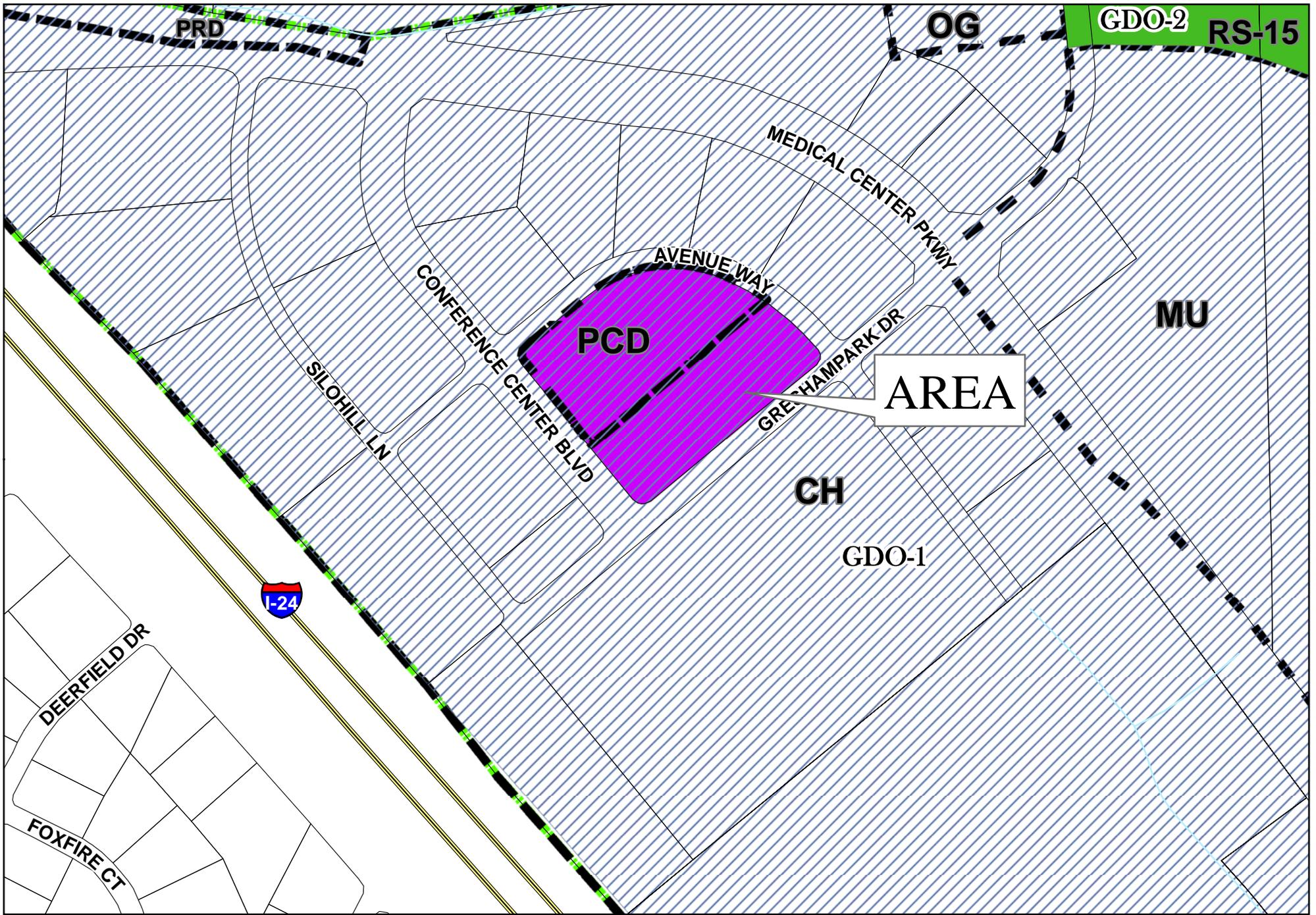


**Rezoning Request Along E. Northfield Blvd. from
RS-15 to RM-16**



GIS Department
City Of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov

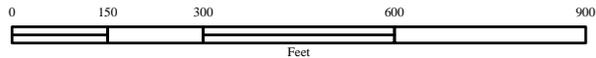




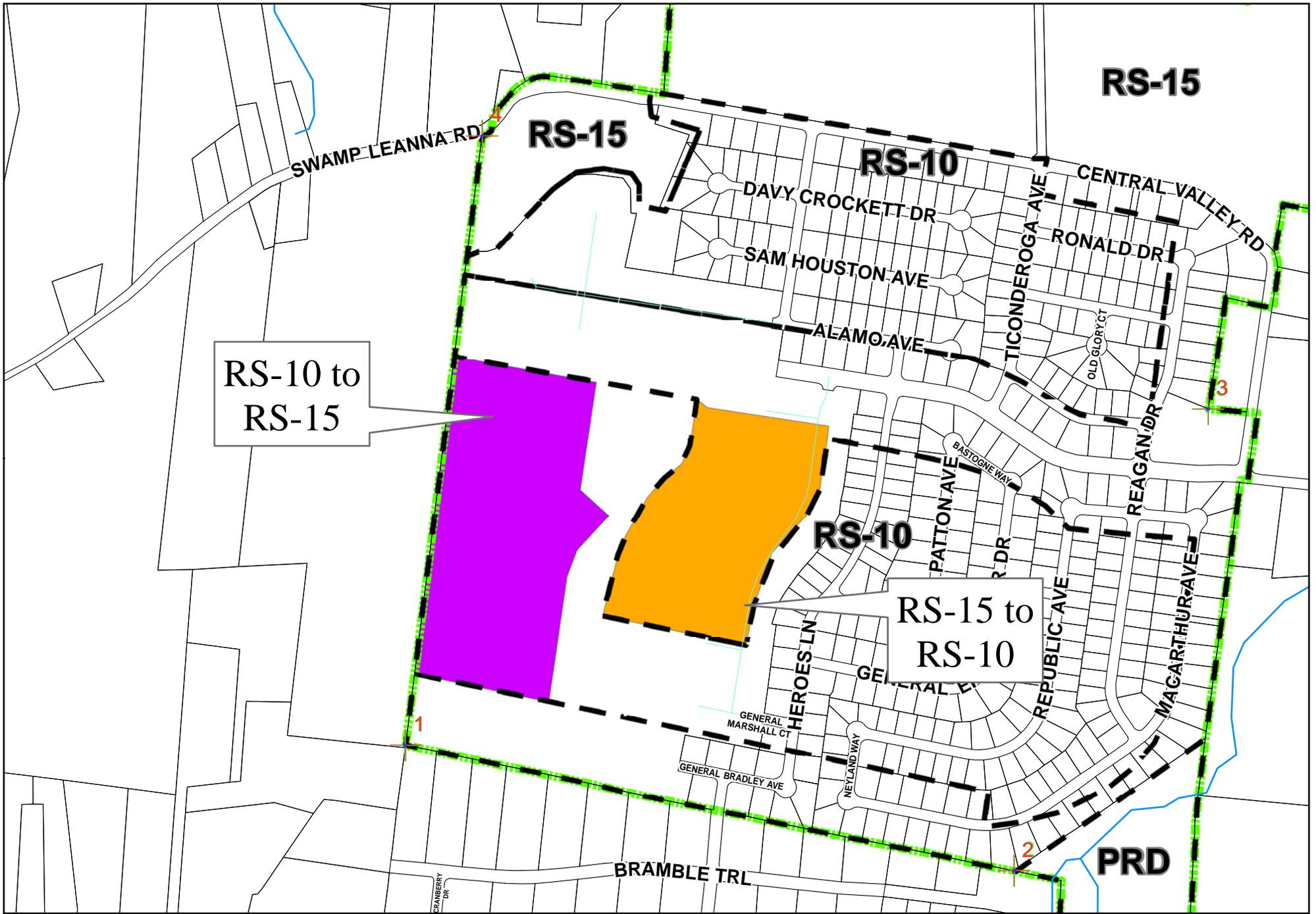
**Rezoning Request for Property Along Conference Center Blvd.
from CH and PCD to PRD**



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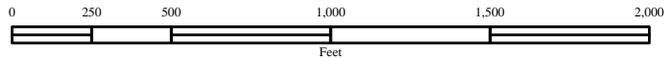
GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov



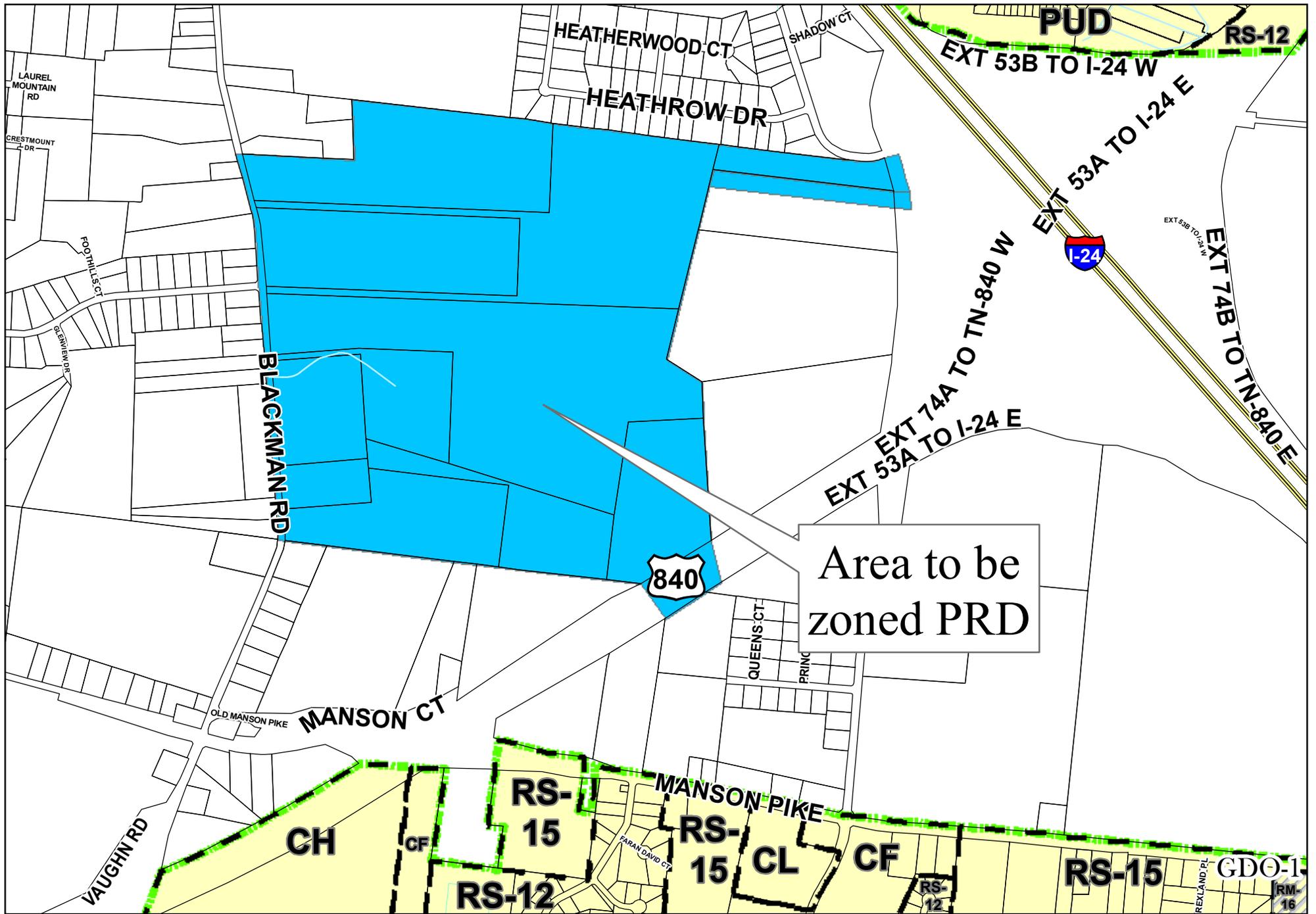
**Rezoning Request for Property in Liberty Cove Subdivision from
RS-10 to RS-15 and RS-15 to RS-10**



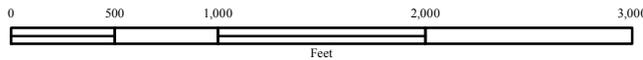
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GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov

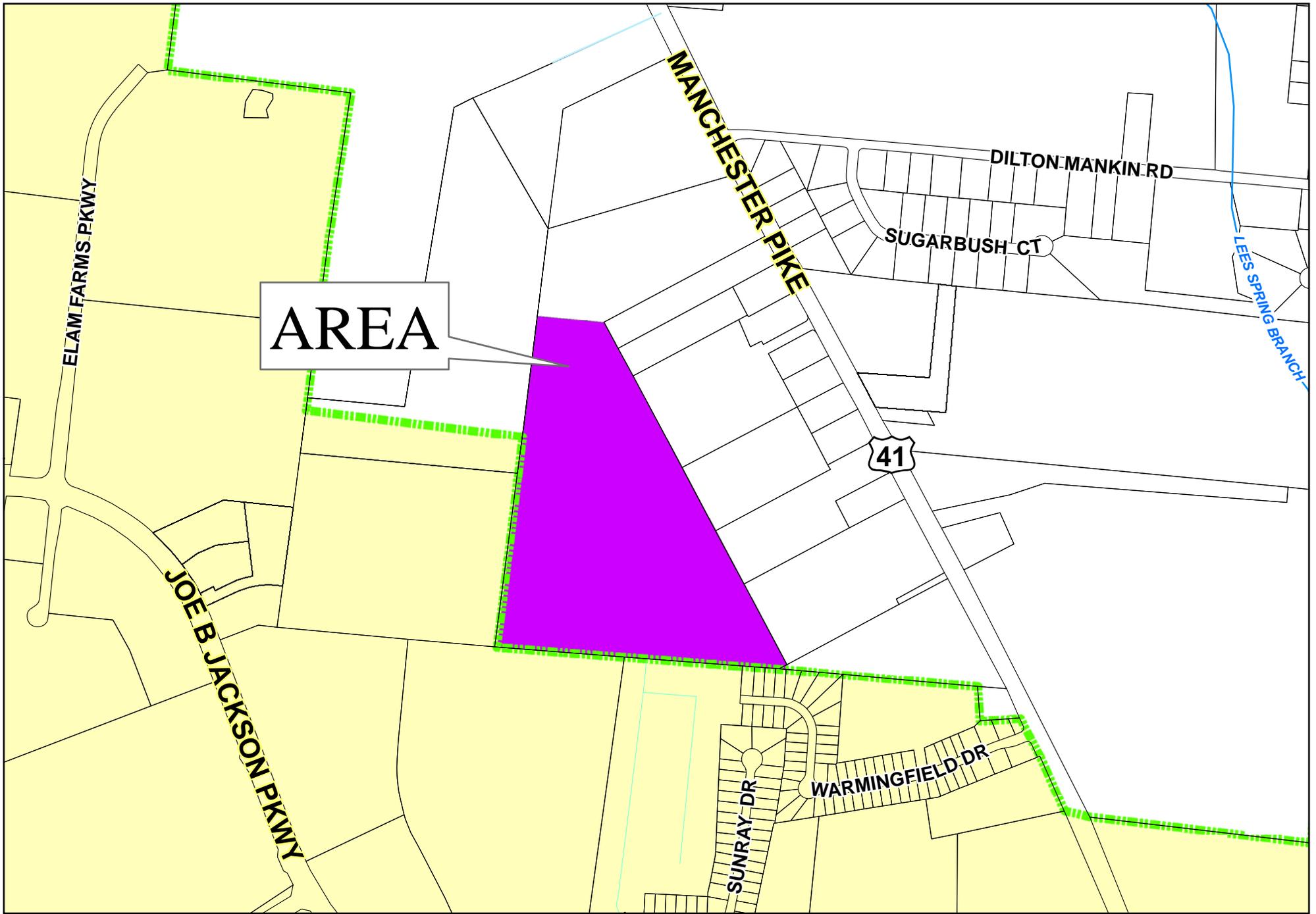


**Zoning Request for Property Along Blackman Road
PRD Simultaneous with Annexation**



GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov



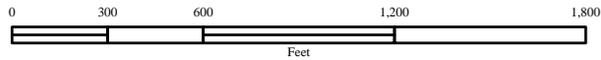


AREA

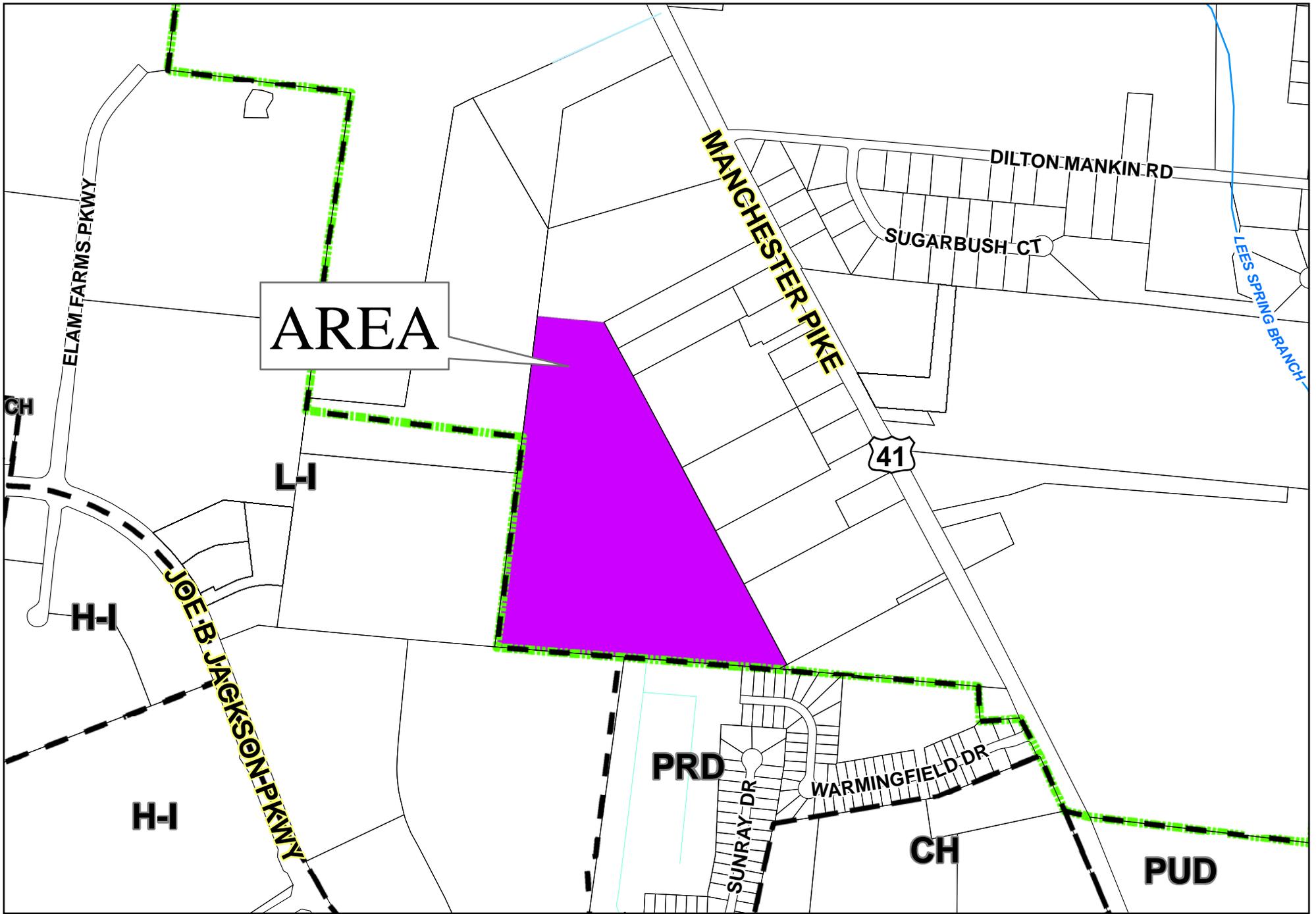
Annexation Request for Area West of Manchester Pike



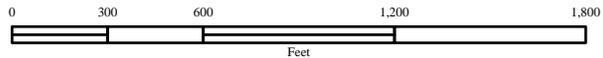
Path: G:\planning\annex\manchesterhwy02_2016.mxd



GIS Department
 City of Murfreesboro
 111 West Vine Street
 Murfreesboro, Tennessee 37130
www.murfreesborotn.gov

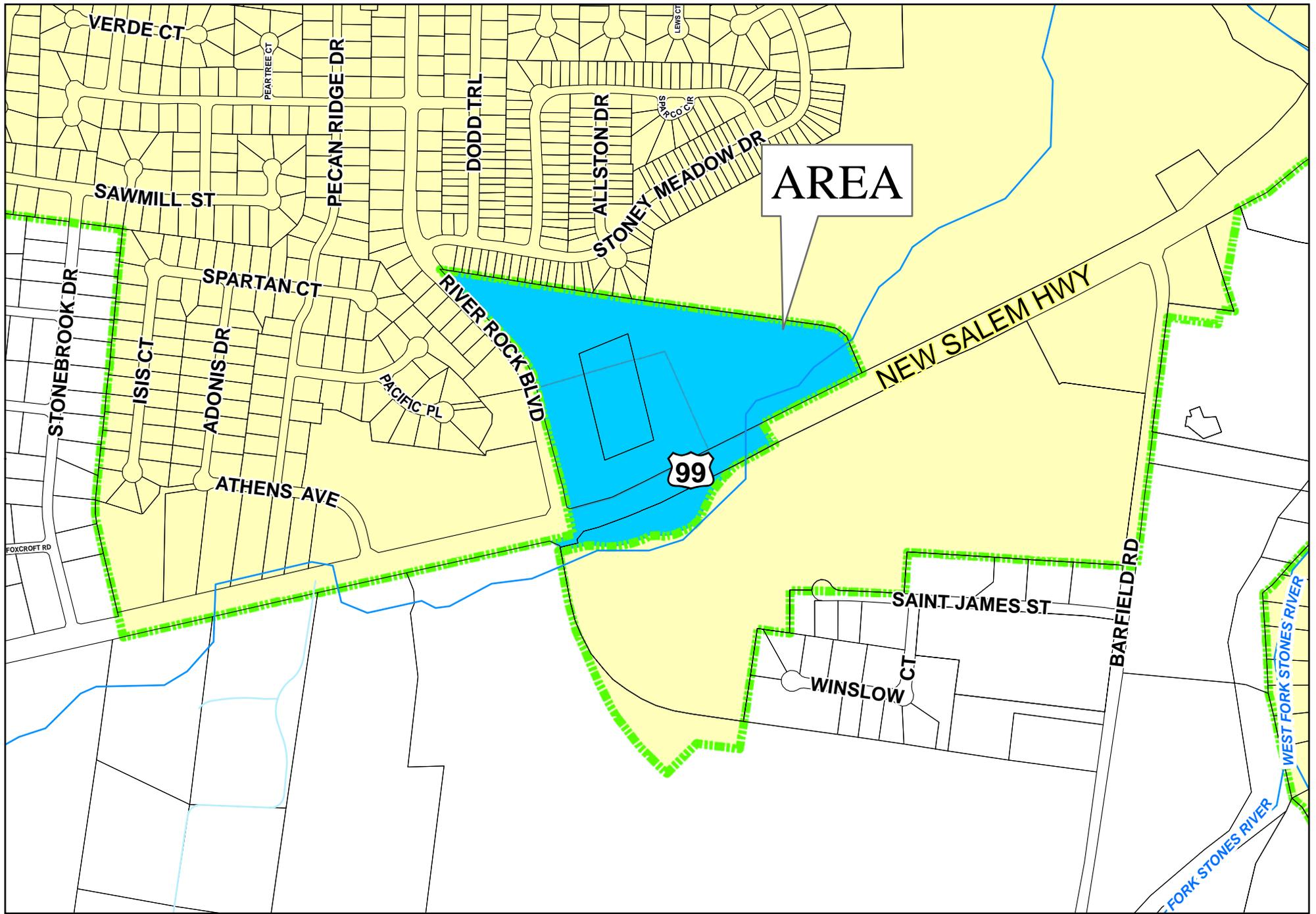


**Zoning Request for Area West of Manchester Pike
L-I Simultaneous with Annexation**



GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
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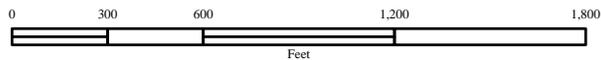




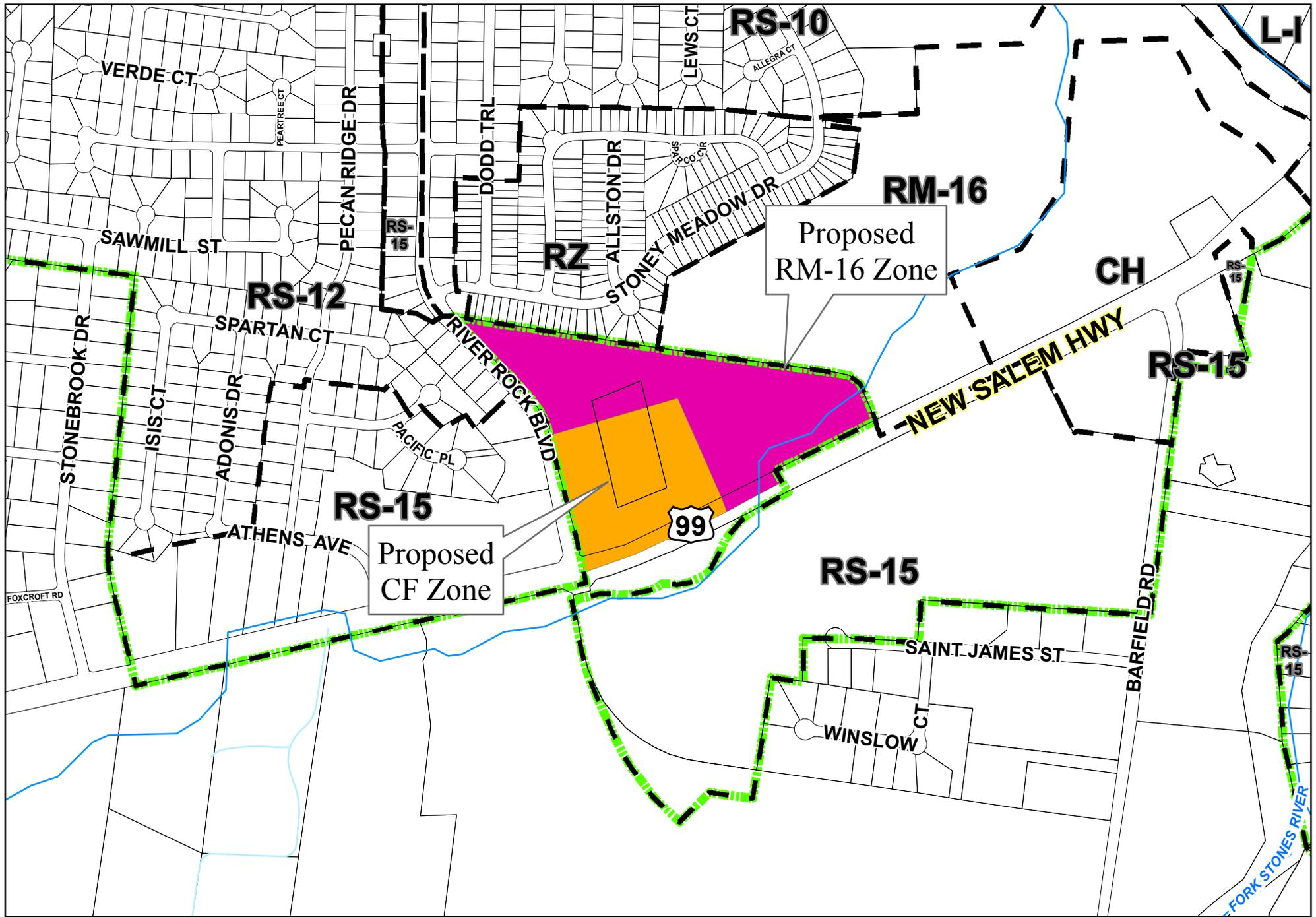
Annexation Request Along New Salem Highway



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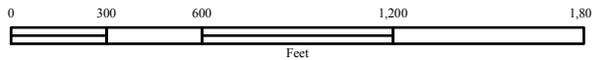
GIS Department
City of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov



**Zoning Request for Area Along New Salem Highway
CF and RM-16 Simultaneous with Annexation**



Path: G:\planning\rezon\newsalemhwy.mxd



GIS Department
City Of Murfreesboro
111 West Vine Street
Murfreesboro, Tennessee 37130
www.murfreesborotn.gov



... creating a better quality of life

March 7, 2016

Honorable Mayor and Members of City Council:

RE: Bass, Berry and Sims as Bond Counsel, Resolutions 16-R-5 and 16-R-6

It is recommended that City Council employ Bass, Berry and Sims to serve as Bond Counsel on the issuance of debt. It is also recommended that City Council adopt Resolutions 16-R-5 and 16-R-6 being the Initial Resolution to sell \$79 million in General Obligation debt of the City and the Bond Resolution defining the details of how the bonds would be issued, tracked and repaid. Both resolutions are in support of the City Council adopted Capital Improvement Plan (CIP) approved on December 10, 2015.

1. Overview

Capital Improvement Planning is a method for evaluating and implementing the effective and efficient provision of public facilities, infrastructure improvements, major maintenance requirements and the acquisition of property and equipment. The CIP includes projects and capital purchases which cost more than \$50,000 and have a useful life of at least five years.

The City's adopted Financial Policies require "an adopted capital improvements plan shall be the basis of determining borrowing, both as to the amount and the timing of debt sales. The City will plan and manage debt with a 'top-down'. The City's preferred method of sale is through competitive bid approach that is not driven by specific projects." Other components of the debt management section of the Financial Policies include:

1. Long term debt shall not be used to finance current operations;
2. The useful life of assets to be purchased or built with bonded debt proceeds shall not be less than the maturity of the underlying debt;
3. The City's will issue General Obligation debt with up to fifteen (15) year maturities in order to rapidly recapture its authorized bonding capacity;
4. The City will seek to structure its General Obligation debt with level debt service payments over the life of each individual bond issue;
5. The City must employ Bond Counsel to render an opinion on the tax exempt nature of the bonds and that all legal requirements for issuance of the debt have been correctly performed;
6. The City will utilize a financial advisor to review debt policies, evaluate the capital improvement plan, examine the capacity of the City for additional debt, follow and understand market conditions, structure the bond offering to best fit those market conditions, prepare and lead staff through the credit rating agency process, obtain access to credit enhancements when needed and conduct the actual sale of the bonds.

Administration Department

111 West Vine Street * P. O. Box 1139 * Murfreesboro, Tennessee 37133-1139 Phone 615 849 2629 * Fax 615 849 2679
TDD 615 849 2689 www.murfreesborotn.gov

7. The City will sell its debt using the method of sale that is most likely to achieve the lowest cost of borrowing while in compliance with federal and state law. This analysis takes into account bond structure, underlying security, credit ratings and other factors pertaining to the bond issue that may impact the ability for the efficient sale of debt;

The 2016-2020 CIP is predominantly funded by the issuance of debt. The table below lists only the projects utilizing bonds or other forms of debt for their completion. There is \$5.7 million in funding from the 2010 and 2012 bond issues and an additional \$4.8 million in shared County funding for City Schools. Savings from road construction, road projects being deferred, the building of Overall Creek Elementary and the purchase of fire trucks and equipment have allowed the \$5.7 million to be applied to current needs.

	2016
	CIP Projects
Administration	
ADA improvements	\$100,000
Energy Savings project	\$2,500,000
Subtotal Administration	\$2,600,000
Communications	
Renovation of Communication offices	\$225,000
Renovation of Council Chambers	\$80,000
Subtotal Communications	\$305,000
Engineering	
Equipment	\$1,020,100
Subtotal Engineering	\$1,020,100
Fire and Rescue	
Equipment	\$1,400,000
Public Safety Training Facility	\$2,500,000
Relocate Station 4	\$1,925,000
Subtotal Fire and Rescue	\$5,825,000
Golf	
Equipment	\$105,500
Subtotal Golf	\$105,500
Library	
Community Technology center	\$400,000
Police	
Equipment	\$1,525,000
Technology	\$820,000

Headquarters-Highland Avenue	\$42,155,000
Subtotal Police	\$44,500,000
Recreation	
Bradley Academy	\$145,000
Maintenance Shop	\$795,000
Miracle Field at McKnight	\$2,750,000
Old Fort Park Improvements	\$686,000
Patterson	\$150,000
School Park sites	\$620,000
Siegel Soccer	\$2,435,000
West Park	\$10,000,000
Subtotal Recreation	\$17,581,000
Schools	
Bradley Academy	\$343,000
Hobgood expansion	\$6,200,000
Subtotal Schools	\$6,543,000
St. Clair Senior Center	\$550,000
Solid Waste	
Side Loader replacements	\$1,800,000
Rear Loader replacement	\$190,000
Subtotal Solid Waste	\$1,990,000
Transit Building	\$55,000
Transportation	
Bradyville Pike	\$146,880
Butler Drive	\$1,000,000
Jones Boulevard	\$850,000
Kingdom Drive bridge	\$1,500,000
Lytle Street	\$3,660,000
North Maney Avenue	\$195,000
Perlino Drive bridge	\$60,000
Subtotal Transportation	\$7,411,880
TOTALS	\$88,886,480
LESS FUNDS ON HAND-PREVIOUS BOND ISSUES	\$5,700,000
LESS FUNDS ON HAND-COUNTY SHARED BONDS	\$4,800,000
GRAND TOTALS	\$78,386,480

2. Bond Issuance Process

Council previously employed Cumberland Securities to serve as Financial Advisor to the City in the issuance of debt. In that role, Cumberland has advised the City on the structure and details of the bonds to insure a competitive price. They have also prepared a Preliminary Official Statement (POS) that serves as a guide to investors contemplating the purchase of the City's bond.

Bass, Berry and Sims is recommended to serve as Bond Counsel and has prepared both the Initial Resolution and the Bond Resolution. Bass, Berry has served the City as Bond Counsel on numerous occasions, most recently the 2014 long and short term debt placements. An engagement letter for their services is attached in the amount of \$58,000 and requires Council approval.

State law initiates the bond issuance process through an Initial Resolution (Resolution 16-R-5) of City Council. The initial resolution explains the need for capital funding from bonds and outlines in broad terms the use of the bond funds. It also discusses the method of payment and initiates a 20-day period for the public to comment on the issuance of the debt.

The actual form and details of the bonds are documented in the Bond Resolution (Resolution 16-R-6). It is a detailed document that sets all the terms of the bonds from their authorization, through the details of the tracking and registration of the bonds electronically.

These bonds are proposed to be sold in the open market to obtain the most competitive pricing possible. The Bond Resolution sets forward the General Obligation pledge, whereby the City guarantees its "full faith and credit" to repay the bonds on the schedule prescribed.

The Bond Resolution also describes the tax-exempt status of the bonds, the fact that the reasonable economic life of the assets purchased or built with the bonds exceeds the term of the bonds and describes the continuing disclosure of the City's financial information required by the current securities regulations.

3. Funding

The bonds mature in relatively equal principal and interest payments annually for the next fifteen years with an estimated annual payment of approximately \$6.6 million. The current FY 2016 budget already planned for approximately \$1.5 million of interest cost in the present fiscal year. The FY 2017 budget will be adjusted to account for the additional \$5 million required to pay the annual principal and interest on the new bonds.

4. Recommendation

The development of the CIP is both challenging and exciting. As a vibrant and growing community, there are many needs that go beyond what can be budgeted and paid for from current income in one fiscal year.

To continue the progress planned in the CIP, it is recommended that City Council approve employing Bass, Berry and Sims as Bond Counsel, adopt Resolution 16-R-5, the Initial Resolution to issue debt and Resolution 16-R-6 detailing the structure of the bonds, the method of registration and tracking and the commitment of the City to repay the debt .

Sincerely,

James H. Crumley
Assistant City Manager

RESOLUTION NO. 16-R-05

INITIAL RESOLUTION AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION BONDS BY THE CITY OF MURFREESBORO, TENNESSEE, OF NOT TO EXCEED SEVENTY-NINE MILLION DOLLARS (\$79,000,000) TO PROVIDE FUNDING FOR CERTAIN PUBLIC WORKS PROJECTS, AND TO FUND THE INCIDENTAL AND NECESSARY EXPENSES RELATED THERETO.

WHEREAS, it is necessary and in the public interest of the City of Murfreesboro, Tennessee (the "Municipality") to incur indebtedness, through the issuance of one or more series of general obligation bonds (the "Bonds") pursuant to Title 9, Chapter 21, Tennessee Code Annotated, for the purpose of financing certain public works projects, as hereinafter more fully described, and to pay legal, fiscal, administrative, and engineering costs, and costs incident to the financing of such public works projects.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MURFREESBORO, TENNESSEE, AS FOLLOWS:

SECTION 1. For the purposes of financing (a) all or a portion of the costs of certain public works projects, consisting of the acquisition of land for and the construction, improvement, acquisition, extension, renovation, and equipping of the following: (1) schools, (2) City Hall, (3) public buildings and facilities, (4) parks and recreational facilities and vehicles, (5) fire and rescue facilities and vehicles, (6) airport and related facilities, (7) police facilities and vehicles, (8) solid waste facilities and vehicles, (9) streets, roads, bridges, plazas, sidewalks, lighting, drainage, streetscapes, and signage and related department vehicles, (10) library, (11) senior center, (12) transit building, (13) community technology center, (14) equipment for City departments, including but not limited to, fire and rescue, parks and recreation, solid waste and police, and (15) communication and technology improvements related to or in connection with the foregoing public works projects; (b) acquisition, construction and improvement of all other property, real and personal, appurtenant thereto or connected therewith, including all utilities, infrastructure and vehicles related to the foregoing public works projects; (c) all legal, fiscal, administrative, and engineering costs incident thereto (collectively, the "Projects"); (d) reimbursement, if any, for prior expenditures for any and all of the foregoing; and (e) costs incident to issuing the Bonds, the Municipality is hereby authorized to issue general obligation bonds in the amount of not to exceed Seventy-Nine Million Dollars (\$79,000,000) which shall bear interest at a rate or rates not to exceed the maximum rate permitted under applicable Tennessee law.

SECTION 2. The Bonds shall be payable from any and all funds of the Municipality legally available therefor, including, but not necessarily limited to, ad valorem taxes to be levied for such purpose on all taxable property within the corporate limits of the Municipality, without limitation as to time, rate, and amount and, for the punctual payment of said principal of, premium, if any, and interest on the Bonds, the full faith and credit of the Municipality will be irrevocably pledged.

SECTION 3. After the adoption of this Resolution, the City Recorder is directed to cause this Resolution, with the notice prescribed by the Act, to be published in full once in a newspaper published and having general circulation in the Municipality.

SECTION 4. This Resolution shall take effect from and after its adoption, the welfare of the Municipality requiring it.

Passed: _____

Shane McFarland, Mayor

ATTEST:

APPROVED AS TO FORM:

Melissa B. Wright
City Recorder

David A. Ives
City Attorney

NOTICE

The foregoing Resolution has been adopted. Unless within twenty (20) days from the date of publication hereof a petition, signed by at least ten percent (10%) of the registered voters of the City of Murfreesboro, Tennessee, shall have been filed with the City Recorder of the City of Murfreesboro, Tennessee, protesting the issuance of the general obligation bonds, such bonds will be issued as proposed.

STATE OF TENNESSEE)
COUNTY OF RUTHERFORD)

I, the undersigned, Melissa B. Wright, do hereby certify that I am the duly appointed City Recorder of the City of Murfreesboro, Rutherford County, Tennessee, and as such official I further certify that attached hereto is a true and correct copy of RESOLUTION 16-R-05 adopted by the City Council of said City at its meeting held on March 10, 2016.

IN WITNESS WHEREOF, I have hereunto subscribed by official signature and affixed the Corporate Seal of said City this ___ day of _____ 2016.

MELISSA B. WRIGHT
CITY RECORDER

(S E A L)

16154572.2

RESOLUTION NO. 16-R-06

A RESOLUTION AUTHORIZING THE ISSUANCE OF GENERAL OBLIGATION BONDS OF THE CITY OF MURFREESBORO, TENNESSEE IN THE AGGREGATE PRINCIPAL AMOUNT OF NOT TO EXCEED \$79,000,000, IN ONE OR MORE SERIES; MAKING PROVISION FOR THE ISSUANCE, SALE AND PAYMENT OF SAID BONDS, ESTABLISHING THE TERMS THEREOF AND THE DISPOSITION OF PROCEEDS THEREFROM; AND PROVIDING FOR THE LEVY OF TAXES FOR THE PAYMENT OF PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE BONDS

WHEREAS, 9-21-101, et seq., inclusive, Tennessee Code Annotated, as amended, authorizes the City of Murfreesboro, Tennessee (the "Municipality"), by resolution of the City Council (the "Governing Body"), to issue and sell bonds to finance public works projects; and

WHEREAS, the Governing Body of the Municipality hereby determines that it is necessary and advisable to issue general obligation bonds, in one or more series, for the purpose of financing (a) all or a portion of the costs of certain public works projects, consisting of the acquisition of land for and the construction, improvement, acquisition, extension, renovation, and equipping of the following: (1) schools, (2) City Hall, (3) public buildings and facilities, (4) parks and recreational facilities and vehicles, (5) fire and rescue facilities and vehicles, (6) airport and related facilities, (7) police facilities and vehicles, (8) solid waste facilities and vehicles, (9) streets, roads, bridges, plazas, sidewalks, lighting, drainage, streetscapes, and signage and related department vehicles, (10) library, (11) senior center, (12) transit building, (13) community technology center, (14) equipment for City departments, including but not limited to, fire and rescue, parks and recreation, solid waste and police, and (15) communication and technology improvements related to or in connection with the foregoing public works projects; (b) acquisition, construction and improvement of all other property, real and personal, appurtenant thereto or connected therewith, including all utilities, infrastructure and vehicles related to the foregoing public works projects; (c) all legal, fiscal, administrative, and engineering costs incident thereto; (d) reimbursement, if any, for prior expenditures for any and all of the foregoing; and (e) costs incident to issuing the Bonds; and

WHEREAS, the Governing Body of the Municipality further hereby determines that it is advisable to sell said general obligation bonds in one or more series; and

WHEREAS, on the date hereof, an initial resolution proposing the issuance of not to exceed \$79,000,000 in aggregate principal amount of general obligation bonds, the proceeds of which shall be used for the purposes set forth above, was adopted and, together with the statutory notice required by Section 9-21-206, Tennessee Code Annotated, will be published as required by law; and

WHEREAS, the Initial Resolution, together with the notice required by Section 9-21-206, Tennessee Code Annotated, as amended, has been published as required by law; twenty (20) days have passed since the date of publication thereof; and no legally sufficient petition, as defined by Section 9-21-207, Tennessee Code Annotated, has been filed with the City Recorder of the Municipality protesting the bonds; and

WHEREAS, it is the intention of the Governing Body of the Municipality to adopt this resolution for the purpose of authorizing not to exceed \$79,000,000 in aggregate principal amount of bonds for the above-described purposes, providing for the issuance, sale and payment of said bonds, establishing the terms thereof, and the disposition of proceeds therefrom, and providing for the levy of a tax for the payment of principal thereof, premium, if any, and interest thereon.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MURFREESBORO, TENNESSEE, AS FOLLOWS:

SECTION 1. Authority. The bonds authorized by this resolution are issued pursuant to 9-21-101, et seq., Tennessee Code Annotated, as amended, and other applicable provisions of law.

SECTION 2. Definitions. In addition to the terms defined in the preamble above, the following terms shall have the following meanings in this resolution unless the text expressly or by necessary implication requires otherwise:

(a) "Bonds" means the not to exceed \$79,000,000 General Obligation Bonds of the Municipality, to be issued in one or more series and dated their date(s) of issuance, and having such series designation(s) or such other dated date(s) as shall be determined by the Mayor pursuant to Section 8 hereof.

(b) "Book-Entry Form" or "Book-Entry System" means a form or system, as applicable, under which physical bond certificates in fully registered form are issued to a Depository, or to its nominee as Registered Owner, with the certificate of bonds being held by and "immobilized" in the custody of such Depository, and under which records maintained by persons, other than the Municipality or the Registration Agent, constitute the written record that identifies, and records the transfer of, the beneficial "book-entry" interests in those bonds.

(c) "Code" means the Internal Revenue Code of 1986, as amended, and all regulations promulgated thereunder.

(d) "Debt Management Policy" means the Debt Management Policy adopted by the Governing Body as required by the State Funding Board of the State of Tennessee;

(e) "Depository" means any securities depository that is a clearing agency under federal laws operating and maintaining, with its participants or otherwise, a Book-Entry System, including, but not limited to, DTC.

(f) "DTC" means The Depository Trust Company, a limited purpose company organized under the laws of the State of New York, and its successors and assigns.

(g) "DTC Participant(s)" means securities brokers and dealers, banks, trust companies and clearing corporations that have access to the DTC System.

(h) "Financial Advisor" means Cumberland Securities Company, Inc., Knoxville, Tennessee.

(i) "Governing Body" means the City Council of the Municipality;

(j) "Mayor" shall mean the Mayor of the Municipality.

(k) "Projects" means (a) all or a portion of the costs of certain public works projects, consisting of the acquisition of land for and the construction, improvement, acquisition, extension, renovation, and equipping of the following: (1) schools, (2) City Hall, (3) public buildings and facilities, (4) parks and recreational facilities and vehicles, (5) fire and rescue facilities and vehicles, (6) airport and related facilities, (7) police facilities and vehicles, (8) solid waste facilities and vehicles, (9) streets, roads, bridges, plazas, sidewalks, lighting, drainage, streetscapes, and signage and related department vehicles, (10) library, (11) senior center, (12) transit building, (13) community technology center, (14) equipment for City departments, including but not limited to, fire and rescue, parks and recreation, solid waste and police, and (15) communication and technology improvements related to or in connection with the foregoing public works projects; (b) acquisition, construction and improvement of all other property, real and personal, appurtenant thereto or connected therewith, including all utilities, infrastructure and vehicles related to the foregoing public works projects; and (c) all legal, fiscal, administrative, and engineering costs incident thereto.

(l) "Registration Agent" means the registration and paying agent appointed by the Mayor pursuant to the terms hereof, or any successor designated by the Governing Body.

SECTION 3. Findings of the Governing Body; Compliance with Debt Management Policy. The Governing Body hereby finds that the issuance and sale of the Bonds, as proposed herein, is consistent with the Municipality's Debt Management Policy. Approximate debt service is attached hereto as Exhibit A, subject to change by the Mayor, as permitted by Section 8 hereof.

SECTION 4. Authorization and Terms of the Bonds.

(a) For the purpose of providing funds to finance, in whole or in part, the cost of the Projects, reimbursement to the appropriate fund of the Municipality for prior expenditures for the foregoing costs, if applicable, and payment of costs incident to the issuance and sale of the Bonds, there is hereby authorized to be issued bonds of the Municipality in the aggregate principal amount of not to exceed \$79,000,000. The Bonds shall be issued in one or more series, as fully registered certificated Bonds or in fully registered, book-entry form, without coupons, and subject to the adjustments permitted hereunder, shall be known as "General Obligation Bonds", shall be dated their date(s) of issuance, and shall have such series designation(s) or such other dated date(s) as shall be determined by the Mayor pursuant to the terms hereof. The Bonds, or any series thereof, shall bear interest at a rate or rates not to exceed the maximum rate permitted by applicable Tennessee law at the time of issuance of the Bonds, payable (subject to the adjustments permitted hereunder) semi-annually on June 1 and December 1 in each year, commencing December 1, 2016. The Bonds shall be issued initially in \$5,000 denominations or integral multiples thereof, as shall be requested by the original purchaser thereof, or such other denominations as shall be directed by the Mayor. Subject to the adjustments permitted pursuant to the terms hereof, the Bonds shall mature serially or be subject to mandatory redemption and shall be payable on June 1 of each year, subject to prior optional redemption as hereinafter provided, in the years 2019 through 2031, inclusive. Attached hereto as Exhibit A is a preliminary debt service estimate of the amortization of the Bonds or any series thereof; provided, however, such amortization may be adjusted in accordance with the terms hereof.

(b) Subject to the adjustments permitted under Section 8 hereof, the Bonds may be subject to redemption prior to maturity at the option of the Municipality on June 1, 2026 and thereafter, as a whole or in part at any time at the redemption price of par plus accrued interest to the redemption date.

If less than all the Bonds shall be called for redemption, the maturities to be redeemed shall be selected by the Governing Body in its discretion. If less than all of the Bonds within a single maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.

(c) Pursuant to the terms hereof, the Mayor is authorized to sell the Bonds, or any maturities thereof, as term bonds ("Term Bonds") with mandatory redemption requirements corresponding to the maturities set forth herein or as determined by the Mayor. In the event any or all the Bonds are sold as Term Bonds, the Municipality shall redeem Term Bonds on redemption dates corresponding to the maturity dates set forth herein, in aggregate principal amounts equal to the maturity amounts established pursuant to the terms hereof for each redemption date, as such maturity amounts may be adjusted pursuant to the terms hereof, at a price of par plus accrued interest thereon to

the date of redemption. The Term Bonds to be redeemed within a single maturity shall be selected as follows:

If less than all of the Bonds within a single maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.

At its option, to be exercised on or before the forty-fifth (45th) day next preceding any such mandatory redemption date, the Municipality may (i) deliver to the Registration Agent for cancellation Bonds to be redeemed, in any aggregate principal amount desired, and/or (ii) receive a credit in respect of its redemption obligation under this mandatory redemption provision for any Bonds of the maturity to be redeemed which prior to said date have been purchased or redeemed (otherwise than through the operation of this mandatory sinking fund redemption provision) and cancelled by the Registration Agent and not theretofore applied as a credit against any redemption obligation under this mandatory sinking fund provision. Each Bond so delivered or previously purchased or redeemed shall be credited by the Registration Agent at 100% of the principal amount thereof on the obligation of the Municipality on such payment date and any excess shall be credited on future redemption obligations in chronological order, and the principal amount of Bonds to be redeemed by operation of this mandatory sinking fund provision shall be accordingly reduced. The Municipality shall on or before the forty-fifth (45th) day next preceding each payment date furnish the Registration Agent with its certificate indicating whether or not and to what extent the provisions of clauses (i) and (ii) of this subsection are to be availed of with respect to such payment and confirm that funds for the balance of the next succeeding prescribed payment will be paid on or before the next succeeding payment date.

(d) Notice of any call for redemption shall be given by the Registration Agent on behalf of the Municipality not less than twenty (20) nor more than sixty (60) days prior to the date fixed for redemption by sending an appropriate notice to the registered owners of the Bonds to be redeemed by first-class mail, postage prepaid, at the addresses shown on the Bond registration records of the Registration Agent as of the date of the notice; but neither failure to mail such notice nor any defect in any such notice so mailed shall affect the sufficiency of the proceedings for redemption of any of the Bonds for which proper notice was given. The notice may state that it is conditioned upon the deposit of moneys in an amount equal to the amount necessary to affect the redemption with the Registration Agent no later than the redemption date ("Conditional Redemption"). The notice may state that it is conditioned upon the deposit of moneys in an amount equal to the amount necessary to affect the redemption with the Registration Agent no later than the redemption date ("Conditional Redemption"). If DTC, or a successor Depository, is the registered owner of the Bonds, all redemption notices shall be mailed by the Registration Agent to DTC, or such successor Depository, as the registered owner of the Bonds, as and when above provided, and neither the Municipality nor the Registration Agent shall be responsible for mailing notices of redemption to DTC Participants or Beneficial Owners. Failure of DTC, or any successor Depository, to provide notice to any DTC Participant or Beneficial Owner will not affect the validity of such redemption. The Registration Agent shall mail said notices as and when directed by the Municipality pursuant to written instructions from an authorized representative of the Municipality (other than for a mandatory sinking fund redemption, notices of which shall be given on the dates provided herein) given at least forty-five (45) days prior to the redemption date (unless a shorter notice period shall be satisfactory to the Registration Agent). From and after the redemption date, all Bonds called for redemption shall cease to bear interest if funds are available at the office of the Registration Agent for the payment thereof and if

notice has been duly provided as set forth herein. In the case of a Conditional Redemption, the failure of the Municipality to make funds available in part or in whole on or before the redemption date shall not constitute an event of default, and the Registration Agent shall give immediate notice to the Depository, if applicable, or the affected Bondholders that the redemption did not occur and that the Bonds called for redemption and not so paid remain outstanding. In the case of a Conditional Redemption, the failure of the Municipality to make funds available in part or in whole on or before the redemption date shall not constitute an event of default, and the Registration Agent shall give immediate notice to the Depository or the affected Bondholders that the redemption did not occur and that the Bonds called for redemption and not so paid remain outstanding.

(e) The Governing Body hereby authorizes and directs the Mayor to appoint the Registration Agent for the Bonds and hereby authorizes the Registration Agent so appointed to maintain Bond registration records with respect to the Bonds, to authenticate and deliver the Bonds as provided herein, either at original issuance or upon transfer, to effect transfers of the Bonds, to give all notices of redemption as required herein, to make all payments of principal and interest with respect to the Bonds as provided herein, to cancel and destroy Bonds which have been paid at maturity or upon earlier redemption or submitted for exchange or transfer, to furnish the Municipality at least annually a certificate of destruction with respect to Bonds cancelled and destroyed, and to furnish the Municipality at least annually an audit confirmation of Bonds paid, Bonds outstanding and payments made with respect to interest on the Bonds. The Mayor is hereby authorized to execute and the City Recorder is hereby authorized to attest such written agreement between the Municipality and the Registration Agent as they shall deem necessary and proper with respect to the obligations, duties and rights of the Registration Agent. The payment of all reasonable fees and expenses of the Registration Agent for the discharge of its duties and obligations hereunder or under any such agreement is hereby authorized and directed.

(f) The Bonds shall be payable, both principal and interest, in lawful money of the United States of America at the main office of the Registration Agent. The Registration Agent shall make all interest payments with respect to the Bonds by check or draft on each interest payment date directly to the registered owners as shown on the Bond registration records maintained by the Registration Agent as of the close of business on the fifteenth day of the month next preceding the interest payment date (the "Regular Record Date") by depositing said payment in the United States mail, postage prepaid, addressed to such owners at their addresses shown on said Bond registration records, without, except for final payment, the presentation or surrender of such registered Bonds, and all such payments shall discharge the obligations of the Municipality in respect of such Bonds to the extent of the payments so made. Payment of principal of and premium, if any, on the Bonds shall be made upon presentation and surrender of such Bonds to the Registration Agent as the same shall become due and payable. All rates of interest specified herein shall be computed on the basis of a three hundred sixty (360) day year composed of twelve (12) months of thirty (30) days each. In the event the Bonds are not registered in the name of DTC, or a successor Depository, if requested by the Owner of at least \$1,000,000 in aggregate principal amount of the Bonds, payment of interest on such Bonds shall be paid by wire transfer to a bank within the continental United States or deposited to a designated account if such account is maintained with the Registration Agent and written notice of any such election and designated account is given to the Registration Agent prior to the record date.

(g) Any interest on any Bond that is payable but is not punctually paid or duly provided for on any interest payment date (hereinafter "Defaulted Interest") shall forthwith cease to be payable to the registered owner on the relevant Regular Record Date; and, in lieu thereof, such Defaulted Interest shall be paid by the Municipality to the persons in whose names the Bonds are registered at the close of business on a date (the "Special Record Date") for the payment of such Defaulted Interest, which shall be fixed in the following manner: the Municipality shall notify the Registration Agent in writing of the amount of Defaulted Interest proposed to be paid on each Bond and the date of the proposed payment, and at the same time the Municipality shall deposit with the Registration Agent an amount of money equal to the aggregate amount proposed to be paid in respect of such Defaulted Interest or shall make arrangements satisfactory to the

Registration Agent for such deposit prior to the date of the proposed payment, such money when deposited to be held in trust for the benefit of the persons entitled to such Defaulted Interest as in this Section provided. Thereupon, not less than ten (10) days after the receipt by the Registration Agent of the notice of the proposed payment, the Registration Agent shall fix a Special Record Date for the payment of such Defaulted Interest which date shall be not more than fifteen (15) nor less than ten (10) days prior to the date of the proposed payment to the registered Owners. The Registration Agent shall promptly notify the Municipality of such Special Record Date and, in the name and at the expense of the Municipality, not less than ten (10) days prior to such Special Record Date, shall cause notice of the proposed payment of such Defaulted Interest and the Special Record Date therefor to be mailed, first-class postage prepaid, to each registered owner at the address thereof as it appears in the Bond registration records maintained by the Registration Agent as of the date of such notice. Nothing contained in this Section or in the Bonds shall impair any statutory or other rights in law or in equity of any registered owner arising as a result of the failure of the Municipality to punctually pay or duly provide for the payment of principal of, premium, if any, and interest on the Bonds when due.

(h) The Bonds are transferable only by presentation to the Registration Agent by the registered owner, or his legal representative duly authorized in writing, of the registered Bond(s) to be transferred with the form of assignment on the reverse side thereof completed in full and signed with the name of the registered owner as it appears upon the face of the Bond(s) accompanied by appropriate documentation necessary to prove the legal capacity of any legal representative of the registered owner. Upon receipt of the Bond(s) in such form and with such documentation, if any, the Registration Agent shall issue a new Bond or the Bond to the assignee(s) in denominations, or integral multiples thereof, as authorized hereunder and as requested by the registered owner requesting transfer. The Registration Agent shall not be required to transfer or exchange any Bond during the period commencing on a Regular or Special Record Date and ending on the corresponding interest payment date of such Bond, nor to transfer or exchange any Bond after the publication of notice calling such Bond for redemption has been made, nor to transfer or exchange any Bond during the period following the receipt of instructions from the Municipality to call such Bond for redemption; provided, the Registration Agent, at its option, may make transfers after any of said dates. No charge shall be made to any registered owner for the privilege of transferring any Bond, provided that any transfer tax relating to such transaction shall be paid by the registered owner requesting transfer. The person in whose name any Bond shall be registered shall be deemed and regarded as the absolute owner thereof for all purposes and neither the Municipality nor the Registration Agent shall be affected by any notice to the contrary whether or not any payments due on the Bonds shall be overdue. The Bonds, upon surrender to the Registration Agent, may, at the option of the registered owner, be exchanged for an equal aggregate principal amount of the Bonds of the same maturity in any authorized denomination or denominations.

(i) The Bonds shall be executed in such manner as may be prescribed by applicable law, in the name, and on behalf, of the Municipality with the signature of the Mayor and the attestation of the City Recorder.

(j) If the Bonds are issued using a Book-Entry System, the Bonds shall be registered in the name of Cede & Co., as nominee of DTC, which will act as securities depository for the Bonds. If a Book-Entry System is employed, one Bond for each maturity shall be issued to DTC and immobilized in its custody or a custodian of DTC. A Book-Entry System, if employed, shall evidence ownership of the Bonds in authorized denominations, with transfers of beneficial ownership effected on the records of DTC and the DTC Participants pursuant to rules and procedures established by DTC. Unless the text expressly or by necessary implication requires otherwise, references in this Subsection to a Bond or the Bonds shall be construed to mean the Bond or the Bonds that are held under the Book-Entry System.

Each DTC Participant shall be credited in the records of DTC with the amount of such DTC Participant's interest in the Bonds. Beneficial ownership interests in the Bonds may be purchased by or through DTC Participants. The holders of these beneficial ownership interests are hereinafter referred to as the "Beneficial Owners." The Beneficial

Owners shall not receive the Bonds representing their beneficial ownership interests. The ownership interests of each Beneficial Owner shall be recorded through the records of the DTC Participant from which such Beneficial Owner purchased its Bonds. Transfers of ownership interests in the Bonds shall be accomplished by book entries made by DTC and, in turn, by DTC Participants acting on behalf of Beneficial Owners. SO LONG AS CEDE & CO., AS NOMINEE FOR DTC, IS THE REGISTERED OWNER OF THE BONDS, THE REGISTRATION AGENT SHALL TREAT CEDE & CO. AS THE ONLY HOLDER OF THE BONDS FOR ALL PURPOSES UNDER THIS RESOLUTION, INCLUDING RECEIPT OF ALL PRINCIPAL OF, PREMIUM, IF ANY, AND INTEREST ON THE BONDS, RECEIPT OF NOTICES, VOTING AND REQUESTING OR DIRECTING THE REGISTRATION AGENT TO TAKE OR NOT TO TAKE, OR CONSENTING TO, CERTAIN ACTIONS UNDER THIS RESOLUTION.

Payments of principal, interest, and redemption premium, if any, with respect to the Bonds, so long as DTC is the only owner of the Bonds, shall be paid by the Registration Agent directly to DTC or its nominee, Cede & Co., as provided in the Letter of Representation relating to the Bonds from the Municipality and the Registration Agent to DTC (the "Letter of Representation"). DTC shall remit such payments to DTC Participants, and such payments thereafter shall be paid by DTC Participants to the Beneficial Owners. The Municipality and the Registration Agent shall not be responsible or liable for payment by DTC or DTC Participants for sending transaction statements or for maintaining, supervising or reviewing records maintained by DTC or DTC Participants.

In the event that the Bonds are issued through a Book-Entry System and (1) DTC determines not to continue to act as securities depository for the Bonds, or (2) the Municipality determines that the continuation of the Book-Entry System of evidence and transfer of ownership of the Bonds would adversely affect their interests or the interests of the Beneficial Owners of the Bonds, then the Municipality shall discontinue the Book-Entry System with DTC or, upon request of such original purchaser, deliver the Bonds to the original purchaser in the form of fully-registered Bonds, as the case may be. If the Municipality fails to identify another qualified securities depository to replace DTC, the Municipality shall cause the Registration Agent to authenticate and deliver replacement Bonds in the form of fully-registered Bonds to each Beneficial Owner.

THE MUNICIPALITY AND THE REGISTRATION AGENT SHALL NOT HAVE ANY RESPONSIBILITY OR OBLIGATIONS TO ANY PARTICIPANT OR ANY BENEFICIAL OWNER WITH RESPECT TO (i) THE BONDS; (ii) THE ACCURACY OF ANY RECORDS MAINTAINED BY DTC OR ANY DTC PARTICIPANT; (iii) THE PAYMENT BY DTC OR ANY DTC PARTICIPANT OF ANY AMOUNT DUE TO ANY BENEFICIAL OWNER IN RESPECT OF THE PRINCIPAL OF AND INTEREST ON THE BONDS; (iv) THE DELIVERY OR TIMELINESS OF DELIVERY BY DTC OR ANY DTC PARTICIPANT OF ANY NOTICE DUE TO ANY BENEFICIAL OWNER THAT IS REQUIRED OR PERMITTED UNDER THE TERMS OF THIS RESOLUTION TO BE GIVEN TO BENEFICIAL OWNERS; (v) THE SELECTION OF BENEFICIAL OWNERS TO RECEIVE PAYMENTS IN THE EVENT OF ANY PARTIAL REDEMPTION OF THE BONDS; OR (vi) ANY CONSENT GIVEN OR OTHER ACTION TAKEN BY DTC OR ITS NOMINEE, CEDE & CO., AS OWNER.

(k) If a Book-Entry System is used, the Registration Agent is hereby authorized to take such action as may be necessary from time to time to qualify and maintain the Bonds for deposit with DTC, including but not limited to, wire transfers of interest and principal payments with respect to the Bonds, utilization of electronic book entry data received from DTC in place of actual delivery of Bonds and provision of notices with respect to Bonds registered by DTC (or any of its designees identified to the Registration Agent) by overnight delivery, courier service, telegram, telecopy or other similar means of communication. No such arrangements with DTC may adversely affect the interest of any of the owners of the Bonds; provided, however, that the Registration Agent shall not be liable with respect to any such arrangements it may make pursuant to this Section.

(l) If the purchaser(s) certifies that it intends to hold the Bonds for its own account, then the Municipality may issue certificated Bonds registered in the name of the owner without the utilization of DTC and the Book-Entry System.

(m) The Registration Agent is hereby authorized to authenticate and deliver the Bonds to the original purchaser, upon receipt by the Municipality of the proceeds of the sale thereof and to authenticate and deliver Bonds in exchange for Bonds of the same principal amount delivered for transfer upon receipt of the Bond(s) to be transferred in proper form with proper documentation as hereinabove described. The Bonds shall not be valid for any purpose unless authenticated by the Registration Agent by the manual signature of an officer thereof on the certificate set forth herein on the Bond form.

(n) In case any Bond shall become mutilated, or be lost, stolen, or destroyed, the Municipality, in its discretion, shall issue, and the Registration Agent, upon written direction from the Municipality, shall authenticate and deliver, a new Bond of like tenor, amount, maturity and date, in exchange and substitution for, and upon the cancellation of, the mutilated Bond, or in lieu of and in substitution for such lost, stolen or destroyed Bond, or if any such Bond shall have matured or shall be able to mature, instead of issuing a substituted Bond the Municipality may pay or authorize payment of such Bond without surrender thereof. In every case, the applicant shall furnish evidence satisfactory to the Municipality and the Registration Agent of the destruction, theft or loss of such Bond, and indemnify satisfactory to the Municipality and the Registration Agent; and the Municipality may charge the applicant for the issue of such new Bond an amount sufficient to reimburse the Municipality for the expense incurred by it in the issue thereof.

SECTION 5. Source of Payment. The Bonds shall be payable from and secured by unlimited ad valorem taxes to be levied on all taxable property within the Municipality. For the prompt payment of the principal of, premium, if any, and interest on the Bonds, the full faith and credit of the Municipality are hereby irrevocably pledged.

SECTION 6. Form of Bonds. The Bonds shall be in substantially the following form, the omissions to be appropriate completed when the Bonds are prepared and delivered:

(Form of Bond)

REGISTERED
Number _____

REGISTERED
\$ _____

UNITED STATES OF AMERICA
STATE OF TENNESSEE
CITY OF MURFREESBORO, TENNESSEE
GENERAL OBLIGATION BONDS, SERIES 2016

Interest Rate: Maturity Date: Date of Bond: CUSIP No.:

Registered Owner:

Principal Amount:

FOR VALUE RECEIVED, the City of Murfreesboro, Tennessee (the "Municipality"), a municipal corporation lawfully organized and existing in Rutherford County, Tennessee, hereby promises to pay to the registered owner hereof, hereinabove named, or registered assigns, in the manner hereinafter provided, the principal amount hereinabove set forth on the maturity date hereinabove set forth (or upon earlier redemption as set forth herein), and to pay interest (computed on the basis of a 360-day year of twelve 30-day months) on said principal amount at the annual rate interest hereinabove set forth from the date hereof until said maturity date or redemption date, said interest being payable on December 1, 2016, and semi-annually thereafter on the first day of June and December in each year until this Bond matures or is redeemed. The principal hereof and interest hereon are payable in lawful money of the United States of America by check or draft at the [designated corporate trust] office of _____, _____, _____, as registration and agent and paying agent (the "Registration Agent"). The Registration Agent shall make all interest payments with respect to this Bond on each interest payment date directly to the registered owner hereof shown on the Bond

registration records maintained by the Registration Agent as of the close of business on the fifteenth day of the month next preceding the interest payment date (the "Regular Record Date") by check or draft mailed to such owner at such owner's address shown on said Bond registration records, without, except for final payment, the presentation or surrender of this Bond, and all such payments shall discharge the obligations of the Municipality to the extent of the payments so made. Any such interest not so punctually paid or duly provided for on any interest payment date shall forthwith cease to be payable to the registered owner on the relevant Regular Record Date; and, in lieu thereof, such defaulted interest shall be payable to the person in whose name this Bond is registered at the close of business on the date (the "Special Record Date") for payment of such defaulted interest to be fixed by the Registration Agent, notice of which shall be given to the owners of the Bonds of the issue of which this Bond is one not less than ten (10) days prior to such Special Record Date. Payment of principal of [and premium, if any, on] this Bond shall be made when due upon presentation and surrender of this Bond to the Registration Agent.

[Except as otherwise provided herein or in the Resolution, as hereinafter defined, this Bond shall be registered in the name of Cede & Co., as nominee of The Depository Trust Company, New York, New York ("DTC"), which will act as securities depository for the Bonds of the series of which this Bond is one. One Bond for each maturity of the Bonds shall be issued to DTC and immobilized in its custody. A book-entry system shall be employed, evidencing ownership of the Bonds in \$5,000 denominations, or multiples thereof, with transfers of beneficial ownership effected on the records of DTC and the DTC Participants, as defined in the Resolution, pursuant to rules and procedures established by DTC. So long as Cede & Co., as nominee for DTC, is the registered owner of the Bonds, the Municipality and the Registration Agent shall treat Cede & Co. as the only owner of the Bonds for all purposes under the Resolution, including receipt of all principal and maturity amounts of, premium, if any, and interest on the Bonds, receipt of notices, voting and requesting or taking or not taking, or consenting to, certain actions hereunder. Payments of principal, maturity amounts, interest, and redemption premium, if any, with respect to the Bonds, so long as DTC is the only owner of the Bonds, shall be paid directly to DTC or its nominee, Cede & Co. DTC shall remit such payments to DTC Participants, and such payments thereafter shall be paid by DTC Participants to the Beneficial Owners, as defined in the Resolution. Neither the Municipality nor the Registration Agent shall be responsible or liable for payment by DTC or DTC Participants, for sending transaction statements or for maintaining, supervising or reviewing records maintained by DTC or DTC Participants. In the event that (1) DTC determines not to continue to act as securities depository for the Bonds or (2) the Municipality determines that the continuation of the book-entry system of evidence and transfer of ownership of the Bonds would adversely affect its interests or the interests of the Beneficial Owners of the Bonds, the Municipality may discontinue the book-entry system with DTC. If the Municipality fails to identify another qualified securities depository to replace DTC, the Municipality shall cause the Registration Agent to authenticate and deliver replacement Bonds in the form of fully-registered Bonds to each Beneficial Owner. Neither the Municipality nor the Registration Agent shall have any responsibility or obligations to DTC Participant or any Beneficial Owner with respect to (i) the Bonds; (ii) the accuracy or any records maintained by DTC or any DTC Participant; (iii) the payment by DTC or any DTC Participant of any amount due to any Beneficial Owner in respect of the principal or maturity amounts of and interest on the Bonds; (iv) the delivery or timeliness of delivery by DTC or any DTC Participant of any notice due to any Beneficial Owner that is required or permitted under the terms of the Resolution to be given to Beneficial Owners; (v) the selection of Beneficial Owners to receive payments in the event of any partial redemption of the Bonds; or (vi) any consent given or other action taken by DTC, or its nominee, Cede & Co., as owner.]

[Bonds of the issue of which this Bond is one shall be subject to redemption prior to maturity at the option of the Municipality on June 1, 20__ and thereafter, as a whole or in part at any time at the redemption price of par plus accrued interest to the redemption date.

If less than all the Bonds shall be called for redemption, the maturities to be redeemed shall be designated by the City Council of the Municipality, in its discretion. If

less than all the principal amount of the Bonds of a maturity shall be called for redemption, the interests within the maturity to be redeemed shall be selected as follows:

(i) if the Bonds are being held under a Book-Entry System by DTC, or a successor Depository, the amount of the interest of each DTC Participant in the Bonds to be redeemed shall be determined by DTC, or such successor Depository, by lot or such other manner as DTC, or such successor Depository, shall determine; or

(ii) if the Bonds are not being held under a Book-Entry System by DTC, or a successor Depository, the Bonds within the maturity to be redeemed shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall determine.]

[Subject to the credit hereinafter provided, the Municipality shall redeem Bonds maturing _____ on the redemption dates set forth below opposite the maturity dates, in aggregate principal amounts equal to the respective dollar amounts set forth below opposite the respective redemption dates at a price of par plus accrued interest thereon to the date of redemption. DTC, as securities depository for the series of Bonds of which this Bond is one, or such Person as shall then be serving as the securities depository for the Bonds, shall determine the interest of each Participant in the Bonds to be redeemed using its procedures generally in use at that time. If DTC or another securities depository is no longer serving as securities depository for the Bonds, the Bonds to be redeemed within a maturity shall be selected by the Registration Agent by lot or such other random manner as the Registration Agent in its discretion shall select. The dates of redemption and principal amount of Bonds to be redeemed on said dates are as follows:

<u>Final Maturity</u>	<u>Redemption Date</u>	<u>Principal Amount of Bonds Redeemed</u>
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*Final Maturity

At its option, to be exercised on or before the forty-fifth (45th) day next preceding any such redemption date, the Municipality may (i) deliver to the Registration Agent for cancellation Bonds to be redeemed, in any aggregate principal amount desired, and/or (ii) receive a credit in respect of its redemption obligation under this mandatory redemption provision for any Bonds of the maturity to be redeemed which prior to said date have been purchased or redeemed (otherwise than through the operation of this mandatory sinking fund redemption provision) and cancelled by the Registration Agent and not theretofore applied as a credit against any redemption obligation under this mandatory sinking fund provision. Each Bond so delivered or previously purchased or redeemed shall be credited by the Registration Agent at 100% of the principal amount thereof on the obligation of the Municipality on such payment date and any excess shall be credited on future redemption obligations in chronological order, and the principal amount of Bonds to be redeemed by operation of this mandatory sinking fund provision shall be accordingly reduced. The Municipality shall on or before the forty-fifth (45th) day next preceding each payment date furnish the Registration Agent with its certificate indicating whether or not and to what extent the provisions of clauses (i) and (ii) of this subsection are to be availed of with respect to such payment and confirm that funds for the balance of the next succeeding prescribed payment will be paid on or before the next succeeding payment date.]

Notice of any call for redemption shall be given by the Registration Agent not less than twenty (20) nor more than sixty (60) days prior to the date fixed for redemption by

sending an appropriate notice to the registered owners of the Bonds to be redeemed by first-class mail, postage prepaid, at the addresses shown on the Bond registration records of the Registration Agent as of the date of the notice; but neither failure to mail such notice nor any defect in any such notice so mailed shall affect the sufficiency of the proceedings for the redemption of any of the Bonds for which proper notice was given. The notice may state that it is conditioned upon the deposit of moneys in an amount equal to the amount necessary to affect the redemption with the Registration Agent no later than the redemption date ("Conditional Redemption"). [As long as DTC, or a successor Depository, is the registered owner of the Bonds, all redemption notices shall be mailed by the Registration Agent to DTC, or such successor Depository, as the registered owner of the Bonds, as and when above provided, and neither the Municipality nor the Registration Agent shall be responsible for mailing notices of redemption to DTC Participants or Beneficial Owners. Failure of DTC, or any successor Depository, to provide notice to any DTC Participant will not affect the validity of such redemption.] From and after any redemption date, all Bonds called for redemption shall cease to bear interest if funds are available at the office of the Registration Agent for the payment thereof and if notice has been duly provided as set forth in the Resolution, as hereafter defined. In the case of a Conditional Redemption, the failure of the Municipality to make funds available in part or in whole on or before the redemption date shall not constitute an event of default, and the Registration Agent shall give immediate notice to the [Depository or the] affected Bondholders that the redemption did not occur and that the Bonds called for redemption and not so paid remain outstanding.

This Bond is transferable by the registered owner hereof in person or by such owner's attorney duly authorized in writing at the [designated corporate trust] office of the Registration Agent set forth on the front side hereof, but only in the manner, subject to limitations and upon payment of the charges provided in the Resolution, as hereafter defined, and upon surrender and cancellation of this Bond. Upon such transfer, a new Bond or Bonds of authorized denominations of the same maturity and interest rate for the same aggregate principal amount will be issued to the transferee in exchange therefor. The person in whose name this Bond is registered shall be deemed and regarded as the absolute owner thereof for all purposes and neither the Municipality nor the Registration Agent shall be affected by any notice to the contrary whether or not any payments due on the Bond shall be overdue. Bonds, upon surrender to the Registration Agent, may, at the option of the registered owner thereof, be exchanged for an equal aggregate principal amount of the Bonds of the same maturity in authorized denomination or denominations, upon the terms set forth in the Resolution. The Registration Agent shall not be required to transfer or exchange any Bond during the period commencing on a Regular Record Date or Special Record Date and ending on the corresponding interest payment date of such Bond, nor to transfer or exchange any Bond after the notice calling such Bond for redemption has been made, nor during a period following the receipt of instructions from the Municipality to call such Bond for redemption.

[This Bond is one of a total authorized issue aggregating \$_____ and issued by the Municipality to finance (a) all or a portion of the costs of certain public works projects, consisting of the acquisition of land for and the construction, improvement, acquisition, extension, renovation, and equipping of the following: (1) schools, (2) City Hall, (3) public buildings and facilities, (4) parks and recreational facilities and vehicles, (5) fire and rescue facilities and vehicles, (6) airport and related facilities, (7) police facilities and vehicles, (8) solid waste facilities and vehicles, (9) streets, roads, bridges, plazas, sidewalks, lighting, drainage, streetscapes, and signage and related department vehicles, (10) library, (11) senior center, (12) transit building, (13) community technology center, (14) equipment for City departments, including but not limited to, fire and rescue, parks and recreation, solid waste and police, and (15) communication and technology improvements related to or in connection with the foregoing public works projects; (b) acquisition, construction and improvement of all other property, real and personal, appurtenant thereto or connected therewith, including all utilities, infrastructure and vehicles related to the foregoing public works projects; (c) all legal, fiscal, administrative, and engineering costs incident thereto (collectively, the "Projects"); (d) reimbursement, if any, for prior expenditures for any and all of the foregoing; and (e) costs incident to issuing the Bonds, pursuant to 9-21-101, et seq., Tennessee Code Annotated, as amended, and

pursuant to a resolution adopted by the City Council of the Municipality on March 10, 2016 (the "Resolution").]

The Bonds shall be payable from unlimited ad valorem taxes to be levied on all taxable property within the Municipality. For the prompt payment of the principal of, premium, if any, and interest on the Bonds, the full faith and credit of the Municipality are hereby irrevocably pledged.

This Bond and the income therefrom are exempt from all present state, county and municipal taxes in Tennessee except (a) inheritance, transfer and estate taxes, (b) Tennessee excise taxes on interest on the Bond during the period the Bond is held or beneficially owned by any organization or entity, other than a sole proprietorship or general partnership, doing business in the State of Tennessee, and (c) Tennessee franchise taxes by reason of the inclusion of the book value of the Bond in Tennessee franchise tax base of any organization or entity, other than a sole proprietorship or general partnership, doing business in the State of Tennessee.

It is hereby certified, recited, and declared that all acts, conditions and things required to exist, happen and be performed precedent to and in the issuance of this Bond exist, happen and be performed precedent to and in the issuance of this Bond exist, have happened and have been performed in due time, form and manner as required by law, and that the amount of this Bond, together with all other indebtedness of the Municipality, does not exceed any limitation prescribed by the constitution and statutes of the State of Tennessee.

IN WITNESS WHEREOF, the Municipality has caused this Bond to be signed by its Mayor and attested by its City Recorder under the corporate seal of the Municipality, all as of the date hereinabove set forth.

CITY OF MURFREESBORO, TENNESSEE

By: _____
Mayor

(SEAL)

ATTESTED:

City Recorder

Transferable and payable at the designated corporate trust office of: _____
_____, _____

Date of Registration: _____

This Bond is one of the issue of Bonds issued pursuant to the Resolution hereinabove described.

Registration Agent

By: _____
Authorized Officer

(FORM OF ASSIGNMENT)

FOR VALUE RECEIVED, the undersigned sells, assigns and transfers unto _____, whose address is _____ (Please insert Federal Identification or Social Security Number of Assignee _____), the within Bond of City of Murfreesboro, Tennessee, and does hereby irrevocably constitute and appoint _____, attorney, to transfer the said Bond on the records kept for registration thereof with full power of substitution in the premises.

Dated: _____

NOTICE: The signature to this assignment must correspond with the name of the registered owner as it appears on the face of the within Bond in every particular, without alteration or enlargement or any change whatsoever.

Signature guaranteed:

NOTICE: Signature(s) must be guaranteed by a member firm of a Medallion Program acceptable to the Registration Agent

SECTION 7. Levy of Tax. The Municipality, through its Governing Body, shall annually levy and collect a tax upon all taxable property within the Municipality, in addition to all other taxes authorized by law, sufficient to pay principal of, premium, if any, and interest on the Bonds when due, and for that purpose there is hereby levied a direct annual tax in such amount as may be found necessary each year to pay principal, premium, if any, and interest coming due on the Bonds in said year. Principal, premium, if any, and interest falling due at any time when there are insufficient funds from this tax levy on hand shall be paid from the current funds of the Municipality and reimbursement therefor shall be made out of the taxes hereby provided to the levied when the same shall have been collected. The tax herein provided may be reduced to the extent of any direct appropriations from other funds, taxes and revenues of the Municipality to the payment of debt service on the Bonds.

SECTION 8. Sale of Bonds.

(a) The Bonds shall be offered for competitive public sale in one or more series, at a price of not less than ninety-nine percent (99%) of par, plus accrued interest, as a whole or in part from time to time as shall be determined by the Mayor, in consultation with the Financial Advisor. The Bonds, or any series thereof, shall be sold by delivery of bids via physical delivery, mail, fax, or telephone or by electronic bidding means of an Internet bidding service as shall be determined by the Mayor, in consultation with the Financial Advisor.

(b) If the Bonds are sold in more than one series, the Mayor is authorized to cause to be sold in each series an aggregate principal amount of Bonds less than that shown in Section 4 hereof for each series, so long as the total aggregate principal amount of all series issued does not exceed the total aggregate of Bonds authorized to be issued herein.

(c) The Mayor is further authorized with respect to each series of Bonds to:

(1) change the dated date of the Bonds, or any series thereof, to a date other than the date of issuance of the Bonds;

(2) change the designation of the Bonds, or any series thereof, to a designation other than "General Obligation Bonds" and to specify the series designation of the Bonds, or any series thereof;

(3) change the first interest payment date on the Bonds, or any series thereof, to a date other than December 1, 2016, provided that such date is not later than twelve months from the dated date of such series of Bonds;

(4) adjust the principal and interest payment dates and the maturity amounts of the Bonds (including, but not limited to establishing the date and year of the first principal payment date), or any series thereof, provided that (A) the total principal amount of all series of the Bonds does not exceed the total amount of Bonds authorized herein; and (B) the final maturity date of each series shall not exceed twenty (20) years from its' date of issuance;

(5) adjust or remove the Municipality's optional redemption provisions of the Bonds, or any series thereof, provided that the premium amount to be paid on Bonds or any series thereof does not exceed two percent (2%) of the principal amount thereof;

(6) sell the Bonds, or any series thereof, or any maturities thereof as Term Bonds with mandatory redemption requirements corresponding to the maturities set forth herein or as otherwise determined by the Mayor, as he shall deem most advantageous to the Municipality;

(7) cause all or a portion of the Bonds to be insured by a bond insurance policy issued by a nationally recognized bond insurance company if such insurance is requested and paid for by the winning bidder of the Bonds, or any series thereof.

The form of the Bond set forth in Section 6 hereof shall be conformed to reflect any changes made pursuant to this Section 8 hereof.

(d) The Mayor is authorized to sell the Bonds, or any series thereof, simultaneously with any other bonds or notes authorized by resolution or resolutions of the Governing Body. The Mayor is further authorized to sell the Bonds, or any series thereof, as a single issue of bonds with any other bonds with substantially similar terms authorized by resolution or resolutions of the Governing Body, in one or more series as the Mayor shall deem to be advantageous to the Municipality and in doing so, the Mayor is authorized to change the designation of the Bonds to a designation other than "General Obligation Bonds"; provided, however, that the total aggregate principal amount of combined bonds to be sold does not exceed the total aggregate principal amount of Bonds authorized by this resolution or bonds authorized by any other resolution or resolutions adopted by the Governing Body.

(e) The Mayor is authorized to award the Bonds, or any series thereof, in each case to the bidder whose bid results in the lowest true interest cost to the Municipality, provided the rate or rates on the Bonds does not exceed the maximum rate prescribed by Section 4 hereof. The award of the Bonds by the Mayor to the lowest bidder shall be binding on the Municipality, and no further action of the Governing Body with respect thereto shall be required. If permitted in the notice of sale for the Bonds, including any series thereof, (i) the successful bidder may request that the Bonds, or any such series thereof, be issued in the form of fully registered certificated Bonds in the name of the successful bidder or as directed by the successful bidder, in lieu of registration using the Book-Entry System, and/or (ii) the successful bidder may assign its right to purchase the Bonds, or any series thereof, to a third party provided, however, that upon such assignment, the successful bidder shall remain obligated to perform all obligations relating to the purchase of the Bonds as the successful bidder, including the delivery of a good faith deposit, if any, the execution of required documents and the payment of the purchase price, if such successful bidder's assignee does not perform any of such obligations.

(f) The Mayor and City Recorder are authorized to cause the Bonds, in fully registered certificated or book-entry form, to be authenticated and delivered by the Registration Agent to the successful bidder and to execute, publish, and deliver all certificates and documents, including an Official Statement and closing certificates, as

they shall deem necessary in connection with the sale and delivery of the Bonds. The Mayor is hereby authorized to enter into a contract with the Financial Advisor, for financial advisory services in connection with the sale of the Bonds and to enter into a contract with Bass, Berry & Sims PLC to serve as bond counsel in connection with the Bonds in substantially the form attached hereto as Exhibit B.

(g) No Bonds shall be issued until the publication of the Initial Resolution and at least twenty-days have elapsed since the publication thereof with no legally sufficient protest having been filed.

SECTION 9. Disposition of Bond Proceeds. The proceeds of the sale of the Bonds shall be disbursed as follows:

(a) the proceeds from the sale of the Bonds shall be deposited with a financial institution regulated by the Federal Deposit Insurance Corporation or similar federal agency in a special fund known as the Series 2016 Construction Fund (the "Construction Fund"), or such other designation as shall be determined by the Mayor to be kept separate and apart from all other funds of the Municipality. The Municipality shall disburse funds in the Construction Fund to pay costs of issuance of the Bonds, including necessary legal, accounting and fiscal expenses, printing, engraving, advertising and similar expenses, administrative and clerical costs, Registration Agent fees, bond insurance premiums, if any, and other necessary miscellaneous expenses incurred in connection with the issuance and sale of the Bonds. Notwithstanding the foregoing, costs of issuance of the Bonds may be withheld from the good faith deposit, if any, or purchase price of the Bonds and paid to the Financial Advisor to be used to pay costs of issuance of the Bonds. The remaining funds in the Construction Fund shall be disbursed solely to pay the costs of the Projects and to reimburse the Municipality for any funds previously expended for costs of the Projects. Money in the Construction Fund shall be secured in the manner prescribed by applicable statutes relative to the securing of public or trust funds, if any, or, in the absence of such a statute, by a pledge of readily marketable securities having at all times a market value of not less than the amount in said Construction Fund. Money in the Construction Fund shall be invested at the direction of the City Recorder in such investments as shall be permitted by applicable law to the extent permitted by applicable law and shall be retained therein. After completion of the Projects, monies, if any, remaining in the Construction Fund may be used to pay interest on the Bonds.

SECTION 10. Official Statement. The Mayor, City Manager and City Recorder of the Municipality, or any of them, are hereby authorized and directed to provide for the preparation and distribution of a Preliminary Official Statement describing the Bonds. After bids have been received and the Bonds have been awarded, the Mayor, City Manager and City Recorder of the Municipality, or any of them, shall make such completions, omissions, insertions and changes in any Preliminary Official Statement prepared, as shall be consistent with this resolution and necessary or desirable to complete the Preliminary Official Statement as a final Official Statement for purposes of Rule 15c2-12(e)(3) of the Securities and Exchange Commission. The Mayor, City Manager and City Recorder of the Municipality, or any of them, shall arrange for the delivery to the successful bidder on the Bonds of a reasonable number of copies of the Official Statement within seven business days after the Bonds have been awarded for delivery, by the successful bidder on the Bonds, to each potential investor requesting a copy of the Official Statement and to each person to whom such bidder and members of his bidding group initially sell the Bonds.

The Mayor, City Manager and City Recorder of the Municipality, or any of them, are authorized, on behalf of the Municipality, to deem any Preliminary Official Statement and Official Statement for the Bonds in final form, each to be final as of its date within the meaning of Rule 15c2-12(b)(1), except for the omission in the Preliminary Official Statement of certain pricing and other information allowed to be omitted pursuant to such Rule 15c2-12(b)(1). The distribution of the Preliminary Official Statement and the Official Statement in final form shall be conclusive evidence that each has been deemed in final form as of its date by the Municipality except for the omission in the Preliminary Official Statement of such pricing and other information.

Notwithstanding the foregoing provisions of this Section, if the winning bidder or its purchaser or assignee does not intend to reoffer the Bonds, as evidenced by a certificate executed by the winning bidder and/or its purchaser or assignee, then an Official Statement is authorized, but not required, as shall be determined by the Mayor in consultation with the Financial Advisor and Bond Counsel.

SECTION 11. Discharge and Satisfaction of Bonds. If the Municipality shall pay and discharge the indebtedness evidenced by any series of the Bonds in any one or more of the following ways, to wit:

(a) By paying or causing to be paid, by deposit of sufficient funds as and when required with the Registration Agent, the principal of and interest on such Bonds as and when the same become due and payable;

(b) By depositing or causing to be deposited with any trust company or financial institution whose deposits are insured by the Federal Deposit Insurance Corporation or similar federal agency and which has trust powers (an "Agent"; which Agent may be the Registration Agent) in trust or escrow, on or before the date of maturity or redemption, sufficient money or Federal Obligations, as hereafter defined, the principal of and interest on which, when due and payable, will provide sufficient moneys to pay or redeem such Bonds and to pay interest thereon when due until the maturity or redemption date (provided, if such Bonds are to be redeemed prior to maturity thereof, proper notice of such redemption shall have been given or adequate provision shall have been made for the giving of such notice);

(c) By delivering such Bonds to the Registration Agent for cancellation by it;

and if the Municipality shall also pay or cause to be paid all other sums payable hereunder by the Municipality with respect to such Bonds, or make adequate provision therefor, and by resolution of the Governing Body instruct any such Agent to pay amounts when and as required to the Registration Agent for the payment of principal of and interest on such Bonds when due, then and in that case the indebtedness evidenced by such Bonds shall be discharged and satisfied and all covenants, agreements and obligations of the Municipality to the holders of such Bonds shall be fully discharged and satisfied and shall thereupon cease, terminate and become void.

If the Municipality shall pay and discharge the indebtedness evidenced by any of the Bonds in the manner provided in either clause (a) or clause (b) above, then the registered owners thereof shall thereafter be entitled only to payment out of the money or Federal Obligations deposited as aforesaid.

Except as otherwise provided in this Section, neither Federal Obligations nor moneys deposited with the Registration Agent pursuant to this Section nor principal or interest payments on any such Federal Obligations shall be withdrawn or used for any purpose other than, and shall be held in trust for, the payment of the principal and interest on said Bonds; provided that any cash received from such principal or interest payments on such Federal Obligations deposited with the Registration Agent, (A) to the extent such cash will not be required at any time for such purpose, shall be paid over to the Municipality as received by the Registration Agent and (B) to the extent such cash will be required for such purpose at a later date, shall, to the extent practicable, be reinvested in Federal Obligations maturing at times and in amounts sufficient to pay when due the principal and interest to become due on said Bonds on or prior to such redemption date or maturity date thereof, as the case may be, and interest earned from such reinvestments shall be paid over to the Municipality, as received by the Registration Agent. For the purposes of this Section, Federal Obligations shall direct obligations of, or obligations, the principal of and interest on which are guaranteed by, the United States of America, or any agency thereof, obligations of any agency or instrumentality of the United States or any other obligations at the time of the purchase thereof are permitted investments under Tennessee law for the purposes described in this Section, which bonds or other obligations shall not be subject to redemption prior to their maturity other than at the option of the registered owner thereof.

SECTION 12. Federal Tax Matters Related to the Bonds.

(a) Except as hereinafter provided, the Bonds will be issued as federally tax-exempt bonds. The Municipality hereby covenants that it will not use, or permit the use of, any proceeds of the Bonds in a manner that would cause the Bonds to be subjected to treatment under Section 148 of the Code, and applicable regulations thereunder, as an "arbitrage bond". To that end, the Municipality shall comply with applicable regulations adopted under said Section 148. The Municipality further covenants with the registered owners from time to time of the Bonds that it will, throughout the term of the Bonds and through the date that the final rebate, if any, must be made to the United States in accordance with Section 148 of the Code, comply with the provisions of Sections 103 and 141 through 150 of the Code and all regulations proposed and promulgated thereunder that must be satisfied in order that interest on the Bonds shall be and continue to be excluded from gross income for federal income tax purposes under Section 103 of the Code. Notwithstanding anything herein to the contrary, if the Mayor determines, in consultation with the Financial Advisor and Bond Counsel, that a portion of the Projects cannot be financed with proceeds of federally tax-exempt bonds pursuant to the requirements of the Code, the Bonds financing that portion of the Projects will be issued as federally taxable bonds, and all documents authorized herein shall be conformed accordingly.

(b) It is reasonably expected that the Municipality will reimburse itself for certain expenditures made by it in connection with the Projects by issuing the Bonds. This resolution shall be placed in the minutes of the Governing Body and shall be made available for inspection by the general public at the office of the Governing Body. This resolution constitutes a declaration of official intent under Treas. Reg. §1.150-2.

(c) The appropriate officers of the Municipality are authorized and directed, on behalf of the Municipality, to execute and deliver all such certificates and documents that may be required of the Municipality in order to comply with the provisions of this Section related to the issuance of the Bonds and to administer the Municipality's Federal Tax Compliance Policies and Procedures with respect to the Bonds.

SECTION 13. Continuing Disclosure. If and as required by Rule 15c2-12 of the Securities Exchange Commission for the Bonds, the Municipality hereby covenants and agrees that it will provide annual financial information and event notices to the appropriate information repositories. The Mayor is authorized to execute at the Closing of the sale of the Bonds an agreement for the benefit of and enforceable by the owners of the Bonds specifying the details of the financial information and event notices to be provided and its obligations relating thereto. Failure of the Municipality to comply with the undertaking herein described and to be detailed in said closing agreement shall not be a default hereunder, but any such failure shall entitle the owner or owners of any of the Bonds to take such actions and to initiate such proceedings as shall be necessary and appropriate to cause the Municipality to comply with their undertaking as set forth herein and in said agreement, including the remedies of mandamus and specific performance.

SECTION 14. Reasonably Expected Economic Life. The "reasonably expected economic life" of the Projects within the meaning of Sections 9-21-101, et seq., Tennessee Code Annotated, is greater than the term of the Bonds authorized herein.

SECTION 15. Resolution a Contract. The provisions of this resolution shall constitute a contract between the Municipality and the registered owners of the Bonds, and after the issuance of the Bonds, no change, variation or alteration of any kind in the provisions of this resolution shall be made in any manner until such time as the Bonds and interest due thereon shall have been paid in full.

SECTION 16. Separability. If any section, paragraph or provision of this resolution shall be held to be invalid or unenforceable for any reason, the invalidity or unenforceability of such section, paragraph or provision shall not affect any of the remaining provisions of this resolution.

SECTION 17. Repeal of Conflicting Resolutions and Effective Date. All other resolutions and orders, or parts thereof in conflict with the provisions of this resolution, are, to the extent of such conflict, hereby repealed and this resolution shall be in immediate effect from and after its adoption.

Passed: _____

Shane McFarland, Mayor

ATTEST:

APPROVED AS TO FORM:

Melissa B. Wright
City Recorder

David A. Ives
City Attorney

EXHIBIT A

ESTIMATED DEBT SERVICE

Date	Principal	Coupon	Interest	Total P+I	Fiscal Total
12/01/2016	-	-	1,382,500.00	1,382,500.00	-
06/01/2017	4,075,000.00	3.000%	1,185,000.00	5,260,000.00	6,642,500.00
12/01/2017	-	-	1,123,875.00	1,123,875.00	-
06/01/2018	4,375,000.00	3.000%	1,123,875.00	5,498,875.00	6,622,750.00
12/01/2018	-	-	1,058,250.00	1,058,250.00	-
06/01/2019	4,525,000.00	3.000%	1,058,250.00	5,583,250.00	6,641,500.00
12/01/2019	-	-	990,375.00	990,375.00	-
06/01/2020	4,650,000.00	3.000%	990,375.00	5,640,375.00	6,630,750.00
12/01/2020	-	-	920,625.00	920,625.00	-
06/01/2021	4,800,000.00	3.000%	920,625.00	5,720,625.00	6,641,250.00
12/01/2021	-	-	848,625.00	848,625.00	-
06/01/2022	4,925,000.00	3.000%	848,625.00	5,773,625.00	6,622,250.00
12/01/2022	-	-	774,750.00	774,750.00	-
06/01/2023	5,075,000.00	3.000%	774,750.00	5,849,750.00	6,624,500.00
12/01/2023	-	-	698,625.00	698,625.00	-
06/01/2024	5,225,000.00	3.000%	698,625.00	5,923,625.00	6,622,250.00
12/01/2024	-	-	620,250.00	620,250.00	-
06/01/2025	5,400,000.00	3.000%	620,250.00	6,020,250.00	6,640,500.00
12/01/2025	-	-	539,250.00	539,250.00	-
06/01/2026	5,550,000.00	3.000%	539,250.00	6,089,250.00	6,628,500.00
12/01/2026	-	-	456,000.00	456,000.00	-
06/01/2027	5,725,000.00	3.000%	456,000.00	6,181,000.00	6,637,000.00
12/01/2027	-	-	370,125.00	370,125.00	-
06/01/2028	5,900,000.00	3.000%	370,125.00	6,270,125.00	6,640,250.00
12/01/2028	-	-	281,625.00	281,625.00	-
06/01/2029	6,075,000.00	3.000%	281,625.00	6,356,625.00	6,638,250.00
12/01/2029	-	-	190,500.00	190,500.00	-
06/01/2030	6,250,000.00	3.000%	190,500.00	6,440,500.00	6,631,000.00
12/01/2030	-	-	96,750.00	96,750.00	-
06/01/2031	6,450,000.00	3.000%	96,750.00	6,546,750.00	6,643,500.00
	79,000,000.00		20,506,750.00	99,506,750.00	

EXHIBIT B

FORM OF ENGAGEMENT LETTER OF BOND COUNSEL

LETTERHEAD OF BASS, BERRY & SIMS PLC

March 10, 2016

City of Murfreesboro, Tennessee
111 West Vine Street
Murfreesboro, Tennessee 37130

Attention: Shane McFarland, Mayor

Re: Issuance of Not to Exceed \$79,000,000 in Aggregate Principal Amount of General Obligation Bonds

Dear Mayor:

The purpose of this engagement letter is to set forth certain matters concerning the services we will perform as bond counsel to City of Murfreesboro, Tennessee (the "Municipality"), in connection with the issuance of the above-referenced bonds in one or more series (collectively, the "Bonds"). We understand that the Bonds are being issued for the purpose of providing funds necessary to finance capital projects for the Municipality, and to pay costs of issuance of the Bonds, as more fully set forth in the Resolution. We further understand that the Bonds will be sold by competitive sale.

SCOPE OF ENGAGEMENT

In this engagement, we expect to perform the following duties:

1. Subject to the completion of proceedings to our satisfaction, render our legal opinion (the "Bond Opinion") regarding the validity and binding effect of the Bonds, the source of payment and security for the Bonds, and the excludability of interest on the Bonds from gross income for federal income tax purposes.
2. Prepare and review documents necessary or appropriate for the authorization, issuance and delivery of the Bonds, coordinate the authorization and execution of such documents, and review enabling legislation.
3. Assist the Municipality in seeking from other governmental authorities such approvals, permissions and exemptions as we determine are necessary or appropriate in connection with the authorization, issuance, and delivery of the Bonds, except that we will not be responsible for any required blue-sky filings.
4. Review legal issues relating to the structure of the Bond issue.
5. Draft those sections of the official statement to be disseminated in connection with the sale of the Bonds, describing the Bond Opinion, the terms of and security for the Bonds, and the treatment of the Bonds and interest thereon under state and federal tax law.

6. Assist the Municipality in presenting information to bond rating organizations and providers of credit enhancement relating to legal issues affecting the issuance of the Bonds, if requested.
7. Prepare and review the notice of sale pertaining to the competitive sale of the Bonds.

Our Bond Opinion will be addressed to the Municipality and will be delivered by us on the date the Bonds are exchanged for their purchase price (the "Closing").

The Bond Opinion will be based on facts and law existing as of its date. In rendering our Bond Opinion, we will rely upon the certified proceedings and other certifications of public officials and other persons furnished to us without undertaking to verify the same by independent investigation, and we will assume continuing compliance by the Municipality with applicable laws relating to the Bonds. During the course of this engagement, we will rely on you to provide us with complete and timely information on all developments pertaining to any aspect of the Bonds and their security. We understand that you will direct members of your staff and other employees of the Municipality to cooperate with us in this regard.

Our duties in this engagement are limited to those expressly set forth above. Among other things, our duties do not include:

- a. Except as described in paragraph (5) above,
 - 1) Assisting in the preparation or review of an official statement or any other disclosure document with respect to the Bonds, or
 - 2) Performing an independent investigation to determine the accuracy, completeness or sufficiency of any such document, or
 - 3) Rendering advice that the official statement or other disclosure documents
 - a) Do not contain any untrue statement of a material fact or
 - b) Do not omit to state a material fact necessary to make the statements contained therein, in light of the circumstances under which they were made, misleading.
- b. Preparing requests for tax rulings from the Internal Revenue Service, or no action letters from the Securities and Exchange Commission.
- c. Preparing blue sky or investment surveys with respect to the Bonds.
- d. Drafting state constitutional or legislative amendments.
- e. Pursuing test cases or other litigation (such as contested validation proceedings).
- f. Making an investment or expressing any view as to the creditworthiness of the Municipality or the Bonds.
- g. Assisting in the preparation of, or opining on, any continuing disclosure undertaking pertaining to the Bonds or any other outstanding debt or, after Closing, providing advice concerning any

actions necessary to assure compliance with any continuing disclosure undertaking.

- h. Representing the Municipality in Internal Revenue Service examinations or inquiries, or Securities and Exchange Commission investigations.
- i. After Closing, providing continuing advice to the Municipality or any other party concerning any actions necessary to assure that interest paid on the Bonds will continue to be excludable from gross income for federal income tax purposes (e.g., our engagement does not include rebate calculations for the Bonds).
- j. Addressing any other matter not specifically set forth above that is not required to render our Bond Opinion.

ATTORNEY-CLIENT RELATIONSHIP

Upon execution of this engagement letter, the Municipality will be our client and attorney-client relationship will exist between us. We assume that all other parties will retain such counsel as they deem necessary and appropriate to represent their interests in this transaction. We further assume that all other parties understand that in this transaction we represent only the Municipality, we are not counsel to any other party, and we are not acting as an intermediary among the parties. Our services as bond counsel are limited to those contracted for in this letter, the Municipality's execution of this engagement letter will constitute an acknowledgment of those limitations. Our representation of the Municipality will not affect, however, our responsibility to render an objective Bond Opinion. Please note that, in our representation of the Municipality, we will not act as a "municipal advisor", as such term is defined in the Securities Exchange Act of 1934, as amended.

Our representation of the Municipality and the attorney-client relationship created by this engagement letter will be concluded upon issuance of the Bonds. Nevertheless, subsequent to Closing, we will mail the appropriate Internal Revenue Service Forms 8038-G, and prepare and distribute to the participants in the transaction a transcript of the proceedings pertaining to the Bonds.

As you are aware, our firm represents many political subdivisions, companies and individuals. It is possible that, during the time that we are representing the Municipality, one or more of our present or future clients will have transactions with the Municipality. It is also possible that we may be asked to represent, in an unrelated matter, one or more of the entities involved in the issuance of the Bonds. We do not believe such representation will adversely affect our ability to represent you as provided in this letter, either because such matters will be sufficiently different from the issuance of the Bonds so as to make such representations not adverse to our representation of you, or because the potential for such adversity is remote or minor and outweighed by the consideration that it is unlikely that advice given to the other client will be relevant to any aspect of the issuance of the Bonds. Execution of this letter will signify the Municipality's consent to our representation of others consistent with the circumstances described in this paragraph.

FEES

Based upon: (i) our current understanding of the terms, structure, size and schedule of the financing represented by the Bonds; (ii) the duties we will undertake pursuant to this engagement letter; (iii) the time we anticipate devoting to the financings; and (iv) the responsibilities we will assume in connection therewith, we estimate that our fee will be \$58,000 for the Bonds. Our fees may vary: (a) if the principal amount of Bonds actually issued differs significantly from the amounts stated above; (b) if material changes in the structure or schedule of the respective financings occur; or (c) if unusual or unforeseen circumstances arise which require a significant increase in our time or responsibility. If, at any time, we believe that circumstances require an adjustment of our

original fee estimates, we will advise you and prepare and provide to you an amendment to this engagement letter. The fees quoted above will include all out-of-pocket expenses advanced for your benefit, such as travel costs, photocopying, deliveries, long distance telephone charges, telecopies charges, filing fees, computer-assisted research and other expenses.

If, for any reason, the financing represented by the Bonds is completed without the delivery of our Bond Opinion as bond counsel or our services are otherwise terminated, we will expect to be compensated at our normal rates for the time actually spent on your behalf plus client charges as described above unless we have failed to meet our responsibilities under this engagement, but in no event will our fees exceed the amount set forth above.

RECORDS

At your request, papers and property furnished by you will be returned promptly upon receipt of payment for outstanding fees and client charges. All goods, documents, records, and other work product and property produced during the performance of this engagement are deemed to be Municipality's property. We agree to maintain documentation for all charges against the Municipality. Our books, records, and documents, insofar as they relate to work performed or money received under this engagement, shall be maintained for a period of three (3) full years from the respective Closings and will be subject to audit, at any reasonable time and upon reasonable notice by the Municipality or its duly appointed representatives.

OTHER MATTERS

We have not retained any persons to solicit or secure this engagement from the Municipality upon an agreement or understanding for a contingent commission, percentage, or brokerage fee. We have not offered any employee of the Municipality a gratuity or an offer of employment in connection with this engagement and no employee has requested or agreed to accept a gratuity or offer of employment in connection with this engagement.

Any modification or amendment to this Engagement Letter must be in writing, executed by us and contain the signatures of the Municipality. The validity, construction and effect of this Engagement Letter and any and all extensions and/or modifications thereof shall be governed by the laws of the State of Tennessee. To the extent permitted by Municipality law, any action between the parties arising from this Engagement Letter shall be maintained in the state or federal courts of Davidson County, Tennessee.

CONCLUSION

If the foregoing terms are acceptable to you, please so indicate by returning the enclosed copy of this engagement letter dated and signed by an authorized officer, retaining the original for your files. We look forward to working with you.

**CITY OF MURFREESBORO,
TENNESSEE:**

BASS, BERRY & SIMS PLC:

By: _____
Shane McFarland, Mayor

By: _____
Karen Neal, Member