

Town of Thompson's Station
Municipal Planning Commission
Meeting Agenda
October 27, 2020

Meeting Called To Order- Roll Call

Statement By Chair Relating To Conducting The Planning Commission Meeting By Electronic Means Of Due To COVID-19 State Of Emergency

Documents:

[INTRODUCTION STATEMENT FOR TS PC OCT 2020.PDF](#)

Consideration Of The Minutes Of The September 22, 2020 Meeting

Documents:

[SEPTEMBER 2020 MINUTES.PDF](#)

Public Comment

Any citizen desiring to make a comment can submit their written comments to the Town, which will be included in the meeting minutes for public perusal.

Email your comments to Town Hall at INFO@THOMPSONS-STATION.COM with October Planning Commission Public Comments as the Subject Line.

Contact the Town Community Development office with any questions at (615) 794-4333 ext. 12.

Planner Report

New Business:

1. Pleasant Creek Preliminary Plat For The Creation Of 412 Residential Lots, Four Commercial Lots, And Associated Open Space Located Along Lewisburg Pike.

Documents:

[ITEM 1 PLEASANT CREEK OPEN SPACES CONCEPT 9.11 REDUCED.PDF](#)
[ITEM 1 PLEASANT CREEK TRAFFIC STUDY REVIEW MEMOS 10-21-20.PDF](#)
[ITEM 1 PLEASANT CREEK TRAFFIC STUDY 10-12-20.PDF](#)
[ITEM 1 PLEASANT CREEK PRELIM PLAT PC STAFF REPORT 10-20-20.PDF](#)
[ITEM 1 PLEASANT CREEK PRELIM PLAT 9-2-20_RS.PDF](#)

2. Zoning Associated With Annexation Of Property At 4440 Les Watkins Road.

Documents:

[ITEM 2 STAFF REPORT 4440 LES WATKINS ZONING.PDF](#)
[ITEM 2 PLAN OF SERVICES 4440 LES WATKINS ROAD EXHIBIT TO RESOLUTION 2020-008 4-21-20 FINAL.PDF](#)

3. Advisory Opinion On BZA Case.

Documents:

ITEM 3 PC BZA MEMO.PDF
ITEM 3 BZA VOGUE TOWER PARTNERS VII_COLUMBIA PIKE ZONING
SUBMITTAL 10-07-2020.PDF
ITEM 3 BZA VOGUE TOWER PARTNERS VII_COLUMBIA PIKE
JUSTIFICATION LETTER.PDF

Adjourn

This meeting will be held at 7:00 p.m. by electronic means due to the COVID-19 State of Emergency. The meeting will be live-streamed on the Town Website www.thompsons-station.com

STATEMENT FOR THE RECORD AT START OF MEETING
Thompson's Station Planning Commission

Hello and welcome to this the October 27th, 2020, Planning Commission meeting for the Town of Thompson's Station.

Pursuant to the Guidance from the Office of the Comptroller for the State of Tennessee and in accordance with Governor Lee's Executive Order # 60 (which was previously extended by Executive Order # 16, 34, and 51): due to the treatment and containment of COVID-19.

This Town of Thompson's Station Planning Commission meeting, with notice, is being held virtually and being recorded to protect the public health, safety, and welfare of the Citizens of Thompson's Station in light of the coronavirus and to continue to allow the Town to function and operate.

Further, it is the desire of the Planning Commission to include this determination in the minutes for this meeting.

We understand that we, the Thompson's Station Planning Commission, serves the Town of Thompson's Station, which is why we are currently recording this virtual meeting, broadcasting it live for public viewing and uploading and preserving it for future viewing.

Minutes of the Meeting
of the Municipal Planning Commission
of the Town of Thompson 's Station, Tennessee
September 22, 2020

Call to Order:

The meeting of the Municipal Planning Commission of the Town of Thompson's Station was called to order at 7:00 p.m. on 22th day of September 2020 via electronic means under the authority of the Governor's Executive Order related to public meetings during the COVID-19 emergency with the required quorum.

The following statement was read by Planning Chairman Trent Harris:

This meeting is being conducted pursuant to the Guidance from the Comptroller's Office, and in accordance with Governor Lee's Executive Order No. 16 due to the treatment and containment of COVID-19.

This regular monthly meeting for September of 2020 is being held by video conference with the Planning Commission of Thompson's Station and live streamed, as necessary to protect the public's health, safety, and welfare in light of the coronavirus. Further it is requested that the governing body include this determination in the minutes for this meeting.

We understand, we the members of the Planning Commission serve at the pleasure of the citizens of Town of Thompson's Station, and due to the current situation, is why we are currently live streaming this meeting for the benefit of the public, through our website.

A recording of this meeting will be available on the Town of Thompson's Station's web site at thompsons-station.com within 24 hours of this meeting.

Members and staff virtually present were: Chairman Trent Harris; Alderman Shaun Alexander; Commissioner Luis Parra; Commissioner Sheila Shipman; Commissioner Tara Rumpler; Commissioner Kreis White; Commissioner Bob Whitmer; Interim Town Planner Micah Wood; Planning Technician Jennifer Jones; IT Coordinator Tyler Rainey and Town Attorney Andrew Mills.

Also present were Mr. Jay Franks, applicant; Mr. Josh Denton, Attorney for applicant; and Jonathan Smith with Barge Design as consultant for the Town.

Minutes:

The minutes of the July 28th, 2020 regular meeting were presented.

Commissioner Whitmer made a motion to approve the July 28th, 2020 meeting minutes.

Roll Call Vote:

	<u>VOTE</u>		<u>VOTE</u>		<u>VOTE</u>
Chairman Harris	Yea	Commissioner Parra	Yea	Alderman Alexander	Yea
Commissioner Shipman	Yea	Commissioner Rumpler	Yea	Commissioner White	Yea
Commissioner Whitmer	Yea				
Yea	7	Nay	0	Abstain	0

Public Comment:

None.

Town Planner Report:

Mr. Wood updated the Commission on the following items:

- The Dedication of Public Improvements and Release of Sureties Policy
- Administrative Plat Approval for 1738 & 1726 Old Thompson's Station Road (existing lot line revision)
- Virtual Planning Commission training on November 13, 2020

New Business:

- 1. Pleasant Creek Preliminary Plat (PP 2020-004) for the creation of 412 residential lots, four commercial lots and associated open space lot located along Lewisburg Pike (Map 154 Parcel 50).**

Mr. Wood reviewed his staff report and recommends the Planning Commission approve the preliminary plat with the following contingencies:

1. The applicant shall set a pre-application meeting with Town Staff prior to the submittal of the constructions plans for this development.
2. Prior to the approval of construction plans, the developer shall enter into a development agreement for the project.
3. Prior to the approval of construction plans, the developer shall obtain any necessary permits through the Tennessee Department of Environment and Conservation.
4. Prior to the approval of construction plans, all applicable codes and regulations shall be addressed to the satisfaction of the Town Engineer.
5. Prior to the submittal of the first final plat for this subdivision, a copy of the CCRs shall be submitted for Town review.
6. Any signage proposed for the subdivision shall comply requirements set forth within the Land Development Ordinance and shall be located within the open space and maintained by the homeowner's association.
7. Streetlights shall be incorporated in accordance with the Land Development Ordinance and shall be documented on the construction drawings.
8. All recommendations within the traffic study shall be completed.
9. Any change of use or expansion of the project site shall conform to the requirements set forth within the Land Development Ordinance and shall be approved prior to the implementation of any changes to the project.

After discussion, Commissioner White made a motion to defer Item 1, (PP 2020-004), Pleasant Creek Preliminary Plat for the creation of 412 residential lots, four commercial lots and an associated open space lot located along Lewisburg Pike.

Roll Call Vote:

	<u>VOTE</u>		<u>VOTE</u>		<u>VOTE</u>
Chairman Harris	Yea	Commissioner Parra	Yea	Alderman Alexander	Yea
Commissioner Shipman	Yea	Commissioner Rumpler	Yea	Commissioner White	Yea
Commissioner Whitmer	Yea				
Yea	7	Nay	0	Abstain	0

2. Reschedule November Planning Commission meeting from 11/24/20 to 11/17/20 due to Thanksgiving.

Mr. Wood recommended that the November Planning Commission meeting be rescheduled due to Thanksgiving.

After discussion, Alderman Alexander made a motion to move the November Planning Commission meeting from 11/24/2020 to 11/17/2020 due to Thanksgiving.

Roll Call Vote:

	<u>VOTE</u>		<u>VOTE</u>		<u>VOTE</u>
Chairman Harris	Yea	Commissioner Parra	Yea	Alderman Alexander	Yea
Commissioner Shipman	Yea	Commissioner Rumpler	Yea	Commissioner White	Yea
Commissioner Whitmer	Yea				
Yea	7	Nay	0	Abstain	0

There being no further business, the meeting was adjourned at 8:24 p.m.

Trent Harris, Chairman

Attest:

Shaun Alexander, Secretary

SITE DATA

PROJECT NAME: PLEASANT CREEK
 LOCATION: PARCEL 50, TAX MAP 154
 ZONING: TRANSECT
 COMMUNITY TYPES: T1, T2, T3, T4, T5
 TOTAL SITE AREA: +/-177.95 AC
 TOTAL PROPOSED HOMES: 412
 149 SINGLE FAMILY LOT 65' X 130' (TYPICAL)
 263 ATTACHED SINGLE FAMILY LOT 20'-40' X 130' (TYPICAL)
 TOTAL COMMERCIAL LOTS: 4
 TOTAL OPEN SPACE: 47%
 84.28 / 177.95 = 0.47%

AREA CHART

SINGLE FAMILY LOT AREA	33.34
MULTI FAMILY LOT AREA	28.69
COMMERCIAL LOT AREA	7.85
OPEN SPACE	60.10
TOWN / DRIP AREA	24.18
RIGHTS OF WAY	23.79
TOTAL AREA	177.95

Lot Types

- Single Family
- Single Family with Alley
- Twin Homes
- Attached Town Homes
- Town Homes with Front Garage

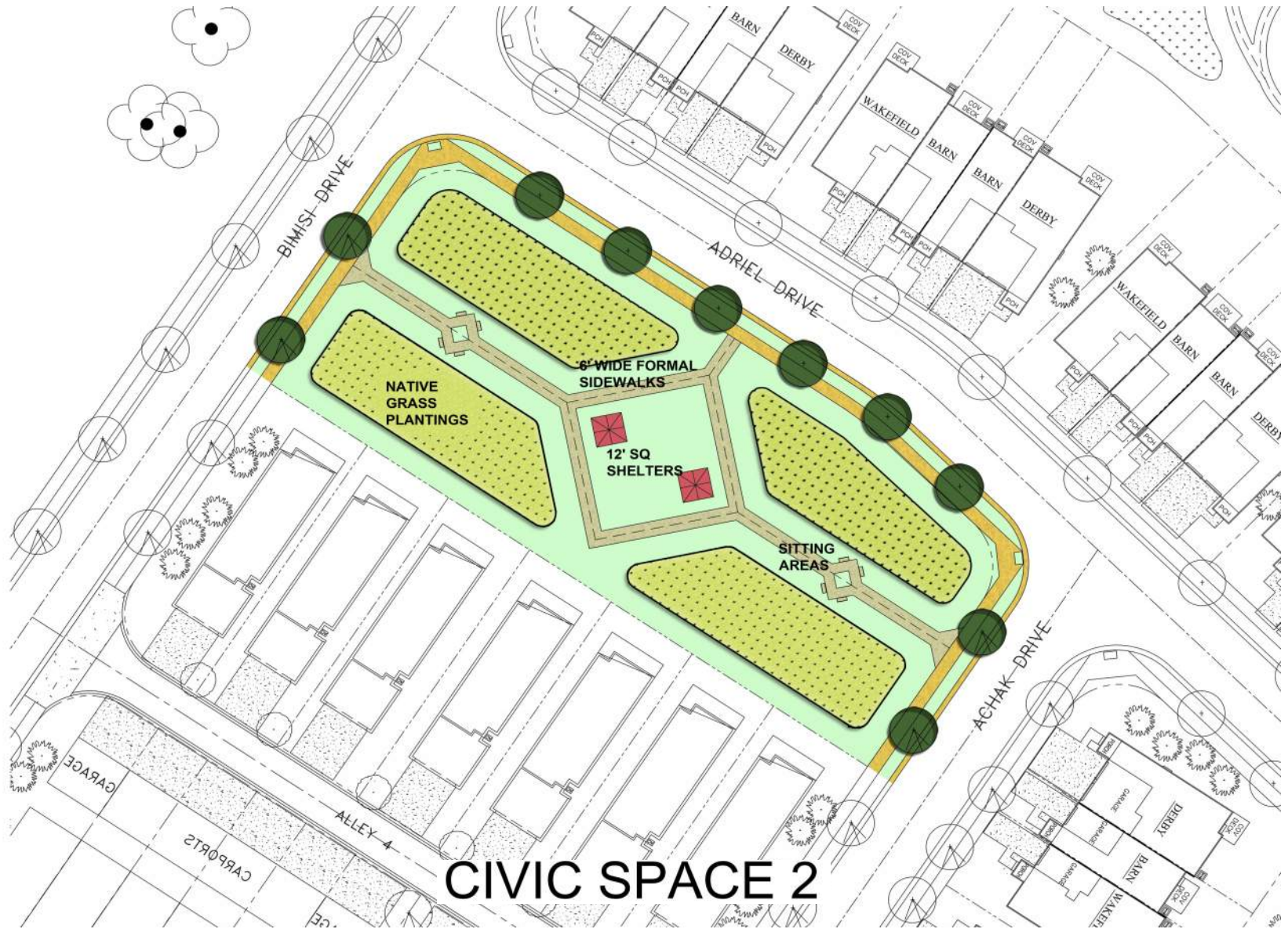


PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



CIVIC SPACE 1

PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



CIVIC SPACE 2

PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



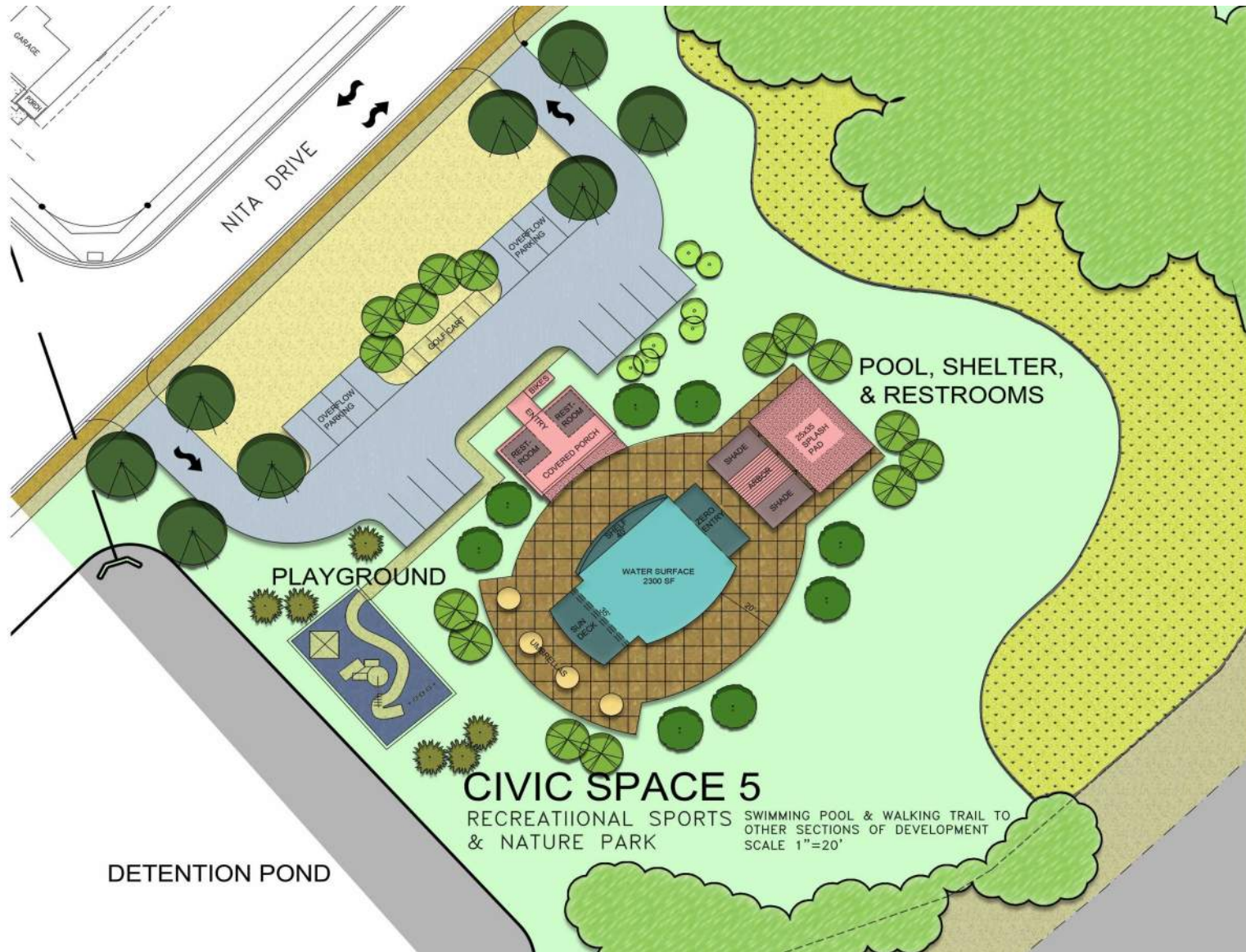
CIVIC SPACE 3
 RAMBLE
 BENCHES, TREES, CONNECTION
 WALKWAYS, LAWN, & PLAY EQUIPMENT
 SCALE 1" = 20'

PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



CIVIC SPACES 4A & 4B
 PARKS UNDEVELOPED AREAS HANDLING DRAINAGE
 ACROSS THE SITE CONTAINING A FEW
 BENCHES AND PATCHES OF LAWN
 SCALE 1"=40'

PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



DETENTION POND

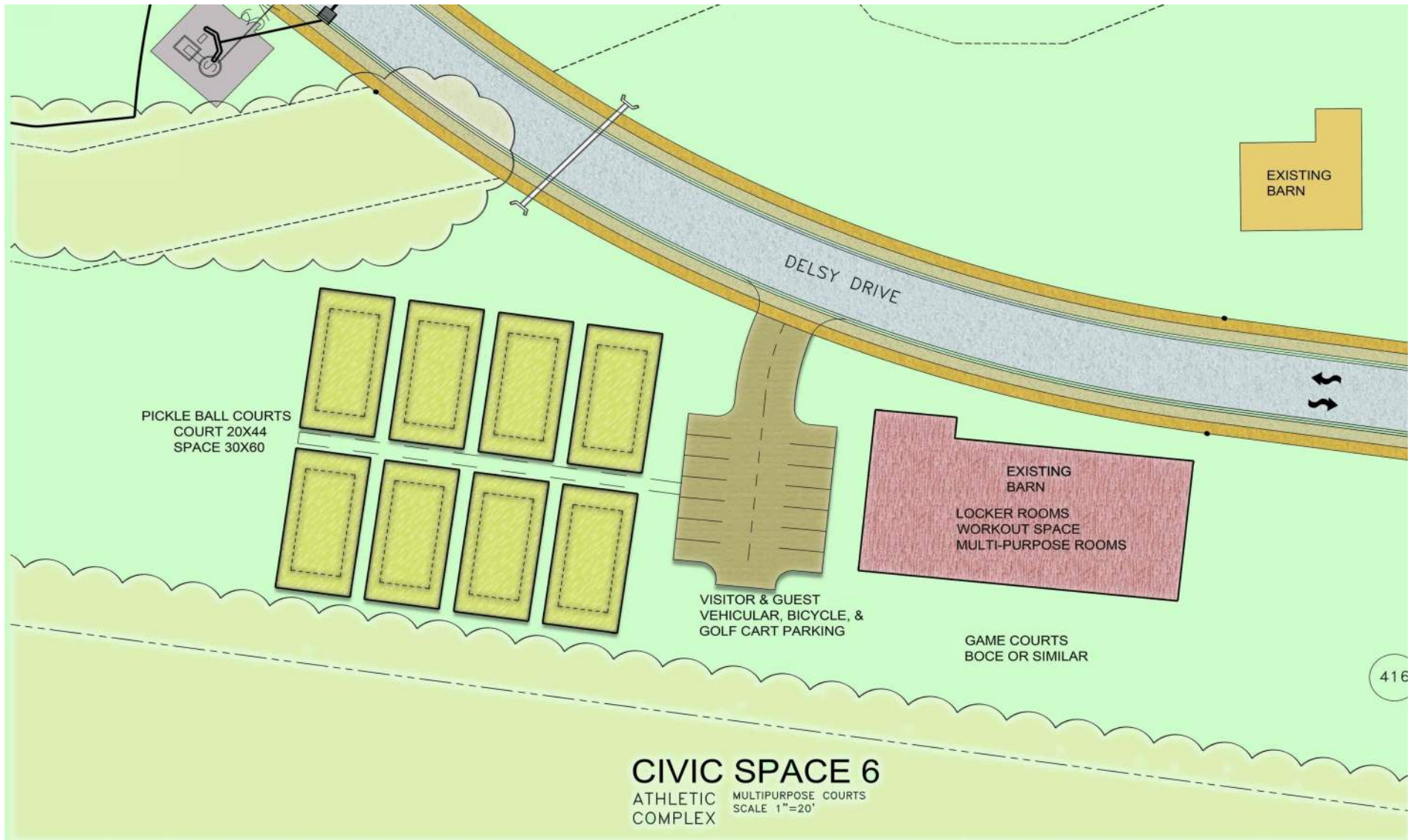
PLAYGROUND

POOL, SHELTER,
& RESTROOMS

CIVIC SPACE 5
RECREATIONAL SPORTS
& NATURE PARK

SWIMMING POOL & WALKING TRAIL TO
OTHER SECTIONS OF DEVELOPMENT
SCALE 1"=20'

P LEASANT C R E E K
CIVIC PLANS
THOMPSON'S STATION, TN



CIVIC SPACE 6
 ATHLETIC COMPLEX
 MULTIPURPOSE COURTS
 SCALE 1"=20'

PLEASANT CREEK
 CIVIC PLANS
 THOMPSON'S STATION, TN



■ Single Family

PLEASANT CREEK
CONCEPTUAL PLAN
THOMPSON'S STATION, TN



Bob Johnson

■ Single Family with Alley

PLEASANT CREEK
CONCEPTUAL PLAN
THOMPSON'S STATION, TN



BOB JOHNSON

Attached Town Homes

PLEASANT CREEK
CONCEPTUAL PLAN
THOMPSON'S STATION, TN



■ Town Homes with Front Garage

PLEASANT CREEK
CONCEPTUAL PLAN
THOMPSON'S STATION, TN



PLEASANT CREEK
CONCEPTUAL PLAN
THOMPSON'S STATION, TN

MEMORANDUM

To: Micah Wood, Town of Thompson's Station

From: Jonathan Smith, P.E. Barge Design Solutions

Date: September 18, 2020

Project ID: 3672722

Re: Pleasant Creek TIS review

This memorandum reports the findings of our review of the supplied traffic impact study for the Pleasant Creek development in Thompson's Station, Tennessee.

Findings

1. The methodology used to develop the traffic counts for this study is acceptable and consistent with the discussions held during the scoping meeting.
2. The site plan shows a future access point on to Thompson's Station Road. It is advised that a new study be conducted prior to Town approval of that specific connection. Additional improvements may be necessitated by this study,
3. Proposed traffic signal at US 431 and Harpeth – Peytonsville Road will require approval from TDOT.
4. The supplied TIS does not state who will be responsible for conducting the signal warrant analysis for the proposed signal at US 431 and Harpeth – Peytonsville Road. It is recommended that the applicant pay for this analysis.
5. The supplied TIS does not state who will fund the construction of the proposed signal or who will be responsible for the construction of the northbound and southbound left turn lanes on US 431 at the site access points.
6. The TIS shows a significant decrease in level of service (LOS), an increase in delay, and an increase in queue length for the southbound approach at the intersection of Thompson's Station Road and Pantall Road with no proposed mitigation measures. It is unclear if the study included the proposed improvements to the southbound approach at this intersection as described in the Littlebury traffic impact study. Additionally, the Alexander Farms development in Spring Hill includes proposed roadway improvements for the intersection of Buckner Lane and Thompson's Station Road East as well as Pantall Road Thompson's Station Road East. These improvements by the Southeast Ventures/Alexander Farm development should be incorporated, as well.

Recommendations

1. Revise and resubmit study to address items 4, 5, and 6.

615 Third Avenue South, Suite 700
Nashville, TN 37210
Phone: 615.254.1400 |
www.bargedesign.com



MEMORANDUM

To: Micah Wood, Town Planner

From: Jonathan Smith, P.E. Barge Design Solutions

Date: October 20, 2020

Project ID: 3672722

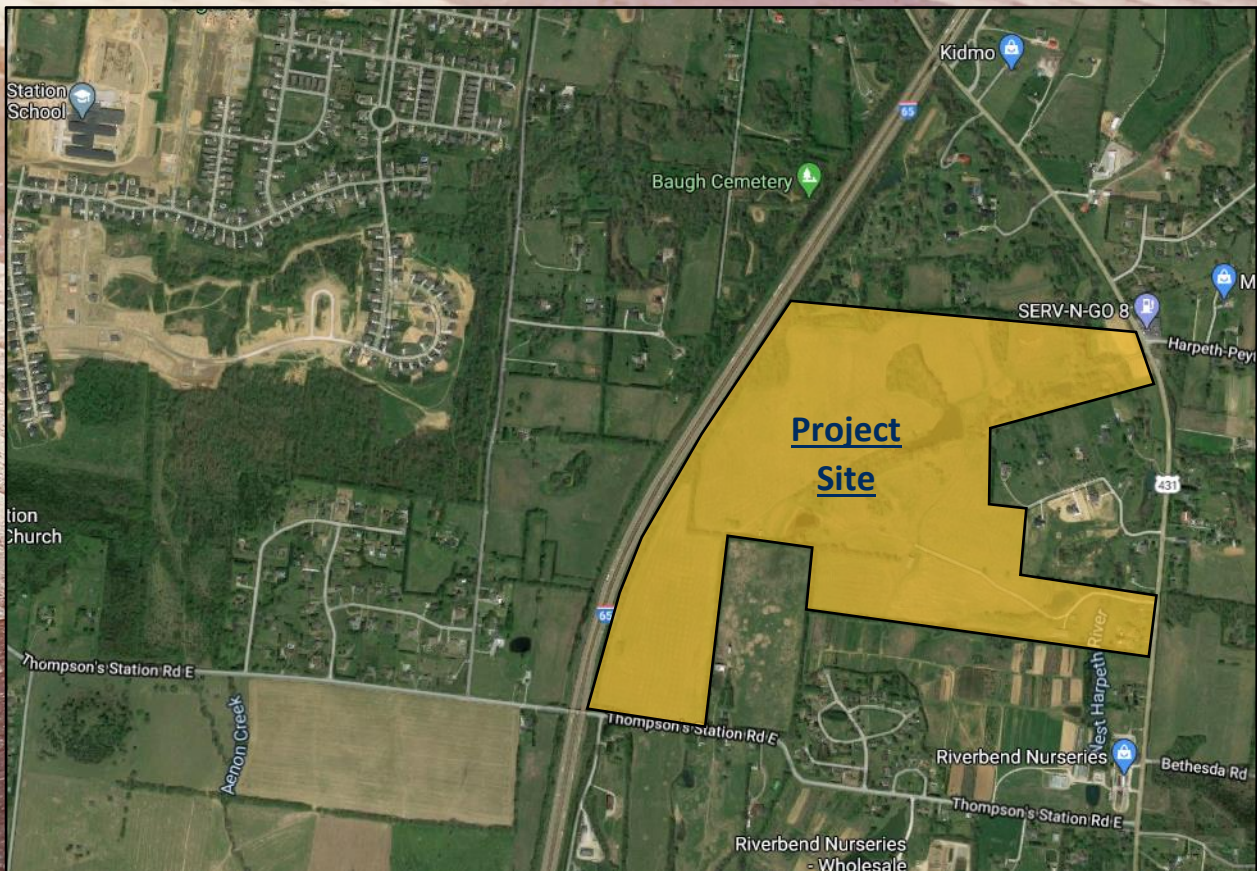
Re: Pleasant Creek TIS Revision Comments

This memorandum reports the review of the revised traffic impact study for the proposed Pleasant Creek development in Thompson's Station, Tennessee. The submitted revision addresses the majority of the comments from the September 25th memorandum. Comment 9 from the September 25th memorandum has not been satisfactorily addressed in the revised study. The applicant should have his engineer attend the Planning Commission meeting to provide information on the study, answer the Commission's questions on the study, and provide information on what would be required to provide a level of service better than F at Site Access A.



TRAFFIC IMPACT STUDY

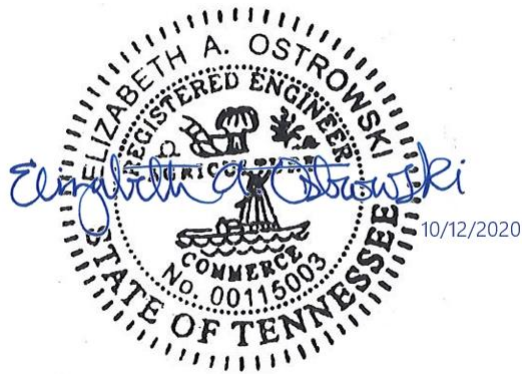
PLEASANT CREEK - UPDATED THOMPSON'S STATION, TENNESSEE



PREPARED FOR:
PLEASANT CREEK INVESTMENTS, LLC
OCTOBER 2020

TRAFFIC IMPACT STUDY - UPDATED
PLEASANT CREEK
THOMPSON'S STATION, TENNESSEE

PREPARED FOR:
PLEASANT CREEK INVESTMENTS, LLC



PREPARED BY:
KCI TECHNOLOGIES, INC
500 11th Avenue North, Suite 290
Nashville, TN 37203
615.370.8410 office 615.370.8455 fax
www.kci.com

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EXECUTIVE SUMMARY

Project Description

The proposed Pleasant Creek development is located on the west side of Lewisburg Pike (SR 106/US 431), east of I-65 in Thompson's Station, Tennessee. According to the developer, the proposed development includes approximately 327 single-family residential homes, 90 single-family townhomes, 5,500 square feet of retail, 2,000 square feet of fitness center, and 2,000 square feet of bank on approximately 179 acres. Access to the development is planned to be provided by two access drives, located along Lewisburg Pike (SR 106/US 431). The northern access will be provided via the new eastbound approach to the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth Peytonsville Road. The southern access will be located approximately 1,100 feet north of the intersection of Lewisburg Pike (SR 106/US 431) and Bethesda Road. The purpose of this study is to analyze the access plan and the traffic impacts associated with this proposed development.

Data Collection

In order to provide data for the traffic impact analysis, manual traffic counts were conducted at the following intersections:

1. Lewisburg Pike (SR 106/US 431) and Thompson's Station Road East (unsignalized)
2. Lewisburg Pike (SR 106/US 431) and Bethesda Road (unsignalized)
3. Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road (unsignalized)
4. Thompson's Station Road East and Buckner Lane (signalized)
5. Thompson's Station Road East and Pantall Road (unsignalized)

KCI Technologies, Inc. conducted the traffic counts from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday in July 2020; however, given the changes in traffic patterns resulting from Covid-19, these counts were compared to historic counts as a point of reference. Traffic volumes from counts gathered as part of Thompson's Station 2015 Comprehensive Traffic Study were grown at an annual growth rate of 7% for five years to make this evaluation. The growth rate was based upon historic TDOT AADT data from nearby count stations. To be conservative, the maximum turning movement volumes from either of the count methodologies (i.e., the existing (2020) volumes or the grown volumes using 2015 counts) were utilized for this study.

Projection of Future Traffic Volumes

In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. Then, the estimated total project-generated traffic volumes for the proposed development were added to the background peak hour traffic volumes in order to obtain the total projected peak hour traffic volumes for the study area intersections.

Conclusions and Recommendations

The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. These specific recommendations will provide safe and efficient traffic operations within the study area following the completion of the proposed project. The recommendations are as follows:

Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A

- Preliminary signal warrant analysis determined that a signal is warranted under existing conditions. However, these preliminary analyses were based on traffic projections made due to Covid-19 and not on actual counts representing traffic conditions without the impacts of Covid-19. Therefore, a full signal warrant analysis should be completed by the Pleasant Creek development when traffic conditions have stabilized and prior to the completion of 35 lots within the Pleasant Creek development. Additionally, the proposed traffic signal will require approval from TDOT.
- Until a signal is installed, the eastbound approach of Site Access A should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.
- Site Access A should be designed to include sufficient width for one entering lane and three exiting lanes. The exiting approach should include one left-turn lane with a minimum of 125 feet of storage, one through lane, and one right-turn lane with a minimum of 125 feet of storage.
- The Pleasant Creek development should provide a northbound left-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 150 feet of storage length.
- The Pleasant Creek development should provide a southbound right-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 75 feet of storage length.

Lewisburg Pike (SR 106/US 431) and Site Access B

- The eastbound approach of Site Access B should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.

- Site Access B should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting approach should include one left-turn lane and one right-turn lane.
- Provide a northbound left-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 150 feet of storage length.
- Provide a southbound right-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 75 feet of storage length.

The above recommendations should be the responsibility of the Pleasant Creek developer.

While there are movements other than what is recommended above that are operating at LOS F under existing, background, and projected conditions, these movements are stop-controlled approaches along a high-volume arterial. It is typical for stop-controlled approaches on high-volume arterials to operate at LOS F. The additional intersection that is operating at LOS F under existing, background, and projected conditions is Thompson's Station Road East and Buckner Lane. While it is operating at LOS F under existing, background, and projected conditions, with the recommended improvements presented in the Alexander Property study, this intersection is expected to improve from LOS F with an overall intersection delay of 244.4 seconds to LOS F with an overall intersection delay of 114.5 seconds. Additionally, the conservative growth of the traffic volumes within this study result in conservative analysis and resulting delays. No recommendations for these intersections are provided.

Additional Recommendations

- As part of the construction of the project, all internal and external roadway connections should be designed such that the departure sight triangles, as specified by AASHTO, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.
- Final design of internal roadways and parking should meet all Town of Thompson's Station standards. Internal intersections should be two-way stop-controlled unless all-way stop control warrants are met.
- Should an additional site access be provided on Thompson's Station Road East in the future, the City recommends a new traffic study be conducted prior to Town approval of that specific connection.

In summary, based on the analyses conducted, no further recommendations are presented for the proposed Pleasant Creek development.

1. INTRODUCTION AND PROJECT DESCRIPTION

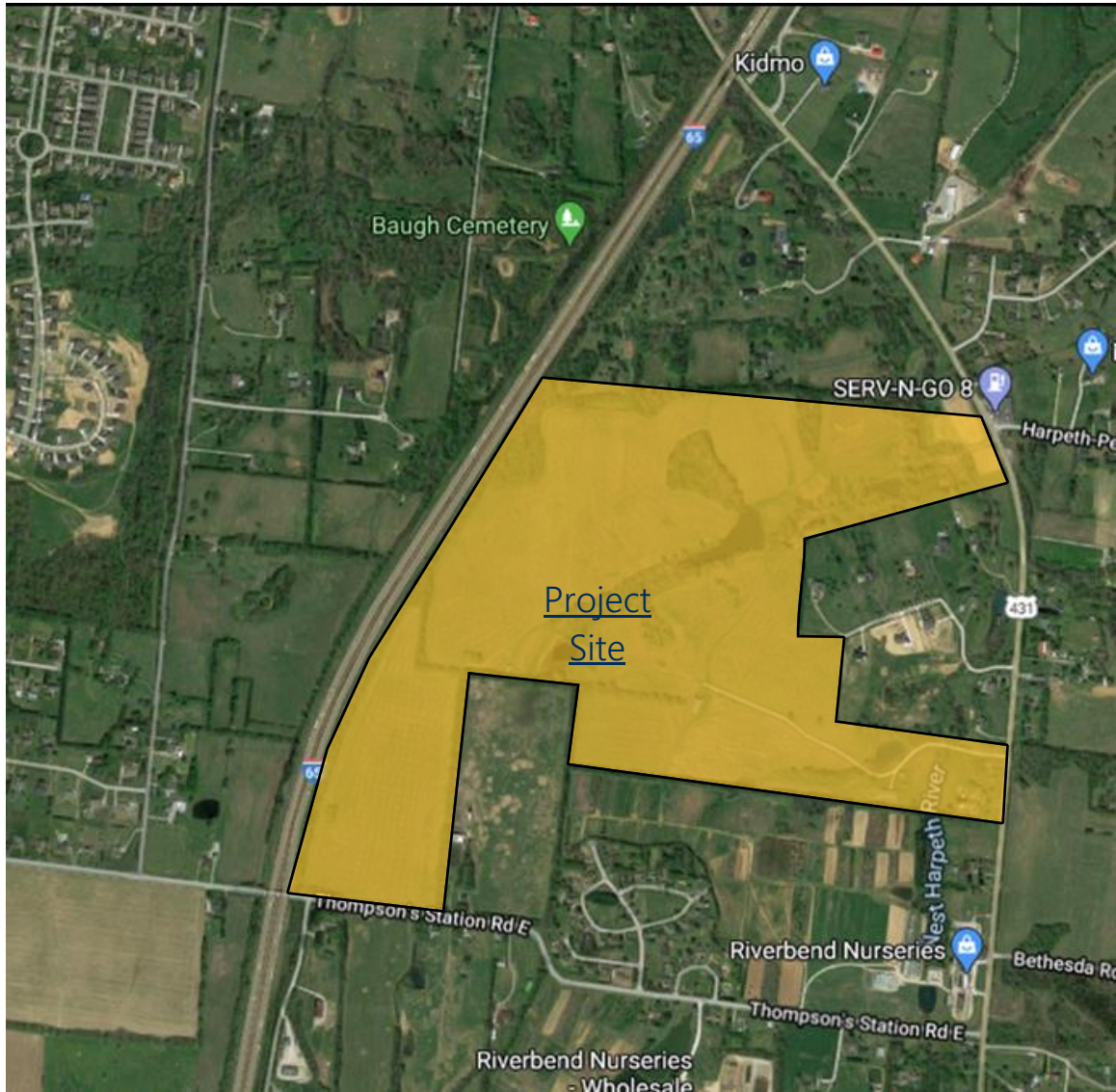
The purpose of this study is to analyze the traffic impacts and access plan associated with the proposed Pleasant Creek development located on the west side of Lewisburg Pike (SR 106/US 431), east of I-65 in Thompson's Station, Tennessee. According to the developer, the proposed development includes approximately 327 single-family residential homes, 90 single-family townhomes, 5,500 square feet of retail, 2,000 square feet of fitness center, and 2,000 square feet of bank on approximately 179 acres.

As shown by Figure 1, the property is located along Lewisburg Pike (SR 106/US 431) northwest of the intersection of Lewisburg Pike (SR 106/US 431) and Thompson's Station Road East. The property is currently zoned TC (Transect Community). The proposed development is within an area that is characterized by low-density land uses. The property is generally bounded on the west by I-65, on the south by Thompson Station Road and existing residential developments, on the east by Lewisburg Pike (SR 106/US 431), and on the north by undeveloped land and residential developments.

The current site plan for the Pleasant Creek development is shown in Appendix A. Based on this site plan, proposed vehicular access for the development is planned to be provided by two access drives, located along Lewisburg Pike (SR 106/US 431). The northern access will be provided via the new eastbound approach to the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth Peytonsville Road. The southern access will be located approximately 1,100 feet north of the intersection of Lewisburg Pike (SR 106/US 431) and Bethesda Road. Surface parking is planned to accommodate the proposed development.

In this study, the current operating characteristics of the adjacent roadways and intersections in the vicinity of the project site are evaluated. The expected trips generated by the proposed development are determined and distributed to the roadway network. The adjacent roadways and intersections are then reevaluated to determine the anticipated traffic impacts of the project. Finally, recommendations are presented, including roadway improvements and/or traffic control improvements that are needed to accommodate the expected traffic.

FIGURE 1. LOCATION OF THE PROJECT SITE



Location of the Project Site
(Not to Scale)

Figure 1.

2. EXISTING CONDITIONS

2.1 Existing Roadway Network

Local access to the site will be provided by Lewisburg Pike (SR 106/US 431), Thompson’s Station Road East, Bethesda Road, Harpeth-Peytonsville Road, Buckner Lane, and Pantall Road. A description of these roadways within the project vicinity is as follows:

Lewisburg Pike (SR 106/US 431) is a two-way roadway that generally travels in a north-south direction with one travel lane in each direction. Within the study area, Lewisburg Pike (SR 106/US 431) provides connection between I-840 to the north and Thompson’s Station Road East to the south. According to the Thompson’s Station’s *Major Thoroughfare Plan*, Lewisburg Pike (SR 106/US 431) is categorized as an urban arterial in the vicinity of the project site. The posted speed limit on Lewisburg Pike (SR 106/US 431) is 55 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Lewisburg Pike (SR 106/US 431) near the project site.



*Lewisburg Pike looking north,
east of the project site*

Thompson’s Station Road East is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Thompson’s Station Road East provides connection between US 31 to the west and Lewisburg Pike (SR 106/US 431) to the east. According to the Thompson’s Station’s *Major Thoroughfare Plan*, Thompson’s Station Road East is categorized as an urban collector in the vicinity of the project site. The posted speed limit on Thompson’s Station Road East is 45 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Thompson’s Station Road East near the project site.



*Thompson’s Station Road East looking east,
south of the project site*

Bethesda Road is a two-way roadway that generally travels in an east-west direction with one travel lane in each direction. Within the study area, Bethesda Road provides connection between Lewisburg Pike (SR 106/US 431) to the west and Bethesda-Duplex Road to the east. Because Bethesda Road is within Williamson County, and outside the boundaries of Thompson’s Station, it is not functionally classified in the Town of Thompson’s Station’s *Major Thoroughfare Plan*. However, according to TDOT’s Functional Classification Map, Bethesda Road is categorized as a minor collector in the vicinity of the project site. The posted speed limit on Bethesda Road is 45 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Bethesda Road near the project site.



Bethesda Road looking east, east of the project site

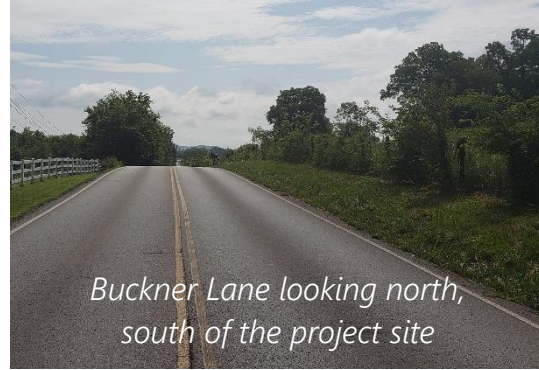
Harpeth-Peytonsville Road is a two-way that generally travels in an east-west direction with one travel lane in each direction. Within the study area, Harpeth-Peytonsville Road provides connection between Lewisburg Pike (SR 106/US 431) to the west and Peytonsville-Trinity Road near I-840 to the east. Because Harpeth-Peytonsville Road is within Williamson



Harpeth-Peytonsville looking east, east of the project site

County, and outside the boundaries of Thompson’s Station, it is not functionally classified in the Town of Thompson’s Station’s *Major Thoroughfare Plan*. However, according to TDOT’s Functional Classification Map, Harpeth-Peytonsville is categorized as a minor collector in the vicinity of the project site. The posted speed limit on Harpeth-Peytonsville Road is 50 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Harpeth-Peytonsville Road near the project site.

Buckner Lane is a two-way roadway that generally travels in a north-south direction with one travel lane in each direction. Within the study area, Buckner Lane provides connection between Thompson’s Station Road East to the north and Highway 247 to the south. Because Buckner Lane is within the City of Spring Hill, it is not functionally classified in the Town of Thompson’s Station’s *Major Thoroughfare Plan*. However, according to the *TDOT Functional Classification Map*, Buckner Lane is categorized as a major collector in the vicinity of the project site. The posted speed limit on Buckner Lane is 40 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Buckner Lane near the project site.



*Buckner Lane looking north,
south of the project site*

Pantall Road is a two-way roadway that generally travels in a north-south direction with one travel lane in each direction. Within the study area, Pantall Road provides connection between Thompson’s Station Road East to the south and Critz Lane to the north, near Lewisburg Pike (SR 106/US 431). According to the Thompson’s Station’s *Major Thoroughfare Plan*, Pantall Road is categorized as an urban collector in the vicinity of the project site. The posted speed limit on Pantall Road is 40 mph near the project site. No sidewalks, on-street parking, transit, or bicycle facilities are provided on Pantall Road near the project site.



*Pantall Road looking north,
west of the project site*

The study area includes five existing intersections described as follows:

Lewisburg Pike (SR 106/US 431) and Thompson’s Station Road East is an unsignalized intersection with three approaches. The northbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. The eastbound approach of Thompson’s Station Road East is stop-controlled and includes one lane for all movements. The southbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. No pedestrian, bicycle, or transit facilities exist at the intersection.



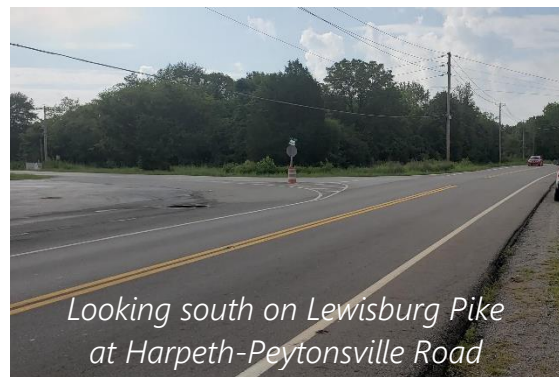
Looking north on Lewisburg Pike at Thompson’s Station Road East

Lewisburg Pike (SR 106/US 431) and Bethesda Road is an unsignalized intersection with three approaches. The northbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. The southbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. The westbound approach of Bethesda Road is stop-controlled and includes one lane for all movements. No pedestrian, bicycle, or transit facilities exist at the intersection.



Looking south on Lewisburg Pike at Bethesda Road

Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road is an unsignalized intersection with three approaches. The northbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. The southbound approach of Lewisburg Pike (SR 106/US 431) operates freely and includes one lane for all movements. The westbound approach of Harpeth-Peytonsville Road is stop-controlled and includes one lane for all movements. No pedestrian, bicycle, or transit facilities exist at the intersection.



Looking south on Lewisburg Pike at Harpeth-Peytonsville Road

Thompson’s Station Road East and Buckner Lane is a signalized intersection with three approaches. The northbound approach of Buckner Lane includes one lane for all movements. The eastbound approach of Thompson’s Station Road East includes one lane for all movements. The westbound approach of Thompson’s Station Road East includes one lane for all movements. Protected-permitted left-turn signal phasing is provided on the westbound approach. No pedestrian, bicycle, or transit facilities exist at the intersection.



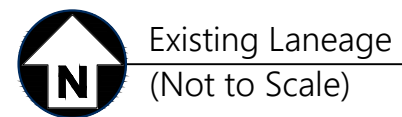
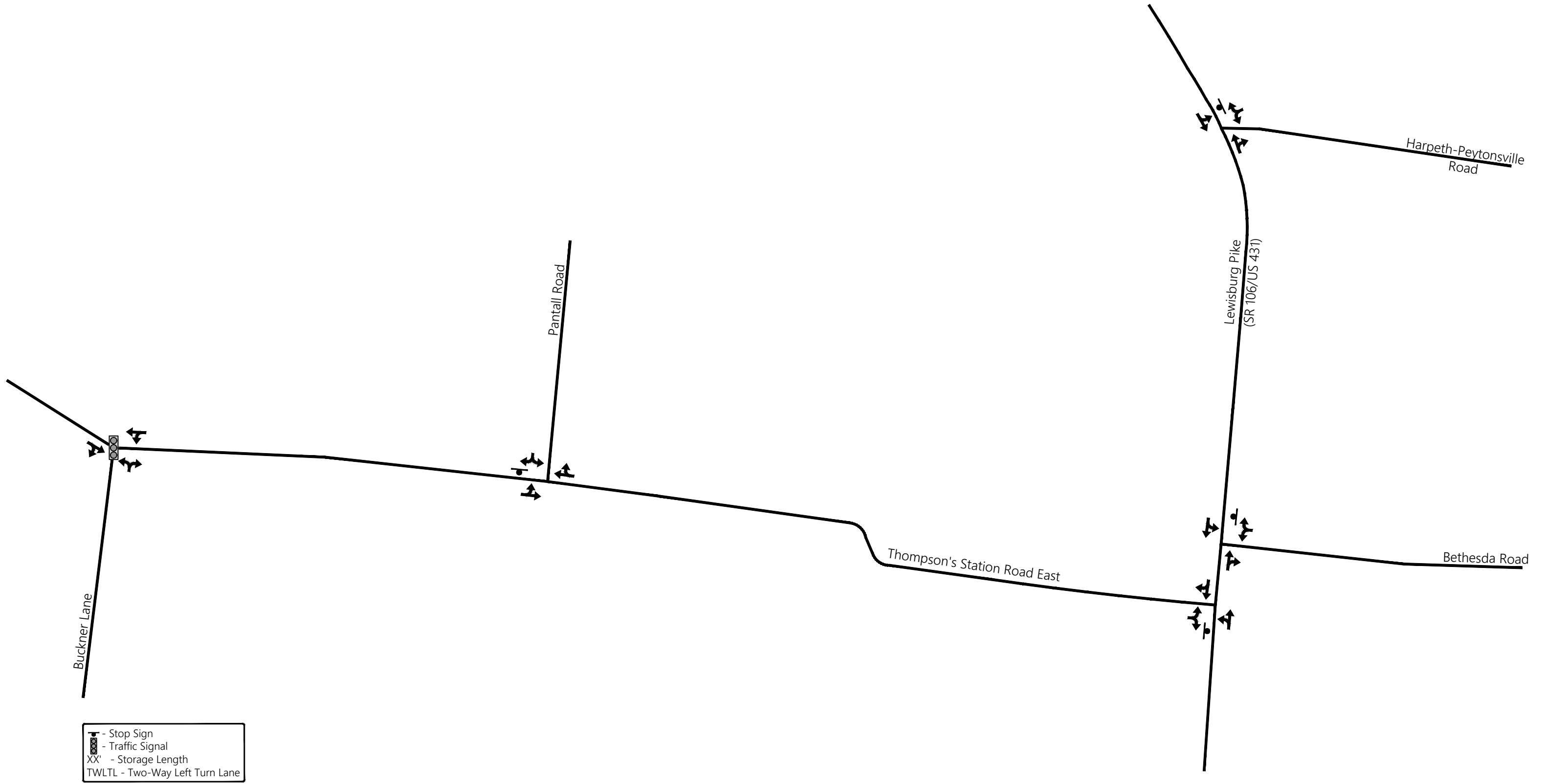
Looking west on Thompson’s Station Road East at Buckner Lane

Thompson’s Station Road East and Pantall Road is an unsignalized intersection with three approaches. The eastbound approach of Thompson’s Station Road East operates freely and includes one lane for all movements. The southbound approach of Pantall Road is stop-controlled and includes one lane for all movements. The westbound approach of Thompson’s Station Road East operates freely and includes one lane for all movements. No pedestrian, bicycle, or transit facilities exist at the intersection.



Looking south on Pantall Road at Thompson’s Station Road East

The existing laneage at the study intersections is illustrated in Figure 2.



Existing Laneage
(Not to Scale)

Figure 2.

2.2 Existing Traffic Volumes

In order to provide data for the traffic impact analysis, traffic counts were conducted at the following intersections:

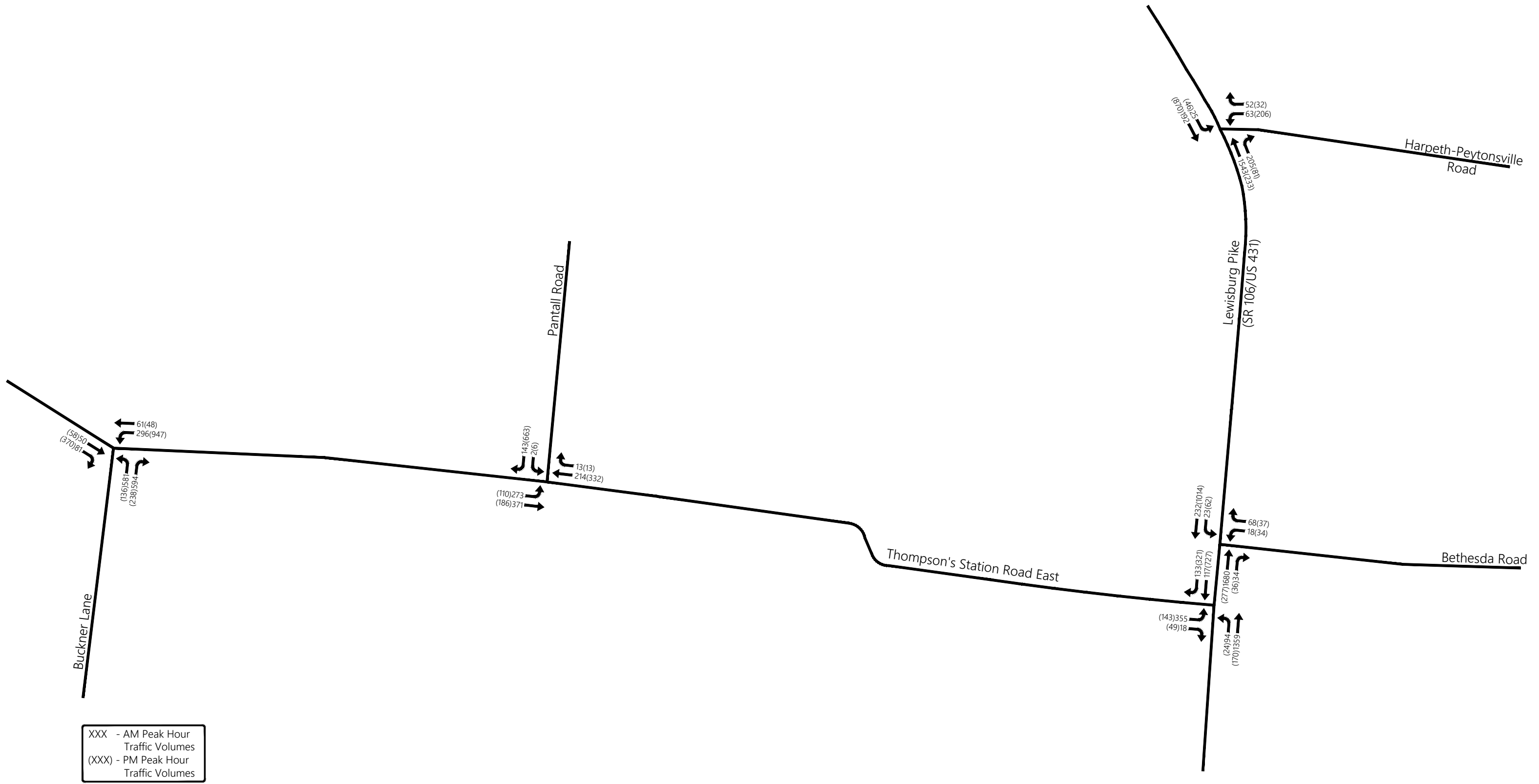
1. Lewisburg Pike (SR 106/US 431) and Thompson’s Station Road East (unsignalized)
2. Lewisburg Pike (SR 106/US 431) and Bethesda Road (unsignalized)
3. Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road (unsignalized)
4. Thompson’s Station Road East and Buckner Lane (signalized)
5. Thompson’s Station Road East and Pantall Road (unsignalized)

KCI Technologies, Inc. conducted traffic counts from 7:00 – 9:00 AM and 4:00 – 6:00 PM on a typical weekday in July 2020; however, given the changes in traffic patterns resulting from Covid-19, these counts were compared to historic counts. Traffic counts gathered as part of Thompson’s Station 2015 Comprehensive Traffic Study were grown at an annual growth rate of 7% for five years to make this evaluation. The growth rate was based upon historic TDOT AADT data from nearby count stations. To be conservative, the maximum turning movement volumes from either of the count methodologies (i.e., the existing (2020) volumes or the grown volumes using 2015 counts) were utilized for this study. These volumes were then balanced between all study intersections. The existing peak hour turning movement volumes are presented in Figure 3. A detailed summary of the traffic counts is included in Appendix B.

In addition to the above information, average daily traffic volumes were obtained from the Tennessee Department of Transportation (TDOT). There are four TDOT count stations located in the vicinity of the project site. The count station locations and annual average daily traffic (AADT) in 2018 are shown in Table 1. Additional TDOT Count Station data is included in Appendix C.

TABLE 1. TDOT COUNT STATION DATA

ROADWAY	LOCATION	STATION NO.	2018 AADT (vpd)
Lewisburg Pike (SR 106/US 431)	East of I-65; Between Cascade Eastgate Boulevard and Wilhoite Road	65	6,188
Thompson’s Station Road East	West of I-65; Between Columbia Pike and Village Drive	66	4,009
Bethesda Road	East of Lewisburg Pike (SR 106/US 431); Between Lewisburg Pike and Marlin Way	64	2,062
Harpeth-Peytonsville Road	East of Lewisburg Pike (SR 106/US 431); Between Dotson Road and Herbert Smithson Road	93	1,608



Existing Peak Hour Traffic Volumes
(Not to Scale)

Figure 3.

2.3 Existing Traffic Operations

To determine the current operation of the study intersections, capacity analyses were performed for the AM and PM peak hours. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, 6th Edition. However, it should be noted that due to the limitations of HCM 6th Edition regarding intersections with non-NEMA phasing, the signalized intersection of Thompson’s Station Road East and Buckner Road was analyzed using HCM 2000 methodologies under existing conditions only. The capacity analyses result in the determination of a Level of Service (LOS) for an intersection. The LOS is a concept used to describe how well an intersection or roadway operates. LOS A is the best, while LOS F is the worst. LOS D is typically considered as the minimum acceptable LOS for an intersection in an urbanized area. Table 2 presents the descriptions of LOS for signalized and unsignalized intersections.

TABLE 2. DESCRIPTIONS OF LEVEL OF SERVICE

LEVEL OF SERVICE	DESCRIPTION	UNSIGNALIZED CONTROL DELAY (sec/veh)	SIGNALIZED CONTROL DELAY (sec/veh)
A	Little or no delay	≤ 10.0	≤ 10.0
B	Short traffic delay	>10 and ≤ 15	>10 and ≤ 20
C	Average traffic delay	>15 and ≤ 25	>20 and ≤ 35
D	Long traffic delay	>25 and ≤ 35	>35 and ≤ 55
E	Very long traffic delay	>35 and ≤ 50	>55 and ≤ 80
F	Extreme traffic delay	> 50.0	> 80.0

Source: *Highway Capacity Manual*, TRB 2010

The results of the capacity analyses for the existing conditions at the study intersections are presented in Table 3. As shown, the overall intersection and critical movements for the study intersections operate at LOS D or better in the AM and PM peak hours with the following exceptions:

- Lewisburg Pike (SR 106/US 431) and Thompson’s Station Road East
 - The eastbound approach operates at LOS F in the AM and PM peak hours.
- Lewisburg Pike (SR 106/US 431) and Bethesda Road
 - The westbound approach operates at LOS F in the AM peak and LOS E in the PM peak hour.

- Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road
 - The westbound approach operates at LOS F in the AM and PM peak hours.
- Thompson’s Station Road East and Buckner Lane
 - The overall intersection operates at LOS F in the AM and PM peak hours.
- Thompson’s Station Road East and Pantall Road
 - The southbound approach operates at LOS F in the PM peak hour.

Capacity analyses worksheets are included in Appendix D.

TABLE 3. EXISTING PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)	
		AM Peak Hour	PM Peak Hour
Lewisburg Pike and Thompson’s Station Road East	Northbound Left-Turn	A (8.0)	B (11.1)
	Eastbound Approach	F (>300)	F (102.3)
Lewisburg Pike and Bethesda Road	Westbound Approach	F (259.8)	E (36.1)
	Southbound Left-Turn	C (17.0)	A (8.1)
Lewisburg Pike and Harpeth-Peytonsville Road	Westbound Approach	F (>300)	F (299.8)
	Southbound Left-Turn	C (15.1)	A (7.9)
Thompson’s Station Road East and Buckner Lane ²	Overall Intersection	F (111.2)	F (244.4)
Thompson’s Station Road East and Pantall Road	Eastbound Left-Turn	A (8.5)	A (8.4)
	Southbound Approach	B (11.1)	F (84.3)
<i>Notes: 1 - For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection. 2 - HCM 2000 methods were used due to the incompatibility with NEMA phasing, which is not supported by HCM 6th Edition methods.</i>			

3. BACKGROUND TRAFFIC VOLUMES

3.1 Establishing Background Volumes

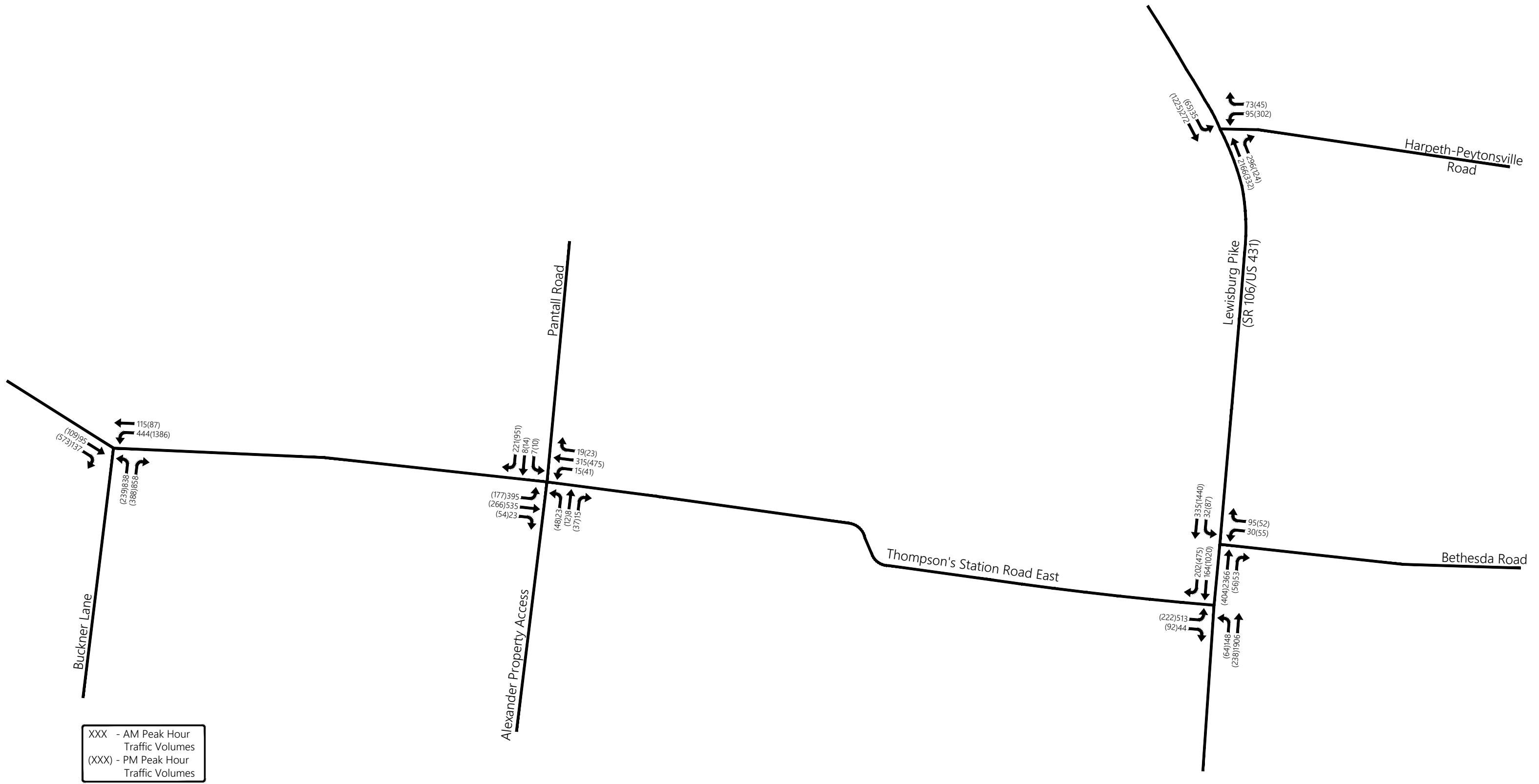
In order to account for the traffic growth prior to the completion of the proposed project, background traffic volumes were established. For the purposes of this traffic study, the proposed development was assumed to be completed by the year 2025, which is a 5-year horizon. Historical daily traffic volumes were obtained from the four TDOT count stations located in the vicinity of the project site. Since 2013, the combined traffic at these four TDOT count stations has increased by an average of 6.7% per year. The TDOT count station data is included in Appendix C.

A growth factor was applied to the existing peak hour traffic volumes to account for background growth for the future conditions. The existing peak hour traffic volumes at the study intersections were increased by 7.0% per year for five years to account for anticipated background traffic growth within the study area.

Additionally, per the scoping meeting with the City of Thompson's Station, the peak hour traffic volumes generated by the following developments were included as background traffic:

- Alexander Property – Phase I Only – Located on southeast corner of the intersection of Thompson's Station Road East and Buckner Lane, approximately 1.25 miles west of the project site.
- Littlebury – Located on east side of Pantall Road, approximately 3,500 feet west of the project site.

It should be noted that the neither background development has currently started constructions; however, both are expected to be completed by 2025. Trip assignment for the background developments are included in Appendix E. The background peak hour traffic volumes for horizon year 2025 are presented in Figure 4. These volumes represent the peak hour traffic that is expected to be on the roadway in 2025 even if the proposed Pleasant Creek development is not completed.




 Background Peak Hour Traffic Volumes
 (Not to Scale)

Figure 4.

3.2 Background Traffic Operations

To determine the operation of the study area intersections under background conditions, capacity analyses were performed for the AM and PM peak hours. The analyses for the background conditions were based on the same lane configurations and signal timings as the existing conditions with some exceptions. The following roadway improvements were recommended by the Alexander Property and Littlebury traffic impact studies and are expected to be completed by 2025:

Thompson's Station Road East and Buckner Lane

- Realign Buckner Lane between Thompson's Station Road East and Buckner Road. This realignment would relocate this intersection to approximately 600 feet west of Sherrie Street.
- Widen Thompson's Station Road East in order to provide a westbound left-turn lane.
- Widen Thompson's Station Road East in order to provide an eastbound right-turn lane with channelization to an added lane on Buckner Lane in the southbound direction.
- Install traffic signal control with permissive/protected left-turn signal phasing for Thompson's Station Road East.

Thompson's Station Road East and Pantall Road

- The southbound approach of Pantall Road should be widened to include a through/left-turn lane and a right-turn lane.
- A northbound approach should be installed, operate as stop-controlled, and be designed to include one ingress lane and two egress lanes. The egress lanes should include one shared through/left-turn lane and one right-turn lane.

These improvements were incorporated into the network configuration of the background conditions. As shown in Tables 4A and 4B, under background conditions, the capacity analyses indicate that the operational performances of the critical movements at the study intersections are generally expected to continue to operate at the same level of service as under existing conditions or continue to operate at LOS D or better in the AM and PM peak hours with the following exceptions:

- Lewisburg Pike (SR 106/US 431) and Bethesda Road
 - The westbound approach is expected to deteriorate from LOS E to LOS F in the PM peak hour.

- Thompson’s Station Road East and Pantall Road
 - The northbound through/left-turn lane is expected to operate at LOS F in the AM and PM peak hours.
 - The southbound through/left-turn lane is expected to operate at LOS F in the AM and PM peak hours.
 - The southbound right-turn lane is expected to operate at LOS F in the PM peak hour.

It is important to note that the intersection of Thompson’s Station Road East and Buckner Lane has improved operations between existing and background conditions due to the incorporated background improvements. Capacity analyses worksheets are included in Appendix D.

TABLE 4A. BACKGROUND AM PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)	
		EXISTING	BACKGROUND
Lewisburg Pike and Thompson’s Station Road East	Northbound Left-Turn	A (8.0)	A (8.6)
	Eastbound Approach	F (>300)	F (>300)
Lewisburg Pike and Bethesda Road	Westbound Approach	F (259.8)	F (>300)
	Southbound Left-Turn	C (17.0)	D (33.2)
Lewisburg Pike and Harpeth-Peytonsville Road	Westbound Approach	F (>300)	F (>300)
	Southbound Left-Turn	C (15.1)	D (26.1)
Thompson’s Station Road East and Buckner Lane	Overall Intersection	F (111.2)	D (35.5)
Thompson’s Station Road East and Pantall Road	Northbound Through/Left	--	F (>300)
	Northbound Right-Turn	--	B (12.4)
	Eastbound Left-Turn	A (8.5)	A (9.7)
	Westbound Left-Turn	--	A (8.8)
	Southbound Through/Left	B (11.1)	F (233.4)
	Southbound Right-Turn	--	B (13.0)
<i>Note: 1 - For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection.</i>			

TABLE 4B. BACKGROUND PM PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)	
		EXISTING	BACKGROUND
Lewisburg Pike and Thompson's Station Road East	Northbound Left-Turn	B (11.1)	C (15.9)
	Eastbound Approach	F (102.3)	F (>300)
Lewisburg Pike and Bethesda Road	Westbound Approach	E (36.1)	F (>300)
	Southbound Left-Turn	A (8.1)	A (8.7)
Lewisburg Pike and Harpeth-Peytonsville Road	Westbound Approach	F (299.8)	F (>300)
	Southbound Left-Turn	A (7.9)	A (8.2)
Thompson's Station Road East and Buckner Lane	Overall Intersection	F (244.4)	F (98.8)
Thompson's Station Road East and Pantall Road	Northbound Through/Left	--	--
	Northbound Right-Turn	--	B (10.3)
	Eastbound Left-Turn	A (8.4)	A (9.3)
	Westbound Left-Turn	--	A (8.1)
	Southbound Through/Left	F (84.3)	F (53.9)
	Southbound Right-Turn	--	F (>300)
<i>Note: 1 - For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection.</i>			

4. IMPACTS

4.1 Trip Generation

A traffic generation process was used to estimate the amount of traffic expected to be generated by the proposed Pleasant Creek development. Factors for the trip generation were taken from ITE’s *Trip Generation*, 10th Edition. According to the developer, the proposed development includes approximately 327 single-family residential homes, 90 single-family townhomes, 5,500 square feet of retail, 2,000 square feet of fitness center, and 2,000 square feet of bank. It should be noted that the 90 single-family townhomes will be analyzed using LUC 210 due to the planned nature of the development, as well as, LUC 210 being more conservative than LUC 220 (Low Rise Multi-Family). Therefore, the total units for analysis is 417. Additionally, the fitness center will be analyzed using LUC 820 due to the planned nature of the development, as well as, LUC 820 being more conservative than LUC 492 (Health/Fitness Club).

No reductions were applied to the base trip generation to account for internal capture, alternative modes, or pass-by trips.

Table 5 presents the daily, AM and PM peak hour trip generation for the proposed development. As shown in Table 5, the proposed development can be expected to generate approximately 5,164 new vehicle trips per day. The AM and PM peak hour trip generations will equal approximately 327 and 545 new trips, respectively. These trips represent the new traffic that will be generated by the proposed Pleasant Creek development. The calculations for trip generation are included in Appendix F.

TABLE 5. DEVELOPMENT TRIP GENERATION

LAND USE	SIZE	DAILY TRAFFIC	GENERATED TRAFFIC			
			AM PEAK		PM PEAK	
			Enter	Exit	Enter	Exit
Single-Family Detached Housing (LUC 210)	417 Units	3,868	75	226	252	148
Shopping Center (LUC 820)	1,500 s.f.	346	1	0	12	12
Shopping Center (LUC 820)	4,000 s.f.	674	2	2	24	26
Shopping Center (LUC 820)	2,000 s.f.	76	1	1	14	16
Drive-In Bank (LUC 912)	2,000 s.f.	200	11	8	21	21
NEW TRIPS		5,164	90	237	322	223
			327		545	

Source: *Trip Generation*, 10th Edition

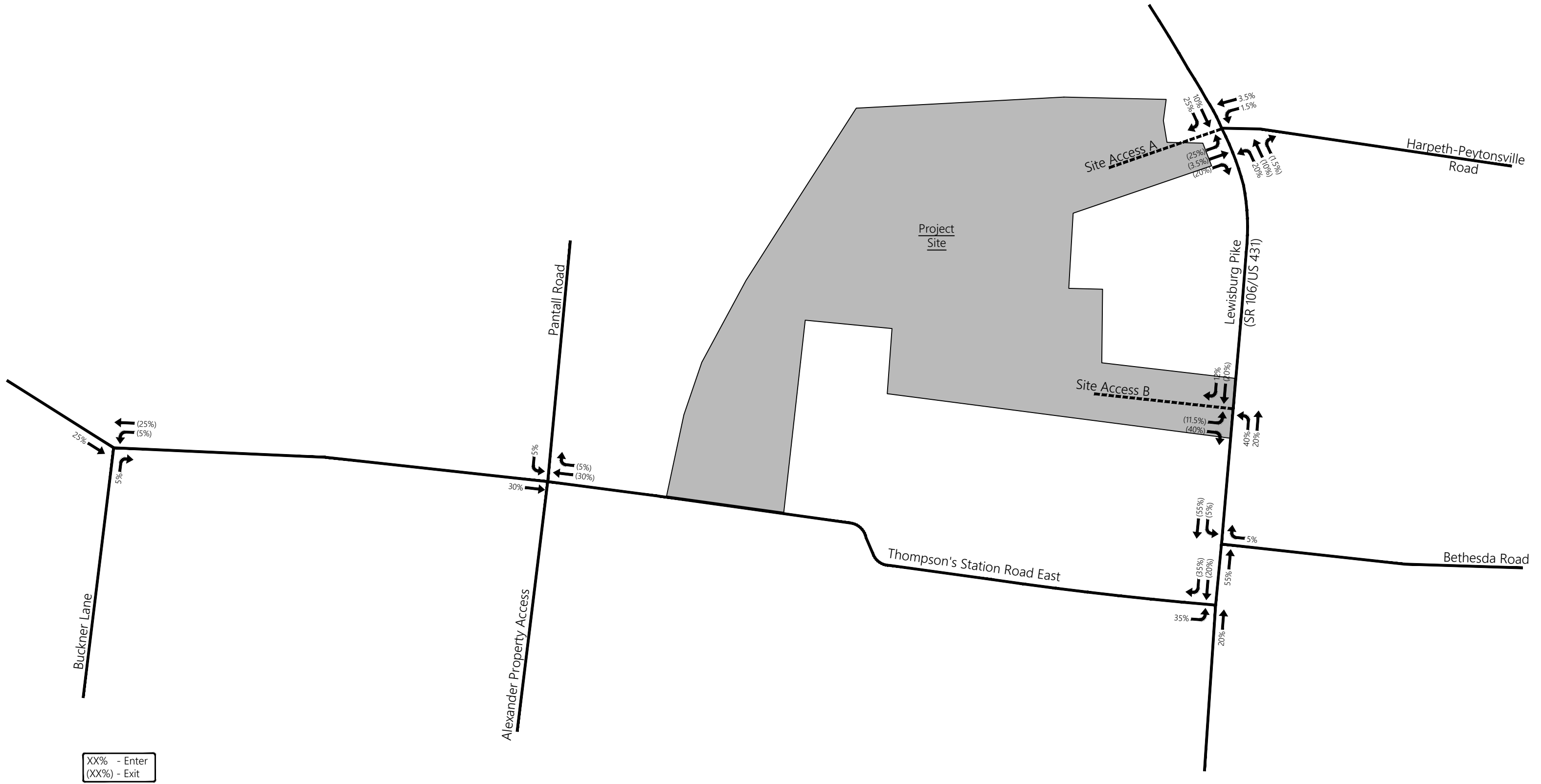
4.2 Trip Distribution and Traffic Assignment

A directional distribution of traffic generated by the proposed project was established based on the proposed access, the existing roadway network, and the existing travel patterns developed from the existing peak hour traffic counts. As previously discussed, access to the development is planned to be provided by two access drives, located along Lewisburg Pike (SR 106/US 431). The northern access will be provided via the new eastbound approach to the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth Peytonsville Road. The southern access will be located approximately 1,100 feet north of the intersection of Lewisburg Pike (SR 106/US 431) and Bethesda Road.

The directional distribution for the proposed development is shown in Figure 5. As shown in the figure,

- approximately 35% of the traffic generated by the development will be oriented to the north on Lewisburg Pike (SR 106/US 431),
- 25% to the west on Thompson's Station Road East,
- 20% to the south on Lewisburg Pike (SR 106/US 431),
- 5% to the east on Harpeth-Peytonsville Road,
- 5% to the east on Bethesda Road,
- 5% to the north on Pantall Road, and
- 5% to the south on Buckner Lane.

Based on the directional distribution, the project-generated traffic for the AM and PM peak hour was assigned to the roadway network. The traffic assignment for the proposed development is shown in Figure 6. It should be noted that the 20% of vehicles distributed to the south on Lewisburg Pike (SR 106/US 431) is due to the proposed I-65 interchange located along Buckner Road. This interchange is being constructed in tandem with the Alexander Property background development.

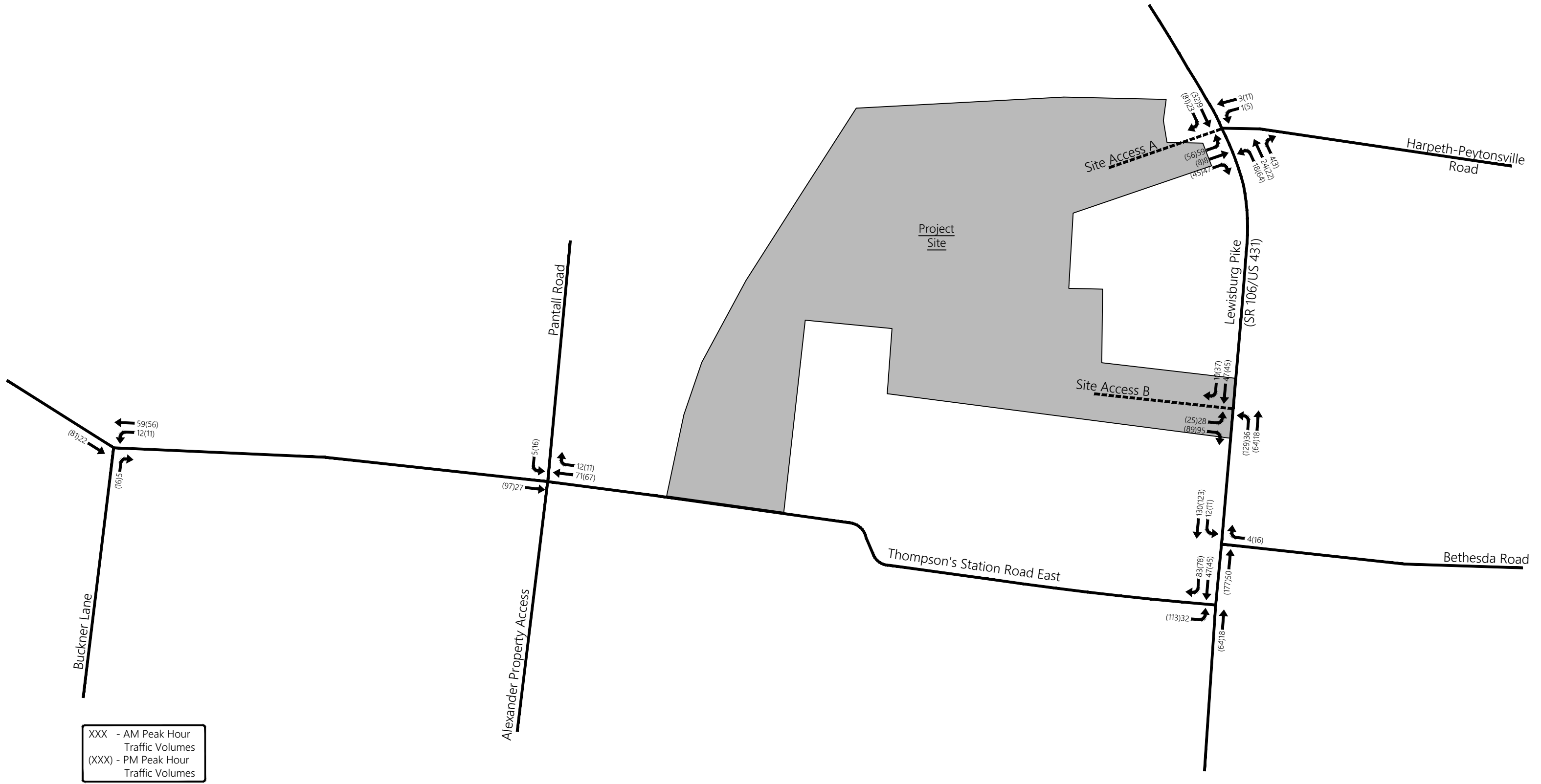


XX% - Enter
(XX%) - Exit



Distribution of Peak Hour Traffic Volumes
Generated by the Project Site
(Not to Scale)

Figure 5.



XXX - AM Peak Hour
Traffic Volumes
(XXX) - PM Peak Hour
Traffic Volumes



Assignment of Peak Hour Traffic Volumes
Generated by the Project Site
(Not to Scale)

Figure 6.

4.3 Capacity / Level of Service Analyses

The total site-generated traffic volumes were added to the background peak hour traffic volumes for the proposed development in order to obtain the total projected traffic volumes for the study intersections. Figure 7 presents the total projected AM and PM peak hour traffic volumes expected at the completion of the proposed development.

Capacity analyses were performed in order to determine the impact of the project on the study intersections. These capacity analyses were also used to evaluate the need for roadway and traffic control improvements at the intersections studied. The capacity calculations were performed according to the methods outlined in the *Highway Capacity Manual*, TRB 2010. The results of the capacity analyses for the projected conditions at the study area intersections are presented in Tables 6A and 6B. For the analyses, the intersection configurations and signal timings were the same as the existing and background conditions.

Based on preliminary lane warrant analysis, the intersections with proposed site accesses are expected to operate as follows:

- Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A
 - The northbound approach of Lewisburg Pike (SR 106/US 431) should include one left-turn lane and one shared through/right-turn lane.
 - The southbound approach of Lewisburg Pike (SR 106/US 431) should include one shared through/left-turn lane and one right-turn lane.
 - The eastbound approach of Site Access A should be designed to include one ingress lane and three egress lanes. The egress lanes should include one left-turn lane, one through lane, and one right-turn lane.
 - The westbound approach of Harpeth-Peytonsville Road should include one shared lane for all movements.
- Lewisburg Pike (SR 106/US 431) and Site Access B
 - The northbound approach of Lewisburg Pike (SR 106/US 431) should include one left-turn lane and one through lane.
 - The southbound approach of Lewisburg Pike (SR 106/US 431) should include one through lane and one right-turn lane.
 - The eastbound approach of Site Access B should be designed to include one ingress lane and two egress lanes. The egress lanes should include one left-turn lane and one right-turn lane.

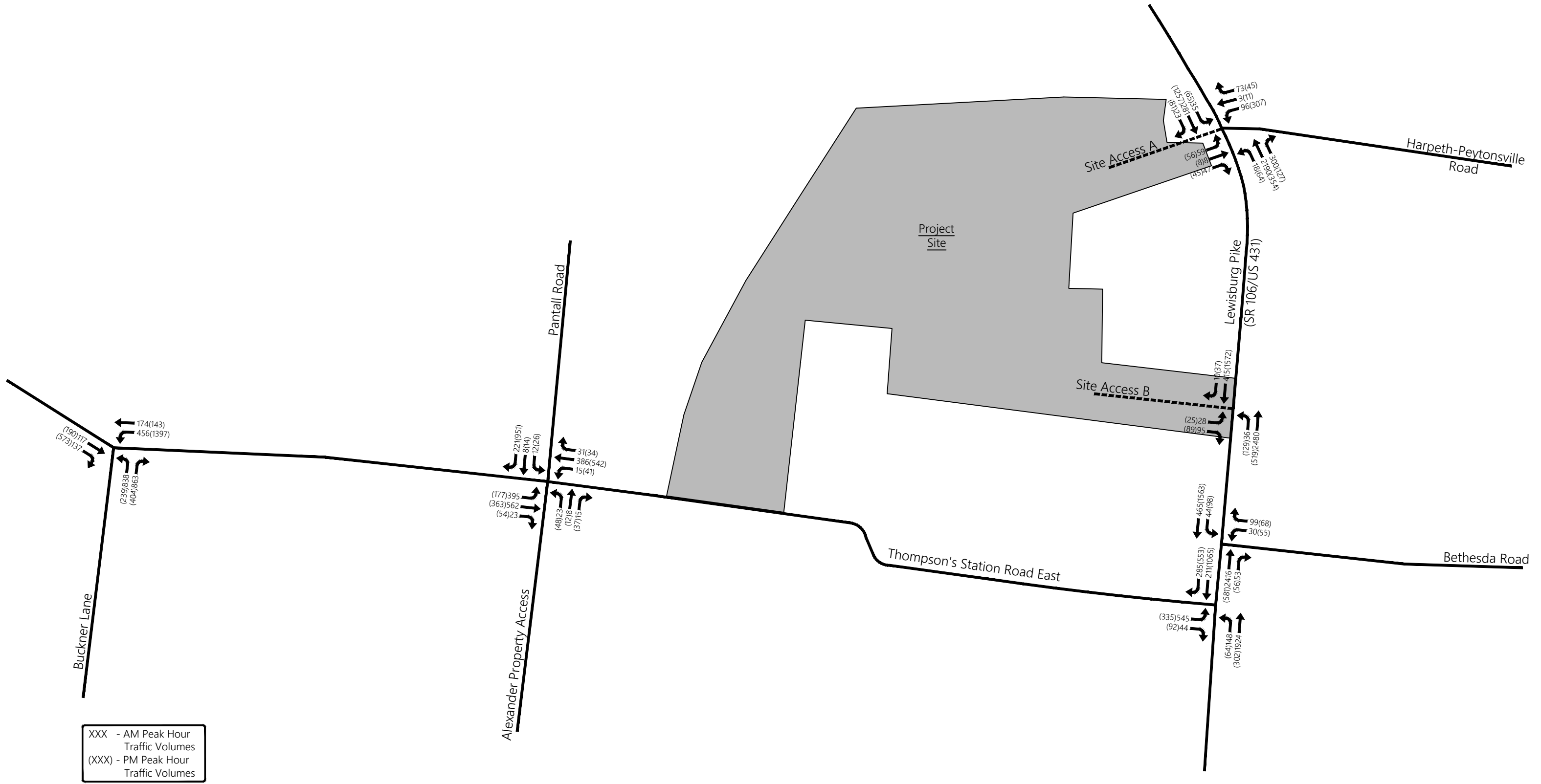
As shown in Tables 6A and 6B, under projected conditions, the capacity analyses indicate that the operational performances of the critical movements at the study intersections are generally expected to continue to operate at the same level of service as under background conditions or continue to operate at LOS D or better in the AM and PM peak hours with the following exceptions:

- Lewisburg Pike (SR 106/US 431) and Bethesda Road
 - The southbound left-turn movement is expected to deteriorate from LOS D to LOS E in the AM peak hour.
- Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A
 - The eastbound left-turn lane is expected to operate at LOS F in the AM and PM peak hours.
- Thompson’s Station Road East and Pantall Road
 - The southbound approach is expected to deteriorate from LOS C to LOS F in the AM peak hour.
- Lewisburg Pike (SR 106/US 431) and Site Access B
 - The eastbound left-turn movement is expected to operate at LOS F in the AM and PM peak hours.
 - The eastbound right-turn movement is expected to operate at LOS F in the PM peak hour.

Additional analyses were conducted under a “projected with improvements” scenario to evaluate the benefits of adding the following roadway improvements:

- Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A
 - The southbound approach was modeled to include the one left-turn lane, one through lane, and one right-turn lane.
 - The intersection was assumed to be signalized with all approaches operating as permissive-only left-turn phasing. The signal was optimized for both cycle length and splits. It should be noted that protected-permitted left-turn signal phasing from the mainline was also taken into consideration; however, it was determined that permissive-only left-turn phasing provided a better overall intersection LOS.

Capacity analyses results for the “projected with improvements” scenario are presented in bold in Tables 6A and 6B. Capacity analyses worksheets are included in Appendix D.



Total Projected Peak Hour Traffic Volumes (Not to Scale)

Figure 7.

TABLE 6A. PROJECTED AM PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)		
		EXISTING	BACKGROUND	PROJECTED
Lewisburg Pike and Thompson’s Station Road East	Northbound Left-Turn	A (8.0)	A (8.6)	A (9.1)
	Eastbound Approach	F (>1,000)	F (>10,000)	F (>10,000)
Lewisburg Pike and Bethesda Road	Westbound Approach	F (259.8)	F (>1,000)	F (>1,000)
	Southbound Left-Turn	C (17.0)	D (33.2)	E (38.6)
Lewisburg Pike and Harpeth-Peytonsville Road/Site Access A	Overall Intersection	--	--	F (215.8)
	Northbound Left-Turn	--	--	A (8.0) A (3.5)
	Eastbound Left-Turn	--	--	F (458.2) E (63.1)
	Eastbound Right-Turn	--	--	B (10.3) E (60.8)
	Westbound Approach	F (>500)	F (>1,000)	F (>15,000) F (105.2)
	Southbound Left-Turn	C (15.1)	D (26.1)	D (26.8) F (133.9)
Thompson’s Station Road East and Buckner Lane	Overall Intersection	F (111.2)	D (35.5)	D (37.1)
Thompson’s Station Road East and Pantall Road	Northbound Through/Left	--	F (>500)	F (>1,000)
	Northbound Right-Turn	--	B (12.4)	B (12.7)
	Eastbound Left-Turn	A (8.5)	A (9.7)	B (10.3)
	Westbound Left-Turn	--	A (8.8)	A (8.9)
	Southbound Through/Left	B (11.1)	F (233.4)	F (>500)
	Southbound Right-Turn	--	B (13.0)	B (14.4)
Lewisburg Pike and Site Access B	Northbound Left-Turn	--	--	A (8.4)
	Eastbound Left-Turn	--	--	F (>1,000)
	Eastbound Right-Turn	--	--	B (12.1)
<p>Note: 1 - For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection.</p> <p>'Projected with Improvements' Scenario Results</p>				

TABLE 6B. PROJECTED PM PEAK HOUR LEVELS OF SERVICE

INTERSECTION	TURNING MOVEMENT	LEVEL OF SERVICE (Average Approach Delay in sec/veh)		
		EXISTING	BACKGROUND	PROJECTED
Lewisburg Pike and Thompson’s Station Road East	Northbound Left-Turn	B (11.1)	C (16.2)	C (17.6)
	Eastbound Approach	F (102.3)	F (>1,000)	F (>1,000)
Lewisburg Pike and Bethesda Road	Westbound Approach	E (36.1)	F (>1,000)	C (16.0)
	Southbound Left-Turn	A (8.1)	A (8.7)	A (9.5)
Lewisburg Pike and Harpeth-Peytonsville Road/Site Access A	Overall Intersection	--	--	E (60.6)
	Northbound Left-Turn	--	--	B (14.1) F (228.5)
	Eastbound Left-Turn	--	--	F (>1,000) D (36.4)
	Eastbound Right-Turn	--	--	D (32.3) D (36.2)
	Westbound Approach	F (299.8)	F (>1,000)	F (>10,000) F (105.9)
	Southbound Left-Turn	A (7.9)	A (8.2)	A (8.3) B (10.1)
Thompson’s Station Road East and Buckner Lane	Overall Intersection	F (244.4)	F (98.8)	F (114.5)
Thompson’s Station Road East and Pantall Road	Northbound Through/Left	--	--	--
	Northbound Right-Turn	--	B (10.3)	B (11.1)
	Eastbound Left-Turn	A (8.4)	A (9.3)	A (9.7)
	Westbound Left-Turn	--	A (8.1)	A (8.4)
	Southbound Through/Left	F (84.3)	F (53.9)	F (135.0)
	Southbound Right-Turn	--	F (420.8)	F (>500)
Lewisburg Pike and Site Access B	Northbound Left-Turn	--	--	C (21.4)
	Eastbound Left-Turn	--	--	F (>500)
	Eastbound Right-Turn	--	--	F (122.4)

Note: 1 - For stop-controlled intersections, a LOS is presented for each critical turning movement. For signalized intersections, a LOS is presented for the overall intersection.

'Projected with Improvements' Scenario Results

4.4 Queue Length Analysis

95th percentile queue lengths for the critical movements of the study intersections that are expected to be impacted by the proposed development were also analyzed and evaluated under the projected conditions. Table 7 indicates the results of the queue length analyses for the study intersection.

TABLE 7. STUDY INTERSECTIONS 95TH PERCENTILE QUEUE LENGTH

INTERSECTION	TURNING MOVEMENT	STORAGE LENGTH (FEET)	95 th PERCENTILE QUEUE LENGTH (FEET)			
			BACKGROUND		PROJECTED	
			AM	PM	AM	PM
Lewisburg Pike and Thompson’s Station Road East	Northbound Left-Turn	--	13’	15’	15’	18’
	Eastbound Approach	--	1885’	883’	2008’	1333’
Lewisburg Pike and Bethesda Road	Westbound Approach	--	433’	350’	460’	30’
	Southbound Left-Turn	--	20’	8’	30’	10’
Lewisburg Pike and Harpeth-Peytonsville Road/Site Access A	Northbound Left-Turn	125’	--	--	0’ 8’	13’ #115’
	Eastbound Left-Turn	125’	--	--	-- 113’	208’ 76’
	Eastbound Right-Turn	125’	--	--	5’ 42’	28’ 32’
	Westbound Approach	--	585’	1053’	638’ 330’	1260’ #567’
	Southbound Left-Turn	--	18’	5’	18’ 60’	5’ 35’
Thompson’s Station Road East and Buckner Lane	Eastbound Right-Turn	200	19’	#663’	23’	#794’
	Westbound Left-Turn	300	#536’	#1519’	#443’	#1903’
	Northbound Left-Turn	--	#892’	#322’	#974’	#374’
	Northbound Right-Turn	--	227’	20’	297’	80’
Thompson’s Station Road East and Pantall Road	Northbound Through/Left	--	118’	--	130’	--
	Northbound Right-Turn	100’	3’	5’	3’	5’
	Eastbound Left-Turn	--	43’	18’	48’	20’
	Westbound Left-Turn	--	3’	3’	3’	3’
	Southbound Through/Left	--	45’	25’	75’	73’
	Southbound Right-Turn	100’	40’	1658’	45’	1815’
Lewisburg Pike and Site Access B	Northbound Left-Turn	75	--	--	3’	45’
	Eastbound Left-Turn	--	--	--	120’	95’
	Eastbound Right-Turn	--	--	--	15’	128’

- 95th percentile volume exceeds capacity; queue may be longer.

4.5 Signal Warrant Analysis

As noted in the capacity analysis, the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonville Road/Site Access A is expected to operate at poor LOS under unsignalized projected conditions in the AM and PM peak hours:

A traffic signal should normally be installed at an intersection only when specific warrants are satisfied. Therefore, traffic signal warrant analyses were performed with available data for the intersections based on the anticipated traffic conditions at completion of the development.

The *Manual on Uniform Traffic Control Devices* (MUTCD) sets forth nine different warrants that have been developed by the traffic engineering profession to facilitate the determination of whether a signal is warranted. These warrants include minimum conditions that normally indicate when a traffic signal is justified at a particular location. The MUTCD states “traffic control signals should not be installed unless one or more of the signal warrants in the manual are met.”

Although the MUTCD provides nine different warrants, only three of these are potentially applicable at the intersection under study. These three warrants, described in the MUTCD, are the volume-related signal warrants, which are described as follows:

WARRANT 1A, MINIMUM VEHICULAR VOLUME

The Minimum Vehicular Volume warrant is intended for application where the volume of intersecting traffic is the principal reason for consideration of signal installation. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table 8 exist on the major street and on the higher volume minor street approach to the intersection.

TABLE 8. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1A

Number of lanes for moving traffic on each approach		Vehicles per hour on major street	Vehicles per hour on higher volume minor approach
Major Street	Minor Street	Total of Both Approaches	One Direction Only
1 Lane	1 Lane	500	150
2 Lanes or more	1 Lane	600	150
2 Lanes or more	2 Lanes or more	600	200
1 Lane	2 Lanes or more	500	200

When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or a rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Minimum Vehicular Volume warrant is 70% of the requirements in Table 8. The speed limit on Lewisburg Pike (SR 106/US 431) is 55 mph; therefore, the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A does qualify for this reduction.

WARRANT 1B, INTERRUPTION OF CONTINUOUS TRAFFIC

The Interruption of Continuous Traffic warrant applies to operating conditions where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or hazard when entering or crossing the major street. The warrant is satisfied when, for each of any eight hours of an average day, the traffic volumes given below in Table 9 exist on the major street and on the higher volume minor street approach to an intersection. In addition, the signal installation shall not seriously disrupt progressive traffic flow.

TABLE 9. MINIMUM VEHICULAR VOLUMES FOR WARRANT 1B

Number of lanes for moving traffic on each approach		Vehicles per hour on major street	Vehicles per hour on higher volume minor approach
Major Street	Minor Street	Total of Both Approaches	One Direction Only
1 Lane	1 Lane	750	75
2 Lanes or more	1 Lane	900	75
2 Lanes or more	2 Lanes or more	900	100
1 Lane	2 Lanes or more	750	100

When the 85th percentile speed of the major street traffic exceeds 40 mph in either an urban or a rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Minimum Vehicular Volume warrant is 70% of the requirements in Table 9. The speed limit on Lewisburg Pike (SR 106/US 431) is 55 mph; therefore, the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A does qualify for this reduction.

WARRANT 1C, COMBINATION WARRANT

In exceptional cases, traffic signals occasionally may be justified where no single warrant is satisfied but where Warrants 1A and 1B are satisfied to the extent of 80 percent or more of the stated values. This warrant is referred to as Warrant 1C (Combination Warrant).

When only peak hour data is collected, preliminary traffic signal warrant analyses can be based on estimates of the eighth highest hour of a typical day, based off the highest peak hour. The method for this estimation is described in the Manual of Traffic Signal Design, by Iris Fullerton and James H. Kell. This estimation procedure is based on the assumption that the eight highest hours will each exceed 6.25% of the ADT and that the peak hour traffic volume is approximately 10% of the ADT.

WARRANT 2, FOUR HOUR VOLUME

The Four Hour Volume warrant is satisfied when for each of any four high hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 8 and Figure 9 for the appropriate combination of approach lanes. It should be noted that when the 85th percentile speed of the major street traffic exceeds 40 mph or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the peak hour volume requirements are reduced by 30%. Figure 8 shows the existing traffic volumes at the study intersection as applied to Warrant 2 thresholds, and Figure 9 shows the projected traffic volumes at the study intersections as applied to Warrant 2 thresholds.

FIGURE 8. WARRANT 2, FOUR-HOUR VEHICULAR VOLUME (EXISTING)

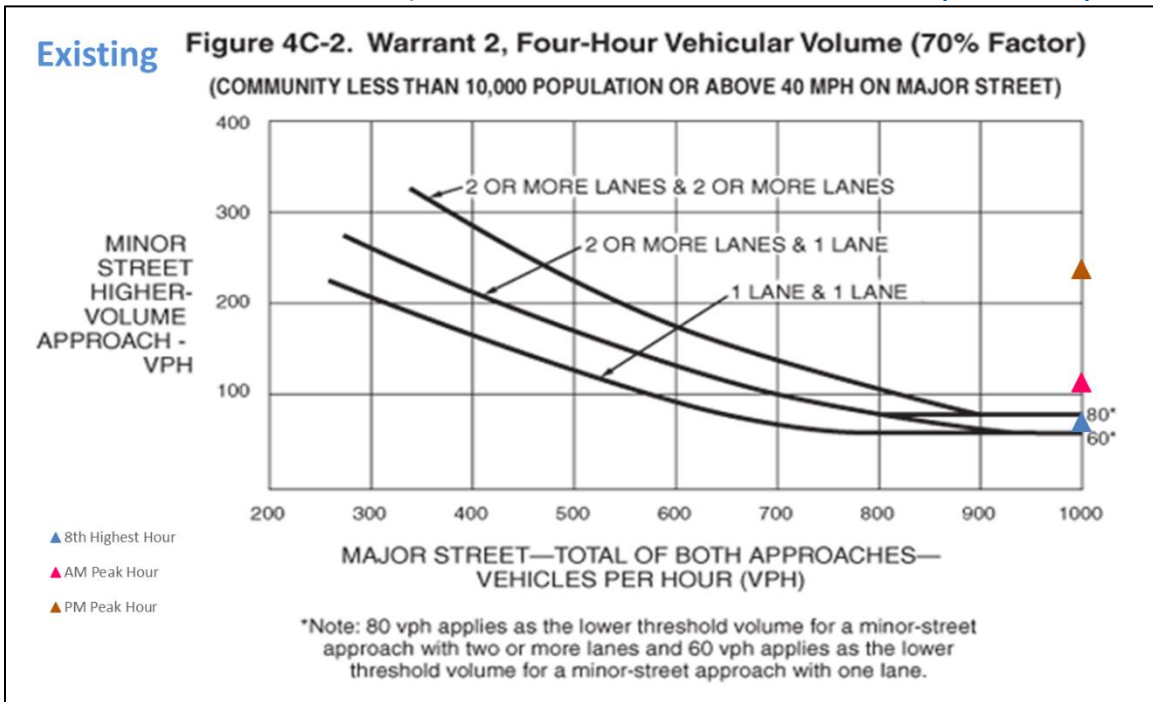
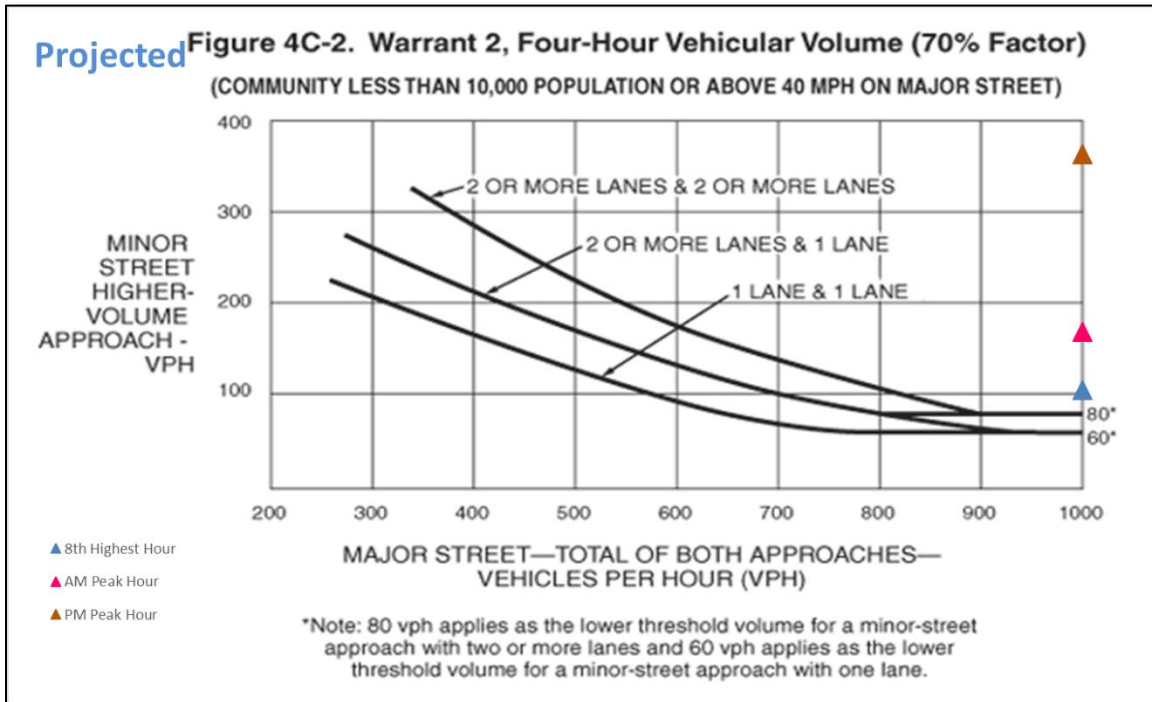


FIGURE 9. WARRANT 2, FOUR-HOUR VEHICULAR VOLUME (PROJECTED)



WARRANT 3, PEAK HOUR VOLUME

The Peak Hour Volume warrant is intended for application when traffic conditions are such that for one hour of the day, minor street traffic suffers undue traffic delay in entering or crossing the major street. The Peak Hour Volume warrant is satisfied when the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for one hour (any four consecutive 15 minute periods) of an average day falls above the curve in Figure 10 and Figure 11 for the appropriate combination of approach lanes. It should be noted that when the 85th percentile speed of the major street traffic exceeds 40 mph or when the intersection lies within a built-up area of an isolated community having a population less than 10,000, the peak hour volume requirements are reduced by 30%. Figure 10 shows the existing traffic volumes at the study intersection as applied to Warrant 3 thresholds, and Figure 11 shows the projected traffic volumes at the study intersections as applied to Warrant 3 thresholds.

FIGURE 10. WARRANT 3, PEAK-HOUR VEHICULAR VOLUME (EXISTING)

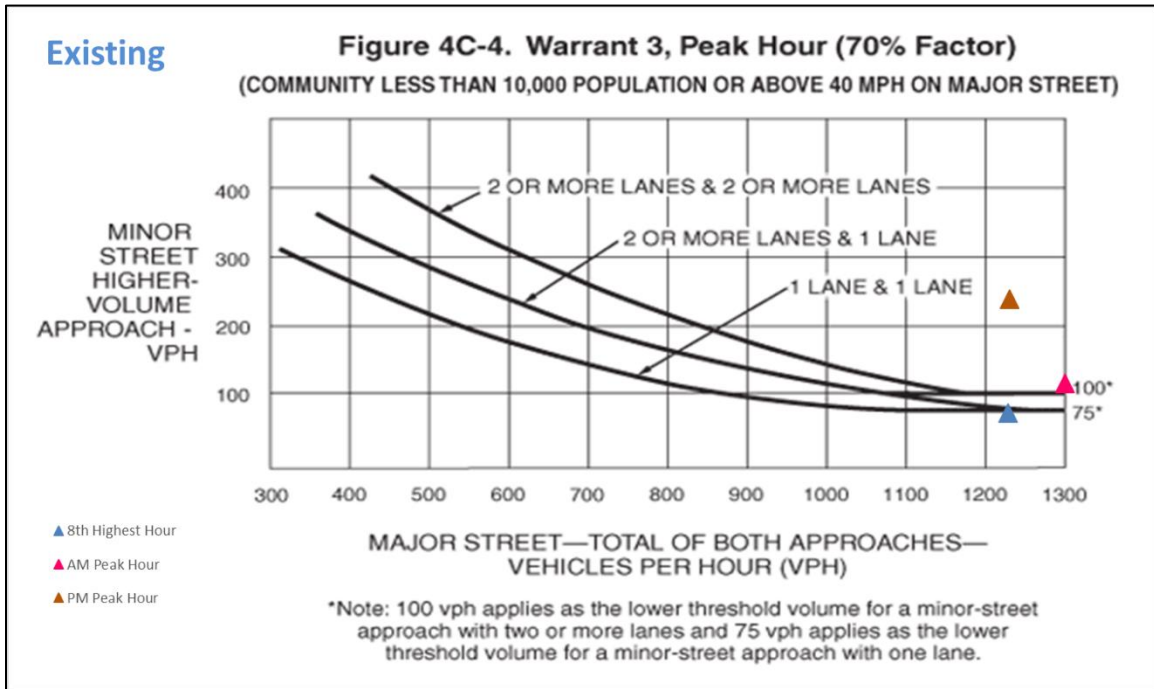
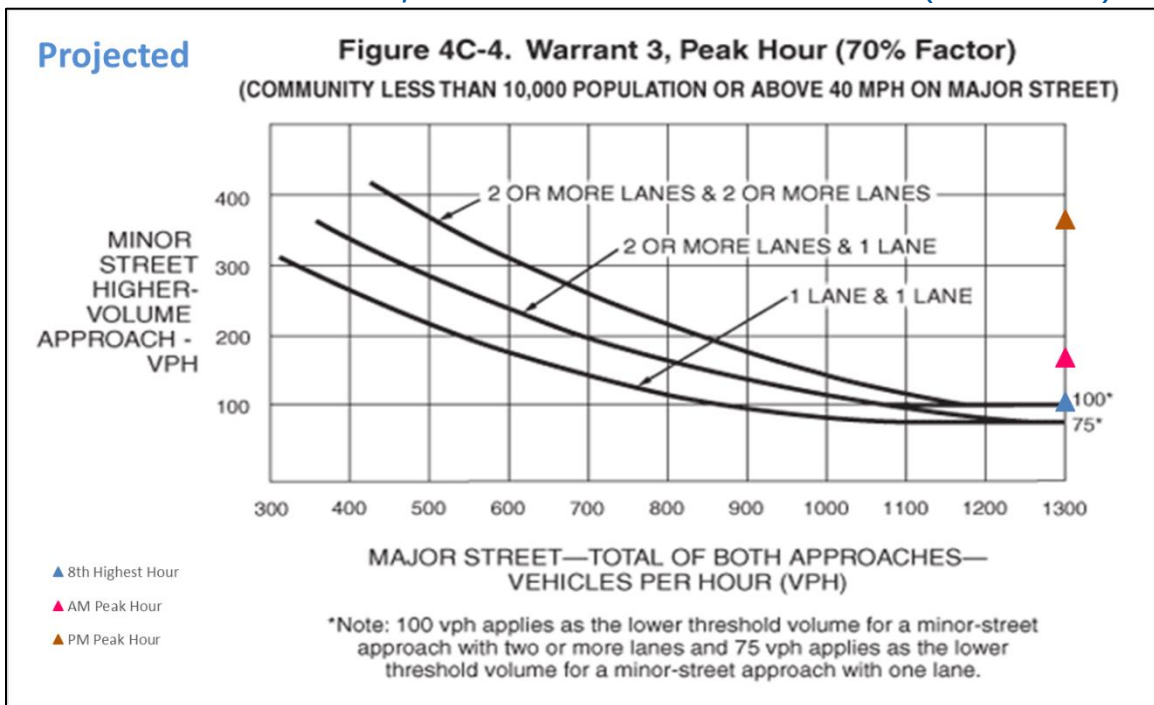


FIGURE 11. WARRANT 3, PEAK-HOUR VEHICULAR VOLUME (PROJECTED)



TRAFFIC SIGNAL WARRANT ANALYSIS RESULTS

Based on the geometry of the intersection, the analyses were performed based on one lane on the major street, Lewisburg Pike (SR 106/US 431), and one lane on the minor street (Harpeth-Peytonsville Road/Site Access A). The results of the warrant analyses indicated that under existing, background, and at the completion of the development, the traffic volumes at the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A will warrant a traffic signal.

Under existing and background conditions, the intersection is expected to meet Warrant 1B for the eighth highest hour, Warrant 2 in the AM and PM peak hours, and Warrant 3 in the AM and PM peak hours. Under projected conditions, the intersection is expected to meet Warrant 1A for the eighth highest hour, Warrant 1B for the eighth highest hour, Warrant 2 in the AM and PM peak hours, and Warrant 3 in the AM and PM peak hours. Results of the warrant analyses are shown in Table 10.

TABLE 10. TRAFFIC SIGNAL WARRANT ANALYSIS

	Hour	Main Street Both Directions	Minor Street Highest Approach	1A	1B	1C	2	3
Existing	8 th Highest Hour	1228	72	No	Yes	n/a	n/a	n/a
	AM Peak Hour	1965	115	n/a	n/a	n/a	Yes	Yes
	PM Peak Hour	1230	238	n/a	n/a	n/a	Yes	Yes
Background	8 th Highest Hour	1731	103	No	Yes	n/a	n/a	n/a
	AM Peak Hour	2770	165	n/a	n/a	n/a	Yes	Yes
	PM Peak Hour	1747	347	n/a	n/a	n/a	Yes	Yes
Projected	8 th Highest Hour	1780	106	Yes	Yes	n/a	n/a	n/a
	AM Peak Hour	2848	169	n/a	n/a	n/a	Yes	Yes
	PM Peak Hour	1949	363	n/a	n/a	n/a	Yes	Yes

5. ANALYSIS OF SITE PLAN

5.1 Site Access Review

According to the information provided by the developer, the proposed Pleasant Creek development includes approximately 327 single-family residential homes, 90 single-family townhomes, 5,500 square feet of retail, 2,000 square feet of fitness center, and 2,000 square feet of bank.

Access to the development is planned to be provided via two access drives, located along Lewisburg Pike (SR 106/US 431). The northern access will be provided via the new eastbound approach to the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth Peytonsville Road. The southern access will be located approximately 1,100 feet north of the intersection of Lewisburg Pike (SR 106/US 431) and Bethesda Road.

5.2 Pedestrian, Bicycle, and Transit Access

No sidewalks, pedestrian infrastructure, bicycle facilities, or transit services are currently provided in the vicinity of the project site.

5.3 Sight Distance Analysis

Field investigation and sight distance measurements were conducted to determine if adequate sight distance is available for accessing the project site. For the 55 mph on Lewisburg Pike (SR 106/US 431), the guidelines from *A Policy on Geometric Design of Highways and Streets*, by the American Association of State Highway and Transportation Officials (AASHTO), call for a minimum stopping sight distance of 495 feet. These are the distances required for motorist to detect an object in the roadway necessitating a stop and be able to stop before reaching the object.

AASHTO also provides minimum design values for intersection sight distance which, allows enough time gap for a motorist to turn from Site Access A and Site Access B onto Lewisburg Pike (SR 106/US 431) without requiring motorists on Lewisburg Pike (SR 106/US 431) to significantly reduce speed. For a speed of 55 mph, the design value for intersection sight distance for a motorist turning from a stop is 530 feet for right-turns and 610 feet for left-turns. Therefore, it is desirable to provide a minimum of 530 feet looking north on Lewisburg Pike (SR 106/US 431) from Site Access A and Site Access B and 610 feet looking to the south on Lewisburg Pike (SR 106/US 431) from Site Access A and Site Access B. The design and available intersection sight distance for each of the site accesses are shown in Table 11.

TABLE 11. INTERSECTION SIGHT DISTANCE ANALYSIS

INTERSECTION	INTERSECTION SIGHT DISTANCE FOR LEFT-TURNS FROM STOP (FEET)		INTERSECTION SIGHT DISTANCE FOR RIGHT-TURNS FROM STOP (FEET)	
	DESIGN	AVAILABLE	DESIGN	AVAILABLE
Lewisburg Pike (SR 106/US 431) and Site Access A	610	610	530	600
Lewisburg Pike (SR 106/US 431) and Site Access B	610	610	530	600

The field investigations indicate that the existing sight distance available at the proposed intersections of Lewisburg Pike (SR 106/US 431) and Site Access A and Lewisburg Pike and Site Access B will be adequate for left-turns and right-turns onto Lewisburg Pike (SR 106/US 431).

5.4 Lane Warrant Analysis

The southbound approach of Lewisburg Pike (SR 106/US 431) at Site Access A was evaluated for the need to provide a right-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in the Intersection Channelization Design Guide (NCHRP 279). The results of the analysis indicate that a right-turn lane is warranted in the PM peak hour.

The northbound approach of Lewisburg Pike (SR 106/US 431) at Site Access A was evaluated for the need to provide a left-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in M.D. Harmelink’s *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections*. The results of the analysis indicate that a left-turn lane is warranted in the AM and PM peak hours.

The eastbound approach of proposed Site Access A was evaluated for the need to provide a two-lane approach based on the projected traffic volumes during the AM and PM peak hours. According to *Evaluating Intersection Improvements: An Engineering Study Guide* (NCHRP 457) Figure 2-4, a two-lane approach is warranted for the eastbound approach of Site Access A during the AM and PM peak hours.

The southbound approach of Lewisburg Pike (SR 106/US 431) at Site Access B was evaluated for the need to provide a right-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in the Intersection Channelization Design Guide (NCHRP 279). The results of the analysis indicate that a right-turn lane is warranted in the PM peak hour.

The northbound approach of Lewisburg Pike (SR 106/US 431) at Site Access B was evaluated for the need to provide a left-turn lane based on the projected traffic volumes during the AM and PM peak hours. This analysis was based on the procedures outlined in M.D. Harmelink's *Volume Warrants for Left-Turn Storage Lanes at Unsignalized Intersections*. The results of the analysis indicate that a left-turn lane is warranted in the AM and PM peak hours.

The eastbound approach of proposed Site Access B was evaluated for the need to provide a two-lane approach based on the projected traffic volumes during the AM and PM peak hours. According to *Evaluating Intersection Improvements: An Engineering Study Guide* (NCHRP 457) Figure 2-4, a two-lane approach is warranted for the eastbound approach of Site Access B during the AM and PM peak hours.

All warrant analyses are included in Appendix I.

5.5 Evaluation of Off-Site Intersections

As described previously, off-site intersections that were analyzed for this study either currently experience poor LOS or will under background conditions. With the exception of the intersection of Thompson's Station Road East and Buckner Lane, each of these intersections has been evaluated and recommendations have been previously presented in the Town of Thompson's Station's *Major Thoroughfare Plan* or in the Town's *2015 Traffic Impact Study Comprehensive Update*. Also, as previously discussed the intersection of Thompson's Station Road East and Buckner Lane is planned to be realigned and improved as part of the proposed Alexander Property development in the city of Spring Hill. Descriptions of the recommendations for the remaining off-site intersections as presented in the Town of Thompson's Station's *Major Thoroughfare Plan* and the *2015 Traffic Impact Study Comprehensive Update* are discussed below:

Lewisburg Pike

Major Thoroughfare Plan Recommendations

"Expand existing route to 4-lane, median-divided facility to provide congestion relief and improve safety. 11' travel lanes and landscaped median to be provided in carriageway with pocket turn lanes at major intersections. Corridor would narrow to 2-lane section with turn lanes north of the I-840 interchange. The new road will include a greenway facility from T.S. Road East to Critz Lane. A curbless section with paved shoulders and drainage swales will be provided to maintain rural character."

2015 Traffic Impact Study Comprehensive Update Recommendations

"Signalize the intersection of Lewisburg Pike and Thompson's Station Road."

“Construct a northbound left turn lane with approximately 150 feet of storage at the intersection of Lewisburg Pike and Thompson’s Station Road.”

Thompson’s Station Road East

Major Thoroughfare Plan Recommendation

“Conduct safety improvements by providing 11' travel lanes and 2' shoulders, as well as, turn lanes at major intersections. The majority will be a 2-3 lane section, but limited portions between Clayton Arnold and Pantall Roads may consist of a 4-lane section to accommodate EB and WB turn lanes. The new road will include a greenway facility along some of its length. The project also presents an opportunity to realign several S-curves along the corridor pending further safety and right-of-way studies.”

2015 Traffic Impact Study Comprehensive Update Recommendations

“Signalize the intersection of Buckner Lane and Thompson’s Station Road.”

“Construct a westbound left turn lane with approximately 150 feet of storage at the intersection of Thompson’s Station Road and Buckner Lane.”

“Construct a northbound right turn lane with approximately 150 feet of storage at the intersection of Buckner Lane and Thompson’s Station Road.”

“Construct an eastbound left turn lane with approximately 150 feet of storage at the intersection of Thompson’s Station Road and Lewisburg Pike.”

“Signalize the intersection of Thompson’s Station Road and Pantall Road.”

“Construct an eastbound left turn lane with approximately 150 feet of storage at the intersection of Thompson’s Station Road and Pantall Road.”

Pantall Road

Major Thoroughfare Plan Recommendation

“Conduct safety improvements along Pantall Road to provide 11' travel lanes and 2' shoulders throughout as well as turn lanes at major intersections.”

Impact of Planned I-65 Interchange South of Thompson’s Station Road

A new interchange with I-65 south of Thompson’s Station Road is planned by TDOT and the City of Spring Hill. Included in this construction project is a new east/west road that will be an extension of Buckner Road and will travel between Buckner Lane and Lewisburg Pike and form an interchange with I-65. This new interchange will be completed by September 2025. With the completion of this interchange, traffic patterns in the area will change significantly. In particular, the interchange will provide a direct connection to I-65 from Buckner Road which is expected to reduce traffic on Thompson’s Station Road, Buckner Lane, and Lewisburg Pike between Thompson’s Station Road and I-840. It should be noted that no adjustments to existing or background traffic were made in this study to account for the new interchange.

6. RECOMMENDATIONS AND CONCLUSIONS

The proposed Pleasant Creek development is located on the north side of Thompson's Station Road East, east of I-65 in Thompson's Station, Tennessee. According to the developer, the proposed development includes approximately 327 single-family residential homes, 90 single-family townhomes, 5,500 square feet of retail, 2,000 square feet of fitness center, and 2,000 square feet of bank. Access to the project site is planned to be provided by two access drives, located along Lewisburg Pike (SR 106/US 431). The northern access will be provided via the new eastbound approach to the intersection of Lewisburg Pike (SR 106/US 431) and Harpeth Peytonsville Road. The southern access will be located approximately 1,100 feet north of the intersection of Lewisburg Pike (SR 106/US 431) and Bethesda Road. The analyses presented in this study indicate that the impacts of the proposed project on the existing street network will be manageable by providing the recommendations below. The recommendations are as follows:

Lewisburg Pike (SR 106/US 431) and Harpeth-Peytonsville Road/Site Access A

- Preliminary signal warrant analysis determined that a signal is warranted under existing conditions. However, these preliminary analyses were based on traffic projections made due to Covid-19 and not on actual counts representing traffic conditions without the impacts of Covid-19. Therefore, a full signal warrant analysis should be completed by the Pleasant Creek development when traffic conditions have stabilized and prior to the completion of 35 lots within the Pleasant Creek development. Additionally, the proposed traffic signal will require approval from TDOT.
- Until a signal is installed, the eastbound approach of Site Access A should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.
- Site Access A should be designed to include sufficient width for one entering lane and three exiting lanes. The exiting approach should include one left-turn lane with a minimum of 125 feet of storage, one through lane, and one right-turn lane with a minimum of 125 feet of storage.
- The Pleasant Creek development should provide a northbound left-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 150 feet of storage length.
- The Pleasant Creek development should provide a southbound right-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 75 feet of storage length.

Lewisburg Pike (SR 106/US 431) and Site Access B

- The eastbound approach of Site Access B should be stop-controlled, and a stop bar and R1-1 'Stop' sign should be installed on the egress approach.

- Site Access B should be designed to include sufficient width for one entering lane and two exiting lanes. The exiting approach should include one left-turn lane and one right-turn lane.
- Provide a northbound left-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 150 feet of storage length.
- Provide a southbound right-turn lane on Lewisburg Pike (SR 106/US 431) with a minimum of 75 feet of storage length.

The above recommendations should be the responsibility of the Pleasant Creek developer.

While there are movements other than what is recommended above that are operating at LOS F under existing, background, and projected conditions, these movements are stop-controlled approaches along a high-volume arterial. It is typical for stop-controlled approaches on high-volume arterials to operate at LOS F. The additional intersection that is operating at LOS F under existing, background, and projected conditions is Thompson's Station Road East and Buckner Lane. While it is operating at LOS F under existing, background, and projected conditions, with the recommended improvements presented in the Alexander Property study, this intersection is expected to improve from LOS F with an overall intersection delay of 244.4 seconds to LOS F with an overall intersection delay of 114.5 seconds. Additionally, the conservative growth of the traffic volumes within this study result in conservative analysis and resulting delays. No recommendations for these intersections are provided.

Additional Recommendations

- As part of the construction of the project, all internal and external roadway connections should be designed such that the departure sight triangles, as specified by AASHTO, will be clear of all sight obstructions, including landscaping, existing vegetation, monument signs/walls, fences, etc.
- Final design of internal roadways and parking should meet all Town of Thompson's Station standards. Internal intersections should be two-way stop-controlled unless all-way stop control warrants are met.
- Should an additional site access be provided on Thompson's Station Road East in the future, the City recommends a new traffic study be conducted prior to Town approval of that specific connection.

In summary, based on the analyses conducted, no further recommendations are presented for the proposed Pleasant Creek development.

APPENDICES

**APPENDIX A
PRELIMINARY SITE PLAN**

**APPENDIX B
DETAILED TURNING MOVEMENT COUNTS**

**APPENDIX C
TDOT COUNT DATA**

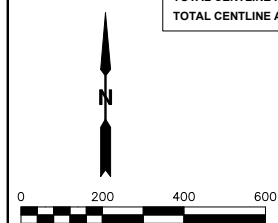
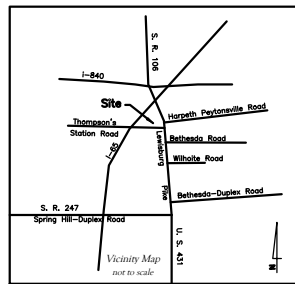
**APPENDIX D
CAPACITY ANALYSES**

**APPENDIX E
BACKGROUND DEVELOPMENTS**

**APPENDIX F
TRIP GENERATION CALCULATIONS**

**APPENDIX G
WARRANT ANALYSIS**

**APPENDIX A
PRELIMINARY SITE PLAN**



TOTAL CENTLINE ROAD 18,245 Linear Feet
 TOTAL CENTLINE ALLEY 2,987 Linear Feet

DARREL E. REIFSCHEIDER
 DEED BOOK 1662, PAGE 557,
 TAX MAP 144, PARCEL 32.00
 D1 ZONING

S.L. PARSLEY JR. ET. UX.
 DEED BOOK 260
 PAGE 286
 TAX MAP 144,
 PARCEL 34.00
 MGA-1 ZONING

69 SINGLE
 FAMILY LOTS

SITE DATA

PROJECT NAME: PLEASANT CREEK
 LOCATION: PARCEL 50, TAX MAP 154
 ZONING: TRANSECT
 COMMUNITY TYPES: T1, T2, T3, T4, T5
 TOTAL SITE AREA: +/-177.95 AC
 TOTAL PROPOSED HOMES: 412
 149 SINGLE FAMILY LOT (85' X 130' (TYPICAL))
 263 ATTACHED SINGLE FAMILY LOT (20'-40' X 130' (TYPICAL))

TOTAL COMMERCIAL LOTS: 6
 TOTAL OPEN SPACE: 47%
 84.28 / 177.95 = 0.47%

AREA CHART

SINGLE FAMILY LOT AREA	33.34
MULTI FAMILY LOT AREA	28.69
COMMERCIAL LOT AREA	7.85
OPEN SPACE	60.10
TOWN / DRIP AREA	24.18
RIGHTS OF WAY	23.79
TOTAL AREA	177.95

LOT DATA

SINGLE FAMILY LOTS	149
MULTI FAMILY LOTS	263
COMMERCIAL LOTS	6
TOTAL LOTS	418

263 ATTACHED
 RESIDENTIAL
 LOTS

DRIP AREA

INTERSTATE I-65

PORTION OF PARCEL 50
 NOT INCLUDED IN PLAT
 RESERVED FOR FUTURE USE

29.19 Acres

LANDS OF
 DAVIS BARBARA WILHOITE
 DEED BOOK 62, PAGE 143,
 PROPERTY MAP 154, PARCEL 34.00
 D-1 ZONING

80 SINGLE
 FAMILY LOTS

OZZAD PROPERTY
 MANAGEMENT LLC
 DEED BOOK 1091 PAGE 242
 TAX MAP 155 PARCEL 6
 D-1 ZONING

EXISTING BUILDING
 TO BE REMOVED

HIGHWAY 431
 (60' R.O.W.)

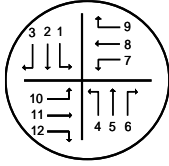
6 COMMERCIAL
 LOTS

EXISTING BUILDING
 TO BE REMOVED

TAX MAP 155,
 PARCEL 7
 PAUL G. WILLIAMS TR
 DEED BOOK 4796,
 PAGE 963
 SE ZONING

EXHIBIT
PLEASANT CREEK
 TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
 PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
 SUITE 230
 FRANKLIN, TN 37064
 PHONE (615) 238-4958

APPENDIX B
DETAILED TURNING MOVEMENT COUNTS



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: 1 - Lewisburg Hwy & Thompson Station Rd East
DATE: 7/21/2020
RECORDER: Darryl Glascock
NOTES:

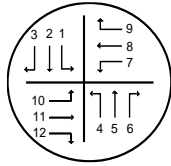
LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Lewisburg Hwy			Lewisburg Hwy			private drive			Thompson Station E		
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15		26	8	10	94					21		9
7:15-7:30		20	7	14	97					11		3
7:30-7:45		38	15	17	97		1			17		4
7:45-8:00		26	9	6	93					19		8
8:00-8:15		33	10	4	92					13		3
8:15-8:30		30	14	8	63		1			17		6
8:30-8:45		28	8	3	65					18		3
8:45-9:00		35	18	6	47					14		3
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
11:00-11:15												
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11:30-11:45												
11:45-12:00 PM												
12:00-12:15												
12:15-12:30												
12:30-12:45												
12:45-1:00												
1:00-1:15												
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1:45-2:00												
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15		148	34	14	49					36		22
4:15-4:30		90	24	7	39	1				19		11
4:30-4:45		98	29	3	31		1			22		8
4:45-5:00		119	30	7	40					14		10
5:00-5:15		106	28	10	44	1			1	16		14
5:15-5:30		119	31	4	30					16		9
5:30-5:45		107	28	4	25					14		3
5:45-6:00		89	17	6	28					12		7
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL		1,112	310	123	934	2	3		1	279		123
AM PK HR		117	41	41	379		1			60		18
MID PK HR												
PM PK HR		442	118	24	145	1	1		1	68		41

168
320
509
670
657
644
580
542
387
248
123

303
494
686
906
823
841
830
769
549
340
159

7:15 AM - 8:15 AM

4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: 2 Lewisburg Hwy & Bethesda
DATE: 7/21/2020
RECORDER: Darryl Glascock
NOTES:

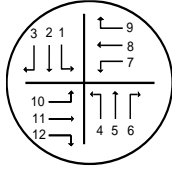
LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Road A	Road B	Road C	Road A	Road B	Road C	Road A	Road B	Road C	Road A	Road B	Road C
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15	2	30			115		2		13			
7:15-7:30	6	25			104	4	2		12			
7:30-7:45	5	48			113	1	5		29			
7:45-8:00	3	32			109	3	3		6			
8:00-8:15	9	40			104	1	1		12			
8:15-8:30	4	40			79	1	2		11			
8:30-8:45	9	35			77	6	1		19			
8:45-9:00	8	48			61	2	4		12			
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
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11:30-11:45												
11:45-12:00 PM												
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2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15	15	120			50	7	3		7			
4:15-4:30	12	116			56	3	4		10			
4:30-4:45	22	120			42	11	6		11			
4:45-5:00	9	145			54	6	4		8			
5:00-5:15	16	108			56	4	5		7			
5:15-5:30	12	150			46	6	3		8			
5:30-5:45	23	124			36	3	2		8			
5:45-6:00	11	100			34	7	4		1			
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL	166	1,281			1,136	65	51		174			
AM PK HR	23	145			430	9	11		59			
MID PK HR												
PM PK HR	59	523			198	27	18		34			

162
315
516
672
677
661
607
586
419
282
135

202
403
615
841
835
859
843
774
578
353
157

7:15 AM - 8:15 AM

4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: 3 Lewisburg Hwy & Harpeth Peytonsville
DATE: 7/21/2020
RECORDER: Darryl Glascock
NOTES:

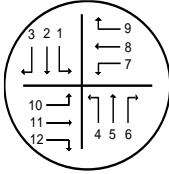
LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Lewisburg			Lewisburg			Harpeth Peytonsville			na		
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15	4	27			103	23	8		9			
7:15-7:30	6	24			104	18	7		8			
7:30-7:45	6	38			115	16	9		5			
7:45-8:00	10	27			97	16	6		7			
8:00-8:15	3	40			100	14	9		7			
8:15-8:30	5	36			79	12	10		4			
8:30-8:45	3	40			92	12	9		6			
8:45-9:00	1	42			62	13	11		9			
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
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11:30-11:45												
11:45-12:00 PM												
12:00-12:15												
12:15-12:30												
12:30-12:45												
12:45-1:00												
1:00-1:15												
1:15-1:30												
1:30-1:45												
1:45-2:00												
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15	7	120			40	17	17		9			
4:15-4:30	6	105			48	7	18		9			
4:30-4:45	6	116			45	14	22		8			
4:45-5:00	10	123			44	15	24		10			
5:00-5:15	11	111			45	13	29		7			
5:15-5:30	10	132			46	7	20		7			
5:30-5:45	4	118			31	8	26		8			
5:45-6:00	3	96			32	5	13		3			
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL	95	1,195			1,083	210	238		116			
AM PK HR	25	129			416	64	31		27			
MID PK HR												
PM PK HR	37	482			180	49	95		32			

174
341
530
693
692
671
644
619
446
300
138

210
403
614
840
846
875
859
785
569
347
152

7:15 AM - 8:15 AM

4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: 4 Buckner Rd & Thompson Station East
DATE: 7/21/2020
RECORDER: Darryl Glascock
NOTES:

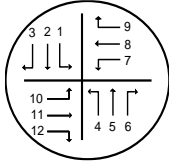
LOCATION	Southbound			Northbound			Westbound			Eastbound		
	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15				22		79	11	6			5	8
7:15-7:30				48		77	5	12			22	10
7:30-7:45				54		106	30	19			3	10
7:45-8:00				35		67	28	20			9	18
8:00-8:15				27		71	31	10			11	17
8:15-8:30				40		81	28	8			2	11
8:30-8:45				37		79	26	11			7	17
8:45-9:00				32		64	34	9			6	21
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
11:00-11:15												
11:15-11:30												
11:30-11:45												
11:45-12:00 PM												
12:00-12:15												
12:15-12:30												
12:30-12:45												
12:45-1:00												
1:00-1:15												
1:15-1:30												
1:30-1:45												
1:45-2:00												
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15				17		50	95	9			14	52
4:15-4:30				15		36	107	9			14	44
4:30-4:45				12		39	136	15			13	47
4:45-5:00				17		40	125	7			12	62
5:00-5:15				25		37	113	5			11	57
5:15-5:30				17		43	155	8			7	76
5:30-5:45				19		31	114	6			15	61
5:45-6:00				16		37	93	10			12	43
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL				433		937	1,131	164			163	554
AM PK HR				164		321	94	61			45	55
MID PK HR												
PM PK HR				71		159	529	35			43	242

131
305
527
704
740
736
691
680
513
343
166

237
462
724
987
998
1,079
1,063
1,011
763
457
211

7:15 AM - 8:15 AM

4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Thompson Station E & Pantail Rd
DATE: 7/21/2020
RECORDER: Darryl Glascock
NOTES:

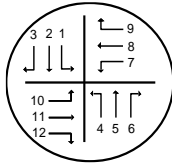
LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Pantail Rd			na			Thompson Station E			Thompson Station E		
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15	1		11					13	2	66	21	
7:15-7:30			19					16		63	17	
7:30-7:45	1		19					28	1	91	17	
7:45-8:00			24					16	2	56	18	
8:00-8:15			20					17	1	63	14	
8:15-8:30			16					19		64	17	
8:30-8:45			19					14		67	19	
8:45-9:00	1		24					23	2	54	15	
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
11:00-11:15												
11:15-11:30												
11:30-11:45												
11:45-12:00 PM												
12:00-12:15												
12:15-12:30												
12:30-12:45												
12:45-1:00												
1:00-1:15												
1:15-1:30												
1:30-1:45												
1:45-2:00												
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15	2		87					21	1	30	29	
4:15-4:30	3		95					25	1	25	21	
4:30-4:45	1		106					28		22	18	
4:45-5:00	1		103					33		28	20	
5:00-5:15	2		99					27		28	18	
5:15-5:30	1		118					35	1	32	19	
5:30-5:45	1		85					34	1	21	19	
5:45-6:00	3		77					23	1	26	15	
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL	17		922					372	13	736	297	
AM PK HR	1		82					77	4	273	66	
MID PK HR												
PM PK HR	5		426					123	1	110	75	

114
229
386
502
503
504
466
469
354
238
119

170
340
515
700
704
740
726
686
512
306
145

7:15 AM - 8:15 AM

4:30 PM - 5:30 PM



INTERSECTION TRAFFIC VOLUME COUNTS

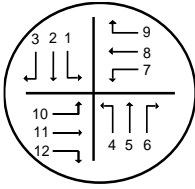
LOCATION: Lewisburg Hwy & Thompson Station Rd
DATE: 4/28/2015
RECORDER: Darryl Glascock
NOTES: 25-35 cars in que eastbound Thompson station rd from 6:15am until 7:45 am at during and at end of each 15 min sequence. Intersection not signalized.

LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Lewisburg Hwy			Lewisburg Hwy			Thompson Station Rd			Thompson Station Rd		
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45		8	17	13	253					63		
6:45-7:00		21	30	15	228					65		
7:00-7:15		21	36	16	218					56		3
7:15-7:30		22	12	11	234					60		4
7:30-7:45		29	8	5	168					74		4
7:45-8:00		4	19	6	138					47		7
8:00-8:15		25	18	10	101					82		11
8:15-8:30		40	45	6	86					62		2
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
10:15-10:30												
10:30-10:45												
10:45-11:00												
11:00-11:15												
11:15-11:30												
11:30-11:45												
11:45-12:00 PM												
12:00-12:15												
12:15-12:30												
12:30-12:45												
12:45-1:00												
1:00-1:15												
1:15-1:30												
1:30-1:45												
1:45-2:00												
2:00-2:15												
2:15-2:30												
2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15		93	25	5	42					19		9
4:15-4:30		99	58	1	45					27		10
4:30-4:45		113	45	3	29					18		11
4:45-5:00		102	54	5	25					28		8
5:00-5:15		120	38	7	30					28		12
5:15-5:30		146	43	5	31					29		7
5:30-5:45		138	75	3	30					20		11
5:45-6:00		101	67	1	24					19		5
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL		1,082	590	112	1,682					697		104
AM PK HR		72	95	55	933					244		7
MID PK HR												
PM PK HR		505	223	16	115					96		35

713
1,063
1,406
1,340
1,202
1,099
997
709
488
241

193
433
652
874
916
937
995
990
755
494
217

6:30 AM - 7:30 AM
5:00 PM - 6:00 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Lewisburg Pike & Harpeth Peytonsville Road
DATE: 4/28/2015
RECORDER: Zack Murphy
NOTES:

LOCATION	Southbound			Northbound			Westbound			Eastbound		
	Lewisburg Pike			Lewisburg Pike			Harpeth Peytonsville Road			Harpeth Peytonsville Road		
TIME	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45	2	22			313	26	7		10			
6:45-7:00	7	32			270	40	22		5			
7:00-7:15	1	40			250	44	11		7			
7:15-7:30	2	36			267	36	3		15			
7:30-7:45	7	30			194	51	6		9			
7:45-8:00	31	18			120	70	13		8			
8:00-8:15	13	47			76	75	9		2			
8:15-8:30	1	64			143	28	10		2			
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
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2:30-2:45												
2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15	12	107			63	9	21		3			
4:15-4:30	7	136			59	13	27		3			
4:30-4:45	7	147			43	12	28		4			
4:45-5:00	2	118			60	7	31		4			
5:00-5:15	9	137			49	18	30		5			
5:15-5:30	6	167			44	14	30		5			
5:30-5:45	12	174			41	15	48		8			
5:45-6:00	6	142			32	11	39		5			
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												

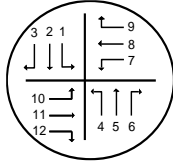
756
1,109
1,468
1,385
1,269
1,138
1,027
730
470
248

215
460
701
923
956
977
1,034
1,047
799
533
235

8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL	125	1,417			2,024	469	335		95			
AM PK HR	12	130			1,100	146	43		37			
MID PK HR												
PM PK HR	33	620			166	58	147		23			

6:30 AM - 7:30 AM

5:00 PM - 6:00 PM



INTERSECTION TRAFFIC VOLUME COUNTS

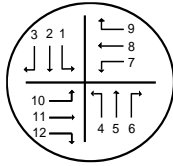
LOCATION: Pantall Rd & Thompson Station Rd
 DATE: 04/29/2015
 RECORDER: Nathan Quinn
 NOTES:

LOCATION TIME	Southbound Pantall Rd			Northbound			Westbound Thompson Station Rd			Eastbound Thompson Station Rd		
	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45	1		9					20		37	37	
6:45-7:00			43					42	1	30	35	
7:00-7:15			26					38	3	53	49	
7:15-7:30			14					16	4	69	48	
7:30-7:45			2					11	3	62	28	
7:45-8:00	3		11					11	1	54	34	
8:00-8:15	2		8					13		51	46	
8:15-8:30	2		13					18	1	56	34	
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
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3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15			53					34		11	19	
4:15-4:30	2		102					30	1	20	24	
4:30-4:45	1		107					41	1	18	34	
4:45-5:00			71					50	1	27	30	
5:00-5:15	1		127					60	6	18	22	
5:15-5:30	1		114					54	1	23	30	
5:30-5:45			116					60		21	29	
5:45-6:00			116					59	2	15	28	
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
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8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL	13		932					557	25	565	527	
AM PK HR	1		92					116	8	189	169	
MID PK HR												
PM PK HR	2		473					233	9	77	109	

255
424
575
577
540
491
464
358
244
124

117
296
498
677
794
838
862
903
669
446
220

6:30 AM - 7:30 AM
5:00 PM - 6:00 PM



INTERSECTION TRAFFIC VOLUME COUNTS

LOCATION: Buckner Lane & Thompson Station Road
 DATE: 04/30/2015
 RECORDER: Nathan Quinn
 NOTES:

LOCATION TIME	Southbound			Northbound Buckner Ln			Westbound Thompson Station Rd			Eastbound Thompson Station Rd		
	1	2	3	4	5	6	7	8	9	10	11	12
6:00-6:15 AM												
6:15-6:30												
6:30-6:45				92		71	20	12			3	9
6:45-7:00				93		74	85	14				15
7:00-7:15				99		112	64	6			1	17
7:15-7:30				130		128	42	6			6	17
7:30-7:45				95		108	30	9			3	14
7:45-8:00				46		91	31	6			3	11
8:00-8:15				48		109	22	6			4	11
8:15-8:30				46		103	19	10			7	11
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00												
10:00-10:15												
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10:30-10:45												
10:45-11:00												
11:00-11:15												
11:15-11:30												
11:30-11:45												
11:45-12:00 PM												
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2:45-3:00												
3:00-3:15												
3:15-3:30												
3:30-3:45												
3:45-4:00												
4:00-4:15				20		37	105	2			9	52
4:15-4:30				14		33	114	10			6	50
4:30-4:45				22		44	149	4			14	52
4:45-5:00				19		35	162	13			6	62
5:00-5:15				25		26	132	11			6	73
5:15-5:30				31		43	160	13			11	57
5:30-5:45				20		45	165	5			11	69
5:45-6:00				21		28	194	4			7	65
6:00-6:15												
6:15-6:30												
6:30-6:45												
6:45-7:00												
7:00-7:15												
7:15-7:30												
7:30-7:45												
7:45-8:00												
8:00-8:15												
8:15-8:30												
8:30-8:45												
8:45-9:00												
9:00-9:15												
9:15-9:30												
9:30-9:45												
9:45-10:00 PM												
TOTAL				821		1,087	1,494	131			97	585
AM PK HR				414		385	211	38			10	58
MID PK HR												
PM PK HR				97		142	651	33			35	264

488
787
1,116
1,168
1,075
976
843
584
396
196

225
452
737
1,034
1,082
1,170
1,200
1,222
949
634
319

6:30 AM - 7:30 AM
5:00 PM - 6:00 PM

APPENDIX C
TDOT COUNT DATA

TDOT AADT DATA

Station	65	66	64	93
Route	SR106	1928	996	980
Location	Lewisburg Pike - E of I-65 - B/W Cascade Eastates Blvd and Wilhoite Rd	Thompson's Station Road East - W of I-65 - B/W Columbia Pk and Village Dr	Bethesda Road - E of Lewisburg Pk - B/W Lewisburg Pk and Marlin Wv	Harpeth-Peytonsville Road - E of Lewisburg Pk - B/W Dotson Rd and Herbert Smithson Rd
County	Williamson	Williamson	Williamson	Williamson
2018	6,188	4,009	2,062	1,608
2017	6,714	2,824	1,116	1,677
2016	4,914	2,693	1,252	1,288
2015	5,087	2,666	1,229	1,419
2014	4,948	2,659	1,515	1,206
2013	4,899	2,404	1,500	1,210
2012	4,906	3,019	1,595	1,269
2011	4,767	2,634	1,325	1,231
2010	4,780	2,557	1,525	1,195
2009	4,817	2,590	1,709	1,163
2008	5,168	2,279	1,669	1,194
2007	5,021	3,720	1,844	1,230
2006	4,992	2,571	1,923	1,293

APPENDIX D
CAPACITY ANALYSES

EXISTING CONDITIONS
CAPACITY ANALYSES

Intersection						
Int Delay, s/veh	662.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		L		T	
Traffic Vol, veh/h	355	18	94	1359	117	133
Future Vol, veh/h	355	18	94	1359	117	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	386	20	102	1477	127	145

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	1881	200	272	0	0
Stage 1	200	-	-	-	-
Stage 2	1681	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	~ 78	841	1291	-	-
Stage 1	834	-	-	-	-
Stage 2	~ 166	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 44	841	1291	-	-
Mov Cap-2 Maneuver	~ 44	-	-	-	-
Stage 1	466	-	-	-	-
Stage 2	~ 166	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, \$	3685.6	0.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1291	-	46	-	-
HCM Lane V/C Ratio	0.079	-	8.814	-	-
HCM Control Delay (s)	8	\$	3685.6	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.3	-	48.1	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	11.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	18	68	1680	34	23	232
Future Vol, veh/h	18	68	1680	34	23	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	74	1826	37	25	252

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2147	1845	0	0	1863
Stage 1	1845	-	-	-	-
Stage 2	302	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	53	93	-	-	324
Stage 1	137	-	-	-	-
Stage 2	750	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	48	93	-	-	324
Mov Cap-2 Maneuver	48	-	-	-	-
Stage 1	137	-	-	-	-
Stage 2	683	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	259.8	0	1.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	78	324
HCM Lane V/C Ratio	-	-	1.198	0.077
HCM Control Delay (s)	-	-	259.8	17
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	7	0.2

Intersection						
Int Delay, s/veh	28					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	52	1543	205	25	192
Future Vol, veh/h	63	52	1543	205	25	192
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	57	1677	223	27	209

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2052	1789	0	0	1677
Stage 1	1789	-	-	-	-
Stage 2	263	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 61	101	-	-	382
Stage 1	147	-	-	-	-
Stage 2	781	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 56	101	-	-	382
Mov Cap-2 Maneuver	~ 56	-	-	-	-
Stage 1	147	-	-	-	-
Stage 2	719	-	-	-	-

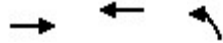
Approach	WB	NB	SB
HCM Control Delay, s	502.6	0	1.7
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	70	382
HCM Lane V/C Ratio	-	-	1.786	0.071
HCM Control Delay (s)	-	-	502.6	15.1
HCM Lane LOS	-	-	F	C
HCM 95th %tile Q(veh)	-	-	11.1	0.2

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Existing AM



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	142	388	1278
v/c Ratio	0.25	1.09	1.19
Control Delay	15.0	112.4	117.3
Queue Delay	0.0	0.0	0.0
Total Delay	15.0	112.4	117.3
Queue Length 50th (ft)	33	~310	~1072
Queue Length 95th (ft)	82	#498	#1335
Internal Link Dist (ft)	1044	3802	1526
Turn Bay Length (ft)			
Base Capacity (vph)	573	355	1073
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.25	1.09	1.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Existing AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Volume (vph)	50	81	296	61	581	594
Future Volume (vph)	50	81	296	61	581	594
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.92			1.00	0.93	
Flt Protected	1.00			0.96	0.98	
Satd. Flow (prot)	1707			1789	1694	
Flt Permitted	1.00			0.63	0.98	
Satd. Flow (perm)	1707			1168	1694	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	88	322	66	632	646
RTOR Reduction (vph)	54	0	0	0	34	0
Lane Group Flow (vph)	88	0	0	388	1244	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	4	
Permitted Phases			6			
Actuated Green, G (s)	33.5			33.5	67.5	
Effective Green, g (s)	33.5			33.5	67.5	
Actuated g/C Ratio	0.30			0.30	0.61	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	519			355	1039	
v/s Ratio Prot	0.05				c0.73	
v/s Ratio Perm				c0.33		
v/c Ratio	0.17			1.09	1.20	
Uniform Delay, d1	28.1			38.2	21.2	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.7			75.1	98.4	
Delay (s)	28.8			113.3	119.7	
Level of Service	C			F	F	
Approach Delay (s)	28.8			113.3	119.7	
Approach LOS	C			F	F	

Intersection Summary

HCM 2000 Control Delay	111.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	273	371	214	13	2	143
Future Vol, veh/h	273	371	214	13	2	143
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	403	233	14	2	155

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	247	0	-	0	1237 240
Stage 1	-	-	-	-	240 -
Stage 2	-	-	-	-	997 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1319	-	-	-	194 799
Stage 1	-	-	-	-	800 -
Stage 2	-	-	-	-	357 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1319	-	-	-	138 799
Mov Cap-2 Maneuver	-	-	-	-	138 -
Stage 1	-	-	-	-	568 -
Stage 2	-	-	-	-	357 -

Approach	EB	WB	SB
HCM Control Delay, s	3.6	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1319	-	-	-	749
HCM Lane V/C Ratio	0.225	-	-	-	0.21
HCM Control Delay (s)	8.5	0	-	-	11.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.8

Intersection						
Int Delay, s/veh	13.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	143	49	24	170	727	321
Future Vol, veh/h	143	49	24	170	727	321
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	155	53	26	185	790	349

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1202	965	1139	0	-	0
Stage 1	965	-	-	-	-	-
Stage 2	237	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	204	309	613	-	-	-
Stage 1	370	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	194	309	613	-	-	-
Mov Cap-2 Maneuver	194	-	-	-	-	-
Stage 1	353	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	102.3	1.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	613	-	214	-	-
HCM Lane V/C Ratio	0.043	-	0.975	-	-
HCM Control Delay (s)	11.1	0	102.3	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.1	-	8.5	-	-

Intersection						
Int Delay, s/veh	2.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	37	277	36	62	1014
Future Vol, veh/h	34	37	277	36	62	1014
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	40	301	39	67	1102

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1557	321	0	0	340
Stage 1	321	-	-	-	-
Stage 2	1236	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	124	720	-	-	1219
Stage 1	735	-	-	-	-
Stage 2	274	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	106	720	-	-	1219
Mov Cap-2 Maneuver	106	-	-	-	-
Stage 1	735	-	-	-	-
Stage 2	235	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.1	0	0.5
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	191	1219
HCM Lane V/C Ratio	-	-	0.404	0.055
HCM Control Delay (s)	-	-	36.1	8.1
HCM Lane LOS	-	-	E	A
HCM 95th %tile Q(veh)	-	-	1.8	0.2

Intersection						
Int Delay, s/veh	48.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	206	32	233	81	46	870
Future Vol, veh/h	206	32	233	81	46	870
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	224	35	253	88	50	946

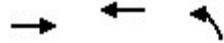
Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1343	297	0	0	253
Stage 1	297	-	-	-	-
Stage 2	1046	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 168	742	-	-	1312
Stage 1	754	-	-	-	-
Stage 2	338	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 155	742	-	-	1312
Mov Cap-2 Maneuver	~ 155	-	-	-	-
Stage 1	754	-	-	-	-
Stage 2	311	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	299.8	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	173	1312
HCM Lane V/C Ratio	-	-	1.495	0.038
HCM Control Delay (s)	-	-	299.8	7.9
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	16.6	0.1

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues
 4: Buckner Lane & Thompson's Station Road East



Lane Group	EBT	WBT	NBL
Lane Group Flow (vph)	465	1081	407
v/c Ratio	0.34	1.75	1.25
Control Delay	1.4	362.5	176.9
Queue Delay	0.0	0.0	0.0
Total Delay	1.4	362.5	176.9
Queue Length 50th (ft)	12	~890	~420
Queue Length 95th (ft)	37	#1156	#633
Internal Link Dist (ft)	1044	3802	1526
Turn Bay Length (ft)			
Base Capacity (vph)	1356	619	325
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.34	1.75	1.25

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Existing PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	58	370	947	48	136	238
Future Volume (vph)	58	370	947	48	136	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.88			1.00	0.91	
Flt Protected	1.00			0.95	0.98	
Satd. Flow (prot)	1645			1778	1672	
Flt Permitted	1.00			0.43	0.98	
Satd. Flow (perm)	1645			807	1672	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	63	402	1029	52	148	259
RTOR Reduction (vph)	93	0	0	0	45	0
Lane Group Flow (vph)	372	0	0	1081	362	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Actuated Green, G (s)	107.5			107.5	23.5	
Effective Green, g (s)	107.5			107.5	23.5	
Actuated g/C Ratio	0.77			0.77	0.17	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1263			619	280	
v/s Ratio Prot	0.23				c0.22	
v/s Ratio Perm				c1.34		
v/c Ratio	0.29			1.75	1.29	
Uniform Delay, d1	4.9			16.2	58.2	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			342.5	155.9	
Delay (s)	5.0			358.8	214.1	
Level of Service	A			F	F	
Approach Delay (s)	5.0			358.8	214.1	
Approach LOS	A			F	F	

Intersection Summary

HCM 2000 Control Delay	244.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.66		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Intersection						
Int Delay, s/veh	43.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	110	186	332	13	6	663
Future Vol, veh/h	110	186	332	13	6	663
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	120	202	361	14	7	721

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	375	0	-	0	810 368
Stage 1	-	-	-	-	368 -
Stage 2	-	-	-	-	442 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1183	-	-	-	349 ~ 677
Stage 1	-	-	-	-	700 -
Stage 2	-	-	-	-	648 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1183	-	-	-	309 ~ 677
Mov Cap-2 Maneuver	-	-	-	-	309 -
Stage 1	-	-	-	-	620 -
Stage 2	-	-	-	-	648 -

Approach	EB	WB	SB
HCM Control Delay, s	3.1	0	84.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1183	-	-	-	670
HCM Lane V/C Ratio	0.101	-	-	-	1.085
HCM Control Delay (s)	8.4	0	-	-	84.3
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.3	-	-	-	20.5

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

BACKGROUND CONDITIONS
CAPACITY ANALYSES

Intersection

Int Delay, s/veh 1930.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	513	44	148	1906	164	202
Future Vol, veh/h	513	44	148	1906	164	202
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	558	48	161	2072	178	220

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2682	288	398	0	-	0
Stage 1	288	-	-	-	-	-
Stage 2	2394	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 24	751	1161	-	-	-
Stage 1	761	-	-	-	-	-
Stage 2	~ 72	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 24	751	1161	-	-	-
Mov Cap-2 Maneuver	~ 24	-	-	-	-	-
Stage 1	761	-	-	-	-	-
Stage 2	~ 72	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	1314.8	0.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1161	-	26	-	-
HCM Lane V/C Ratio	0.139	-	23.286	-	-
HCM Control Delay (s)	8.6	\$	1314.8	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.5	-	75.4	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	121.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	30	95	2366	53	32	335
Future Vol, veh/h	30	95	2366	53	32	335
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	103	2572	58	35	364

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	3035	2601	0	0	2630	0
Stage 1	2601	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 14	~ 32	-	-	162	-
Stage 1	56	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	~ 10	~ 32	-	-	162	-
Mov Cap-2 Maneuver	~ 10	-	-	-	-	-
Stage 1	56	-	-	-	-	-
Stage 2	476	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	2826.3	0	2.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	21	162
HCM Lane V/C Ratio	-	-	6.47	0.215
HCM Control Delay (s)	-	\$ 2826.3	33.2	0
HCM Lane LOS	-	-	F	D
HCM 95th %tile Q(veh)	-	-	17.3	0.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 244.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	73	2166	296	35	272
Future Vol, veh/h	95	73	2166	296	35	272
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	79	2354	322	38	296

Major/Minor

	Minor1	Major1	Major2		
Conflicting Flow All	2887	2515	0	0	2354
Stage 1	2515	-	-	-	-
Stage 2	372	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 18	~ 36	-	-	208
Stage 1	~ 62	-	-	-	-
Stage 2	697	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 14	~ 36	-	-	208
Mov Cap-2 Maneuver	~ 14	-	-	-	-
Stage 1	~ 62	-	-	-	-
Stage 2	544	-	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, \$	4270.5	0	3
HCM LOS	F		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	19	208
HCM Lane V/C Ratio	-	-	9.611	0.183
HCM Control Delay (s)	-	\$	4270.5	26.1
HCM Lane LOS	-	-	F	D
HCM 95th %tile Q(veh)	-	-	23.4	0.7

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues
4: Buckner Lane & Thompson's Station Road East

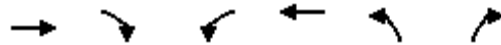


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	103	149	483	125	911	933
v/c Ratio	0.31	0.12	0.93	0.17	0.98	0.72
Control Delay	42.3	1.2	56.6	22.9	50.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.3	1.2	56.6	22.9	50.0	6.5
Queue Length 50th (ft)	64	4	284	57	594	107
Queue Length 95th (ft)	116	19	#536	100	#892	227
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	333	1226	518	725	948	1303
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.12	0.93	0.17	0.96	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	95	137	444	115	838	858
Future Volume (veh/h)	95	137	444	115	838	858
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	0	483	125	911	933
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	334		536	727	942	1107
Arrive On Green	0.18	0.00	0.17	0.39	0.53	0.53
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	103	0	483	125	911	933
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	5.2	0.0	18.5	4.8	53.9	47.2
Cycle Q Clear(g_c), s	5.2	0.0	18.5	4.8	53.9	47.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	334		536	727	942	1107
V/C Ratio(X)	0.31		0.90	0.17	0.97	0.84
Avail Cap(c_a), veh/h	334		536	727	953	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	0.0	33.0	21.9	24.8	12.1
Incr Delay (d2), s/veh	2.4	0.0	18.4	0.5	21.4	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	5.7	2.1	26.0	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.4	0.0	51.3	22.4	46.2	18.1
LnGrp LOS	D		D	C	D	B
Approach Vol, veh/h	103	A		608	1844	
Approach Delay, s/veh	41.4			45.4	32.0	
Approach LOS	D			D	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	23.0	24.0		62.3		47.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	18.5	19.5		58.5		42.5
Max Q Clear Time (g_c+I1), s	20.5	7.2		55.9		6.8
Green Ext Time (p_c), s	0.0	0.3		1.9		0.6

Intersection Summary

HCM 6th Ctrl Delay	35.5
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	24.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	395	535	23	15	315	19	23	8	15	7	8	221
Future Vol, veh/h	395	535	23	15	315	19	23	8	15	7	8	221
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	429	582	25	16	342	21	25	9	16	8	9	240

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	363	0	0	607	0	0	1962	1848	595	1850	1850	353
Stage 1	-	-	-	-	-	-	1453	1453	-	385	385	-
Stage 2	-	-	-	-	-	-	509	395	-	1465	1465	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1196	-	-	971	-	-	47	75	504	57	74	691
Stage 1	-	-	-	-	-	-	162	195	-	638	611	-
Stage 2	-	-	-	-	-	-	547	605	-	160	193	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1196	-	-	971	-	-	~ 14	34	504	26	33	691
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 14	34	-	26	33	-
Stage 1	-	-	-	-	-	-	74	89	-	292	598	-
Stage 2	-	-	-	-	-	-	344	592	-	64	88	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	4		0.4		\$ 627.6		27	
HCM LOS					F		D	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	17	504	1196	-	-	971	-	-	29	691
HCM Lane V/C Ratio	1.982	0.032	0.359	-	-	0.017	-	-	0.562	0.348
HCM Control Delay (s)	\$ 925.3	12.4	9.7	0	-	8.8	0	-	233.4	13
HCM Lane LOS	F	B	A	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	4.7	0.1	1.7	-	-	0.1	-	-	1.8	1.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	207.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			L		R
Traffic Vol, veh/h	222	92	64	238	1020	475
Future Vol, veh/h	222	92	64	238	1020	475
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	100	70	259	1109	516

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1766	1367	1625	0	-	0
Stage 1	1367	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 92	180	400	-	-	-
Stage 1	~ 237	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 73	180	400	-	-	-
Mov Cap-2 Maneuver	~ 73	-	-	-	-	-
Stage 1	~ 189	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, \$	1394.2	3.4	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	400	-	88	-	-
HCM Lane V/C Ratio	0.174	-	3.878	-	-
HCM Control Delay (s)	15.9	\$	1394.2	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	35.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	83.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	52	404	56	87	1440
Future Vol, veh/h	55	52	404	56	87	1440
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	57	439	61	95	1565

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2225	470	0	0	500
Stage 1	470	-	-	-	-
Stage 2	1755	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 47	594	-	-	1064
Stage 1	629	-	-	-	-
Stage 2	152	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	~ 15	594	-	-	1064
Mov Cap-2 Maneuver	~ 15	-	-	-	-
Stage 1	629	-	-	-	-
Stage 2	~ 48	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	1632.8	0	0.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	29	1064
HCM Lane V/C Ratio	-	-	4.01	0.089
HCM Control Delay (s)	-	\$ 1632.8	8.7	0
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	14	0.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	365.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	302	45	332	124	65	1225
Future Vol, veh/h	302	45	332	124	65	1225
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	328	49	361	135	71	1332

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1903	429	0	0	361
Stage 1	429	-	-	-	-
Stage 2	1474	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 76	626	-	-	1198
Stage 1	657	-	-	-	-
Stage 2	~ 210	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	~ 59	626	-	-	1198
Mov Cap-2 Maneuver	~ 59	-	-	-	-
Stage 1	657	-	-	-	-
Stage 2	~ 162	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	2205.4	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	67	1198
HCM Lane V/C Ratio	-	-	5.629	0.059
HCM Control Delay (s)	-	\$	2205.4	8.2
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	42.1	0.2

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues
4: Buckner Lane & Thompson's Station Road East



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	118	623	1507	95	260	422
v/c Ratio	0.55	1.12	1.32	0.07	0.84	0.31
Control Delay	53.0	105.8	167.4	3.8	65.9	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	105.8	167.4	3.8	65.9	0.9
Queue Length 50th (ft)	74	~453	~1204	15	167	0
Queue Length 95th (ft)	132	#663	#1519	27	#322	20
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	344	557	1146	1504	309	1348
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	1.12	1.32	0.06	0.84	0.31

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	109	573	1386	87	239	388
Future Volume (veh/h)	109	573	1386	87	239	388
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	0	1507	95	260	422
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	160		1187	1383	300	1231
Arrive On Green	0.09	0.00	0.61	0.74	0.17	0.17
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	118	0	1507	95	260	422
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	6.0	0.0	59.5	1.4	13.9	7.9
Cycle Q Clear(g_c), s	6.0	0.0	59.5	1.4	13.9	7.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	160		1187	1383	300	1231
V/C Ratio(X)	0.74		1.27	0.07	0.87	0.34
Avail Cap(c_a), veh/h	363		1187	1587	328	1255
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	0.0	14.1	3.5	39.6	3.3
Incr Delay (d2), s/veh	6.5	0.0	128.1	0.0	19.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	59.0	0.4	7.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.2	0.0	142.2	3.5	59.3	3.5
LnGrp LOS	D		F	A	E	A
Approach Vol, veh/h	118	A		1602	682	
Approach Delay, s/veh	50.2			133.9	24.8	
Approach LOS	D			F	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	64.0	12.9		21.0		76.9
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	59.5	19.0		18.0		83.0
Max Q Clear Time (g_c+I1), s	61.5	8.0		15.9		3.4
Green Ext Time (p_c), s	0.0	0.3		0.6		0.5

Intersection Summary

HCM 6th Ctrl Delay	98.8
HCM 6th LOS	F

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	191.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	177	266	54	41	475	23	48	12	37	10	14	951
Future Vol, veh/h	177	266	54	41	475	23	48	12	37	10	14	951
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	192	289	59	45	516	25	52	13	40	11	15	1034

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	541	0	0	348	0	0	1846	1334	319	1348	1351	529
Stage 1	-	-	-	-	-	-	703	703	-	619	619	-
Stage 2	-	-	-	-	-	-	1143	631	-	729	732	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1028	-	-	1211	-	-	57	154	722	128	150	~ 550
Stage 1	-	-	-	-	-	-	428	440	-	476	480	-
Stage 2	-	-	-	-	-	-	243	474	-	414	427	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1028	-	-	1211	-	-	-	112	722	87	109	~ 550
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	112	-	87	109	-
Stage 1	-	-	-	-	-	-	328	337	-	365	455	-
Stage 2	-	-	-	-	-	-	-	449	-	288	328	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.6		\$ 411.8
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	722	1028	-	-	1211	-	-	99	550
HCM Lane V/C Ratio	-	0.056	0.187	-	-	0.037	-	-	0.264	1.879
HCM Control Delay (s)	-	10.3	9.3	0	-	8.1	0	-	53.9	420.8
HCM Lane LOS	-	B	A	A	-	A	A	-	F	F
HCM 95th %tile Q(veh)	-	0.2	0.7	-	-	0.1	-	-	1	66.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

PROJECTED CONDITIONS
CAPACITY ANALYSES

Intersection						
Int Delay, s/veh	2422.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	545	44	148	1924	211	285
Future Vol, veh/h	545	44	148	1924	211	285
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	592	48	161	2091	229	310

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2797	384	539	0	-	0
Stage 1	384	-	-	-	-	-
Stage 2	2413	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 20	664	1029	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	~ 70	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 20	664	1029	-	-	-
Mov Cap-2 Maneuver	~ 20	-	-	-	-	-
Stage 1	688	-	-	-	-	-
Stage 2	~ 70	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay	\$12981.2	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1029	-	22	-	-
HCM Lane V/C Ratio	0.156	-	29.101	-	-
HCM Control Delay (s)	9.1	\$12981.2		-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	80.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	165					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	99	2416	53	44	465
Future Vol, veh/h	30	99	2416	53	44	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	108	2626	58	48	505

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	3256	2655	0	0	2684
Stage 1	2655	-	-	-	-
Stage 2	601	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 10	~ 30	-	-	154
Stage 1	53	-	-	-	-
Stage 2	547	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	~ 6	~ 30	-	-	154
Mov Cap-2 Maneuver	~ 6	-	-	-	-
Stage 1	53	-	-	-	-
Stage 2	310	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	3961.4	0	3.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	16	154
HCM Lane V/C Ratio	-	-	8.764	0.311
HCM Control Delay (s)	-	\$	3961.4	38.6
HCM Lane LOS	-	-	F	E
HCM 95th %tile Q(veh)	-	-	18.4	1.2

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 978.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗		↕		↖	↗		↖	↗	
Traffic Vol, veh/h	59	8	47	96	3	73	18	2190	300	35	281	23
Future Vol, veh/h	59	8	47	96	3	73	18	2190	300	35	281	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	100	-	100	-	-	-	100	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	9	51	104	3	79	20	2380	326	38	305	25

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2842	2801	305	3007	2989	2543	330	0	0	2380	0	0
Stage 1	381	381	-	2583	2583	-	-	-	-	-	-	-
Stage 2	2461	2420	-	424	406	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 11	18	735	~ 8	14	~ 35	1229	-	-	203	-	-
Stage 1	641	613	-	~ 35	52	-	-	-	-	-	-	-
Stage 2	~ 41	63	-	608	598	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	14	735	~ 3	11	~ 35	1229	-	-	203	-	-
Mov Cap-2 Maneuver	-	14	-	~ 3	11	-	-	-	-	-	-	-
Stage 1	631	472	-	~ 34	51	-	-	-	-	-	-	-
Stage 2	-	62	-	428	460	-	-	-	-	-	-	-

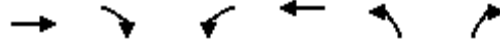
Approach	EB	WB	NB	SB
HCM Control Delay, s		\$ 17810.2	0.1	2.8
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1229	-	-	-	14	735	5	203	-	-
HCM Lane V/C Ratio	0.016	-	-	-	0.621	0.07	37.391	0.187	-	-
HCM Control Delay (s)	8	-	-	-	\$ 458.2	1	\$ 37810.2	26.8	0	-
HCM Lane LOS	A	-	-	-	F	B	F	D	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1.5	0.2	25.5	0.7	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

4: Buckner Lane & Thompson's Station Road East

Projected AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	127	149	496	189	911	938
v/c Ratio	0.43	0.13	0.93	0.25	0.99	0.72
Control Delay	50.9	1.6	56.0	24.9	56.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	1.6	56.0	24.9	56.3	7.4
Queue Length 50th (ft)	90	5	314	96	672	168
Queue Length 95th (ft)	153	23	#443	151	#974	297
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	293	1168	535	752	921	1304
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.13	0.93	0.25	0.99	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Projected AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	117	137	456	174	838	863
Future Volume (veh/h)	117	137	456	174	838	863
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	0	496	189	911	938
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	295		554	756	927	1157
Arrive On Green	0.16	0.00	0.21	0.40	0.52	0.52
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	127	0	496	189	911	938
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	7.4	0.0	25.1	8.0	60.2	47.0
Cycle Q Clear(g_c), s	7.4	0.0	25.1	8.0	60.2	47.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	295		554	756	927	1157
V/C Ratio(X)	0.43		0.89	0.25	0.98	0.81
Avail Cap(c_a), veh/h	295		554	756	928	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	33.4	23.7	28.2	10.7
Incr Delay (d2), s/veh	4.5	0.0	17.0	0.8	25.2	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	14.3	3.6	30.0	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.2	0.0	50.4	24.5	53.4	15.2
LnGrp LOS	D		D	C	D	B
Approach Vol, veh/h	127	A		685	1849	
Approach Delay, s/veh	50.2			43.2	34.0	
Approach LOS	D			D	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.6	23.4		66.9		53.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	25.1	18.9		62.5		48.5
Max Q Clear Time (g_c+I1), s	27.1	9.4		62.2		10.0
Green Ext Time (p_c), s	0.0	0.3		0.2		1.0

Intersection Summary

HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	39.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	395	562	23	15	386	31	23	8	15	12	8	221
Future Vol, veh/h	395	562	23	15	386	31	23	8	15	12	8	221
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	429	611	25	16	420	34	25	9	16	13	9	240

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	454	0	0	636	0	0	2076	1968	624	1963	1963	437
Stage 1	-	-	-	-	-	-	1482	1482	-	469	469	-
Stage 2	-	-	-	-	-	-	594	486	-	1494	1494	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1107	-	-	947	-	-	39	63	485	47	63	620
Stage 1	-	-	-	-	-	-	156	189	-	575	561	-
Stage 2	-	-	-	-	-	-	491	551	-	153	186	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	1107	-	-	947	-	-	~ 9	25	485	18	25	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 9	25	-	18	25	-
Stage 1	-	-	-	-	-	-	62	75	-	229	548	-
Stage 2	-	-	-	-	-	-	289	538	-	52	74	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	4.2		0.3		\$ 1091.2			54.9		
HCM LOS					F			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	11	485	1107	-	-	947	-	-	20	620
HCM Lane V/C Ratio	3.063	0.034	0.388	-	-	0.017	-	-	1.087	0.387
HCM Control Delay (s)	\$ 1613	12.7	10.3	0	-	8.9	0	-	\$ 501.9	14.4
HCM Lane LOS	F	B	B	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	5.2	0.1	1.9	-	-	0.1	-	-	3	1.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	14					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↗
Traffic Vol, veh/h	28	95	36	2480	415	10
Future Vol, veh/h	28	95	36	2480	415	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	103	39	2696	451	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3225	451	462	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	2774	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 11	608	1099	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 11	608	1099	-	-	-
Mov Cap-2 Maneuver	~ 11	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	46	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	346.7	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1099	-	11	608	-	-
HCM Lane V/C Ratio	0.036	-	2.767	0.17	-	-
HCM Control Delay (s)	8.4	\$	1481.8	12.1	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	4.8	0.6	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	520.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			L		R
Traffic Vol, veh/h	335	92	64	302	1065	553
Future Vol, veh/h	335	92	64	302	1065	553
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	364	100	70	328	1158	601

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1927	1459	1759	0	-	0
Stage 1	1459	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 73	159	355	-	-	-
Stage 1	~ 214	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 55	159	355	-	-	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	~ 162	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, \$	2938.5	3.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	355	-	64	-	-
HCM Lane V/C Ratio	0.196	-	7.252	-	-
HCM Control Delay (s)	17.6	\$	2938.5	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	0.7	-	53.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	55	68	581	56	98	1563
Future Vol, veh/h	55	68	581	56	98	1563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	74	632	61	107	1699

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	2576	663	0	0	693	0
Stage 1	663	-	-	-	-	-
Stage 2	1913	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 28	461	-	-	902	-
Stage 1	512	-	-	-	-	-
Stage 2	127	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	0	461	-	-	902	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	902
HCM Lane V/C Ratio	-	-	0.29	0.118
HCM Control Delay (s)	-	-	16	9.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.2	0.4

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 1823.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	8	45	307	11	45	64	354	127	65	1257	81
Future Vol, veh/h	56	8	45	307	11	45	64	354	127	65	1257	81
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	100	-	100	-	-	-	100	-	-	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	61	9	49	334	12	49	70	385	138	71	1366	88

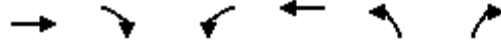
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2064	2033	1366	2175	2190	454	1454	0	0	385	0	0
Stage 1	1508	1508	-	594	594	-	-	-	-	-	-	-
Stage 2	556	525	-	1581	1596	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 40	57	180	~ 33	45	606	465	-	-	1173	-	-
Stage 1	151	183	-	491	493	-	-	-	-	-	-	-
Stage 2	515	529	-	~ 137	166	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 16	32	180	~ 13	26	606	465	-	-	1173	-	-
Mov Cap-2 Maneuver	~ 16	32	-	~ 13	26	-	-	-	-	-	-	-
Stage 1	128	122	-	417	419	-	-	-	-	-	-	-
Stage 2	391	449	-	~ 62	111	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	\$ 921.8	\$ 11876.2	1.7	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	465	-	-	16	32	180	15	1173	-	-
HCM Lane V/C Ratio	0.15	-	-	3.804	0.272	0.272	26.304	0.06	-	-
HCM Control Delay (s)	14.1	-	-	\$ 1746	155.2	3.3	1876.2	8.3	0	-
HCM Lane LOS	B	-	-	F	F	D	F	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	8.3	0.9	1.1	50.4	0.2	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Queues
4: Buckner Lane & Thompson's Station Road East



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	207	623	1518	155	260	439
v/c Ratio	0.81	1.10	1.36	0.11	0.88	0.34
Control Delay	77.1	106.0	192.3	4.1	81.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.1	106.0	192.3	4.1	81.4	3.0
Queue Length 50th (ft)	169	~559	~1633	29	217	49
Queue Length 95th (ft)	#279	#794	#1903	46	#374	80
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	283	566	1114	1445	296	1290
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.10	1.36	0.11	0.88	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Projected PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	190	573	1397	143	239	404
Future Volume (veh/h)	190	573	1397	143	239	404
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	0	1518	155	260	439
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	238		1152	1432	290	1213
Arrive On Green	0.13	0.00	0.60	0.77	0.16	0.16
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	207	0	1518	155	260	439
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	13.6	0.0	75.5	2.7	17.9	11.3
Cycle Q Clear(g_c), s	13.6	0.0	75.5	2.7	17.9	11.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	238		1152	1432	290	1213
V/C Ratio(X)	0.87		1.32	0.11	0.90	0.36
Avail Cap(c_a), veh/h	291		1152	1485	306	1227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	20.1	3.8	51.4	4.8
Incr Delay (d2), s/veh	20.6	0.0	149.1	0.0	26.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	0.0	73.5	0.8	10.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.3	0.0	169.2	3.8	77.7	5.0
LnGrp LOS	E		F	A	E	A
Approach Vol, veh/h	207	A		1673	699	
Approach Delay, s/veh	74.3			153.9	32.0	
Approach LOS	E			F	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	80.0	20.4		24.9		100.4
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	75.5	19.5		21.5		99.5
Max Q Clear Time (g_c+I1), s	77.5	15.6		19.9		4.7
Green Ext Time (p_c), s	0.0	0.3		0.5		0.8

Intersection Summary

HCM 6th Ctrl Delay	114.5
HCM 6th LOS	F

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	215.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	177	363	54	41	542	34	48	12	37	26	14	951
Future Vol, veh/h	177	363	54	41	542	34	48	12	37	26	14	951
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	192	395	59	45	589	37	52	13	40	28	15	1034

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	626	0	0	454	0	0	2031	1525	425	1533	1536	608
Stage 1	-	-	-	-	-	-	809	809	-	698	698	-
Stage 2	-	-	-	-	-	-	1222	716	-	835	838	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	956	-	-	1107	-	-	~42	118	629	95	116	~496
Stage 1	-	-	-	-	-	-	374	394	-	431	442	-
Stage 2	-	-	-	-	-	-	220	434	-	362	382	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	956	-	-	1107	-	-	-	81	629	59	79	~496
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	81	-	59	79	-
Stage 1	-	-	-	-	-	-	273	287	-	314	414	-
Stage 2	-	-	-	-	-	-	-	407	-	236	278	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0.6		\$ 498.4
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	629	956	-	-	1107	-	-	65	496
HCM Lane V/C Ratio	-	0.064	0.201	-	-	0.04	-	-	0.669	2.084
HCM Control Delay (s)	-	11.1	9.7	0	-	8.4	0	-	135	513.7
HCM Lane LOS	-	B	A	A	-	A	A	-	F	F
HCM 95th %tile Q(veh)	-	0.2	0.8	-	-	0.1	-	-	2.9	72.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	13.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘	↗	↘	↗	↗	↗
Traffic Vol, veh/h	25	89	129	519	1572	37
Future Vol, veh/h	25	89	129	519	1572	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	97	140	564	1709	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2553	1709	1749	0	-	0
Stage 1	1709	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	29	112	358	-	-	-
Stage 1	161	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 18	112	358	-	-	-
Mov Cap-2 Maneuver	~ 18	-	-	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	250.3	4.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	358	-	18	112	-	-
HCM Lane V/C Ratio	0.392	-	1.51	0.864	-	-
HCM Control Delay (s)	21.4	-	\$ 705.7	122.4	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	1.8	-	3.8	5.1	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

PROJECTED WITH IMPROVEMENTS CONDITIONS
CAPACITY ANALYSES

Intersection						
Int Delay, s/veh	2422.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			W	W	
Traffic Vol, veh/h	545	44	148	1924	211	285
Future Vol, veh/h	545	44	148	1924	211	285
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	592	48	161	2091	229	310

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	2797	384	539	0	0
Stage 1	384	-	-	-	-
Stage 2	2413	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	~ 20	664	1029	-	-
Stage 1	688	-	-	-	-
Stage 2	~ 70	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	~ 20	664	1029	-	-
Mov Cap-2 Maneuver	~ 20	-	-	-	-
Stage 1	688	-	-	-	-
Stage 2	~ 70	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay (s)	2981.2	0.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1029	-	22	-	-
HCM Lane V/C Ratio	0.156	-	29.101	-	-
HCM Control Delay (s)	9.1	\$	2981.2	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	80.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	165					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	99	2416	53	44	465
Future Vol, veh/h	30	99	2416	53	44	465
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	108	2626	58	48	505

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	3256	2655	0	0	2684
Stage 1	2655	-	-	-	-
Stage 2	601	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 10	~ 30	-	-	154
Stage 1	53	-	-	-	-
Stage 2	547	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	~ 6	~ 30	-	-	154
Mov Cap-2 Maneuver	~ 6	-	-	-	-
Stage 1	53	-	-	-	-
Stage 2	310	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, \$	3961.4	0	3.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	16	154
HCM Lane V/C Ratio	-	-	8.764	0.311
HCM Control Delay (s)	-	\$	3961.4	38.6
HCM Lane LOS	-	-	F	E
HCM 95th %tile Q(veh)	-	-	18.4	1.2

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	64	9	51	186	20	2706	38	305	25
v/c Ratio	0.50	0.04	0.22	0.98	0.02	1.80	0.76	0.20	0.02
Control Delay	76.6	59.1	16.8	117.5	2.6	381.8	87.9	3.2	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.6	59.1	16.8	117.5	2.6	381.8	87.9	3.2	0.9
Queue Length 50th (ft)	60	8	0	166	3	~3994	15	53	0
Queue Length 95th (ft)	113	27	42	#330	8	#4214	#60	75	5
Internal Link Dist (ft)		742		1113		2323		1073	
Turn Bay Length (ft)	100		100		100		100		100
Base Capacity (vph)	127	223	234	190	870	1503	50	1527	1302
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.04	0.22	0.98	0.02	1.80	0.76	0.20	0.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

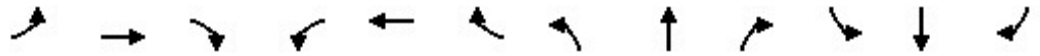
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

Pleasant Creek TIS

3: Lewisburg Pike (SR 106/US 431) & Site Access A/Harpeth-Peytonville Road

Projected AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	59	8	47	96	3	73	18	2190	300	35	281	23
Future Volume (veh/h)	59	8	47	96	3	73	18	2190	300	35	281	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	64	9	51	104	3	79	20	2380	0	38	305	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	224	190	131	3	71	872	1534		48	1534	1300
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.82	0.82	0.00	0.82	0.82	0.82
Sat Flow, veh/h	1316	1870	1585	778	26	594	1050	1870	0	148	1870	1585
Grp Volume(v), veh/h	64	9	51	186	0	0	20	2380	0	38	305	25
Grp Sat Flow(s),veh/h/ln	1316	1870	1585	1399	0	0	1050	1870	0	148	1870	1585
Q Serve(g_s), s	0.0	0.6	4.4	17.4	0.0	0.0	0.6	123.0	0.0	0.0	5.3	0.4
Cycle Q Clear(g_c), s	8.5	0.6	4.4	18.0	0.0	0.0	5.9	123.0	0.0	123.0	5.3	0.4
Prop In Lane	1.00		1.00	0.56		0.42	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	224	190	205	0	0	872	1534		48	1534	1300
V/C Ratio(X)	0.36	0.04	0.27	0.91	0.00	0.00	0.02	1.55		0.79	0.20	0.02
Avail Cap(c_a), veh/h	176	224	190	205	0	0	872	1534		48	1534	1300
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.8	58.4	60.0	67.1	0.0	0.0	3.5	13.5	0.0	75.0	2.9	2.5
Incr Delay (d2), s/veh	1.3	0.1	0.7	38.0	0.0	0.0	0.0	251.6	0.0	58.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.3	1.8	9.2	0.0	0.0	0.1	137.0	0.0	2.2	1.3	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.1	58.4	60.8	105.2	0.0	0.0	3.5	265.1	0.0	133.9	3.0	2.5
LnGrp LOS	E	E	E	F	A	A	A	F		F	A	A
Approach Vol, veh/h		124			186			2400	A		368	
Approach Delay, s/veh		61.8			105.2			262.9			16.5	
Approach LOS		E			F			F			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		127.5		22.5		127.5		22.5				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		123.0		18.0		123.0		18.0				
Max Q Clear Time (g_c+I1), s		125.0		10.5		125.0		20.0				
Green Ext Time (p_c), s		0.0		0.2		0.0		0.0				

Intersection Summary

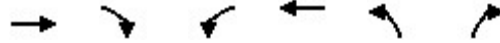
HCM 6th Ctrl Delay	215.8
HCM 6th LOS	F

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Queues
4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
Projected AM



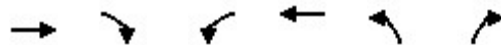
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	127	149	496	189	911	938
v/c Ratio	0.43	0.13	0.93	0.25	0.99	0.72
Control Delay	50.9	1.6	56.0	24.9	56.3	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	1.6	56.0	24.9	56.3	7.4
Queue Length 50th (ft)	90	5	314	96	672	168
Queue Length 95th (ft)	153	23	#443	151	#974	297
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	293	1168	535	752	921	1304
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.13	0.93	0.25	0.99	0.72

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Projected AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	117	137	456	174	838	863
Future Volume (veh/h)	117	137	456	174	838	863
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	127	0	496	189	911	938
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	295		554	756	927	1157
Arrive On Green	0.16	0.00	0.21	0.40	0.52	0.52
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	127	0	496	189	911	938
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	7.4	0.0	25.1	8.0	60.2	47.0
Cycle Q Clear(g_c), s	7.4	0.0	25.1	8.0	60.2	47.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	295		554	756	927	1157
V/C Ratio(X)	0.43		0.89	0.25	0.98	0.81
Avail Cap(c_a), veh/h	295		554	756	928	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	0.0	33.4	23.7	28.2	10.7
Incr Delay (d2), s/veh	4.5	0.0	17.0	0.8	25.2	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	14.3	3.6	30.0	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.2	0.0	50.4	24.5	53.4	15.2
LnGrp LOS	D		D	C	D	B
Approach Vol, veh/h	127	A		685	1849	
Approach Delay, s/veh	50.2			43.2	34.0	
Approach LOS	D			D	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	29.6	23.4		66.9		53.0
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	25.1	18.9		62.5		48.5
Max Q Clear Time (g_c+I1), s	27.1	9.4		62.2		10.0
Green Ext Time (p_c), s	0.0	0.3		0.2		1.0

Intersection Summary

HCM 6th Ctrl Delay			37.1			
HCM 6th LOS			D			

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	39.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	395	562	23	15	386	31	23	8	15	12	8	221
Future Vol, veh/h	395	562	23	15	386	31	23	8	15	12	8	221
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	429	611	25	16	420	34	25	9	16	13	9	240

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	454	0	0	636	0	0	2076	1968	624	1963	1963	437
Stage 1	-	-	-	-	-	-	1482	1482	-	469	469	-
Stage 2	-	-	-	-	-	-	594	486	-	1494	1494	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1107	-	-	947	-	-	39	63	485	47	63	620
Stage 1	-	-	-	-	-	-	156	189	-	575	561	-
Stage 2	-	-	-	-	-	-	491	551	-	153	186	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	1107	-	-	947	-	-	~9	25	485	18	25	620
Mov Cap-2 Maneuver	-	-	-	-	-	-	~9	25	-	18	25	-
Stage 1	-	-	-	-	-	-	62	75	-	229	548	-
Stage 2	-	-	-	-	-	-	289	538	-	52	74	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	4.2		0.3		\$ 1091.2		54.9	
HCM LOS					F		F	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	11	485	1107	-	-	947	-	-	20	620
HCM Lane V/C Ratio	3.063	0.034	0.388	-	-	0.017	-	-	1.087	0.387
HCM Control Delay (s)	\$ 1613	12.7	10.3	0	-	8.9	0	-	\$ 501.9	14.4
HCM Lane LOS	F	B	B	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	5.2	0.1	1.9	-	-	0.1	-	-	3	1.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	14					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖
Traffic Vol, veh/h	28	95	36	2480	415	10
Future Vol, veh/h	28	95	36	2480	415	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	103	39	2696	451	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3225	451	462	0	-	0
Stage 1	451	-	-	-	-	-
Stage 2	2774	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 11	608	1099	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	46	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 11	608	1099	-	-	-
Mov Cap-2 Maneuver	~ 11	-	-	-	-	-
Stage 1	620	-	-	-	-	-
Stage 2	46	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	346.7	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1099	-	11	608	-	-
HCM Lane V/C Ratio	0.036	-	2.767	0.17	-	-
HCM Control Delay (s)	8.4	\$	1481.8	12.1	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	4.8	0.6	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	520.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	335	92	64	302	1065	553
Future Vol, veh/h	335	92	64	302	1065	553
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	364	100	70	328	1158	601

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1927	1459	1759	0	-	0
Stage 1	1459	-	-	-	-	-
Stage 2	468	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 73	159	355	-	-	-
Stage 1	~ 214	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 55	159	355	-	-	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	~ 162	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, \$	2938.5	3.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	355	-	64	-	-
HCM Lane V/C Ratio	0.196	-	7.252	-	-
HCM Control Delay (s)	17.6	\$	2938.5	-	-
HCM Lane LOS	C	A	F	-	-
HCM 95th %tile Q(veh)	0.7	-	53.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	68	581	56	98	1563
Future Vol, veh/h	55	68	581	56	98	1563
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	74	632	61	107	1699

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	2576	663	0	0	693
Stage 1	663	-	-	-	-
Stage 2	1913	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	~ 28	461	-	-	902
Stage 1	512	-	-	-	-
Stage 2	127	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	0	461	-	-	902
Mov Cap-2 Maneuver	0	-	-	-	-
Stage 1	512	-	-	-	-
Stage 2	0	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16	0	0.6
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	461	902
HCM Lane V/C Ratio	-	-	0.29	0.118
HCM Control Delay (s)	-	-	16	9.5
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.2	0.4

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	61	9	49	395	70	523	71	1366	88
v/c Ratio	0.18	0.02	0.12	1.19	1.15	0.42	0.14	1.07	0.08
Control Delay	38.2	35.4	10.7	151.3	187.5	8.9	7.2	65.5	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	35.4	10.7	151.3	187.5	8.9	7.2	65.5	4.3
Queue Length 50th (ft)	38	5	0	~367	~64	149	17	~1170	13
Queue Length 95th (ft)	76	19	32	#567	#115	213	35	#1432	30
Internal Link Dist (ft)		742		1113		2323		1073	
Turn Bay Length (ft)	100		100		100		100		100
Base Capacity (vph)	342	442	413	332	61	1239	522	1280	1098
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.02	0.12	1.19	1.15	0.42	0.14	1.07	0.08

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

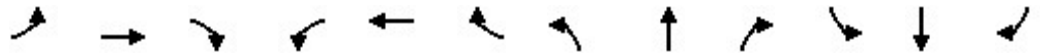
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary

Pleasant Creek TIS

3: Lewisburg Pike (SR 106/US 431) & Site Access A/Harpeth-Peytonville Road

Projected PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	8	45	307	11	45	64	354	127	65	1257	81
Future Volume (veh/h)	56	8	45	307	11	45	64	354	127	65	1257	81
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	61	9	49	334	12	49	70	385	0	71	1366	88
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	436	444	376	329	10	40	60	1286		666	1286	1090
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.69	0.69	0.00	0.69	0.69	0.69
Sat Flow, veh/h	1341	1870	1585	1151	41	169	398	1870	0	998	1870	1585
Grp Volume(v), veh/h	61	9	49	395	0	0	70	385	0	71	1366	88
Grp Sat Flow(s),veh/h/ln	1341	1870	1585	1361	0	0	398	1870	0	998	1870	1585
Q Serve(g_s), s	0.0	0.4	2.9	28.1	0.0	0.0	0.0	9.7	0.0	3.6	82.5	2.2
Cycle Q Clear(g_c), s	3.7	0.4	2.9	28.5	0.0	0.0	82.5	9.7	0.0	13.3	82.5	2.2
Prop In Lane	1.00		1.00	0.85		0.12	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	436	444	376	379	0	0	60	1286		666	1286	1090
V/C Ratio(X)	0.14	0.02	0.13	1.04	0.00	0.00	1.17	0.30		0.11	1.06	0.08
Avail Cap(c_a), veh/h	436	444	376	379	0	0	60	1286		666	1286	1090
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	35.1	36.0	48.0	0.0	0.0	60.0	7.4	0.0	10.0	18.7	6.2
Incr Delay (d2), s/veh	0.1	0.0	0.2	57.9	0.0	0.0	168.5	0.1	0.0	0.1	43.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.2	1.2	17.3	0.0	0.0	4.6	3.1	0.0	0.7	41.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.4	35.1	36.2	105.9	0.0	0.0	228.5	7.5	0.0	10.1	62.2	6.2
LnGrp LOS	D	D	D	F	A	A	F	A		B	F	A
Approach Vol, veh/h		119			395			455	A		1525	
Approach Delay, s/veh		36.2			105.9			41.5			56.5	
Approach LOS		D			F			D			E	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		33.0		87.0		33.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		82.5		28.5		82.5		28.5				
Max Q Clear Time (g_c+I1), s		84.5		5.7		84.5		30.5				
Green Ext Time (p_c), s		0.0		0.3		0.0		0.0				

Intersection Summary

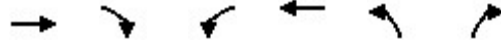
HCM 6th Ctrl Delay	60.6
HCM 6th LOS	E

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Queues
4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
Projected PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	207	623	1518	155	260	439
v/c Ratio	0.81	1.10	1.36	0.11	0.88	0.34
Control Delay	77.1	106.0	192.3	4.1	81.4	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.1	106.0	192.3	4.1	81.4	3.0
Queue Length 50th (ft)	169	~559	~1633	29	217	49
Queue Length 95th (ft)	#279	#794	#1903	46	#374	80
Internal Link Dist (ft)	1044			3802	1526	
Turn Bay Length (ft)		200	300			
Base Capacity (vph)	283	566	1114	1445	296	1290
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	1.10	1.36	0.11	0.88	0.34

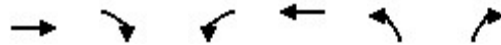
Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 6th Signalized Intersection Summary
 4: Buckner Lane & Thompson's Station Road East

Pleasant Creek TIS
 Projected PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Volume (veh/h)	190	573	1397	143	239	404
Future Volume (veh/h)	190	573	1397	143	239	404
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	0	1518	155	260	439
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	238		1152	1432	290	1213
Arrive On Green	0.13	0.00	0.60	0.77	0.16	0.16
Sat Flow, veh/h	1870	1585	1781	1870	1781	1585
Grp Volume(v), veh/h	207	0	1518	155	260	439
Grp Sat Flow(s),veh/h/ln	1870	1585	1781	1870	1781	1585
Q Serve(g_s), s	13.6	0.0	75.5	2.7	17.9	11.3
Cycle Q Clear(g_c), s	13.6	0.0	75.5	2.7	17.9	11.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	238		1152	1432	290	1213
V/C Ratio(X)	0.87		1.32	0.11	0.90	0.36
Avail Cap(c_a), veh/h	291		1152	1485	306	1227
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	20.1	3.8	51.4	4.8
Incr Delay (d2), s/veh	20.6	0.0	149.1	0.0	26.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	0.0	73.5	0.8	10.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.3	0.0	169.2	3.8	77.7	5.0
LnGrp LOS	E		F	A	E	A
Approach Vol, veh/h	207	A		1673	699	
Approach Delay, s/veh	74.3			153.9	32.0	
Approach LOS	E			F	C	
Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	80.0	20.4		24.9		100.4
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	75.5	19.5		21.5		99.5
Max Q Clear Time (g_c+I1), s	77.5	15.6		19.9		4.7
Green Ext Time (p_c), s	0.0	0.3		0.5		0.8

Intersection Summary

HCM 6th Ctrl Delay	114.5
HCM 6th LOS	F

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection

Int Delay, s/veh 215.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Vol, veh/h	177	363	54	41	542	34	48	12	37	26	14	951
Future Vol, veh/h	177	363	54	41	542	34	48	12	37	26	14	951
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	100	-	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	192	395	59	45	589	37	52	13	40	28	15	1034

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	626	0	0	454
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	956	-	-	1107
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	956	-	-	1107
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.9	0.6		\$ 498.4
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	629	956	-	-	1107	-	-	65	496
HCM Lane V/C Ratio	-	0.064	0.201	-	-	0.04	-	-	0.669	2.084
HCM Control Delay (s)	-	11.1	9.7	0	-	8.4	0	-	135	513.7
HCM Lane LOS	-	B	A	A	-	A	A	-	F	F
HCM 95th %tile Q(veh)	-	0.2	0.8	-	-	0.1	-	-	2.9	72.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	13.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖
Traffic Vol, veh/h	25	89	129	519	1572	37
Future Vol, veh/h	25	89	129	519	1572	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	97	140	564	1709	40

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2553	1709	1749	0	-	0
Stage 1	1709	-	-	-	-	-
Stage 2	844	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	29	112	358	-	-	-
Stage 1	161	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 18	112	358	-	-	-
Mov Cap-2 Maneuver	~ 18	-	-	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	250.3	4.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	358	-	18	112	-	-
HCM Lane V/C Ratio	0.392	-	1.51	0.864	-	-
HCM Control Delay (s)	21.4	-	705.7	122.4	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	1.8	-	3.8	5.1	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

APPENDIX E
BACKGROUND DEVELOPMENTS

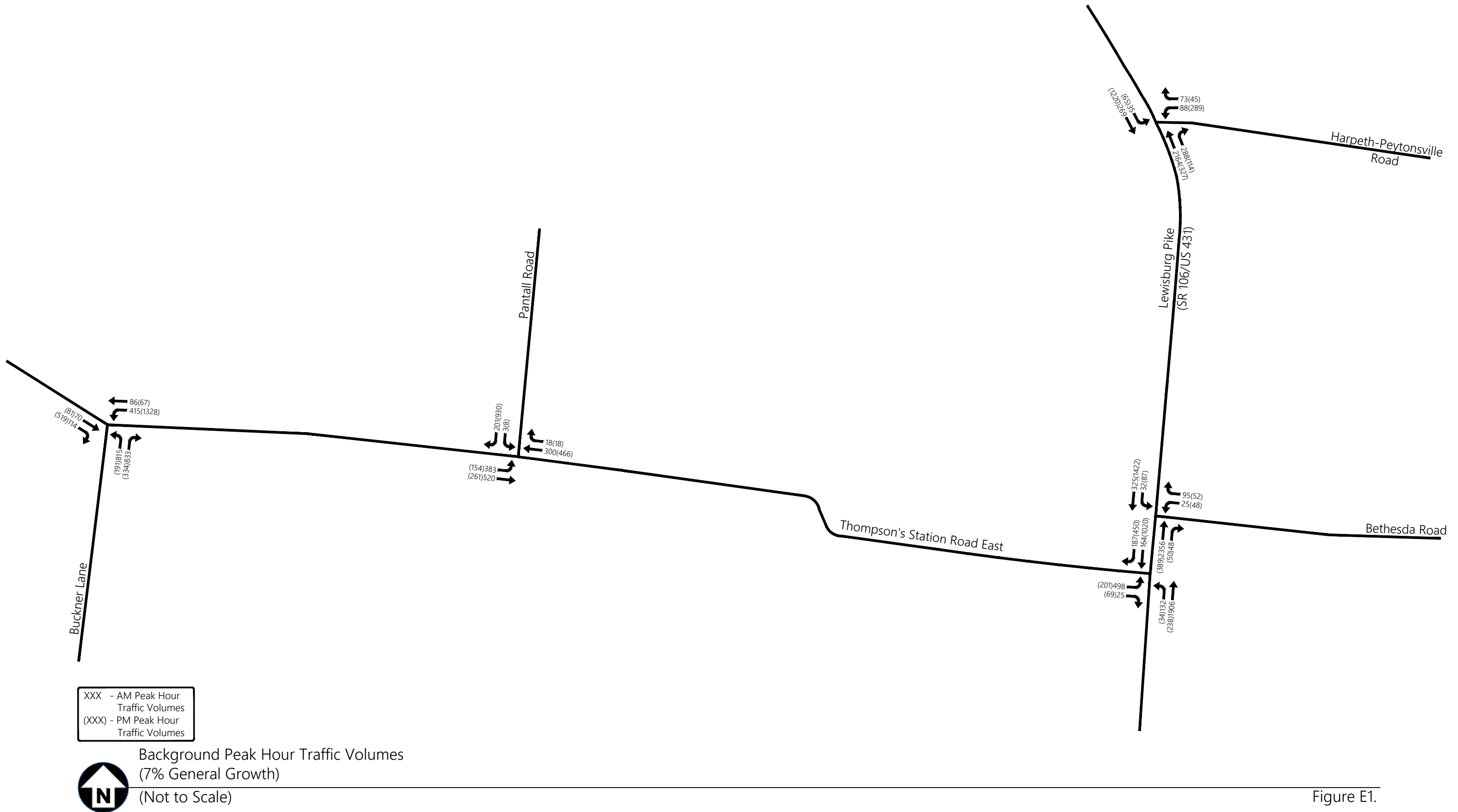
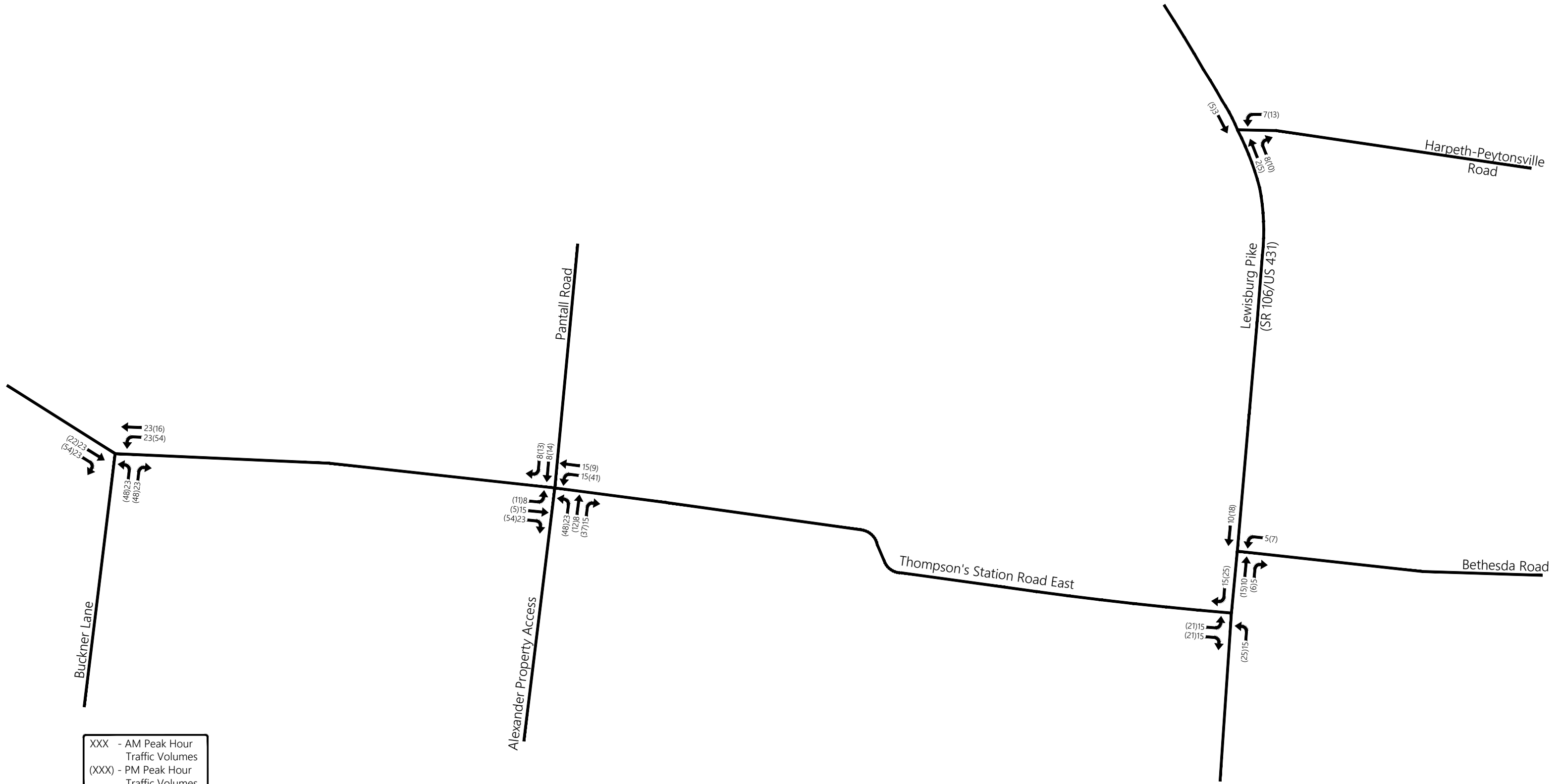


Figure E1.



XXX - AM Peak Hour Traffic Volumes
 (XXX) - PM Peak Hour Traffic Volumes

Background Peak Hour Traffic Volumes
 Generated by Alexander Property
 (Not to Scale)

Figure E2.

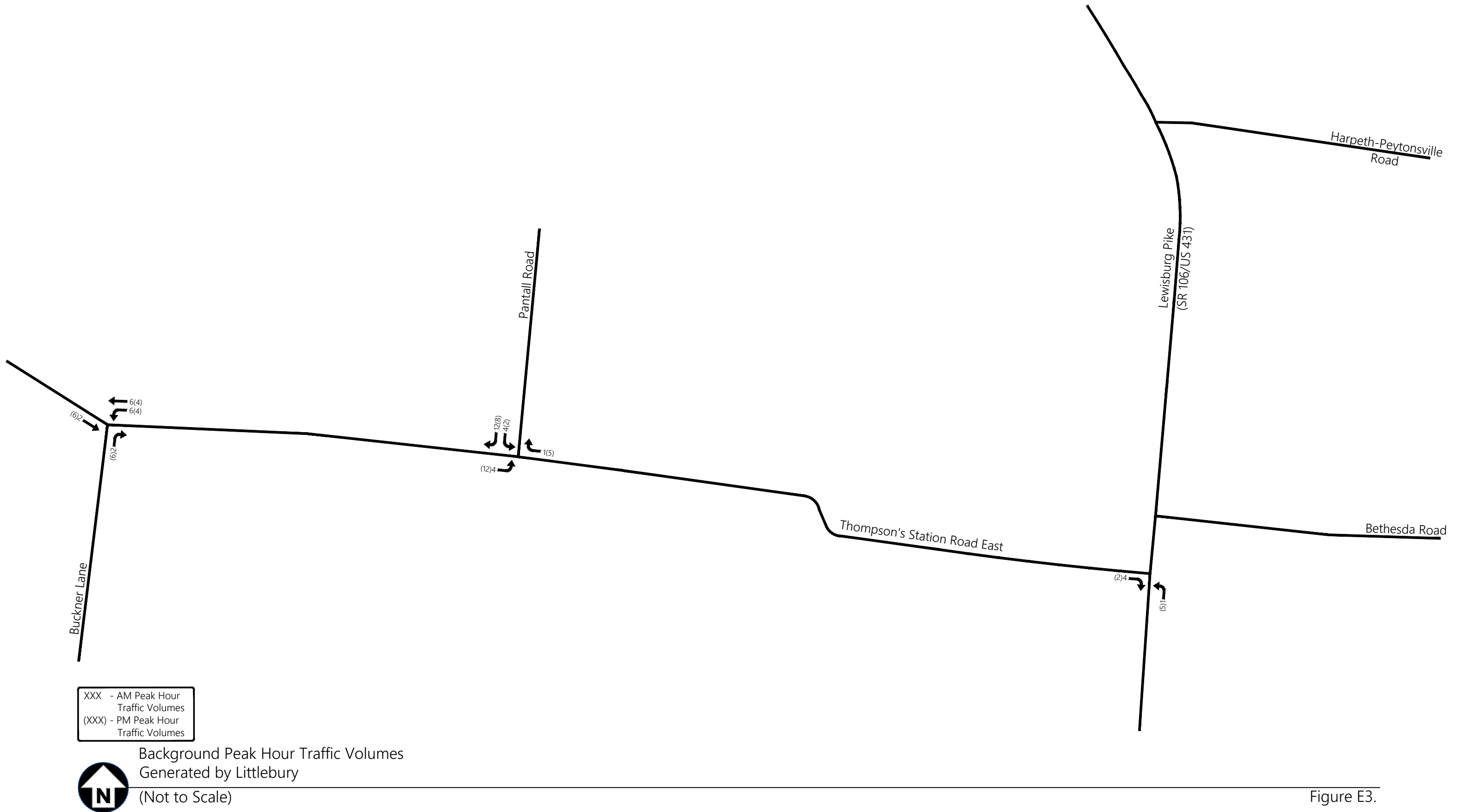


Figure E3.

APPENDIX F
TRIP GENERATION CALCULATIONS

TOTAL TRIP GENERATION

ITE CODE	LAND USE	# UNITS	UNIT TYPE	ADT	AM			PM		
					Enter	Exit	Total	Enter	Exit	Total
210	Single-Family Detached Housing	417	units	3868	75	226	301	252	148	400
820	Shopping Center	1.5	k.s.f.	346	1		1	12	12	24
820	Shopping Center	4	k.s.f.	674	2	2	4	24	26	50
820	Shopping Center	2	k.s.f.	76	1	1	2	14	16	30
912	Drive-In Bank	2	k.s.f.	200	11	8	19	20	21	41
TOTAL				5164	90	237	327	322	223	545

TRIP GENERATION

Single-Family Detached Housing

210 ITE Land Code

417 units

Average Daily Traffic:

$$\ln(T) = (0.92 * \ln(X) + 2.71)$$

$$\ln(T) = (0.92 * \ln(417) + 2.71)$$

$$T = 3868$$

A.M. Peak Hour:

$$T = 0.71 * (X) + 4.80$$

$$T = 0.71 * (417) + 4.80$$

$$T = 301$$

Enter = 75 25%

Exit = 226 75%

P.M. Peak Hour:

$$\ln(T) = (0.96 * \ln(X) + 0.2)$$

$$\ln(T) = (0.96 * \ln(417) + 0.2)$$

$$T = 400$$

Enter = 252 63%

Exit = 148 37%

TRIP GENERATION

Shopping Center

820 ITE Land Code

1.5 k.s.f.

Average Daily Traffic:

$$\ln(T) = (0.68 * \ln(X) + 5.57)$$

$$\ln(T) = (0.68 * \ln(1.5) + 5.57)$$

$$T = 346$$

A.M. Peak Hour:

$$T = 0.94 * (X)$$

$$T = 0.94 * (1.5)$$

$$T = 1$$

Enter = 1 62%

Exit = 0 38%

P.M. Peak Hour:

$$\ln(T) = (0.74 * \ln(X) + 2.89)$$

$$\ln(T) = (0.74 * \ln(1.5) + 2.89)$$

$$T = 24$$

Enter = 12 48%

Exit = 12 52%

TRIP GENERATION

Shopping Center

820 ITE Land Code

4 k.s.f.

Average Daily Traffic:

$$\ln(T) = (0.68 * \ln(X) + 5.57)$$

$$\ln(T) = (0.68 * \ln(4) + 5.57)$$

$$T = 674$$

A.M. Peak Hour:

$$T = 0.94 * (X)$$

$$T = 0.94 * (4)$$

$$T = 4$$

Enter = 2 62%

Exit = 2 38%

P.M. Peak Hour:

$$\ln(T) = (0.74 * \ln(X) + 2.89)$$

$$\ln(T) = (0.74 * \ln(4) + 2.89)$$

$$T = 50$$

Enter = 24 48%

Exit = 26 52%

TRIP GENERATION

Shopping Center

820 ITE Land Code

2 k.s.f.

Average Daily Traffic:

$$T = 37.75 * (X)$$

$$T = 37.75 * (2)$$

$$T = 76$$

A.M. Peak Hour:

$$T = 0.94 * (X)$$

$$T = 0.94 * (2)$$

$$T = 2$$

Enter = 1 62%

Exit = 1 38%

P.M. Peak Hour:

$$\ln(T) = (0.74 * \ln(X) + 2.89)$$

$$\ln(T) = (0.74 * \ln(2) + 2.89)$$

$$T = 30$$

Enter = 14 48%

Exit = 16 52%

TRIP GENERATION

Drive-In Bank

912 ITE Land Code

2 k.s.f.

Average Daily Traffic:

$$T = 100.03 * (X)$$

$$T = 100.03 * (2)$$

$$T = 200$$

A.M. Peak Hour:

$$T = 9.5 * (X)$$

$$T = 9.5 * (2)$$

$$T = 19$$

Enter = 11 58%

Exit = 8 42%

P.M. Peak Hour:

$$T = 20.45 * (X)$$

$$T = 20.45 * (2)$$

$$T = 41$$

Enter = 20 50%

Exit = 21 50%

APPENDIX G
WARRANT ANALYSIS

Northbound - Lewisburg Pike (SR 106/US 431) and Site Access A - AM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

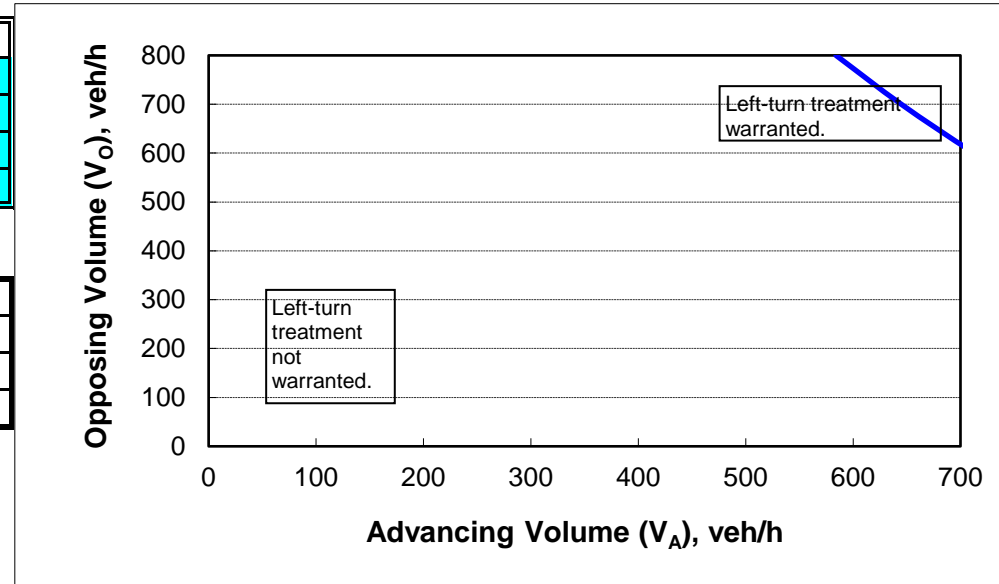
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	2509
Opposing volume (V_O), veh/h:	339

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	936
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Northbound - Lewisburg Pike (SR 106/US 431) and Site Access A - PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

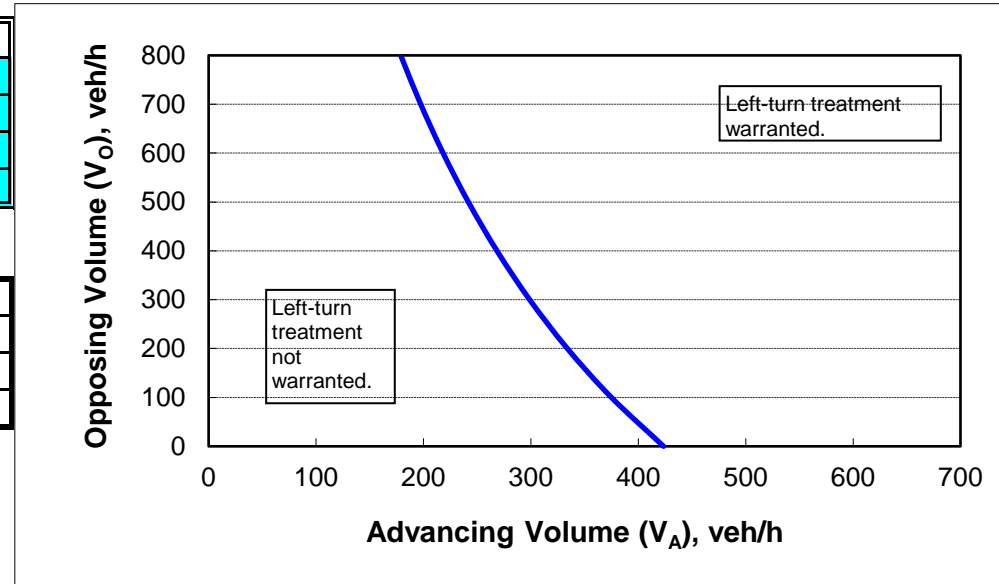
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	12%
Advancing volume (V_A), veh/h:	545
Opposing volume (V_O), veh/h:	1404

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	100
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Southbound - Lewisburg Pike (SR 106/US 431) and Harpeth-Peytsonville Road - AM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

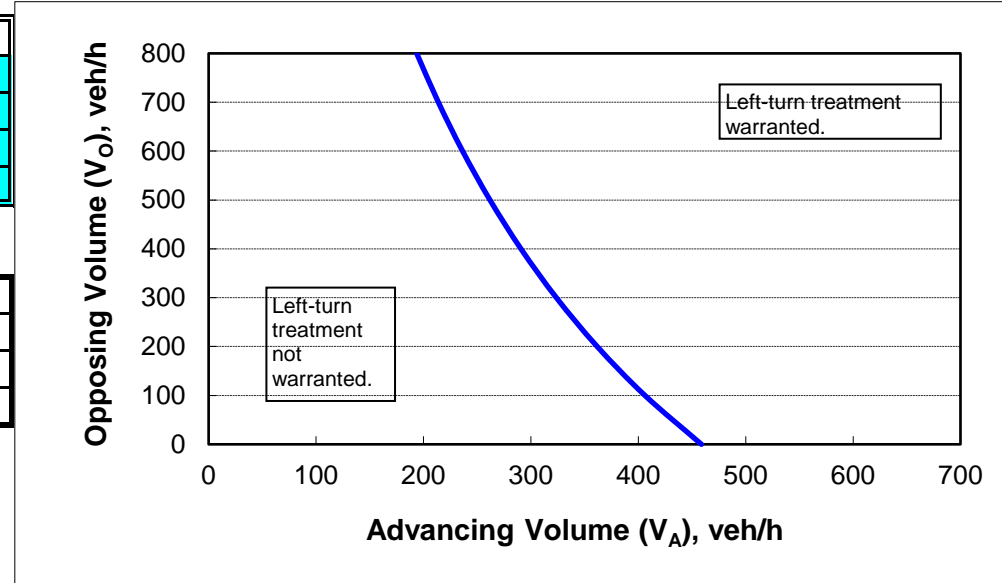
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	10%
Advancing volume (V_A), veh/h:	339
Opposing volume (V_O), veh/h:	2509

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	38
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Southbound - Lewisburg Pike (SR 106/US 431) and Harpeth-Peytsonville Road - PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

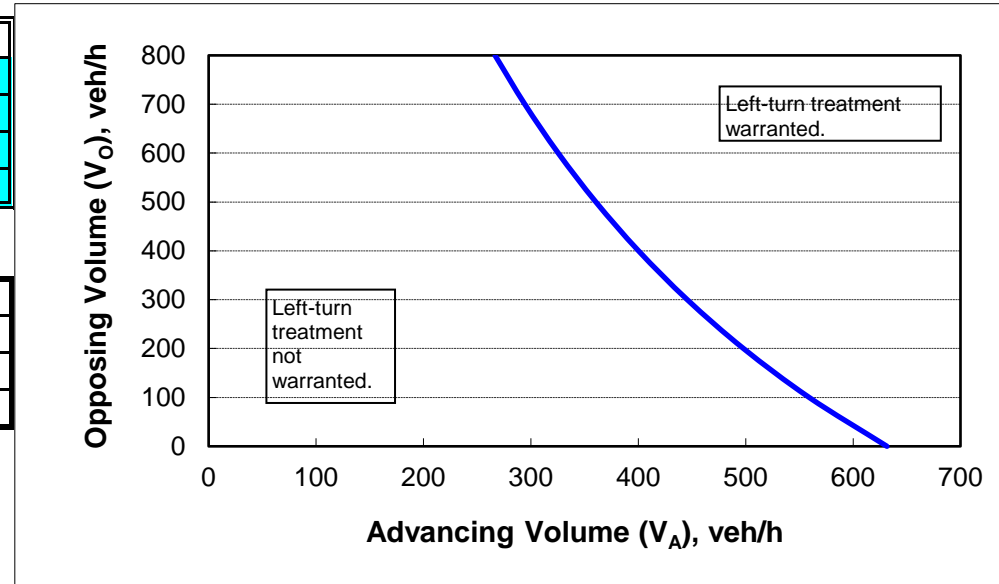
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	5%
Advancing volume (V_A), veh/h:	1404
Opposing volume (V_O), veh/h:	545

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	344
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Northbound - Lewisburg Pike (SR 106/US 431) and Site Access B - AM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

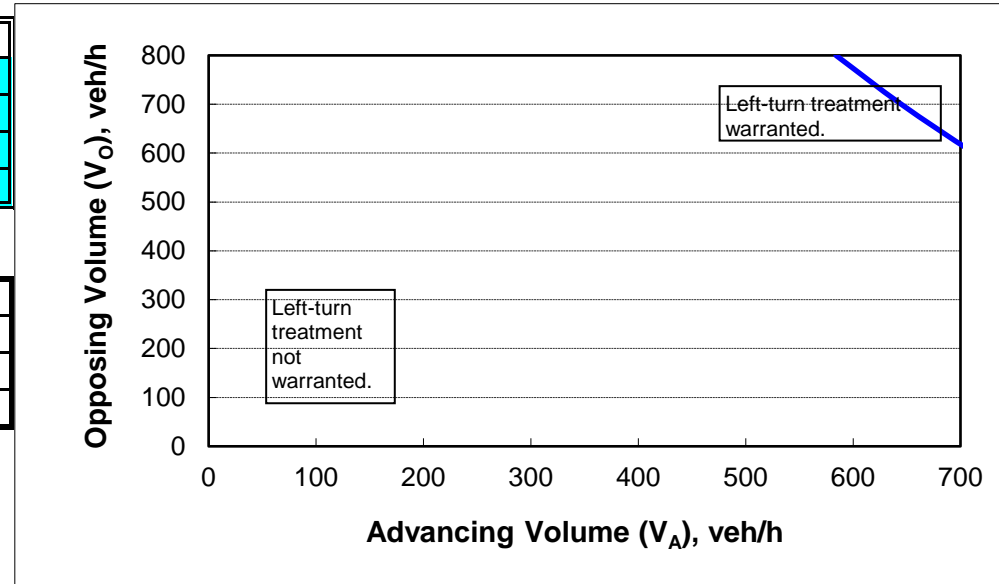
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	2517
Opposing volume (V_O), veh/h:	422

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	857
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Northbound - Lewisburg Pike (SR 106/US 431) and Site Access B - PM Peak Hour

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

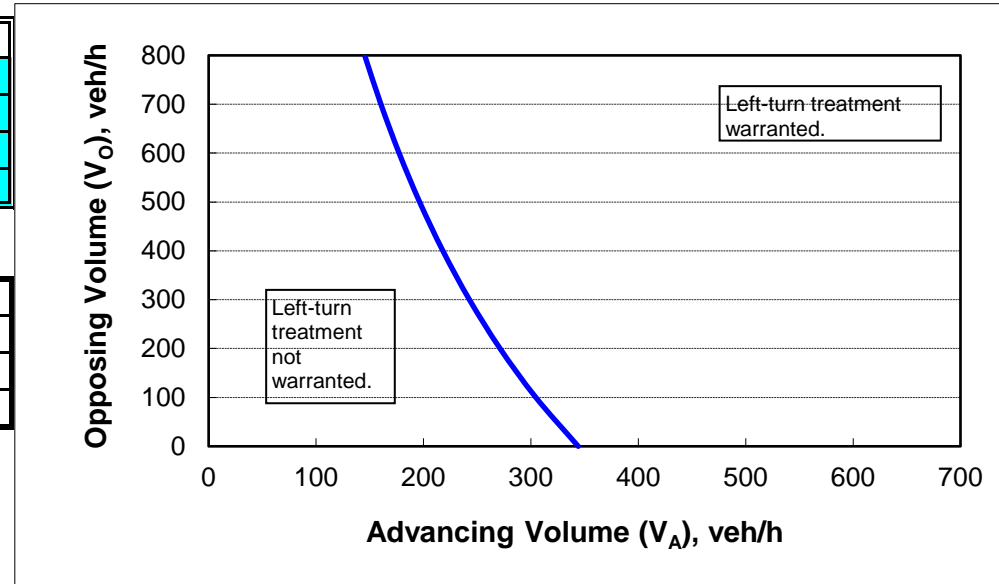
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	55
Percent of left-turns in advancing volume (V_A), %:	20%
Advancing volume (V_A), veh/h:	648
Opposing volume (V_O), veh/h:	1610

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	67
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



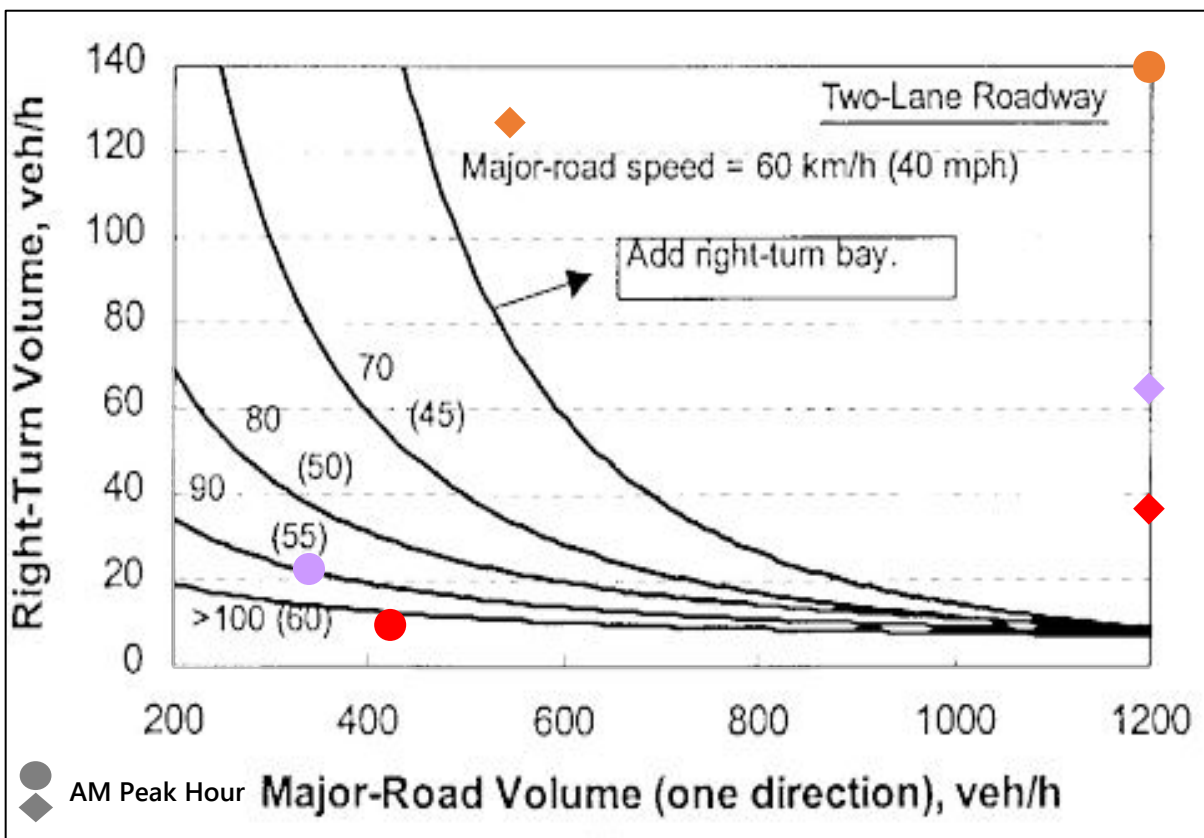
CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Projected Conditions (Peak Hours)
RIGHT-TURN LANE WARRANT ANALYSIS
(Based on NCHRP 457: Evaluating Intersection Improvements)

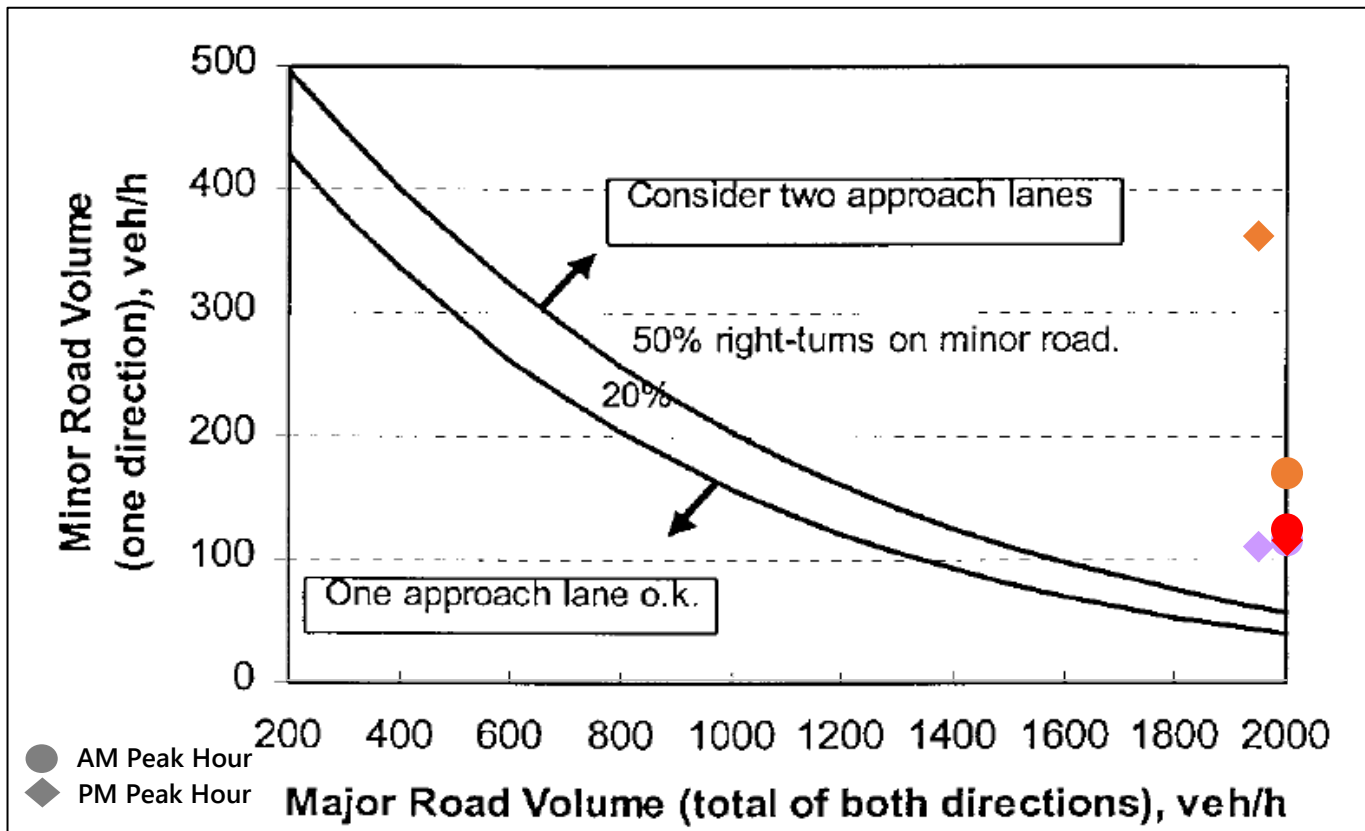
Intersection Approach	Speed Limit	AM Peak Hour			PM Peak Hour		
		V_R^*	V_A^*	Warrant Met?	V_R^*	V_A^*	Warrant Met?
Southbound - Lewisburg Pike at Site Access A	55	23	339	No	65	1404	Yes
Northbound - Lewisburg Pike at Harpeth-Peytonsville Road	55	300	2509	Yes	127	545	Yes
Southbound - Lewisburg Pike at Site Access B	55	10	422	No	37	1610	Yes

V_R = Right Turn Volumes, V_A = Advancing Volumes



Projected Conditions (Peak Hours)
MINOR APPROACH ANALYSES
(Based on Intersection Channelization Design Guide)

Intersection Approach	AM Peak Hour			PM Peak Hour		
	Minor Road Volume	Major Road Volume	2-Lane Approach?	Minor Road Volume	Major Road Volume	2-Lane Approach?
Eastbound - Site Access A at Lewisburg Pike	114	2848	Yes	109	1949	Yes
Westbound - Harpeth-Peytonsville Road at Lewisburg Pike	169	2848	Yes	363	1949	Yes
Eastbound - Site Access B at Lewisburg Pike	123	2939	Yes	114	2258	Yes

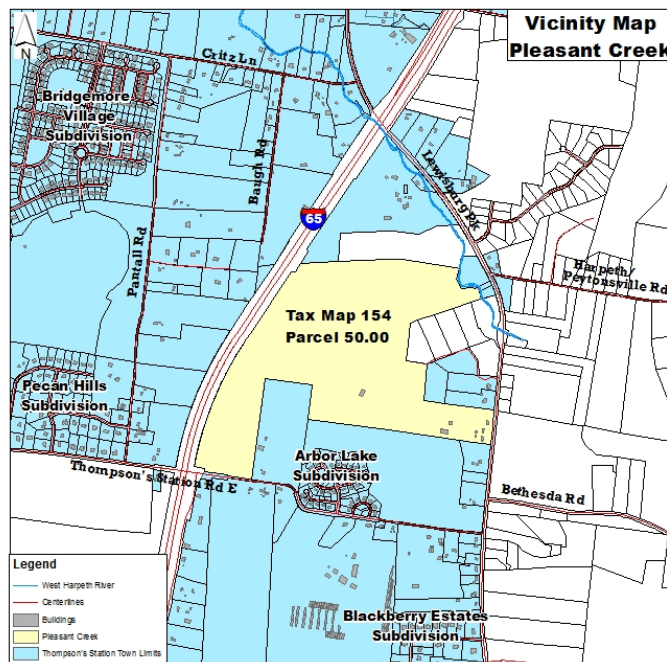


**Thompson's Station Planning Commission
Staff Report – Item 1 (PP 2020-004)
October 27, 2020**

PROJECT DESCRIPTION

Pleasant Creek Investments, LLC, submitted a request for a preliminary plat for a multi-phase project which will 149 single family lots, 263, attached single family lots, 4 commercial lots, and associated open space lots. The tree removal plan, provided as an exhibit to the preliminary plat, includes the removal of trees for a total of 2,308 inches.

The applicant has revised the Traffic Study, related to comments raised at the September Planning Commission meeting. The revised TIS and the memos from the Town's Traffic Engineer are included for review by the Planning Commission.



ANALYSIS

Site Design and Layout

The development is located within the TC zone, which includes a variety of Transect Zones to achieve the applicant's desired community mix within this subdivision. The site design has evolved slightly since the Concept Plan was present to the Planning Commission in June. This includes refinement of the open space areas to provide additional detail. Additional refinement of the overall development of the subdivision is to be expected as the construction plans and final plats are provided.

Per section 5.3.4(c) of the LDO, the approval of the Preliminary Plat in a TC zone establishes the specific zoning districts from the transect zones. This development will include a mix T1/T2 for open space areas, T3 for residential single family detached, T4 for residential single family attached, and T5 for commercial or mixed-use development, as permitted in a T5 zone. The single

family detached homes have a 65' x 130 typical lot, while the attached single family includes a range of 20' – 40' x 130' lots. The proposed typical lots conform to the LDO standards for T3 and T4 zones.

Roadways

The standard for local roadways is 50 feet. Three new roads are proposed and will have at least a 50-foot right-of-way and the required sidewalks. Additional reviews of the roadways will occur as part of the construction plan process.

Open Space/Amenities

Open space is provided in a mix of styles under the Civic Space Types, required by the LDO. Open space of 47% is provided, consistent with LDO requirements. The LDO requires that neighborhoods with greater than 50 lots incorporate one of the following amenities: children's playground, swimming pool with amenities center, passive recreation areas, and trails throughout the open space where feasible. The amenity center and other proposed trails/recreations areas fulfill this requirement. The applicant has provided additional information on the development of the open space areas as exhibits to the plat.

Trees

Development of site, as proposed, will result in the removal of a total of 2,308 inches. The LDO requires the replacement of trees 18 inches and greater at a ratio of one and a half inches for every inch removed. The landscape plans submitted with the construction plans will include detailed landscaping and plating details for each section to account for all replacement requirements.

Traffic Study

A traffic study was submitted and reviewed by the Town's traffic engineer. A revised traffic study was submitted to the Town and has been reviewed by the traffic engineer. All recommended mitigation shall be incorporated into the development agreement and the construction plans for this subdivision.

Utilities

The BOMA approved a MOU for the installation of a bio-clere system for wastewater treatment at the 6-9-20 meeting. This wastewater treatment system will provide the sewer services for this subdivision. The Town will assume responsibility for the wastewater system per the terms of the approved MOU.

RECOMMENDATION

Staff recommends approval with the following contingencies:

1. The applicant shall set a pre-application meeting with Town Staff prior to the submittal of the constructions plans for this development.
2. Prior to the approval of construction plans, the developer shall enter into a development agreement for the project.
3. Prior to the approval of construction plans, the developer shall obtain any necessary permits through the Tennessee Department of Environment and Conservation.

4. Prior to the approval of construction plans, all applicable codes and regulations shall be addressed to the satisfaction of the Town Engineer.
5. Prior to the submittal of the first final plat for this subdivision, a copy of the CCRs shall be submitted for Town review.
6. Any signage proposed for the subdivision shall comply requirements set forth within the Land Development Ordinance and shall be located within the open space and maintained by the homeowner's association.
7. Streetlights shall be incorporated in accordance with the Land Development Ordinance and shall be documented on the construction drawings.
8. All recommendations within the traffic study shall be completed.
9. Any change of use or expansion of the project site shall conform to the requirements set forth within the Land Development Ordinance and shall be approved prior to the implementation of any changes to the project.

ATTACHMENTS

Preliminary Plat

Open Space Exhibits

Traffic Study dated October 12, 2020

Traffic Study Review Memos dated 9-18-20 & 10-20-20

Owner/Developer:

Pleasant Creek Investments, LLC
John Y. Franks Managing Member
Suite 230, 144 Southeast Parkway
Franklin, TN 37067
615-567-4420
johnfranks@live.com

Landscape Architect:

Paul A. Lebovitz, Landscape Architect
102 Winslow Road
Franklin, Tennessee 37064
615-415-6855
pleb@bellsouth.net

Project Engineer:

SITE ENGINEERING CONSULTANTS, INC.
RICHARD HOUZE, P.E.
850 MIDDLE TENNESSEE BLVD.
MURFREESBORO, Tennessee 37129
615-890-790
RHOUZE@SED-CIVIL.COM

Surveyor:

Tom King, RLS
Hyde Park Homes, LLC
Suite 230, 144 Southeast Parkway
Franklin, Tennessee 37067
615-238-4958
tomgking3@gmail.com

GeoTechnical Engineer:

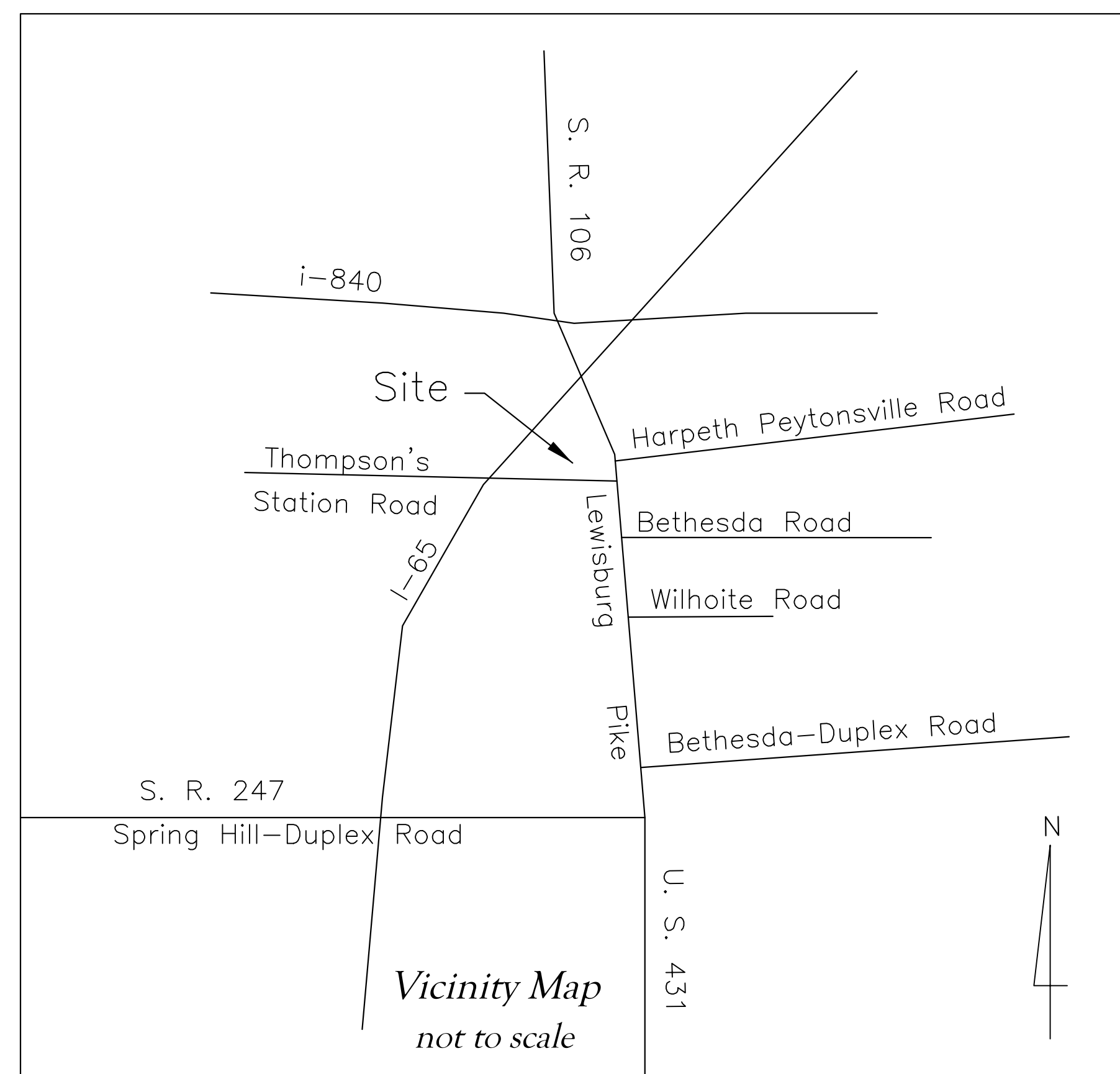
American Geotechnical,
Bob Stickney
2712 Reams Place
Franklin, TN 37064
615-791-9768
bobstickney@comcast.net

Hydrology:

Grow Environmental Solutions
Tony Grow
1406 Wilson Avenue
Tullahoma, Tennessee 37388
931-273-4681
tony@growenv.com

PLEASANT CREEK (TRANSECT VILLAGE) PRELIMINARY PLAT

**TOWN
of
THOMPSON'S STATION, TENNESSEE**
1952 LEWISBURG, PIKE
MAP 154 PARCEL 50



Mayor:

Corey Napier

Aldermen:

Shaun Alexander
Brandon Bell
Ben Dilks
Brian Stover

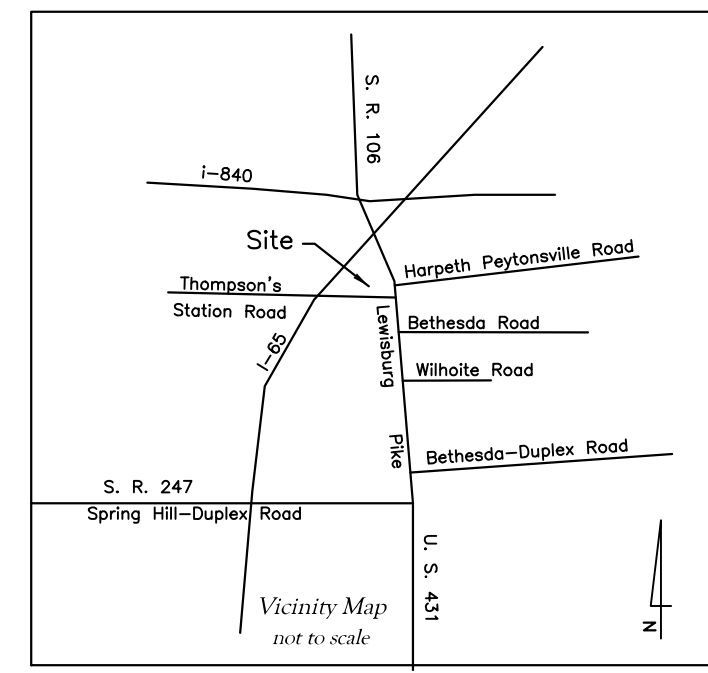
Thompsons Station

Planning Administrator:

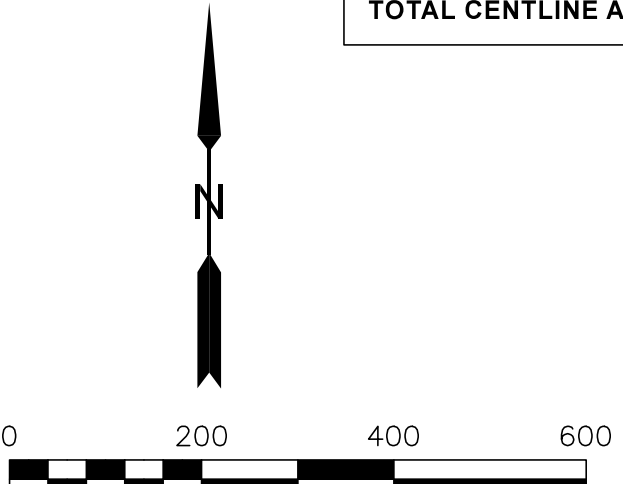
Micah Wood
615-794-4333 Ext. 12
mwood@thompsons-station.com

TABLE OF CONTENTS:

- 1 Cover Sheet
- 2 Over All Preliminary Plat
- 3 Data Sheet
- 4 -12 Preliminary Plat Sheets
- 13 Lot Area Table & Curve Data
- 14 Detail
- 15 Civic Space 1 - Multi-Use Square
- 16 Civic Space 2 - Formal Square
- 17 Civic Space - Ramble+Playground
- 18 Civic Space 4 - Undeveloped Wooded Area
- 19 Civic Space 5 - Recreational Pool Park
- 20 Civic Space 6 - Athletic Complex
- 21 Street Buffer Yard
- 22 Tree Removal Plan



TOTAL CENTLINE ROAD 18,245 Linear Feet
 TOTAL CENTLINE ALLEY 2,987 Linear Feet



- SURVEY NOTES:**
1. SURVEYOR'S LIABILITY FOR THIS DOCUMENT SHALL BE LIMITED TO THE ORIGINAL PURCHASER AND DOES NOT EXTEND TO ANY UNPAID PERSON OR ENTITIES WITHOUT AN EXPRESSED RE-CERTIFICATION BY WRITTEN SIGNATURE APPEARING UPON THE SURVEY.
 2. PARCEL NUMBERS SHOWN THUS (00) REFER TO WILLIAMSON COUNTY TAX MAP 154 PARCEL 50.
 3. ALL DISTANCES WERE MEASURED WITH EDM, AND GPS EQUIPMENT AND HAVE BEEN ADJUSTED FOR TEMPERATURE.
 4. THE PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLANE AND ARE DETERMINED TO BE IN ZONE X AS PER FIRM PANEL NUMBER 4718700365, DATED 09-29-06.
 5. THIS SURVEYOR WAS NOT PROVIDED WITH A TITLE COMMITMENT, THEREFORE SUBJECT TO THE FINDINGS OF A DETAILED TITLE SEARCH.
 6. PRIOR TO ANY CONSTRUCTION, EXCAVATION OR ANY DISTURBANCE OF THE EXISTING GROUND ELEVATION, THE OWNER AND/OR CONTRACTOR SHOULD ASSUME RESPONSIBILITY OF CONTACTING THE LOCAL UTILITY AGENCIES FOR EXACT LOCATION OF UNDERGROUND GAS LINES, TELEPHONE AND ELECTRIC CABLES AND WATER LINES ETC., TO AVOID ANY HAZARD OR CONFLICT. IN TENNESSEE, IT IS A REQUIREMENT FOR THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF EXCAVATION AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT, TENNESSEE ONE CALL, 1-800-368-1887.
 7. PROPERTY DATA TAKEN FROM DEED OF RECORD AND DEEDS FROM ADJOINING PROPERTIES AS NOTED CURRENT DEED OF RECORD FOR PARCEL 40 BEING RECORDED IN DEED BOOK 6584 PAGE 127 REGISTER OFFICE WILLIAMSON COUNTY TENNESSEE.
 8. EASEMENT GRANTED TO AT&T CABLE OF RECORD IN BOOK 552, PAGE 179 R.O.W.C.T.
 9. UTILITIES SHOWN WERE TAKEN FROM FIELD LOCATIONS THAT WERE APPARENT AND COPIED FROM APPROPRIATE GOVERNING AGENCIES MAPS ARE APPROXIMATE AT BEST, THERE MAY BE UTILITIES, THE EXISTENCE OF WHICH ARE UNKNOWN TO THE SURVEYOR.
 10. ALL SIDEWALKS, OPEN SPACE, STREET TREES AND DRAINAGE IMPROVEMENT TO BE MAINTAINED BY THE HOME OWNERS ASSOCIATION.
 11. ALL OPEN SPACE MAY BE USED AS PUBLIC UTILITY AND DRAINAGE EASEMENT FOR THIS PROJECT, ALL OPEN SPACE AND MEANS TO BE MAINTAINED BY THE HOME OWNERS ASSOCIATION.

SITE DATA

PROJECT NAME: PLEASANT CREEK
 LOCATION: PARCEL 50, TAX MAP 154
 ZONING: TRANSECT
 COMMUNITY TYPES: T1, T2, T3, T4, T5
 TOTAL SITE AREA: +/-177.95 AC
 TOTAL PROPOSED HOMES: 412
 149 SINGLE FAMILY LOT 65' X 130' (TYPICAL)
 263 ATTACHED SINGLE FAMILY LOT 20'-40' X 130' (TYPICAL)
 TOTAL COMMERCIAL LOTS: 4
 TOTAL OPEN SPACE: 47%
 84.28 / 177.95 = 0.47%

AREA CHART

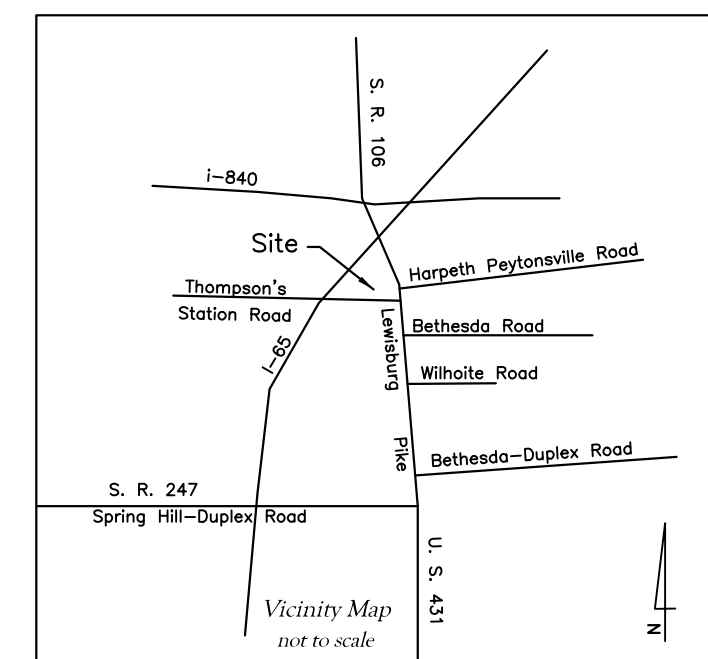
SINGLE FAMILY LOT AREA	33.34
MULTI FAMILY LOT AREA	28.69
COMMERCIAL LOT AREA	7.85
OPEN SPACE	60.10
TOWN / DRIP AREA	24.18
RIGHTS OF WAY	23.79
TOTAL AREA	177.95



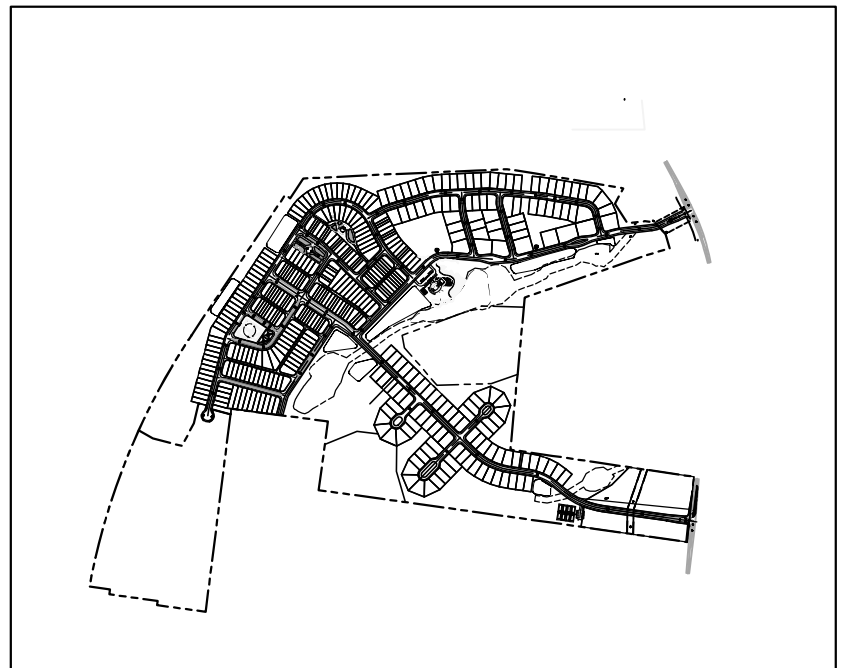
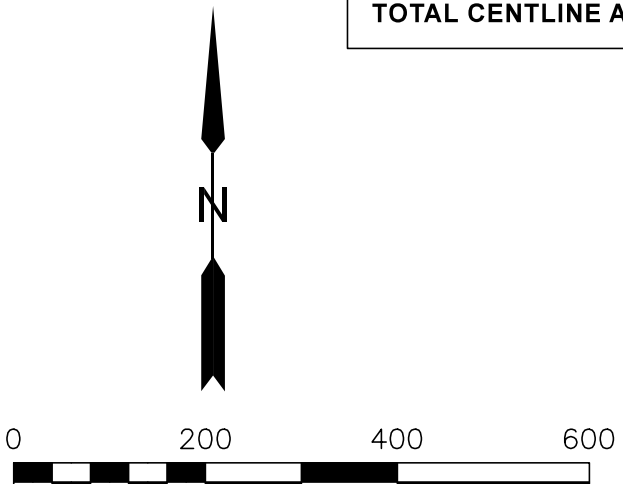
LINE BEARING	DISTANCE
L1 N82°11'15"W	405.38'
L2 N07°48'45"E	35.00'
L3 N82°11'15"W	400.00'
L4 N07°48'45"E	40.00'
L5 N82°11'15"W	172.00'

**PRELIMINARY PLAT
 PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
 PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
 SUITE 230
 FRANKLIN, TN 37064
 PHONE (615) 238-4958



TOTAL CENTLINE ROAD 23,242 Linear Feet
 TOTAL CENTLINE ALLEY 6,765 Linear Feet



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 2. PARCEL NUMBERS SHOWN IN THIS (00) REFER TO WILLIAMSON COUNTY TAX MAP 154 PARCEL 50.
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 4. THE PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLANE AND HAS BEEN DETERMINED TO BE IN ZONE X AS PER FIRM PANEL NUMBER 4718703567, DATED 09-29-06.
 5. THIS SURVEYOR WAS NOT PROVIDED WITH A TITLE COMMITMENT, THEREFORE SUBJECT TO THE FINDINGS OF A DETAILED TITLE SEARCH.
 6. PRIOR TO ANY CONSTRUCTION, EXCAVATION OR ANY DISTURBANCE OF THE EXISTING GROUND ELEVATION, THE OWNER AND/OR CONTRACTOR SHOULD ASSUME RESPONSIBILITY OF CONTACTING THE LOCAL UTILITY AUTHORITIES FOR EXACT LOCATION OF UNDERGROUND GAS LINES, TELEPHONE AND ELECTRIC CABLES AND WATER LINES ETC., TO AVOID ANY HAZARD OR CONFLICT. IN TENNESSEE, IT IS A REQUIREMENT FOR THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF EXCAVATION AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT, TENNESSEE ONE CALL, 1-800-368-1887.
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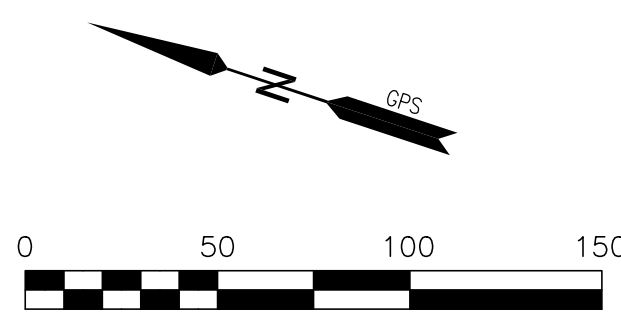
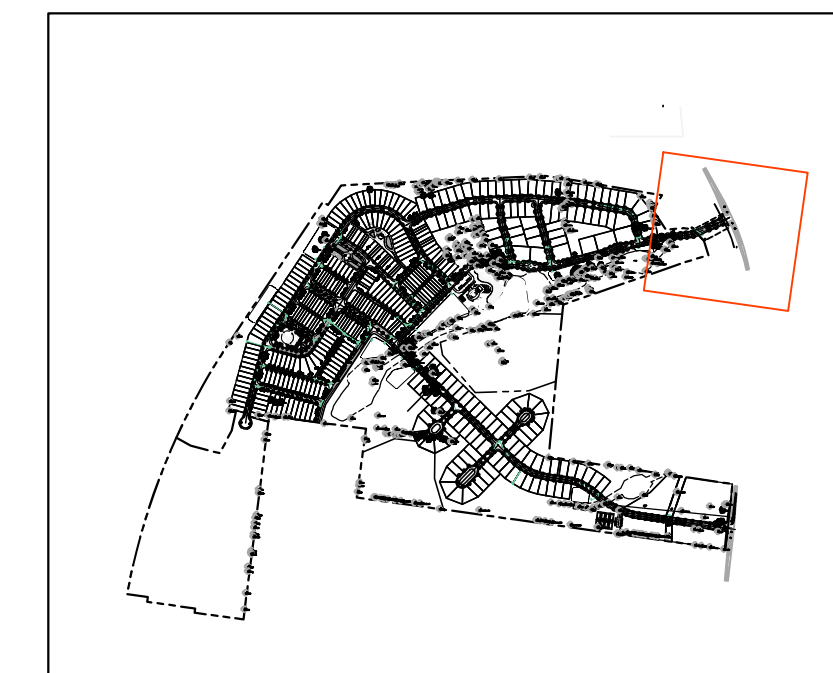
INTERSTATE I-65

HIGHWAY 431
(60' R.O.W.)

	T1 / T2
	T3
	T4
	T5
	CIVIC
	TOWN / DRIP
	AREA REMOVED

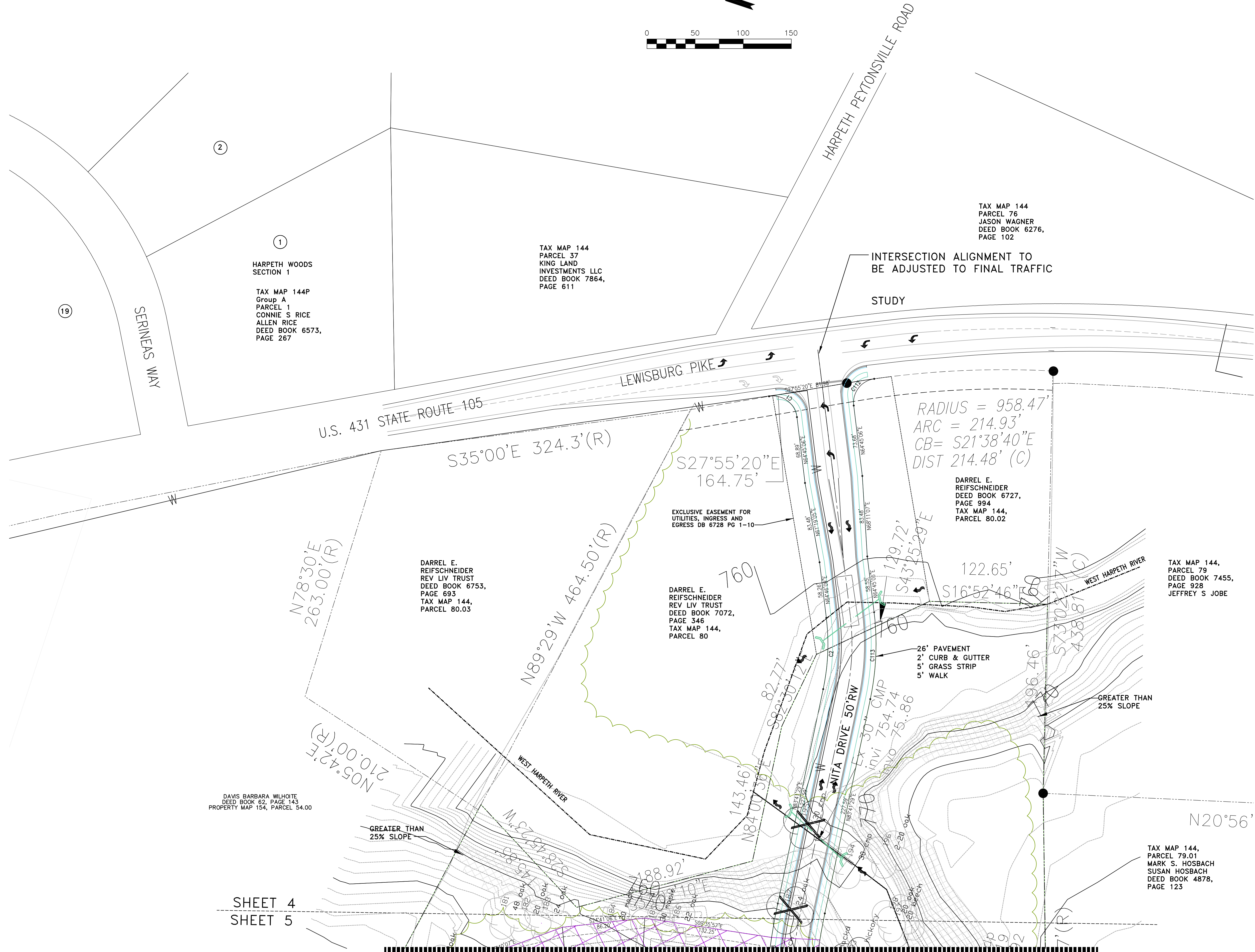
LINE BEARING	DISTANCE
L1 N82°11'15"W	405.98'
L2 N07°48'45"E	135.00'
L3 N82°11'15"W	400.00'
L4 N07°48'45"E	40.00'
L5 N82°11'15"W	172.00'

**PRELIMINARY PLAT
 PLEASANT CREEK**
 TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
 PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
 SUITE 230
 FRANKLIN, TN 37064
 PHONE (615) 238-4958



LEGEND

- Iron Rod Existing - iron rod (ex)
- Iron Rod Set - iron rod (s)
- Deed Call - (100.00')
- Fence -
- Property Line -
- Railroad Track -
- Utility Pole w guy wire -
- Minimum Building Setback Line MBSL
- Public Utility & Drainage Easement PUDE
- Storm Sewer -
- Sanitary Sewer -
- Water -
- Fire Hydrant -



SHEET 4
SHEET 5

MATCH LINE SHEET 5

**PRELIMINARY PLAT
PLEASANT CREEK**

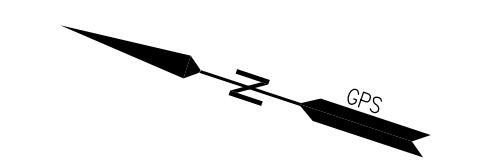
TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE

PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958



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- Storm Sewer -
- Sanitary Sewer -
- Water -
- Fire Hydrant -



S.L. PARSLEY JR. ET. UX.
 DEED BOOK 260
 PAGE 286
 TAX MAP 144,
 PARCEL 34.00
 MCA-1 ZONING

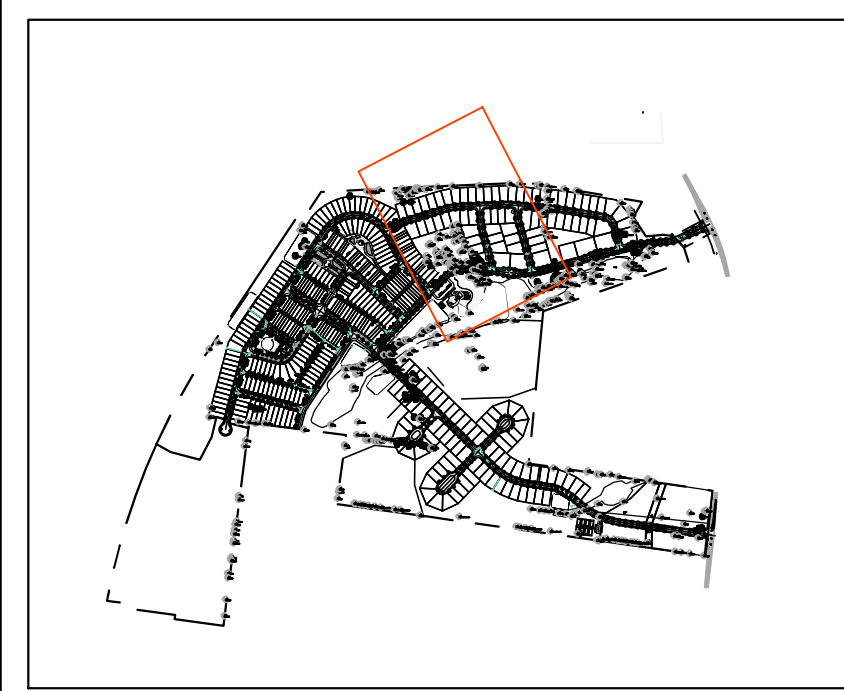
SHEET 5
 SHEET 6

MATCH LINE SHEET 6

MATCH LINE SHEET 6

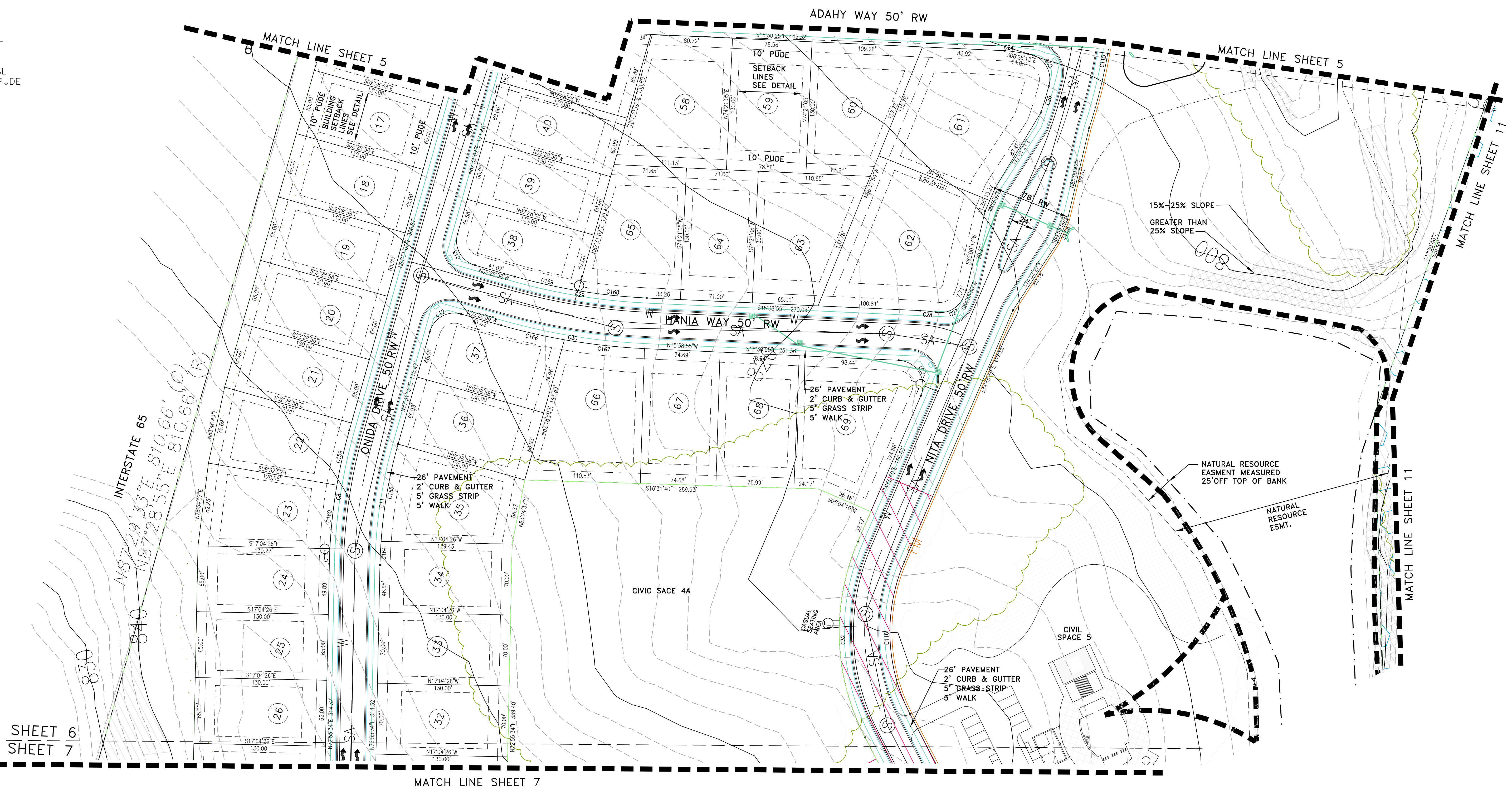
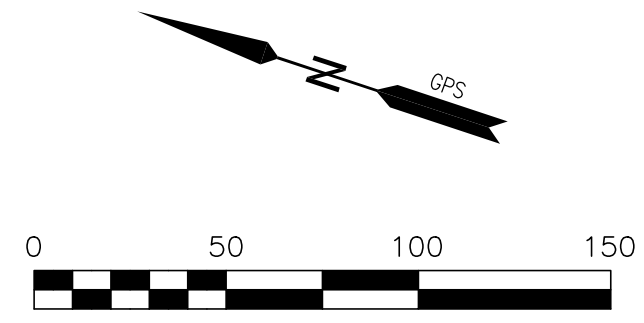
**PRELIMINARY PLAT
 PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
 PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
 SUITE 230
 FRANKLIN, TN 37064
 PHONE (615) 238-4958



LEGEND

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- Railroad Track
- Utility Pole w/ guy wire
- Minimum Building Setback Line MBSL
- Public Utility & Drainage Easement PUDE
- Storm Sewer
- Sanitary Sewer
- Water
- Fire Hydrant



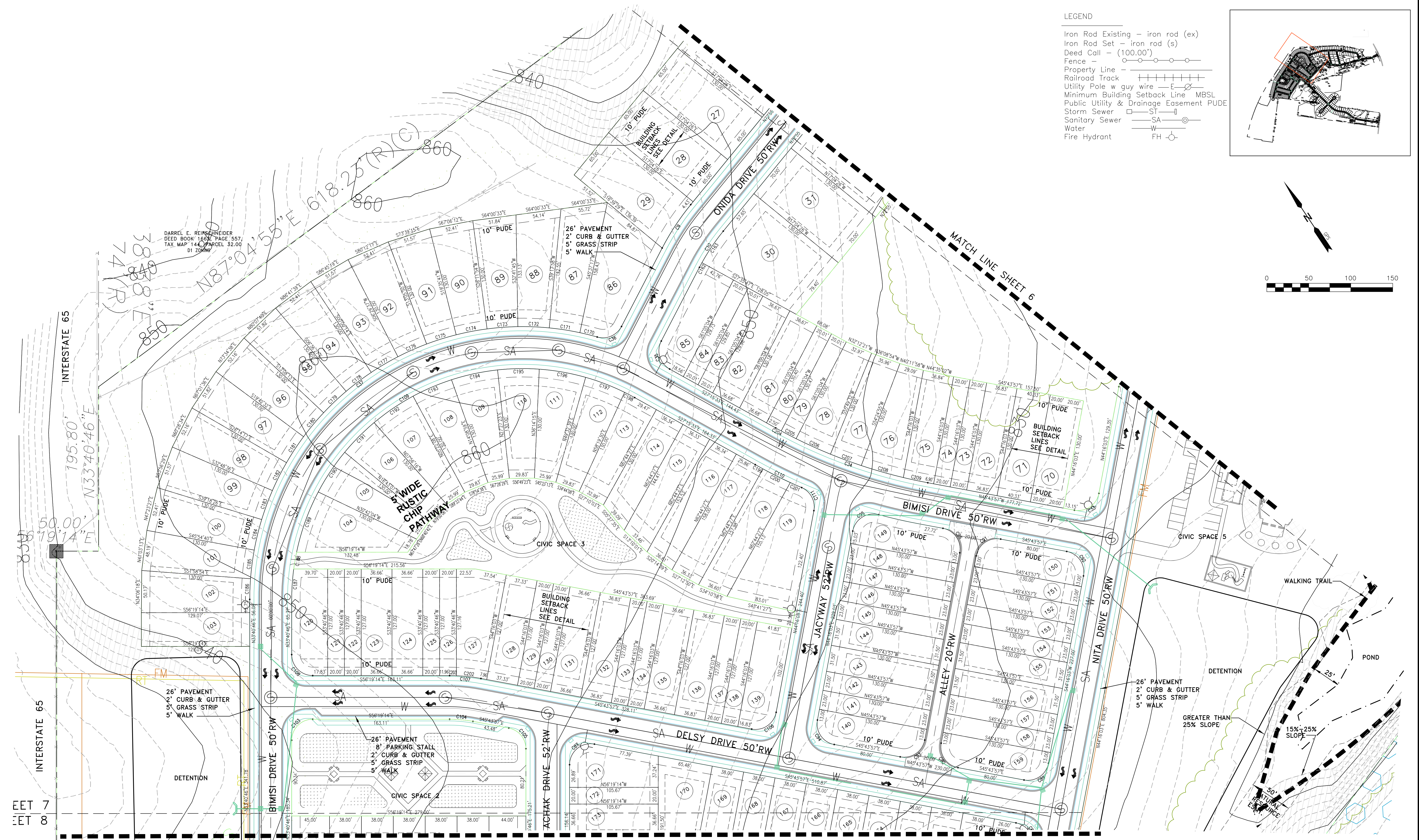
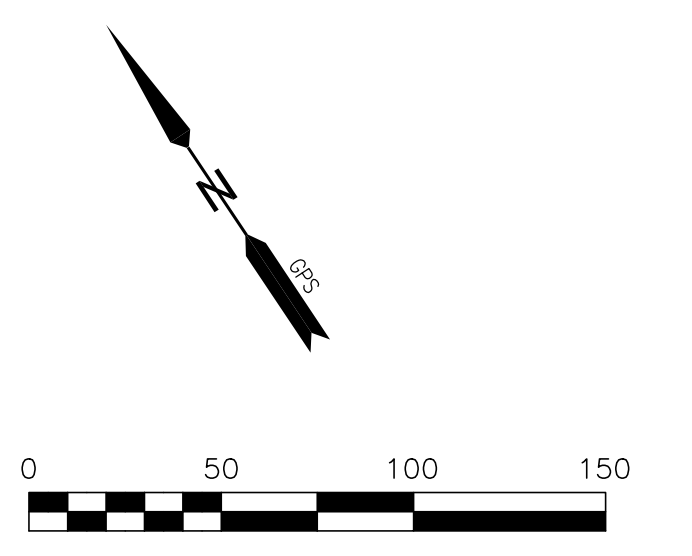
SHEET 6
SHEET 7

MATCH LINE SHEET 7

PRELIMINARY PLAT
PLEASANT CREEK

TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

- LEGEND
- Iron Rod Existing - iron rod (ex)
 - Iron Rod Set - iron rod (s)
 - Deed Call - (100.00')
 - Fence -
 - Property Line -
 - Railroad Track -
 - Utility Pole w/ guy wire -
 - Minimum Building Setback Line MBSL
 - Public Utility & Drainage Easement PUDE
 - Storm Sewer - ST
 - Sanitary Sewer - SA
 - Water - W
 - Fire Hydrant - FH



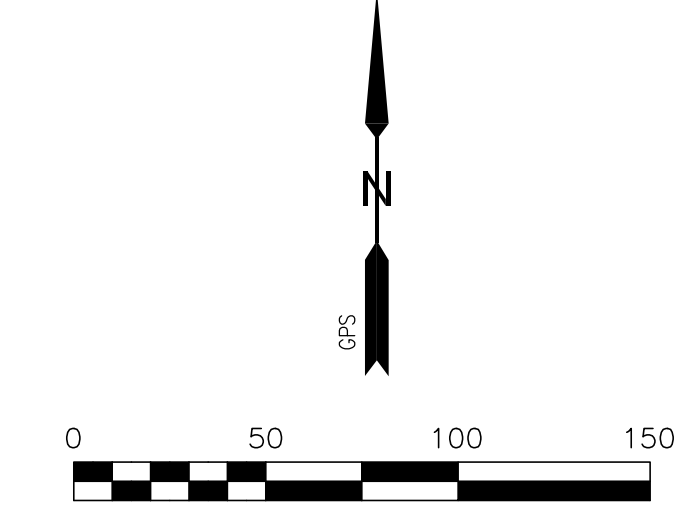
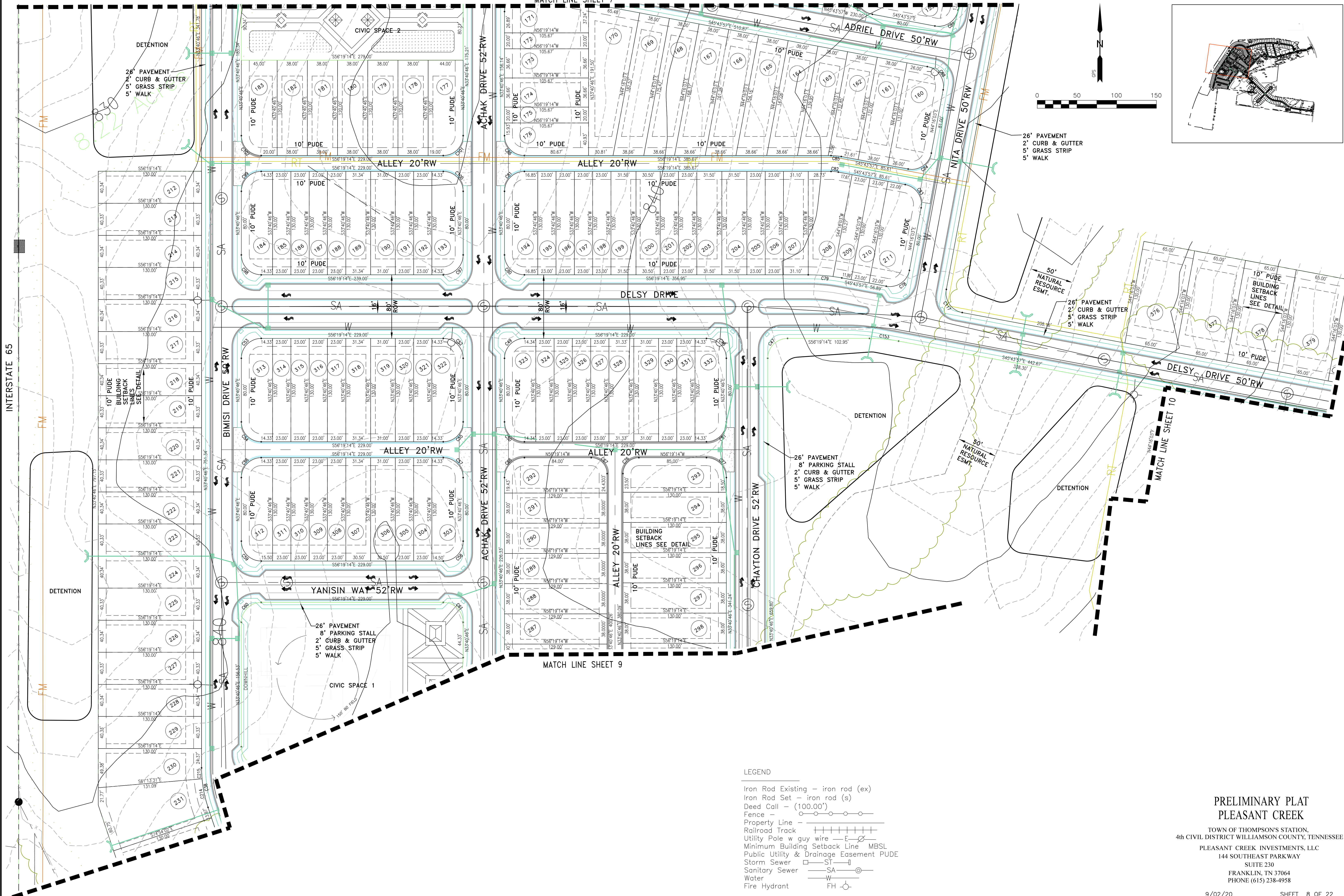
**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE

PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

9/02/20 SHEET 7 OF 22

MATCH LINE SHEET 7



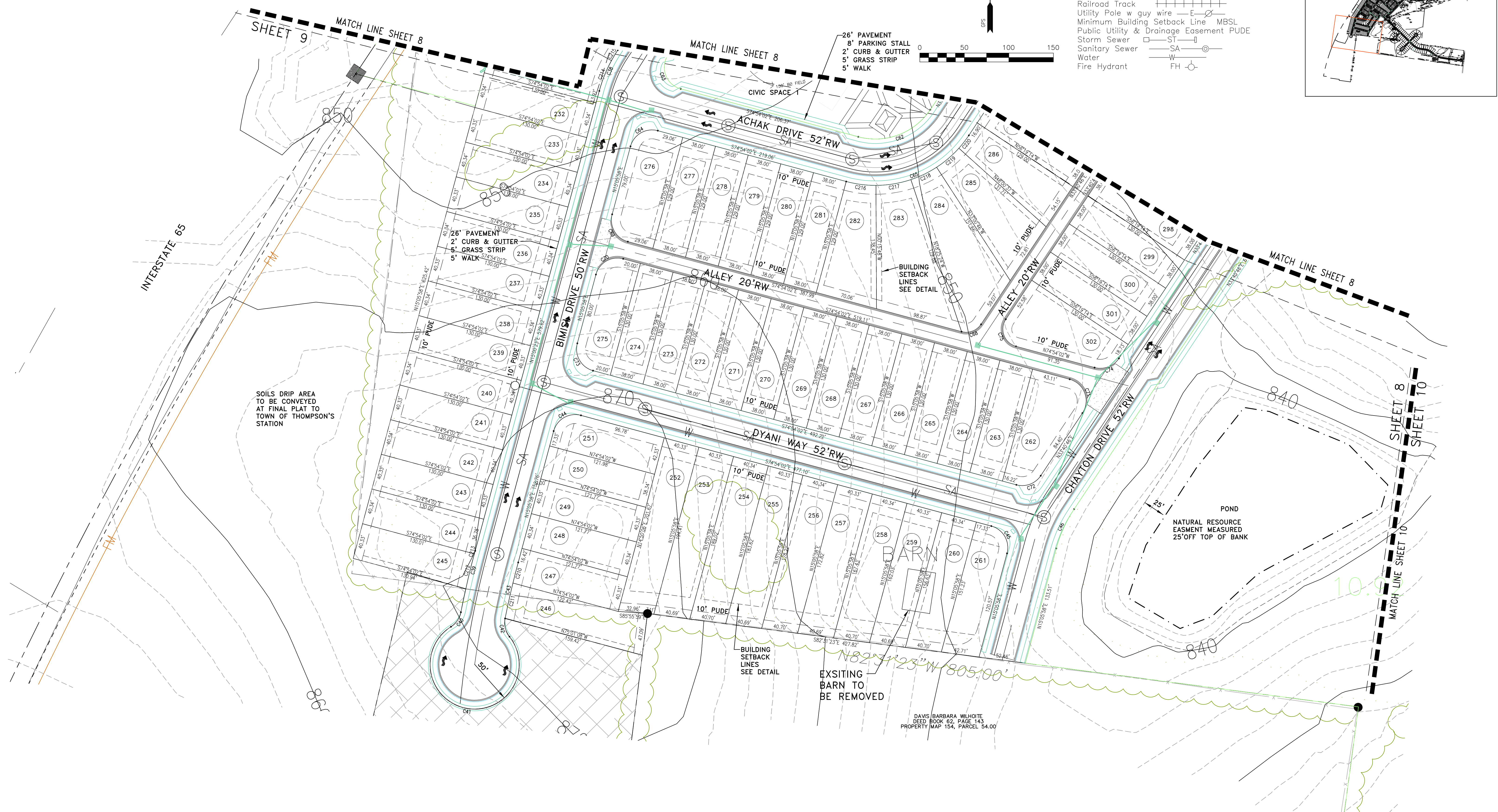
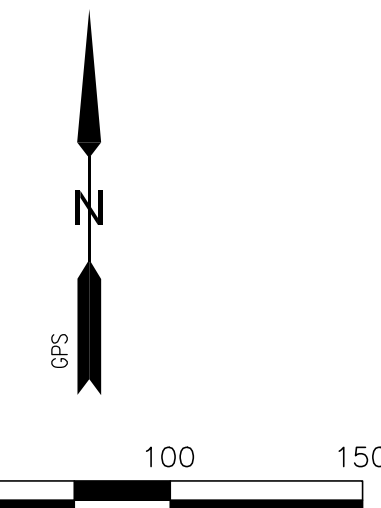
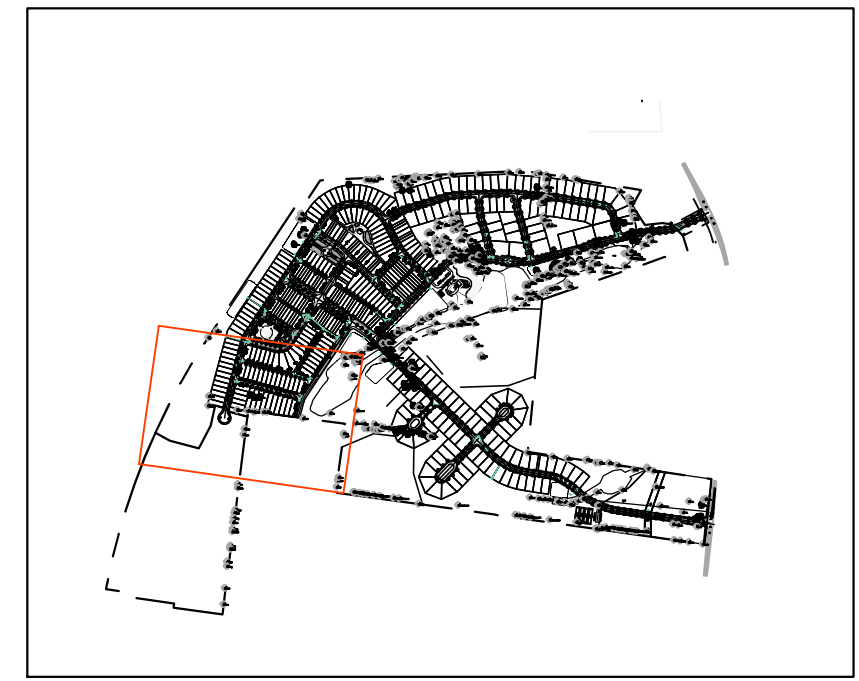
- LEGEND**
- Iron Rod Existing - iron rod (ex)
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 - Deed Call - (100.00')
 - Fence -
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 - Railroad Track -
 - Utility Pole w guy wire -
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 - Public Utility & Drainage Easement PUDE -
 - Storm Sewer - ST -
 - Sanitary Sewer - SA -
 - Water - W -
 - Fire Hydrant - FH -

**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
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144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

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- Public Utility & Drainage Easement PUDE -
- Storm Sewer -
- Sanitary Sewer -
- Water -
- Fire Hydrant -



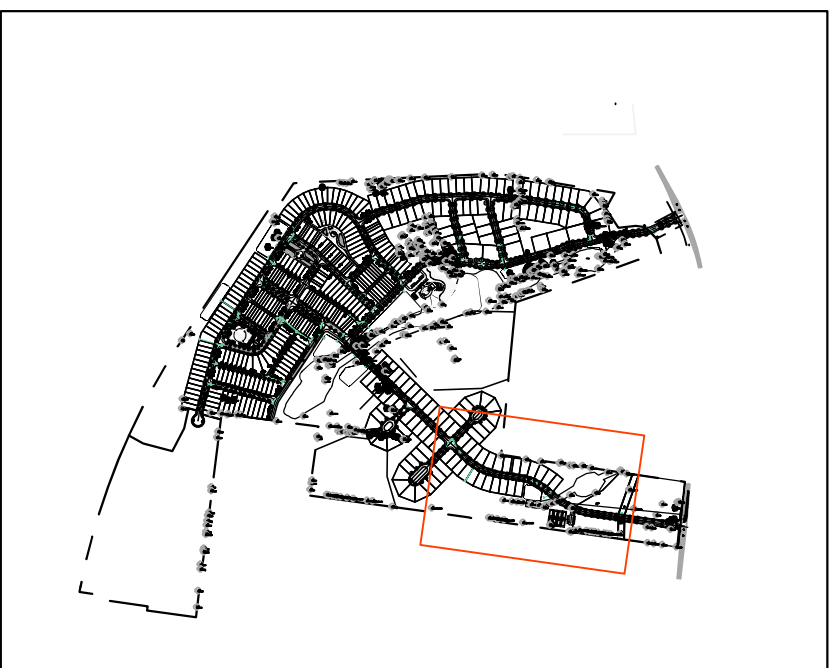
SOILS DRIP AREA
TO BE CONVEYED
AT FINAL PLAT TO
TOWN OF THOMPSON'S
STATION

EXISTING
BARN TO
BE REMOVED

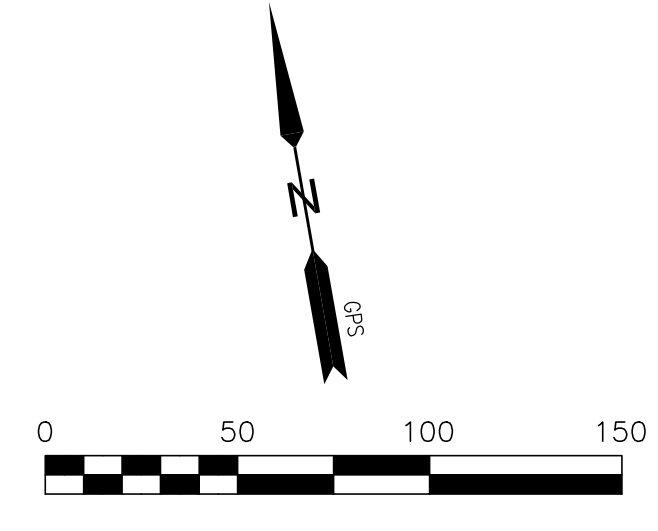
DAVIS BARBARA WILHOITE
DEED BOOK 62, PAGE 145
PROPERTY MAP 154, PARCEL 54.00'

**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
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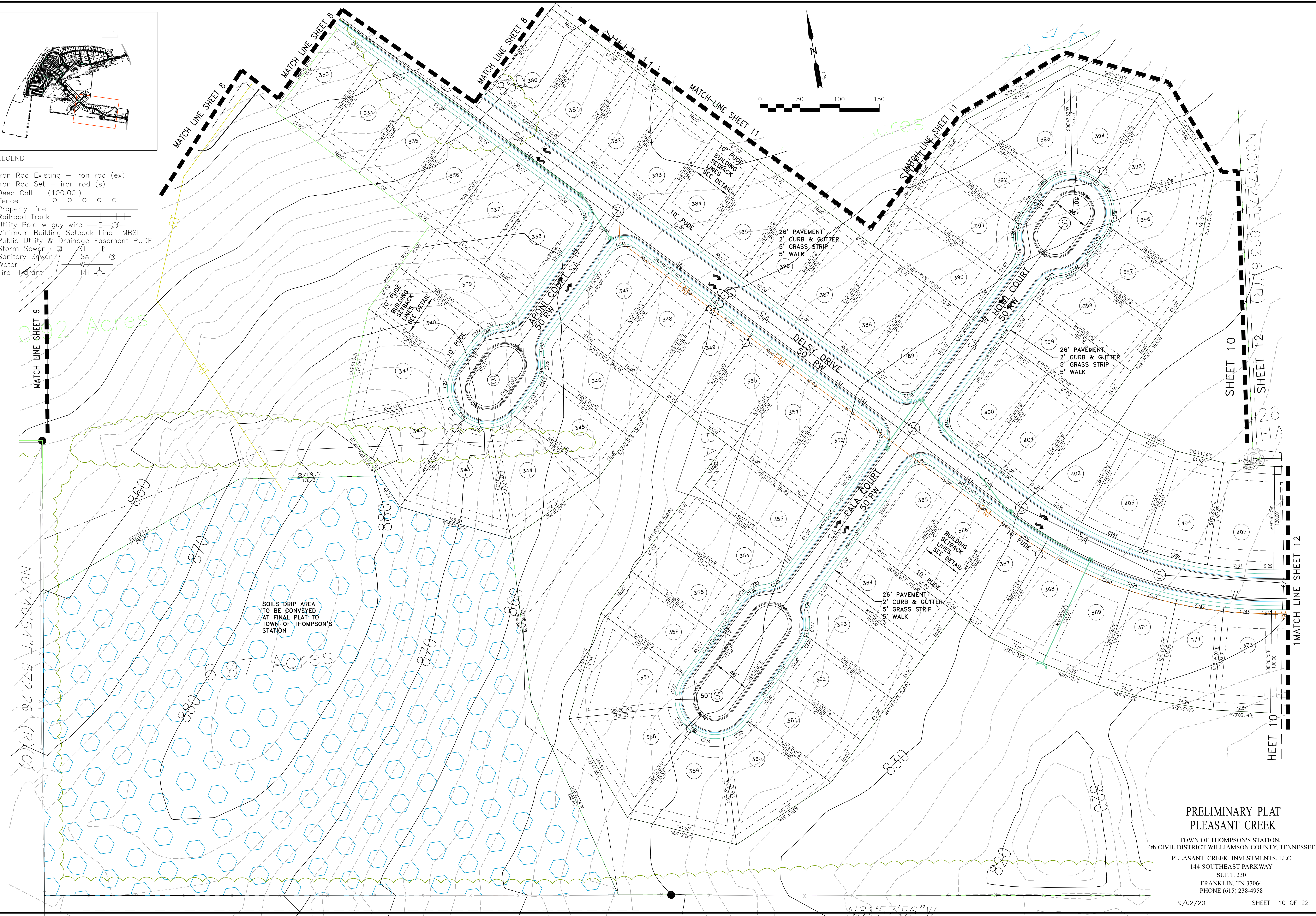
- LEGEND**
- Iron Rod Existing - iron rod (ex)
 - Iron Rod Set - iron rod (s)
 - Deed Call - (100.00')
 - Fence
 - Property Line
 - Railroad Track
 - Utility Pole w guy wire
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 - Public Utility & Drainage Easement PUDE
 - Storm Sewer
 - Sanitary Sewer
 - Water
 - Fire Hydrant



0.92 Acres

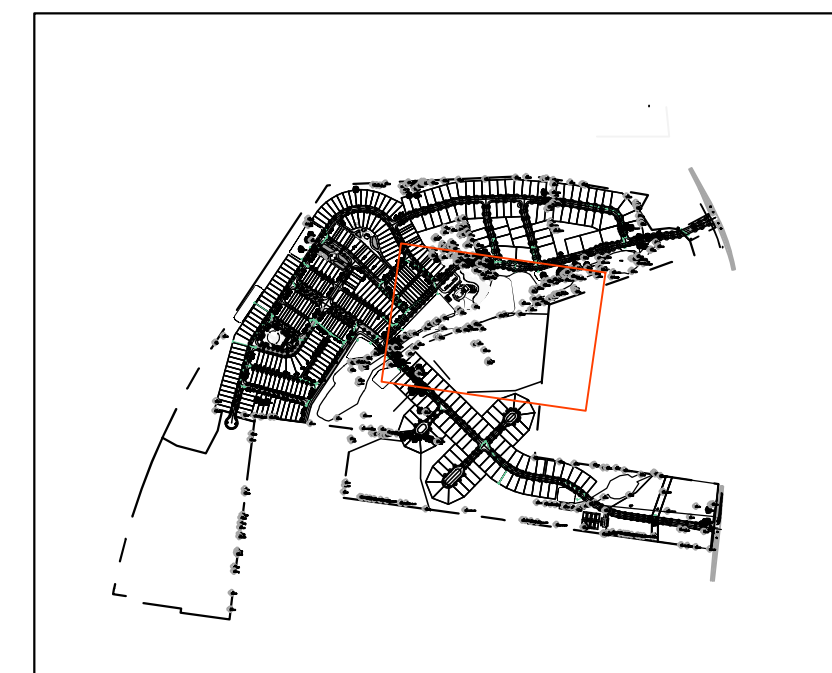
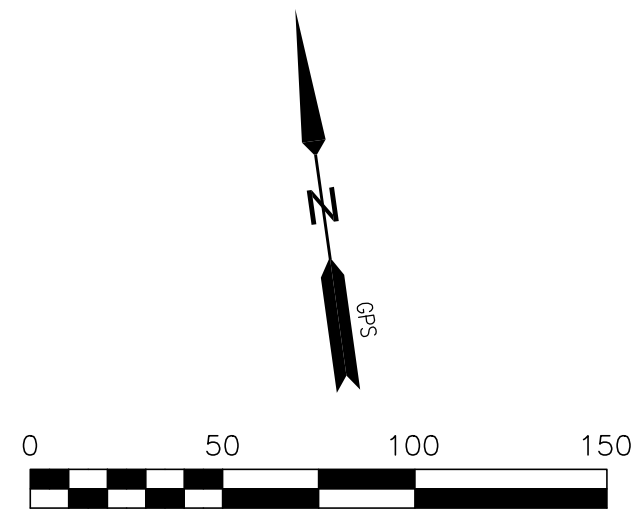
0.97 Acres

SOILS DRIP AREA TO BE CONVEYED AT FINAL PLAT TO TOWN OF THOMPSON'S STATION



**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
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FRANKLIN, TN 37064
PHONE (615) 238-4958

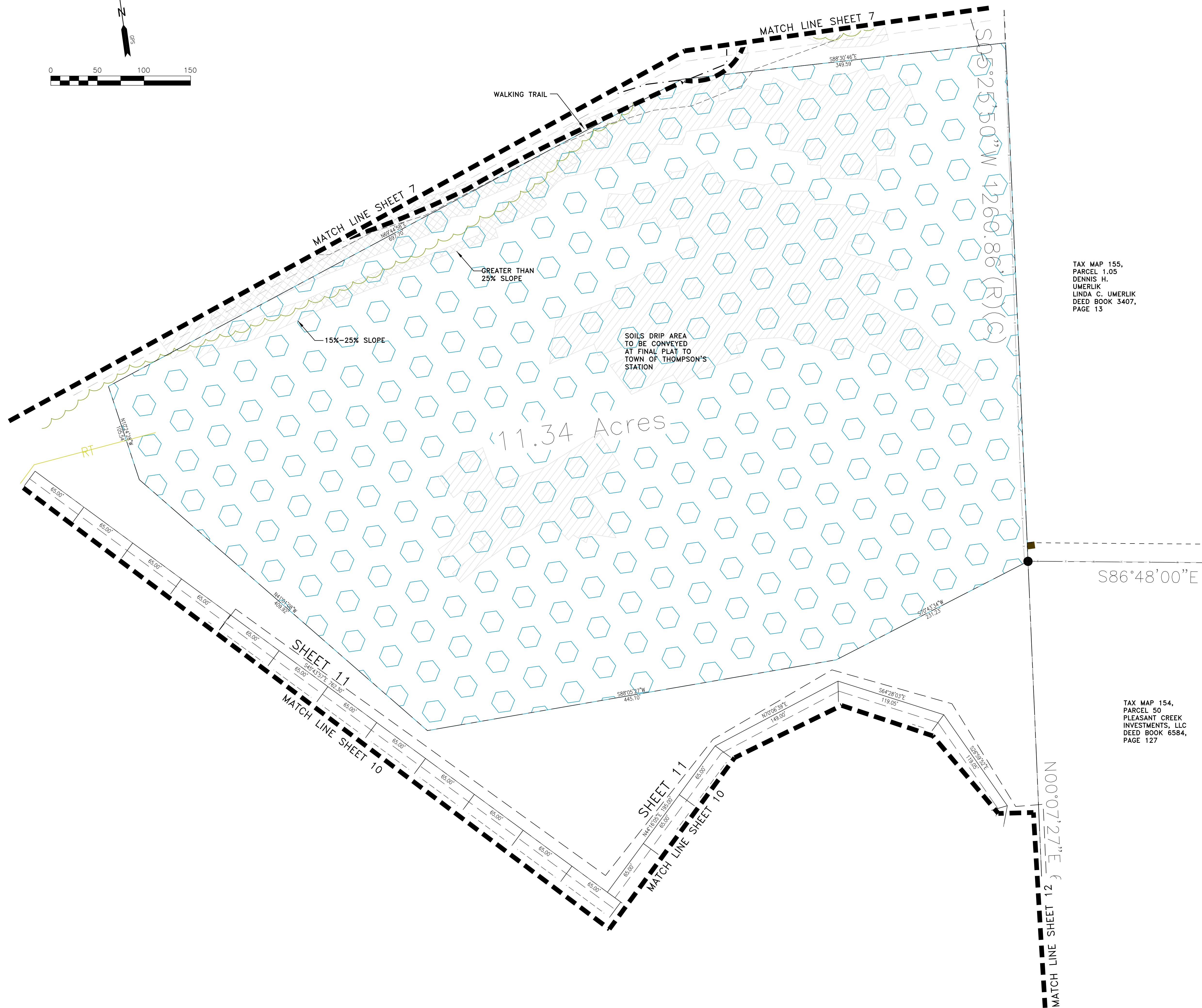


LEGEND

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- Storm Sewer -
- Sanitary Sewer -
- Water -
- Fire Hydrant -

TAX MAP 155,
PARCEL 1.05
DENNIS H.
UMERLIK
LINDA C. UMERLIK
DEED BOOK 3407,
PAGE 13

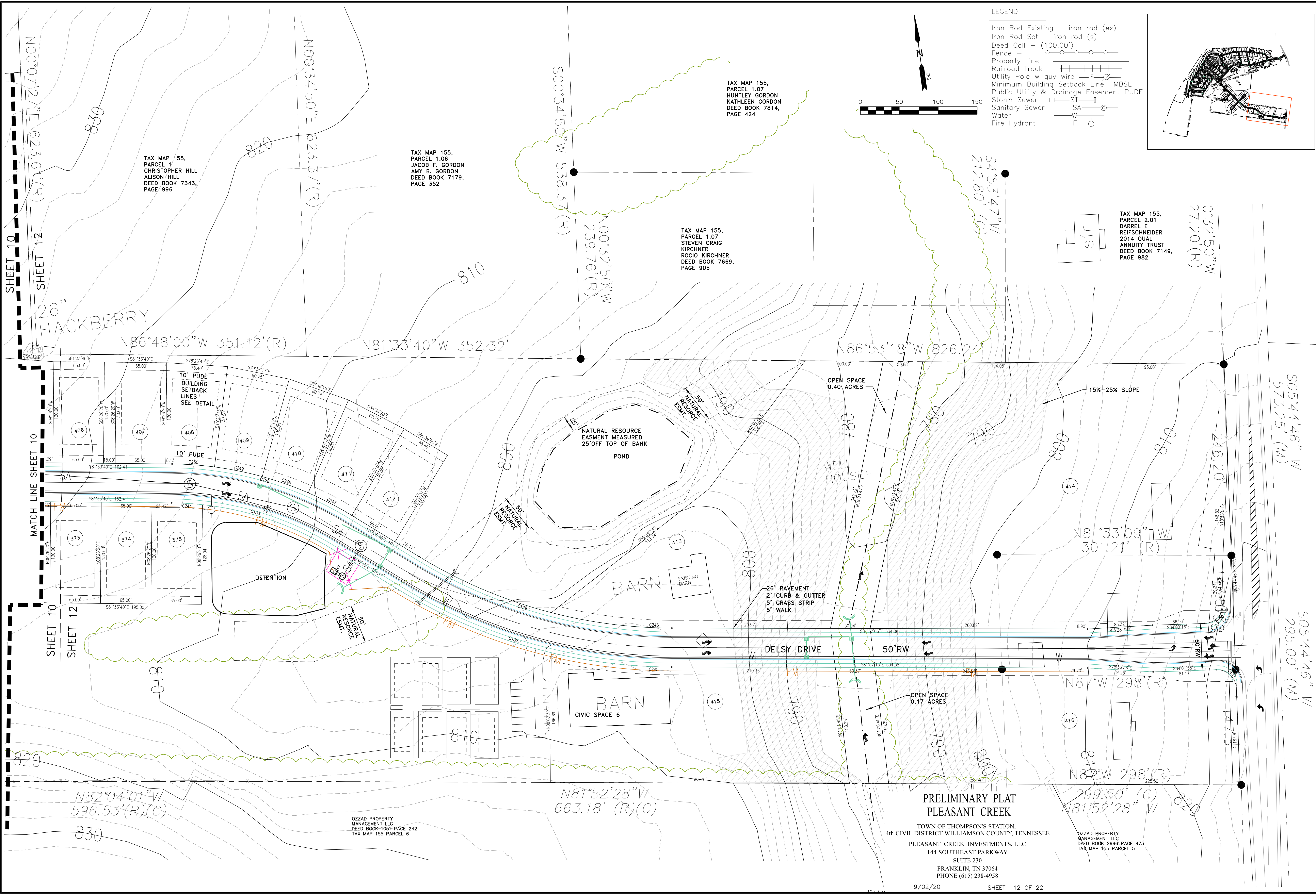
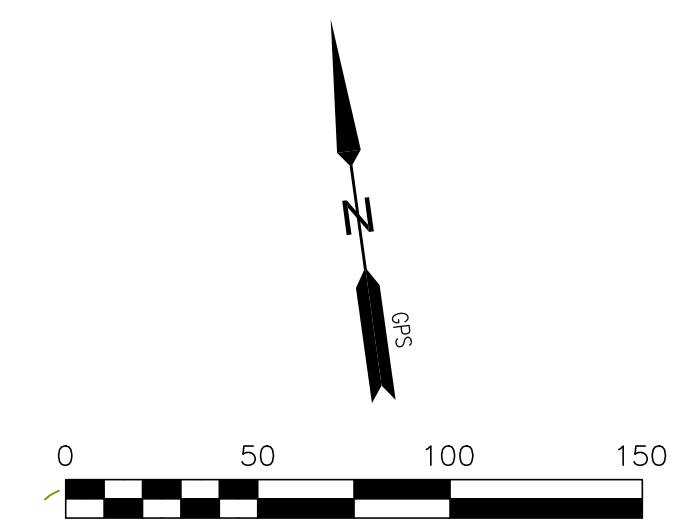
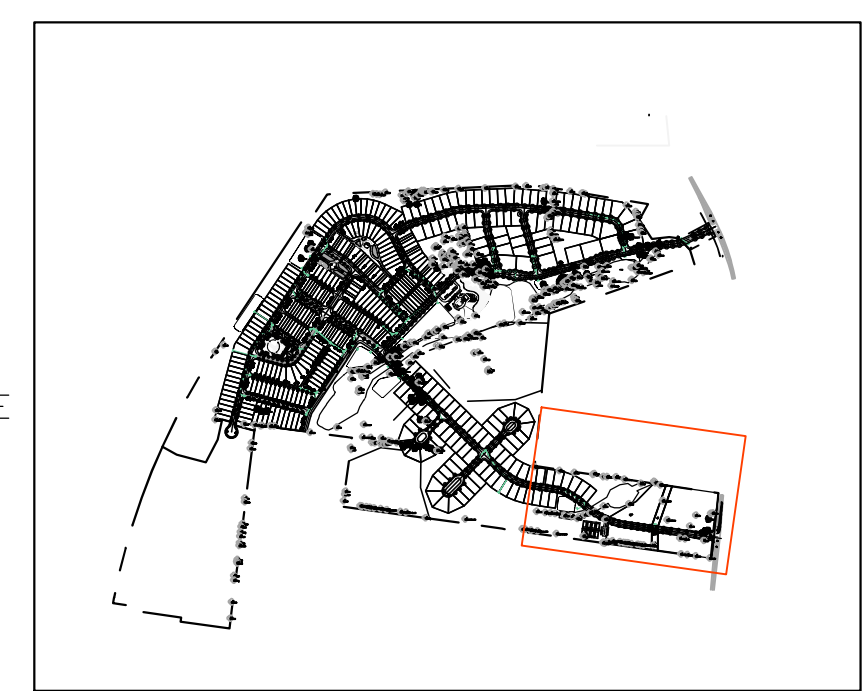
TAX MAP 154,
PARCEL 50
PLEASANT CREEK
INVESTMENTS, LLC
DEED BOOK 6584,
PAGE 127



PRELIMINARY PLAT
PLEASANT CREEK
TOWN OF THOMPSON'S STATION,
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PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
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- Sanitary Sewer -
- Water -
- Fire Hydrant -



TAX MAP 155,
PARCEL 1
CHRISTOPHER HILL
ALISON HILL
DEED BOOK 7343,
PAGE 996

TAX MAP 155,
PARCEL 1.06
JACOB F. GORDON
AMY B. GORDON
DEED BOOK 7179,
PAGE 352

TAX MAP 155,
PARCEL 1.07
HUNTLEY GORDON
KATHLEEN GORDON
DEED BOOK 7814,
PAGE 424

TAX MAP 155,
PARCEL 2.01
DARREL E
REIFSCHEIDER
2014 QUAL
ANNUITY TRUST
DEED BOOK 7149,
PAGE 982

OZZAD PROPERTY
MANAGEMENT LLC
DEED BOOK 1051 PAGE 242
TAX MAP 155 PARCEL 6

**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

OZZAD PROPERTY
MANAGEMENT LLC
DEED BOOK 2996 PAGE 473
TAX MAP 155 PARCEL 5

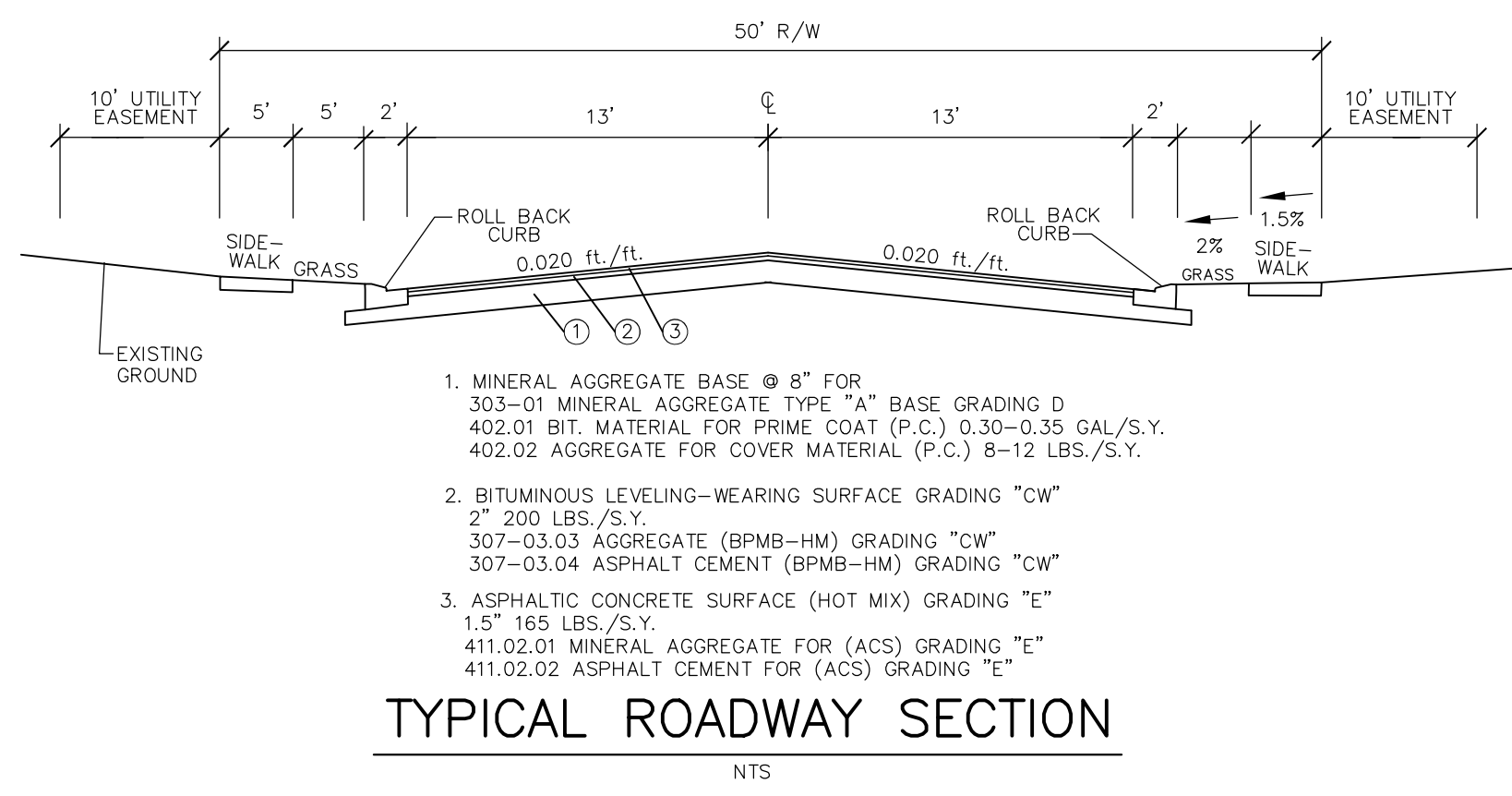
LOT AREA TABLE

Lot Area Table containing columns for Lot No., Sq. Feet, and Acres, with multiple columns of lot data.

CURVE DATA

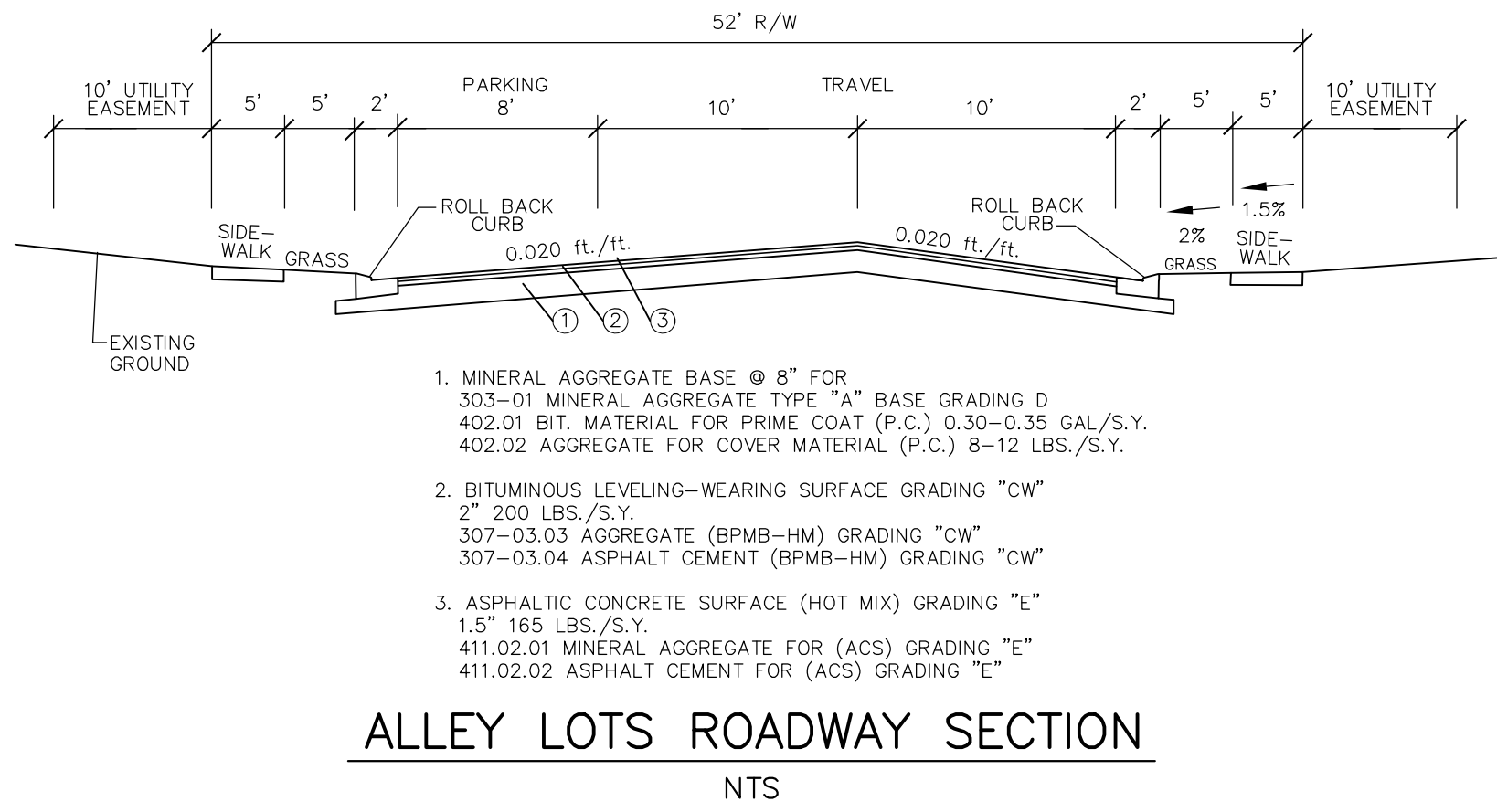
Curve Data table with columns for CURVE, RADIUS, DELTA ANGLE, ARC, CHORD, and CHORD BEARING, listing curve specifications for various lots.

PRELIMINARY PLAT PLEASANT CREEK TOWN OF THOMPSON'S STATION, 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE PLEASANT CREEK INVESTMENTS, LLC 144 SOUTHEAST PARKWAY SUITE 230 FRANKLIN, TN 37064 PHONE (615) 238-4958



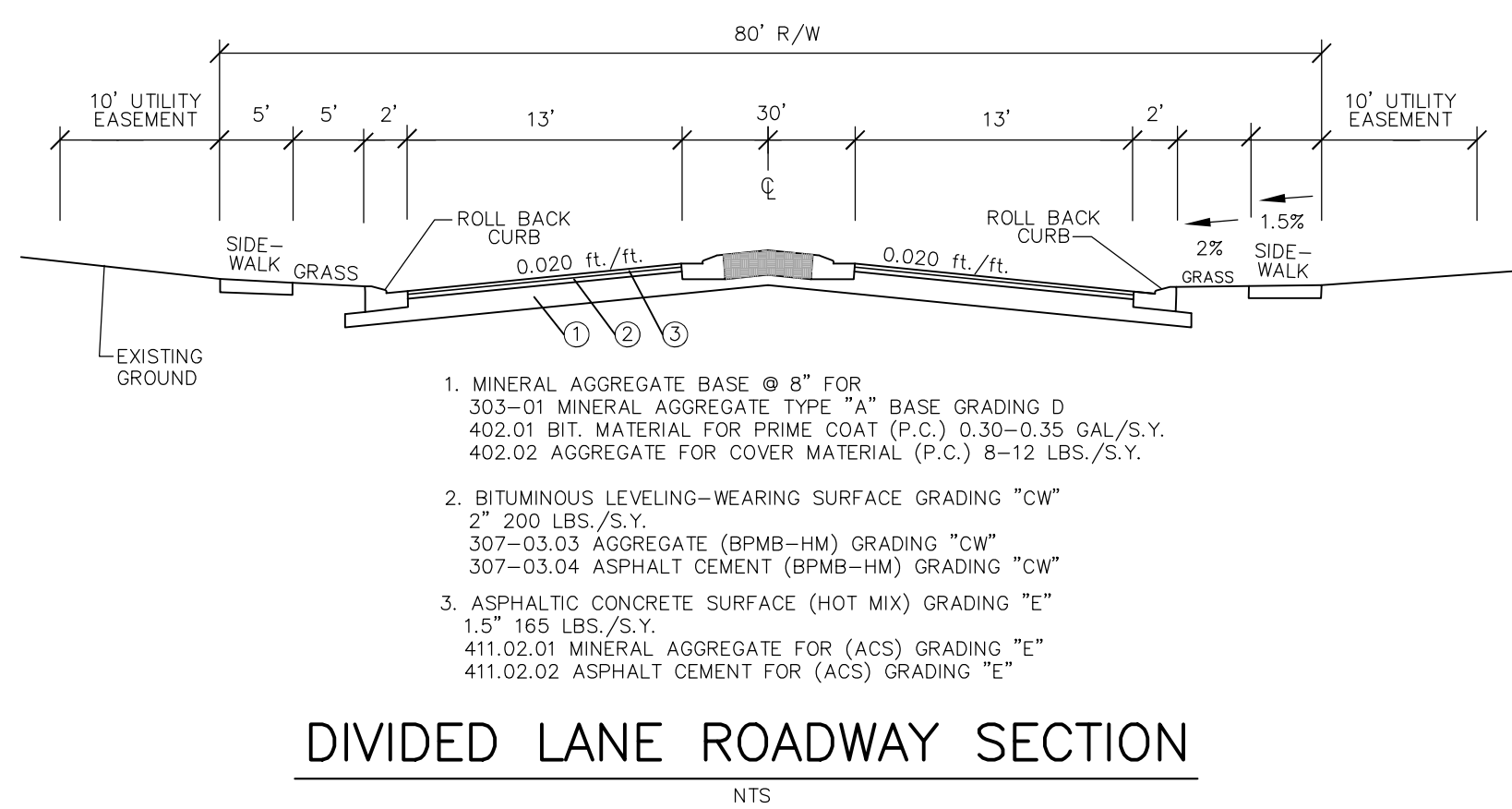
TYPICAL ROADWAY SECTION

NTS



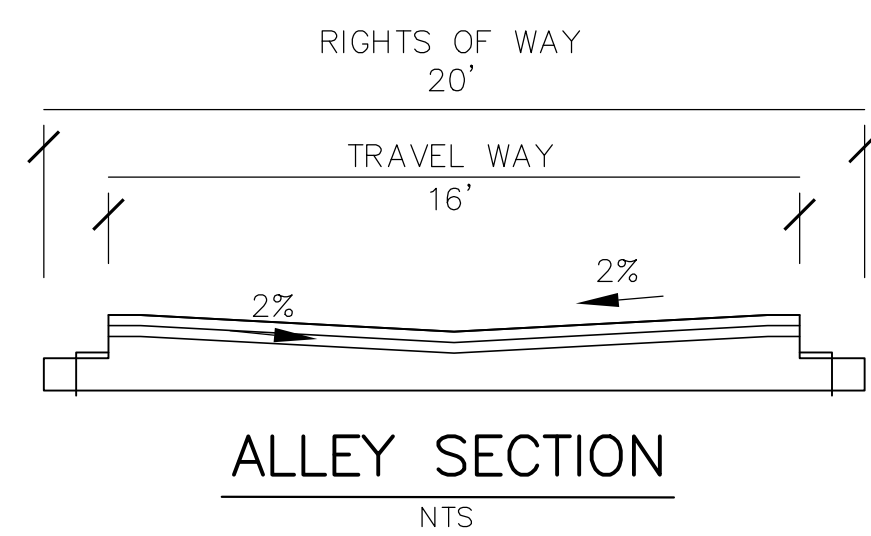
ALLEY LOTS ROADWAY SECTION

NTS



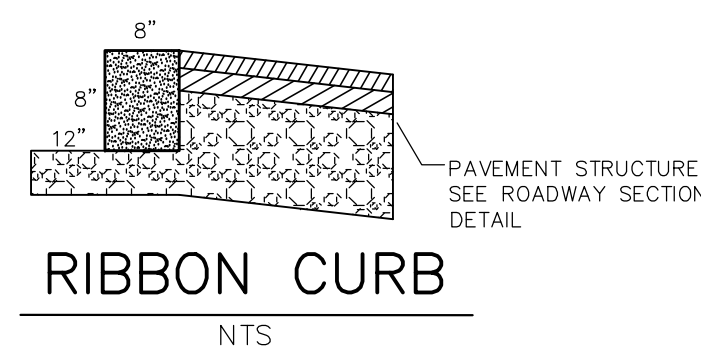
DIVIDED LANE ROADWAY SECTION

NTS



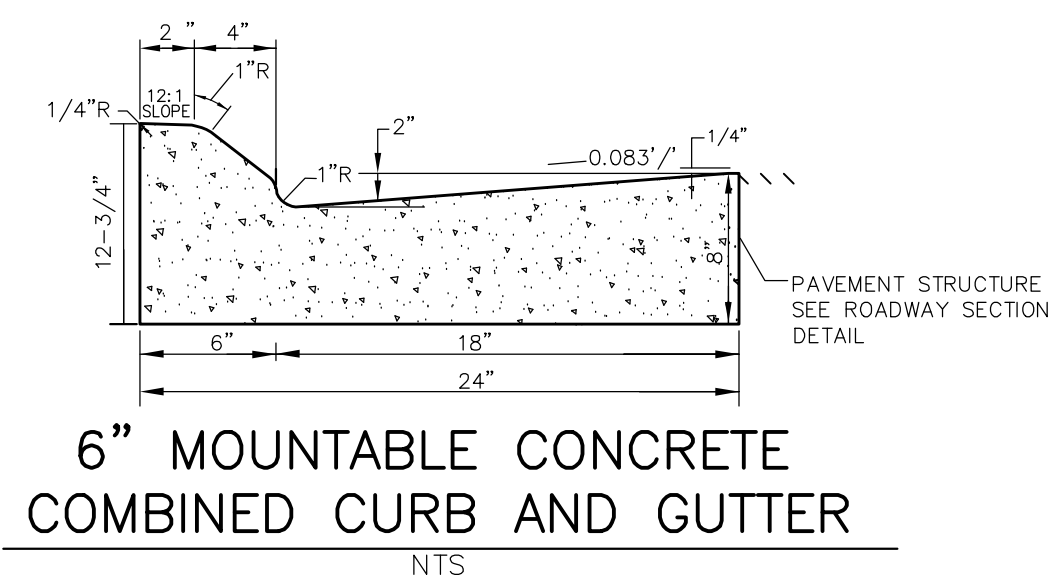
ALLEY SECTION

NTS



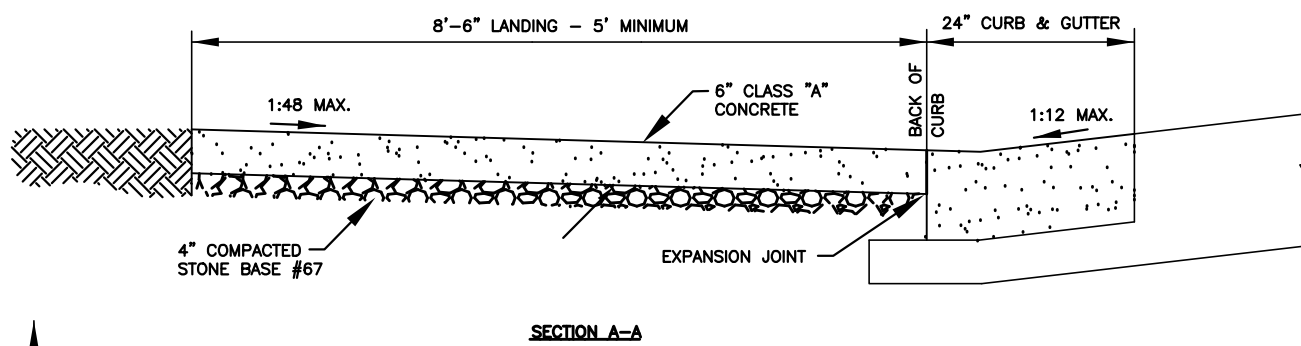
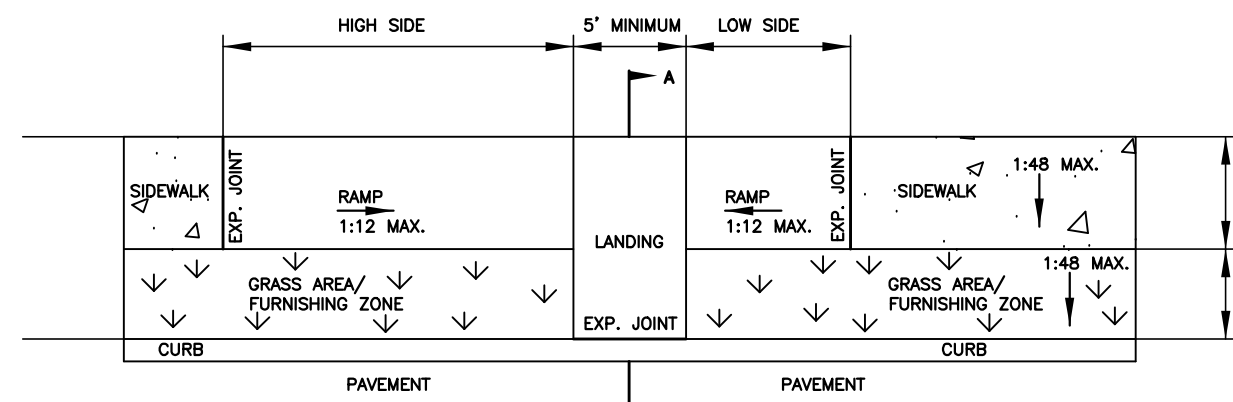
RIBBON CURB

NTS



6" MOUNTABLE CONCRETE COMBINED CURB AND GUTTER

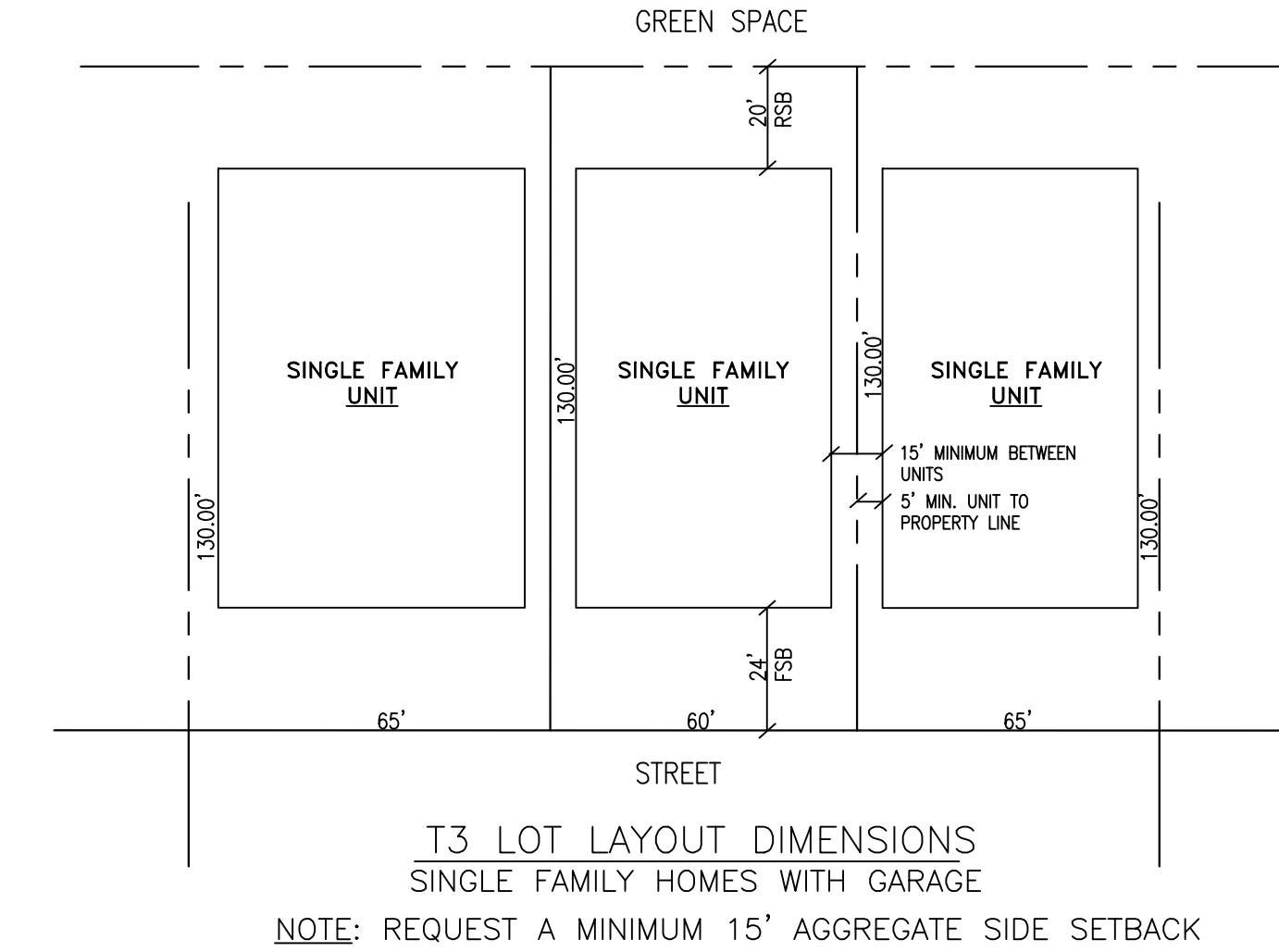
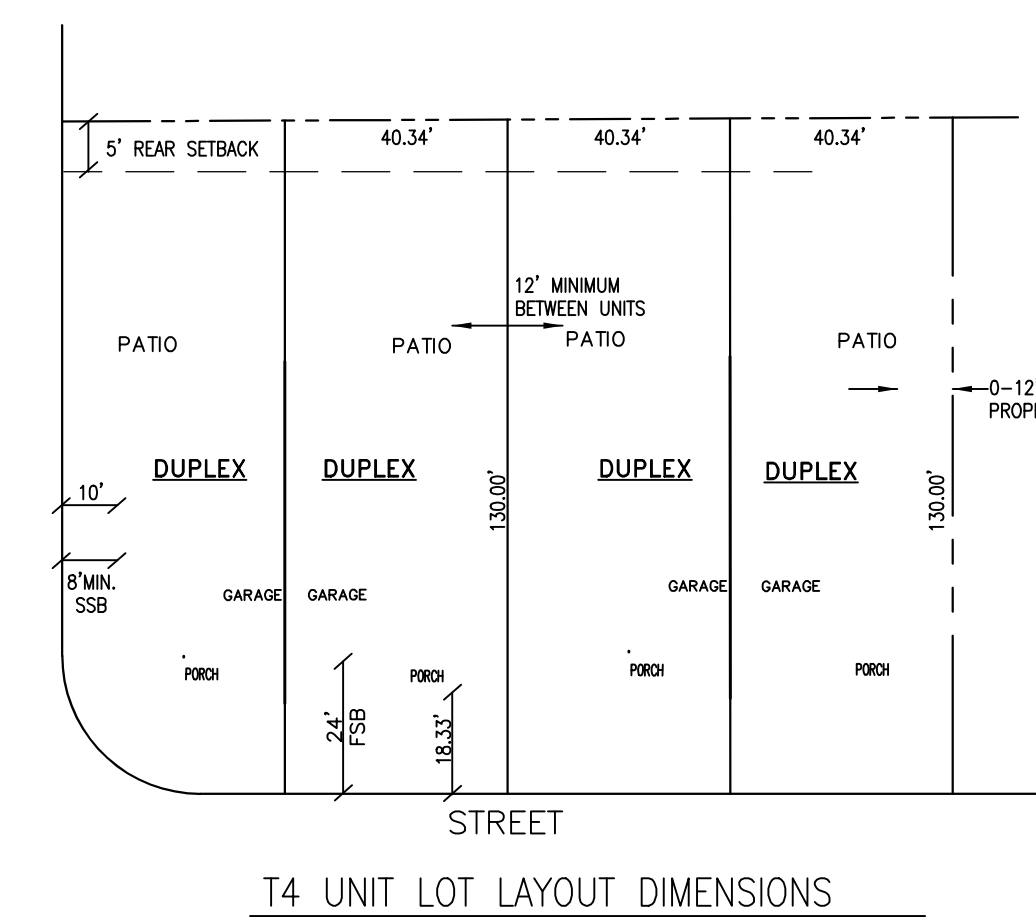
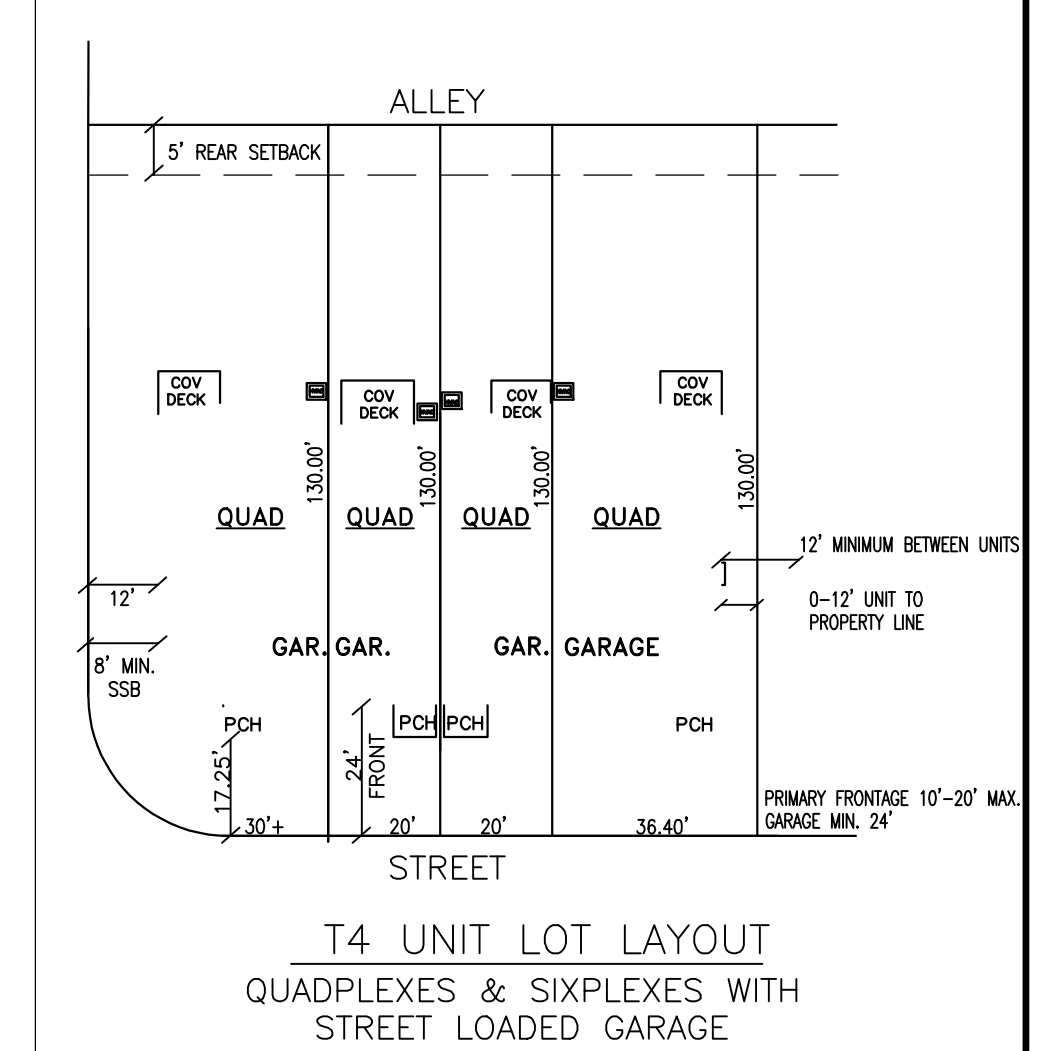
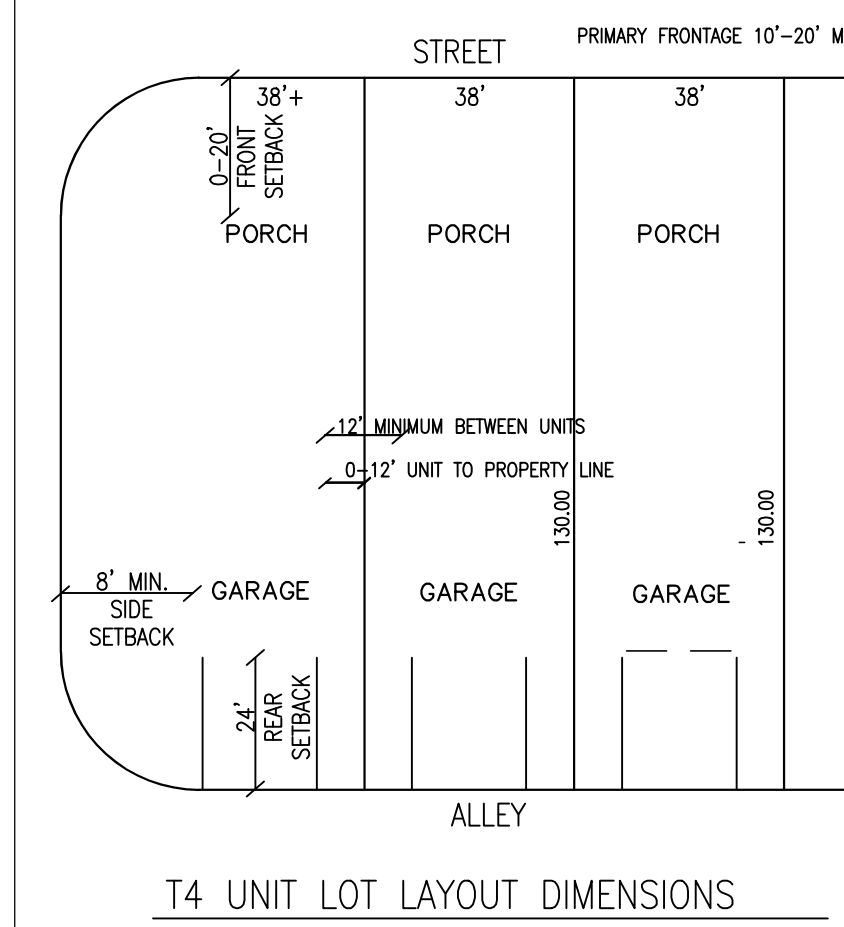
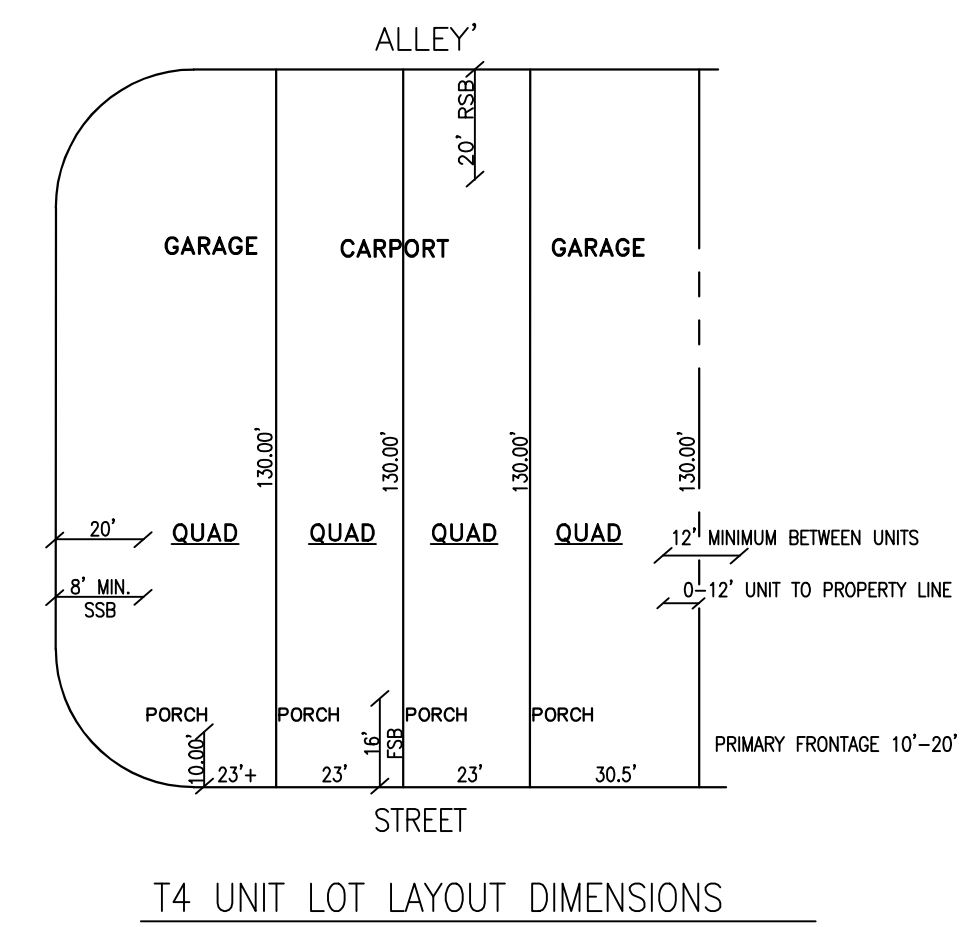
NTS



SIDEWALK

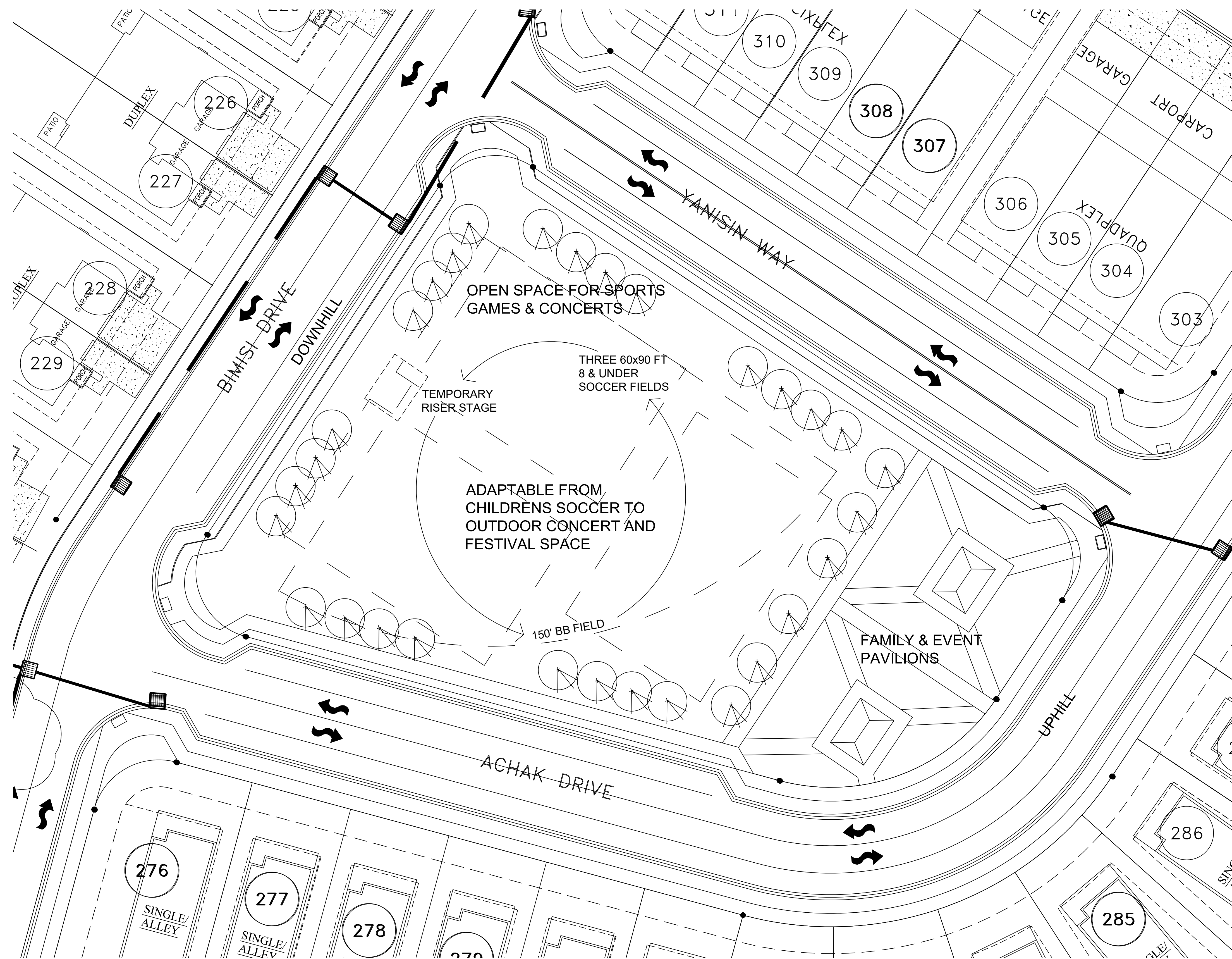
NTS

- GENERAL NOTES
- LANDING SHALL BE FLUSH WITH THE EDGE OF PAVEMENT.
 - SURFACE TEXTURE OF THE CURB RAMP SHALL BE STABLE, FIRM AND SLIP-RESISTANT. THE SURFACE SHALL BE COARSE BROOMED FINISH TRANSVERSE TO THE SLOPE OF THE RAMP.
 - BACK OF CURB HEIGHT ALONG RAMP SHALL TRANSITION FROM 0 INCHES AT EXPANSION JOINTS TO 6 INCHES AT LANDING AND SHALL BE A CONSTANT HEIGHT OF 6 INCHES THROUGH LANDING. CROSS-SLOPE (BACK TO FRONT) OF TOP OF BACK CURB SHALL BE THE SAME AS SIDEWALK CROSS-SLOPE.
 - HIGH SIDE AND LOW SIDE RAMP SHALL HAVE A MAXIMUM SLOPE OF 1:12 (VERTICAL-HORIZONTAL) AND SHALL NOT BE REQUIRED TO EXCEED 8 FEET (96 INCHES) IN LENGTH.



DETAILS

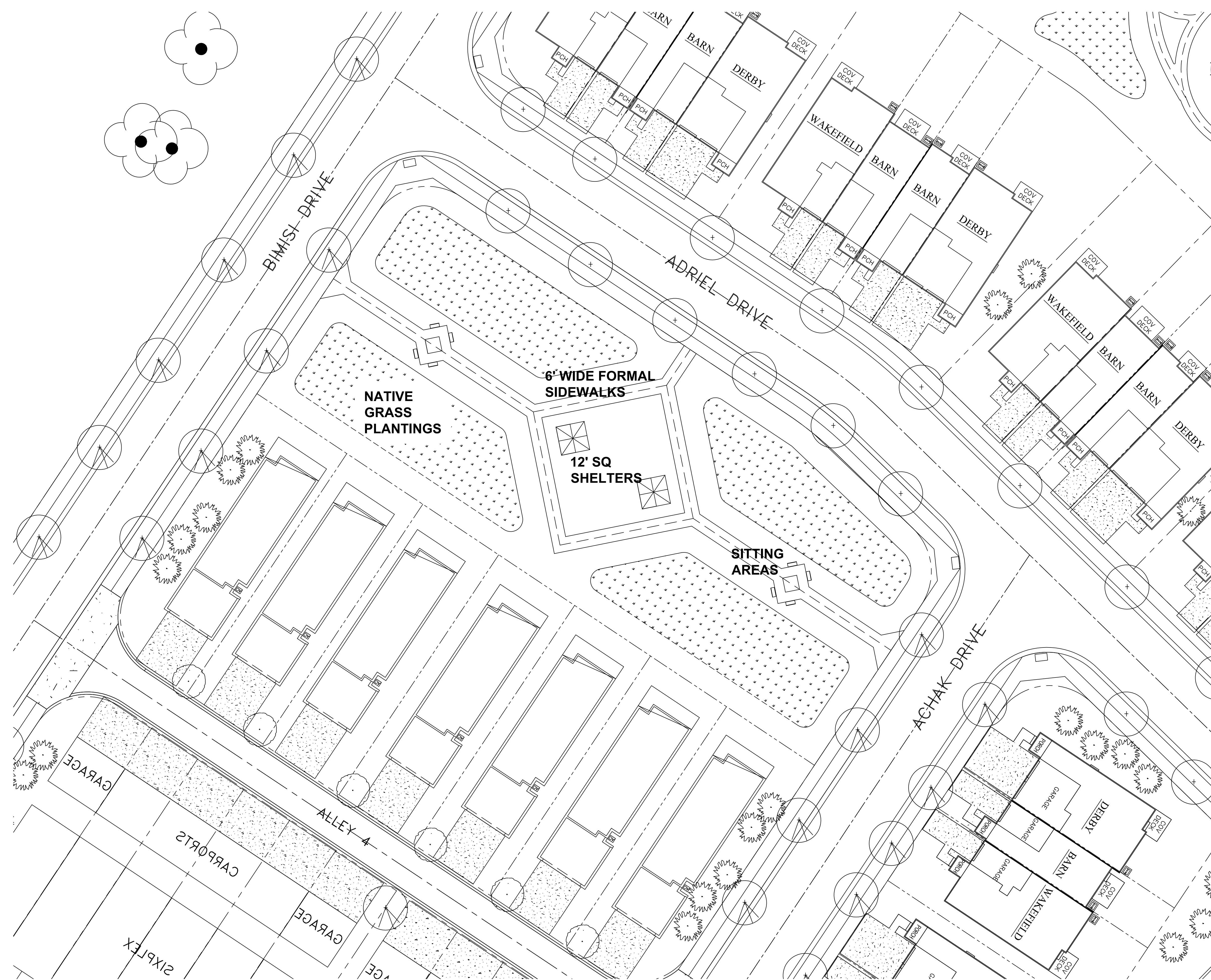
PRELIMINARY PLAT
PLEASANT CREEK
TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958



CIVIC SPACE 1
 SQUARE MULTIPURPOSE ADAPTABLE RECREATION SPACE
 SCALE 1"=20'

PRELIMINARY PLAT
 PLEASANT CREEK

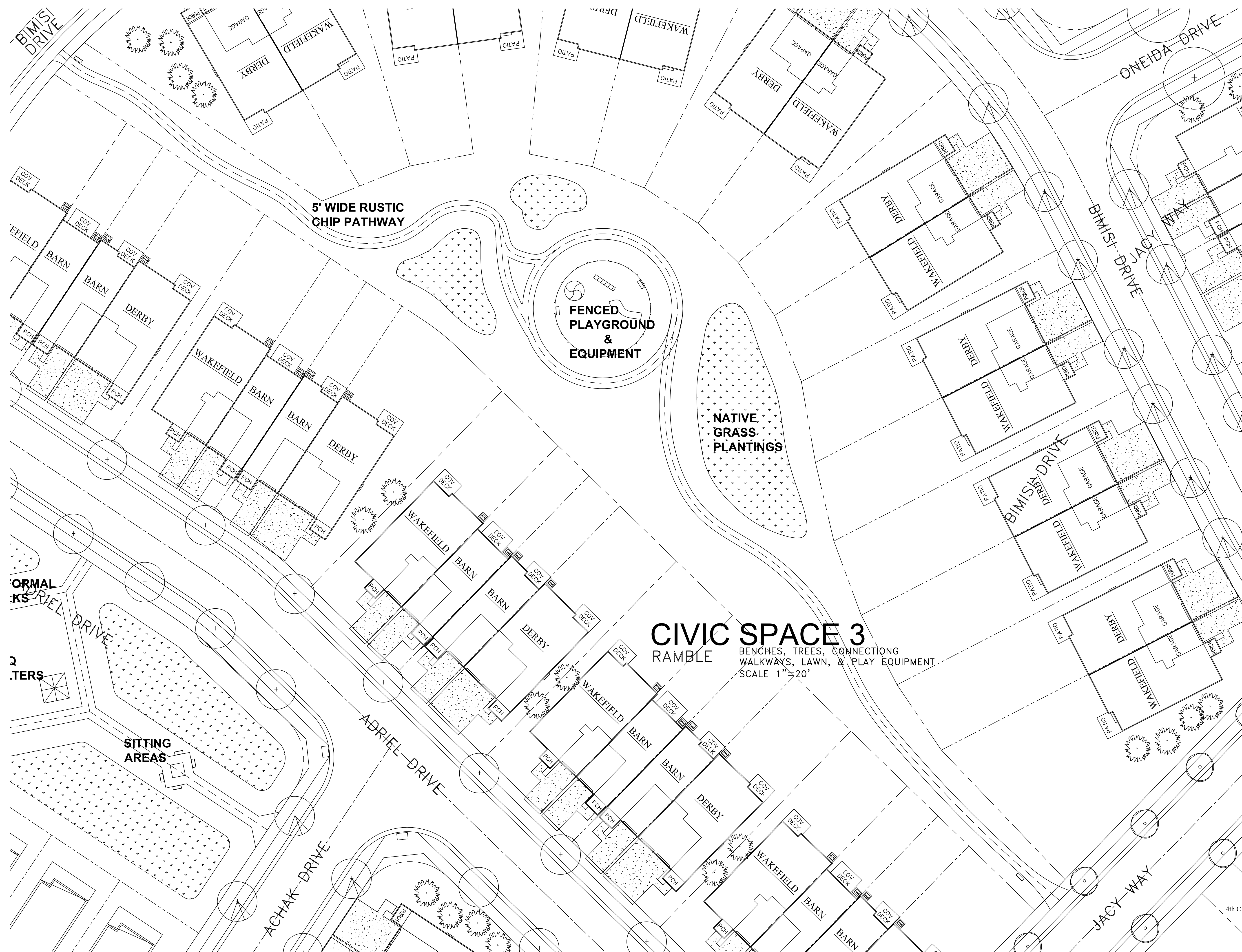
PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
 SUITE 230
 FRANKLIN, TN 37064
 PHONE (615) 238-4958
 TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE



CIVIC SPACE 2
 SQUARE FORMAL DESIGN W/BENCHES,
 TREES, SIDEWALKS, LAWN
 SCALE 1"=20'

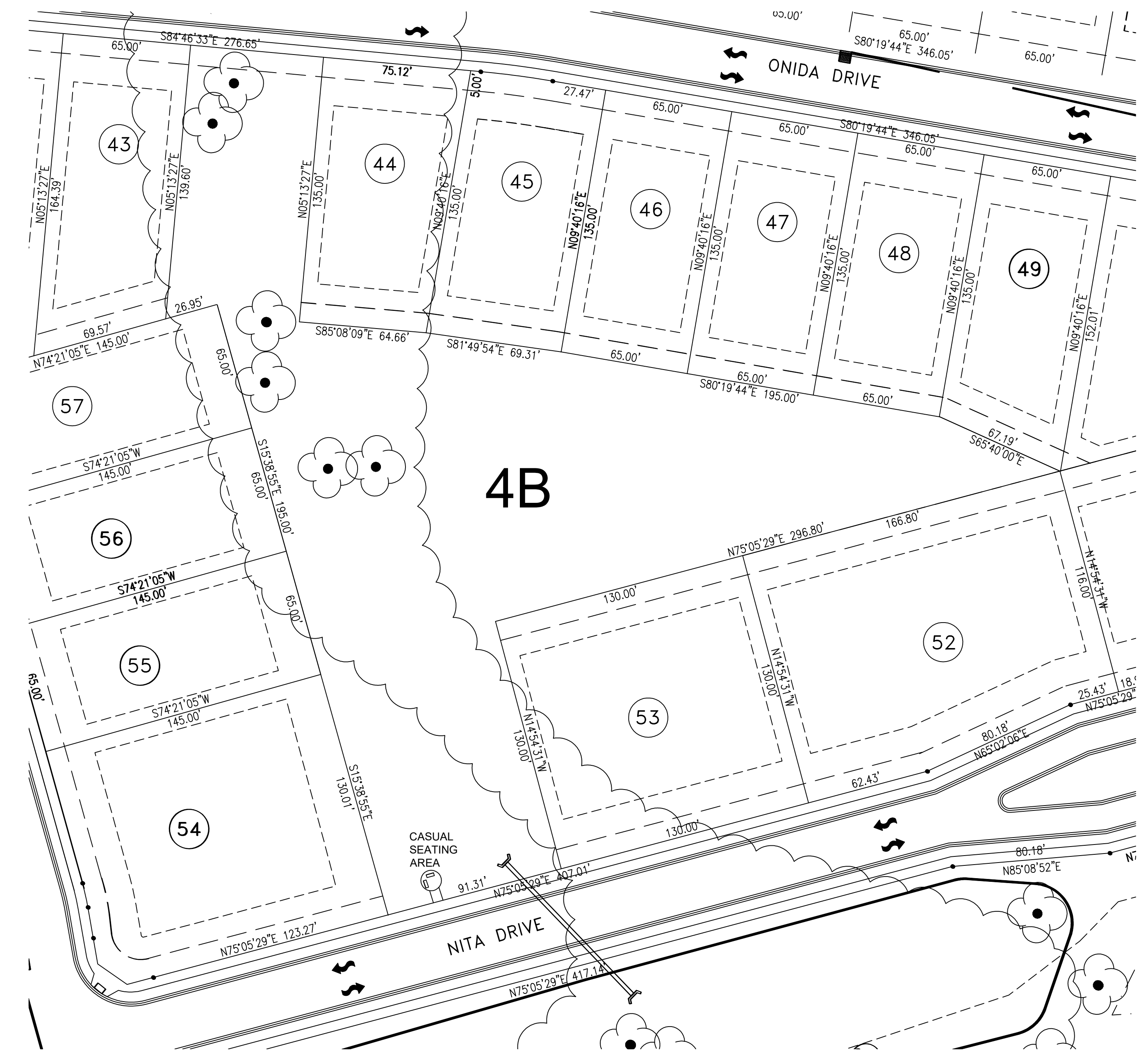
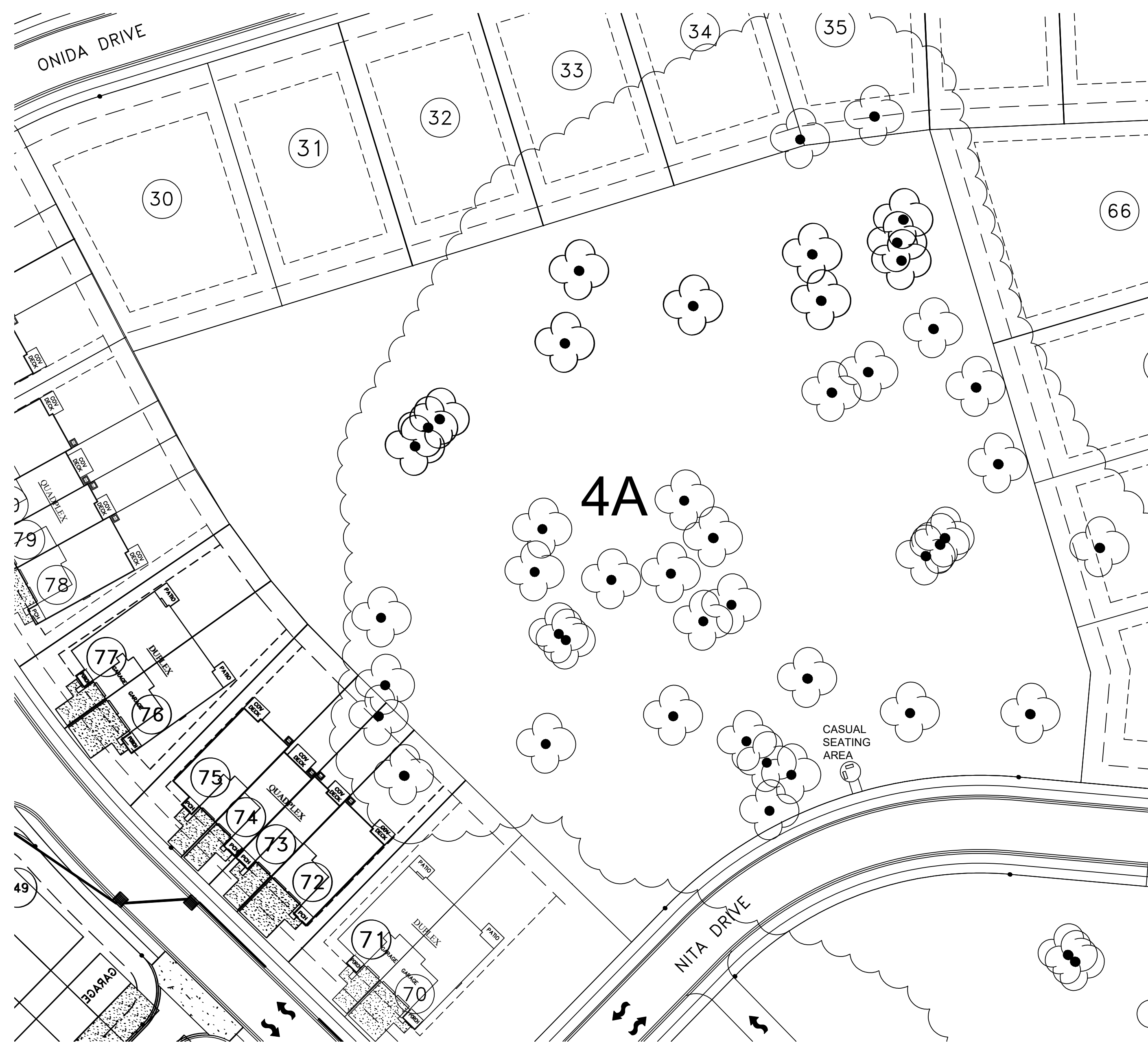
**PRELIMINARY PLAT
 PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
 4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
 PLEASANT CREEK INVESTMENTS, LLC
 144 SOUTHEAST PARKWAY
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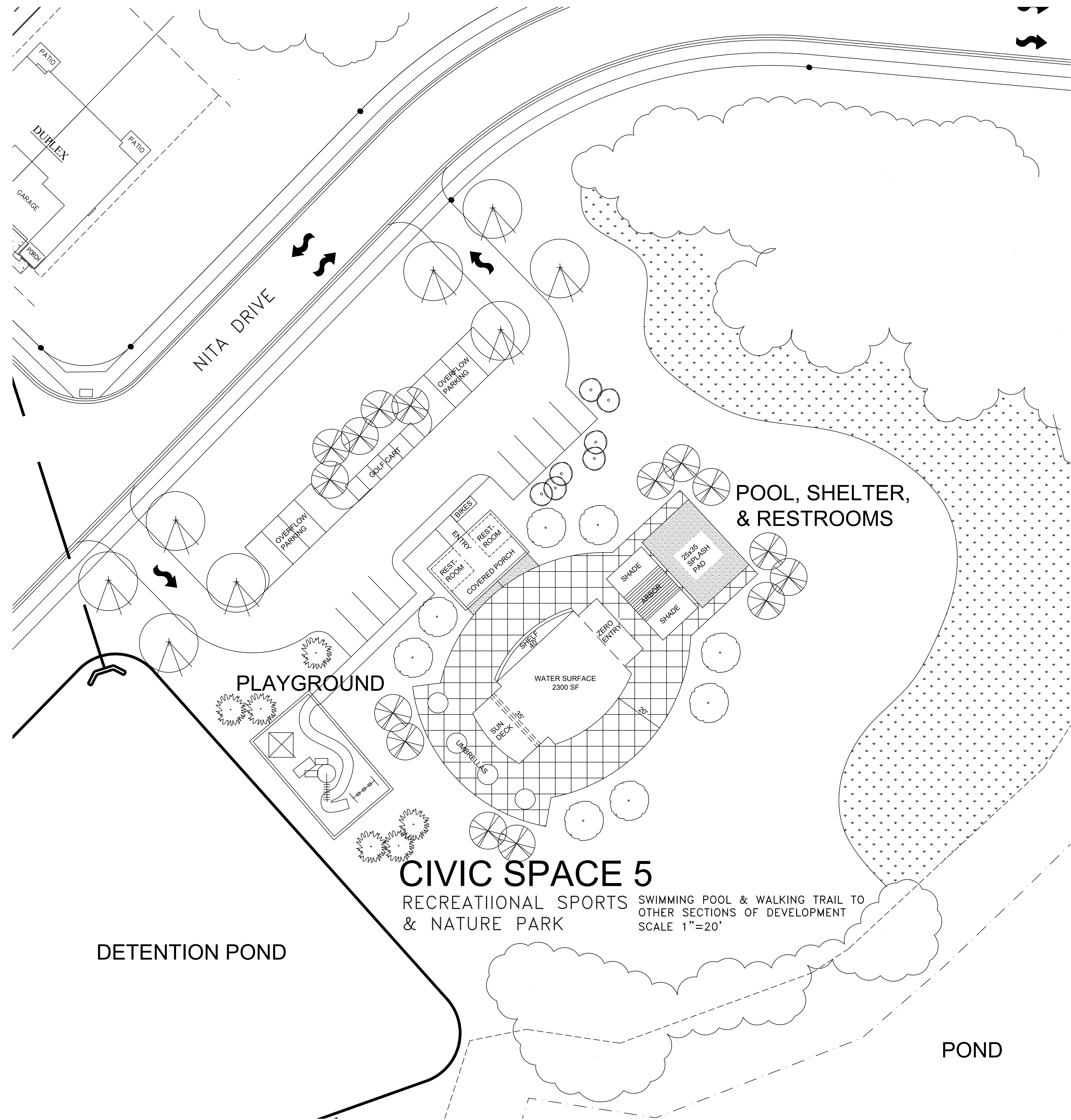
CIVIC SPACE 3
 RAMBLE
 BENCHES, TREES, CONNECTIONG
 WALKWAYS, LAWN, & PLAY EQUIPMENT
 SCALE 1"=20'

PRELIMINARY PLAT
PLEASANT CREEK
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CIVIC SPACES 4A & 4B
 PARKS UNDEVELOPED AREAS HANDLING DRAINAGE
 ACROSS THE SITE CONTAINING A FEW
 BENCHES AND PATCHES OF LAWN
 SCALE 1"=40'

PRELIMINARY PLAT
 PLEASANT CREEK
 TOWN OF THOMPSON'S STATION,
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DETENTION POND

PLAYGROUND

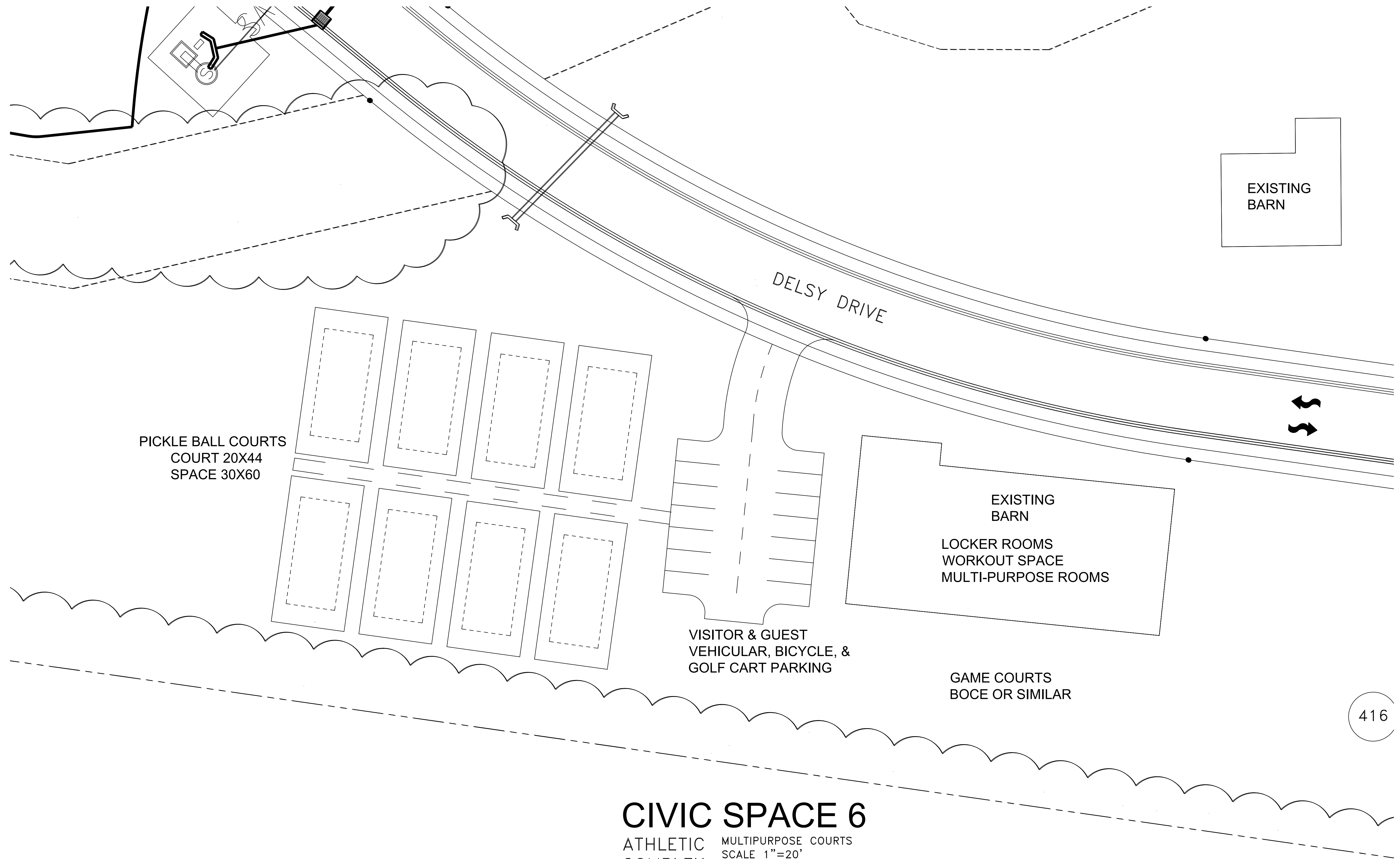
POOL, SHELTER,
& RESTROOMS

CIVIC SPACE 5

RECREATIONAL SPORTS & NATURE PARK
SWIMMING POOL & WALKING TRAIL TO
OTHER SECTIONS OF DEVELOPMENT
SCALE 1"=20'

POND

PRELIMINARY PLAT
PLEASANT CREEK
TOWN OF THOMPSON'S STATION,
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144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958



PICKLE BALL COURTS
COURT 20X44
SPACE 30X60

DELSY DRIVE

EXISTING
BARN

EXISTING
BARN
LOCKER ROOMS
WORKOUT SPACE
MULTI-PURPOSE ROOMS

VISITOR & GUEST
VEHICULAR, BICYCLE, &
GOLF CART PARKING

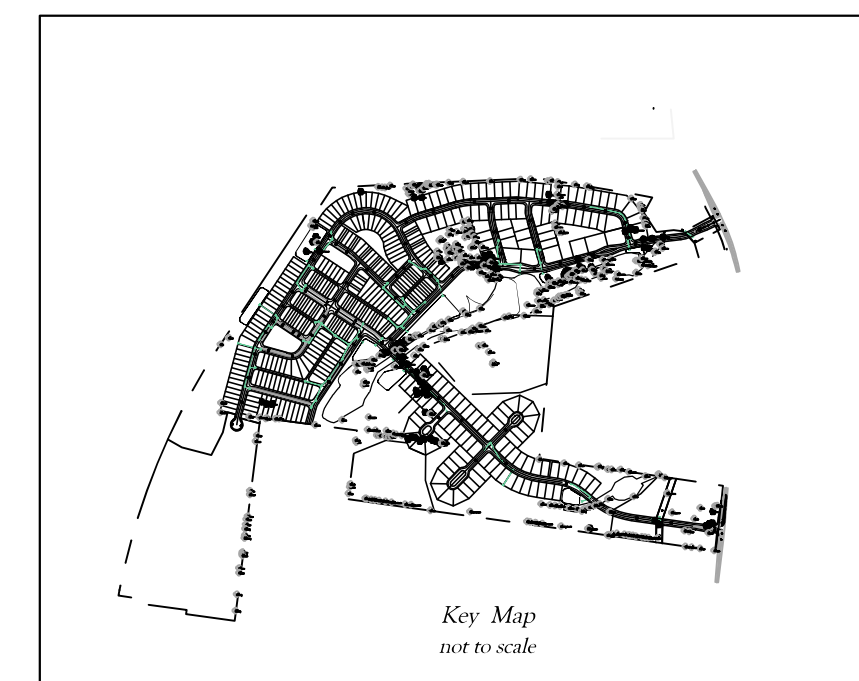
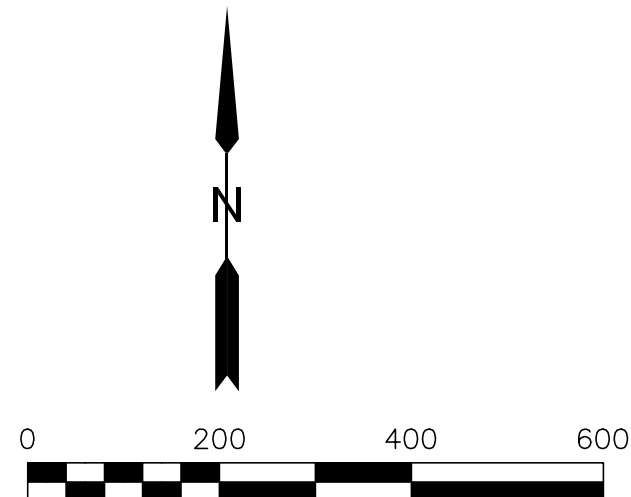
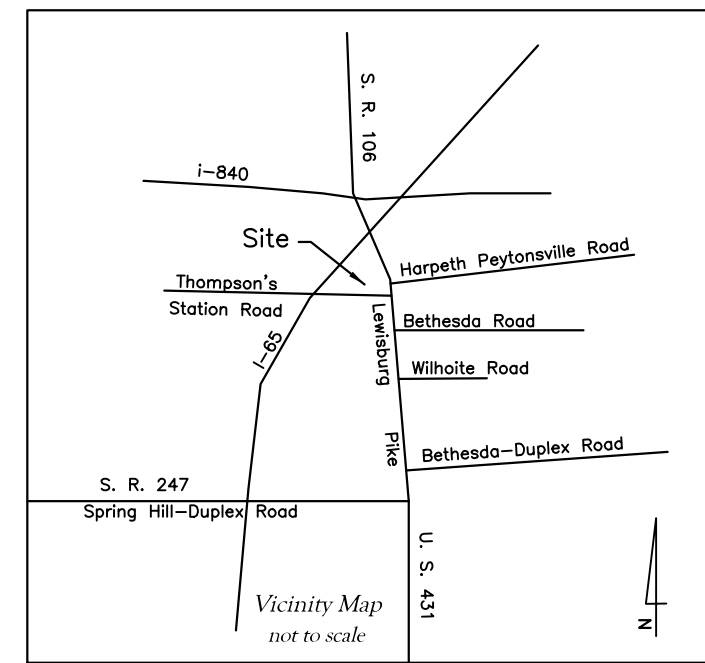
GAME COURTS
BOUCE OR SIMILAR

416

CIVIC SPACE 6
ATHLETIC COMPLEX
MULTIPURPOSE COURTS
SCALE 1"=20'

PRELIMINARY PLAT
PLEASANT CREEK

PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958
TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE



TREE PLANTING PLAN NOTES

1. THIS PLAN REPRESENTS THE GENERAL APPEARANCE OF A FINAL PLANTING PLAN THAT WILL OCCUR AS EACH SECTION IS BUILT OUT.
2. THE FINAL PLAN AT A LARGER SCALE WILL MEET OR EXCEED THE REQUIRED TREE REPLACEMENT NUMBER.
3. STREET OR CANOPY TREES WILL BE PLANTED AN AVERAGE OF 50' ON CENTER THROUGHOUT THE PROJECT WHERE SPACE IS SUFFICIENT BETWEEN THE CURB AND SIDEWALK.
4. IN OTHER AREAS TREES WILL BE PLACED BEHIND THE SIDEWALK.
5. WHERE ELECTRICAL OR OTHER UTILITIES ABOVE OR BELOW GROUND CREATE OBSTACLES TO CANOPY TREE PLANTING, UNDERSTORY TREES WILL BE PLANTED.
6. THE PROJECT WILL MEET ALL TREE, SHRUB, AND LANDSCAPE REQUIREMENTS OF THE CITY OF THOMPSON'S STATION.
7. A MINIMUM OF 6 DIFFERENT CANOPY TREES AND 4 DIFFERENT UNDERSTORY TREES WILL BE PLANTED AT THIS TRANSECT DEVELOPMENT.
8. IN THE T-3 DISTRICT, 2 TREES SHALL BE PLANTED WITHIN THE FRONT SETBACK. (P117 LDO)
9. IN THE T-4 DISTRICT, 1 UNDERSTORY TREE SHALL BE PLANTED WITHIN THE FRONT SETBACK. (P117 LDO)
10. FINAL PLANT SELECTION MAY VARY WITH GROWER AVAILABILITY AT THE TIME OF CONSTRUCTION.



LINE BEARING	DISTANCE
L1 N82°11'15"W	405.98'
L2 N07°48'45"E	135.00'
L3 N82°11'15"W	400.00'
L4 N07°48'45"E	40.00'
L5 N82°11'15"W	172.00'

THOMPSON STATION ROAD

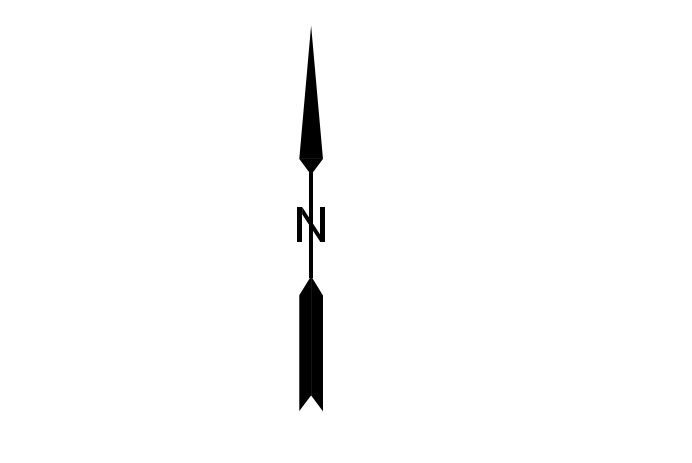
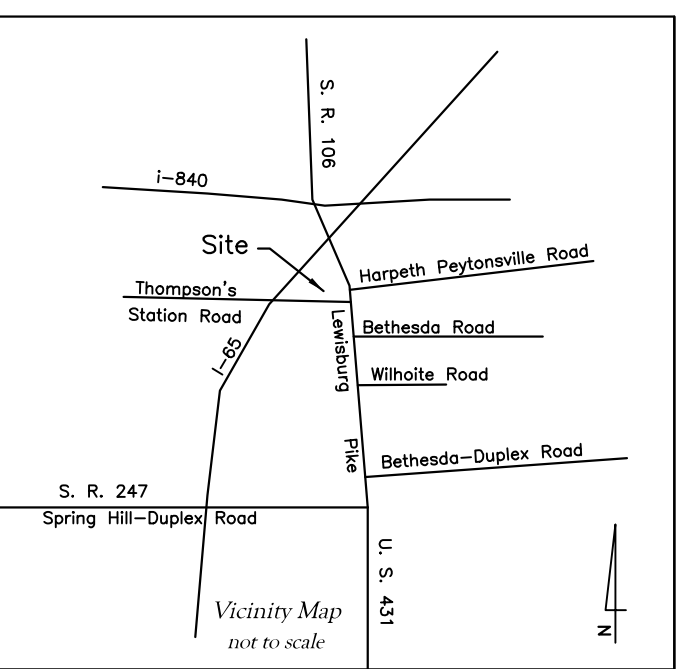
HIGHWAY 431
(60' R.O.W.)

TREE PLANTING PLAN

**PRELIMINARY PLAT
PLEASANT CREEK**

TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHEAST PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

Point	Description	Point	Description	Point	Description	Point	Description	Point	Description
1	40 oak	51	22 hack	101	32 hack	151	20 maple	201	30 maple
2	40 oak	52	24 hack	102	24 hack	152	20 maple	202	20 oak
3	40 oak	53	24 hack	103	32 hack	153	20 maple	203	20 oak
4	40 oak	54	24 hack	104	24 hack	154	20 maple	204	20 oak
5	40 oak	55	24 hack	105	24 hack	155	20 maple	205	20 oak
6	20 pine	56	24 hack	106	24 locust	156	20 maple	206	28 beech
7	22 maple	57	24 hack	107	20 hack	157	20 maple	207	28 oak
8	20 walnut	58	24 oak	108	36 hack	158	22 hack	208	30 sycamore
9	20 maple	59	36 hack	109	24 hack	159	22 hack	209	28 sycamore
10	20 maple	60	22 oak	110	20 cherry	160	22 oak	210	28 sycamore
11	22 maple	61	30 oak	111	36 oak	161	24 oak	211	28 maple
12	20 maple	62	30 oak	112	40 osage	162	20 sycamore	212	34 oak
13	22 maple	63	22 oak	113	20 oak	163	28 oak	213	42 oak
14	22 maple	64	22 oak	114	min	164	48 hack	214	20 oak
15	20 hack	65	48 oak	115	24 hack	165	20 hack	215	30 maple
16	24 hack	66	22 oak	116	20 hack	166	20 hack	216	28 oak
17	24 hack	67	20 oak	117	20 hack	167	20 hack	217	30 oak
18	24 hack	68	20 oak	118	22 hack	168	20 oak	218	34 oak
19	24 hack	69	20 oak	119	28 maple	169	20 hack	219	3-20 oak
20	18 sycamore	70	30 oak	120	48 oak damaged	170	22 beech	220	30 oak
21	26 sycamore	71	20 oak	121	36 oak	171	39 sycamore	221	20 oak
22	26 oak	72	20 cherry	122	24 hack	172	20 oak	222	22 oak
23	18 oak	73	22 oak	123	30 oak	173	30 sycamore	223	20 oak
24	40 oak	74	22 hickory	124	26 oak	174	20 cherry	224	26 oak
25	30 hack	75	22 oak	125	24 sycamore	175	24 sycamore	225	24 oak
26	30 hack	76	22 oak	126	24 oak	176	30 oak	226	28 oak
27	30 hack	77	22 oak	127	30 maple	177	39 oak	227	20 oak
28	30 hack	78	32 oak	128	24 hack	178	24 oak	228	22 oak
29	30 hack	79	24 hack	129	20 oak	179	20 hack	229	24 oak
30	20 hack	80	22 oak	130	20 oak	180	2-20 oak	230	26 sycamore
31	20 hack	81	22 oak	131	20 oak	181	48 oak	231	28 oak
32	20 hack	82	30 oak	132	24 hack	182	20 oak	232	22 oak
33	24 hack	83	22 oak	133	28 hack	183	24 oak	233	24 oak
34	20 hack	84	20 sycamore	134	24 hack	184	20 maple	234	24 oak
35	20 hack	85	60 sycamore	135	24 hack	185	30 maple	235	20 oak
36	30 hack	86	50 oak	136	36 hack	186	22 oak	236	28 oak
37	20 hack	87	24 hack	137	24 oak	187	24 oak	237	20 hack
38	32 hack	88	36 oak	138	24 oak	188	30 beech	238	20 oak
39	32 hack	89	24 oak	139	24 oak	189	3-20 sycamore	239	20 oak
40	30 hack	90	24 oak	140	26 oak	190	30 sycamore	240	20 oak
41	30 hack	91	20 hack	141	22 oak	191	22 oak damaged	241	20 oak
42	30 hack	92	30 locust	142	22 oak	192	24 hack	242	20 sycamore
43	24 hack	93	20 hack	143	24 hack	193	32 hickory	243	26 sycamore
44	24 hack	94	24 oak	144	24 hack	194	30 cmp	244	22 sycamore
45	20 hack	95	24 oak	145	32 oak	195	20 oak	245	20 oak
46	20 hack	96	20 locust	146	24 oak	196	2-20 oak	246	32 beech
47	20 hack	97	24 locust	147	22 oak	197	20 beech	247	22 oak
48	24 hack	98	24 hack	148	24 hack	198	24 hack	248	22 hack
49	48 hack	99	32 hack	149	24 beech	199	24 oak	249	24 oak
50	22 hack	100	32 hack	150	20 oak	200	3-30 sycamore	250	28 hack
						300	20 hack	350	38 hack
						400	20 hack	400	20 hack



Point#	Description	Point#	Description
7	22 maple	222	22 oak
8	20 walnut	223	20 oak
9	20 maple	224	26 oak
10	20 maple	225	24 oak
11	22 maple	226	26 oak
18	24 hack	235	20 oak
23	36 oak	289	20 sycamore
38	32 hack	290	36 oak
68	20 oak	291	20 oak
70	30 oak	292	28 sycamore
71	20 oak	306	22 hack
72	20 cherry	307	20 cedar
73	22 oak	308	22 oak
74	22 hickory	311	20 oak
76	22 oak	312	24 oak
77	22 oak	313	22 oak
78	32 oak	314	20 oak
115	24 hack	315	24 oak
116	20 hack	316	22 hack
118	22 hack	318	20 hack
119	26 maple	332	22 oak
120	48 oak damaged	333	22 oak
122	24 hack	334	22 maple
123	30 oak	335	20 oak
136	36 hack	336	24 oak
137	24 oak	337	24 oak
138	24 oak	338	24 oak
142	22 oak	339	20 maple
145	32 oak	340	28 oak
165	20 hack	342	24 hickory
169	20 hack	343	20 oak
170	22 beech	344	24 oak
171	30 sycamore	345	34 oak
176	30 oak	386	20 maple
187	24 oak	387	20 oak
188	30 beech	388	32 hickory
189	3-20 sycamore	389	32 oak
190	30 sycamore	391	20 oak
191	22 oak damaged	392	20 oak
192	24 hack	395	24 oak
193	32 hickory	396	28 oak
195	30 cmp	408	20 oak
213	42 oak	428	30 oak
215	30 maple	441	20 hack
216	28 oak	442	20 hack
218	34 oak	444	20 hack
219	3-20 oak	Total Inches	2,308

LINE BEARING	DISTANCE
L1 N82°11'15" W 405.96'	
L2 N07°48'45" E 35.00'	
L3 N87°11'15" W 400.00'	
L4 N07°48'45" E 40.00'	
L5 N82°11'15" W 173.00'	



**PRELIMINARY PLAT
PLEASANT CREEK**
TOWN OF THOMPSON'S STATION,
4th CIVIL DISTRICT WILLIAMSON COUNTY, TENNESSEE
PLEASANT CREEK INVESTMENTS, LLC
144 SOUTHAIR PARKWAY
SUITE 230
FRANKLIN, TN 37064
PHONE (615) 238-4958

TREE REMOVAL PLAN

**Thompson's Station Planning Commission
Staff Report – Item 2 (Rezone 2020-002)
October 26, 2020**

Amend the Zoning Map to Zone 4.45 acres for as part of an annexation approved by the BOMA to the Graystone Quarry SP zoning.

PROJECT DESCRIPTION

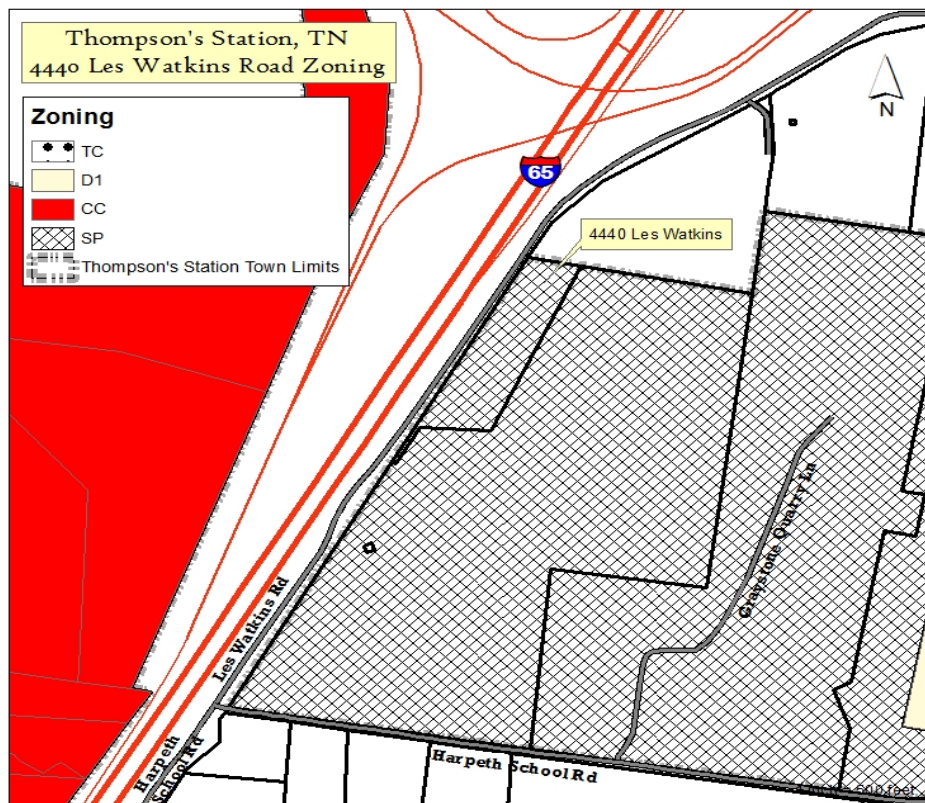
In June, an Annexation and Plan of Services was approved to add the property at 4440 Les Watkins Road into the Town boundaries. Per the approved Plan of Services for this annexation, the zoning of the property was slated to occur after the certification of the annexation referendum:

A. Planning & Codes Services

...

2. All planning and zoning jurisdiction of the Town will extend to the annexed area on the effective date of annexation. The appropriate zoning for the site shall be considered by the Planning Commission after the effective date of the annexation by referendum of this property (i.e. certification by the Williamson County Election Commission thirty (30) days after the referendum vote).

Since the referendum has been certified by the County Election Commission, the Planning Commission may now recommend the appropriate zoning for this property. The parcel is part of the overall Graystone Quarry property.



PURPOSE OF A ZONING REZONING REQUEST

Changing the zoning of a particular parcel will allow the owner of the parcel to develop or use their property based on the corresponding use table within the Land Development Ordinance (Table 4.1 Land Use and Building Type). The Planning Commission is to evaluate the request based on the General Plan and make a formal recommendation to the Board of Mayor and Aldermen. The recommendation can be one of denial or approval.

ZONING

The subject site is currently un-zoned due to the annexation. It is located within the G1 – Controlled Growth sector of the General Plan. The property is bounded to the east by Les Watkins Road and State Route 840, north by residential uses located within Williamson County, to the west and south by vacant land zoned Specific Plan within the Town.

ANALYSIS

The subject property is a platted part of the overall Graystone Quarry development and is located along Les Watkins Road, east of Interstate 65. The site is predominantly vacant with a single family home on site. Since the parcel is part of the overall Graystone Quarry property, it is appropriate to expand the Graystone Quarry SP zoning to include this newly annexed parcel. Although this zoning district is not an option for a zoning map amendment in ordinary circumstances, since this parcel is combined with the larger Graystone development plan, the zoning of this parcel to SP would, in effect, cure the prospect of a newly created split-zoned tract. Split-zoned tracts or parcels are not a best practice for zoning purposes. Additionally, since there are no other zones in proximity and the interstate ROW bounds the western side of the property, extending the SP zone is recommended.

RECOMMENDATION

Staff recommends the Graystone Quarry SP zoning district be extended to zone this property.

ATTACHMENTS

Annexation Plan of Services

PORPOSED RESOLUTION NO. 2020-009

EXHIBIT A: Plan of Services for 4440 Les Watkins Road

A. Police

1. The same regular police protection service now provided within the Town will be extended to the annexed area on the effective date of annexation thirty (30) days after a successful referendum vote. Patrolling, radio responses to calls, and other routine police services, using present personnel and equipment, will be provided on the effective date of annexation per
2. Traffic signs, traffic signals and other street (road) traffic control markings and devices will be installed as the need therefore is established by appropriate study and traffic standards.
3. The Williamson County Sheriff's Department currently provides the aforementioned services to the Town through an interlocal agreement.

B. Fire

The same regular fire protection service now provided within the Town will be extended to the annexed area on the effective date of annexation.

C. Sewers

1. Sanitary sewers will be provided at a time when the density and/or type of development in the annexation area are such as to amortize the cost of sewer installation, without causing an increase in sewer rates for the entire sewer system.
2. The developer as required to serve subsequent developments will complete construction of sanitary sewers in the area.
3. The annexation area currently has septic sewer service on site to serve the one (1) house. This will continue until there is further development.

D. Utilities

The applicant shall be responsible for contacting all utility providers and establishing service. Currently, HB&TS provides water, Atmos Energy provides natural gas, and MTEMC provides electricity to the annexation area, and that is not anticipated to change.

E. Streets

1. Emergency maintenance of streets (repair of chuckholes, measures necessary for traffic flow, etc.) in the annexed area will begin after the effective date of annexation.
2. Routine maintenance of the roads and rights-of-way will begin in the annexed area

PORPOSED RESOLUTION NO. 2020-009

EXHIBIT A: Plan of Services for 4440 Les Watkins Road

once development of the annexed area occurs.

3. The governing body under current policies of the Town will determine the scheduling of any major paving activity in the annexed area.
4. Street name signs, where needed, will be installed in the substantially developed area in accordance with the current policies of the Town.

F. Planning & Codes Services

1. All codes inspection services now provided by the Town will begin in the annexed area and apply to new construction and substantial improvements after the effective date of annexation.
2. All planning and zoning jurisdiction of the Town will extend to the annexed area on the effective date of annexation. The appropriate zoning for the site shall be considered by the Planning Commission after the effective date of the annexation by referendum of this property (i.e. certification by the Williamson County Election Commission thirty (30) days after the referendum vote).

G. Recreation

Residents of the annexed area and all future residents may utilize all existing municipal recreational facilities on the effective date of annexation by referendum under the same policies and guidelines governing current town residents.

H. Schools

There will be no effect upon the school system for the Town as the school system is operated by Williamson County. The property has one (1) residence that is currently being used for rental purposes. The nearest schools to this property are

I. Tax Assessor

The impact of the annexation to the Tax Assessor would be minimal to none.

J. Animal Control

This service is provided by the County, so the impact would be none.

K. Cemetery

There should be no impact as the Town does not operate a local cemetery.

Phone: (615) 794-4333
Fax: (615) 794-3313
www.thompsons-station.com



1550 Thompson's Station Road W.
P.O. Box 100
Thompson's Station, TN 37179

MEMO

DATE: October 20, 2020
TO: Planning Commissioners
FROM: Micah Wood, AICP Interim Town Planner
SUBJECT: Advisory Opinion for BZA Request

Request & Background

A BZA meeting is scheduled for November 4, 2020, at 6pm. Per Section 5.5.4(d)(iv), the Planning Commission may issue an advisory opinion on any matter before the BZA, which will be made part of the BZA's public record.

The applicant, Vogue Tower Partners has requested Administrative Review of a conflict between regulations in the LDO. The conflict is related to permitted zoning districts for wireless communications facilities in Table 4.4 Wireless Communications Facility Permitted Use Table & Section 4.11.7(b) Wireless Communications Facility Permitted Locations. This request will resolve the conflict between the sections of the LDO as to the permitted use location of a Wireless Communications Facility. The applicant's proposed location is zoned CC, which per the Permitted Use Table allows wireless communications facilities in CC zones, while the Use Condition for Wireless Communications Facility in Section 4.11(b) requires that towers are only permitted in the IM zone.

If the Planning Commission desires to submit an advisory opinion on this matter, Town Staff will include it with the BZA staff report.

Town of Thompson's Station Planning Department

P. O. Box 100
 1550 Thompson's Station Road West
 615-794-4333



General Application / Request:

File No.: _____

Applicant Information: (Please print)

Company / Business Name: Vogue Towers Partners VII, LLC

Contact: Pat Tant, CEO Phone # 1: 423-702-0313

Mailing / Street Address: 430 Chestnut Street, Suite 101-B

City, State, Zip: Chattanooga, TN 37402

E-mail: pat@voguetowers.net Phone # 2: _____

SUBDIVISIONS:

	RESIDENTIAL		NON-RESIDENTIAL
	Development Concept Presentation		Development Concept Presentation
	Single Lot Site Plan – Lot #: _____		Single Lot Site Plan – Lot #: _____
	Site Plan		Site Plan
	Preliminary Plat		Preliminary Plat
	Final Plat		Final Plat
	Revision to Final Plat		Revision to Final Plat
	Construction Drawing		Construction Drawing

SIGNS:

	Master Sign Plan / Program		Sign Permit / Review
	Billboard Sign Face Replacement		Temporary Sign Permit

OTHER:

	Annexation		Change of Use
	Rezone		Residential Business
	Temporary Use/Event permit		Home Occupation
	Special Exception	X	Variance or Other BZA Request

Parcel / Property Information:

Parcel Location / Address: 4561 Columbia Pike

Tax Map & Parcel #: 145.00100.00004145 Acreage: 25.22 for parcel, approx .11 development

Owner Name: Raymond Fields

Owner Address (if different from Parcel Address): Chapel Hill, TN

Deed Book & Page #: Book-Page 4990-357 and 5042-71

Check one : sewer septic n/a

Project Description Information:

Subdivision / Project Name: Columbia Pike - TN-043

Plat Book & Page #: _____ Lot #(s): _____

Project Description:

Development of a multi-tenant Wireless Communications Tower ("WCT") facility
as located and identified in the attached drawings.

Justification Statement: State why the application(s) should be approved, based on the required findings (if any). Attach additional pages if necessary.

See attached Application summary and justification, attached to this application.

Michael A. Sandifer
Signature of Applicant

October 8, 2020
Date

PROPERTY OWNER(S) STATEMENT

STATE OF TENNESSEE
COUNTY OF WILLIAMSON
TOWN OF THOMPSON'S STATION

I / We, Raymond Fields, declare that I / we am / are the owner(s) of the property described herein and hereby give authorization for the filing of this application. Further, I / we do, by my / our signature(s) on this agreement, absolve the Town of Thompson's Station of all liabilities regarding any deed restrictions that may be applicable to the property described herein. (Signature of all property owners is required. The owner in escrow is not acceptable.)

I / We declare that all encumbrances on the subject property are shown on the submitted site plan (or are attached on a separate sheet) and that the purpose of all encumbrances (and ownership of all easements) is stated. In the case of a tentative map, I / we further declare that the property involved in this application is free from all encumbrances that would conflict with the project application, particularly dedications of the right to further subdivide to the Town of Thompson's Station.

I / We hereby grant the Town admittance to the subject property as necessary for processing of the project application.

I / We declare under penalty of perjury that the foregoing statements and answers herein contained and the information herewith submitted are in all respects true and correct to the best of my knowledge and belief.

Signed: Raymond Fields

Date: 9-15-20

Signed: _____

Date: _____

Signed: _____

Date: _____

Engineer Information: (Please print)

Company / Business Name: French & Parrello Associates

Contact: Michael Sandifer Phone # 1: 205-532-4870

Street / Mailing Address: 100 North Point Center East, Suite 125

City, State, Zip: Alpharetta, GA 30022

E-mail: michael.sandifer@fpaengineers.com Phone # 2: _____

Architect Information: (Please print)

Company / Business Name: N/A

Contact: _____ Phone # 1: _____

Street / Mailing Address: _____

City, State, Zip: _____

E-mail: _____ Phone # 2: _____

Consultant Information: (Please print)

Company / Business Name: Same as Engineer

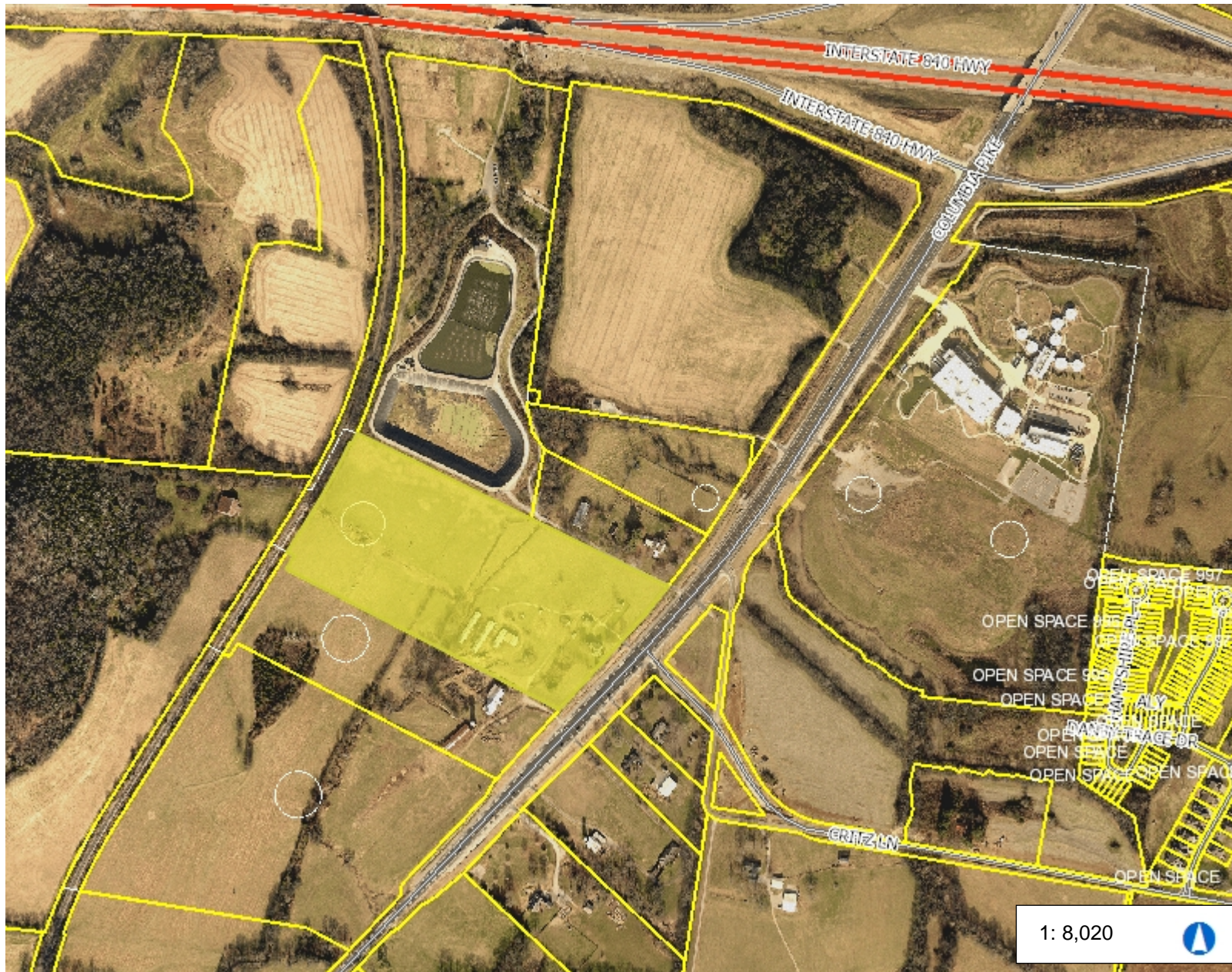
Contact: _____ Phone # 1: _____

Street / Mailing Address: _____

City, State, Zip: _____

E-mail: _____ Phone # 2: _____

Tools & Features Demonstration Site



Legend

- Parcels
- Notes
- Miscellaneous
- Easement
- Exemptions
- Conflicts
- Lines
- Corporate Limits
- BRENTWOOD
- FAIRVIEW
- FRANKLIN
- NOLENSVILLE
- SPRING HILL
- THOMPSONS STATION
- Parks
- Centerlines
- <all other values>
- INTERSTATE
- ACCESS
- LOCAL STREETS
- MAJOR ARTERIAL
- MAJOR COLLECTOR
- MINOR ARTERIAL
- MINOR COLLECTOR
- NO NAME
- UNCLASSIFIED

Notes

0.3 0 0.13 0.3 Miles

NAD_1983_StatePlane_Tennessee_FIPS_4100_Feet
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THIS MAP IS NOT TO BE USED FOR NAVIGATION



**APPLICATION FOR SITE PLAN APPROVAL BY VOGUE TOWER PARTNERS VII, LLC, FOR THE
CONSTRUCTION OF A WIRELESS COMMUNICATION FACILITY**

Application: For Town of Thompson Station Board of Zoning Appeals and Planning Commission approval by Vogue Tower Partners VII, LLC (“Vogue Towers”) for a proposed multi-tenant Wireless Communication Tower (“WCT”) facility.

Site Name: Columbia Pike, #TN-043

Project Description: Vogue Towers proposes to construct a multi-tenant 125’ monopole structure within a 55’x55’ fenced compound area (see attached design drawings for details). This facility will have provisions for multiple carriers, satisfying the intent of the Town’s ordinance to reduce the need for new towers.

Parcel Address: 4561 Columbia Pike, Thompson Station, TN 37179

Property Owner: Raymond Fields

Narrative:

The wireless industry is continually improving networks to best meet the needs of the community. In the present case, the growth in usage at existing locations requires a new tower. The purpose of this proposed wireless facility will be to provide improved coverage, quality, and safety to the area, specifically to customers and residents in and around Thompson Station, along Columbia Pike and Hwy 840.

As the demand for data continues to increase with the use of “smart phones”, there is an increased need for WCT infrastructure to keep up with the demand. Each WCT facility can handle only a fixed amount of demand and/or cover so far, and this tower is needed to provide additional coverage and capacity for this portion of the community.

This proposal is to construct a multi-carrier monopole WCT facility. The applicant will lease the use of space and access as shown on the site plan. Within that area, there would be a 3,025 sq/ft fenced compound providing room for wireless carriers, including Verizon Wireless, AT&T, and other collocating wireless providers to place equipment cabinets/buildings within the compound of the new tower.

Consideration of this application should not, however, be limited to examining how successfully Vogue Towers has mitigated any negative impact through design and location. The positive impact of the site should be given full weight as well. We live in a society where our wireless devices have become an essential tool for daily living, a necessity with approximately 80% of E911 calls being made from wireless devices each year and more than one-half of American homes (54.9% as of 2018) with only wireless telephone service (*National Center for Health Statistics*). Furthermore, the benefits of this site to the community go beyond just convenience for residents and businesses. Quality wireless service is part of the critical infrastructure necessary for public safety and first responders in emergency situations such as accidents, crimes, health incidents and storms. Given the design, location and benefits provided by this proposed site, the lack of significant impacts, and compliance with the requirements of the ordinance as more fully demonstrated below, approval of this application is respectfully requested.

4.11.7 *Wireless Communications Facilities*

These standards govern the development of wireless communications facilities.

- a. *Review Process for Wireless Communication Towers (“WCT”). All applications to construct a WCT within the Town shall include a detailed site plan of the proposed WCT, in addition to information required for a building permit, and shall obtain the approval of the Planning Commission, unless specifically exempted as provided herein. **See attached zoning drawings. A complete set, with additional code related detail will be provided for building permit review.***
- b. *Permitted Locations. WCTs are permitted within the IM zoning district subject to these standards; however, the placement of such towers in areas and specific locations to minimize the visual impact of WCTs is strongly encouraged. **The subject property is zoned “CC – Community Commercial”, also a permitted use per the Permitted Use Table in the Town’s Land Development Ordinance. Applicant is requesting clarification from BZA.***
- d. *High-impact WCTs. Any proposed WCT not meeting the conditions for low- or medium-impact WCTs require site plan review and approval by the Planning Commission and must meet the following additional conditions:*
 - i. *An applicant for a high-impact WCT shall provide an inventory of existing WCTs or sites approved for WCTs that are within the Town, and WCTs outside of the Town which serve areas within the Town, as well as within the coverage area of the proposed WCT. The inventory shall include specific information about the design, height, and location of each WCT and demonstrate that their needs and the needs of the public cannot be adequately served by co-location or installation of a low- or medium-impact WCT. High-impact WCTs will only be approved if the Planning Commission determines based on the evidence presented by the applicant that no existing WCT or structure can accommodate the proposed antenna. **Applicant does not currently own or operate any existing WCT’s in or around the Town.***
 - ii. *High-impact WCTs shall be no separated by not less than 1,500 feet, measured by a straight line from the base of an existing tower, to the base of a proposed tower. **Closest existing WCT is approx. 1.75m to the SE, followed by an existing WCT approx. 2m to the south. No existing WCT facilities identified within 1,500’.***
 - iii. *Site plans applications for high-impact WCTs shall include a detailed landscaping plan sufficient to screen the entire perimeter of the fence of the WCT and to provide for the installation and future growth of large trees and other vegetation. The Planning Commission may require the applicant to post a landscaping bond as a condition of approval. **Applicant***

selected this location based on its natural screening based on adjacent uses. The WCT is located at the rear of the 25+ acre tract, with screening via the railroad to the west and the Town's water facility to the north, and is located at the rear of the property to not require additional landscaping.

- iv. *Applications for high-impact WCTs shall also include detailed construction drawings and plans approved by a licensed engineer and a schematic drawing of the proposed WCT and accessory structures, fencing and landscaping. See attached zoning drawings. A complete set, with additional code related detail will be provided for building permit review.*
 - v. *A high-impact WCT shall require an additional two-foot setback from the base of the tower to the property line for each vertical foot over the maximum height of structures permitted within that zone district. No WCT shall be permitted by the Planning Commission of a height of more than 125 feet. Applicant complies with this requirement based on design of the monopole to include a 50% failure zone, reducing the potential fall radius to approx. 63', plus the three-story requirement for the Town's "CC" district. Applicant is providing a fall zone letter as part of this package and will provide detailed tower design calculations as part of the building permit submittal process.*
- e. *Requirements for all WCTs. All WCTs shall meet the following requirements:*
- i. *Minimum siting distances to habitable structures required for compliance with the Federal Communications Commission (FCC) regulations.*
 - ii. *Shall be designed using non-reflective materials and shall be compatible with and match the building architecture and colors to the maximum extent feasible and be located to minimize visual impacts. Monopole structures are typically galvanized steel, tubular structures that share design characteristics with existing utility lines in the area.*
 - iii. *No signs are permitted on a WCT other than necessary warning or certification signs.*
Applicant complies, posting only required warning, certification of identification signage.
 - iv. *No lighting is permitted on a WCT except as required to comply with federal regulations. Applicant does not anticipate lighting to be required for this location.*
Governed by the FAA, lighting is not generally required for towers less than 200' in height.
 - v. *All ground mounted mechanical equipment shall be housed underground or within a structure that shall be fenced and screened from public view with an 8 foot fence. The fenced shall be locked at all times and the perimeter of such fence shall be completely screened from adjacent properties either by existing trees and vegetation or newly installed landscaping. Applicant complies, as illustrated in attached drawings.*
 - vi. *Wireless communications facilities shall be operated and maintained in accordance with all applicable federal, state, county and local building codes and regulations. Any abandoned facilities or structures shall be removed within 30 days. Applicant confirms its intent to comply with this Section. The WCT will be maintained in a safe manner, and in compliance with conditions of permits, as well as all applicable and permissible local codes, ordinances, and regulations and applicable City, State and Federal laws, rules and regulations, unless granted specific relief by the Commission in writing.*
- g. *Abandonment and removal. Any WCT that is not operated for a continuous period of 12 months or more shall be considered to have been abandoned, and the owner shall remove the same within*

90 days of receipt of notice from the Town. Failure to remove an abandoned tower or antenna within said 90 days shall be grounds to remove the WCT at the owner's expense. If there are multiple users of a WCT, then this provision shall not become effective until all users abandon the tower. The Planning Commission shall require that a Performance Agreement be established for all High Impact WCTs, with appropriate financial security to defray the costs of removal.

Applicant confirms its intent to comply with this Section 4.11.7(g) as described above.

As provided for in this application package, the proposed telecommunications facility meets the conditions and specifications of Thompson Station's Land Development Ordinance. Wireless service is considered a public necessity in some cases, as it is often the only means citizens have to emergency services. The location and character of the use, if developed according to the plan submitted and recommended, will be in harmony with the area in which it is to be located. The proposed WCT will meet the infrastructure needs of this area of the area and will provide much needed access to emergency services.

Respectfully submitted,

Patricia Troxell-Tant

Patricia Troxell-Tant
Chief Executive Officer
Vogue Tower Partners VII, LLC



Corporate Office
1800 Route 34, Suite 101, Wall, New Jersey 07719

Regional Offices
King of Prussia, Pennsylvania
Hackettstown, New Jersey
Camden, New Jersey
New York, New York
Atlanta, Georgia

FALL ZONE LETTER

October 8, 2020

Vogue Tower Partners VII, LLC ("Vogue Towers")
430 Chestnut St., Suite 101-B
Chattanooga, TN 37402

RE: Fall Zone Letter for Proposed 125' Monopole Tower – Thompson Station, TN

Site Name: Columbia Pike, TN-043
Site Address: 4156 Columbia Pike, Williamson County, TN
Building Code: IBC 2015
Design Standard: ANSI/TIA-222-G

Dear Vogue Towers;

As the above referenced project progresses through jurisdictional review, we have been directed by your staff and project team to ensure that the tower ordered for this site is designed with an engineered failure point to limit the fall zone radius and thereby prevent damage to any adjacent structure(s). This tower will, of course, be compliant with and designed to the current building code and will withstand all code-required wind loads. In the event of a catastrophic event beyond the designed wind speed and loading, this tower will be designed to fail by buckling at a specific point to reduce its theoretical fall zone radius. For the requested 125' monopole, the theoretical fall zone radius will not exceed 50% or the tower height, or 62.5'.

Once approval is granted, you may solicit tower manufacturer quotes based on the criteria above to obtain specific tower construction and engineering details that comply with the required fall zone radius for this site.

Should you have any questions, please do not hesitate to contact me.

Sincerely,



John Bosco, P.E.
Senior Project Manager
TN PE #22512 (Exp: 7/31/21)