SOUTHWOOD PHASE 2

Chapter 527 Traffic Impact Analysis

ALBEMARLE COUNTY, VIRGINIA

October 2021

Revised February 2022

TIMMONS GROUP
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1 EXECUTIVE SUMMARY

This report presents the revised findings of the traffic impact analysis prepared for the proposed Southwood Phase 2 development in Albemarle County, Virginia.

The original TIA was submitted in October 2021 and the Virginia Department of Transportation (VDOT) and the Albemarle County Community Development Department, Transportation Planning (CDD) issued comments in December 2021.

A copy of the response to those comments is included in Appendix A. The analysis/TIA was revised per the VDOT/CDOT comments.

Project Overview

The proposed development is located south of I-64, southeast of Old Lynchburg Road (Route 631) and along Hickory Street as shown on Figure 1-1 (all figures are located at the end of their respective chapter).

The site is currently zoned R-2 (two-family residential) and is occupied by an income restricted mobile home park with 341 mobile home units.

The Applicant is proposing to develop the site in two Phases to include the following:

- 1,336 Residential Dwelling Units
  - 442 Affordable Housing Units
  - 894 Market Rate Units
- 60,000 S.F. of Commercial Space
  - 30,000 S.F. Office Space
  - 30,000 S.F. Retail Space

The site was the subject of a 2019 rezoning and traffic impact analysis which assumed two Phases of development with slightly different density. At that time, the traffic study assumed the following:

- Under Phase 1, the existing 341 mobile home units remained, and 300 dwelling units (270 apartments/townhomes and 30 single family units) and 50,000 S.F. of commercial space (25,000 S.F. Office Space and 25,000 S.F. Retail Space) added to the development.
- Phase 2 was assumed to consist of replacing the 341 mobile home units with 500 new dwelling units (for a net increase of 159 dwelling units).

In order to update the traffic study with the proposed changes, all density changes were assumed to occur with the Phase 2 development. This allows the previous traffic study to stand on its own and not require updates.

Therefore, for the purposes of this traffic study, it was assumed that Phase 1 will remain the same and Phase 2 will consist of the following:

- Replace the existing 341 mobile home units with 1,036 new dwelling units
  - 60 Single Family Dwelling Units
  - 419 Apartment Dwelling Units
  - 115 Townhome Dwelling Units
  - 442 Affordable Housing Units

- Add 10,000 S.F. of Commercial Space
  - 5,000 S.F. Office Space
  - 5,000 S.F. Retail Space

The buildout of the development is likely to occur sometime between 2030 and 2040. For purposes of this analysis, the development was assumed to be complete by 2030 to determine the impact of the development on the existing roadway network with only funded improvements.

A site concept plan is shown on Figure 1-2.

Primary access to the site will be provided via existing Hickory Street which to the full access connection to Old Lynchburg Road. Secondary access will be provided via Hickory Street to Stagecoach Road to Old Lynchburg Road/5th Street Extended. No new connections to Old Lynchburg Road (Route 631) are proposed with the development.

When complete, Phase 2 of the proposed development will generate 291 net trips (112 in and 179 out) during the AM peak hour, 407 net trips (225 in and 182 out) during the PM peak hour, and 4,433 net average weekday trips.

The purpose of this analysis is to determine the impact of the proposed development on the surrounding roadway network. The scope of this study was developed in conjunction with the Virginia Department of Transportation (VDOT) staff, and Albemarle County staff at a scoping meeting held virtually on July 12, 2021. A copy of the scoping agreement and subsequent correspondence is included in Appendix A.

As agreed upon in the scoping agreement, the study limits include the following existing intersections (see Figure 1-1):

1. Old Lynchburg Road and Hickory Street (unsignalized);
2. Old Lynchburg Road and Sunset Avenue Extended (unsignalized);
3. Old Lynchburg Road and 5th Street Extended/County Complex (unsignalized);
4. 5th Street Extended and Stagecoach Road/Afton Pond Court (unsignalized);
5. 5th Street Extended and I-64 EB on-off ramp; and
6. 5th Street Extended and I-64 WB on-off ramp.

In accordance with the scoping agreement, analyses were completed for the weekday AM and PM peak hours for the following scenarios:

1. 2021 Existing Traffic Conditions
2. 2030 Background Traffic Conditions (without the development of the site)
3. 2030 Future Traffic Conditions (with development of Phase 2 of the site)
4. 2036 Background Traffic Conditions (without the development of the site)
5. 2036 Future Traffic Conditions (with development of Phase 2 of the site)

The following steps were taken to determine the potential traffic impacts associated with this project:

1. <u>Data Collection</u> – Traffic counts were conducted at the study intersections on September 2, 2021 when public school was in session and were compared with past traffic counts to determine any changes in traffic due to the ongoing COVID-19 pandemic.

2. Traffic Growth – In order to be conservative and to account for development outside the study area, a 1% annual growth rate was applied to the through movements on the mainline and I-64 ramps only. The growth rate was compounded annually for each future scenario.

3. Other Development Trip Generation – The traffic impacts of four (4) other developments in the area were included in the analysis.

4. Trip Generation – Traffic generated by the proposed development was estimated using the 10th Edition of the Institute of Transportation Engineers' *Trip Generation Manual.*

5. Traffic Distributions – The distribution of trips generated by the proposed development was based on the existing traffic volumes, the nature of use, and the surrounding roadway network.

6. Traffic Projections – Future traffic volumes were determined using the existing traffic counts, the 1% growth rate discussed above, the trips from the other developments, and the trips generated by the site.

7. Traffic Capacity Analysis – Level of service calculations for existing, background, and future conditions were performed using SYNCHRO Version 10 for signalized and unsignalized intersections and SIDRA Version 10 for the proposed roundabout.

8. Queuing Analysis – The simulated maximum and SIDRA/HCS 95th percentile queue lengths were reviewed at the study intersections to determine turn lane storage needs.

This traffic impact analysis (TIA) has been prepared in accordance with (1) the procedures outlined in the Virginia Department of Transportation's (VDOT) Traffic Impact Analysis Regulations (henceforth referred to as Chapter 527), (2) the VDOT Traffic Operations and Safety Analysis Manual (TOSAM), and (3) the Scope of Study agreed upon between Albemarle County, VDOT, and Timmons Group (See Appendix A for the scoping agreement).

Based on the analysis the following conclusions are offered:

As shown in 2030 and 2036 background conditions, many of the study intersections along the Old Lynchburg Road/5th Street Corridor experience capacity and queueing constraints. The additional traffic generated by the Southwood Phase 2 development will add to the delay but will not cause any new intersections to fail.

Albemarle County staff indicated that the intersection of Old Lynchburg Road and 5th Street Ext./County Complex would be reconstructed as a roundabout by the year 2030. The results of the analysis show that the roundabout improves congestion and delay at this intersection during future conditions.

The VDOT STARS study recommended the following additional improvements:

- 5th Street Extended & Stagecoach Road/Afton Pond Court: converted to a Restricted Crossing U-Turn (RCUT) intersection
- Old Lynchburg Road & 5th Street Extended: converted to a roundabout

Further, the STARS study recommended further study of the 5th Street / I-64 interchange to determine the best solution to mitigate traffic congestion.

Specifically,

- Under 2021 existing conditions:
    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements operate at a LOS A during both AM and PM peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Ext./Private Entrance, the eastbound approach operates at a LOS B/C during the AM/PM peaks, respectively. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of Old Lynchburg Road/5th Street/County Complex, the eastbound approach and left movement operate at a LOS D/E during the AM/PM peaks, respectively. The westbound left operates at a LOS C during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
        - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
        - The westbound left movement is over capacity during both peak hours (LOS F) and during the AM peak, the WB left maximum queue backs up past the storage for the WB right, effectively blocking both lanes.
        - The north- and southbound through and turning movements operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to handle 95th percentile and maximum queue lengths.
    - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
        - The intersection currently operates at an overall LOS D/C during the AM/PM peaks, respectively. The eastbound approach is over capacity during the AM peak (LOS F) and PM peak (LOS E).
        - The northbound approach operates at a LOS E/D during the AM/PM peaks, respectively. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
        - The intersection currently operates at an overall LOS C/D during the AM/PM peaks, respectively. The westbound right operates at a LOS F/E during the AM/PM peaks, respectively.
        - The northbound left movement operates at a LOS B/C during the AM/PM peaks, respectively. The NB left 95th percentile queue exceeds the available storage, spilling back into through lanes.
        - The southbound approach operates at a LOS D/F during the AM/PM peaks, respectively. All other turning bays have adequate storage to handle 95th percentile and maximum queue lengths.

- Under 2030 background conditions with the 1% growth rate and traffic from four (4) background developments:

    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a LOS C/D during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection operates at a LOS A/B during the AM/PM peaks, respectively. During the PM peak, the eastbound approach operates at a LOS C. All other movements operate at a LOS B or better during both peak hours. Adequate storage exists to accommodate 95th percentile queue lengths.

    - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
        - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB through-left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
        - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E/B during the AM/PM peaks, respectively. During both peak hours, the WB left maximum queue backs up past the storage for the WB right lane effectively blocking both lanes.
        - All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements have adequate storage to accommodate 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
        - The overall intersection is over capacity during both AM (LOS F) and PM (LOS E) peaks.
        - The eastbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. During the AM peak, the EB approach maximum queue will back up onto mainline I-64 eastbound.
        - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
        - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
        - The westbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. The northbound left and through movement will operate at a LOS C or better during both peak hours.
        - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During the PM peak, the SB thru maximum queue backs up through the

nearby intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- Under 2030 total future conditions with the development of Phase 2 of the site the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

  - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements and approaches will continue to operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
    - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the eastbound right effectively blocking both lanes.
    - The westbound left is over capacity during both peak hours (LOS F). The westbound right will operate at a LOS F/C during the AM/PM peaks, respectively. During both peak hours, the WB left maximum queue backs up past the storage for the westbound right effectively blocking both lanes.
    - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue exceeds the available storage, spilling back into through lanes. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

  - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
    - The overall intersection is over capacity during both peaks (LOS F).
    - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the EB maximum queue will back up onto mainline I-64 eastbound.
    - The northbound approach is over capacity during both AM and PM (LOS F) peaks.
    - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peaks (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage.
  - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During both peak hours, the SB thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.
  -

- Under 2036 background conditions with the 1% growth rate and traffic from four (4) background developments:

  - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a C/E during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. The eastbound approach will operate at a LOS D during the PM peak. All other turning movements will operate at a LOS B or better during both AM/PM peaks. All turning movements have adequate storage to accommodate 95th percentile queue lengths.

  - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
    - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right effectively blocking both lanes.
    - The westbound approach is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E during the AM peak and LOS B during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
    - During the AM peak, the southbound left maximum queue exceeds the available storage spilling back into the through lanes. All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both AM and PM (LOS F) peaks.
  - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the maximum queue is expected to back up onto mainline I-64 eastbound. During both peak hours, the eastbound left maximum queue backs up past the available storage for the eastbound right.
  - The northbound approach is over capacity during both AM and PM (LOS F) peaks. During the PM peak, the northbound approach maximum queue backs up reaching the adjacent intersection of Stagecoach Road/Afton Pond Court.
  - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS E/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peak hours (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours.
  - The southbound approach is over capacity during both the peak hours (LOS F). During the PM peak, the southbound thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- Under 2036 total future conditions with development of phase 2 of the site the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

  - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. The southbound left will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
  - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the EB right effectively blocking the lane.
  - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS F during the AM peak and LOS C during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
  - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue exceeds the available storage. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both peak hours (LOS F).
  - The eastbound approach is over capacity during both peaks (LOS F). During both Peak hours, the EB approach maximum queue will back up onto mainline I-64 eastbound.
  - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection is over capacity during both AM (LOS E) and PM (LOS F) peaks.
  - The westbound approach is over capacity during both peak hours (LOS F). The northbound left will operate at a LOS C during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage, spilling back into through lanes.
  - The southbound approach is over capacity during both peak hours (LOS F) and the maximum queue backs up through the adjacent intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

LEGEND:

- Existing Road
- Proposed Road
- Proposed Site
- Study Intersection

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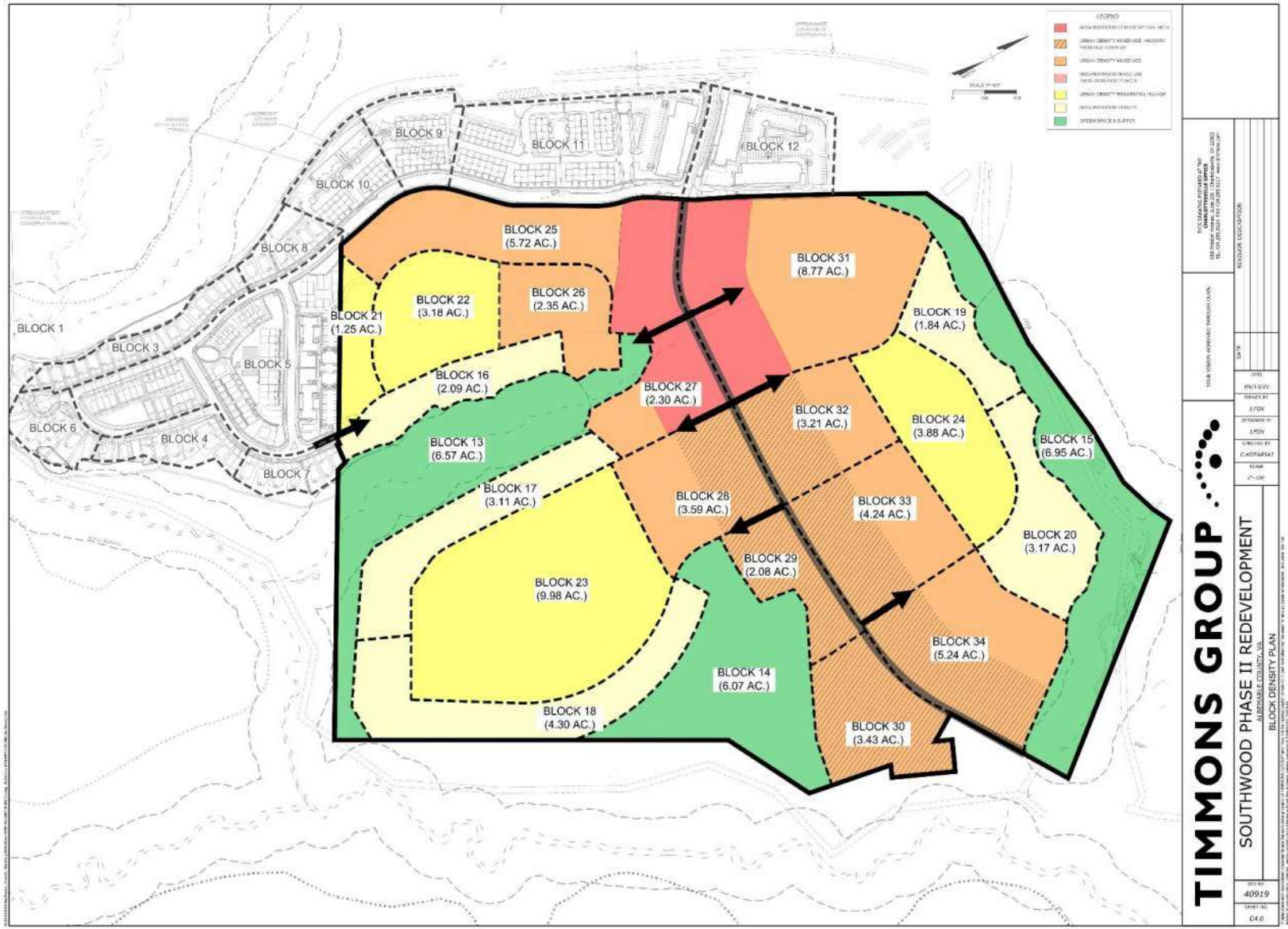
Southwood Phase 2 TIA
Surrounding Roadway Network and Site Location
Albemarle County, Virginia

Figure
1-1



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Southwood Phase 2 TIA
Site Concept Plan
Albemarle County, Virginia

Figure
1-2

2 BACKGROUND INFORMATION

2.1 DESCRIPTION OF ON-SITE DEVELOPMENT

The site is currently zoned R-2 (two-family residential) and is occupied by an income restricted mobile home park with 341 mobile home units.

The Applicant is proposing to develop the site in two Phases to include the following:

- 1,336 Residential Dwelling Units
  - 442 Affordable Housing Units
  - 894 Market Rate Units
- 60,000 S.F. of Commercial Space
  - 30,000 S.F. Office Space
  - 30,000 S.F. Retail Space

The site was the subject of a 2019 rezoning and traffic impact analysis which assumed two Phases of development with slightly different density. At that time, the traffic study assumed the following:

- Under Phase 1, the existing 341 mobile home units remained, and 300 dwelling units (270 apartments/townhomes and 30 single family units) and 50,000 S.F. of commercial space (25,000 S.F. Office Space and 25,000 S.F. Retail Space) added to the development.
- Phase 2 was assumed to consist of replacing the 341 mobile home units with 500 new dwelling units (for a net increase of 159 dwelling units).

In order to update the traffic study with the proposed changes, all density changes were assumed to occur with the Phase 2 development. This allows the previous traffic study to stand on its own and not require updates.

Therefore, for the purposes of this traffic study, it was assumed that Phase 1 will remain the same and Phase 2 will consist of the following:

- Replace the existing 341 mobile home units with 1,036 new dwelling units
  - 60 Single Family Dwelling Units
  - 419 Apartment Dwelling Units
  - 115 Townhome Dwelling Units
  - 442 Affordable Housing Units
- Add 10,000 S.F. of Commercial Space
  - 5,000 S.F. Office Space
  - 5,000 S.F. Retail Space

The buildout of the development is likely to occur sometime between 2030 and 2040. For purposes of this analysis, the development was assumed to be complete by 2030 to determine the impact of the development on the existing roadway network with only funded improvements.

Primary access to the site will be provided via existing Hickory Street which to the full access connection to Old Lynchburg Road. Secondary access will be provided via Hickory Street to Stagecoach Road to Old Lynchburg Road/5th Street Extended. No new connections to Old Lynchburg Road (Route 631) are proposed with the development.

For the purposes of this analysis, the proposed development is expected to be open and occupied by the year 2030.

2.2 STUDY LIMITS

As agreed upon in the scoping agreement, the study limits include the following existing intersections:

1. Old Lynchburg Road and Hickory Street (unsignalized);
2. Old Lynchburg Road and Sunset Avenue Extended (unsignalized);
3. Old Lynchburg Road and 5th Street Extended/County Complex (unsignalized);
4. 5th Street Extended and Stagecoach Road/Afton Pond Court (unsignalized);
5. 5th Street Extended and I-64 EB on-off ramp; and
6. 5th Street Extended and I-64 WB on-off ramp.

2.3 EXISTING ROADWAYS NETWORK

Route 631 carries two separate names through the study area. The roadway is called 5th Street Extended from the Charlottesville City limits to the intersection with the County Complex where it becomes Old Lynchburg Road.

For purposes of this analysis, it was assumed that Route 631 (5th Street Extended and Old Lynchburg Road) runs north-south through the study area.

All roadway descriptions reference 2019 VDOT counts as those are the most recently available daily counts that reflect typical traffic conditions (i.e., not influenced by the COVID19 pandemic).

5th Street Extended (Route 631) is a four-lane divided roadway with auxiliary turning lanes. It is listed as a Minor Arterial south of the I-64 interchange and Principal Arterial north of the I-64 interchange. The posted speed limit is 45 mph north of Stagecoach Road and 35 mph between Stagecoach Road and Old Lynchburg Road.

According to the 2019 VDOT Traffic Counts, 5th Street Extended carries 19,000 vehicles per day (vpd) between Stagecoach Road and I-64, and 29,000 vpd from I-64 to Charlottesville City Limits. The roadway has a shared use path along the west side between Stagecoach Road and Old Lynchburg Road.

Old Lynchburg Road (Route 631) is a four-lane divided Minor Arterial with auxiliary turning lanes north of Hickory Street, and a two-lane undivided Major Collector south of Hickory Street. The posted speed limit is 40 mph between 5th Street and Hickory Street and 45 mph south of Hickory Street.

According to the 2019 VDOT Traffic Counts, Old Lynchburg Road carries 9,700 vpd. The roadway has a shared use path along the west side of the road north of Ambrose Commons Drive.

Old Lynchburg Road (Route 780) is a two-lane undivided Major Collector with a posted speed limit of 35 mph. According to the 2019 VDOT Traffic Counts, Old Lynchburg Road carries 3,800 vpd. The roadway has a shared use path along the west side.

Sunset Avenue Extended (Route 781) is a two-lane undivided Major Collector with a posted speed limit of 30 mph. According to the 2019 VDOT Traffic Counts, Sunset Avenue carries 3,000 vpd. The roadway has no sidewalks.

Stagecoach Road (Route 877) is a two-lane undivided local road with a posted speed limit of 25 mph. According to the 2019 VDOT Traffic Counts, Stagecoach Road carries 2,700 vpd. The roadway has no sidewalks.

Afton Pond Court is a two-lane undivided local road with a speed limit of 25 mph. The roadway has a sidewalk along the west side.

Hickory Street is a two-lane undivided local road with a speed limit of 25 mph. The roadway has sidewalks along both sides.

The 2021 existing lane use and traffic control at the study intersections is shown on Figure 2-1.

2.4 Future Improvements

A STARS study was completed in January 2021 by Kittelson & Associates for the Route 631 corridor (5th Street Extended and Old Lynchburg Road) from Harris Road in the north to Ambrose Commons Drive to the south. The study recommends the following improvements to study intersections mentioned above:

- 5th Street Extended & Stagecoach Road/Afton Pond Court: converted to a Restricted Crossing U-Turn (RCUT) intersection
- Old Lynchburg Road & 5th Street Extended: converted to a roundabout

The STARS study also found that a project development and environmental study should be completed for the 5th Street / I-64 interchange. A preliminary VJUST analysis of alternatives showed that a diverging diamond interchange could best mitigate traffic congestion. A timeline for further study and/or modification of the interchange has not been identified.

For the purposes of this analysis, it was assumed that the roundabout improvements at Old Lynchburg Road & 5th Street Extended would be operational by the year 2030. The proposed geometry of the roundabout was extracted from the Route 631 STARS study mentioned above and will be used in future (2030 and 2036) analysis.

At this time funding or project schedule for the intersection improvements at 5th Street Extended & Stagecoach Road/Afton Pond Court has not been identified and therefore the improvement was not assumed in this analysis.

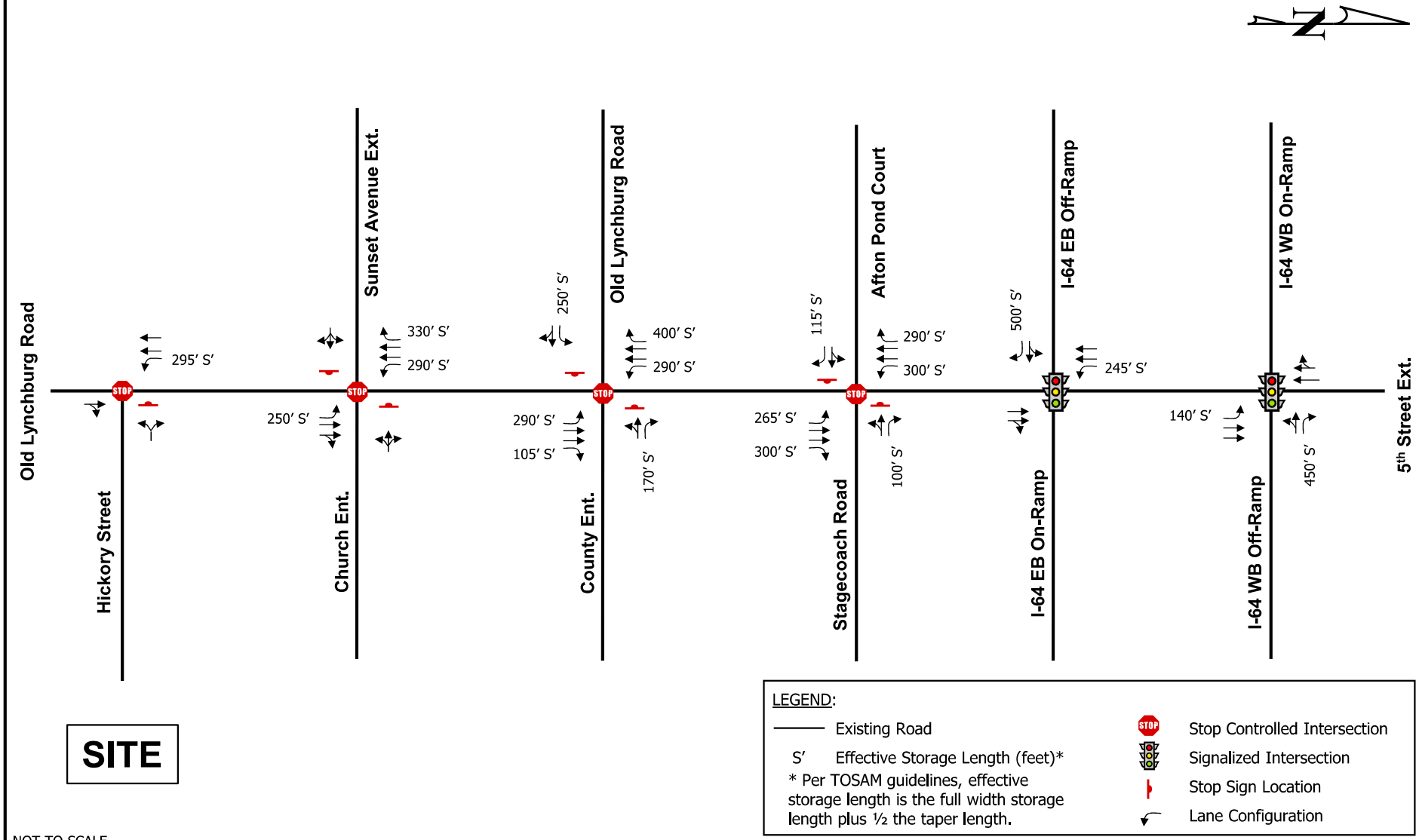
The future lane use and traffic control at the study intersections is shown on Figure 2-2.

2.5 Other Modes of Transportation

Currently, there are sidewalks/shared use paths on limited segments of the study area road network as outlined in Section 2.3. The sidewalks/paths do not connect to points north of I-64, and there are also no on-street bike lanes within the study area.

The Charlottesville Area Transit (CAT) Route 3 runs along 5th Street and Old Lynchburg Road from Downtown Charlottesville and terminates in the existing Southwood development with bus stops on Hickory Street.

While it is expected that some site trips will be made via transit, in order to present a conservative analysis, no reduction was not taken for trips completed via transit, walking, and biking.



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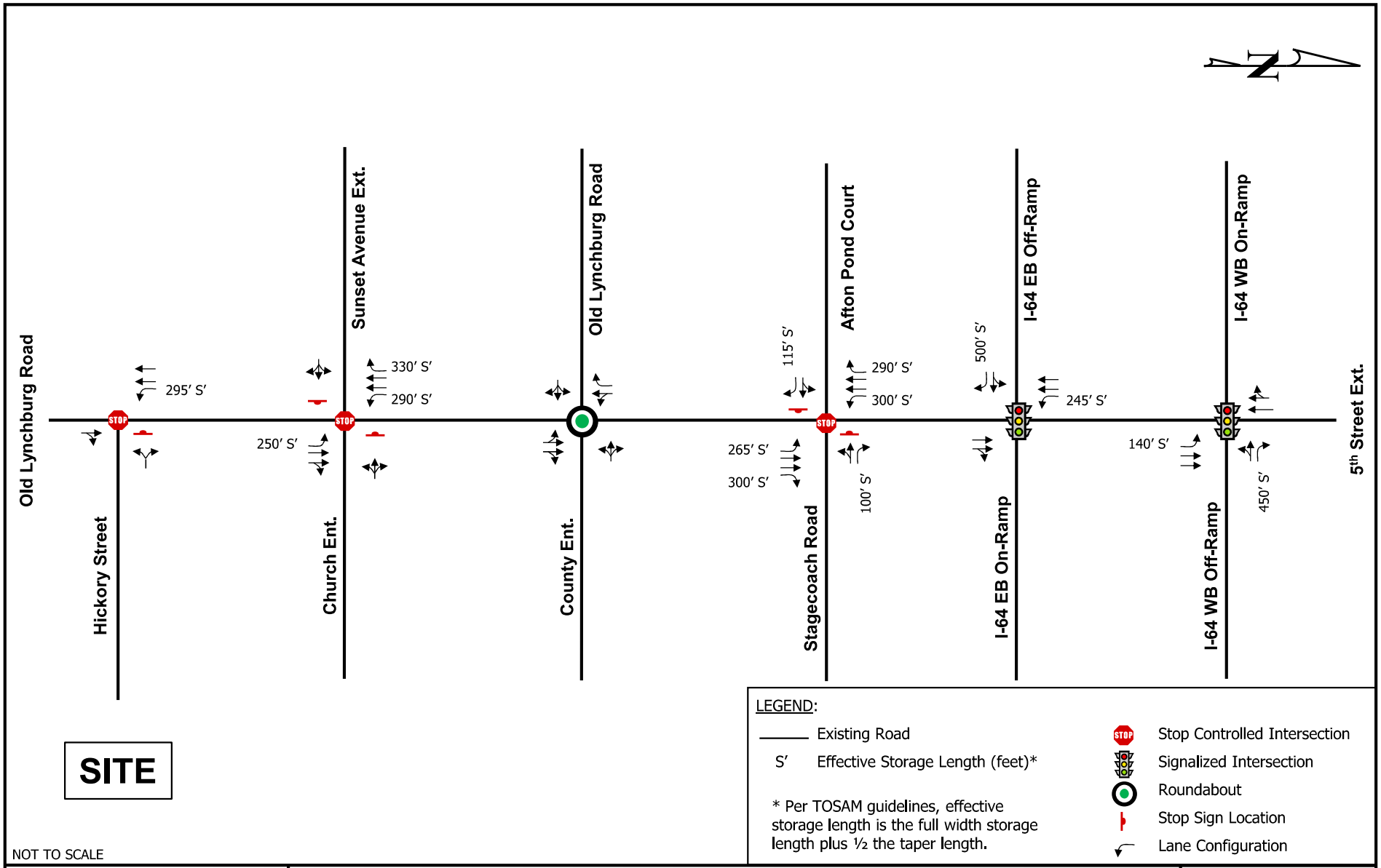
Southwood Phase 2 TIA
Existing Lane Use Geometry
Albemarle County, Virginia

Figure
2-1



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Southwood Phase 2 TIA
Future Lane Use Geometry
Albemarle County, Virginia

Figure
2-2

3 2021 EXISTING CONDITIONS

3.1 EXISTING TRAFFIC VOLUMES

Existing peak hour turning movement counts were conducted at each of the study intersections during the AM (7:00-9:00) and PM (4:00-6:00) peak hour timeframes. The counts were conducted on September 2, 2021 on a typical weekday when public schools were in session. The counts included heavy vehicles by movement, pedestrians, and bikes.

The raw traffic counts are included in Appendix B and the existing peak hour counts shown on Figure 3-1. The common peak hours for all study intersections were found to be 7:45–8:45 AM and 4:45–5:45 PM.

It is noted that at the time of the counts, Hickory Street was closed at the intersection with Old Lynchburg Road. The turning movement counts at that intersection were obtained from the Southwood Phase 1 TIA and the through traffic was balanced to the adjacent intersection.

Existing signal timings for all intersections were provided by VDOT and are included in Appendix C.

3.2 CAPACITY ANALYSES

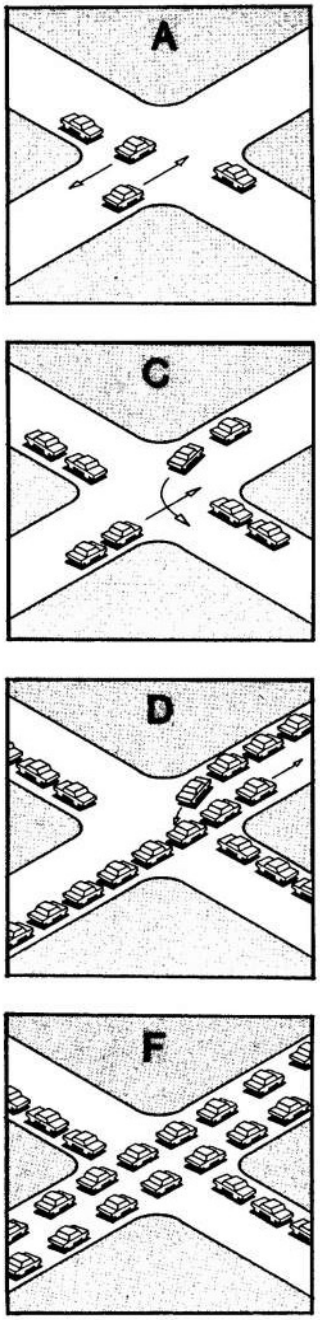
Capacity analysis allows traffic engineers to determine the impacts of traffic on the surrounding roadway network. The Highway Capacity Manual methodologies govern how the capacity analyses are conducted and how the results are interpreted. Levels of service (LOS) are determined for each part of the roadway network, with LOS A through D representing acceptable results and LOS E and F representing unacceptable results. Table 3-1 shows in detail how each of these levels of service are interpreted.

Table 3-1: Level of Service Definitions

LEVEL OF SERVICE DEFINITIONS

L.O.S.	ROADWAY SEGMENTS OR CONTROLLED ACCESS HIGHWAYS	INTERSECTIONS
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive back-ups.
E	Actual capacity of the roadway involves delay to all motorists due to congestion.	Very long queues may create lengthy delays, especially for left turning vehicles.
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage area during part or all of an hour.

SOURCE: A Policy on Design of Design of Urban Highways and Arterial Streets - AASHTO, 1973 based upon material published in Highway Capacity Manual, National Academy of Sciences, 1965.



For both unsignalized and signalized intersections, level of service is defined in terms of delay, a measure of driver discomfort, frustration, fuel consumption and lost travel time. Table 3-2 summarizes the delay associated with each LOS category:

Table 3-2: Unsignalized and Signalized Intersection Level of Service Criteria

Signalized Intersections		Unsignalized Intersections	
Level of Service	Control Delay per Vehicle (sec/veh)	Level of Service	Average Control Delay (sec/veh)
A	≤ 10	A	0 to 10
B	> 10 to ≤ 20	B	> 10 to ≤ 15
C	> 20 to ≤ 35	C	> 15 to ≤ 25
D	> 35 to ≤ 55	D	> 25 to ≤ 35
E	> 55 to ≤ 80	E	> 35 to ≤ 50
F	> 80	F	> 50

Source: Exhibit 16-2 and Exhibit 17-2 from TRB's "Highway Capacity Manual 2000"

Capacity analyses were performed to assess existing (2021), background (2030), and future (2036) operational conditions. The signalized and unsignalized intersections were analyzed using SYNCHRO Version 10 and the roundabout was analyzed using SIDRA Version 9 based on HCM 2000 methodologies with the following assumptions:

- Level terrain;
- 12-foot lane widths;
- No parking activity or bus stops;
- Existing peak hour factor as determined by the traffic counts (by intersection) for existing scenario;
- The higher of the existing peak hour factor as determined by traffic counts (by intersection) or a peak hour factor of 0.92.
- Heavy vehicle percentage as determined by the traffic counts (by movement); and
- Traffic signals timing data provided by VDOT.

It is noted the roundabout is included in the SYNCHRO model for graphical purposes only. No analysis (LOS or queuing) results for the roundabout were obtained from the SYNCHRO model.

3.3 Existing Conditions Capacity Analyses

Table 3-3 summarizes the 2021 existing intersection LOS, delay, 95th percentile queue lengths (Synchro/SIDRA), and maximum queue lengths (SimTraffic) based on the 2021 existing intersection geometry and peak hour traffic volumes shown on Figure 2-1 and Figure 3-1, respectively. The corresponding SYNCHRO and SimTraffic reports are included in Appendix D.

As noted above, Route 631 (5th Street Extension and Old Lynchburg Road) is assumed to run north-south through the study area.

As shown in Table 3-3, under existing conditions:

- At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements operate at a LOS A during both AM and PM peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Ext./Private Entrance, the eastbound approach operates at a LOS B/C during the AM/PM peaks, respectively. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road/5th Street/County Complex, the eastbound approach and left movement operate at a LOS D/E during the AM/PM peaks, respectively. The westbound left operates at a LOS C during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
    - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
    - The westbound left movement is over capacity during both peak hours (LOS F) and during the AM peak, the WB left maximum queue backs up past the storage for the WB right, effectively blocking both lanes.
    - The north- and southbound through and turning movements operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to handle 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
    - The intersection currently operates at an overall LOS D/C during the AM/PM peaks, respectively. The eastbound approach is over capacity during the AM peak (LOS F) and PM peak (LOS E).
    - The northbound approach operates at a LOS E/D during the AM/PM peaks, respectively. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
    - The intersection currently operates at an overall LOS C/D during the AM/PM peaks, respectively. The westbound right operates at a LOS F/E during the AM/PM peaks, respectively.
    - The northbound left movement operates at a LOS B/C during the AM/PM peaks, respectively. The NB left 95th percentile queue exceeds the available storage, spilling back into through lanes.
    - The southbound approach operates at a LOS D/F during the AM/PM peaks, respectively. All other turning bays have adequate storage to handle 95th percentile and maximum queue lengths.

Table 3-3: Intersection Level of Service and Delay Summary
2021 Existing Traffic

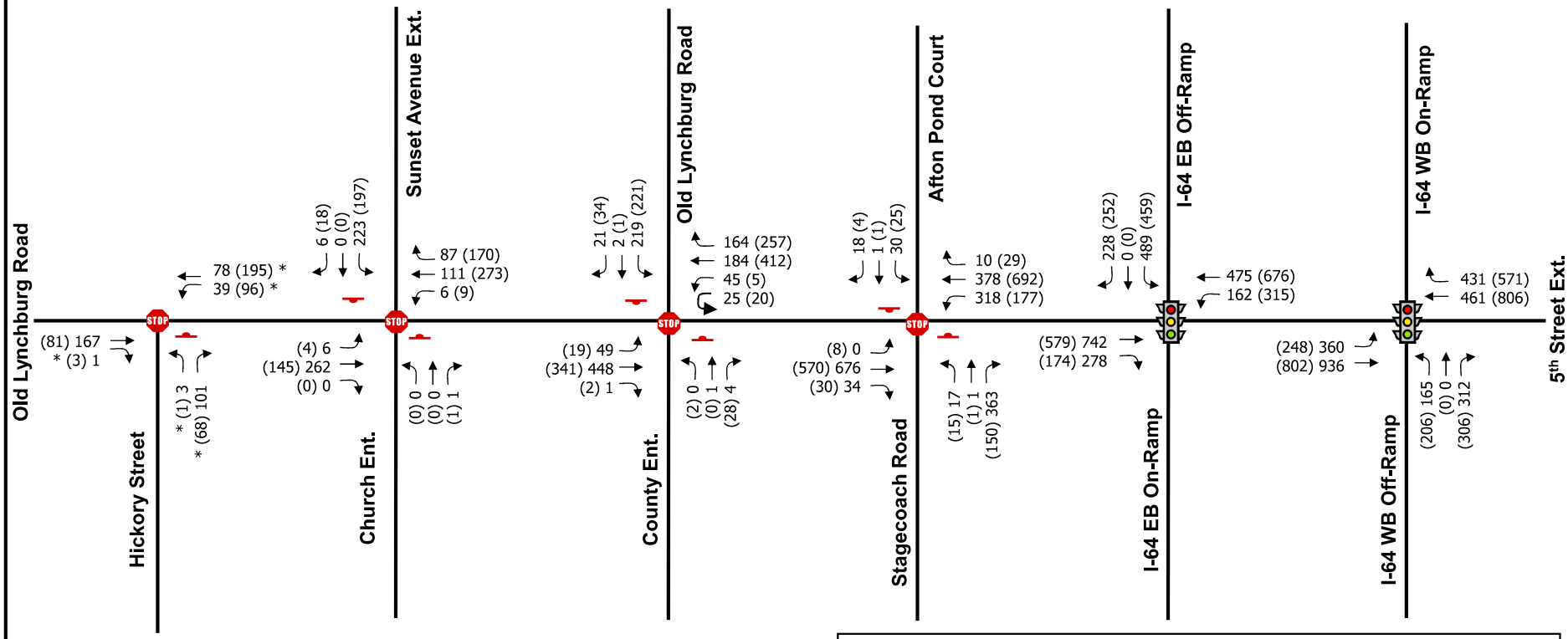
Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	AM PEAK HOUR				PM PEAK HOUR			
			Delay [1] (sec/veh)	LOS [1]	Synchro 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)	Delay [1] (sec/veh)	LOS [1]	Synchro 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)
1. Old Lynchburg Road (N-S) and	*WB Approach*		10.0	A	10	70	*9.2*	A	6	55
Hickory Street (W)	NB Thru - Right		†	†	--	--	†	†	--	--
Unsignalized	*NB Approach*		†	†	--	--	†	†	--	--
	SB Left	295	7.8	A	2	48	7.6	A	4	42
	SB Thru		†	†	--	--	†	†	--	--
	SB Approach		*2.6*	*A*	--	--	*2.5*	*A*	--	--
2. Old Lynchburg Road (N-S) and	*EB Approach*		*14.0*	*B*	35	127	*15.6*	*C*	37	130
Church Entrance (W) /	*WB Approach*		*9.1*	*A*	0	16	*8.7*	*A*	0	6
Sunset Avenue Ext. (E)	NB Left	250	7.6	A	0	4	8.3	A	0	13
Unsignalized	NB Thru-Right		†	†	--	4	†	†	--	1
	NB Approach		*0.2*	*A*	--	--	*0.2*	*A*	--	--
	SB Left	290	7.8	A	0	21	7.5	A	0	4
	SB Thru		†	†	--	--	†	†	--	2
	SB Right	330	†	†	--	2	†	†	--	--
	SB Approach		0.2	A	--	--	0.1	*A*	--	--
3. Old Lynchburg Road (N) /	EB Left	250	27.5	D	70	172	46.0	E	113	191
5th Street Extended (S) and	EB Thru - Right		9.8	A	2	48	10.0	A	4	89
County Complex (W) /	*EB Approach*		*25.8*	*D*	--	--	*41.1*	*E*	--	--
Old Lynchburg Road (E)	WB Left - Thru		20.3	C	0	17	16.3	C	0	15
Unsignalized	WB Right	170	9.6	A	0	20	9.4	A	2	29
	WB Approach		*11.7*	*B*	--	--	*9.9*	*A*	--	--
	NB Left	290	8.1	A	0	28	9.0	A	2	36
	NB Thru		†	†	--	7	†	†	--	2
	NB Right	105	†	†	--	--	†	†	--	--
	NB Approach		*0.2*	*A*	--	--	*0.5*	*A*	--	--
	SB Left	290	9.1	A	4	58	9.3	A	2	38
	SB Thru		†	†	--	--	†	†	--	--
	SB Right	400	†	†	--	6	†	†	--	18
	SB Approach		*1.5*	*A*	--	--	*0.3*	*A*	--	--
4. 5th Street Extended (N-S) and	EB Left - Thru		754.8	F	90	162	94.9	F	31	72
Stagecoach Road (W) /	EB Right	115	9.8	A	2	87	10.6	B	0	28
Afton Pond Court (E)	*EB Approach*		*481.1*	*F*	--	--	*83.7*	*F*	--	--
Unsignalized	WB Left - Thru		177.0	F	35	585	50.7	F	6	67
	WB Right	100	21.0	C	94	100	11.6	B	16	87
	WB Approach		*28.4*	*D*	--	--	*15.4*	*C*	--	--
	NB Left	265	0.0	A	0	--	9.2	A	0	--
	NB Thru		†	†	--	33	†	†	--	4
	NB Right	300	†	†	--	31	†	†	--	25
	NB Approach		*0.0*	*A*	--	--	*0.1*	*A*	--	--
	SB Left	300	12.6	B	43	262	9.6	A	14	125
	SB Thru		†	†	--	79	†	†	--	--
	SB Right	290	†	†	--	--	†	†	--	--
	SB Approach		*5.7*	*A*	--	--	*1.9*	*A*	--	--
5. 5th Street Extended (N-S) and	EB Left - Thru		104.9	F	#546	672.0	68.5	E	#470	504
I-64 EB Off-Ramp (E)	EB Right	500	30.8	C	56	357	31.3	C	66	315
Signalized	*EB Approach*		*81.3*	*F*	--	--	*55.3*	*E*	--	--
	NB Thru - Right		66.6	E	#453	355	47.1	D	#286	257
	NB Approach		*66.0*	*E*	--	--	*46.8*	*D*	--	--
	SB Left	245	20.9	C	104.0	164	15.5	B	176	228
	SB Thru		0.2	A	72	62	0.1	A	64	120
	SB Approach		*5.5*	*A*	--	--	*5.0*	*A*	--	--
	Overall		**54.4**	**D**	--	--	**32.4**	**C**	**--**	**--**
6. 5th Street Extended (N-S) at	WB Left - Thru		31.8	C	149	180	33.5	C	181	194
I-64 WB Off-Ramp (W)	WB Right	450	83.8	F	#210	247.0	67.3	E	139	203
Signalized	*WB Approach*		*65.8*	*E*	--	--	*53.7*	*D*	--	--
	NB Left	140	16.1	B	167	140	21.9	C	132	139
	NB Thru		0.1	A	128	311	0.2	A	45	260
	NB Approach		*4.5*	*A*	--	--	*5.3*	*A*	--	--
	SB Thru - Right		49.9	D	251	291	99.8	F	#539	639
	NB Approach		*46.6*	*D*	--	--	*93.2*	*F*	--	--
	Overall		**29.6**	**C**	--	--	**54.9**	**D**	**--**	**--**

[1] *Overall intersection LOS and delay cannot be reported for unsignalized intersections.*

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

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

SimTraffic queues are average maximum queues after 10 runs of 60 minutes each.



SITE

Peak Hours:
7:45-8:45 AM
4:45-5:45 PM

* Turning movements at Old Lynchburg Rd & Hickory St are 2018 counts taken from Southwood Phase 1 TIA. Through volumes balanced to Sunset Ave. counts.

LEGEND:

- Existing Road
- X AM Peak Hour Volume
- (X) PM Peak Hour Volume
- Stop Controlled Intersection
- Signalized Intersection
- Stop Sign Location
- Lane Configuration

NOT TO SCALE

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Southwood Phase 2 TIA
2021 Existing Peak Hour Volumes
Albemarle County, Virginia

Figure
3-1

4 2030 TOTAL BACKGROUND CONDITIONS

The background 2030 volumes were analyzed assuming future intersection geometry in conjunction with projected background traffic volumes. As previously mentioned, the intersection of 5th Street Ext./Old Lynchburg Road/County Complex is expected to be rebuilt as a roundabout by the year 2030. Accordingly, this intersection was analyzed using SIDRA 9.

The background traffic volumes were developed based on a 1% annual growth rate and the completion of four (4) other developments in the study area.

4.1 2030 Background Traffic Growth

The 1% annual growth rate discussed above was compounded annually for the 9-year period from 2021 to 2030 and applied to mainline through volumes and the I-64 ramps only. The resulting 2030 Existing + Growth Volumes are shown on Figure 4-1.

4.2 Approved Background 2030 Developments

Background developments in the study area were based on the Albemarle County Development Dashboard information, published in February 2020. The most recent aerial imagery (updated June 2021) was used to identify which developments had already been built. The background developments that are currently under construction and expected to open by the year 2030 are as follows:

1. Whittington Phase B3 – 24 remaining single-family homes
2. Albemarle Business Park (Formerly Royal Fern) – 102,000 S.F of office space, 5,000 S.F. of restaurant space, 5,000 S.F. retail store, 4,000 S.F. variety store, 125 room business hotel, 100,000 S.F. self-storage, and 150 units of multifamily housing (mid-rise).
    a. The Traffic Impact Analysis for this development was completed under the name Royal Fern. The name of the development has been changed to Albemarle Business Park.
3. 5th Street Landing – 9,500 S.F. of retail space and an 8,500 S.F. day care center.
4. Southwood Phase 1 – 25,000 S.F. of retail space, 25,000 S.F. of office space, 270 units of apartments/townhomes, and 30 single family homes.

The location of the background developments is shown on Figure 4-2.

The trips that would be generated by developments 1 and 3 were obtained via the ITE *Trip Generation Manual, 10th Edition*. The trips that would be generated by developments 2 and 4 were obtained from their respective traffic studies (see Appendix E). The total background development trip generation is shown in Table 4-1.

.

Table 4-1: Approved Background Development Trip Generation

	Size	Units	Land Use Code	Weekday[1] AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Trips
1. Whittington[2]										
Single Family Residential - 24 Units Remaining										
Built by 2030	24	D.U.	210	6	16	22	16	10	26	280
Total Whittington Trips	**24**	**D.U.**		**6**	**16**	**22**	**16**	**10**	**26**	**280**
2. Albemarle Business Park [2,3]										
Multifamily Housing - 150 Units Remaining										
Built by 2030	150	D.U.	221	14	40	54	40	26	66	816
Office										
Built by 2030	102,000	S.F	710	105	17	122	19	97	116	1,082
Business Hotel										
Built by 2030	125	Room	312	20	29	49	22	18	40	514
Retail (Built by 2030)										
Restaurant	5,000	S.F.	932	27	23	50	30	19	49	561
Store	5,000	S.F.	876	4	1	5	11	10	21	332
Variety Store	4,000	S.F.	814	7	6	13	14	13	27	254
Mini Warehouse	100,000	S.F.	151	6	4	10	8	9	17	151
Total Albemarle Business Park Retail & Office Trips				169	80	249	104	166	270	2,894
Total Albemarle Business Park Trips Trips				**183**	**120**	**303**	**144**	**192**	**336**	**3,710**
3. 5th Street Landing [2]										
Day Care										
Built by 2030	8,500	S.F	565	50	44	94	44	51	95	405
Retail										
Built by 2030	9,500	S.F.	820	6	3	9	17	19	36	359
Total 5th Street Development Trips				**56**	**47**	**103**	**61**	**70**	**131**	**764**
4. Southwood Phase I [4]										
Residential (built by 2030)										
Apartments/Townhomes	270	D.U.	220	28	95	123	90	53	143	1,976
Single Family	30	D.U.	210	7	19	26	20	12	32	343
Residential Subtotal				35	114	149	110	65	175	2,319
Commercial (built by 2030)										
Retail	25,000	S.F.	820	15	9	24	46	49	95	944
Office	25,000	S.F	710	43	7	50	5	26	31	277
Commercial Subtotal				58	16	74	51	75	126	1,221
Total Southwood Phase 1 Development Trips				**93**	**130**	**223**	**161**	**140**	**301**	**3,540**
Total Background Trips				**338**	**313**	**651**	**382**	**412**	**794**	**8,294**

Notes: (1) Based on the Institute of Transportation Engineers Trip Generation, 10th Edition. Assumes General Urban/Suburban land use category.
(2) 2030 Development programs obtained from the Albemarle County Development Dashboard (last updated 2/2020).
(3) Albemarle Business Park trips obtained from the Royal Fern Development TIA Supplement dated April 9, 2020 and prepared by EPR, PC.
(4) Southwood Phase 1 trips obtained from the Southwood Phase 1 TIA dated January 7, 2019 and prepared by Timmons Group.

4.3 Approved Background 2030 Development Trip Distribution and Assignment

Trip distributions were developed for each of the background developments. These distributions followed the same methodology for the overall percentage of traffic entering the study area road network as the proposed development. The distributions for each approved background development are included in Appendix E.

The trip generation for each approved background development was then assigned to the study area road network according to each trip distribution to create the individual approved background site trips. The trips from the individual developments are shown in Appendix E and summed to develop the total trips generated by the background developments shown on Figure 4-3.

4.4 Total Background 2030 Traffic Forecasts

The total background development trips shown on Figure 4-3 were then added to the 2030 Existing + Growth Volumes shown on Figure 4-1 to yield the Total 2030 Background Traffic Volumes, shown on Figure 4-4.

4.5 2030 Background Capacity Analysis Results

Table 4-2 summarizes the 2030 background intersection LOS, delay, 95th percentile (Synchro and Sidra), and maximum (SimTraffic) queue lengths based on the 2030 background peak hour traffic volumes shown on Figure 4-4, the future lane geometry (Figure 2-2), and the existing timings at the traffic signals. The corresponding SYNCHRO and SIDRA worksheets are included in Appendix F.

Note that Route 631 (5th Street Extension and Old Lynchburg Road) is assumed to run north-south through the study area.

As shown in Table 4-2, under 2030 background conditions:

- At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a LOS C/D during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection operates at a LOS A/B during the AM/PM peaks, respectively. During the PM peak, the eastbound approach operates at a LOS C. All other movements operate at a LOS B or better during both peak hours. Adequate storage exists to accommodate 95th percentile queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
  - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB through-left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
  - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E/B during the AM/PM peaks, respectively. During both peak hours, the WB left maximum queue backs up past the storage for the WB right lane effectively blocking both lanes.
  - All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both AM (LOS F) and PM (LOS E) peaks.
  - The eastbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. During the AM peak, the EB approach maximum queue will back up onto mainline I-64 eastbound.
  - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. The northbound left and through movement will operate at a LOS C or better during both peak hours.
  - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During the PM peak, the SB thru maximum queue backs up through the nearby intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

Table 4-2: Intersection Level of Service and Delay Summary
2030 Total Background Peak Hour Traffic

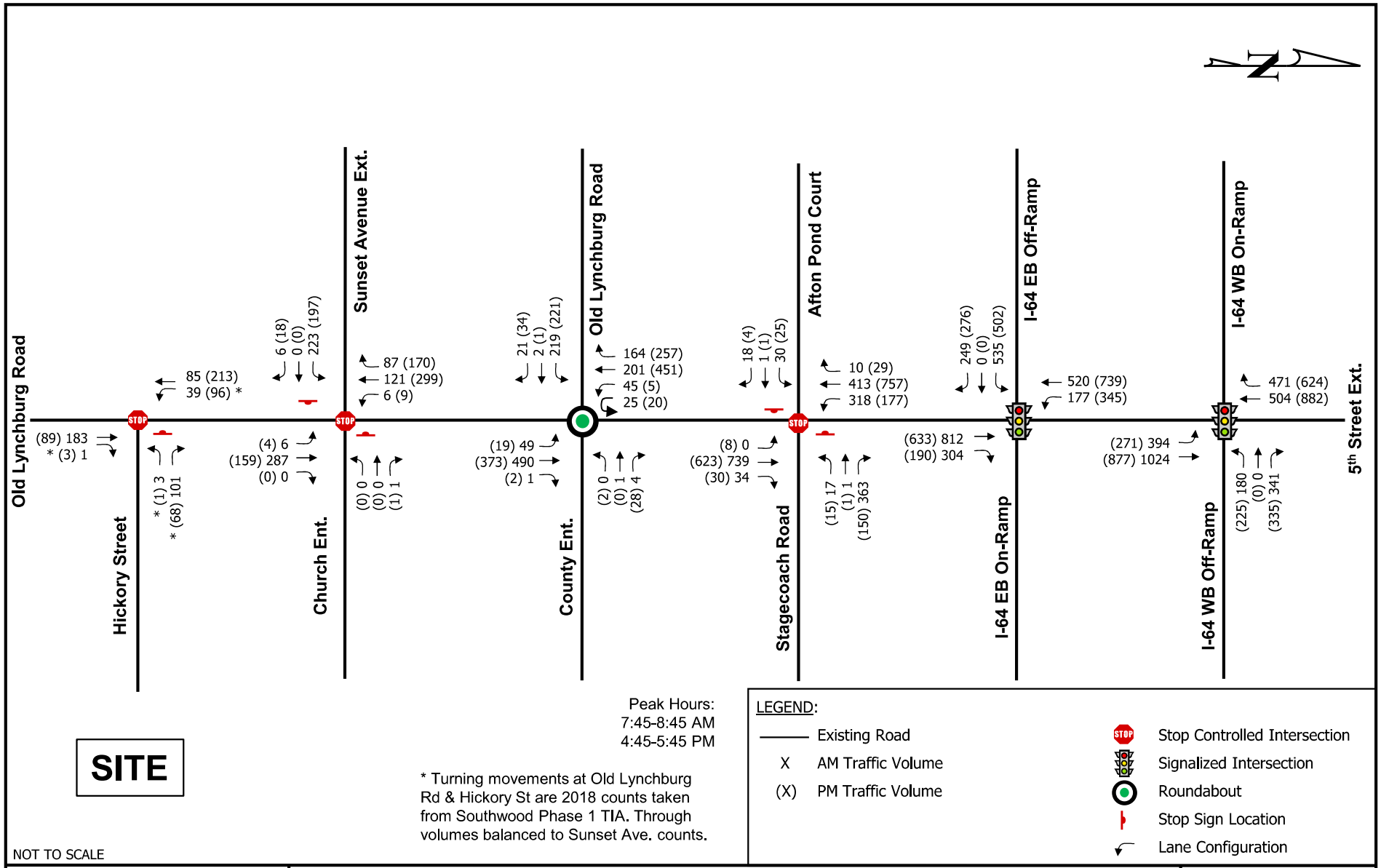
Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	AM PEAK HOUR				PM PEAK HOUR			
			Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)	Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)
1. Old Lynchburg Road (N-S) and Hickory Street (W) Unsignalized	*WB Approach*		11.4	B	23	104	*10.3*	B	18	76
	NB Thru - Right		†	†	--	2	†	†	--	
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	295	8.1	A	6	80	7.9	A	12	63
	SB Thru		†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
2. Old Lynchburg Road (N-S) and Church Entrance (W) / Sunset Avenue Ext. (E) Unsignalized	*EB Approach*		*21.0*	*C*	60	155	*32.2*	*D*	90	162
	WB Approach		*9.5*	*A*	0	18	*9.1*	*A*	0	6
	NB Left	250	7.9	A	0	17	8.9	A	0	19
	NB Thru-Right		†	†	--	--	†	†	--	2
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	290	8.2	A	0	18	7.8	A	0	20
	SB Thru		†	†	--	--	†	†	--	1
	SB Right	330	†	†	--	2	†	†	--	4
	SB Approach		†	†	--	--	†	†	--	--
3. Old Lynchburg Road (NB) / 5th Street Extended (SB) and County Complex (WB) / Old Lynchburg Road (EB) Roundabout	*EB Approach*		*11.8*	*B*	83	--	*24.6*	*C*	205	--
	WB Approach		*9.0*	*A*	1	--	*9.3*	*A*	7	--
	NB Left - Thru		10.4	B	72	--	9.2	A	56	--
	NB Thru - Right		10.1	B	75	--	8.7	A	58	--
	NB Approach		*10.2*	*B*	--	--	*8.7*	*A*	--	--
	SB Left - Thru		8.0	A	65	--	12.9	B	175	--
	SB Right		7.0	A	40	--	8.4	A	61	--
	SB Approach		*7.6*	*A*	--	--	*11.4*	*B*	--	--
	Overall		**9.5**	**A**	--	--	**13.1**	**B**	**--**	**--**
4. 5th Street Extended (N-S) and Stagecoach Road (W) / Afton Pond Court (E) Unsignalized	EB Left - Thru		5065.7	F	115	290	521.3	F	68	127
	EB Right	115	10.9	B	2	115	12.5	B	0	37
	EB Approach		*3208.8*	*F*	--	--	*453.5*	*F*	--	--
	WB Left - Thru		635.6	F	57	797	203.4	F	33	301
	WB Right	100	37.0	E	158	100	14.4	B	25	99
	WB Approach		*63.7*	*F*	--	--	*31.3*	*D*	--	--
	NB Left	265	0.0	A	0	--	10.5	B	0	32
	NB Thru		†	†	--	32	†	†	--	47
	NB Right	300	†	†	--	29	†	†	--	18
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	300	16.6	C	62	290	12.0	B	23	172
	SB Thru		†	†	--	417	†	†	--	2
	SB Right	290	†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
5. 5th Street Extended (N-S) and I-64 EB Off-Ramp (E) Signalized	EB Left - Thru		153.2	F	#625	1101	103.4	F	#546	847
	EB Right	500	40.0	D	140	500	42.7	D	208	498
	EB Approach		*112.6*	*F*	--	--	*79.2*	*E*	--	--
	NB Thru - Right		179.4	F	#677	757	148.9	F	#540	1295
	NB Approach		*173.4*	*F*	--	--	*148.1*	*F*	--	--
	SB Left	245	20.9	C	83	186	16.7	B	158	241
	SB Thru		0.1	A	77	63	0.1	A	74	207
	SB Approach		*4.5*	*A*	--	--	*4.7*	*A*	--	--
	Overall		**108.0**	**F**	--	--	**72.9**	**E**	**--**	**--**
6. 5th Street Extended (N-S) at I-64 WB Off-Ramp (W) Signalized	WB Left - Thru		36.2	D	#227	244	43.5	D	#289	246
	WB Right	450	122.9	F	#312	349	101.7	F	#273	254
	WB Approach		*88.0*	*F*	--	--	*75.2*	*E*	--	--
	NB Left	140	18.7	B	180	139	23.0	C	136	139
	NB Thru		0.1	A	108	411	0.1	A	34	176
	NB Approach		*5.3*	*A*	--	--	*5.7*	*A*	--	--
	SB Thru - Right		93.3	F	#427	580	204.1	F	#754	1394
	SB Approach		*91.5*	*F*	--	--	*182.9*	*F*	--	--
	Overall		**49.2**	**D**	--	--	**98.2**	**F**	**--**	**--**

[1] *Overall intersection LOS and delay cannot be reported for unsignalized intersections.*

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

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

SimTraffic queues are average maximum queues after 10 runs of 60 minutes each.



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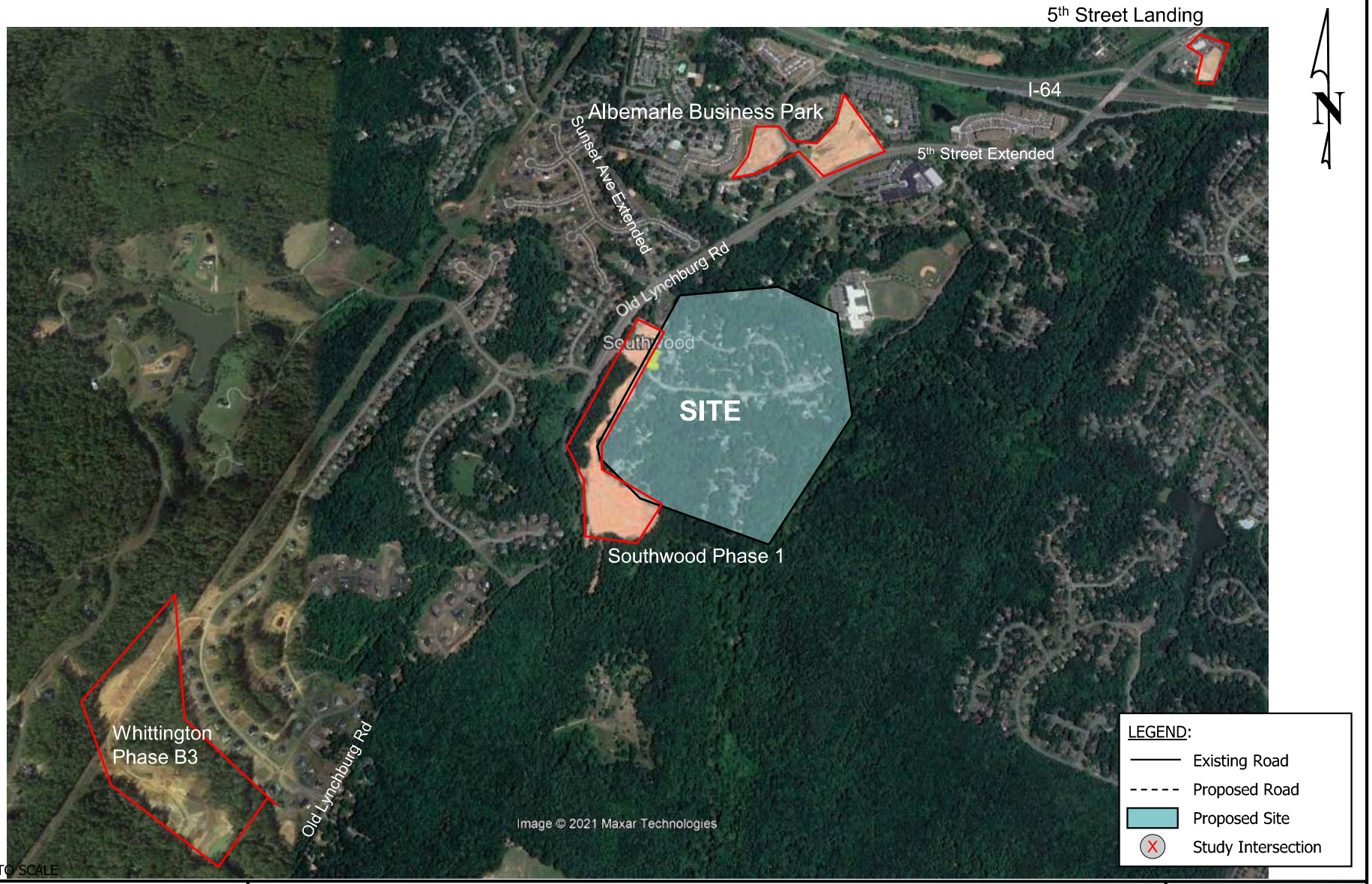
Southwood Phase 2 TIA
2030 Existing + Growth Peak Hour Volumes
Albemarle County, Virginia

Figure
4-1



NOT TO SCALE

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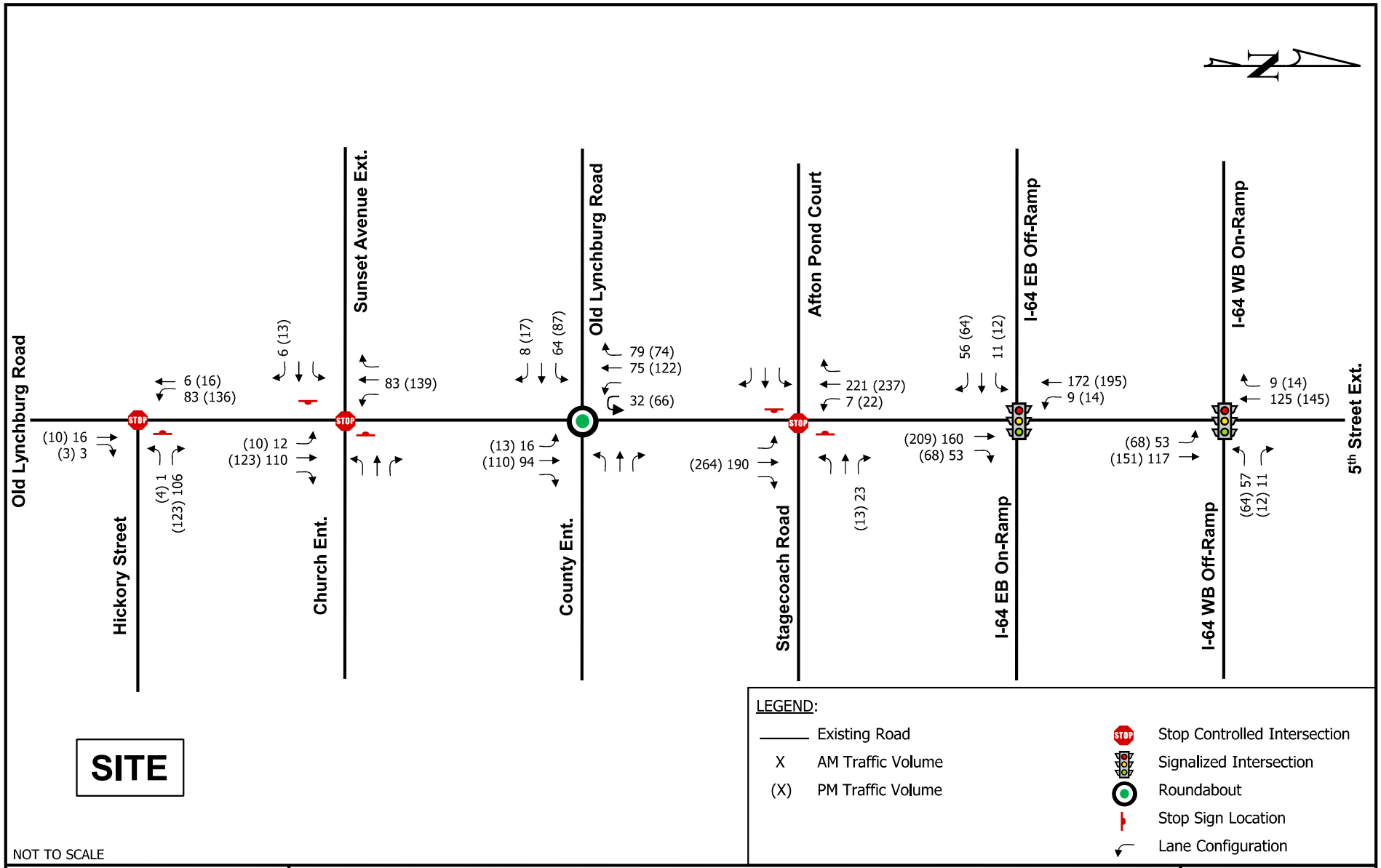
Southwood Phase 2 TIA
Approved Background Development Locations
Albemarle County, Virginia

Figure
4-2



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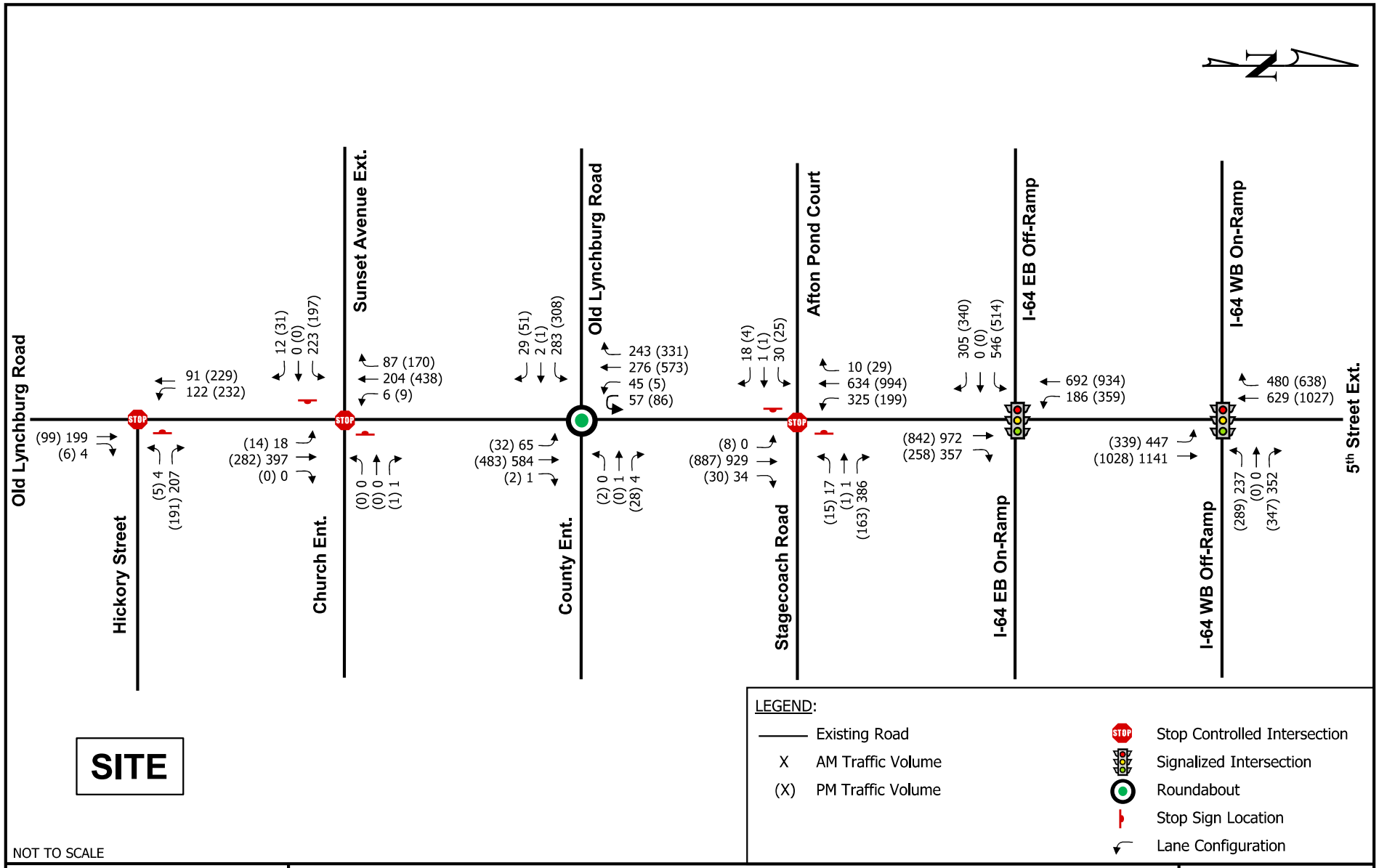
Southwood Phase 2 TIA
2030 Approved Background Development Trips
Albemarle County, Virginia

Figure
4-3



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Southwood Phase 2 TIA
2030 Total Background Peak Hour Volumes
Albemarle County, Virginia

Figure
4-4

5 SITE TRIP GENERATION AND DISTRIBUTION

Site traffic for the proposed development was estimated based on the site characteristics and subsequently distributed to the surrounding roadway network.

The site is currently zoned R-2 (two-family residential) and is occupied by an income restricted mobile home park with 341 mobile home units.

The Applicant is proposing to develop the site in two Phases to include the following:

- 1,336 Residential Dwelling Units
  - 442 Affordable Housing Units
  - 894 Market Rate Units
- 60,000 S.F. of Commercial Space
  - 30,000 S.F. Office Space
  - 30,000 S.F. Retail Space

The site was the subject of a 2019 rezoning and traffic impact analysis which assumed two Phases of development with slightly different density. At that time, the traffic study assumed the following:

- Under Phase 1, the existing 341 mobile home units remained, and 300 dwelling units (270 apartments/townhomes and 30 single family units) and 50,000 S.F. of commercial space (25,000 S.F. Office Space and 25,000 S.F. Retail Space) added to the development.
- Phase 2 was assumed to consist of replacing the 341 mobile home units with 500 new dwelling units (for a net increase of 159 dwelling units).

In order to update the traffic study with the proposed changes, all density changes were assumed to occur with the Phase 2 development. This allows the previous traffic study to stand on its own and not require updates.

Therefore, for the purposes of this traffic study, it was assumed that Phase 1 will remain the same and Phase 2 will consist of the following:

- Replace the existing 341 mobile home units with 1,036 new dwelling units
  - 60 Single Family Dwelling Units
  - 419 Apartment Dwelling Units
  - 115 Townhome Dwelling Units
  - 442 Affordable Housing Units
- Add 10,000 S.F. of Commercial Space
  - 5,000 S.F. Office Space
  - 5,000 S.F. Retail Space

The buildout of the development is likely to occur sometime between 2030 and 2040. For purposes of this analysis, the development was assumed to be complete by 2030 to Primary access to the site will be provided via existing Hickory Street which to the full access connection to Old Lynchburg Road. Secondary access will be provided via Hickory Street to Stagecoach Road to Old Lynchburg Road/5th Street Extended. No new connections to Old Lynchburg Road (Route 631) are proposed with the development.

For purposes of this analysis, the development was assumed to be complete and occupied by 2030.

5.1 Site Trip Generation

The site-generated traffic volumes shown in Table 5-1 for the total Southwood Development were estimated using the 11th Edition of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* and was calculated using the number of dwelling units or the size of the building (S.F.) as the independent variable.

To determine the number of trips generated by Phase 2 of the proposed development, the trips for the total Southwood Development (Phases 1 and 2) were recalculated with an updated development program including affordable housing units. Then, the total trips approved in the Southwood Phase 1 TIA were subtracted to yield the net increase in trips for Southwood Phase 2.

As noted above, the proposed development will replace the existing mobile home park and therefore those trips were subtracted from the total development trip generation to calculate the net new residential trips associated with Phase 2.

As shown in Table 5-1, when complete, Phase 2 of the proposed development will generate 291 net trips (112 in and 179 out) during the AM peak hour, 407 net trips (225 in and 182 out) during the PM peak hour, and 4,433 net average weekday trips.

5.2 Pass-By Trip Reductions

Reductions were not taken for pass-by trips due to the site location and the low traffic volumes along Old Lynchburg Road in the vicinity of the site.

Table 5-1: 2030 Trip Generation Summary

	Size	Units	Land Use Code	Weekday AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Trips
1. Total Southwood Development (1)										
Proposed Residential										
Multifamily Housing (Low-Rise)	689	D.U.	220	57	179	236	200	117	317	4,492
Townhomes	115	D.U.	215	17	37	54	37	28	65	826
Single Family	90	D.U.	210	18	50	68	57	33	90	916
Affordable Housing	442	D.U.	223	46	113	159	120	83	203	2,126
Proposed Residential Subtotal	*1,336*	*D.U.*		*138*	*379*	*517*	*414*	*261*	*675*	*8,360*
Existing Residential Development (To be Removed)										
Mobile Home Park	341	D.U.	240	28	105	133	123	75	198	2,428
Existing Residential Subtotal				*28*	*105*	*133*	*123*	*75*	*198*	*2,428*
Net New Residential (Proposed - Existing)				*110*	*274*	*384*	*291*	*186*	*477*	*5,932*
Commercial										
Retail	30,000	S.F.	822	43	28	71	85	85	170	1,634
Office	30,000	S.F	710	52	7	59	10	51	61	407
Commercial Subtotal	60,000	S.F		*95*	*35*	*130*	*95*	*136*	*231*	*2,041*
Total Southwood Development Trips (Phase 1 and Phase 2)				**205**	**309**	**514**	**386**	**322**	**708**	**7,973**
2. Approved Southwood Phase 1 (Background Development) (2)										
Residential										
Apartments/Townhomes	270	D.U.	220	28	95	123	90	53	143	1,976
Single Family	30	D.U.	210	7	19	26	20	12	32	343
Residential Subtotal	300	D.U.		*35*	*114*	*149*	*110*	*65*	*175*	*2,319*
Commercial										
Retail	25,000	S.F.	820	15	9	24	46	49	95	944
Office	25,000	S.F	710	43	7	50	5	26	31	277
Commercial Subtotal	50,000	S.F		*58*	*16*	*74*	*51*	*75*	*126*	*1,221*
Total Approved Southwood Phase 1 Development Trips				**93**	**130**	**223**	**161**	**140**	**301**	**3,540**
3. Net Increase in Trips, Southwood Phase 2 Total Development - Approved Phase 1										
Net Residential Trips				75	160	235	181	121	302	3,613
Net Commerical Trips				37	19	56	44	61	105	820
Total Net Increse in Trips, Southwood Phase 2				**112**	**179**	**291**	**225**	**182**	**407**	**4,433**

Notes: (1) Based on the Institute of Transportation Engineers Trip Generation, 11th Edition. Assumes General Urban/Suburban land use category.
(2) Southwood Phase 1 trips obtained from the Southwood Phase 1 TIA dated January 7, 2019 and prepared by Timmons Group.

5.3 TRIP DISTRIBUTION METHODOLOGY

The distribution of external trips generated by the proposed development was based on the existing travel patterns, the nature of the use, and local knowledge. The distributions also align with those used in the approved Southwood Phase 1 TIA.

The following directional distributions were assumed for residential units:

- To/from the west on Sunset Avenue Ext. – 10%
- To/from the west on Old Lynchburg Road – 10%
- To/from the west on I-64 – 20%
- To/from the east on I-64 – 20%
- To/from the north on Stagecoach Road – 20%
- To/from the north on 5th Street Ext. – 40%

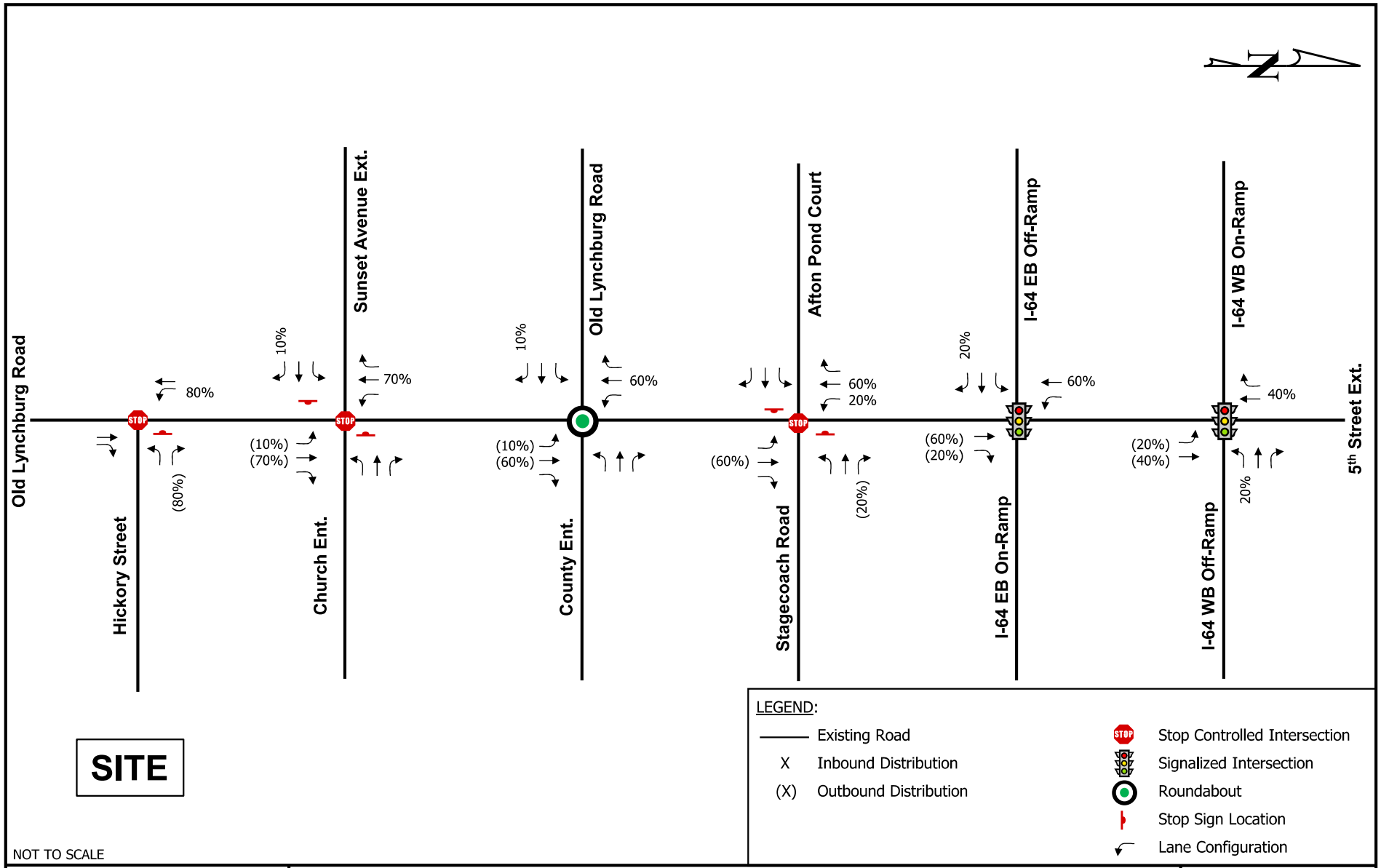
The following directional distributions were assumed for commercial development:

- To/from the south on Old Lynchburg Road – 5%
- To/from the west on Sunset Avenue Ext. – 5%
- To/from the west on Old Lynchburg Road – 5%
- To/from the west on I-64 – 20%
- To/from the east on I-64 – 20%
- To/from the north on 5th Street Ext. – 45%

Directional distributions were then applied to the study intersections as shown on Figures 5-1 (residential) and 5-2 (commercial).

5.4 TRAFFIC ASSIGNMENT

The trip distribution percentages for the external site trips were applied to the trip generation shown in Table 5-1 to distribute the external site trips to the surrounding roadway network. The resulting Phase 2 site generated external trips are shown on Figure 5-3.



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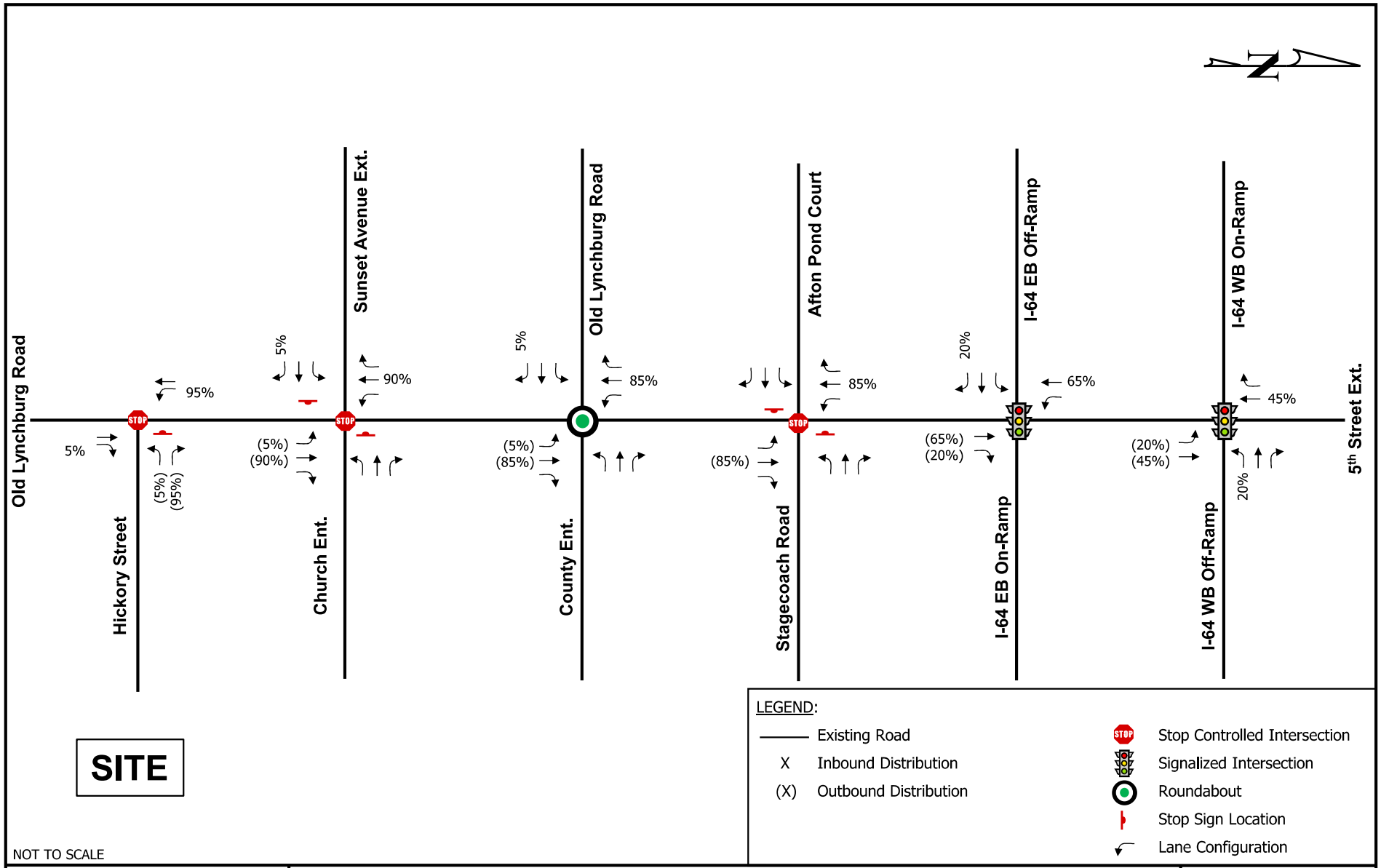
Southwood Phase 2 TIA
Site Trip Distributions - Residential
Albemarle County, Virginia

Figure
5-1



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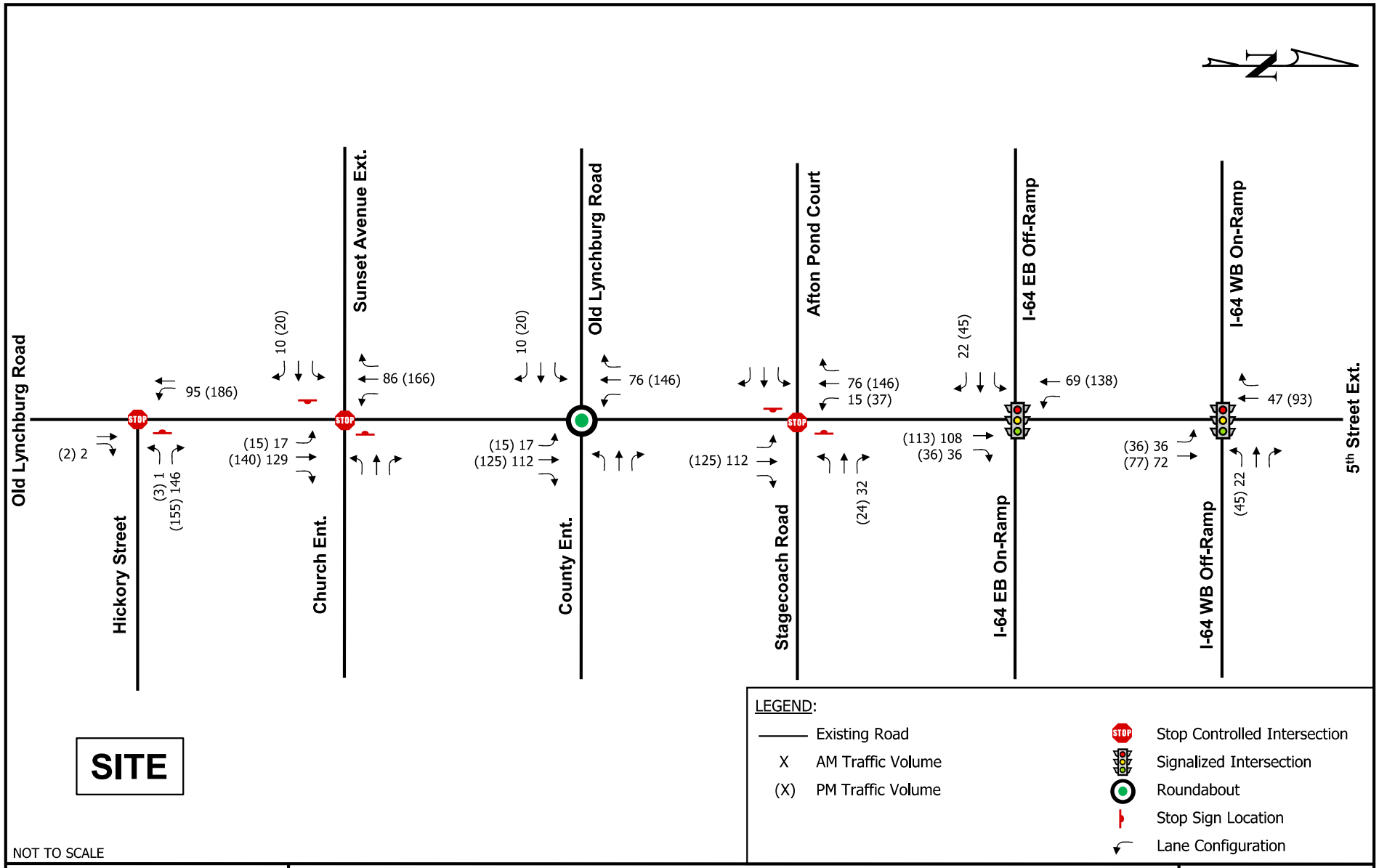
Southwood Phase 2 TIA
Site Trip Distributions - Commercial
Albemarle County, Virginia

Figure
5-2



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Southwood Phase 2 TIA
2030 Phase 2 Site Trips
Albemarle County, Virginia

Figure
5-3

6 2030 TOTAL FUTURE CONDITIONS

To complete the analysis of the 2030 total conditions (with Phase 2 of the proposed development), the estimated site trips were added to the background 2030 volumes. The projected volumes were then used to complete the capacity analysis.

As previously mentioned, the intersection of 5th Street Ext./Old Lynchburg Road/County Complex is expected to be rebuilt as a roundabout by the year 2030. Accordingly, this intersection was analyzed using SIDRA 9.

6.1 TOTAL FUTURE TRAFFIC VOLUMES

To generate the 2030 total future traffic volumes, the Phase 2 external site trips shown on Figure 5-3 was added to the background 2030 traffic volumes shown on Figure 4-4. The resulting 2030 total future traffic volumes are shown on Figure 6-1.

6.2 2030 TOTAL CAPACITY ANALYSES

Table 6-1 summarizes the 2030 total future intersection LOS, delay, 95th percentile (Synchro) queue lengths, and the maximum (SimTraffic) queue lengths based on the 2030 total future traffic volumes shown on Figure 6-1, the future lane geometry (Figure 2-2), and the existing traffic signal timings. The corresponding SYNCHRO and SIDRA worksheets are included in Appendix G.

Note that Route 631 (5th Street Extension and Old Lynchburg Road) is assumed to run north-south through the study area. Also note that the overall intersection LOS and delay cannot be reported for unsignalized intersections.

As shown in table 7-1, under 2030 total future conditions the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

- At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements and approaches will continue to operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
    - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the eastbound right effectively blocking both lanes.
    - The westbound left is over capacity during both peak hours (LOS F). The westbound right will operate at a LOS F/C during the AM/PM peaks, respectively. During both peak

hours, the WB left maximum queue backs up past the storage for the westbound right effectively blocking both lanes.
  - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue exceeds the available storage, spilling back into through lanes. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both peaks (LOS F).
  - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the EB maximum queue will back up onto mainline I-64 eastbound.
  - The northbound approach is over capacity during both AM and PM (LOS F) peaks.
  - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peaks (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage.
  - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During both peak hours, the SB thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

Table 6-1: Intersection Level of Service and Delay Summary
2030 Total Future Traffic

Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	AM PEAK HOUR				PM PEAK HOUR			
			Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)	Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)
1. Old Lynchburg Road (N-S) and	*WB Approach*		*14.0*	*B*	55	132	*13.0*	*B*	49	176
Hickory Street (W)	NB Thru - Right		†	†	--	2	†	†	--	4
Unsignalized	*NB Approach*		†	†	--	--	†	†	--	--
	SB Left	295	8.5	A	14	93	8.5	A	25	86
	SB Thru		†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
2. Old Lynchburg Road (N-S) and	*EB Approach*		*41.2*	*E*	115	182	*129.6*	*F*	224	230
Church Entrance (W) /	*WB Approach*		*10.0*	*A*	0	16	*9.6*	*A*	0	14
Sunset Avenue Ext. (E)	NB Left	250	8.2	A	2	24	9.6	A	2	26
Unsignalized	NB Thru-Right		†	†	--	5	†	†	--	4
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	290	8.5	A	0	20	8.2	A	0	23
	SB Thru		†	†	--	2	†	†	--	--
	SB Right	330	†	†	--	4	†	†	--	4
	SB Approach		†	†	--	--	†	†	--	--
3. Old Lynchburg Road (NB) /	*EB Approach*		*9.2*	*A*	66	--	*21.0*	*C*	195	--
5th Street Extended (SB) and	*WB Approach*		*7.2*	*A*	1	--	*7.5*	*A*	6	--
County Complex (WB) /	NB Left - Thru		8.2	A	71	--	7.7	A	60	--
Old Lynchburg Road (EB)	NB Thru - Right		7.6	A	74	--	6.9	A	63	--
Roundabout	*NB Approach*		*8.0*	*A*	--	--	*7.3*	*A*	--	--
	SB Left - Thru		7.0	A	67	--	11.9	B	184	--
	SB Right		6.0	A	34	--	7.3	A	53	--
	SB Approach		*6.6*	*A*	--	--	*10.5*	*B*	--	--
	Overall		**7.7**	**A**	--	--	**11.3**	**B**	**--**	**--**
4. 5th Street Extended (N-S) and	EB Left - Thru		2350.4	F	107	280	1502.8	F	86	243
Stagecoach Road (W) /	EB Right	115	11.1	B	2	103	13.5	B	0	68
Afton Pond Court (E)	*EB Approach*		1491.1	F	--	--	*1304.2*	*F*	--	--
Unsignalized	WB Left - Thru		1348.2	F	66	787	514.2	F	49	682
	WB Right	100	66.2	F	242	100	16.8	C	35	100
	WB Approach		*119.1*	*F*	--	--	*56.0*	*F*	--	--
	NB Left	265	0.0	A	0	0	11.2	B	0	36
	NB Thru		†	†	--	20	†	†	--	172
	NB Right	300	†	†	--	31	†	†	--	28
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	300	20.6	C	84	300	13.9	B	35	205
	SB Thru		†	†	--	709	†	†	--	24
	SB Right	290	†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
5. 5th Street Extended (N-S) and	EB Left - Thru		153.2	F	#625	1088	103.4	F	#546	898
I-64 EB Off-Ramp (E)	EB Right	500	45.2	D	182	500	57.9	E	#296	500
Signalized	*EB Approach*		*112.7*	*F*	--	--	*83.9*	*F*		--
	NB Thru - Right		244.6	F	#779	985	219.8	F	#642	1455
	NB Approach		*232.8*	*F*	--	--	*217.1*	*F*	--	--
	SB Left	245	20.8	C	m75	172	16.7	B	m139	240
	SB Thru		0.1	A	m85	116	0.1	A	m81	228
	SB Approach		*4.1*	*A*	--	--	*4.2*	*A*	--	--
	Overall		**135.2**	**F**	--	--	**98.6**	**F**	**--**	**--**
6. 5th Street Extended (N-S) at	WB Left - Thru		38.8	D	#260	299	58.2	E	#352	320
I-64 WB Off-Ramp (W)	WB Right	450	122.9	F	#312	303	101.7	F	#293	238
Signalized	*WB Approach*		*87.3*	*F*	--	--	*80.3*	*F*	--	--
	NB Left	140	20.4	C	m182	139	24.4	C	m139	139
	NB Thru		0.1	A	m96	390	0.1	A	m31	279
	NB Approach		*5.9*	*A*	--	--	*6.2*	*A*	--	--
	SB Thru - Right		108.6	F	#466	716	239.8	F	#827	1391
	NB Approach		*106.1*	*F*	--	--	*212.8*	*F*	--	--
	Overall		**53.7**	**D**	--	--	**111.8**	**F**	**--**	**--**

[1] *Overall intersection LOS and delay cannot be reported for unsignalized intersections.*

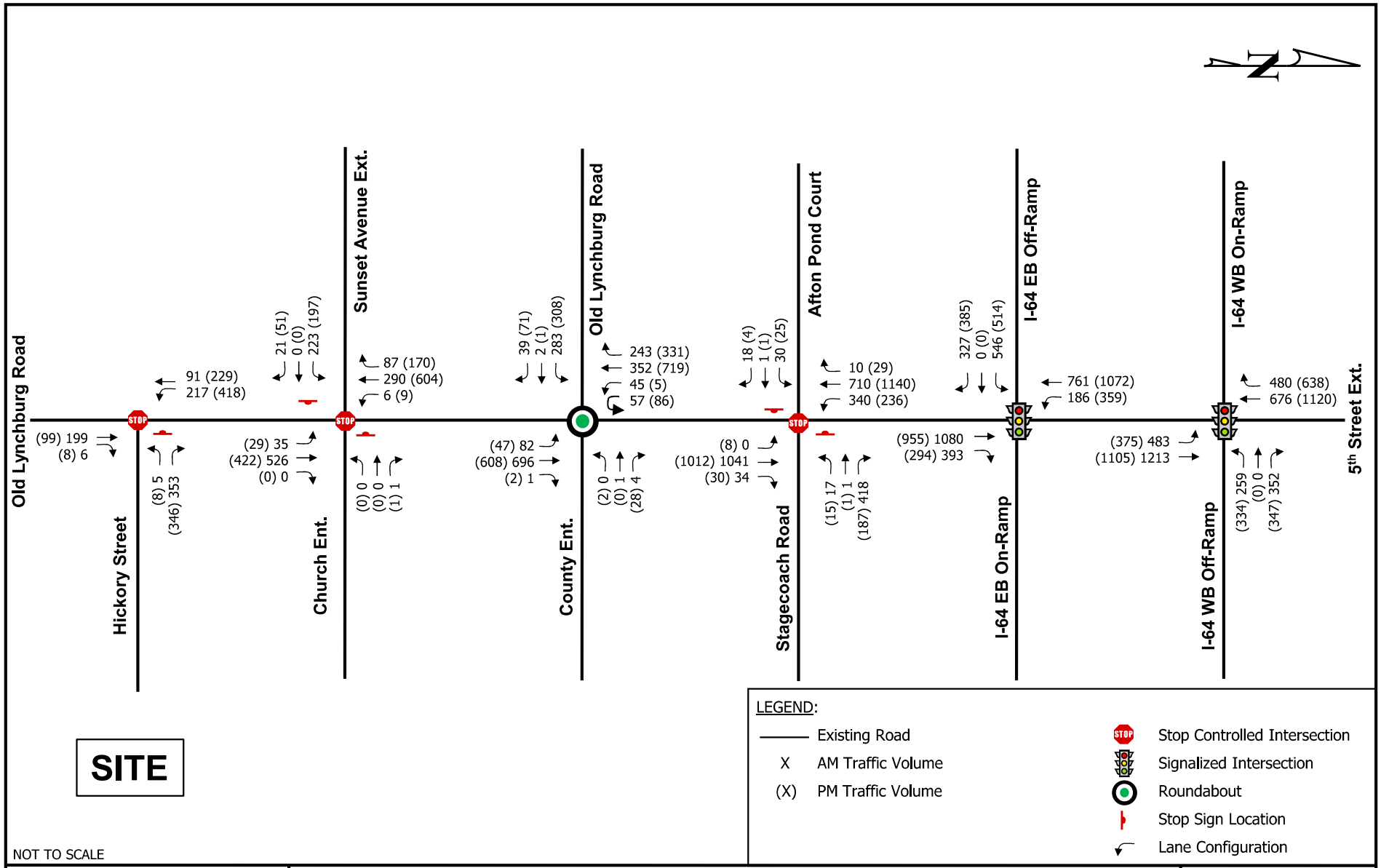
† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

m Volume for 95th percentile queue is metered by upstream signal.

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

SimTraffic queues are average maximum queues after 10 runs of 60 minutes each.

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO.



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Southwood Phase 2 TIA
2030 Total Future Peak Hour Volumes
Albemarle County, Virginia

Figure
6-1

7 2036 TOTAL BACKGROUND CONDITIONS

In accordance with Chapter 527 Guidelines, this analysis examines a buildout plus six-year scenario (2038).

The background 2036 volumes were analyzed assuming future intersection geometry in conjunction with projected background traffic volumes.

The background traffic volumes were developed based on a 1% annual growth rate and the completion of four (4) other developments in the study area.

7.1 2036 Background Traffic Growth

The 1% annual growth rate discussed above was compounded annually for the 15-year period from 2021 to 2036 and applied to mainline through volumes and the I-64 ramps only. The resulting 2036 Existing + Growth Volumes are shown on Figure 7-1.

7.2 Approved Background 2036 Developments

Background developments in the study area were based on the Albemarle County Development Dashboard information, published in February 2020. The most recent aerial imagery (updated June 2021) was used to identify which developments had already been built. There are no background developments expected to open after the year 2030.

7.3 Total Background 2036 Traffic Forecasts

Since there are no background developments expected to open after 2030, the total 2030 background development trips shown on Figure 4-3 were then added to the 2036 Existing + Growth Volumes shown on Figure 7-1 to yield the Total 2036 Background Traffic Volumes, shown on Figure 7-2.

7.4 2036 Background Capacity Analysis Results

Table 7-1 summarizes the 2036 background intersection LOS, delay, 95th percentile (Synchro and Sidra), and maximum (SimTraffic) queue lengths based on the 2036 background peak hour traffic volumes shown on Figure 7-2, the future lane geometry (Figure 2-2), and the existing timings at the traffic signals. The corresponding SYNCHRO and SIDRA worksheets are included in Appendix H.

As shown in Table 7-1, under 2036 background conditions:

- At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a C/E during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. The eastbound approach will operate at a LOS D during the PM peak. All other turning movements

will operate at a LOS B or better during both AM/PM peaks. All turning movements have adequate storage to accommodate 95th percentile queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
  - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right effectively blocking both lanes.
  - The westbound approach is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E during the AM peak and LOS B during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
  - During the AM peak, the southbound left maximum queue exceeds the available storage spilling back into the through lanes. All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both AM and PM (LOS F) peaks.
  - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the maximum queue is expected to back up onto mainline I-64 eastbound. During both peak hours, the eastbound left maximum queue backs up past the available storage for the eastbound right.
  - The northbound approach is over capacity during both AM and PM (LOS F) peaks. During the PM peak, the northbound approach maximum queue backs up reaching the adjacent intersection of Stagecoach Road/Afton Pond Court.
  - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS E/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peak hours (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours.
  - The southbound approach is over capacity during both the peak hours (LOS F). During the PM peak, the southbound thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

Table 7-1: Intersection Level of Service and Delay Summary
2036 Total Background Peak Hour Traffic

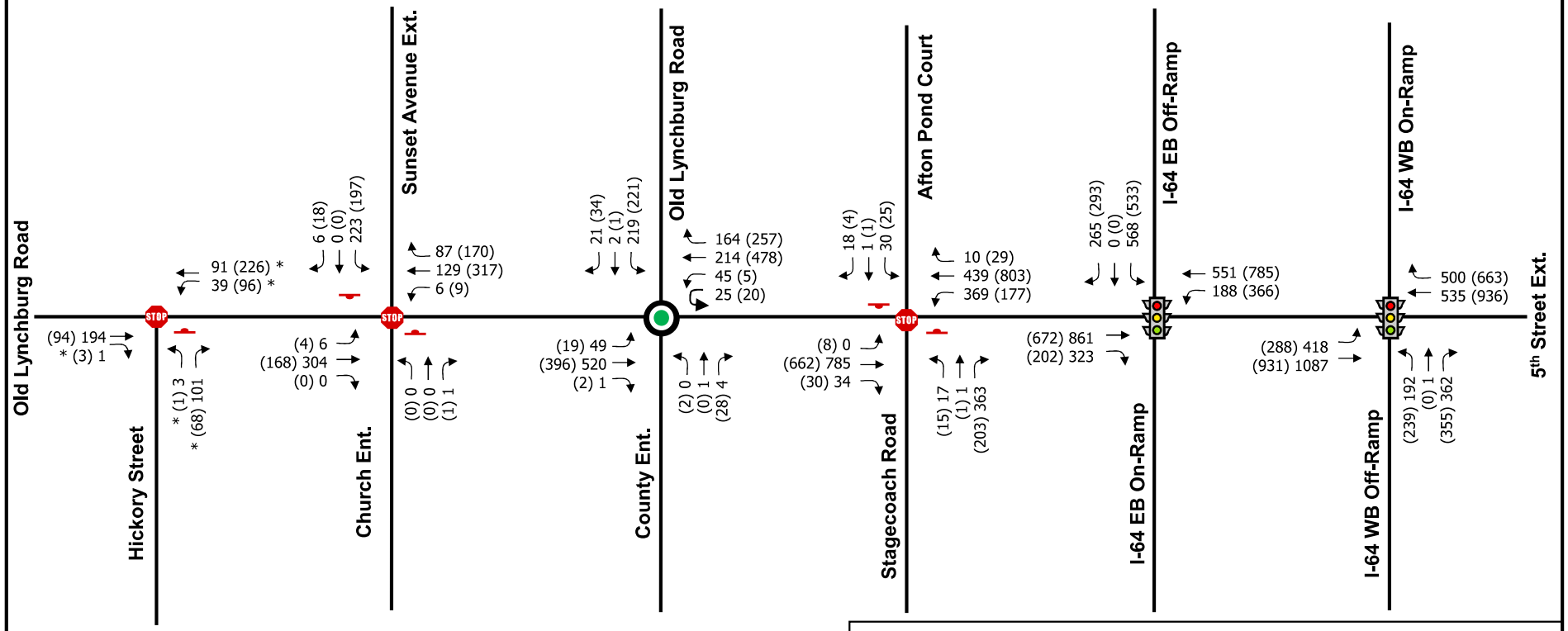
Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	AM PEAK HOUR				PM PEAK HOUR			
			Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)	Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)
1. Old Lynchburg Road (N-S) and Hickory Street (W) Unsignalized	*WB Approach*		*11.5*	*B*	23	88	*10.4*	*B*	18	84
	NB Thru - Right		†	†	--	--	†	†	--	
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	295	8.2	A	6	73	7.9	A	12	61
	SB Thru		†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
2. Old Lynchburg Road (N-S) and Church Entrance (W) / Sunset Avenue Ext. (E) Unsignalized	*EB Approach*		*22.1*	*C*	62	179	*35.1*	*E*	96	147
	WB Approach		*9.6*	*A*	0	14	*9.1*	*A*	0	8
	NB Left	250	7.9	A	0	20	8.9	A	0	26
	NB Thru-Right		†	†	--	--	†	†	--	5
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	290	8.2	A	0	20	7.9	A	0	15
	SB Thru		†	†	--	--	†	†	--	2
	SB Right	330	†	†	--	2	†	†	--	8
	SB Approach		†	†	--	--	†	†	--	--
3. Old Lynchburg Road (NB) / 5th Street Extended (SB) and County Complex (WB) / Old Lynchburg Road (EB) Roundabout	*EB Approach*		*12.1*	*B*	86	--	*27.0*	*D*	221	--
	WB Approach		*9.3*	*A*	0	--	*9.5*	*A*	7	--
	NB Left - Thru		10.8	B	79	--	9.5	A	59	--
	NB Thru - Right		10.5	B	80	--	9.0	A	62	--
	NB Approach		†	†	--	--	†	†	--	--
	SB Left - Thru		8.2	A	69	--	13.7	B	194	--
	SB Right		7.1	A	40	--	8.6	A	63	--
	SB Approach		*7.7*	*A*	--	--	*12.1*	*B*	--	--
	Overall		**9.8**	**A**	--	--	**13.9**	**B**	**--**	**--**
4. 5th Street Extended (N-S) and Stagecoach Road (W) / Afton Pond Court (E) Unsignalized	EB Left - Thru		6878.4	F	117	289	645.8	F	72	180
	EB Right	115	11.1	B	2	115	12.8	B	0	51
	EB Approach		*4355.7*	*F*	--	--	*561.4*	*F*	--	--
	WB Left - Thru		763.5	F	66	792	247.6	F	37	560
	WB Right	100	42.0	E	172	100	14.9	B	25	100
	WB Approach		*74.1*	*F*	--	--	*35.7*	*E*	--	--
	NB Left	265	0.0	A	0	--	10.7	B	0	31
	NB Thru		†	†	--	36	†	†	--	88
	NB Right	300	†	†	--	23	†	†	--	25
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	300	17.7	C	92	300	12.3	B	23	172
	SB Thru		†	†	--	486	†	†	--	23
	SB Right	290	†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
5. 5th Street Extended (N-S) and I-64 EB Off-Ramp (E) Signalized	EB Left - Thru		184.1	F	#673	1127	127.7	F	#588	1160
	EB Right	500	43.7	D	165	500	47.0	D	22	500
	EB Approach		*134.0*	*F*	--	--	*95.8*	*F*		--
	NB Thru - Right		210.1	F	#725	1027	172.1	F	#574	1414
	NB Approach		*201.5*	*F*	--	--	*170.9*	*F*	--	--
	SB Left	245	20.9	C	83	192	17.0	B	159	240
	SB Thru		0.0	A	77	96	0.1	A	74	224
	SB Approach		*4.5*	*A*	--	--	*4.8*	*A*	--	--
	Overall		**126.3**	**F**	--	--	**84.8**	**F**	**--**	**--**
6. 5th Street Extended (N-S) at I-64 WB Off-Ramp (W) Signalized	WB Left - Thru		37.4	D	#243	286	46.8	D	#308	324
	WB Right	450	147.7	F	#344	339	121.2	F	#314	299
	WB Approach		*103.6*	*F*	--	--	*87.6*	*F*	--	--
	NB Left	140	19.7	B	179	140	23.6	C	136	139
	NB Thru		0.1	A	109	398	0.1	A	35	281
	NB Approach		*5.6*	*A*	--	--	*5.9*	*A*	--	--
	SB Thru - Right		115.2	F	#468	670	243.4	F	#816	1390
	NB Approach		*112.3*	*F*	--	--	*214.8*	*F*	--	--
	Overall		**59.2**	**E**	--	--	**115.0**	**F**	**--**	**--**

[1] *Overall intersection LOS and delay cannot be reported for unsignalized intersections.*

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

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

SimTraffic queues are average maximum queues after 10 runs of 60 minutes each.



SITE

Peak Hours:
7:45-8:45 AM
4:45-5:45 PM

* Turning movements at Old Lynchburg Rd & Hickory St are 2018 counts taken from Southwood Phase 1 TIA. Through volumes balanced to Sunset Ave. counts.

LEGEND:

- Existing Road
- X AM Traffic Volume
- (X) PM Traffic Volume
- Stop Controlled Intersection
- Signalized Intersection
- Roundabout
- Stop Sign Location
- Lane Configuration

NOT TO SCALE

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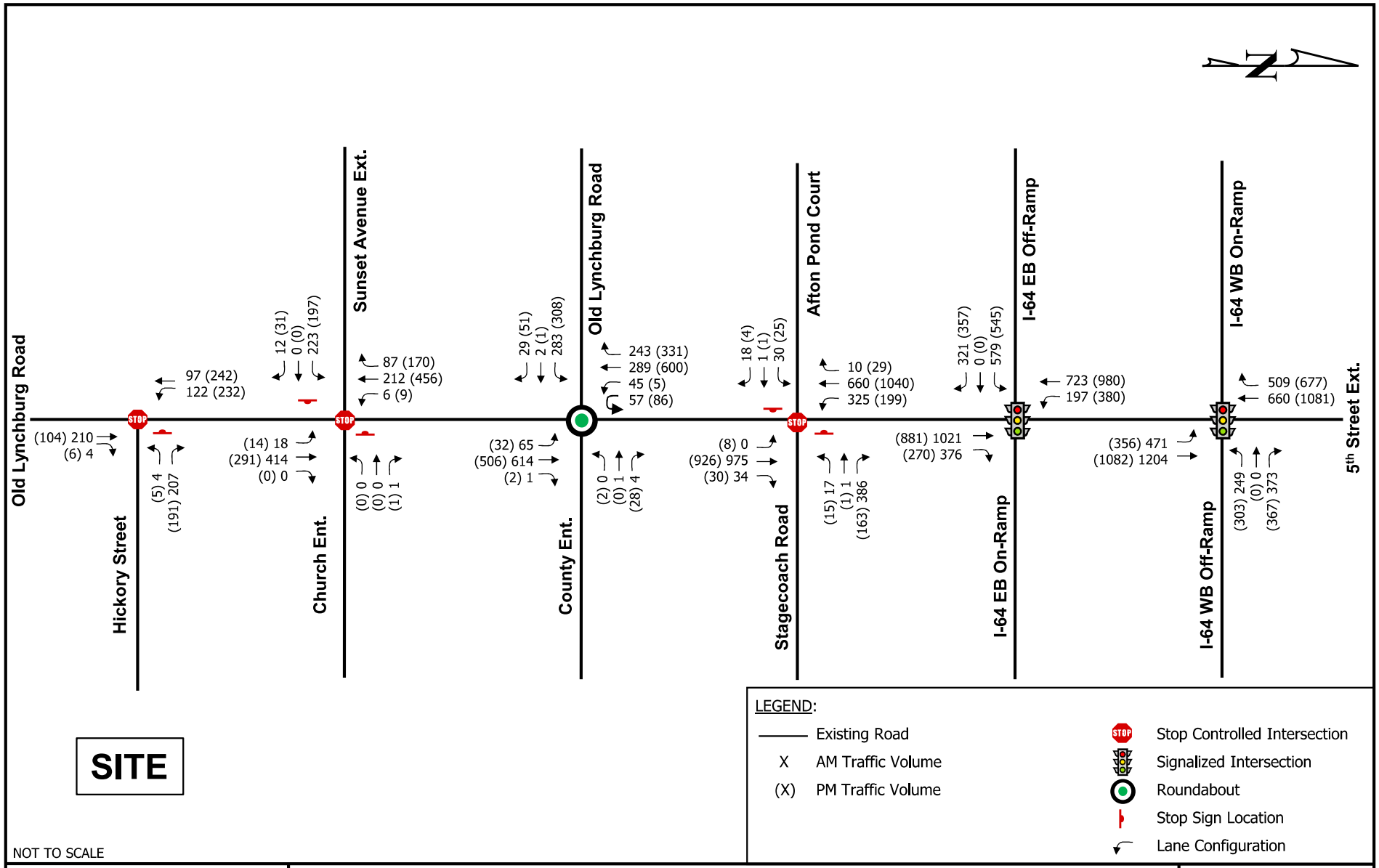
Southwood Phase 2 TIA
2036 Existing + Growth Peak Hour Volumes
Albemarle County, Virginia

Figure
7-1



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Southwood Phase 2 TIA
2036 Total Background Peak Hour Volumes
Albemarle County, Virginia

Figure
7-2

8 2036 TOTAL FUTURE CONDITIONS

To complete the analysis of the 2036 total conditions (with Phase 2 of the proposed development), the estimated site trips were added to the background 2036 volumes. The projected volumes were then used to complete the capacity analysis.

8.1 TOTAL FUTURE TRAFFIC VOLUMES

To generate the 2036 total future traffic volumes, the Phase 2 external site trips shown on Figure 5-3 were added to the background 2036 traffic volumes shown on Figure 7-2. The resulting 2036 total future traffic volumes are shown on Figure 8-1.

8.2 2036 TOTAL CAPACITY ANALYSES

Table 9-1 summarizes the 2036 total future intersection LOS, delay, 95th percentile (Synchro) queue lengths, and the maximum (SimTraffic) queue lengths based on the 2036 total future traffic volumes shown on Figure 8-1, the future lane geometry (Figure 2-2), and the existing traffic signal timings. The corresponding SYNCHRO and SIDRA worksheets are included in Appendix I.

Note that Route 631 (5th Street Extension and Old Lynchburg Road) is assumed to run north-south through the study area. Also note that the overall intersection LOS and delay cannot be reported for unsignalized intersections.

As shown in Table 9-1, under 2036 total future conditions the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

- At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. The southbound left will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
    - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the EB right effectively blocking the lane.
    - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS F during the AM peak and LOS C during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
    - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue

exceeds the available storage. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both peak hours (LOS F).
  - The eastbound approach is over capacity during both peaks (LOS F). During both Peak hours, the EB approach maximum queue will back up onto mainline I-64 eastbound.
  - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection is over capacity during both AM (LOS E) and PM (LOS F) peaks.
  - The westbound approach is over capacity during both peak hours (LOS F). The northbound left will operate at a LOS C during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage, spilling back into through lanes.
  - The southbound approach is over capacity during both peak hours (LOS F) and the maximum queue backs up through the adjacent intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

Table 8-1: Intersection Level of Service and Delay Summary
2036 Total Future Traffic

Intersection and Type of Control	Movement and Approach	Effective Turn Lane Storage (ft)	AM PEAK HOUR				PM PEAK HOUR			
			Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)	Delay [1] (sec/veh)	LOS [1]	Synchro/Sidra 95th Percentile Queue Length (ft)	SimTraffic Max Queue Length (ft)
1. Old Lynchburg Road (N-S) and	*WB Approach*		*14.3*	*B*	57	88	*13.1*	*B*	49	85
Hickory Street (W)	NB Thru - Right		†	†	--	--	†	†	--	--
Unsignalized	*NB Approach*		†	†	--	--	†	†	--	--
	SB Left	295	8.5	A	14	73	8.5	A	25	62
	SB Thru		†	†	--	--	†	†	--	--
	SB Approach		†	†	--	--	†	†	--	--
2. Old Lynchburg Road (N-S) and	*EB Approach*		*44.5*	*E*	212	179	*147.6*	*F*	238	172
Church Entrance (W) /	*WB Approach*		*10.1*	*B*	0	14	*9.6*	*A*	0	12
Sunset Avenue Ext. (E)	NB Left	250	8.2	A	2	20	9.7	A	2	21
Unsignalized	NB Thru-Right		†	†	--	--	†	†	--	2
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	290	8.6	A	0	20	8.3	A	0	23
	SB Thru		†	†	--	--	†	†	--	--
	SB Right	330	†	†	--	2	†	†	--	10
	SB Approach		†	†	--	--	†	†	--	--
3. Old Lynchburg Road (NB) /	*EB Approach*		*9.4*	*A*	67	--	*23.1*	*C*	211	--
5th Street Extended (SB) and	*WB Approach*		*7.4*	*A*	1	--	*7.7*	*A*	6	--
County Complex (WB) /	NB Left - Thru		8.5	A	75	--	7.9	A	63	--
Old Lynchburg Road (EB)	NB Thru - Right		7.8	A	78	--	7.0	A	66	--
Roundabout	*NB Approach*		*8.3*	*A*	--	--	*7.5*	*A*	--	--
	SB Left - Thru		7.2	A	70	--	12.6	B	201	--
	SB Right		6.1	A	35	--	7.4	A	54	--
	SB Approach		*6.8*	*A*	--	--	*11.0*	*B*	--	--
	Overall		**7.9**	**A**	--	--	**12.0**	**B**	**--**	**--**
4. 5th Street Extended (N-S) and	EB Left - Thru		**	**	**	289	1707.0	F	88	151
Stagecoach Road (W) /	EB Right	115	11.1	B	2	115	13.8	B	0	79
Afton Pond Court (E)	*EB Approach*		**	**	**	--	*1481.2*	*F*	--	--
Unsignalized	WB Left - Thru		1555.5	F	68	792	612.8	F	51	508
	WB Right	100	76.9	F	263	100	17.4	C	37	100
	WB Approach		*137.9*	*F*	--	--	*64.3*	*F*	--	--
	NB Left	265	0.0	A	0	0	11.5	B	0	31
	NB Thru		†	†	--	36	†	†	--	79
	NB Right	300	†	†	--	23	†	†	--	19
	NB Approach		†	†	--	--	†	†	--	--
	SB Left	300	22.4	C	92	299	14.5	B	37	152
	SB Thru		†	†	--	486	†	†	--	--
	SB Right	290	†	†	--	--	†	†	--	6
	SB Approach		†	†	--	--	†	†	--	--
5. 5th Street Extended (N-S) and	EB Left - Thru		184.1	F	#673	1127	127.7	F	#588	1096
I-64 EB Off-Ramp (E)	EB Right	500	50.8	D	208	500	66.7	E	#319	475
Signalized	*EB Approach*		*134.5*	*F*	--	--	*101.9*	*F*		--
	NB Thru - Right		277.1	F	#828	1027	244.8	F	#676	1383
	NB Approach		*261.7*	*F*	--	--	*241.1*	*F*	--	--
	SB Left	245	20.9	C	m74	192	17.0	B	m140	241
	SB Thru		0.1	A	m85	96	0.1	A	m79	199
	SB Approach		*4.2*	*A*	--	--	*4.4*	*A*	--	--
	Overall		**154.0**	**F**	--	--	**111.2**	**F**	**--**	**--**
6. 5th Street Extended (N-S) at	WB Left - Thru		40.5	D	#276	286	66.0	E	#372	280
I-64 WB Off-Ramp (W)	WB Right	450	147.7	F	#344	339	121.2	F	#320	277
Signalized	*WB Approach*		*102.7*	*F*	--	--	*94.3*	*F*	--	--
	NB Left	140	23.0	C	m180	140	25.4	C	m137	139
	NB Thru		0.1	A	m97	398	0.1	A	m31	296
	NB Approach		*6.6*	*A*	--	--	*6.5*	*A*	--	--
	SB Thru - Right		131.9	F	#505	670	280.5	F	#887	1388
	NB Approach		*128.1*	*F*	--	--	*245.3*	*F*	--	--
	Overall		**61.4**	**E**	--	--	**129.1**	**F**	**--**	**--**

[1] *Overall intersection LOS and delay cannot be reported for unsignalized intersections.*

† SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

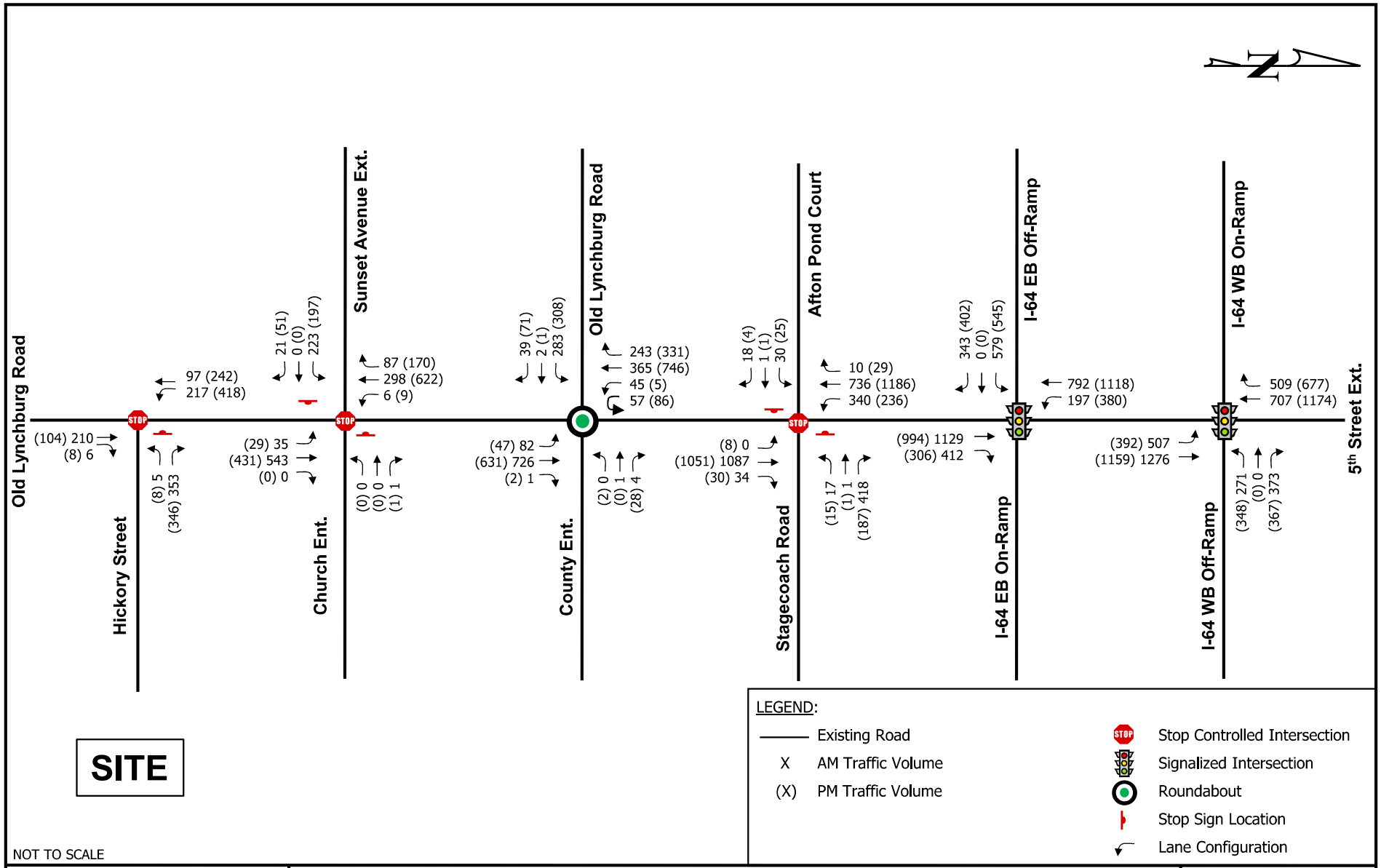
m Volume for 95th percentile queue is metered by upstream signal.

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

SimTraffic queues are average maximum queues after 10 runs of 60 minutes each.

* HCM 2000 used to determine LOS for this movement. V/C ratio is greatly exceeded.

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO.



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Southwood Phase 2 TIA
2036 Total Future Peak Hour Volumes
Albemarle County, Virginia

Figure
8-1

9 CONCLUSIONS AND RECOMMENDATIONS

As shown in 2030 and 2036 background conditions, many of the study intersections along the Old Lynchburg Road/5th Street Corridor experience capacity and queueing constraints. The additional traffic generated by the Southwood Phase 2 development will add to the delay but will not cause any new intersections to fail.

Albemarle County staff indicated that the intersection of Old Lynchburg Road and 5th Street Ext./County Complex would be reconstructed as a roundabout by the year 2030. The results of the analysis show that the roundabout improves congestion and delay at this intersection during future conditions.

The VDOT STARS study recommended the following additional improvements:

- 5th Street Extended & Stagecoach Road/Afton Pond Court: converted to a Restricted Crossing U-Turn (RCUT) intersection
- Old Lynchburg Road & 5th Street Extended: converted to a roundabout

Further, the STARS study recommended further study of the 5th Street / I-64 interchange to determine the best solution to mitigate traffic congestion.

Specifically,

- Under 2021 existing conditions:
    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements operate at a LOS A during both AM and PM peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Ext./Private Entrance, the eastbound approach operates at a LOS B/C during the AM/PM peaks, respectively. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of Old Lynchburg Road/5th Street/County Complex, the eastbound approach and left movement operate at a LOS D/E during the AM/PM peaks, respectively. The westbound left operates at a LOS C during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.
    - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
        - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
        - The westbound left movement is over capacity during both peak hours (LOS F) and during the AM peak, the WB left maximum queue backs up past the storage for the WB right, effectively blocking both lanes.

        - The north- and southbound through and turning movements operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to handle 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
        - The intersection currently operates at an overall LOS D/C during the AM/PM peaks, respectively. The eastbound approach is over capacity during the AM peak (LOS F) and PM peak (LOS E).
        - The northbound approach operates at a LOS E/D during the AM/PM peaks, respectively. Adequate turn bay storage exists to handle all 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
        - The intersection currently operates at an overall LOS C/D during the AM/PM peaks, respectively. The westbound right operates at a LOS F/E during the AM/PM peaks, respectively.
        - The northbound left movement operates at a LOS B/C during the AM/PM peaks, respectively. The NB left 95th percentile queue exceeds the available storage, spilling back into through lanes.
        - The southbound approach operates at a LOS D/F during the AM/PM peaks, respectively. All other turning bays have adequate storage to handle 95th percentile and maximum queue lengths.

- Under 2030 background conditions with the 1% growth rate and traffic from four (4) background developments:

    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a LOS C/D during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection operates at a LOS A/B during the AM/PM peaks, respectively. During the PM peak, the eastbound approach operates at a LOS C. All other movements operate at a LOS B or better during both peak hours. Adequate storage exists to accommodate 95th percentile queue lengths.

    - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
        - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB through-left maximum queue backs up past the storage for the EB right, effectively blocking both lanes.
        - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E/B during the AM/PM peaks, respectively. During both peak hours, the WB left maximum queue backs up past the storage for the WB right lane effectively blocking both lanes.

        - All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements have adequate storage to accommodate 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
        - The overall intersection is over capacity during both AM (LOS F) and PM (LOS E) peaks.
        - The eastbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. During the AM peak, the EB approach maximum queue will back up onto mainline I-64 eastbound.
        - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
        - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
        - The westbound approach is over capacity during both AM (LOS F) and PM (LOS E) peaks. The northbound left and through movement will operate at a LOS C or better during both peak hours.
        - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During the PM peak, the SB thru maximum queue backs up through the nearby intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- Under 2030 total future conditions with the development of Phase 2 of the site the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, all turning movements and approaches will continue to operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
  - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the eastbound right effectively blocking both lanes.
  - The westbound left is over capacity during both peak hours (LOS F). The westbound right will operate at a LOS F/C during the AM/PM peaks, respectively. During both peak hours, the WB left maximum queue backs up past the storage for the westbound right effectively blocking both lanes.
  - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue exceeds the available storage, spilling back into through lanes. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both peaks (LOS F).
  - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the EB maximum queue will back up onto mainline I-64 eastbound.
  - The northbound approach is over capacity during both AM and PM (LOS F) peaks.
  - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS D/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peaks (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage.
  - The southbound approach is over capacity during both the AM and PM peaks (LOS F). During both peak hours, the SB thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.
  -

- Under 2036 background conditions with the 1% growth rate and traffic from four (4) background developments:

  - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. All other movements operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

  - At the unsignalized intersection of Old Lynchburg Road and Sunset Ave. Ext./Private Entrance, the eastbound approach will operate at a C/E during the AM/PM peaks, respectively. All other movements and approaches operate at a LOS A during both peak

hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

- At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. The eastbound approach will operate at a LOS D during the PM peak. All other turning movements will operate at a LOS B or better during both AM/PM peaks. All turning movements have adequate storage to accommodate 95th percentile queue lengths.

- At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
  - The eastbound approach is over capacity during both peak hours (LOS F). During the AM peak, the EB left maximum queue backs up past the storage for the EB right effectively blocking both lanes.
  - The westbound approach is over capacity during both peak hours (LOS F). The WB right will operate at a LOS E during the AM peak and LOS B during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
  - During the AM peak, the southbound left maximum queue exceeds the available storage spilling back into the through lanes. All other turning movements and approaches will operate at a LOS C or better during both peak hours. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
  - The overall intersection is over capacity during both AM and PM (LOS F) peaks.
  - The eastbound approach is over capacity during both peak hours (LOS F). During both peak hours, the maximum queue is expected to back up onto mainline I-64 eastbound. During both peak hours, the eastbound left maximum queue backs up past the available storage for the eastbound right.
  - The northbound approach is over capacity during both AM and PM (LOS F) peaks. During the PM peak, the northbound approach maximum queue backs up reaching the adjacent intersection of Stagecoach Road/Afton Pond Court.
  - The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
  - The overall intersection will operate at a LOS E/F during the AM/PM peaks, respectively.
  - The westbound approach is over capacity during both peak hours (LOS F). The northbound left and through movement will operate at a LOS C or better during both peak hours.
  - The southbound approach is over capacity during both the peak hours (LOS F). During the PM peak, the southbound thru maximum queue backs up through the adjacent intersection at the Holiday Inn.
  - All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

- Under 2036 total future conditions with development of phase 2 of the site the intersections will operate at comparable capacity and queuing levels as under background conditions. Specifically:

    - At the unsignalized intersection of Old Lynchburg Road and Hickory Street, the westbound approach will operate at a LOS B during both peak hours. The southbound left will operate at a LOS A during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the unsignalized intersection of Old Lynchburg Road and Sunset Avenue Extended, the eastbound approach will operate at a LOS E/F during the AM/PM peaks, respectively. All other turning movements and approaches will operate at a LOS B or better during both peak hours. Adequate turn bay storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the roundabout intersection of Old Lynchburg Road/5th Street Ext./County Complex, the overall intersection will operate at a LOS A/B during the AM/PM peaks, respectively. All movements will operate at a LOS B or better during both peak hours except the eastbound approach will operate at a LOS C during the PM peak. Adequate storage exists to accommodate 95th percentile and maximum queue lengths.

    - At the unsignalized intersection of 5th Street Ext. and Stagecoach Road/Afton Pond Court:
        - The eastbound approach is over capacity during both peak hours (LOS F). The EB left maximum queue backs up past the storage for the EB right effectively blocking the lane.
        - The westbound left is over capacity during both peak hours (LOS F). The WB right will operate at a LOS F during the AM peak and LOS C during the PM peak. During both peak hours, the WB left maximum queue backs up past the storage for the WB right and backs up through the intersection with Oak Hill Drive.
        - The north- and southbound turning movements and approaches will operate at a LOS C or better during both peak hours. During the AM peak, the SB left maximum queue exceeds the available storage. All other turning movements have adequate turn bay storage to accommodate 95th percentile and maximum queues.

    - At the signalized intersection of 5th Street Ext. and I-64 EB on-off ramp:
        - The overall intersection is over capacity during both peak hours (LOS F).
        - The eastbound approach is over capacity during both peaks (LOS F). During both Peak hours, the EB approach maximum queue will back up onto mainline I-64 eastbound.
        - The northbound approach is over capacity during both peak hours (LOS F). The southbound left will operate at a LOS C/B during the AM/PM peaks, respectively. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

    - At the signalized intersection of 5th Street Ext. and I-64 WB on-off ramp:
        - The overall intersection is over capacity during both AM (LOS E) and PM (LOS F) peaks.
        - The westbound approach is over capacity during both peak hours (LOS F). The northbound left will operate at a LOS C during both peak hours. During both peak hours, the NB left maximum queue exceeds the available storage, spilling back into through lanes.

- The southbound approach is over capacity during both peak hours (LOS F) and the maximum queue backs up through the adjacent intersection at the Holiday Inn. All other turning movements and approaches have adequate storage to accommodate 95th percentile and maximum queue lengths.

Appendix A
Response to Comments/
Scoping Documents

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

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To: Kevin McDermott, PE (Albemarle) and
Doug McAvoy, Jr., PE (VDOT)
From: Steve Schmidt, PE, PTOE (Timmons Group)
RE: Southwood Phase 2 TIA Response to County/VDOT Comments
Date: February 18, 2022

Timmons Group prepared a Traffic Impact Analysis (TIA) dated October 13, 2021 for the/Southwood Phase 2 project located in Albemarle County, Virginia. The project is County case number ZMA2021-00013.

The Albemarle County Community Development Department, Transportation Planning (CDD) issued comments on the TIA/rezoning on December 15, 2021 and the Virginia Department of Transportation (VDOT) issued comments on December 14, 2021.

Timmons Group (TG) has reviewed CDD/VDOT's comments (**in bold below**) and prepared the responses below. As a result of the comments/responses, a revised TIA has been prepared and is submitted with these responses.

Our responses to CDOT comments are as follows:

CDD Comments

The Albemarle County Community Development Department, Planning Division, Transportation Planning has reviewed the above referenced resubmitted application plan and associated traffic impact analysis by Habitat for Humanity/Southwood and Timmons Group (March 2021) and offers the following comments:

1. **It doesn't appear that any trips were assigned to Hickory Street in the analysis which may have been an oversight when the scoping meeting was held for this TIA. It seems that some percentage should be assumed to utilize that as roadway for trips to and from the development. Can an assumption for that distribution be developed and discussed in this study? I don't believe any intersection analysis is necessary, but volumes would be helpful.**

   TG Response: 20% of the projected residential site trips will access the site via Hickory Street to Oak Hill Drive to Stagecoach Road. This was not discussed textually in Section 5.3, however, this distribution is shown in Figure 5-1. The text of the report will be revised for clarification.

2. **The statement that "traffic from the proposed development does not have a significant impact on the surrounding network" seems to a be an inaccurate conclusion.**
    - **Currently Old Lynchburg Road/Fifth St Extended carries a range of just over 8,000 vpd in the southern segment of the corridor to 15,000 near the interchange. Phase 1 and Phase 2 of the Southwood Development will add an estimated 10,483 additional vehicles to the corridor more than doubling the level of traffic on Old Lynchburg near the site (~7,000 new trips from Phase 2). The Corridor is already strained under the current conditions and this very significant increase will likely result in it becoming nearly inoperable during the peak hours.**
    - **Sunset Ave EB will go from a 32 sec delay to a 169 sec delay in the pm, an increase of over 2 minutes.**

    TG Response: As shown in 2030 and 2036 background conditions (without the traffic from Southwood Phase 2), the Old Lynchburg Road/Fifth Street Extended corridor and the I-64 interchange are congested with the addition of the background developments (8,294 additional daily trips).

    The TIA has been revised to reflect the intended housing type (market rate vs. affordable) and the conclusions updated accordingly.

3. **Although future conditions at the intersections analyzed such as 5th St Extended/Stagecoach and 5th St Extended/ I-64 Ramps are projected to be failing without the development of Phase 2 of Southwood, the future build condition is still very concerning. The Fifth Street STARS Study performed by VDOT made recommendations to improve these intersections. However, the Conclusions and Recommendations Section does not reference any of those or other recommendations. It is important for staff to understand if the previously recommended options to address these conditions are still valid with the addition of the traffic from Southwood Phase 2.**

    TG Response: Many of the improvements included in the VDOT Fifth Street STARS Study were not analyzed in this TIA because they are not funded or in the conceptual stage. In addition, the STARS Study did not comment on what improvements could be made at the Fifth Street/I-64 interchange; stating that further study of the interchange is necessary.

    The intersection of Old Lynchburg Road/Fifth Street Extended/County Complex was analyzed as a roundabout with the same intersection geometry as proposed in the VDOT Fifth Street STARS Study. This intersection design can accommodate the background developments and Southwood Phase 2 site trips with acceptable levels of service.

4. **The Conclusions and Recommendations Section also discusses the issues of congestion on the Corridor but does not include any recommendation to address these problems.**

TG Response: The site's primary entrance at Hickory Street and Old Lynchburg Road performs with acceptable levels of service with the addition of the site traffic. The corridor is already experiencing capacity constraints prior to the construction of Southwood Phase 2. Several improvements are suggested by the VDOT Fifth Street STARS Study and as it notes the I-64 interchange requires further study to determine potential improvements. Any further recommendations are out of the scope of this report.

Application Plan/Code of Development/Proffer Statement Comments:

1. **The Transit Stop Proffer identifies a single transit stop to be constructed within the Hickory Street Overlay or the Neighborhood Center Special Area. Staff recommends specifying what this transit stop will include such as bench, shelter, etc.**

   TG Response: See the revised proffer statement.

2. **It is likely that this development will support more than one transit stop based on the size, density, and transit propensity. Staff recommends considering how transit will fit in to the development beyond the proffer of a single stop.**

   TG Response: See the revised proffer statement.

3. **All waivers, exceptions, etc. to allow different street, sidewalk, shared-use path designs beyond what is required by VDOT/County will need to be reviewed at the site plan stage for necessary approvals.**

   TG Response: Noted. No response/revision required.

VDOT Comments:

Traffic Impact Analysis Comments:

1. Provide all Synchro files with the TIA so that the review of the operational analyses can be complete.

TG Response: Synchro files will be provided.

2. We need to see the overall Level of Service for the unsignalized intersections. Perhaps using the delay and volume for each movement to estimate the overall average delay for the intersection.

TG Response: The Highway Capacity Manual (HCM) does not provide a calculation or means to report overall delay for unsignalized intersections. Further, ITE standards, VDOT Chapter 527 regulations, and VDOT TOSAM requirements do not allow for a means to report overall delay for

unsignalized intersections.

3. The title (naming) for Figure 4-1 is confusing, can this be renamed to something like "Year 2030 Background Volumes"?

TG Response: Figure 4-1 shows the traffic volumes generated by growing the 2021 existing traffic counts to the year 2030 (Existing + Growth). Figure 4-4 is the sum of the existing traffic+ growth (Figure 4-1) and the trips from other approved developments (Figure 4-3). The volumes in Figure 4-4 are the volumes used in the 2030 Background analysis.

4. In Table 4-1, under background development 2 (Albemarle Business Park), can the numbers for Total Albemarle Business Park Retail & Office Trips be verified? These values (169, 80, 249, 104, 166 …) on that row seem confusing; they may need to be removed.

TG Response: The line in question was a subtotal line only for all office/retail trips but has been removed for clarity. It is noted the Albemarle Business Park trips shown in Table 4-1 were correct and properly accounted for in the analysis.

5. Please revise Figure 4-3 to ensure that the volumes match the data shown in Table 4-1 for both AM and PM peak hours, especially for the Albemarle Business Park and the 5th Street Extended developments. The trips did not seem to add up. This will affect Figures 4-4 and 6-1, which will need to be revised as well.

TG Response: The figures have been revised.

6. The volumes at the Old Lynchburg Road / Afton Pond Court are not adding up, please verify.

TG Response: The volumes at the intersection have been checked and verified. It is noted there are other intersections (Pinehurst Court, Wahoo Way, and Windfield Cir) and driveways between Fifth Street/Afton Pond Court and the adjacent study intersection so the volumes may not balance between study intersections.

7. Please ensure that the Synchro files are coded correctly as there seems to be some significant increase in delay at intersection #4 on Table 4-2 when compared to Table 3-3. For example, the volume on the WB approach has not changed, however, the delay on the WB left-turn movement has increased from 50.7 seconds in 2021 (existing condition) to 203.4 seconds in 2030 (background condition). The same remark for the EB approach, which seems to have experienced an increase of 4,310.9 seconds in delay.

TG Response: The Synchro files are coded correctly. The increase in delay is due to the volume being greater than the capacity for that movement. When the volume to capacity (v/c) ratio is greater than 1 (over capacity), the delay that each vehicle experiences increases exponentially with each additional vehicle and may no longer be an accurate measure of delay.

8. Please check the Level of Service and maximum queue lengths on Table 6-1, the traffic at intersection #1 in the SB left-turn lane was increased by over 50 percent with the project's trips added during the pm peak hour, yet the delay and queue lengths did not seem to be impacted.

TG Response: The delay and maximum queue lengths are shown accurately in Table 6-1. The southbound left movement does not experience much additional delay with the addition of the site traffic because there is very low conflicting traffic. The northbound approach has about 200 vehicles per hour in both peak hours, providing ample gaps in traffic for the southbound left.

9. At intersection #2 (Year 2030), it appears that the site traffic is affecting the EB approach considerably. The LOS has degraded from C to F, even with the volume remains the same for that EB approach. Any recommendations for improvement at this location?

TG Response: The change in LOS for the eastbound approach is mostly caused by the addition of northbound and southbound through traffic. The VDOT Fifth Street STARS Study recommended a road diet at the intersection but further study may be required.

10. Why has the delays/Level of Service (Year 2030) at intersection #3 improved with site traffic added?

TG Response: The delays at Intersection #3 have improved slightly from 2030 Background to 2030 Total Conditions because the addition of the site traffic creates a better balance of traffic across the intersection. Roundabouts generally work best when the turning and through movements are similar (i.e. a roadway with high through volumes and small turning volumes is not an ideal application for a roundabout). This creates more gaps for traffic to enter the roundabout from each direction as the traffic moves through the roundabout, reducing the delay.

11. Based on the operational analysis for Year 2030, at intersection #5, when the project's trips are added, the overall delay is anticipated to increase by 56 seconds during the AM peak and 26 seconds during the PM peak hour. Any recommendations for operational improvement at this intersection?

TG Response: As noted by the VDOT Fifth Street STARS Study, the interchange requires further study which is outside the scope of this traffic study.

12. Note that the final plan must show conformance with the VDOT Road Design Manual Appendices B(1) and F, as well as any other applicable standards, regulations or other requirements.

TG Response: Noted. No response/revision required.

PRE-SCOPE OF WORK MEETING FORM

Information on the Project
Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information	
Consultant Name: Tele: E-mail:	Steve Schmidt, PE, PTOE (Timmons Group) 804-200-6502 steve.schmidt@timmons.com
Developer/Owner Name: Tele: E-mail:	Habitat for Humanity

Project Information				
Project Name:	Southwood - Phase 2		Locality/County:	Albemarle County
Project Location: (Attach regional and site specific location map)	The site is located east of Route 631 (Old Lynchburg Road) and south of Hickory Street as shown on Figure 1.			
Submission Type	Comp Plan ☐	Rezoning ☒	Site Plan ☐	Subd Plat ☐
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The applicant is seeking to develop Phase 2 of the site by replacing the existing 341 mobile home units with 1,000 new dwelling units for a net increase of 659 units. 20,000 S.F. of commercial space is also included in Phase 2. Primary access to the site would be provided by the existing Route 631/Hickory Street intersection. No new connections to Route 631 are proposed. A previous TIA was completed in 2019 for the site and included 500 dwelling units in Phase 2. The current proposal is a 500 unit increase over the previous TIA. See trip generation table for a comparison of trips. This TIA will build off the previous TIA and will contain similar assumptions as to study intersections, background developments, growth rate, etc.			

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential ☐	Commercial ☐	Mixed Use ☒	Other ☐
	Residential Uses(s) Number of Units: 659 ITE LU Code(s): 220 210 _____ **Commercial Use(s)** ITE LU Code(s): 820 710 _____ Square Ft or Other Variable:		**Other Use(s)** ITE LU Code(s): Independent Variable(s):	20,000 S.F. _____ _____ _____ _____ _____ _____ _____
Total Peak Hour Trip Projection:	Less than 100 ☐	100 – 499 ☒	500 – 999 ☐	1,000 or more ☐

Traffic Impact Analysis Assumptions

Study Period	Existing Year: 2021	Build-out Year: 2030	Design Year: 2036
Study Area Boundaries (Attach map)	North: I-64	South: Hickory Street	
	East: Hickory Street	West: Stagecoach Road	
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	No road improvements are planned, but there is ongoing development along Route 631. The traffic study will assumed the following nine developments (consistent with the 2019 TIA) a. Whittington (40 single-family D.U. and 4 multi-family D.U); b. Wintergreen Farms (69 single-family D.U.); c. Timberland Park (80 multi-family D.U.); d. Sunset Overlook (35 single-family D.U.); e. Royal Fern (26 single-family D.U. and 30 multi-family D.U.); f. Fifth Street Place (116 multi-family D.U.); g. Brookdale (96 multi-family D.U.); h. 5th Street Development (27,500 SF commercial retail); and i. Region Ten Women's Shelter (7,900 SF commercial retail).		
Consistency With Comprehensive Plan (Land use, transportation plan)	The proposed uses are consistent with the surrounding uses.		
Available Traffic Data (Historical, forecasts)	Historic VDOT ADT Traffic Data, AM/PM peak hour counts conducted at the study intersections in 2018.		

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Trip Distribution (Attach sketch)	Road Name: 5th St Ext North: (90% Res/90% Com)	Road Name: Old Lynchburg South: (0% Res/5% Com)	
	Road Name: Old Lynchburg North: (10% Res/5% Com)	Road Name:	
Annual Vehicle Trip Growth Rate:	1%	Peak Period for Study (check all that apply)	☒ AM ☒ PM ☐ SAT
		Peak Hour of the Generator	
Study Intersections and/or Road Segments (Attach additional sheets as necessary)	1.Old Lynchburg Road/Hickory Street	6.5th Street Extended/I-64 WB Off Ramp	
	2.Old Lynchburg Road/Sunset Ave Extended/Church Ent.	7.	
	3.Old Lynchburg Road/5th Street Extended/County Complex	8.	
	4.5th Street Extended/Stagecoach Road/Apartment Complex	9.	
	5.5th Street Extended/I-64 EB Off Ramp	10.	
Trip Adjustment Factors	Internal allowance: ☐ Yes ☒ No Reduction: _____% trips	Pass-by allowance: ☐ Yes ☒ No Reduction: _____% trips	
Software Methodology	☒ Synchro ☐ HCS (v.2000/+) ☐ aaSIDRA ☐ CORSIM ☐ Other _____		
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	5th Street Extended/I-64 EB Off Ramp 5th Street Extended/I-64 WB Off Ramp		
Improvement(s) Assumed or to be Considered	None		
Background Traffic Studies Considered	2019 TIA prepared for Southwood		
Plan Submission	☐ Master Development Plan (MDP) ☒ Generalized Development Plan (GDP) ☐ Preliminary/Sketch Plan ☐ Other Plan type (Final Site, Subd. Plan)		
Additional Issues to be Addressed	☒ Queuing analysis ☐ Actuation/Coordination ☐ Weaving analysis ☐ Merge analysis ☐ Bike/Ped Accommodations ☐ Intersection(s) ☐ TDM Measures ☒ Other Turn Lane Warrants		

NOTES on ASSUMPTIONS: 1. The 2018 existing traffic counts will be used as the basis for the analysis and will be grown at 1%/year (mainline and 64-ramps only) to reach 2021 levels.

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

SIGNED: W. Scott Dunn DATE: July 12, 2021

Applicant or Consultant

PRINT NAME: W. Scott Dunn

Applicant or Consultant

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Table 1: Southwood Trip Generation

LAND USE	ITE CODE	AMOUNT	UNITS	WEEKDAY ADT	AM PEAK HOUR IN	AM PEAK HOUR OUT	AM PEAK HOUR TOTAL	PM PEAK HOUR IN	PM PEAK HOUR OUT	PM PEAK HOUR TOTAL
Phase 1										
Residential										
Apartments	220[1]	113	D.U.	813	12	42	54	42	24	66
Single Family	210	12	D.U.	148	3	10	13	8	5	13
Residential Subtotal		125	D.U.	*961*	*15*	*52*	*67*	*50*	*29*	*79*
Commercial										
Retail	820	20,000	S.F.	755	12	7	19	36	40	76
Office	710	20,000	S.F.	223	39	6	45	4	21	25
Commercial Subtotal		*40,000*	*S.F.*	*978*	*51*	*13*	*64*	*40*	*61*	*101*
Phase 1 Total				1,939	66	65	131	90	90	180
Phase 2										
Residential[2]										
Apartments	220[1]	150	D.U.	1,093	16	54	70	54	31	85
Townhomes	220[1]	749	D.U.	5,622	74	249	323	223	131	354
Single Family	210	99	D.U.	1,030	19	56	75	64	37	101
Residential Subtotal		998	D.U.	*7,745*	*109*	*359*	*468*	*341*	*199*	*540*
Commercial										
Retail	820	20,000	S.F.	755	12	7	19	36	40	76
Commercial Subtotal		*20,000*	*S.F.*	*755*	*12*	*7*	*19*	*36*	*40*	*76*
Phase 2 Total				8,500	121	366	487	377	239	616
Southwood Total (Phase 1 + Phase 2)				10,439	187	431	618	467	329	796

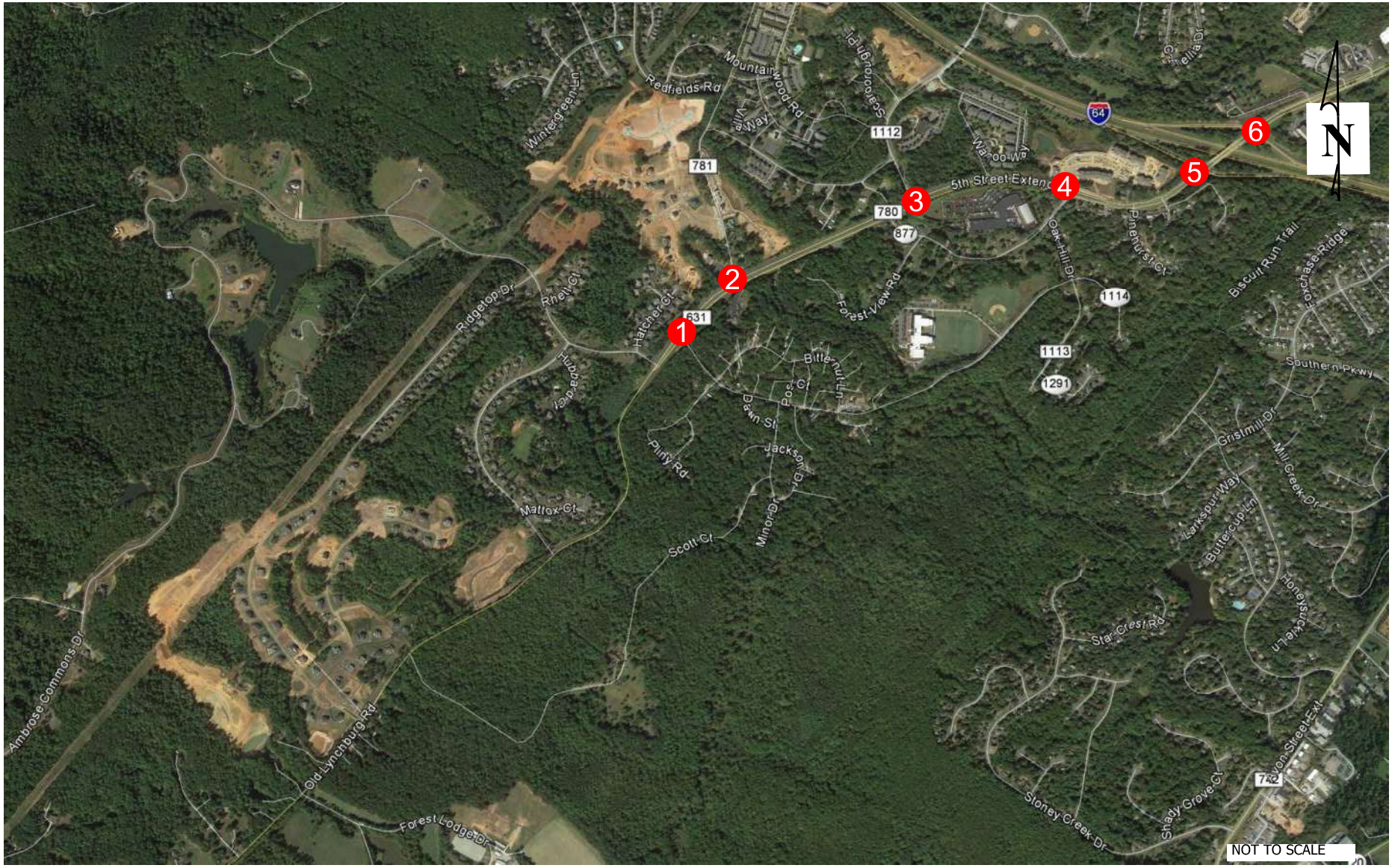
Source: ITE Trip Generation, 10th Edition.

1. ITE includes townhomes and apartments in the same category with the 10th edition.
2. Phase 2 consists of 998 total units but will replace the existing 341 units currently on site for a net increase of 657 units.

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2
Site Location
Albemarle County, Virginia

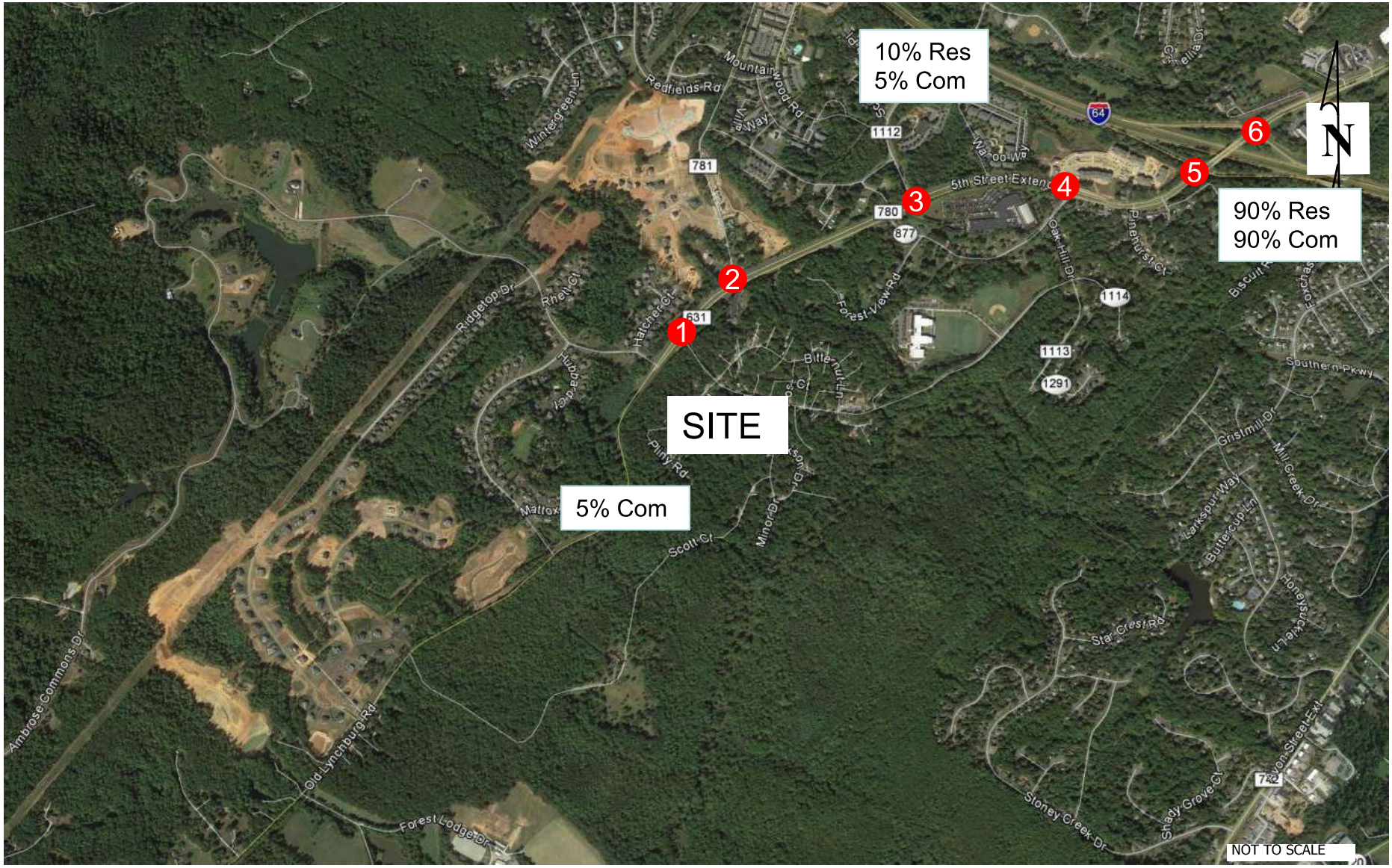
Figure
1



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2
Study Area Intersections
Albemarle County, Virginia

Figure
2



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2
Proposed Site Trip Distributions
Albemarle County, Virginia

Figure
3

Appendix B
Traffic Counts

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
Page No : 1

Groups Printed- Passenger Veh - Trucks

	5th St From North					I64 WB Off Ramp From East					5th St From South					I64 WB On Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
07:00 AM	69	66	0	0	135	73	0	12	0	85	0	133	48	0	181	0	0	0	0	0	401
07:15 AM	84	69	0	0	153	83	0	12	0	95	0	180	64	0	244	0	0	0	0	0	492
07:30 AM	101	80	0	0	181	91	0	35	0	126	0	221	75	0	296	0	0	0	0	0	603
07:45 AM	106	110	0	0	216	92	0	44	0	136	0	231	103	0	334	0	0	0	0	0	686
Total	360	325	0	0	685	339	0	103	0	442	0	765	290	0	1055	0	0	0	0	0	2182
08:00 AM	115	126	0	0	241	83	0	50	0	133	0	233	77	0	310	0	0	0	0	0	684
08:15 AM	101	134	0	0	235	83	0	42	0	125	0	236	97	0	333	0	0	0	0	0	693
08:30 AM	109	91	0	0	200	54	0	29	0	83	0	236	83	0	319	0	0	0	0	0	602
08:45 AM	105	117	0	0	222	70	0	27	0	97	0	199	54	0	253	0	0	0	0	0	572
Total	430	468	0	0	898	290	0	148	0	438	0	904	311	0	1215	0	0	0	0	0	2551
*** BREAK ***																					
04:00 PM	116	198	0	0	314	56	1	49	0	106	0	164	89	0	253	0	0	0	0	0	673
04:15 PM	119	243	0	0	362	61	0	46	0	107	0	186	57	0	243	0	0	0	0	0	712
04:30 PM	125	203	0	0	328	65	1	45	0	111	0	186	48	0	234	0	0	0	0	0	673
04:45 PM	148	188	0	0	336	88	0	51	0	139	0	189	78	0	267	0	0	0	0	0	742
Total	508	832	0	0	1340	270	2	191	0	463	0	725	272	0	997	0	0	0	0	0	2800
05:00 PM	157	196	0	0	353	65	0	54	0	119	0	207	56	0	263	0	0	0	0	0	735
05:15 PM	143	212	0	0	355	87	0	50	0	137	0	208	57	0	265	0	0	0	0	0	757
05:30 PM	123	210	0	0	333	66	0	51	0	117	0	198	57	0	255	0	0	0	0	0	705
05:45 PM	102	199	0	0	301	62	1	45	0	108	0	187	42	0	229	0	0	0	0	0	638
Total	525	817	0	0	1342	280	1	200	0	481	0	800	212	0	1012	0	0	0	0	0	2835
Grand Total	1823	2442	0	0	4265	1179	3	642	0	1824	0	3194	1085	0	4279	0	0	0	0	0	10368
Apprch %	42.7	57.3	0	0		64.6	0.2	35.2	0		0	74.6	25.4	0		0	0	0	0		
Total %	17.6	23.6	0	0	41.1	11.4	0	6.2	0	17.6	0	30.8	10.5	0	41.3	0	0	0	0	0	
Passenger Veh	1776	2366	0	0	4142	1147	1	623	0	1771	0	3126	1070	0	4196	0	0	0	0	0	10109
% Passenger Veh	97.4	96.9	0	0	97.1	97.3	33.3	97	0	97.1	0	97.9	98.6	0	98.1	0	0	0	0	0	97.5
Trucks	47	76	0	0	123	32	2	19	0	53	0	68	15	0	83	0	0	0	0	0	259
% Trucks	2.6	3.1	0	0	2.9	2.7	66.7	3	0	2.9	0	2.1	1.4	0	1.9	0	0	0	0	0	2.5

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
Page No : 2

	5th St From North					I64 WB Off Ramp From East					5th St From South					I64 WB On Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	101	80	0	0	181	91	0	35	0	126	0	221	75	0	296	0	0	0	0	0	603
07:45 AM	106	110	0	0	216	**92**	0	44	0	**136**	0	231	**103**	0	**334**	0	0	0	0	0	686
08:00 AM	**115**	126	0	0	**241**	83	0	**50**	0	133	0	233	77	0	310	0	0	0	0	0	684
08:15 AM	101	**134**	0	0	235	83	0	42	0	125	0	**236**	97	0	333	0	0	0	0	0	**693**
Total Volume	423	450	0	0	873	349	0	171	0	520	0	921	352	0	1273	0	0	0	0	0	2666
% App. Total	48.5	51.5	0	0		67.1	0	32.9	0		0	72.3	27.7	0		0	0	0	0		
PHF	.920	.840	.000	.000	.906	.948	.000	.855	.000	.956	.000	.976	.854	.000	.953	.000	.000	.000	.000	.000	.962
Passenger Veh	409	431	0	0	840	336	0	160	0	496	0	908	349	0	1257	0	0	0	0	0	2593
% Passenger Veh	96.7	95.8	0	0	96.2	96.3	0	93.6	0	95.4	0	98.6	99.1	0	98.7	0	0	0	0	0	97.3
Trucks	14	19	0	0	33	13	0	11	0	24	0	13	3	0	16	0	0	0	0	0	73
% Trucks	3.3	4.2	0	0	3.8	3.7	0	6.4	0	4.6	0	1.4	0.9	0	1.3	0	0	0	0	0	2.7

Data Collection Group
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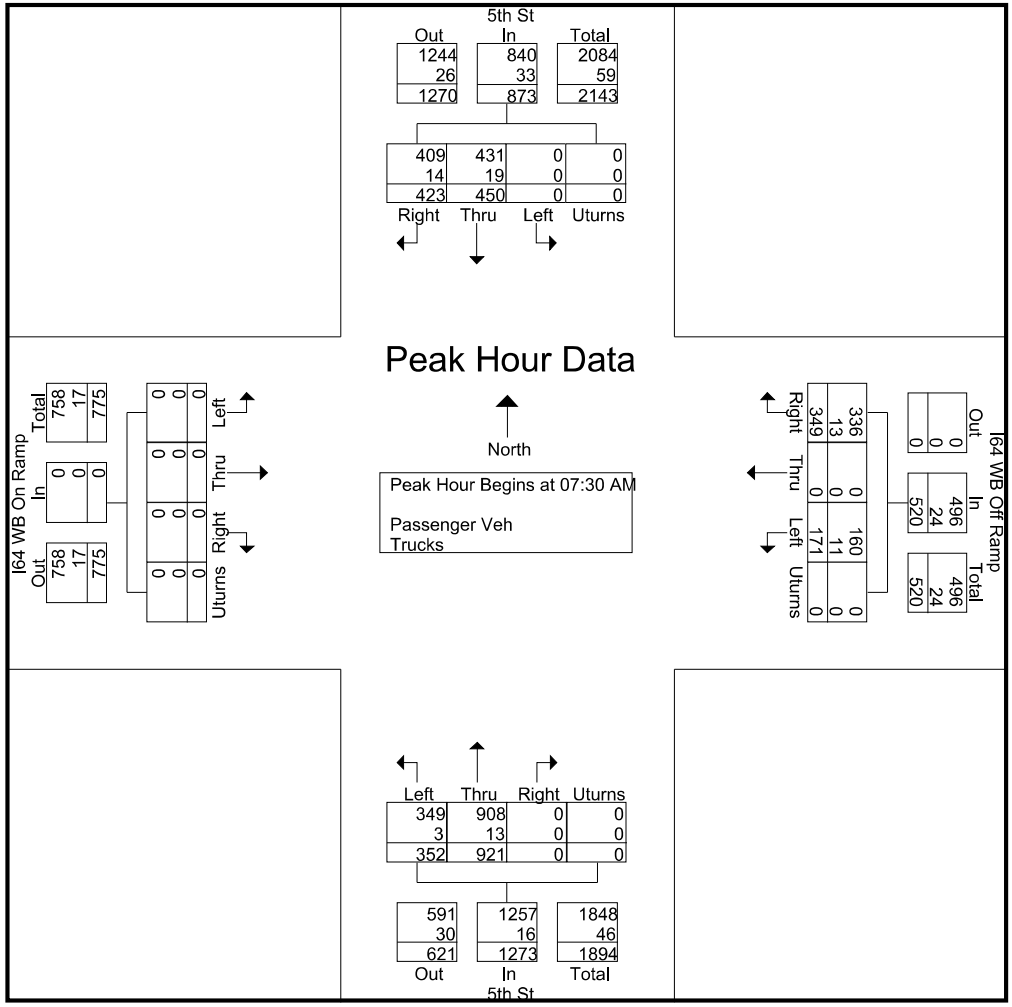
File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
Page No : 3



Data Collection Group

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File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
Page No : 4

	5th St From North					I64 WB Off Ramp From East					5th St From South					I64 WB On Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	148	188	0	0	336	**88**	0	51	0	**139**	0	189	**78**	0	**267**	0	0	0	0	0	742
05:00 PM	**157**	196	0	0	353	65	0	**54**	0	119	0	207	56	0	263	0	0	0	0	0	735
05:15 PM	143	**212**	0	0	**355**	87	0	50	0	137	0	**208**	57	0	265	0	0	0	0	0	**757**
05:30 PM	123	210	0	0	333	66	0	51	0	117	0	198	57	0	255	0	0	0	0	0	705
Total Volume	571	806	0	0	1377	306	0	206	0	512	0	802	248	0	1050	0	0	0	0	0	2939
% App. Total	41.5	58.5	0	0		59.8	0	40.2	0		0	76.4	23.6	0		0	0	0	0		
PHF	.909	.950	.000	.000	.970	.869	.000	.954	.000	.921	.000	.964	.795	.000	.983	.000	.000	.000	.000	.000	.971
Passenger Veh	563	795	0	0	1358	302	0	204	0	506	0	786	242	0	1028	0	0	0	0	0	2892
% Passenger Veh	98.6	98.6	0	0	98.6	98.7	0	99.0	0	98.8	0	98.0	97.6	0	97.9	0	0	0	0	0	98.4
Trucks	8	11	0	0	19	4	0	2	0	6	0	16	6	0	22	0	0	0	0	0	47
% Trucks	1.4	1.4	0	0	1.4	1.3	0	1.0	0	1.2	0	2.0	2.4	0	2.1	0	0	0	0	0	1.6

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File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
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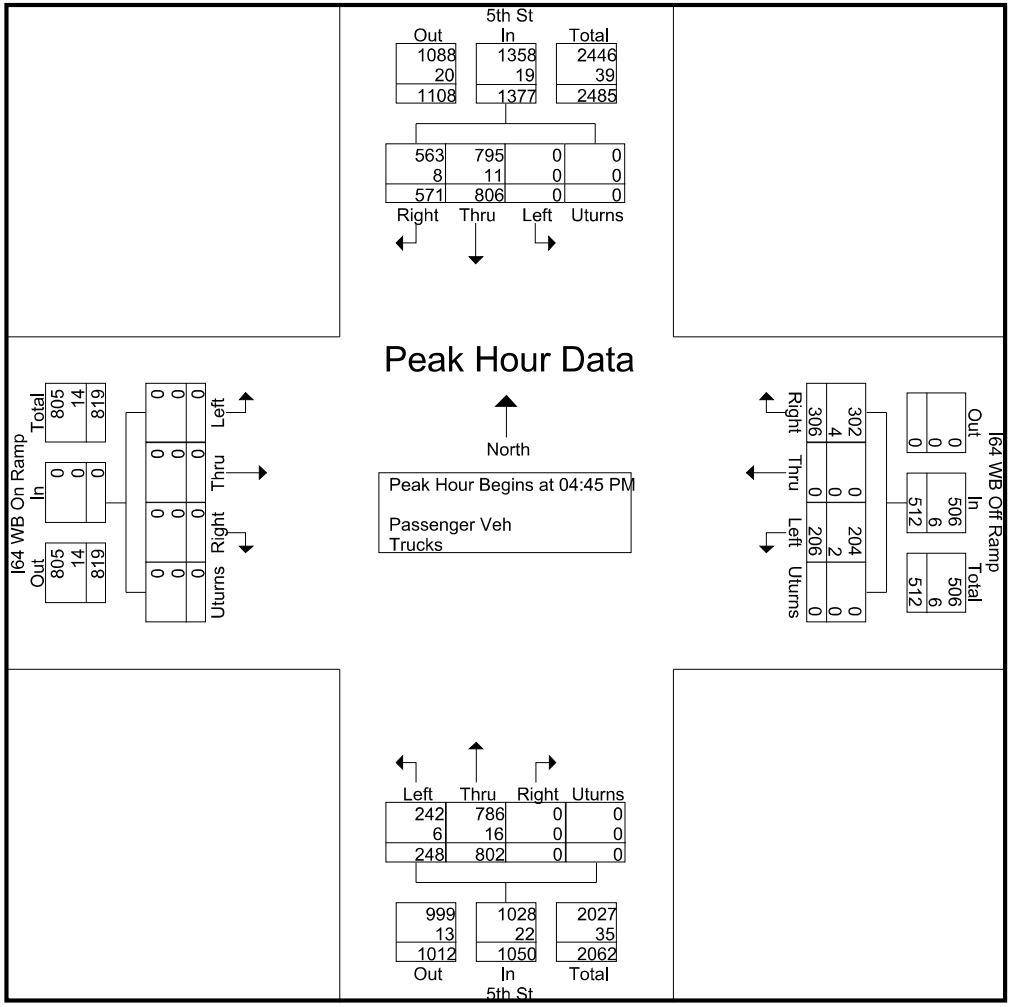

Data Collection Group

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File Name : 5th and I64 WB
Site Code : 00765765
Start Date : 9/2/2021
Page No : 1

Groups Printed- Bikes - Peds

	5th St From North					I64 WB Off Ramp From East					5th St From South					I64 WB On Ramp From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
*** BREAK ***																					
07:30 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
*** BREAK ***																					
Total	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
*** BREAK ***																					
08:15 AM	0	0	0	0	0	0	0	0	1	1	0	3	0	0	3	0	0	0	0	0	4
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	1	1	0	3	0	0	3	0	0	0	0	0	4
*** BREAK ***																					
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
*** BREAK ***																					
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	3
*** BREAK ***																					
Grand Total	0	3	0	0	3	0	0	0	1	1	0	4	0	0	4	0	0	0	1	1	9
Apprch %	0	100	0	0		0	0	0	100		0	100	0	0		0	0	0	100		
Total %	0	33.3	0	0	33.3	0	0	0	11.1	11.1	0	44.4	0	0	44.4	0	0	0	11.1	11.1	
Bikes	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	7
% Bikes	0	100	0	0	100	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	77.8
Peds	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
% Peds	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	100	100	22.2

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 1

Groups Printed- Bikes - Peds

	5th From North					I64 EB On Ramp From East					5th From South					I64 EB Off Ramp From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
*** BREAK ***																					
07:30 AM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
*** BREAK ***																					
Total	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
*** BREAK ***																					
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
*** BREAK ***																					
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
Total	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	2	2	5
*** BREAK ***																					
05:15 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
*** BREAK ***																					
Total	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Grand Total	0	5	1	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	2	2	13
Apprch %	0	83.3	16.7	0		0	0	0	0		0	100	0	0		0	0	0	100		
Total %	0	38.5	7.7	0	46.2	0	0	0	0	0	0	38.5	0	0	38.5	0	0	0	15.4	15.4	
Bikes	0	5	1	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
% Bikes	0	100	100	0	100	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	84.6
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	15.4

Data Collection Group

757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 1

Groups Printed- Passenger Veh - Trucks

	5th From North					I64 EB On Ramp From East					5th From South					I64 EB Off Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
07:00 AM	0	44	32	0	76	0	0	0	0	0	31	126	0	0	157	8	0	58	0	66	299
07:15 AM	0	46	35	0	81	0	0	0	0	0	40	140	0	0	180	35	0	90	0	125	386
07:30 AM	0	66	48	0	114	0	0	0	0	0	65	188	0	0	253	29	0	112	0	141	508
07:45 AM	0	108	42	0	150	0	0	0	0	0	83	199	0	0	282	40	0	119	0	159	591
Total	0	264	157	0	421	0	0	0	0	0	219	653	0	0	872	112	0	379	0	491	1784
08:00 AM	0	151	35	0	186	0	0	0	0	0	71	180	0	0	251	78	0	131	0	209	646
08:15 AM	0	134	42	0	176	0	0	0	0	0	64	199	0	0	263	76	0	127	0	203	642
08:30 AM	0	82	43	0	125	0	0	0	0	0	60	164	0	0	224	34	0	112	0	146	495
08:45 AM	0	83	53	0	136	0	0	0	0	0	57	161	0	0	218	29	0	106	0	135	489
Total	0	450	173	0	623	0	0	0	0	0	252	704	0	0	956	217	0	476	0	693	2272
*** BREAK ***																					
04:00 PM	0	133	96	0	229	0	0	0	0	0	46	167	0	0	213	68	0	88	0	156	598
04:15 PM	0	187	100	1	288	0	0	0	0	0	42	141	0	0	183	63	0	112	0	175	646
04:30 PM	0	161	100	1	262	0	0	0	0	0	48	124	0	0	172	56	0	92	0	148	582
04:45 PM	0	143	92	0	235	0	0	0	0	0	53	150	0	0	203	59	0	103	0	162	600
Total	0	624	388	2	1014	0	0	0	0	0	189	582	0	0	771	246	0	395	0	641	2426
05:00 PM	0	163	82	0	245	0	0	0	0	0	41	148	0	0	189	60	0	106	0	166	600
05:15 PM	0	181	84	1	266	0	0	0	0	0	35	145	0	0	180	57	0	128	0	185	631
05:30 PM	0	189	56	0	245	0	0	0	0	0	45	136	0	0	181	76	0	122	0	198	624
05:45 PM	0	161	91	1	253	0	0	0	0	0	53	115	0	0	168	70	0	96	0	166	587
Total	0	694	313	2	1009	0	0	0	0	0	174	544	0	0	718	263	0	452	0	715	2442
Grand Total	0	2032	1031	4	3067	0	0	0	0	0	834	2483	0	0	3317	838	0	1702	0	2540	8924
Apprch %	0	66.3	33.6	0.1		0	0	0	0		25.1	74.9	0	0		33	0	67	0		
Total %	0	22.8	11.6	0	34.4	0	0	0	0	0	9.3	27.8	0	0	37.2	9.4	0	19.1	0	28.5	
Passenger Veh	0	1968	1003	4	2975	0	0	0	0	0	818	2435	0	0	3253	825	0	1674	0	2499	8727
% Passenger Veh	0	96.9	97.3	100	97	0	0	0	0	0	98.1	98.1	0	0	98.1	98.4	0	98.4	0	98.4	97.8
Trucks	0	64	28	0	92	0	0	0	0	0	16	48	0	0	64	13	0	28	0	41	197
% Trucks	0	3.1	2.7	0	3	0	0	0	0	0	1.9	1.9	0	0	1.9	1.6	0	1.6	0	1.6	2.2

Data Collection Group

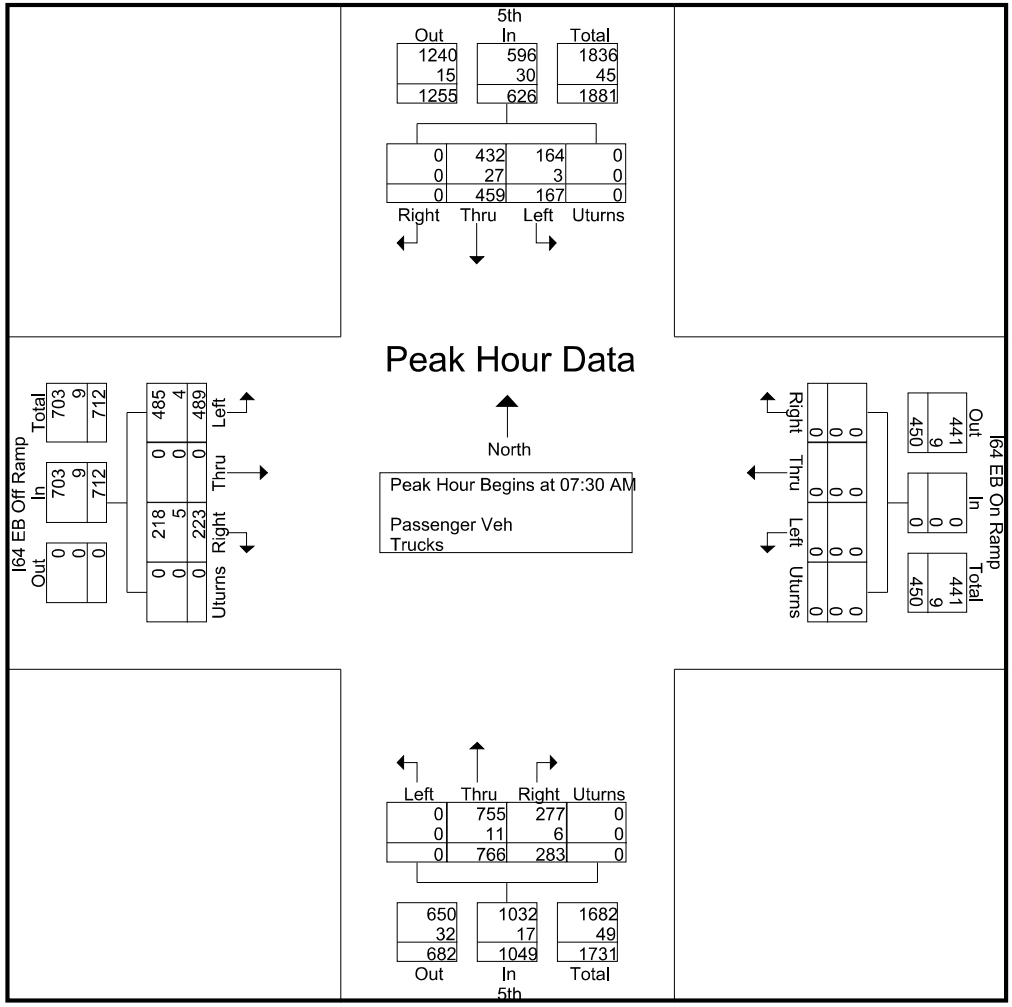
757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 2

	5th From North					I64 EB On Ramp From East					5th From South					I64 EB Off Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	66	**48**	0	114	0	0	0	0	0	65	188	0	0	253	29	0	112	0	141	508
07:45 AM	0	108	42	0	150	0	0	0	0	0	**83**	**199**	0	0	**282**	40	0	119	0	159	591
08:00 AM	0	**151**	35	0	**186**	0	0	0	0	0	71	180	0	0	251	**78**	0	**131**	0	**209**	**646**
08:15 AM	0	134	42	0	176	0	0	0	0	0	64	199	0	0	263	76	0	127	0	203	642
Total Volume	0	459	167	0	626	0	0	0	0	0	283	766	0	0	1049	223	0	489	0	712	2387
% App. Total	0	73.3	26.7	0		0	0	0	0		27	73	0	0		31.3	0	68.7	0		
PHF	.000	.760	.870	.000	.841	.000	.000	.000	.000	.000	.852	.962	.000	.000	.930	.715	.000	.933	.000	.852	.924
Passenger Veh	0	432	164	0	596	0	0	0	0	0	277	755	0	0	1032	218	0	485	0	703	2331
% Passenger Veh	0	94.1	98.2	0	95.2	0	0	0	0	0	97.9	98.6	0	0	98.4	97.8	0	99.2	0	98.7	97.7
Trucks	0	27	3	0	30	0	0	0	0	0	6	11	0	0	17	5	0	4	0	9	56
% Trucks	0	5.9	1.8	0	4.8	0	0	0	0	0	2.1	1.4	0	0	1.6	2.2	0	0.8	0	1.3	2.3

Data Collection Group
757.478.6761
LSmith@DataCollectionGroup.net

File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 3



Data Collection Group

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File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 4

	5th From North					I64 EB On Ramp From East					5th From South					I64 EB Off Ramp From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	143	**92**	0	235	0	0	0	0	0	**53**	**150**	0	0	**203**	59	0	103	0	162	600
05:00 PM	0	163	82	0	245	0	0	0	0	0	41	148	0	0	189	60	0	106	0	166	600
05:15 PM	0	181	84	**1**	**266**	0	0	0	0	0	35	145	0	0	180	57	0	**128**	0	185	**631**
05:30 PM	0	**189**	56	0	245	0	0	0	0	0	45	136	0	0	181	**76**	0	122	0	**198**	624
Total Volume	0	676	314	1	991	0	0	0	0	0	174	579	0	0	753	252	0	459	0	711	2455
% App. Total	0	68.2	31.7	0.1		0	0	0	0		23.1	76.9	0	0		35.4	0	64.6	0		
PHF	.000	.894	.853	.250	.931	.000	.000	.000	.000	.000	.821	.965	.000	.000	.927	.829	.000	.896	.000	.898	.973
Passenger Veh	0	674	306	1	981	0	0	0	0	0	171	568	0	0	739	251	0	448	0	699	2419
% Passenger Veh	0	99.7	97.5	100	99.0	0	0	0	0	0	98.3	98.1	0	0	98.1	99.6	0	97.6	0	98.3	98.5
Trucks	0	2	8	0	10	0	0	0	0	0	3	11	0	0	14	1	0	11	0	12	36
% Trucks	0	0.3	2.5	0	1.0	0	0	0	0	0	1.7	1.9	0	0	1.9	0.4	0	2.4	0	1.7	1.5

Data Collection Group
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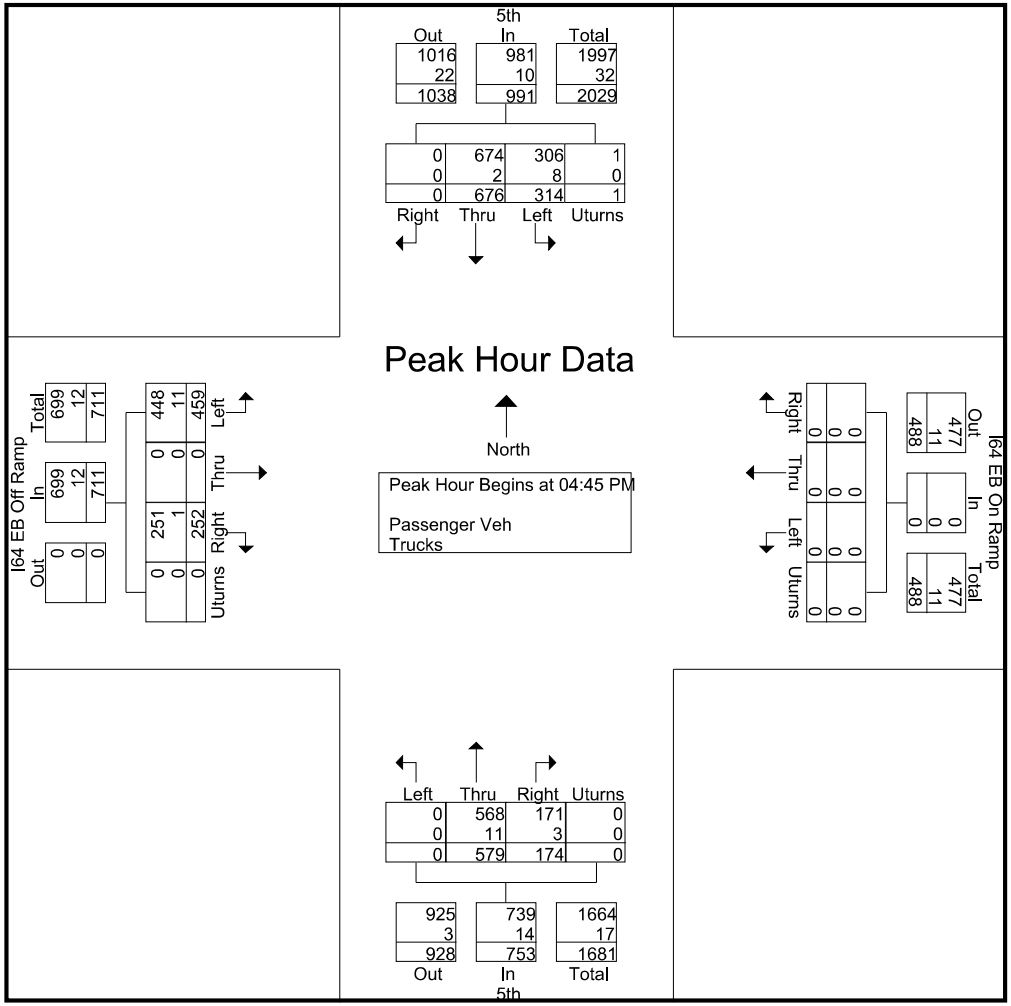
File Name : 5th and I64EB
Site Code : 00006193
Start Date : 9/2/2021
Page No : 5



Data Collection Group

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
Page No : 1

Groups Printed- Passenger Veh - Trucks

	5th St From North					County Complex From East					Old Lynchburg Rd From South					Old Lynchburg Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	16	15	6	1	38	0	0	0	0	0	0	66	3	0	69	2	0	32	0	34	141
07:15 AM	22	31	4	0	57	0	0	0	0	0	0	104	7	2	113	0	0	46	0	46	216
07:30 AM	22	29	4	2	57	1	1	0	0	2	0	133	11	2	146	3	0	71	0	74	279
07:45 AM	27	44	13	9	93	0	0	0	0	0	0	120	11	0	131	4	0	65	0	69	293
Total	87	119	27	12	245	1	1	0	0	2	0	423	32	4	459	9	0	214	0	223	929
08:00 AM	54	47	10	5	116	1	0	0	0	1	0	111	11	1	123	5	2	43	0	50	290
08:15 AM	39	44	16	5	104	0	0	0	0	0	1	109	11	1	122	9	0	53	0	62	288
08:30 AM	44	49	6	6	105	3	1	0	0	4	0	108	12	2	122	3	0	58	0	61	292
08:45 AM	28	62	7	3	100	1	0	0	0	1	1	85	3	0	89	2	1	49	0	52	242
Total	165	202	39	19	425	5	1	0	0	6	2	413	37	4	456	19	3	203	0	225	1112
04:00 PM	48	93	1	5	147	8	0	0	0	8	1	66	5	4	76	12	1	36	0	49	280
04:15 PM	62	100	4	5	171	7	1	0	0	8	0	66	2	3	71	12	2	36	0	50	300
04:30 PM	69	82	2	10	163	8	0	1	0	9	0	82	9	0	91	19	0	53	0	72	335
04:45 PM	63	78	3	2	146	6	0	0	0	6	0	97	3	1	101	6	0	61	0	67	320
Total	242	353	10	22	627	29	1	1	0	31	1	311	19	8	339	49	3	186	0	238	1235
05:00 PM	51	116	1	6	174	10	0	2	0	12	0	86	1	3	90	7	0	49	0	56	332
05:15 PM	71	113	0	6	190	8	0	0	0	8	2	83	6	1	92	9	0	51	0	60	350
05:30 PM	72	105	1	7	185	4	0	0	0	4	0	75	4	0	79	12	1	60	0	73	341
05:45 PM	63	91	1	11	166	3	0	0	0	3	0	86	8	0	94	7	0	57	0	64	327
Total	257	425	3	30	715	25	0	2	0	27	2	330	19	4	355	35	1	217	0	253	1350
Grand Total	751	1099	79	83	2012	60	3	3	0	66	5	1477	107	20	1609	112	7	820	0	939	4626
Apprch %	37.3	54.6	3.9	4.1		90.9	4.5	4.5	0		0.3	91.8	6.7	1.2		11.9	0.7	87.3	0		
Total %	16.2	23.8	1.7	1.8	43.5	1.3	0.1	0.1	0	1.4	0.1	31.9	2.3	0.4	34.8	2.4	0.2	17.7	0	20.3	
Passenger Veh	726	1071	79	82	1958	60	3	3	0	66	5	1445	103	20	1573	108	7	805	0	920	4517
% Passenger Veh	96.7	97.5	100	98.8	97.3	100	100	100	0	100	100	97.8	96.3	100	97.8	96.4	100	98.2	0	98	97.6
Trucks	25	28	0	1	54	0	0	0	0	0	0	32	4	0	36	4	0	15	0	19	109
% Trucks	3.3	2.5	0	1.2	2.7	0	0	0	0	0	0	2.2	3.7	0	2.2	3.6	0	1.8	0	2	2.4

Data Collection Group

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
Page No : 2

	5th St From North					County Complex From East					Old Lynchburg Rd From South					Old Lynchburg Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	27	44	13	**9**	93	0	0	0	0	0	0	**120**	11	0	**131**	4	0	**65**	0	**69**	**293**
08:00 AM	**54**	47	10	5	**116**	1	0	0	0	1	0	111	11	1	123	5	**2**	43	0	50	290
08:15 AM	39	44	**16**	5	104	0	0	0	0	0	**1**	109	11	1	122	**9**	0	53	0	62	288
08:30 AM	44	**49**	6	6	105	**3**	**1**	0	0	**4**	0	108	**12**	**2**	122	3	0	58	0	61	292
Total Volume	164	184	45	25	418	4	1	0	0	5	1	448	45	4	498	21	2	219	0	242	1163
% App. Total	39.2	44	10.8	6		80	20	0	0		0.2	90	9	0.8		8.7	0.8	90.5	0		
PHF	.759	.939	.703	.694	.901	.333	.250	.000	.000	.313	.250	.933	.938	.500	.950	.583	.250	.842	.000	.877	.992
Passenger Veh	156	173	45	25	399	4	1	0	0	5	1	436	42	4	483	18	2	215	0	235	1122
% Passenger Veh	95.1	94.0	100	100	95.5	100	100	0	0	100	100	97.3	93.3	100	97.0	85.7	100	98.2	0	97.1	96.5
Trucks	8	11	0	0	19	0	0	0	0	0	0	12	3	0	15	3	0	4	0	7	41
% Trucks	4.9	6.0	0	0	4.5	0	0	0	0	0	0	2.7	6.7	0	3.0	14.3	0	1.8	0	2.9	3.5

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
Page No : 3

Peak Hour Data

Peak Hour Begins at 07:45 AM

Passenger Veh
Trucks

North

5th St

	Right	Thru	Left	U-Turn	Total
In	156	173	45	25	399
	8	11	0	0	19
Out	164	184	45	25	418
Total	655				1054
	16				35
	671				1089

Old Lynchburg Rd

	Left	Thru	Right	U-Turn	Total
In	42	436	1	4	483
	3	12	0	0	15
Out	45	448	1	4	498
Total	191				674
	14				29
	205				703

Old Lynchburg Rd

	Left	Thru	Right	U-Turn	Total
In	215	2	18	0	235
	4	0	3	0	7
Out	219	2	21	0	242
Total	434				452
	18				
	452				

County Complex

	Right	Thru	Left	U-Turn	Total
In	4	1	0	0	5
	0	0	0	0	0
Out	4	1	0	0	5
Total	48				53
	0				0
	48				53

Data Collection Group

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
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	5th St From North					County Complex From East					Old Lynchburg Rd From South					Old Lynchburg Rd From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	51	**116**	**1**	6	174	**10**	0	**2**	0	**12**	0	**86**	1	**3**	90	7	0	49	0	56	332
05:15 PM	71	113	0	6	**190**	8	0	0	0	8	**2**	83	6	1	92	9	0	51	0	60	**350**
05:30 PM	**72**	105	1	7	185	4	0	0	0	4	0	75	4	0	79	**12**	**1**	**60**	0	**73**	341
05:45 PM	63	91	1	**11**	166	3	0	0	0	3	0	86	**8**	0	**94**	7	0	57	0	64	327
Total Volume	257	425	3	30	715	25	0	2	0	27	2	330	19	4	355	35	1	217	0	253	1350
% App. Total	35.9	59.4	0.4	4.2		92.6	0	7.4	0		0.6	93	5.4	1.1		13.8	0.4	85.8	0		
PHF	.892	.916	.750	.682	.941	.625	.000	.250	.000	.563	.250	.959	.594	.333	.944	.729	.250	.904	.000	.866	.964
Passenger Veh	256	423	3	29	711	25	0	2	0	27	2	327	19	4	352	35	1	215	0	251	1341
% Passenger Veh	99.6	99.5	100	96.7	99.4	100	0	100	0	100	100	99.1	100	100	99.2	100	100	99.1	0	99.2	99.3
Trucks	1	2	0	1	4	0	0	0	0	0	0	3	0	0	3	0	0	2	0	2	9
% Trucks	0.4	0.5	0	3.3	0.6	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0.9	0	0.8	0.7

Data Collection Group

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
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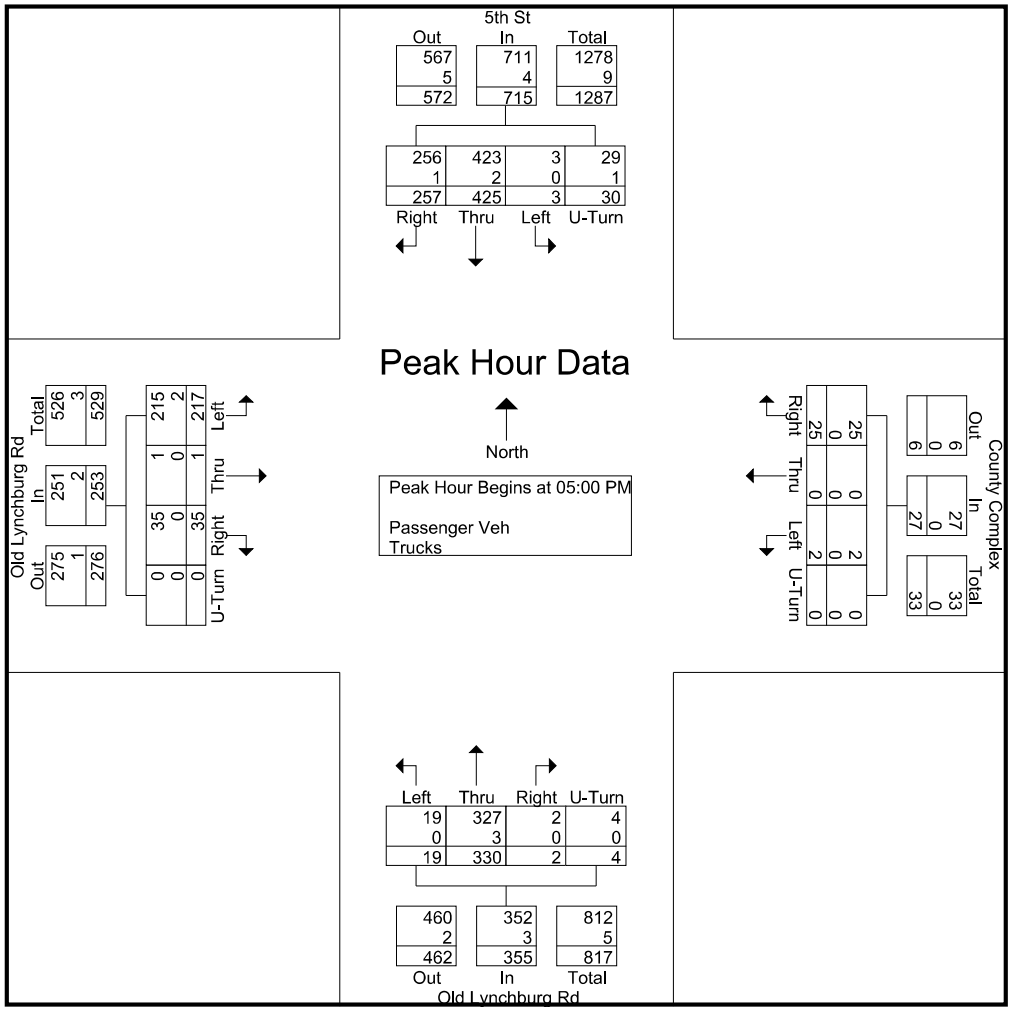

Data Collection Group

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File Name : 5th and Old Lynchburg and County Complex
Site Code :
Start Date : 9/2/2021
Page No : 1

Groups Printed- Bikes - Peds

	5th St From North					County Complex From East					Old Lynchburg Rd From South					Old Lynchburg Rd From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4	1	0	0	0	1	5
09:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
04:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	1	0	0	0	1	0	0	0	0	0	0	0	1	1	2	0	0	0	1	1	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	1	1	0	1	3	6
Grand Total	1	0	0	0	1	0	0	1	0	1	0	0	7	2	9	3	1	0	2	6	17
Apprch %	100	0	0	0		0	0	100	0		0	0	77.8	22.2		50	16.7	0	33.3		
Total %	5.9	0	0	0	5.9	0	0	5.9	0	5.9	0	0	41.2	11.8	52.9	17.6	5.9	0	11.8	35.3	
Bikes	1	0	0	0	1	0	0	0	0	0	0	0	7	0	7	3	1	0	0	4	12
% Bikes	100	0	0	0	100	0	0	0	0	0	0	0	100	0	77.8	100	100	0	0	66.7	70.6
Peds	0	0	0	0	0	0	0	1	0	1	0	0	0	2	2	0	0	0	2	2	5
% Peds	0	0	0	0	0	0	0	100	0	100	0	0	0	100	22.2	0	0	0	100	33.3	29.4

Data Collection Group

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Police office directed traffic in the AM

File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
Page No : 1

Groups Printed- Passenger Veh - Trucks

	5th From North					Stagecoach From East					5th From South					Apartments Access From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
07:00 AM	3	37	15	0	55	44	0	2	0	46	3	97	0	0	100	1	0	8	0	9	210
07:15 AM	3	48	25	0	76	38	0	4	0	42	4	151	0	0	155	3	0	4	0	7	280
07:30 AM	2	45	37	0	84	61	0	4	0	65	10	198	2	0	210	2	0	7	0	9	368
07:45 AM	4	90	69	0	163	81	0	3	0	84	10	183	0	0	193	4	0	6	0	10	450
Total	12	220	146	0	378	224	0	13	0	237	27	629	2	0	658	10	0	25	0	35	1308
08:00 AM	3	100	124	0	227	108	0	4	0	112	11	148	0	0	159	2	0	6	0	8	506
08:15 AM	2	99	101	0	202	112	0	8	0	120	11	165	0	0	176	2	0	15	0	17	515
08:30 AM	1	89	24	0	114	62	1	2	0	65	2	180	0	0	182	10	1	3	0	14	375
08:45 AM	4	93	20	1	118	33	0	4	0	37	2	131	0	0	133	2	1	8	0	11	299
Total	10	381	269	1	661	315	1	18	0	334	26	624	0	0	650	16	2	32	0	50	1695
04:00 PM	14	140	44	1	199	93	0	14	0	107	8	103	1	0	112	1	0	7	0	8	426
04:15 PM	9	171	72	0	252	43	0	3	0	46	6	111	1	0	118	2	1	7	0	10	426
04:30 PM	16	152	49	1	218	44	0	5	0	49	6	144	2	0	152	1	0	5	0	6	425
04:45 PM	6	144	43	0	193	35	0	7	0	42	7	156	1	0	164	1	0	8	0	9	408
Total	45	607	208	2	862	215	0	29	0	244	27	514	5	0	546	5	1	27	0	33	1685
05:00 PM	4	168	37	0	209	49	1	5	0	55	0	151	1	0	152	1	0	3	0	4	420
05:15 PM	7	200	39	0	246	33	0	3	0	36	10	134	3	0	147	2	0	7	0	9	438
05:30 PM	12	180	58	0	250	33	0	0	0	33	13	129	2	1	145	0	1	7	0	8	436
05:45 PM	10	163	59	0	232	42	0	5	0	47	10	143	3	0	156	2	0	7	0	9	444
Total	33	711	193	0	937	157	1	13	0	171	33	557	9	1	600	5	1	24	0	30	1738
Grand Total	100	1919	816	3	2838	911	2	73	0	986	113	2324	16	1	2454	36	4	108	0	148	6426
Apprch %	3.5	67.6	28.8	0.1		92.4	0.2	7.4	0		4.6	94.7	0.7	0		24.3	2.7	73	0		
Total %	1.6	29.9	12.7	0	44.2	14.2	0	1.1	0	15.3	1.8	36.2	0.2	0	38.2	0.6	0.1	1.7	0	2.3	
Passenger Veh	95	1865	799	3	2762	881	2	72	0	955	98	2287	16	1	2402	31	4	107	0	142	6261
% Passenger Veh	95	97.2	97.9	100	97.3	96.7	100	98.6	0	96.9	86.7	98.4	100	100	97.9	86.1	100	99.1	0	95.9	97.4
Trucks	5	54	17	0	76	30	0	1	0	31	15	37	0	0	52	5	0	1	0	6	165
% Trucks	5	2.8	2.1	0	2.7	3.3	0	1.4	0	3.1	13.3	1.6	0	0	2.1	13.9	0	0.9	0	4.1	2.6

Data Collection Group

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File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
Page No : 2

	5th From North					Stagecoach From East					5th From South					Apartments Access From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**4**	90	69	0	163	81	0	3	0	84	10	**183**	0	0	**193**	4	0	6	0	10	450
08:00 AM	3	**100**	**124**	0	**227**	108	0	4	0	112	**11**	148	0	0	159	2	0	6	0	8	506
08:15 AM	2	99	101	0	202	**112**	0	**8**	0	**120**	11	165	0	0	176	2	0	**15**	0	**17**	**515**
08:30 AM	1	89	24	0	114	62	**1**	2	0	65	2	180	0	0	182	**10**	**1**	3	0	14	375
Total Volume	10	378	318	0	706	363	1	17	0	381	34	676	0	0	710	18	1	30	0	49	1846
% App. Total	1.4	53.5	45	0		95.3	0.3	4.5	0		4.8	95.2	0	0		36.7	2	61.2	0		
PHF	.625	.945	.641	.000	.778	.810	.250	.531	.000	.794	.773	.923	.000	.000	.920	.450	.250	.500	.000	.721	.896
Passenger Veh	8	359	311	0	678	352	1	16	0	369	29	666	0	0	695	16	1	30	0	47	1789
% Passenger Veh	80.0	95.0	97.8	0	96.0	97.0	100	94.1	0	96.9	85.3	98.5	0	0	97.9	88.9	100	100	0	95.9	96.9
Trucks	2	19	7	0	28	11	0	1	0	12	5	10	0	0	15	2	0	0	0	2	57
% Trucks	20.0	5.0	2.2	0	4.0	3.0	0	5.9	0	3.1	14.7	1.5	0	0	2.1	11.1	0	0	0	4.1	3.1

Data Collection Group

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File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
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Peak Hour Data

Peak Hour Begins at 07:45 AM

Passenger Veh
Trucks

North

5th

	Out	In	Total
	1048	678	1726
	21	28	49
	1069	706	1775

	Right	Thru	Left	U-Turn
	8	359	311	0
	2	19	7	0
	10	378	318	0

Stagecoach

	Out	In	Total
	341	369	710
	12	12	24
	353	381	734

	Right	Thru	Left	U-Turn
	352	1	16	0
	11	0	1	0
	363	1	17	0

5th

	Left	Thru	Right	U-Turn
	0	666	29	0
	0	10	5	0
	0	676	34	0

	Out	In	Total
	391	695	1086
	22	15	37
	413	710	1123

Apartments Access

	Out	In	Total
	9	47	56
	2	2	4
	11	49	60

	Left	Thru	Right	U-Turn
	30	1	16	0
	0	0	2	0
	30	1	18	0

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File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
Page No : 4

	5th From North					Stagecoach From East					5th From South					Apartments Access From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	4	168	37	0	209	**49**	**1**	**5**	0	**55**	0	**151**	1	0	152	1	0	3	0	4	420
05:15 PM	7	**200**	39	0	246	33	0	3	0	36	10	134	**3**	0	147	**2**	0	**7**	0	**9**	438
05:30 PM	**12**	180	58	0	**250**	33	0	0	0	33	**13**	129	2	**1**	145	0	**1**	7	0	8	436
05:45 PM	10	163	**59**	0	232	42	0	5	0	47	10	143	3	0	**156**	2	0	7	0	9	**444**
Total Volume	33	711	193	0	937	157	1	13	0	171	33	557	9	1	600	5	1	24	0	30	1738
% App. Total	3.5	75.9	20.6	0		91.8	0.6	7.6	0		5.5	92.8	1.5	0.2		16.7	3.3	80	0		
PHF	.688	.889	.818	.000	.937	.801	.250	.650	.000	.777	.635	.922	.750	.250	.962	.625	.250	.857	.000	.833	.979
Passenger Veh	33	707	192	0	932	156	1	13	0	170	31	554	9	1	595	5	1	24	0	30	1727
% Passenger Veh	100	99.4	99.5	0	99.5	99.4	100	100	0	99.4	93.9	99.5	100	100	99.2	100	100	100	0	100	99.4
Trucks	0	4	1	0	5	1	0	0	0	1	2	3	0	0	5	0	0	0	0	0	11
% Trucks	0	0.6	0.5	0	0.5	0.6	0	0	0	0.6	6.1	0.5	0	0	0.8	0	0	0	0	0	0.6

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File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
Page No : 5

Peak Hour Data

Peak Hour Begins at 05:00 PM

Passenger Veh
Trucks

North

5th

	Right	Thru	Left	U-Turn	Total
In	33	707	192	0	932
	0	4	1	0	5
Out	33	711	193	0	937
Total	734	1666			
	4	9			
	738	1675			

Stagecoach

	Right	Thru	Left	U-Turn	Total
In	157	1	13	0	171
	1	0	0	0	1
Out	156	1	13	0	170
Total	224	394			
	3	4			
	227	398			

5th

	Left	Thru	Right	U-Turn	Total
In	9	554	31	1	595
	0	3	2	0	5
Out	9	557	33	1	600
Total	725	1320			
	4	9			
	729	1329			

Apartments Access

	Left	Thru	Right	U-Turn	Total
In	24	1	5	0	30
	0	0	0	0	0
Out	24	1	5	0	30
Total	73				
	0				
	73				

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Police office directed traffic in the AM

File Name : 5th and Stagecoach
Site Code :
Start Date : 9/2/2021
Page No : 1

Groups Printed- Bikes - Peds

	5th From North					Stagecoach From East					5th From South					Apartments Access From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	5
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Grand Total	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	4	4	10
Apprch %	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	100		
Total %	0	10	0	0	10	0	0	0	0	0	0	50	0	0	50	0	0	0	40	40	
Bikes	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6
% Bikes	0	100	0	0	100	0	0	0	0	0	0	100	0	0	100	0	0	0	0	0	60
Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	4
% Peds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	40

Data Collection Group

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File Name : Old Lynchburg and Sunset
Site Code : 00003766
Start Date : 9/2/2021
Page No : 1

Groups Printed- Passenger Veh - Trucks

	Old Lynchburg From North					Driveway From East					Old Lynchburg From South					Sunset From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
07:00 AM	11	6	0	0	17	0	0	0	0	0	0	34	0	0	34	1	0	35	0	36	87
07:15 AM	9	23	0	0	32	0	0	0	0	0	0	52	2	0	54	2	0	62	0	64	150
07:30 AM	8	22	0	4	34	0	0	0	0	0	0	62	1	0	63	1	0	71	0	72	169
07:45 AM	14	31	0	2	47	0	0	0	0	0	0	72	0	0	72	0	0	55	0	55	174
Total	42	82	0	6	130	0	0	0	0	0	0	220	3	0	223	4	0	223	0	227	580
08:00 AM	29	22	0	1	52	0	0	0	0	0	0	69	1	0	70	0	0	51	0	51	173
08:15 AM	21	28	0	2	51	0	0	0	0	0	0	59	2	0	61	4	0	53	0	57	169
08:30 AM	23	30	1	0	54	1	0	0	0	1	0	62	2	1	65	2	0	64	0	66	186
08:45 AM	23	42	0	0	65	0	0	0	0	0	0	50	3	0	53	2	0	43	0	45	163
Total	96	122	1	3	222	1	0	0	0	1	0	240	8	1	249	8	0	211	0	219	691
*** BREAK ***																					
04:00 PM	44	61	0	3	108	0	0	0	0	0	0	30	2	0	32	3	0	39	0	42	182
04:15 PM	42	68	0	2	112	0	0	0	0	0	0	31	4	0	35	0	0	36	0	36	183
04:30 PM	40	59	0	2	101	0	0	0	0	0	0	46	0	0	46	2	0	44	0	46	193
04:45 PM	56	26	0	2	84	0	0	0	0	0	0	33	0	0	33	2	0	62	0	64	181
Total	182	214	0	9	405	0	0	0	0	0	0	140	6	0	146	7	0	181	0	188	739
05:00 PM	41	83	0	1	125	0	0	0	0	0	0	34	1	0	35	4	0	51	0	55	215
05:15 PM	36	82	1	3	122	1	0	0	0	1	0	38	1	0	39	7	0	48	0	55	217
05:30 PM	37	82	0	2	121	0	0	0	0	0	0	40	2	0	42	5	0	36	0	41	204
05:45 PM	47	47	0	1	95	0	0	0	0	0	0	45	3	0	48	2	0	45	0	47	190
Total	161	294	1	7	463	1	0	0	0	1	0	157	7	0	164	18	0	180	0	198	826
Grand Total	481	712	2	25	1220	2	0	0	0	2	0	757	24	1	782	37	0	795	0	832	2836
Apprch %	39.4	58.4	0.2	2		100	0	0	0		0	96.8	3.1	0.1		4.4	0	95.6	0		
Total %	17	25.1	0.1	0.9	43	0.1	0	0	0	0.1	0	26.7	0.8	0	27.6	1.3	0	28	0	29.3	
Passenger Veh	467	696	2	25	1190	2	0	0	0	2	0	742	22	1	765	34	0	772	0	806	2763
% Passenger Veh	97.1	97.8	100	100	97.5	100	0	0	0	100	0	98	91.7	100	97.8	91.9	0	97.1	0	96.9	97.4
Trucks	14	16	0	0	30	0	0	0	0	0	0	15	2	0	17	3	0	23	0	26	73
% Trucks	2.9	2.2	0	0	2.5	0	0	0	0	0	0	2	8.3	0	2.2	8.1	0	2.9	0	3.1	2.6

Data Collection Group

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File Name : Old Lynchburg and Sunset
Site Code : 00003766
Start Date : 9/2/2021
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	Old Lynchburg From North					Driveway From East					Old Lynchburg From South					Sunset From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	14	**31**	0	**2**	47	0	0	0	0	0	0	**72**	0	0	**72**	0	0	55	0	55	174
08:00 AM	**29**	22	0	1	52	0	0	0	0	0	0	69	1	0	70	0	0	51	0	51	173
08:15 AM	21	28	0	2	51	0	0	0	0	0	0	59	**2**	0	61	**4**	0	53	0	57	169
08:30 AM	23	30	**1**	0	**54**	**1**	0	0	0	**1**	0	62	2	**1**	65	2	0	**64**	0	**66**	**186**
Total Volume	87	111	1	5	204	1	0	0	0	1	0	262	5	1	268	6	0	223	0	229	702
% App. Total	42.6	54.4	0.5	2.5		100	0	0	0		0	97.8	1.9	0.4		2.6	0	97.4	0		
PHF	.750	.895	.250	.625	.944	.250	.000	.000	.000	.250	.000	.910	.625	.250	.931	.375	.000	.871	.000	.867	.944
Passenger Veh	82	105	1	5	193	1	0	0	0	1	0	255	5	1	261	6	0	214	0	220	675
% Passenger Veh	94.3	94.6	100	100	94.6	100	0	0	0	100	0	97.3	100	100	97.4	100	0	96.0	0	96.1	96.2
Trucks	5	6	0	0	11	0	0	0	0	0	0	7	0	0	7	0	0	9	0	9	27
% Trucks	5.7	5.4	0	0	5.4	0	0	0	0	0	0	2.7	0	0	2.6	0	0	4.0	0	3.9	3.8

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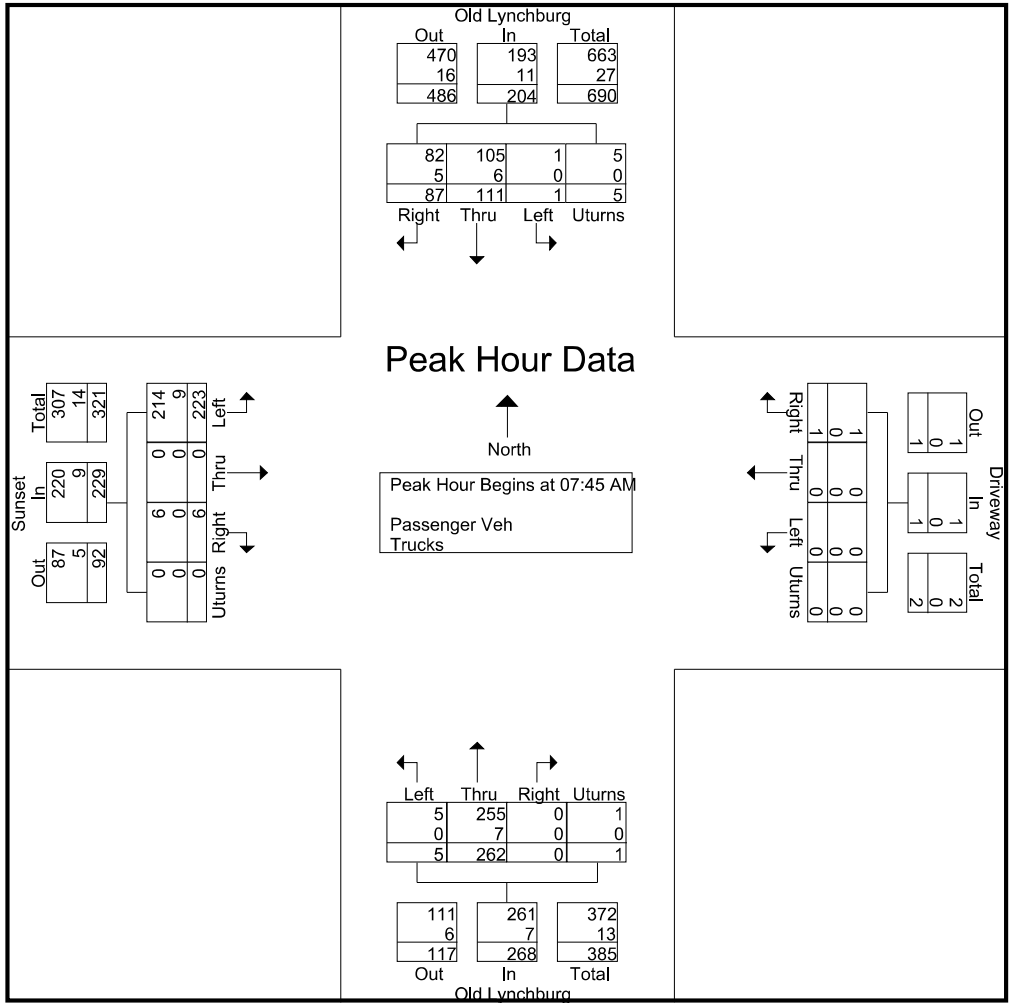

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File Name : Old Lynchburg and Sunset
Site Code : 00003766
Start Date : 9/2/2021
Page No : 4

	Old Lynchburg From North					Driveway From East					Old Lynchburg From South					Sunset From West					
Start Time	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Right	Thru	Left	Uturns	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	41	**83**	0	1	**125**	0	0	0	0	0	0	34	1	0	35	4	0	**51**	0	**55**	215
05:15 PM	36	82	**1**	**3**	122	**1**	0	0	0	**1**	0	38	1	0	39	**7**	0	48	0	55	**217**
05:30 PM	37	82	0	2	121	0	0	0	0	0	0	40	2	0	42	5	0	36	0	41	204
05:45 PM	**47**	47	0	1	95	0	0	0	0	0	0	**45**	**3**	0	**48**	2	0	45	0	47	190
Total Volume	161	294	1	7	463	1	0	0	0	1	0	157	7	0	164	18	0	180	0	198	826
% App. Total	34.8	63.5	0.2	1.5		100	0	0	0		0	95.7	4.3	0		9.1	0	90.9	0		
PHF	.856	.886	.250	.583	.926	.250	.000	.000	.000	.250	.000	.872	.583	.000	.854	.643	.000	.882	.000	.900	.952
Passenger Veh	158	294	1	7	460	1	0	0	0	1	0	155	7	0	162	17	0	178	0	195	818
% Passenger Veh	98.1	100	100	100	99.4	100	0	0	0	100	0	98.7	100	0	98.8	94.4	0	98.9	0	98.5	99.0
Trucks	3	0	0	0	3	0	0	0	0	0	0	2	0	0	2	1	0	2	0	3	8
% Trucks	1.9	0	0	0	0.6	0	0	0	0	0	0	1.3	0	0	1.2	5.6	0	1.1	0	1.5	1.0

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File Name : Old Lynchburg and Sunset
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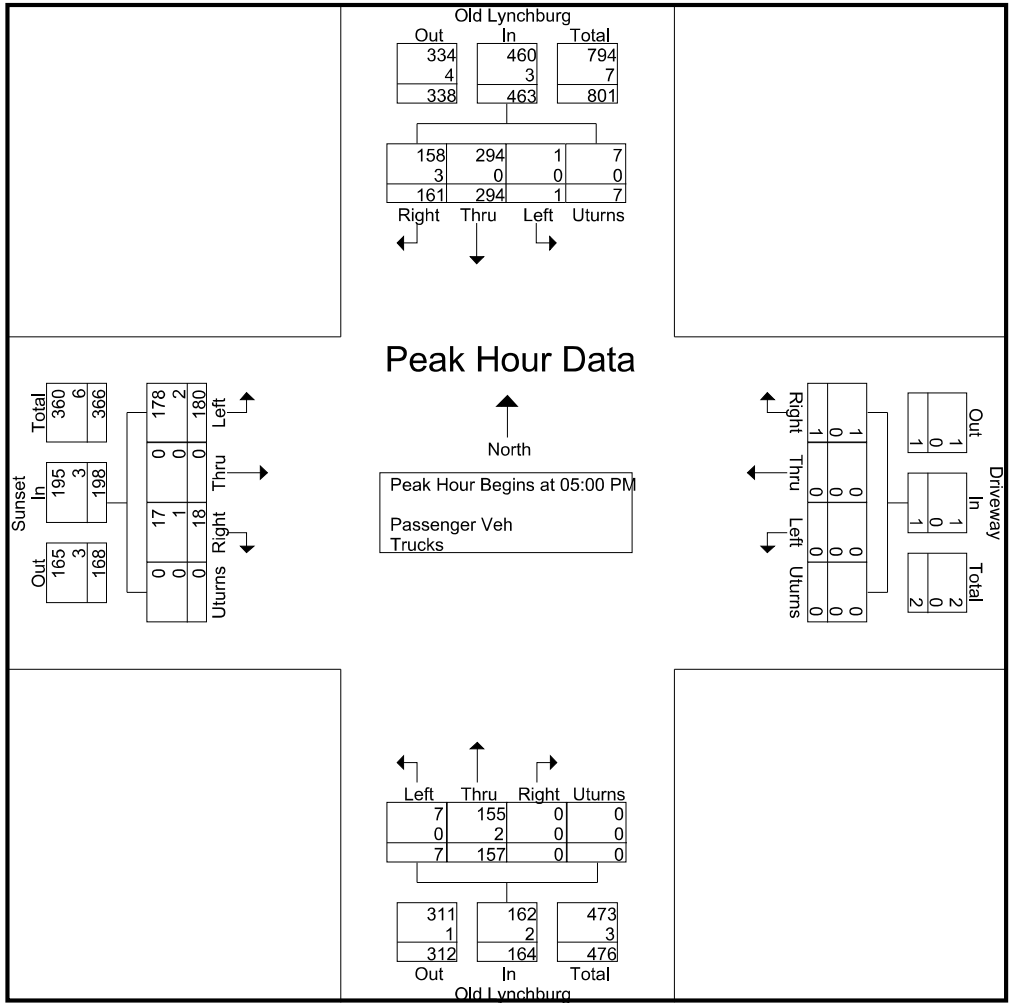

Data Collection Group

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File Name : Old Lynchburg and Sunset
Site Code : 00003766
Start Date : 9/2/2021
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Groups Printed- Bikes - Peds

	Old Lynchburg From North					Driveway From East					Old Lynchburg From South					Sunset From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4	4	5
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	7	7	8
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	1	1	4
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2
*** BREAK ***																					
Total	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	2	2	7
*** BREAK ***																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
*** BREAK ***																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	1	2
05:00 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	3	4	1	0	0	0	1	6
05:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	0	0	0	2	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	1	1	4
Total	1	0	0	0	1	0	0	0	1	1	0	3	0	6	9	3	0	0	1	4	15
Grand Total	1	0	0	0	1	0	0	0	1	1	0	10	0	6	16	3	0	0	11	14	32
Apprch %	100	0	0	0		0	0	0	100		0	62.5	0	37.5		21.4	0	0	78.6		
Total %	3.1	0	0	0	3.1	0	0	0	3.1	3.1	0	31.2	0	18.8	50	9.4	0	0	34.4	43.8	
Bikes	1	0	0	0	1	0	0	0	0	0	0	10	0	0	10	3	0	0	0	3	14
% Bikes	100	0	0	0	100	0	0	0	0	0	0	100	0	0	62.5	100	0	0	0	21.4	43.8
Peds	0	0	0	0	0	0	0	0	1	1	0	0	0	6	6	0	0	0	11	11	18
% Peds	0	0	0	0	0	0	0	0	100	100	0	0	0	100	37.5	0	0	0	100	78.6	56.2

Appendix C
Existing Signal Timings

SEPAC ECOM All Data

10/15/2018
9:39:51AM

Intersection Name: **I-64/ 5th ST EB Ramp Alb** Intersection Alias: **02159**

Access Data

1 :**1200/1312 Baud**
3 :**19200 Baud**

Access Code: **9999** Channel: 1 Address: **1**

Revision: **3.34g** IP Address:

Phase Initialization Data

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Initial	1-Inact	4-Grn	0-None	1-Inact	0-None	4-Grn	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None

PHASE DATA

Vehical Basic Timings							Misc Timings						Pedestrian Timings						
Phase	Min Green	Passage	Max1	Max2	Yellow	All Red	Green Delay	Yellow Delay	Walk Off	Walk Offset Mode	Bike Green	Bike Psg	Walk	Ped Clr	Alt Walk	Alt Ped Clr	Flash Walk	Ext Ped Clr	Actuated Rest in Walk
1	8	3.5	18	18	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
2	10	3.0	40	40	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
3	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
4	10	3.5	55	25	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
5	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
6	10	3.0	40	40	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
7	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
8	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
9	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
10	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
11	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
12	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
13	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
14	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
15	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
16	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No

Vehicle Density Timings							General Control				Miscellaneous					Special Sequence		
Ph.	Added Initial	Max Initial	Time B4 Redu	Car B4 Redu	Time To Redu	Min Gap	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Pass	Condit Service	No Simu Gap Out	Omit	Minus Yel	Omit Call
1	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	0	0	0
2	0.0	0	0	0	0	0.0	NonActI	Min	None	0	No	No	No	No	No	0	0	0
3	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
4	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	0	0	0
5	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
6	0.0	0	0	0	0	0.0	NonActI	Min	None	0	No	No	No	No	No	0	0	0
7	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
8	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
9	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
10	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
11	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
12	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
13	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
14	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
15	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

16	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

Vehical Detector Phase Assignment

	Assign Phase	Mode	Switch Phase	Extend	Delay
Veh Det:1	1	Veh	0	0.0	5
Veh Det:2	2	Veh	0	0.0	0
Veh Det:3	1	Veh	0	0.0	0
Veh Det:4	4	Veh	0	0.0	0
Veh Det:5	5	Veh	0	0.0	0
Veh Det:6	6	Veh	0	0.0	0
Veh Det:7	7	Veh	0	0.0	0
Veh Det:8	8	Veh	0	0.0	0

Pedestrian Detector

Assign Phase	Mode	Switch Phase	Extend	Delay
Default Data				

Special Detector Phase Assignment

Assign Phase	Mode	Switch Phase	Extend	Delay
: **Default Data**				

Unit Data

General Control

Startup Time: 0sec
Startup State: Flash
Red Revert: 40sec
Auto Ped Clr: No
Stop T Reset: No
Alt Sequence: 0
Special Seq: 0-Standard

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

I/O Modes:

ABC Input(Entry) Modes: 0 **D Input(Entry) Modes:** 2

ABC Output(O/STS) Modes: 0 **D Output(O/STS) Modes:** 2

Remote Flash

Test A = Flash

Phase	Entry	Exit

Default Data
- No Flash

Default Data
- No Flash

Overlaps

Overlaps

Phase(s)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

Start Green

Overlaps

Phase(s)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
TG Preempt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stop Grn/Yel Phase	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
4	1	1
6	2	7

Phase(s)

Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	1	1	1	1	1	1	1
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

	Ph. Pair 1	Ph. Pair 2	Ph. Pair 3	Ph. Pair 4
Alt. Seq. 1	**1/2**			
Alt. Seq. 2	**3/4**			
Alt. Seq. 3	**1/2**	**3/4**		
Alt. Seq. 4	**5/6**			
Alt. Seq. 5	**1/2**	**5/6**		
Alt. Seq. 6	**3/4**	**5/6**		
Alt. Seq. 7	**1/2**	**3/4**	**5/6**	
Alt. Seq. 8	**7/8**			
Alt. Seq. 9	**1/2**	**7/8**		
Alt. Seq.	**3/4**	**7/8**		
Alt. Seq.	**1/2**	**3/4**	**7/8**	
Alt. Seq.	**5/6**	**7/8**		
Alt. Seq.	**1/2**	**5/6**	**7/8**	
Alt. Seq.	**3/4**	**5/6**	**7/8**	
Alt. Seq.	**1/2**	**3/4**	**5/6**	**7/8**

Port 1 Data

BIU Addr	Port Status	Basic Det	Message 40

Default Data

Signal Driver Ouput

Channel	Control	Hardware Pins
1	1 - Veh Phase 1	1 - Phase 1 RYG
2	2 - Veh Phase 2	2 - Phase 2 RYG
3	3 - Veh Phase 3	3 - Phase 3 RYG
4	4 - Veh Phase 4	4 - Phase 4 RYG
5	5 - Veh Phase 5	5 - Phase 5 RYG
6	6 - Veh Phase 6	6 - Phase 6 RYG
7	7 - Veh Phase 7	7 - Phase 7 RYG
8	8 - Veh Phase 8	8 - Phase 8 RYG
9	33 - Overlap A	17 - Overlap A RYG
10	34 - Overlap B	18 - Overlap B RYG
11	35 - Overlap C	19 - Overlap C RYG
12	36 - Overlap D	20 - Overlap D RYG
13	18 - Ped Phase 2	10 - Phase 2 DPW
14	20 - Ped Phase 4	12 - Phase 4 DPW
15	22 - Ped Phase 6	14 - Phase 6 DPW
16	24 - Ped Phase 8	16 - Phase 8 DPW
17	17 - Ped Phase 1	9 - Phase 1 DPW
18	19 - Ped Phase 3	11 - Phase 3 DPW
19	21 - Ped Phase 5	13 - Phase 5 DPW
20	23 - Ped Phase 7	15 - Phase 7 DPW

Coordination Data

General Coordination Data

Operation Mode: 0=Free
Coordination Mode: 0=Permissive
Maximun Mode: 0=Inhibit
Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn
Force Mode: 1=Cycle
Max Dwell Time: 0
Yield Period: 90

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Dial/Split	Cycle
1/1	90
1/2	90
2/1	70
3/1	90
3/2	90

Split Times and Phase Modes

Dial 1 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	30	0=Actuated	2	35	1=Coordinate	4	25	0=Actuated	6	60	1=Coordinate

Dial 1 / **Split** 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	25	0=Actuated	2	30	1=Coordinate	4	35	0=Actuated	6	55	1=Coordinate

Dial 2 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	20	0=Actuated	2	25	1=Coordinate	4	25	0=Actuated	6	39	1=Coordinate

Dial 3 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	25	0=Actuated	2	40	1=Coordinate	4	25	0=Actuated	6	65	1=Coordinate

Dial 3 / **Split** 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	30	0=Actuated	2	30	1=Coordinate	4	30	0=Actuated	6	44	1=Coordinate

Traffic Plan Data

Plan: 1/2/1	Offset Time: 0	Alternat Sequence: 1	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 2=Yield	Special Function: 0	Correction Mode: 0=No		

Plan: 2/1/1	Offset Time: 0	Alternat Sequence: 1	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 2=Yield	Special Function: 0	Correction Mode: 0=No		

Plan: 3/2/1	Offset Time: 0	Alternat Sequence: 1	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 2=Yield	Special Function: 0	Correction Mode: 0=No		

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 1 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
1	7	0	0	0	0	0	0
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:0	0/0/4																	
2	1	7:0	2/1/1																	
3	1	20:0	0/0/4																	
4	2	0:0	0/0/4																	
5	2	6:30	1/2/1																	
6	2	9:0	2/1/1																	
7	2	15:30	3/2/1																	
8	2	18:30	2/1/1																	
9	2	20:0	0/0/4																	

AUX. Events

Event	Program Day	Hour	Min.	Aux 1	Ouputs 2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimmin	Special Function Outputs 1	2	3	4	5	6	7	8

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10	SF11	SF12	SF13	SF14	SF15	SF16
Special Function 1	X															
Special Function 2		X														
Special Function 3			X													
Special Function 4				X												
Special Function 5					X											
Special Function 6						X										
Special Function 7							X									
Special Function 8								X								

Phase Function

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	X															
Phase 2 Max2		X														
Phase 3 Max2			X													
Phase 4 Max2				X												
Phase 5 Max2					X											
Phase 6 Max2						X										
Phase 7 Max2							X									
Phase 8 Max2								X								

Phase Omit

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Phase Omit									X							
Phase 2 Phase Omit										X						
Phase 3 Phase Omit											X					
Phase 4 Phase Omit												X				
Phase 5 Phase Omit													X			
Phase 6 Phase Omit														X		
Phase 7 Phase Omit															X	
Phase 8 Phase Omit																X

Ped Omit

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Coord ReSvc

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Function Phase Recall

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Phase Min Recall

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Ped Recall	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Bike Recall	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Vehicle Function

Veh Det Switch Omit	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Switch Now	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Switch Also	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Overlap Function	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Dimming Data

Default Data - No Dimming Programmed

Lane Defination

Lanes	Name	Green Inbound	Yellow Inbound	Red Inbound	Green Outbound	Yellow Outbound

Default Data - Lane Defination

Preemption Data

General Preemption Data

Flash > Preempt 1	Preempt 2 = Preempt 3	Preempt 4 = Preempt 5
Preempt 1 > Preempt 2	Preempt 3 = Preempt 4	Preempt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Ext end	Dura tion	Max Call	Lock-Out	Min Green	Min Walk	Debo unce	Gate ext end	Select: Ped Clear	Select: Yel	Select: Red	Track: Grn	Track: Ped	Track: Yel	Track: Red	Dwell Green	Return: Ped Clear	Return: Yel	Return: Red
1	No	0	0	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
2	Yes	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20
3	No	0	0	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
4	Yes	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20
5	Yes	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20
6	Yes	0	0	0	0	40	0	0	0	0	0	0	40	20	0	0	40	20	40	0	40	20

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	2	Yes	No	1	No	Yes	2	Yes	No	2	Yes	No	1	Yes	No
2	No	Yes	6	Yes	No	2	No	Yes	6	Yes	No	6	Yes	No	6	Yes	No
3	No	Yes				3	No	Yes									
4	No	Yes				4	No	Yes									
5	No	Yes				5	No	Yes									
6	No	Yes				6	No	Yes									
7	No	Yes				7	No	Yes									
8	No	Yes				8	No	Yes									

Priority Timers

Priority	Non-Locking	Delay	Extend	Free Dial	Free Split	Min Green	No Lock out	Lock out A	Lock out B	Max Green	Pre-Green	Recall	Excl-co Phase Svc.	Transit Overlap	
														Signal Type	Blankout

Priority Detector Channels

Priority

Detector

Priority Fixed Phases

Priority

Legend:

	0	1
CO-PHASE	FALSE	TRUE
QJ-PHASE		

Priority

Priority Bank : Level

Partial Priority	Full Priority	Recovery
Alt Seq	Freq. Override	Method
Alt Seq Enabled	Ped skip	Return
Min Walk	Force full Priority	PedWait
	Frequency	PedOverride
	Freq. Level	

Codes:

0	X
FALSE	TRUE

Priority :	Priority :	Priority :
Priority Bank :	Priority Bank :	Priority Bank :
Queu Phase Detector Time	Queu Phase Detector Time	Queu Phase Detector Time
Default data	Default data	Default data

Priority :	Priority :	Priority :
Priority Bank :	Priority Bank :	Priority Bank :
Queu Phase Detector Time	Queu Phase Detector Time	Queu Phase Detector Time
Default data	Default data	Default data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Preempt 1

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph	Track	Dwell	Cycle	Ovlp	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

Preempt 2

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
2	Red	Green	No								

Default Data **Default Data**

Preempt 3

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

Preempt 4

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
4	Red	Green	No								

Default Data **Default Data**

Preempt 5

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Green	No					1	Red	Flash	No
6	Red	Green	No					3	Red	Flash	No

Default Data

Preempt 6

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
4	Red	Green	No								

Default Data **Default Data**

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15 1st Phone:

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: No Remote Flash: No 2nd Phone:

Local Fash: No Cycle Fault: No Coord Fault: No Premption: No Voltage Monitor: No

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Name	Veh/ Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor

Default Data **Default Data** **Default Data**

Sample Interval:

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Valu

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 Detector_2 Distance :

Dial/Split/Offset

//

Default Data

Speed Trap Low Treshold	Speed Trap High Treshold

Default Data

Volume Detector Data

Report Interval 0

Volume Detector Number	Controller Detector Channel

Default Data

SEPAC ECOM All Data

10/15/2018
9:35:10AM

Intersection Name: **I-64/ 5th ST WB Ramp Albe** Intersection Alias: **02181**

Access Data

1 :**1200/1312 Baud**
3 :**19200 Baud**

Access Code: **9999** Channel: 1 Address: **2**

Revision: **3.34g** IP Address:

Phase Initialization Data

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Initial	0-None	4-Grn	0-None	1-Inact	1-Inact	4-Grn	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None	0-None

PHASE DATA

Vehical Basic Timings							Misc Timings						Pedestrian Timings						
Phase	Min Green	Passage	Max1	Max2	Yellow	All Red	Green Delay	Yellow Delay	Walk Off	Walk Offset Mode	Bike Green	Bike Psg	Walk	Ped Clr	Alt Walk	Alt Ped Clr	Flash Walk	Ext Ped Clr	Actuated Rest in Walk
1	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
2	10	3.5	40	40	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
3	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
4	8	3.0	35	35	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
5	8	3.0	20	20	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
6	10	3.5	40	40	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
7	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
8	0	0.0	0	0	4.0	2.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
9	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
10	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
11	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
12	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
13	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
14	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
15	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No
16	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0.0	0	0	0		No	0	No

Vehicle Density Timings							General Control				Miscellaneous					Special Sequence		
Ph.	Added Initial	Max Initial	Time B4 Redu	Car B4 Redu	Time To Redu	Min Gap	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Pass	Condit Service	No Simu Gap Out	Omit	Minus Yel	Omit Call
1	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
2	0.0	0	0	0	0	0.0	NonActI	Min	None	0	Yes	No	No	No	No	0	0	0
3	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
4	0.0	0	0	0	0	0.0	NonActII	None	None	0	Yes	No	No	No	No	0	0	0
5	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	0	0	0
6	0.0	0	0	0	0	0.0	NonActI	Min	None	0	Yes	No	No	No	No	0	0	0
7	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
8	0.0	0	0	0	0	0.0	NonActII	None	None	0	No	No	No	No	No	0	0	0
9	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
10	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
11	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
12	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
13	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
14	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0
15	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

16	0.0	0	0	0	0	0.0	None	None	None	0	No	No	No	No	No	0	0	0

Vehical Detector Phase Assignment

	Assign Phase	Mode	Switch Phase	Extend	Delay
Veh Det:1	1	Veh	0	0.0	0
Veh Det:2	2	Veh	0	0.0	0
Veh Det:3	3	Veh	0	0.0	0
Veh Det:4	4	Veh	0	0.0	0
Veh Det:5	5	Veh	0	0.0	5
Veh Det:6	6	Veh	0	0.0	0
Veh Det:7	7	Veh	0	0.0	0
Veh Det:8	8	Veh	0	0.0	0

Pedestrian Detector

Assign Phase	Mode	Switch Phase	Extend	Delay
Default Data				

Special Detector Phase Assignment

Assign Phase	Mode	Switch Phase	Extend	Delay
: **Default Data**				

Unit Data

General Control

Startup Time: 0sec
Startup State: Flash
Red Revert: 40sec
Auto Ped Clr: No
Stop T Reset: No
Alt Sequence: 0
Special Seq: 0-Standard

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

I/O Modes:

ABC Input(Entry) Modes: 0
D Input(Entry) Modes: 2
ABC Output(O/STS) Modes: 0
D Output(O/STS) Modes: 2

Remote Flash

Test A = Flash

Phase	Entry	Exit

Default Data
- No Flash

Default Data
- No Flash

Overlaps

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)	9	10		12												

Start Green

Overlaps

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Phase(s)																

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trail Red	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
TG Preempt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stop Grn/Yel Phase	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
2	1	3
4	1	1
5	2	6
6	2	7

Phase(s)

Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	1	1	1	1	1	1	1
	5	5	7	7	2	2	4	4								
	6	6	8	8	5	6	7	8								

Alternate Sequences

	Ph. Pair 1	Ph. Pair 2	Ph. Pair 3	Ph. Pair 4
Alt. Seq. 1	**1/2**			
Alt. Seq. 2	**3/4**			
Alt. Seq. 3	**1/2**	**3/4**		
Alt. Seq. 4	**5/6**			
Alt. Seq. 5	**1/2**	**5/6**		
Alt. Seq. 6	**3/4**	**5/6**		
Alt. Seq. 7	**1/2**	**3/4**	**5/6**	
Alt. Seq. 8	**7/8**			
Alt. Seq. 9	**1/2**	**7/8**		
Alt. Seq.	**3/4**	**7/8**		
Alt. Seq.	**1/2**	**3/4**	**7/8**	
Alt. Seq.	**5/6**	**7/8**		
Alt. Seq.	**1/2**	**5/6**	**7/8**	
Alt. Seq.	**3/4**	**5/6**	**7/8**	
Alt. Seq.	**1/2**	**3/4**	**5/6**	**7/8**

Port 1 Data

BIU Addr	Port Status	Basic Det	Message 40

Default Data

Signal Driver Ouput

Channel	Control	Hardware Pins
1	1 - Veh Phase 1	1 - Phase 1 RYG
2	2 - Veh Phase 2	2 - Phase 2 RYG
3	3 - Veh Phase 3	3 - Phase 3 RYG
4	4 - Veh Phase 4	4 - Phase 4 RYG
5	5 - Veh Phase 5	5 - Phase 5 RYG
6	6 - Veh Phase 6	6 - Phase 6 RYG
7	7 - Veh Phase 7	7 - Phase 7 RYG
8	8 - Veh Phase 8	8 - Phase 8 RYG
9	0 - None	17 - Overlap A RYG
10	0 - None	18 - Overlap B RYG
11	35 - Overlap C	19 - Overlap C RYG
12	0 - None	20 - Overlap D RYG
13	18 - Ped Phase 2	10 - Phase 2 DPW
14	20 - Ped Phase 4	12 - Phase 4 DPW
15	22 - Ped Phase 6	14 - Phase 6 DPW
16	24 - Ped Phase 8	16 - Phase 8 DPW
17	17 - Ped Phase 1	9 - Phase 1 DPW
18	19 - Ped Phase 3	11 - Phase 3 DPW
19	21 - Ped Phase 5	13 - Phase 5 DPW
20	23 - Ped Phase 7	15 - Phase 7 DPW

Coordination Data

General Coordination Data

Operation Mode: 1=Auto
Coordination Mode: 0=Permissive
Maximun Mode: 0=Inhibit
Correction Mode: 2=Short Way

Offset Mode: 0=Beg Grn
Force Mode: 1=Cycle
Max Dwell Time: 0
Yield Period: 90

Manual Dial: 1
Manual Split: 1
Manual Offset: 1

Dial/Split	Cycle
1/1	90
1/2	90
2/1	70
3/1	90
3/2	90

Split Times and Phase Modes

Dial 1 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	35	1=Coordinate	4	25	0=Actuated	5	30	0=Actuated	6	35	1=Coordinate

Dial 1 / **Split** 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	49	1=Coordinate	4	25	0=Actuated	5	30	0=Actuated	6	35	1=Coordinate

Dial 2 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	39	1=Coordinate	4	25	0=Actuated	5	20	0=Actuated	6	25	1=Coordinate

Dial 3 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	40	1=Coordinate	4	25	0=Actuated	5	25	0=Actuated	6	40	1=Coordinate

Dial 3 / **Split** 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
2	54	1=Coordinate	4	25	0=Actuated	5	25	0=Actuated	6	40	1=Coordinate

Traffic Plan Data

Plan: 1/2/1	Offset Time: 0	Alternat Sequence: 4	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 2=Yield	Special Function: 0	Correction Mode: 0=No		
Plan: 2/1/1	Offset Time: 0	Alternat Sequence: 4	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 2=Yield	Special Function: 0	Correction Mode: 0=No		
Plan: 3/1/1	Offset Time: 10	Alternat Sequence: 0	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 0=Normal	Special Function: 0	Correction Mode: 0=No		

Plan: 3/2/1 | Offset Time: 0 | Alternat Sequence: 4 | Rg 2 Lag Time: 0 | Rg 3 Lag Time: 0 | Rg 4 Lag Time: 0

Mode: 2=Yield | Special Function: 0 | Correction Mode: 0=No

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 1 Min: 0

End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
1	7	0	0	0	0	0	0
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:0	0/0/4																	
2	1	7:0	2/1/1																	
3	1	20:0	0/0/4																	
4	2	0:0	0/0/4																	
5	2	6:30	1/2/1																	
6	2	9:0	2/1/1																	
7	2	15:30	3/2/1																	
8	2	18:30	2/1/1																	
9	2	20:0	0/0/4																	

AUX. Events

Event	Program Day	Hour	Min.	Aux 1	Ouputs 2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimmin	Special Function Outputs 1	2	3	4	5	6	7	8

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10	SF11	SF12	SF13	SF14	SF15	SF16
Special Function 1	X															
Special Function 2		X														
Special Function 3			X													
Special Function 4				X												
Special Function 5					X											
Special Function 6						X										
Special Function 7							X									
Special Function 8								X								

Phase Function

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	X															
Phase 2 Max2		X														
Phase 3 Max2			X													
Phase 4 Max2				X												
Phase 5 Max2					X											
Phase 6 Max2						X										
Phase 7 Max2							X									
Phase 8 Max2								X								

Phase Omit

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Phase Omit									X							
Phase 2 Phase Omit										X						
Phase 3 Phase Omit											X					
Phase 4 Phase Omit												X				
Phase 5 Phase Omit													X			
Phase 6 Phase Omit														X		
Phase 7 Phase Omit															X	
Phase 8 Phase Omit																X

Ped Omit

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Veh Det Coord ReSvc

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

Function Phase Recall

PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase Min Recall																
Veh Det Ped Recall																
Veh Det Bike Recall																
Vehicle Function																
Veh Det Switch Omit																
Veh Det Switch Now																
Veh Det Switch Also																
Overlap Function																

Dimming Data

Default Data - No Dimming Programmed

Lane Defination

Lanes	Name	Green Inbound	Yellow Inbound	Red Inbound	Green Outbound	Yellow Outbound

Default Data - Lane Defination

Preemption Data

General Preemption Data

Flash > Preempt 1	Preempt 2 = Preempt 3	Preempt 4 = Preempt 5
Preempt 1 > Preempt 2	Preempt 3 = Preempt 4	Preempt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Ext end	Duration	Max Call	Lock-Out	Min Green	Min Walk	Debounce	Gate ext end	Select Ped Clear	Select Yel	Select Red	Track Grn	Track Ped	Track Yel	Track Red	Dwell Green	Return Ped Clear	Return Yel	Return Red
1	No	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	0	0	40	20
2	Yes	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20
3	No	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	0	0	40	20
4	Yes	0	0	0	0	0	0	0	0	0	0	8	40	20	0	0	0	20	10	8	40	20
5	Yes	0	0	0	0	0	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20
6	No	0	0	0	0	40	0	0	0	0	0	0	40	20	0	0	40	20	5	0	40	20

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
			2	Yes	No				2	Yes	No	2	Yes	No	2	Yes	No
			6	Yes	No				6	Yes	No	6	Yes	No	6	Yes	No

Priority Timers

Priority	Non-Locking	Delay	Ext end	Free Dial	Free Split	Min Green	No Lock out	Lock out A	Lock out B	Max Green	Pre-Green	Recall	Excl-co Phase Svc.	Transit Overlap	
														Signal Type	Blankout

Priority Detector Channels

Priority

Detector

Priority Fixed Phases

Priority

Legend:

	0	1
CO-PHASE	FALSE	TRUE
QJ-PHASE		

Priority

Priority Bank : Level

Partial Priority	Full Priority	Recovery
Alt Seq	Freq. Override	Method
Alt Seq Enabled	Ped skip	Return
Min Walk	Force full Priority	PedWait
	Frequency	PedOverride
	Freq. Level	

Codes:

0	X
FALSE	TRUE

Priority :	**Priority :**	**Priority :**
Priority Bank :	**Priority Bank :**	**Priority Bank :**
Queu Phase Detector Time	Queu Phase Detector Time	Queu Phase Detector Time
Default data	**Default data**	**Default data**

Priority :	Priority :	Priority :
Priority Bank :	Priority Bank :	Priority Bank :
Queu Phase Detector Time	Queu Phase Detector Time	Queu Phase Detector Time
Default data	Default data	Default data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Priority :	Priority :
Bank	Bank
Detector PE 1A 2A 3A 4A 5A 6A B	Detector PE 1A 2A 3A 4A 5A 6A B
Default Data	Default Data

Preempt 1

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph	Track	Dwell	Cycle	Ovlp	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

Preempt 2

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
2	Red	Green	No					1	Red	Flash	No
5	Red	Green	No					3	Red	Flash	No

Default Data

Preempt 3

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle

Default Data **Default Data** **Default Data**

Preempt 4

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
4	Red	Green	No								

Default Data **Default Data**

Preempt 5

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
6	Red	Green	No								

Default Data **Default Data**

Preempt 6

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
4	Red	Green	No								

Default Data **Default Data**

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15 1st Phone:

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: No Remote Flash: No 2nd Phone:

Local Fash: No Cycle Fault: No Coord Fault: No Premption: No Voltage Monitor: No

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Name	Veh/ Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Sample Interval:

Default Data

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Default Data

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Valu

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 Detector_2 Distance :

Dial/Split/Offset

//

Default Data

Speed Trap Low Treshold	Speed Trap High Treshold

Default Data

Volume Detector Data

Report Interval 0

Volume Detector Number	Controller Detector Channel

Default Data

Appendix D
Capacity Analysis Worksheets for Existing Conditions

Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	101	167	1	39	78
Future Vol, veh/h	3	101	167	1	39	78
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	0	7	4	0	13	8
Mvmt Flow	3	111	184	1	43	86

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	314	185	0	0	185	0
Stage 1	185	-	-	-	-	-
Stage 2	129	-	-	-	-	-
Critical Hdwy	6.6	6.305	-	-	4.295	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3665	-	-	2.3235	-
Pot Cap-1 Maneuver	671	842	-	-	1318	-
Stage 1	852	-	-	-	-	-
Stage 2	889	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	842	-	-	1318	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	852	-	-	-	-	-
Stage 2	860	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	2.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	835	1318	-
HCM Lane V/C Ratio	-	-	0.137	0.033	-
HCM Control Delay (s)	-	-	10	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	223	0	6	0	0	1	6	262	0	6	111	87
Future Vol, veh/h	223	0	6	0	0	1	6	262	0	6	111	87
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	0	0	0	0	3	0	0	5	6
Mvmt Flow	237	0	6	0	0	1	6	279	0	6	118	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	282	421	59	362	514	140	211	0	0	279	0	0
Stage 1	130	130	-	291	291	-	-	-	-	-	-	-
Stage 2	152	291	-	71	223	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	643	527	1001	574	467	889	1372	-	-	1295	-	-
Stage 1	854	792	-	698	675	-	-	-	-	-	-	-
Stage 2	829	675	-	936	723	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	638	522	1001	567	463	889	1372	-	-	1295	-	-
Mov Cap-2 Maneuver	638	522	-	567	463	-	-	-	-	-	-	-
Stage 1	851	788	-	695	672	-	-	-	-	-	-	-
Stage 2	824	672	-	926	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14	9.1	0.2	0.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1372	-	-	644	889	1295	-	-
HCM Lane V/C Ratio	0.005	-	-	0.378	0.001	0.005	-	-
HCM Control Delay (s)	7.6	-	-	14	9.1	7.8	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.8	0	0	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	219	2	21	0	1	4	9	448	1	25	45	184	164
Future Vol, veh/h	219	2	21	0	1	4	9	448	1	25	45	184	164
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	0	14	0	0	0	6	3	0	0	0	6	5
Mvmt Flow	221	2	21	0	1	4	9	453	1	25	45	186	166

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	571	798	93	705	963	227	352	0	0	453	454	0	0
Stage 1	326	326	-	471	471	-	-	-	-	-	-	-	-
Stage 2	245	472	-	234	492	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.18	7.5	6.5	6.9	4.22	-	-	6.4	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.44	3.5	4	3.3	2.26	-	-	2.5	2.2	-	-
Pot Cap-1 Maneuver	404	321	909	327	258	782	1175	-	-	750	1117	-	-
Stage 1	661	652	-	548	563	-	-	-	-	-	-	-	-
Stage 2	737	562	-	754	551	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	375	295	909	298	237	782	1175	-	-	949	949	-	-
Mov Cap-2 Maneuver	375	295	-	298	237	-	-	-	-	-	-	-	-
Stage 1	656	603	-	544	558	-	-	-	-	-	-	-	-
Stage 2	726	558	-	679	510	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.8	11.7	0.2	1.5
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1175	-	-	375	770	237	782	949	-	-
HCM Lane V/C Ratio	0.008	-	-	0.59	0.03	0.004	0.005	0.075	-	-
HCM Control Delay (s)	8.1	-	-	27.5	9.8	20.3	9.6	9.1	-	-
HCM Lane LOS	A	-	-	D	A	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	3.6	0.1	0	0	0.2	-	-

Intersection	
Int Delay, s/veh	20.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1	18	17	1	363	0	676	34	318	378	10
Future Vol, veh/h	30	1	18	17	1	363	0	676	34	318	378	10
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	33	1	20	19	1	403	0	751	38	353	420	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1502	1915	210	1668	1888	376	431	0	0	789	0	0
Stage 1	1126	1126	-	751	751	-	-	-	-	-	-	-
Stage 2	376	789	-	917	1137	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	86	68	769	60	71	619	1139	-	-	827	-	-
Stage 1	222	282	-	360	421	-	-	-	-	-	-	-
Stage 2	623	405	-	285	279	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 20	39	769	38	41	619	1139	-	-	827	-	-
Mov Cap-2 Maneuver	~ 20	39	-	38	41	-	-	-	-	-	-	-
Stage 1	222	162	-	360	421	-	-	-	-	-	-	-
Stage 2	216	405	-	158	160	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 481.1	28.4	0	5.7
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1139	-	-	20	769	38	619	827	-	-
HCM Lane V/C Ratio	-	-	-	1.722	0.026	0.526	0.652	0.427	-	-
HCM Control Delay (s)	0	-	-	$ 754.8	9.8	177	21	12.6	-	-
HCM Lane LOS	A	-	-	F	A	F	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	4.6	0.1	1.8	4.8	2.2	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	532	248	1109	176	516
v/c Ratio	1.12	0.41	0.97	0.38	0.25
Control Delay	110.5	5.9	50.9	19.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	110.5	5.9	50.9	19.9	5.5
Queue Length 50th (ft)	~351	0	310	40	57
Queue Length 95th (ft)	#546	56	#453	m104	72
Internal Link Dist (ft)	1069		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	476	604	1139	461	2062
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.41	0.97	0.38	0.25

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	489	0	228	0	0	0	0	742	278	162	475	0
Future Volume (veh/h)	489	0	228	0	0	0	0	742	278	162	475	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1885	1900	1870				0	1870	1885	1885	1826	0
Adj Flow Rate, veh/h	532	0	248				0	807	302	176	516	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	0	2				0	2	1	1	5	0
Cap, veh/h	483	0	423				0	816	305	461	2082	0
Arrive On Green	0.27	0.00	0.27				0.00	0.32	0.32	0.42	1.00	0.00
Sat Flow, veh/h	1810	0	1585				0	2624	946	1795	3561	0
Grp Volume(v), veh/h	532	0	248				0	566	543	176	516	0
Grp Sat Flow(s),veh/h/ln	1810	0	1585				0	1777	1700	1795	1735	0
Q Serve(g_s), s	24.0	0.0	12.2				0.0	28.5	28.6	1.2	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	12.2				0.0	28.5	28.6	1.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.56	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	423				0	573	548	461	2082	0
V/C Ratio(X)	1.10	0.00	0.59				0.00	0.99	0.99	0.38	0.25	0.00
Avail Cap(c_a), veh/h	483	0	423				0	573	548	461	2082	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.66	0.66	0.00
Uniform Delay (d), s/veh	33.0	0.0	28.7				0.0	30.3	30.4	20.6	0.0	0.0
Incr Delay (d2), s/veh	71.9	0.0	2.1				0.0	35.0	36.3	0.3	0.2	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
%ile BackOfQ(50%),veh/ln	19.6	0.0	4.7				0.0	16.7	16.2	2.1	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	104.9	0.0	30.8				0.0	65.4	66.6	20.9	0.2	0.0
LnGrp LOS	F	A	C				A	E	E	C	A	A
Approach Vol, veh/h		780						1109			692	
Approach Delay, s/veh		81.3						66.0			5.5	
Approach LOS		F						E			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	35.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	19.0	29.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	3.2	30.6		26.0		2.0
Green Ext Time (p_c), s	0.4	0.0		0.0		4.3

Intersection Summary		
HCM 6th Ctrl Delay		54.4
HCM 6th LOS		D

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	172	325	375	975	929
v/c Ratio	0.59	0.83	0.65	0.40	0.69
Control Delay	42.0	36.7	24.3	4.7	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	36.7	24.3	4.7	20.6
Queue Length 50th (ft)	89	93	168	112	167
Queue Length 95th (ft)	149	#210	m167	m128	251
Internal Link Dist (ft)	742			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	359	446	580	2456	1344
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.73	0.65	0.40	0.69

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	165	0	312	360	936	0	0	461	431
Future Volume (veh/h)	0	0	0	165	0	312	360	936	0	0	461	431
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1811	1900	1826	1870	1870	0	0	1841	1856
Adj Flow Rate, veh/h				172	0	325	375	975	0	0	480	449
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				6	0	5	2	2	0	0	4	3
Cap, veh/h				382	0	327	584	2330	0	0	563	503
Arrive On Green				0.21	0.00	0.21	0.53	1.00	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1810	0	1547	1781	3647	0	0	1841	1560
Grp Volume(v), veh/h				172	0	325	375	975	0	0	480	449
Grp Sat Flow(s),veh/h/ln				1810	0	1547	1781	1777	0	0	1749	1560
Q Serve(g_s), s				7.5	0.0	18.9	5.8	0.0	0.0	0.0	23.1	24.7
Cycle Q Clear(g_c), s				7.5	0.0	18.9	5.8	0.0	0.0	0.0	23.1	24.7
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				382	0	327	584	2330	0	0	563	503
V/C Ratio(X)				0.45	0.00	0.99	0.64	0.42	0.00	0.00	0.85	0.89
Avail Cap(c_a), veh/h				382	0	327	584	2330	0	0	563	503
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.15	0.15	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				30.9	0.0	35.5	15.7	0.0	0.0	0.0	28.5	29.0
Incr Delay (d2), s/veh				0.8	0.0	48.3	0.4	0.1	0.0	0.0	15.0	20.9
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.2	0.0	18.9	3.6	0.0	0.0	0.0	11.2	11.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				31.8	0.0	83.8	16.1	0.1	0.0	0.0	43.5	49.9
LnGrp LOS				C	A	F	B	A	A	A	D	D
Approach Vol, veh/h					497			1350			929	
Approach Delay, s/veh					65.8			4.5			46.6	
Approach LOS					E			A			D	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	65.0	25.0	30.0	35.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	59.0	19.0	24.0	29.0
Max Q Clear Time (g_c+I1), s	2.0	20.9	7.8	26.7
Green Ext Time (p_c), s	9.8	0.0	1.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	70	48
Average Queue (ft)	35	6
95th Queue (ft)	59	28
Link Distance (ft)	461	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		295
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	R
Maximum Queue (ft)	127	16	4	2	4	21	2
Average Queue (ft)	56	1	0	0	0	2	0
95th Queue (ft)	96	8	3	2	4	11	2
Link Distance (ft)	619	314		733	733		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250			290	330
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	UL	R
Maximum Queue (ft)	172	48	17	20	28	7	58	6
Average Queue (ft)	72	14	1	2	2	0	22	0
95th Queue (ft)	137	37	7	13	15	4	51	5
Link Distance (ft)		673	311			1952		
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	250			170	290		290	400
Storage Blk Time (%)	0							
Queuing Penalty (veh)	0							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	T	R	L	T	T
Maximum Queue (ft)	162	87	585	100	13	33	31	262	79	2
Average Queue (ft)	56	17	221	84	1	2	2	117	4	0
95th Queue (ft)	142	62	632	128	8	15	13	219	73	2
Link Distance (ft)	265		750		1591	1591			1427	1427
Upstream Blk Time (%)	0		10							
Queuing Penalty (veh)	0		0							
Storage Bay Dist (ft)		115		100			300	300		
Storage Blk Time (%)	9	0	29	31				1	0	
Queuing Penalty (veh)	2	0	107	6				1	1	

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	672	357	347	355	164	62	56
Average Queue (ft)	378	135	185	204	81	24	11
95th Queue (ft)	756	422	298	323	141	54	36
Link Distance (ft)	1075		1427	1427		607	607
Upstream Blk Time (%)	3						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	8	0					
Queuing Penalty (veh)	18	2					

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	180	247	140	311	252	243	291
Average Queue (ft)	91	119	117	111	42	128	146
95th Queue (ft)	155	204	164	276	147	211	260
Link Distance (ft)	754			607	607	1340	1340
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			6	1			
Queuing Penalty (veh)			26	5			

Network Summary

Network wide Queuing Penalty: 169

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	68	81	3	96	195
Future Vol, veh/h	1	68	81	3	96	195
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	3	2	0	1	1
Mvmt Flow	1	80	95	4	113	229

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	438	97	0	0	99	0
Stage 1	97	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Critical Hdwy	6.6	6.245	-	-	4.115	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3285	-	-	2.2095	-
Pot Cap-1 Maneuver	566	956	-	-	1500	-
Stage 1	932	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	524	956	-	-	1500	-
Mov Cap-2 Maneuver	524	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	945	1500	-
HCM Lane V/C Ratio	-	-	0.086	0.075	-
HCM Control Delay (s)	-	-	9.2	7.6	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	0	18	0	0	1	4	145	0	3	273	170
Future Vol, veh/h	197	0	18	0	0	1	4	145	0	3	273	170
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	6	0	0	0	0	1	0	0	0	2
Mvmt Flow	210	0	19	0	0	1	4	154	0	3	290	181

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	381	458	145	313	639	77	471	0	0	154	0	0
Stage 1	296	296	-	162	162	-	-	-	-	-	-	-
Stage 2	85	162	-	151	477	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.02	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.36	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	552	502	863	622	397	975	1101	-	-	1439	-	-
Stage 1	688	672	-	830	768	-	-	-	-	-	-	-
Stage 2	913	768	-	842	559	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	549	499	863	606	395	975	1101	-	-	1439	-	-
Mov Cap-2 Maneuver	549	499	-	606	395	-	-	-	-	-	-	-
Stage 1	685	671	-	827	765	-	-	-	-	-	-	-
Stage 2	909	765	-	822	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	8.7	0.2	0.1
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1101	-	-	566	975	1439	-	-
HCM Lane V/C Ratio	0.004	-	-	0.404	0.001	0.002	-	-
HCM Control Delay (s)	8.3	-	-	15.6	8.7	7.5	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.9	0	0	-	-

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	221	1	34	2	0	28	19	341	2	20	5	412	257
Future Vol, veh/h	221	1	34	2	0	28	19	341	2	20	5	412	257
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	5	0	0	0
Mvmt Flow	230	1	35	2	0	29	20	355	2	21	5	429	268

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	699	878	215	662	1144	178	697	0	0	355	357	0	0
Stage 1	481	481	-	395	395	-	-	-	-	-	-	-	-
Stage 2	218	397	-	267	749	-	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.5	6.9	7.5	6.5	6.9	4.1	-	-	6.5	4.1	-	-
Critical Hdwy Stg 1	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.3	3.5	4	3.3	2.2	-	-	2.55	2.2	-	-
Pot Cap-1 Maneuver	328	289	796	351	202	841	909	-	-	841	1213	-	-
Stage 1	538	557	-	607	608	-	-	-	-	-	-	-	-
Stage 2	767	607	-	721	422	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	304	274	796	321	192	841	909	-	-	870	870	-	-
Mov Cap-2 Maneuver	304	274	-	321	192	-	-	-	-	-	-	-	-
Stage 1	526	540	-	594	595	-	-	-	-	-	-	-	-
Stage 2	724	594	-	667	409	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.1	9.9	0.5	0.3
HCM LOS	E	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	909	-	-	304	755	321	841	870	-	-
HCM Lane V/C Ratio	0.022	-	-	0.757	0.048	0.006	0.035	0.03	-	-
HCM Control Delay (s)	9	-	-	46	10	16.3	9.4	9.3	-	-
HCM Lane LOS	A	-	-	E	B	C	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.8	0.2	0	0.1	0.1	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1	4	15	1	150	8	570	30	177	692	29
Future Vol, veh/h	25	1	4	15	1	150	8	570	30	177	692	29
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	90	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	4	0	0	0	0	3	0	1	7	1	1	0
Mvmt Flow	26	1	4	15	1	155	8	588	31	182	713	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1388	1712	357	1325	1711	294	743	0	0	619	0	0
Stage 1	1077	1077	-	604	604	-	-	-	-	-	-	-
Stage 2	311	635	-	721	1107	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.96	4.1	-	-	4.12	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.33	2.2	-	-	2.21	-	-
Pot Cap-1 Maneuver	100	91	645	116	92	699	873	-	-	964	-	-
Stage 1	230	298	-	457	491	-	-	-	-	-	-	-
Stage 2	669	476	-	389	288	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	65	73	645	97	74	699	873	-	-	964	-	-
Mov Cap-2 Maneuver	65	73	-	97	74	-	-	-	-	-	-	-
Stage 1	228	242	-	453	487	-	-	-	-	-	-	-
Stage 2	515	472	-	312	234	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	83.7	15.4	0.1	1.9
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	873	-	-	65	645	95	699	964	-	-
HCM Lane V/C Ratio	0.009	-	-	0.414	0.006	0.174	0.221	0.189	-	-
HCM Control Delay (s)	9.2	-	-	94.9	10.6	50.7	11.6	9.6	-	-
HCM Lane LOS	A	-	-	F	B	F	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0	0.6	0.8	0.7	-	-

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	473	260	776	325	697
v/c Ratio	1.00	0.43	0.82	0.59	0.32
Control Delay	77.0	7.2	38.5	26.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	77.0	7.2	38.5	26.5	6.7
Queue Length 50th (ft)	~270	8	207	147	62
Queue Length 95th (ft)	#470	66	#286	m176	m64
Internal Link Dist (ft)	1200		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	472	606	942	549	2166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.00	0.43	0.82	0.59	0.32

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	459	0	252	0	0	0	0	579	174	315	676	0
Future Volume (veh/h)	459	0	252	0	0	0	0	579	174	315	676	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1900	1900				0	1870	1870	1856	1900	0
Adj Flow Rate, veh/h	473	0	260				0	597	179	325	697	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0				0	2	2	3	0	0
Cap, veh/h	483	0	429				0	719	215	591	2166	0
Arrive On Green	0.27	0.00	0.27				0.00	0.27	0.27	0.53	1.00	0.00
Sat Flow, veh/h	1810	0	1610				0	2789	807	1767	3705	0
Grp Volume(v), veh/h	473	0	260				0	393	383	325	697	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1777	1725	1767	1805	0
Q Serve(g_s), s	23.4	0.0	12.7				0.0	18.7	18.8	2.6	0.0	0.0
Cycle Q Clear(g_c), s	23.4	0.0	12.7				0.0	18.7	18.8	2.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.47	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	429				0	474	460	591	2166	0
V/C Ratio(X)	0.98	0.00	0.61				0.00	0.83	0.83	0.55	0.32	0.00
Avail Cap(c_a), veh/h	483	0	429				0	474	460	591	2166	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.25	0.25	0.00
Uniform Delay (d), s/veh	32.8	0.0	28.9				0.0	31.1	31.1	15.2	0.0	0.0
Incr Delay (d2), s/veh	35.7	0.0	2.4				0.0	15.4	16.0	0.3	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
%ile BackOfQ(50%),veh/ln	14.5	0.0	5.0				0.0	9.5	9.3	3.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.5	0.0	31.3				0.0	46.5	47.1	15.5	0.1	0.0
LnGrp LOS	E	A	C				A	D	D	B	A	A
Approach Vol, veh/h		733						776			1022	
Approach Delay, s/veh		55.3						46.8			5.0	
Approach LOS		E						D			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	30.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	24.0	24.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	4.6	20.8		25.4		2.0
Green Ext Time (p_c), s	0.9	1.4		0.0		4.9

Intersection Summary	
HCM 6th Ctrl Delay	32.4
HCM 6th LOS	C

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	212	315	256	827	1420
v/c Ratio	0.68	0.70	0.56	0.34	0.93
Control Delay	45.9	20.7	21.2	1.5	34.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	20.7	21.2	1.5	34.5
Queue Length 50th (ft)	112	53	108	18	352
Queue Length 95th (ft)	181	139	m132	m45	#539
Internal Link Dist (ft)	819			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	377	502	456	2452	1525
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.63	0.56	0.34	0.93

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	206	0	306	248	802	0	0	806	571
Future Volume (veh/h)	0	0	0	206	0	306	248	802	0	0	806	571
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1900	1885	1870	1870	0	0	1885	1885
Adj Flow Rate, veh/h				212	0	315	256	827	0	0	831	589
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				1	0	1	2	2	0	0	1	1
Cap, veh/h				382	0	337	456	2330	0	0	765	529
Arrive On Green				0.21	0.00	0.21	0.42	1.00	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1810	0	1598	1781	3647	0	0	2119	1399
Grp Volume(v), veh/h				212	0	315	256	827	0	0	733	687
Grp Sat Flow(s),veh/h/ln				1810	0	1598	1781	1777	0	0	1791	1633
Q Serve(g_s), s				9.4	0.0	17.4	4.8	0.0	0.0	0.0	34.0	34.0
Cycle Q Clear(g_c), s				9.4	0.0	17.4	4.8	0.0	0.0	0.0	34.0	34.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.86
Lane Grp Cap(c), veh/h				382	0	337	456	2330	0	0	677	617
V/C Ratio(X)				0.55	0.00	0.93	0.56	0.35	0.00	0.00	1.08	1.11
Avail Cap(c_a), veh/h				382	0	337	456	2330	0	0	677	617
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.46	0.46	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				31.7	0.0	34.9	21.1	0.0	0.0	0.0	28.0	28.0
Incr Delay (d2), s/veh				1.8	0.0	32.4	0.7	0.2	0.0	0.0	59.1	71.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.2	0.0	17.1	3.1	0.1	0.0	0.0	24.2	24.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				33.5	0.0	67.3	21.9	0.2	0.0	0.0	87.1	99.8
LnGrp LOS				C	A	E	C	A	A	A	F	F
Approach Vol, veh/h					527			1083			1420	
Approach Delay, s/veh					53.7			5.3			93.2	
Approach LOS					D			A			F	

Timer - Assigned Phs	2	4	5	6
Phs Duration (G+Y+Rc), s	65.0	25.0	25.0	40.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	59.0	19.0	19.0	34.0
Max Q Clear Time (g_c+I1), s	2.0	19.4	6.8	36.0
Green Ext Time (p_c), s	7.8	0.0	0.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.9
HCM 6th LOS	D

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	55	42
Average Queue (ft)	28	7
95th Queue (ft)	48	29
Link Distance (ft)	461	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		295
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	T	L	T
Maximum Queue (ft)	130	6	13	1	4	2
Average Queue (ft)	55	0	1	0	0	0
95th Queue (ft)	98	3	6	1	3	2
Link Distance (ft)	619	314		733		1952
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250		290	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	T	UL	T	R
Maximum Queue (ft)	191	89	15	29	36	2	38	2	18
Average Queue (ft)	78	16	1	12	8	0	8	0	1
95th Queue (ft)	156	68	8	29	28	2	29	2	8
Link Distance (ft)		673	311			1952		1592	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	250			170	290		290		400
Storage Blk Time (%)	0	0							
Queuing Penalty (veh)	0	0							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L
Maximum Queue (ft)	72	28	67	87	33	2	4	25	125
Average Queue (ft)	23	5	14	34	3	0	0	2	49
95th Queue (ft)	57	22	44	69	20	2	3	14	92
Link Distance (ft)	265		685			1592	1592		
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		115		100	265			300	300
Storage Blk Time (%)	0		0	0					
Queuing Penalty (veh)	0		0	0					

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	504	315	245	257	228	120	79
Average Queue (ft)	258	83	135	146	135	38	38
95th Queue (ft)	430	211	221	236	217	85	74
Link Distance (ft)	1206		1427	1427		603	603
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	1	0			0	0	
Queuing Penalty (veh)	2	0			1	0	

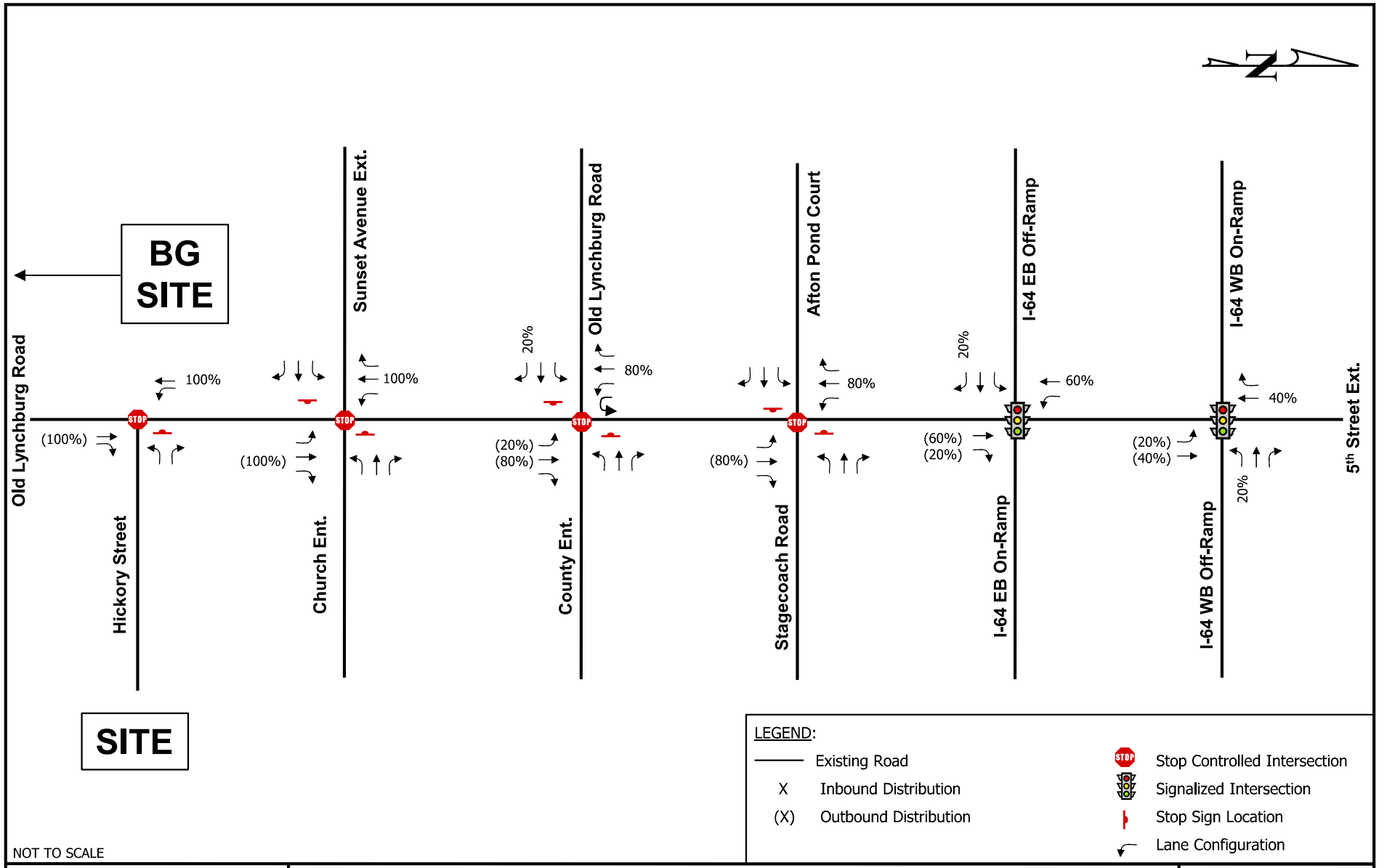
Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	194	203	139	260	133	564	639
Average Queue (ft)	105	99	106	39	8	298	354
95th Queue (ft)	176	171	156	172	79	527	605
Link Distance (ft)	832			603	603	1342	1342
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			2	1			
Queuing Penalty (veh)			8	1			

Network Summary

Network wide Queuing Penalty: 12

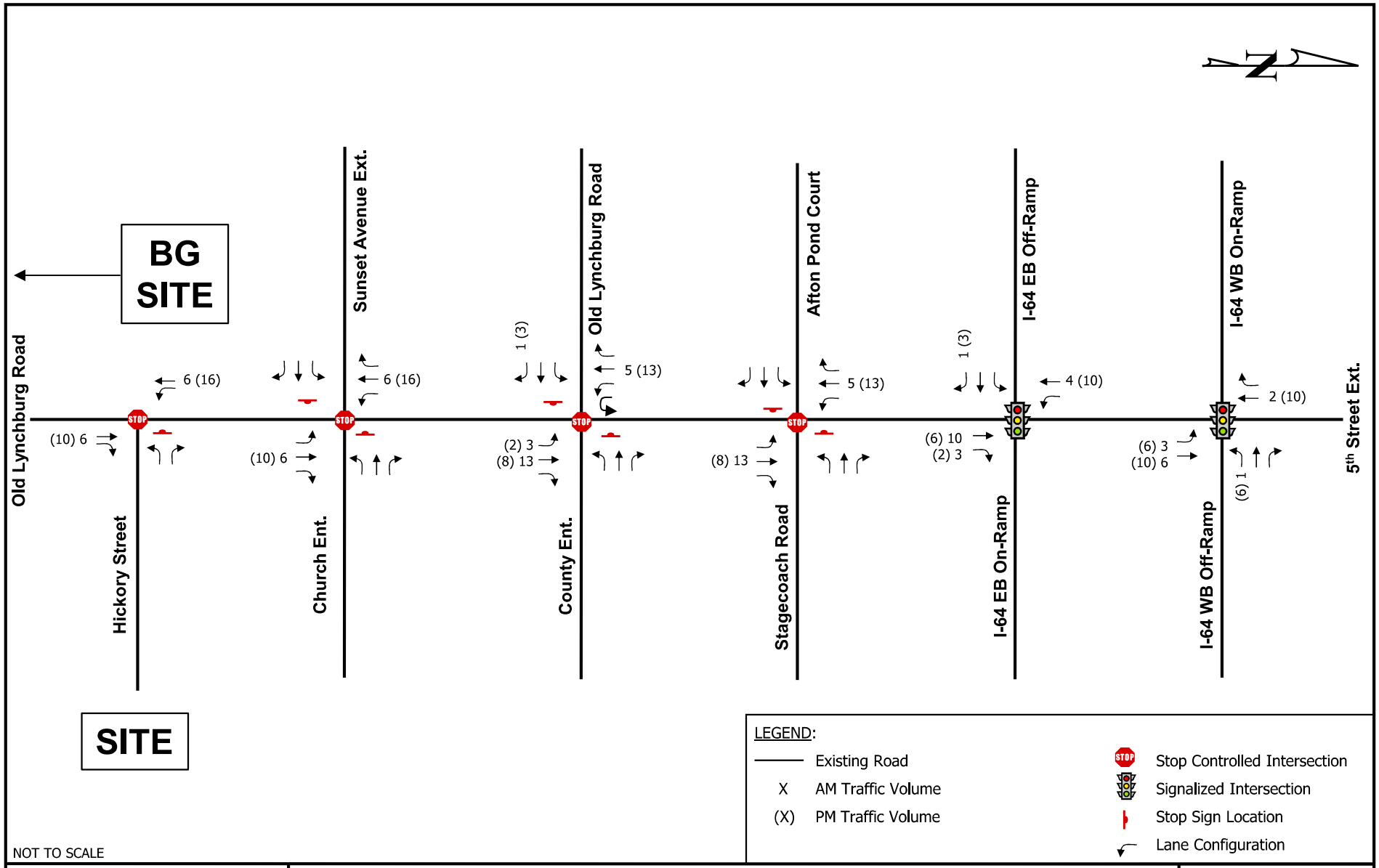
Appendix E
Background Development Trips



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Site Trip Distributions – Whittington

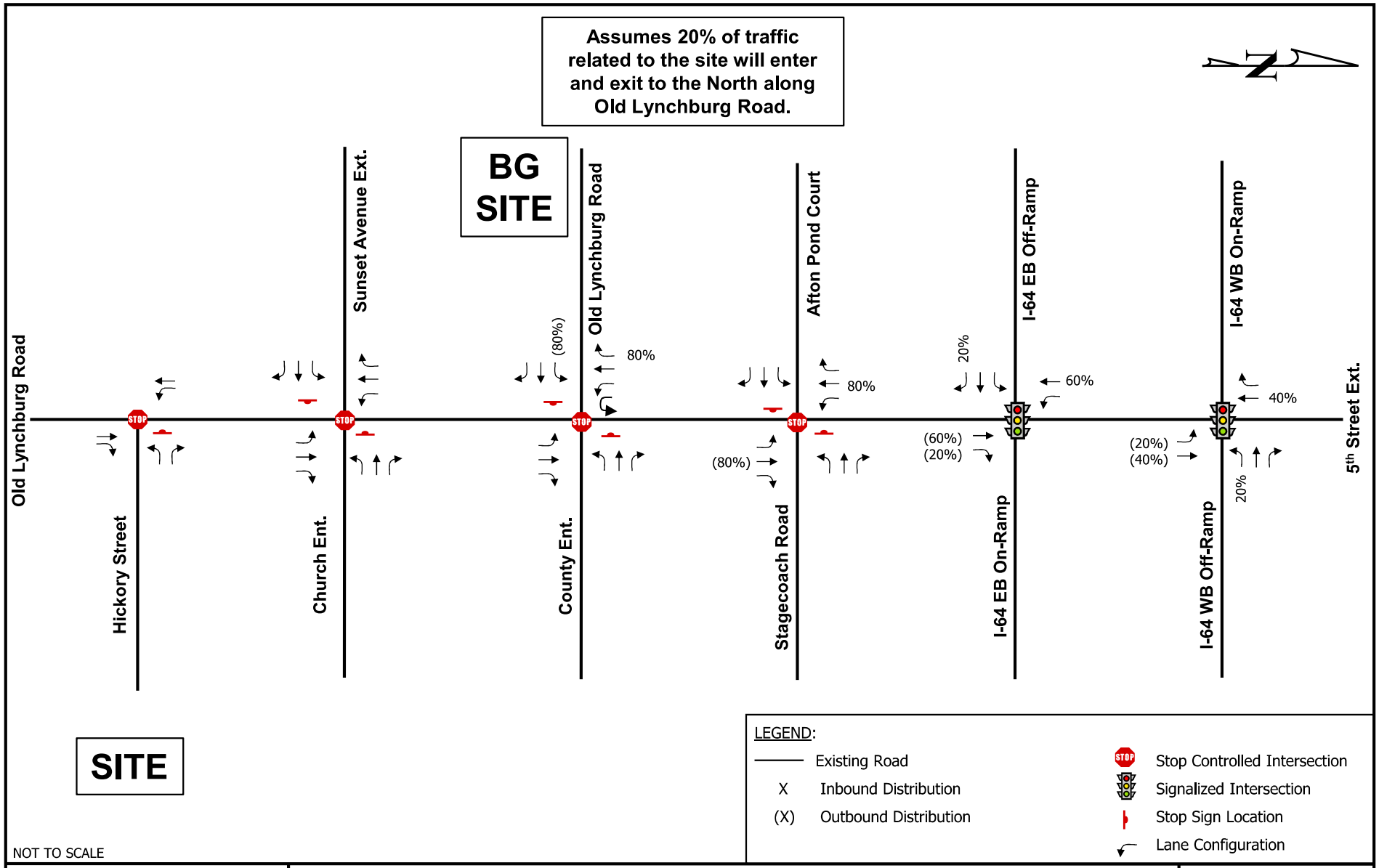
Figure
E-1



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Site Trips – Whittington

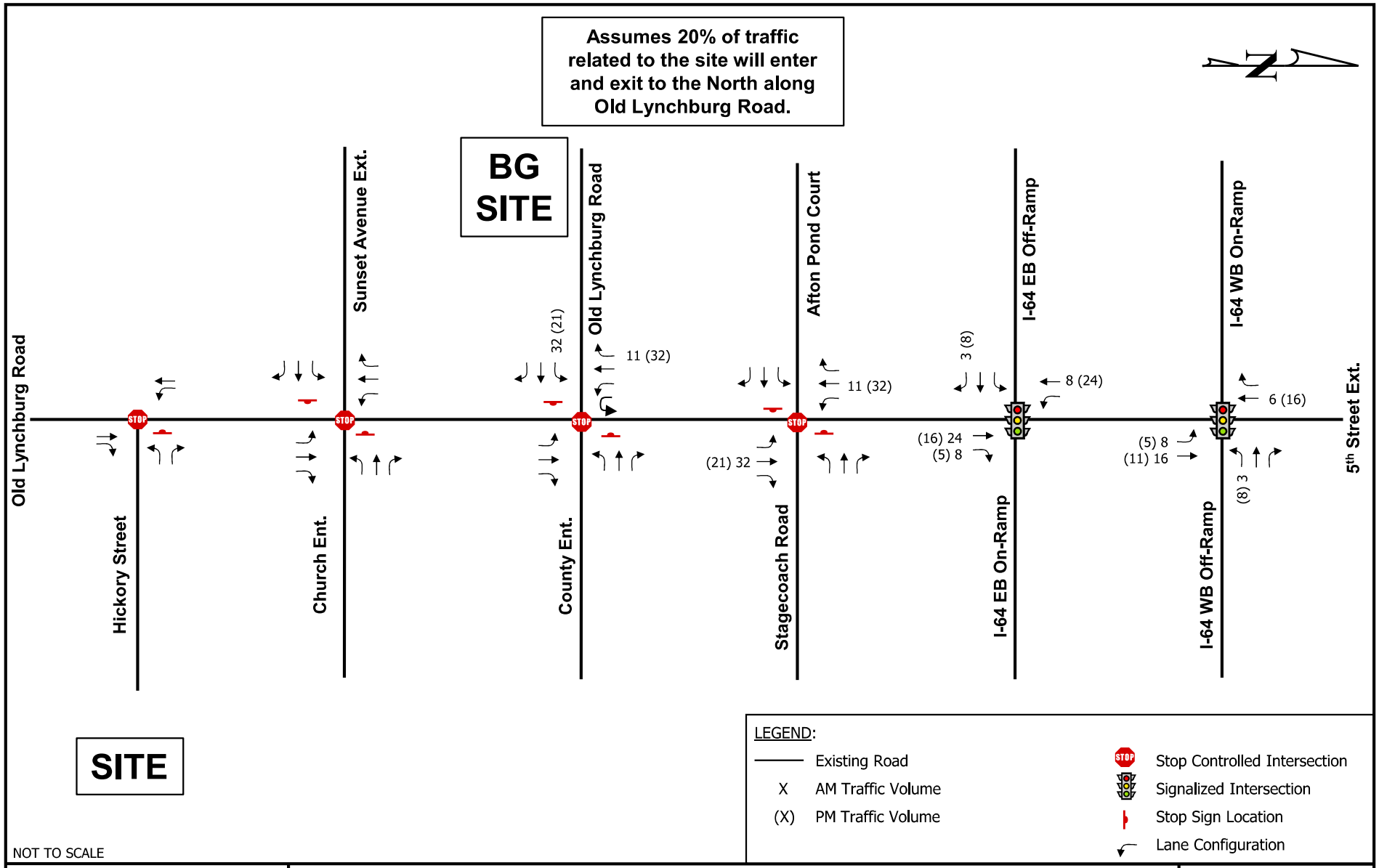
Figure
E-2



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Residential Site Trip Distributions – Albemarle Business Park

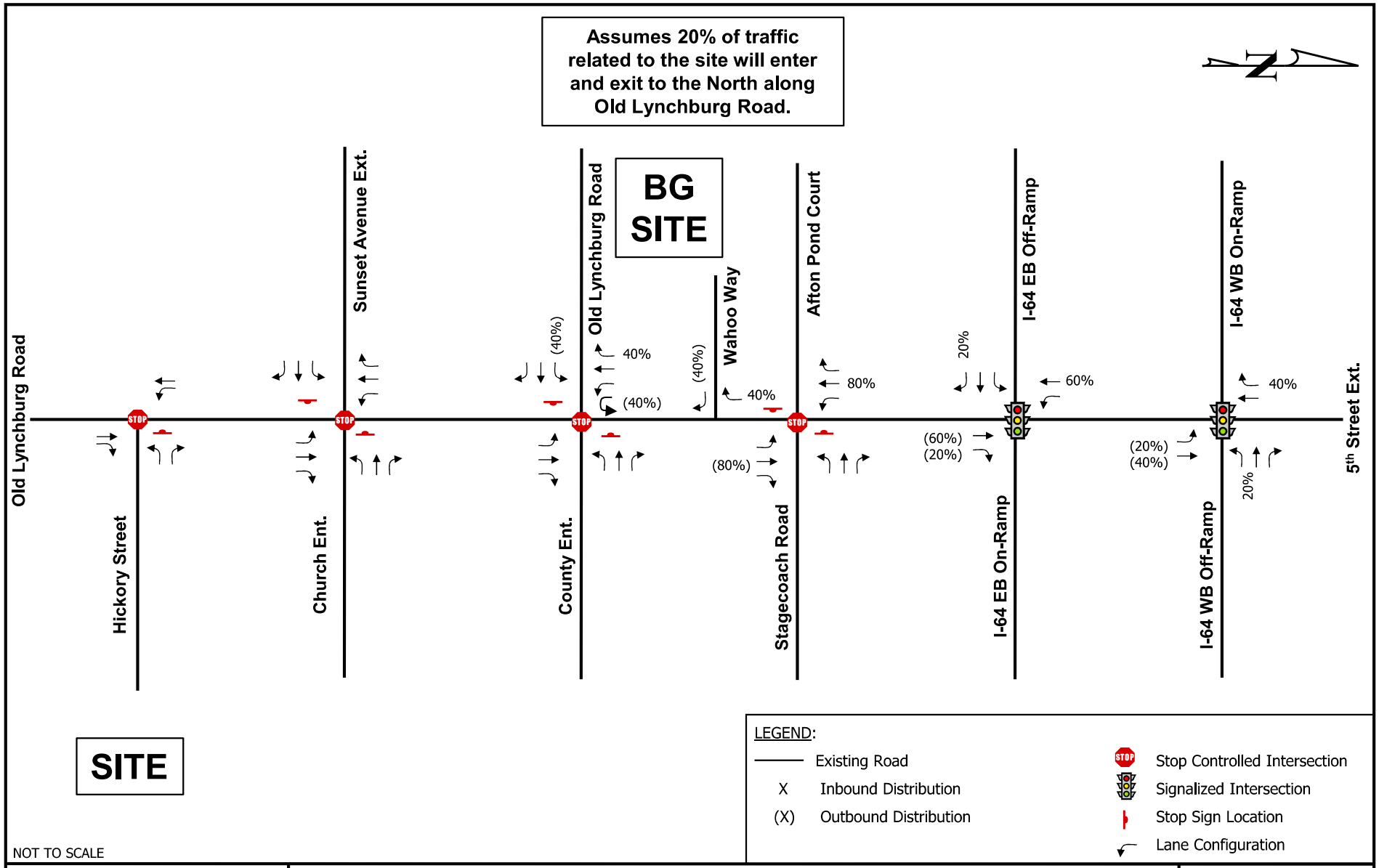
Figure
E-3



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Residential Site Trips – Albemarle Business Park

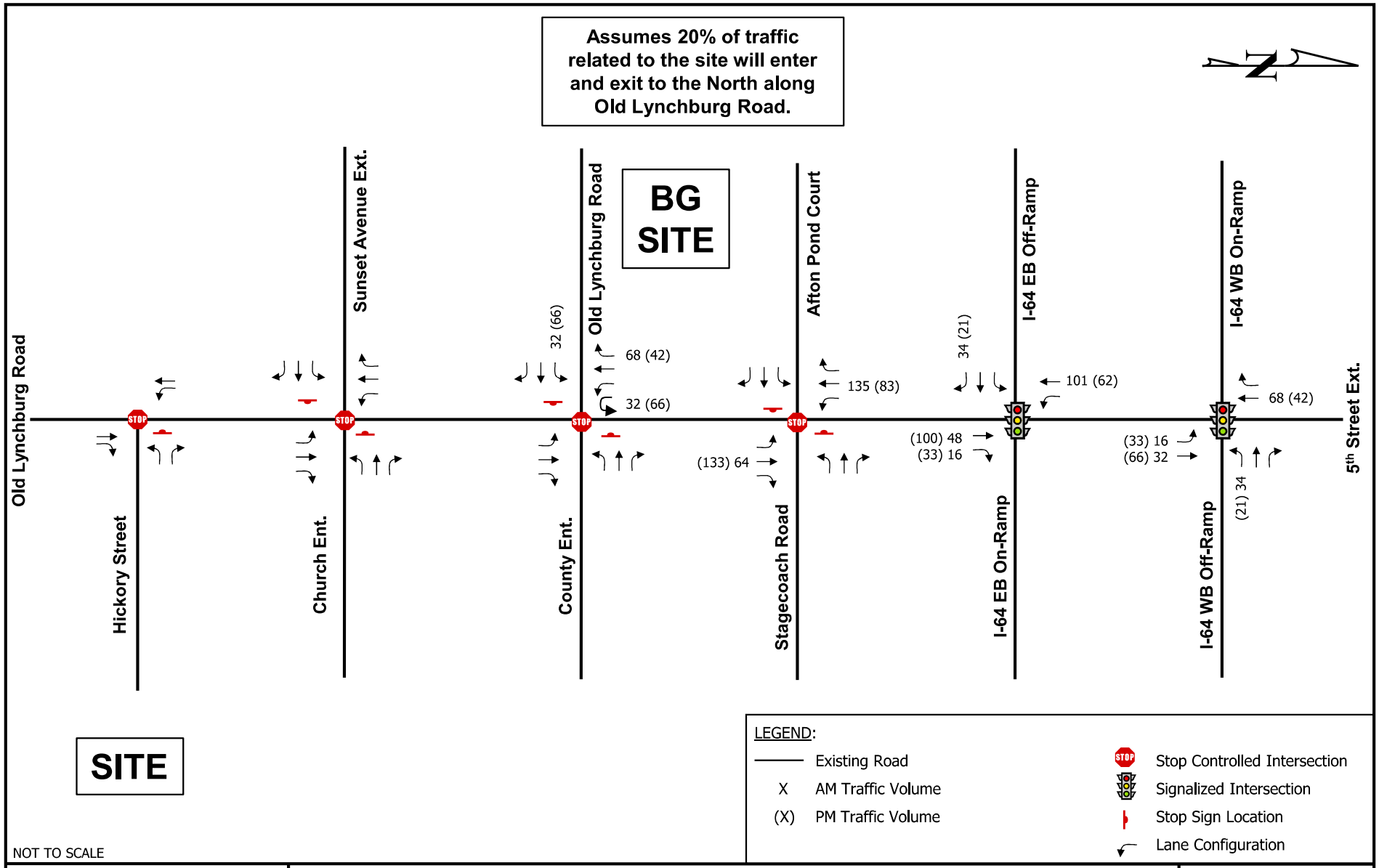
Figure
E-4



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Retail & Office Site Trip Distributions – Albemarle Business Park

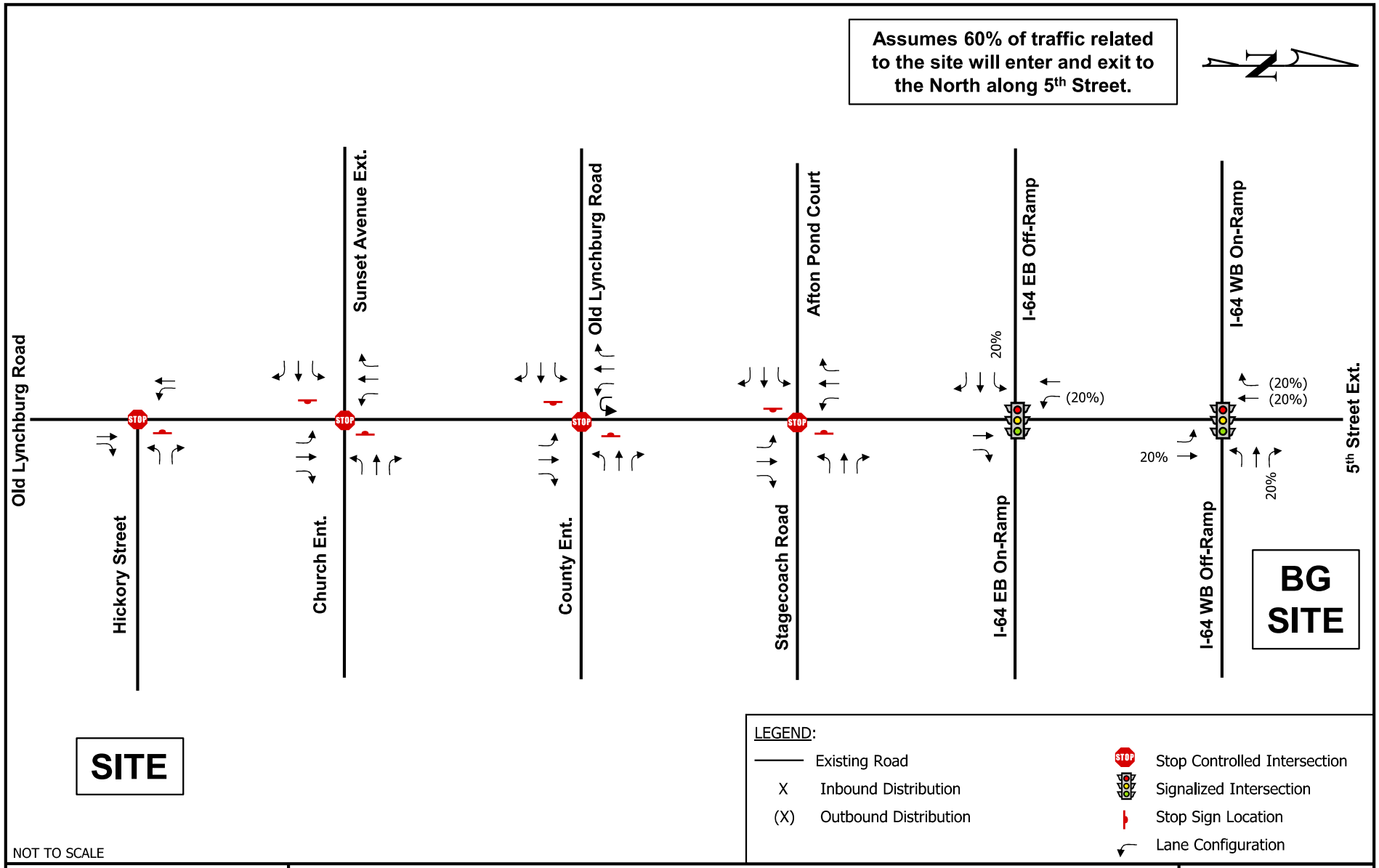
Figure
E-5



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Retail & Office Site Trips – Albemarle Business Park

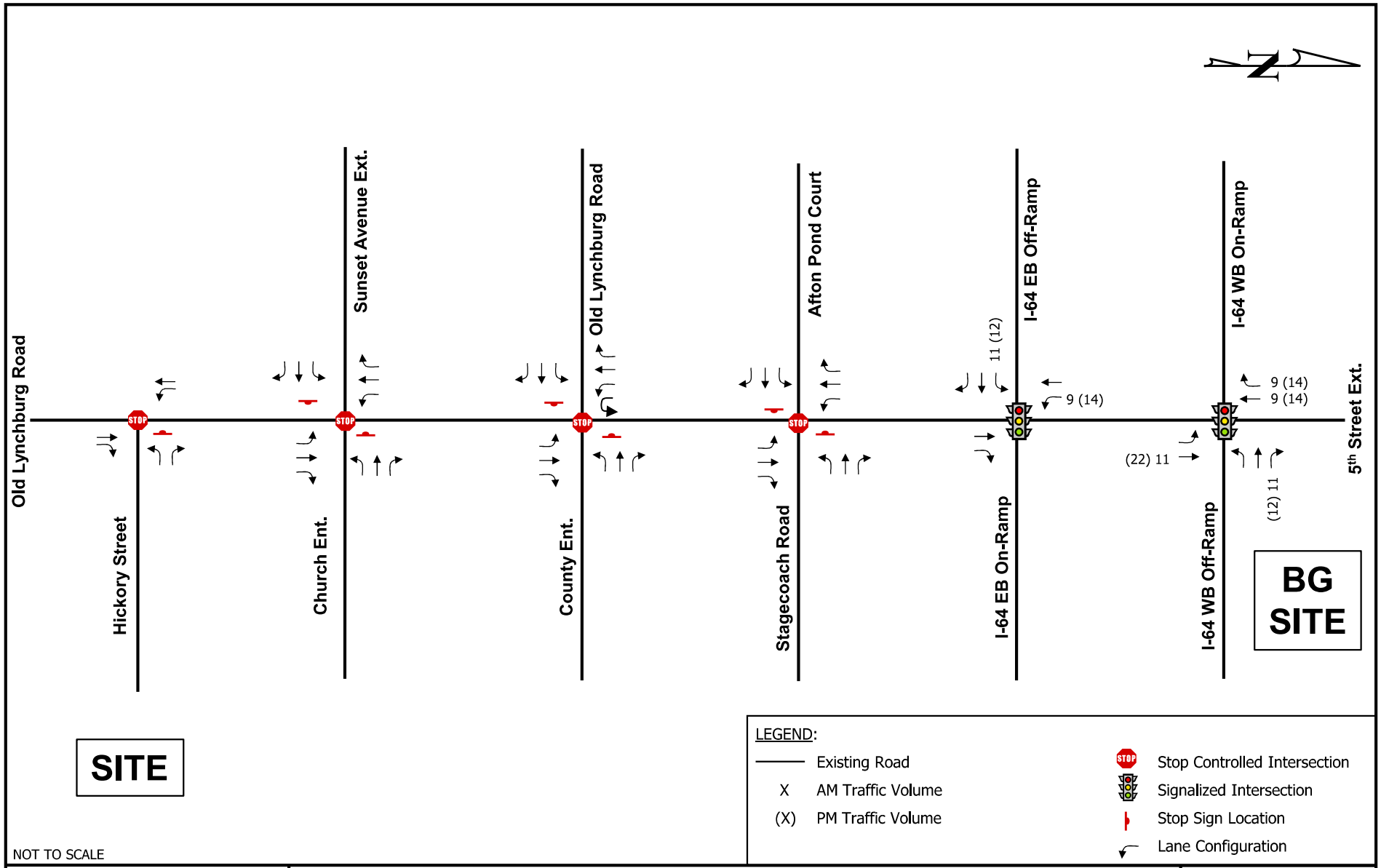
Figure
E-6



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Site Trip Distributions – 5th Street Landing

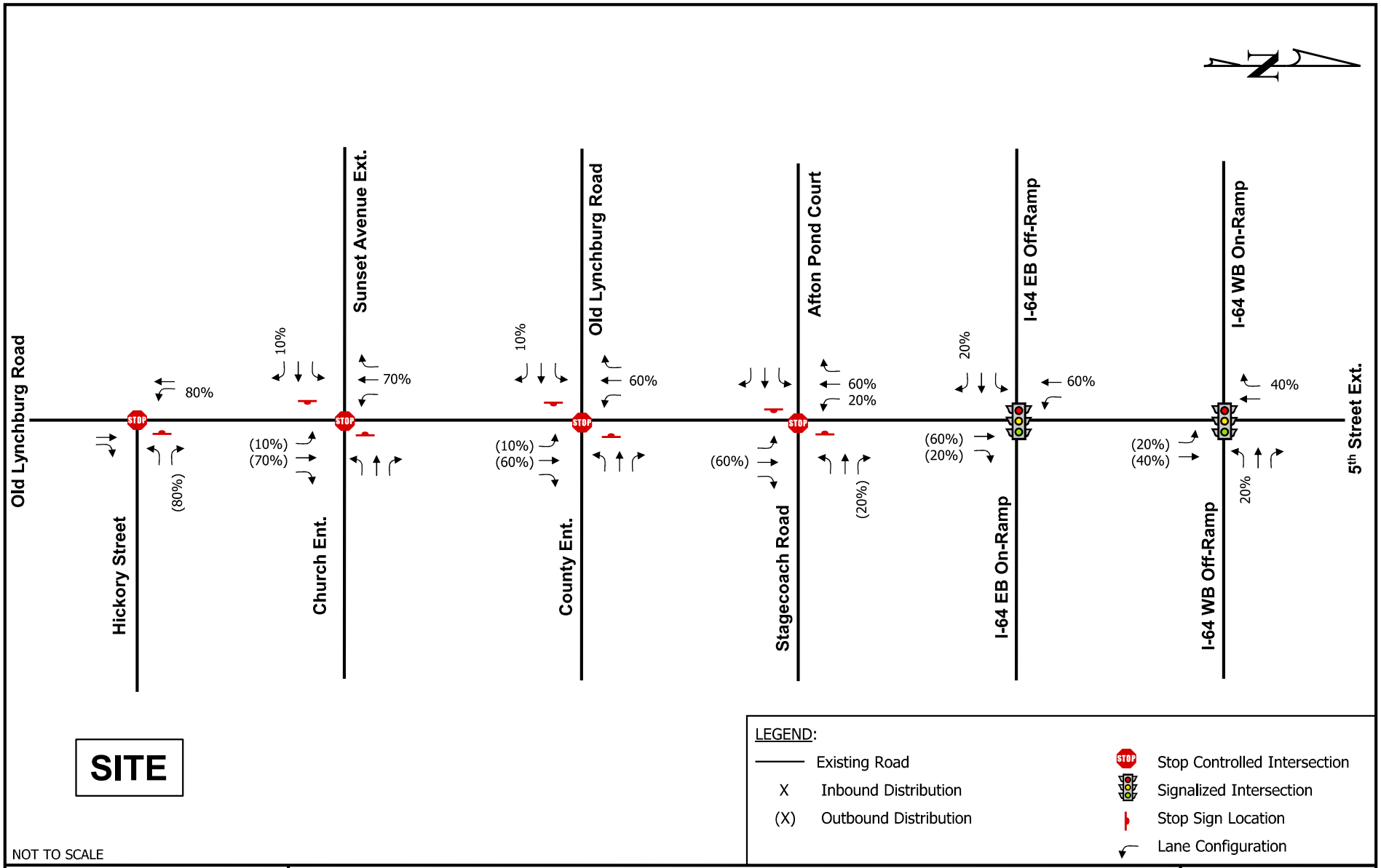
Figure
E-7



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Site Trips – 5th Street Landing

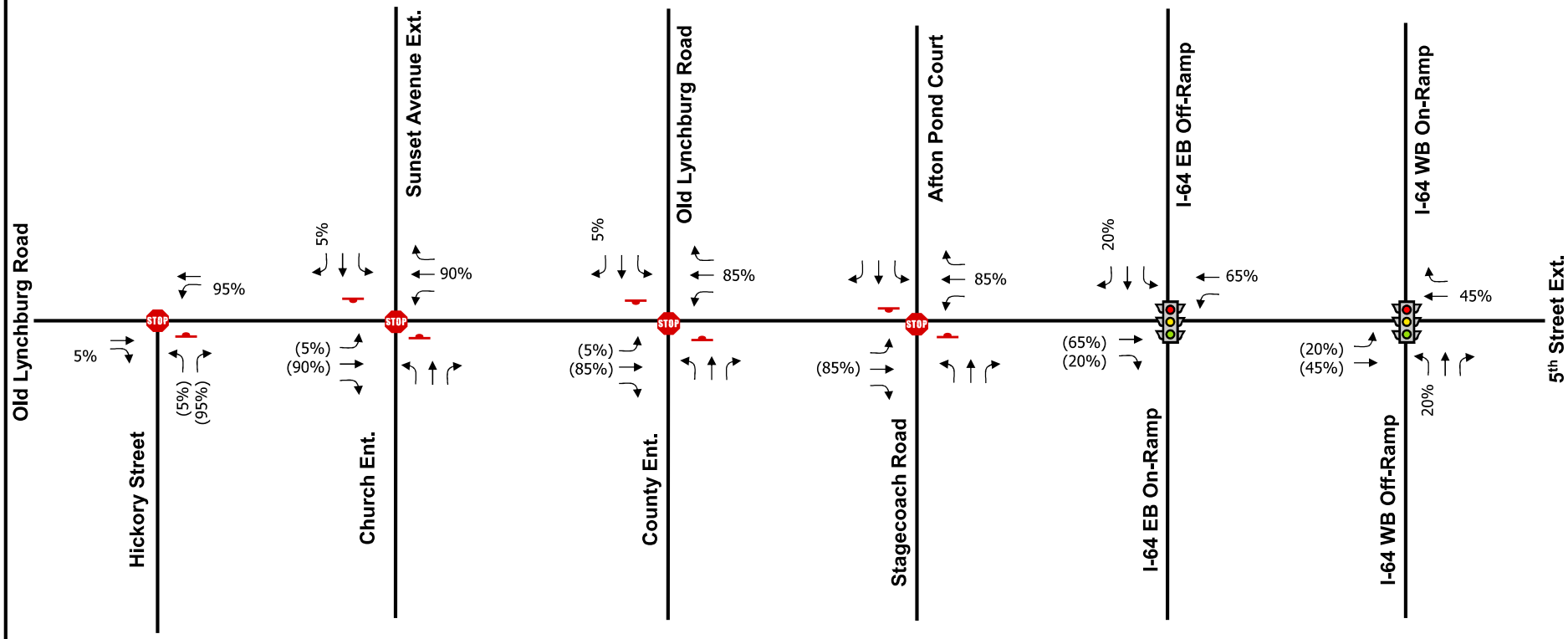
Figure
E-8



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Southwood Phase 1 Trip Distributions - Residential

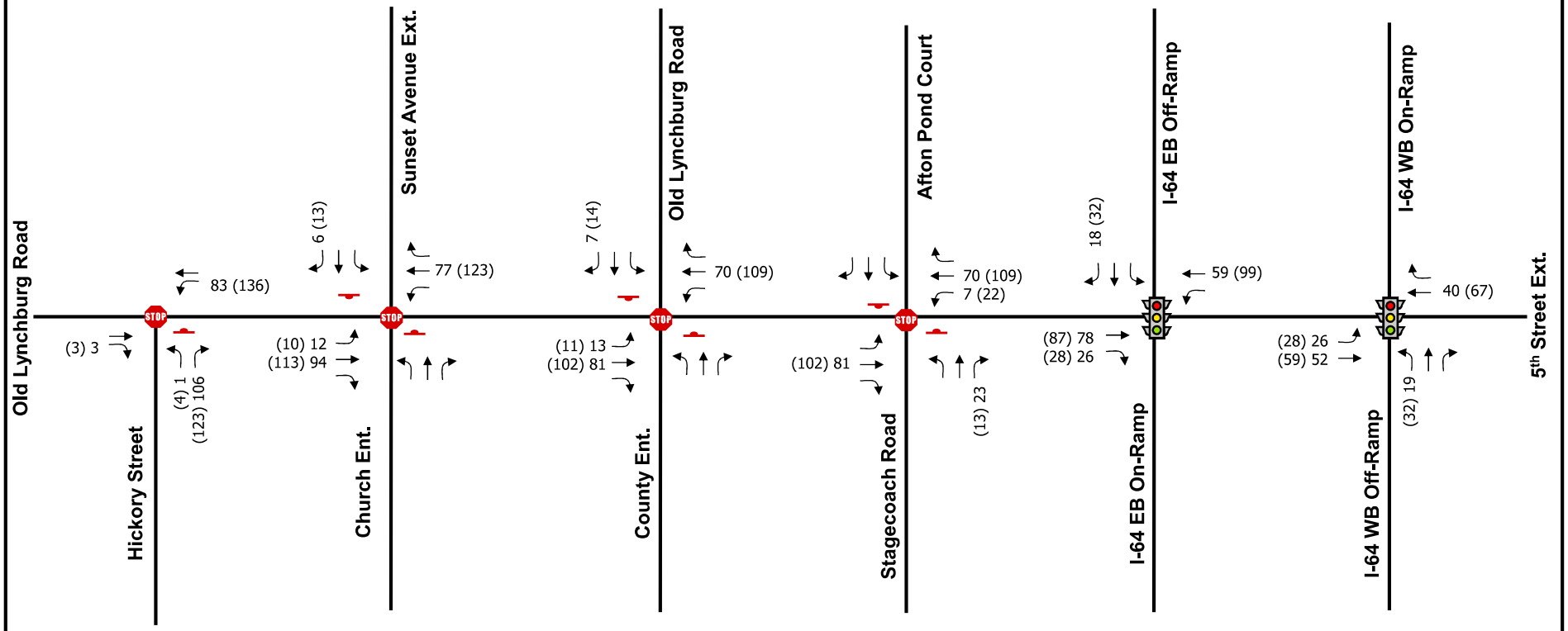
Figure
E-9



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Southwood Phase 1 Trip Distributions - Commercial

Figure
E-10



SITE

NOT TO SCALE

LEGEND:

- Existing Road
- X AM Traffic Volume
- (X) PM Traffic Volume
- Stop Controlled Intersection
- Signalized Intersection
- Stop Sign Location
- Lane Configuration

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Southwood Phase 2 TIA
Southwood Phase 1 Site Trips

Figure
E-11

Appendix F
Capacity Analysis Worksheets
For 2030 Total Background Conditions

Intersection	
Int Delay, s/veh	5.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	207	199	4	122	91
Future Vol, veh/h	4	207	199	4	122	91
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	4	0	13	8
Mvmt Flow	4	225	216	4	133	99

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	534	218	0	0	220	0
Stage 1	218	-	-	-	-	-
Stage 2	316	-	-	-	-	-
Critical Hdwy	6.6	6.305	-	-	4.295	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3665	-	-	2.3235	-
Pot Cap-1 Maneuver	495	807	-	-	1278	-
Stage 1	823	-	-	-	-	-
Stage 2	718	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	444	807	-	-	1278	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	795	1278	-
HCM Lane V/C Ratio	-	-	0.288	0.104	-
HCM Control Delay (s)	-	-	11.4	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.3	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	223	0	12	0	0	1	18	397	0	6	204	87
Future Vol, veh/h	223	0	12	0	0	1	18	397	0	6	204	87
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	0	0	0	0	3	0	0	5	6
Mvmt Flow	237	0	13	0	0	1	19	422	0	6	217	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	478	689	109	581	782	211	310	0	0	422	0	0
Stage 1	229	229	-	460	460	-	-	-	-	-	-	-
Stage 2	249	460	-	121	322	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	466	371	930	401	328	801	1262	-	-	1148	-	-
Stage 1	747	718	-	556	569	-	-	-	-	-	-	-
Stage 2	727	569	-	876	655	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	458	364	930	389	321	801	1262	-	-	1148	-	-
Mov Cap-2 Maneuver	458	364	-	389	321	-	-	-	-	-	-	-
Stage 1	736	714	-	548	560	-	-	-	-	-	-	-
Stage 2	715	560	-	859	652	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	9.5	0.3	0.2
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1262	-	-	470	801	1148	-	-
HCM Lane V/C Ratio	0.015	-	-	0.532	0.001	0.006	-	-
HCM Control Delay (s)	7.9	-	-	21	9.5	8.2	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	3.1	0	0	-	-

Intersection	
Int Delay, s/veh	53.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	283	2	29	0	1	4	65	584	1	57	45	276	243
Future Vol, veh/h	283	2	29	0	1	4	65	584	1	57	45	276	243
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	0	14	0	0	0	6	3	0	0	0	6	5
Mvmt Flow	286	2	29	0	1	4	66	590	1	58	45	279	245

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	913	1208	140	1069	1452	295	524	0	0	590	591	0	0
Stage 1	485	485	-	722	722	-	-	-	-	-	-	-	-
Stage 2	428	723	-	347	730	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.18	7.5	6.5	6.9	4.22	-	-	6.4	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.44	3.5	4	3.3	2.26	-	-	2.5	2.2	-	-
Pot Cap-1 Maneuver	~ 228	185	846	178	132	707	1011	-	-	615	995	-	-
Stage 1	532	555	-	389	434	-	-	-	-	-	-	-	-
Stage 2	575	434	-	648	431	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 191	149	846	145	106	707	1011	-	-	737	737	-	-
Mov Cap-2 Maneuver	~ 191	149	-	145	106	-	-	-	-	-	-	-	-
Stage 1	497	477	-	364	406	-	-	-	-	-	-	-	-
Stage 2	533	406	-	536	371	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	266.3	15.9	0.9	1.8
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1011	-	-	191	650	106	707	737	-	-
HCM Lane V/C Ratio	0.065	-	-	1.497	0.048	0.01	0.006	0.14	-	-
HCM Control Delay (s)	8.8	-	-	294.3	10.8	39.3	10.1	10.7	-	-
HCM Lane LOS	A	-	-	F	B	E	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	17.9	0.2	0	0	0.5	-	-

Notes

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

Intersection	
Int Delay, s/veh	79

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1	18	17	1	386	0	929	34	325	634	10
Future Vol, veh/h	30	1	18	17	1	386	0	929	34	325	634	10
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
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, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	33	1	20	18	1	420	0	1010	37	353	689	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1901	2442	345	2061	2416	505	700	0	0	1047	0	0
Stage 1	1395	1395	-	1010	1010	-	-	-	-	-	-	-
Stage 2	506	1047	-	1051	1406	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	43	32	626	30	33	510	906	-	-	660	-	-
Stage 1	151	210	-	250	320	-	-	-	-	-	-	-
Stage 2	522	308	-	235	208	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 4	15	626	~ 16	15	510	906	-	-	660	-	-
Mov Cap-2 Maneuver	~ 4	15	-	~ 16	15	-	-	-	-	-	-	-
Stage 1	151	98	-	250	320	-	-	-	-	-	-	-
Stage 2	92	308	-	105	97	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	3208.8	63.7	0	5.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	906	-	-	4	626	16	510	660	-	-
HCM Lane V/C Ratio	-	-	-	8.424	0.031	1.223	0.823	0.535	-	-
HCM Control Delay (s)	0	-	$	5065.7	10.9	$ 635.6	37	16.6	-	-
HCM Lane LOS	A	-	-	F	B	F	E	C	-	-
HCM 95th %tile Q(veh)	0	-	-	5.9	0.1	2.9	8.1	3.2	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	593	332	1445	202	752
v/c Ratio	1.25	0.58	1.27	0.44	0.36
Control Delay	158.4	14.8	156.2	18.3	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	158.4	14.8	156.2	18.3	4.9
Queue Length 50th (ft)	~424	54	~541	59	80
Queue Length 95th (ft)	#625	140	#677	m83	m77
Internal Link Dist (ft)	1069		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	476	577	1139	461	2062
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.25	0.58	1.27	0.44	0.36

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	546	0	305	0	0	0	0	972	357	186	692	0
Future Volume (veh/h)	546	0	305	0	0	0	0	972	357	186	692	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1885	1900	1870				0	1870	1885	1885	1826	0
Adj Flow Rate, veh/h	593	0	332				0	1057	388	202	752	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	0	2				0	2	1	1	5	0
Cap, veh/h	483	0	423				0	824	298	459	2082	0
Arrive On Green	0.27	0.00	0.27				0.00	0.32	0.32	0.42	1.00	0.00
Sat Flow, veh/h	1810	0	1585				0	2650	925	1795	3561	0
Grp Volume(v), veh/h	593	0	332				0	730	715	202	752	0
Grp Sat Flow(s),veh/h/ln	1810	0	1585				0	1777	1704	1795	1735	0
Q Serve(g_s), s	24.0	0.0	17.5				0.0	29.0	29.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	17.5				0.0	29.0	29.0	2.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.54	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	423				0	573	549	459	2082	0
V/C Ratio(X)	1.23	0.00	0.79				0.00	1.28	1.30	0.44	0.36	0.00
Avail Cap(c_a), veh/h	483	0	423				0	573	549	459	2082	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.23	0.23	0.00
Uniform Delay (d), s/veh	33.0	0.0	30.6				0.0	30.5	30.5	20.7	0.0	0.0
Incr Delay (d2), s/veh	120.2	0.0	9.4				0.0	136.9	148.9	0.2	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
%ile BackOfQ(50%),veh/ln	26.1	0.0	7.5				0.0	33.1	33.5	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	153.2	0.0	40.0				0.0	167.4	179.4	20.9	0.1	0.0
LnGrp LOS	F	A	D				A	F	F	C	A	A
Approach Vol, veh/h		925						1445			954	
Approach Delay, s/veh		112.6						173.4			4.5	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	35.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	19.0	29.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	4.4	31.0		26.0		2.0
Green Ext Time (p_c), s	0.4	0.0		0.0		6.8

Intersection Summary			
HCM 6th Ctrl Delay			108.0
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	247	367	466	1189	1155
v/c Ratio	0.72	0.93	0.84	0.50	0.94
Control Delay	46.5	56.2	29.7	5.4	39.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	56.2	29.7	5.4	39.2
Queue Length 50th (ft)	130	147	240	146	282
Queue Length 95th (ft)	#227	#312	m180	m108	#427
Internal Link Dist (ft)	742			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	359	410	554	2355	1232
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.69	0.90	0.84	0.50	0.94

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	237	0	352	447	1141	0	0	629	480
Future Volume (veh/h)	0	0	0	237	0	352	447	1141	0	0	629	480
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1811	1900	1826	1870	1870	0	0	1841	1856
Adj Flow Rate, veh/h				247	0	367	466	1189	0	0	655	500
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				6	0	5	2	2	0	0	4	3
Cap, veh/h				382	0	327	555	2330	0	0	610	463
Arrive On Green				0.21	0.00	0.21	0.53	1.00	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1810	0	1547	1781	3647	0	0	1985	1438
Grp Volume(v), veh/h				247	0	367	466	1189	0	0	605	550
Grp Sat Flow(s),veh/h/ln				1810	0	1547	1781	1777	0	0	1749	1582
Q Serve(g_s), s				11.2	0.0	19.0	14.6	0.0	0.0	0.0	29.0	29.0
Cycle Q Clear(g_c), s				11.2	0.0	19.0	14.6	0.0	0.0	0.0	29.0	29.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.91
Lane Grp Cap(c), veh/h				382	0	327	555	2330	0	0	563	510
V/C Ratio(X)				0.65	0.00	1.12	0.84	0.51	0.00	0.00	1.07	1.08
Avail Cap(c_a), veh/h				382	0	327	555	2330	0	0	563	510
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.4	0.0	35.5	17.5	0.0	0.0	0.0	30.5	30.5
Incr Delay (d2), s/veh				3.8	0.0	87.4	1.1	0.1	0.0	0.0	59.2	62.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.1	0.0	22.5	4.6	0.0	0.0	0.0	20.4	19.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				36.2	0.0	122.9	18.7	0.1	0.0	0.0	89.7	93.3
LnGrp LOS				D	A	F	B	A	A	A	F	F
Approach Vol, veh/h					614			1655			1155	
Approach Delay, s/veh					88.0			5.3			91.5	
Approach LOS					F			A			F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	30.0	35.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	24.0	29.0
Max Q Clear Time (g_c+I1), s		2.0		21.0	16.6	31.0
Green Ext Time (p_c), s		13.4		0.0	0.9	0.0

Intersection Summary			
HCM 6th Ctrl Delay			49.2
HCM 6th LOS			D

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	104	2	80
Average Queue (ft)	50	0	21
95th Queue (ft)	81	2	60
Link Distance (ft)	461	108	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			295
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	R
Maximum Queue (ft)	155	18	17	18	2
Average Queue (ft)	67	1	2	1	0
95th Queue (ft)	122	9	12	9	2
Link Distance (ft)	619	314			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			250	290	330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	T	R
Maximum Queue (ft)	250	685	10	20	67	8	11	79	2	30
Average Queue (ft)	232	481	0	3	21	0	1	32	0	2
95th Queue (ft)	303	924	6	14	54	5	6	62	2	15
Link Distance (ft)		673	311			1952	1952		1591	
Upstream Blk Time (%)		44								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	250			170	290			290		400
Storage Blk Time (%)	59	44								
Queuing Penalty (veh)	18	124								

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	T	R	L	T	T
Maximum Queue (ft)	290	115	797	100	8	32	29	290	417	226
Average Queue (ft)	223	19	717	71	0	3	2	169	80	31
95th Queue (ft)	356	86	949	145	5	22	14	305	405	246
Link Distance (ft)	265		750		1591	1591			1427	1427
Upstream Blk Time (%)	66		83							
Queuing Penalty (veh)	0		0							
Storage Bay Dist (ft)		115		100			300	300		
Storage Blk Time (%)	83	0	88	52				10	6	
Queuing Penalty (veh)	15	0	339	10				31	21	

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1101	500	738	757	186	63	51
Average Queue (ft)	832	385	383	404	85	27	13
95th Queue (ft)	1363	690	842	867	150	55	37
Link Distance (ft)	1075		1427	1427		607	607
Upstream Blk Time (%)	38		0	0			
Queuing Penalty (veh)	0		0	1			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	39	2					
Queuing Penalty (veh)	120	13					

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	244	349	139	411	383	505	580
Average Queue (ft)	125	165	131	180	80	270	319
95th Queue (ft)	207	283	155	381	252	530	604
Link Distance (ft)	754			607	607	1340	1340
Upstream Blk Time (%)					0		
Queuing Penalty (veh)					0		
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			12	4			
Queuing Penalty (veh)			70	16			

Network Summary

Network wide Queuing Penalty: 777

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	191	99	6	232	229
Future Vol, veh/h	5	191	99	6	232	229
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	2	0	1	1
Mvmt Flow	5	208	108	7	252	249

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	741	112	0	0	115	0
Stage 1	112	-	-	-	-	-
Stage 2	629	-	-	-	-	-
Critical Hdwy	6.6	6.245	-	-	4.115	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3285	-	-	2.2095	-
Pot Cap-1 Maneuver	371	937	-	-	1480	-
Stage 1	918	-	-	-	-	-
Stage 2	499	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	308	937	-	-	1480	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	414	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	891	1480	-
HCM Lane V/C Ratio	-	-	0.239	0.17	-
HCM Control Delay (s)	-	-	10.3	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.6	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	0	31	0	0	1	14	282	0	9	438	170
Future Vol, veh/h	197	0	31	0	0	1	14	282	0	9	438	170
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	6	0	0	0	0	1	0	0	0	2
Mvmt Flow	210	0	33	0	0	1	15	300	0	10	466	181

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	666	816	233	583	997	150	647	0	0	300	0	0
Stage 1	486	486	-	330	330	-	-	-	-	-	-	-
Stage 2	180	330	-	253	667	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.02	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.36	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	345	314	757	400	246	876	948	-	-	1273	-	-
Stage 1	531	554	-	663	649	-	-	-	-	-	-	-
Stage 2	804	649	-	735	460	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	338	306	757	376	240	876	948	-	-	1273	-	-
Mov Cap-2 Maneuver	338	306	-	376	240	-	-	-	-	-	-	-
Stage 1	523	550	-	652	639	-	-	-	-	-	-	-
Stage 2	790	639	-	697	456	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.2	9.1	0.4	0.1
HCM LOS	D	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	366	876	1273	-	-
HCM Lane V/C Ratio	0.016	-	-	0.663	0.001	0.008	-	-
HCM Control Delay (s)	8.9	-	-	32.2	9.1	7.8	-	-
HCM Lane LOS	A	-	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	4.6	0	0	-	-

Intersection	
Int Delay, s/veh	112.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	308	1	50	2	0	28	32	483	2	86	5	587	331
Future Vol, veh/h	308	1	50	2	0	28	32	483	2	86	5	587	331
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	5	0	0	0
Mvmt Flow	321	1	52	2	0	29	33	503	2	90	5	611	345

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1119	1372	306	1065	1715	252	956	0	0	503	505	0	0
Stage 1	801	801	-	569	569	-	-	-	-	-	-	-	-
Stage 2	318	571	-	496	1146	-	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.5	6.9	7.5	6.5	6.9	4.1	-	-	6.5	4.1	-	-
Critical Hdwy Stg 1	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.3	3.5	4	3.3	2.2	-	-	2.55	2.2	-	-
Pot Cap-1 Maneuver	~ 163	147	696	180	91	754	727	-	-	677	1070	-	-
Stage 1	346	400	-	479	509	-	-	-	-	-	-	-	-
Stage 2	671	508	-	529	276	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 135	120	696	142	74	754	727	-	-	666	666	-	-
Mov Cap-2 Maneuver	~ 135	120	-	142	74	-	-	-	-	-	-	-	-
Stage 1	330	343	-	457	486	-	-	-	-	-	-	-	-
Stage 2	616	485	-	418	237	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 597.2	11.4	0.6	1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	727	-	-	135	636	142	754	666	-	-
HCM Lane V/C Ratio	0.046	-	-	2.377	0.084	0.015	0.039	0.142	-	-
HCM Control Delay (s)	10.2	-	-	$ 694.2	11.2	30.7	10	11.3	-	-
HCM Lane LOS	B	-	-	F	B	D	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	27.6	0.3	0	0.1	0.5	-	-

Notes

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

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1	4	15	1	163	8	887	30	199	994	29
Future Vol, veh/h	25	1	4	15	1	163	8	887	30	199	994	29
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	26	1	4	15	1	168	8	914	31	205	1025	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1909	2396	513	1853	2395	457	1055	0	0	945	0	0
Stage 1	1435	1435	-	930	930	-	-	-	-	-	-	-
Stage 2	474	961	-	923	1465	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	42	34	483	44	34	548	668	-	-	722	-	-
Stage 1	143	201	-	280	349	-	-	-	-	-	-	-
Stage 2	545	337	-	282	194	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 22	24	483	33	24	548	668	-	-	722	-	-
Mov Cap-2 Maneuver	~ 22	24	-	33	24	-	-	-	-	-	-	-
Stage 1	141	144	-	277	345	-	-	-	-	-	-	-
Stage 2	372	333	-	199	139	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 453.5	31.3	0.1	1.9
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	668	-	-	22	483	32	548	722	-	-
HCM Lane V/C Ratio	0.012	-	-	1.218	0.009	0.515	0.307	0.284	-	-
HCM Control Delay (s)	10.5	-	-	$ 521.3	12.5	203.4	14.4	12	-	-
HCM Lane LOS	B	-	-	F	B	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	3.5	0	1.7	1.3	1.2	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	530	351	1134	370	963
v/c Ratio	1.12	0.67	1.20	0.67	0.44
Control Delay	112.5	25.2	133.0	24.9	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	112.5	25.2	133.0	24.9	6.6
Queue Length 50th (ft)	~351	110	~410	176	85
Queue Length 95th (ft)	#546	208	#540	m158	m74
Internal Link Dist (ft)	1200		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	472	526	942	549	2166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.67	1.20	0.67	0.44

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	514	0	340	0	0	0	0	842	258	359	934	0
Future Volume (veh/h)	514	0	340	0	0	0	0	842	258	359	934	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1900	1900				0	1870	1870	1856	1900	0
Adj Flow Rate, veh/h	530	0	351				0	868	266	370	963	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0				0	2	2	3	0	0
Cap, veh/h	483	0	429				0	715	219	551	2166	0
Arrive On Green	0.27	0.00	0.27				0.00	0.27	0.27	0.53	1.00	0.00
Sat Flow, veh/h	1810	0	1610				0	2773	820	1767	3705	0
Grp Volume(v), veh/h	530	0	351				0	575	559	370	963	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1777	1723	1767	1805	0
Q Serve(g_s), s	24.0	0.0	18.4				0.0	24.0	24.0	8.1	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	18.4				0.0	24.0	24.0	8.1	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.48	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	429				0	474	459	551	2166	0
V/C Ratio(X)	1.10	0.00	0.82				0.00	1.21	1.22	0.67	0.44	0.00
Avail Cap(c_a), veh/h	483	0	429				0	474	459	551	2166	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	30.9				0.0	33.0	33.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	70.4	0.0	11.7				0.0	114.4	115.9	0.3	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
%ile BackOfQ(50%),veh/ln	19.5	0.0	8.2				0.0	24.6	24.0	3.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.4	0.0	42.7				0.0	147.4	148.9	16.7	0.1	0.0
LnGrp LOS	F	A	D				A	F	F	B	A	A
Approach Vol, veh/h		881						1134			1333	
Approach Delay, s/veh		79.2						148.1			4.7	
Approach LOS		E						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	30.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	24.0	24.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	10.1	26.0		26.0		2.0
Green Ext Time (p_c), s	0.9	0.0		0.0		7.6

Intersection Summary		
HCM 6th Ctrl Delay		72.9
HCM 6th LOS		E

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	298	358	349	1060	1717
v/c Ratio	0.84	0.85	0.77	0.45	1.21
Control Delay	55.7	41.6	22.3	1.7	127.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	41.6	22.3	1.7	127.4
Queue Length 50th (ft)	162	127	167	45	~615
Queue Length 95th (ft)	#289	#273	m136	m34	#754
Internal Link Dist (ft)	819			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	377	439	456	2361	1417
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.82	0.77	0.45	1.21

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	289	0	347	339	1028	0	0	1027	638
Future Volume (veh/h)	0	0	0	289	0	347	339	1028	0	0	1027	638
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1900	1885	1870	1870	0	0	1885	1885
Adj Flow Rate, veh/h				298	0	358	349	1060	0	0	1059	658
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				1	0	1	2	2	0	0	1	1
Cap, veh/h				382	0	337	456	2330	0	0	822	481
Arrive On Green				0.21	0.00	0.21	0.42	1.00	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1810	0	1598	1781	3647	0	0	2269	1272
Grp Volume(v), veh/h				298	0	358	349	1060	0	0	860	857
Grp Sat Flow(s),veh/h/ln				1810	0	1598	1781	1777	0	0	1791	1656
Q Serve(g_s), s				14.0	0.0	19.0	10.1	0.0	0.0	0.0	34.0	34.0
Cycle Q Clear(g_c), s				14.0	0.0	19.0	10.1	0.0	0.0	0.0	34.0	34.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.77
Lane Grp Cap(c), veh/h				382	0	337	456	2330	0	0	677	626
V/C Ratio(X)				0.78	0.00	1.06	0.77	0.46	0.00	0.00	1.27	1.37
Avail Cap(c_a), veh/h				382	0	337	456	2330	0	0	677	626
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				33.5	0.0	35.5	22.3	0.0	0.0	0.0	28.0	28.0
Incr Delay (d2), s/veh				10.0	0.0	66.2	0.7	0.1	0.0	0.0	133.7	176.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.0	0.0	21.3	4.2	0.0	0.0	0.0	38.2	42.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				43.5	0.0	101.7	23.0	0.1	0.0	0.0	161.7	204.1
LnGrp LOS				D	A	F	C	A	A	A	F	F
Approach Vol, veh/h					656			1409			1717	
Approach Delay, s/veh					75.2			5.7			182.9	
Approach LOS					E			A			F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	25.0	40.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	19.0	34.0
Max Q Clear Time (g_c+I1), s		2.0		21.0	12.1	36.0
Green Ext Time (p_c), s		11.2		0.0	0.6	0.0

Intersection Summary			
HCM 6th Ctrl Delay			98.2
HCM 6th LOS			F

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	81	62
Average Queue (ft)	42	18
95th Queue (ft)	68	50
Link Distance (ft)	461	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		295
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	R
Maximum Queue (ft)	146	14	21	22	5
Average Queue (ft)	67	1	3	2	0
95th Queue (ft)	121	6	14	12	5
Link Distance (ft)	619	314			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			250	290	330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	R
Maximum Queue (ft)	250	718	22	39	45	5	6	66	33
Average Queue (ft)	247	642	2	15	14	0	0	29	2
95th Queue (ft)	275	864	12	34	38	4	5	60	16
Link Distance (ft)		673	311			1952	1952		
Upstream Blk Time (%)		80							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	250			170	290			290	400
Storage Blk Time (%)	77	52							
Queuing Penalty (veh)	39	160							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T	R
Maximum Queue (ft)	140	56	338	100	33	11	25	26	140	2	5
Average Queue (ft)	49	6	126	56	5	3	5	2	63	0	0
95th Queue (ft)	134	32	465	109	22	29	35	14	112	2	4
Link Distance (ft)	265		685			1592	1592			1427	
Upstream Blk Time (%)	2		5								
Queuing Penalty (veh)	0		0								
Storage Bay Dist (ft)		115		100	265			300	300		290
Storage Blk Time (%)	10	0	19	11							
Queuing Penalty (veh)	0	0	31	2							

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	772	497	1123	1146	239	194	117
Average Queue (ft)	401	191	743	762	142	56	48
95th Queue (ft)	775	464	1294	1312	224	120	92
Link Distance (ft)	1206		1427	1427		603	603
Upstream Blk Time (%)	1		1	1			
Queuing Penalty (veh)	0		5	8			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	7	1			0	0	
Queuing Penalty (veh)	24	4			1	0	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	292	284	139	298	207	1383	1388
Average Queue (ft)	155	148	116	72	16	1320	1329
95th Queue (ft)	260	247	159	246	110	1523	1505
Link Distance (ft)	832			603	603	1342	1342
Upstream Blk Time (%)						60	73
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)	0	0	4	1			
Queuing Penalty (veh)	0	0	22	4			

Network Summary

Network wide Queuing Penalty: 300

MOVEMENT SUMMARY

Site: 101 [5th Street @ Old Lynchburg Road - 2030 Background AM (Site Folder: General)]

Southwood Phase 2
2030 Background Conditions
Site Category: (None)
Roundabout
Sensitivity Analysis (Critical Gap & Follow-up Headway): Results for Parameter Scale = 120.0 %

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	65	0.0	66	0.0	0.424	10.4	LOS B	2.8	71.7	0.71	0.62	0.71	30.8
8	T1	584	6.0	590	6.0	0.424	10.1	LOS B	2.9	75.1	0.70	0.61	0.70	31.1
18	R2	1	3.0	1	3.0	0.424	9.5	LOS A	2.9	75.1	0.70	0.59	0.70	26.6
Approach		650	5.4	657	5.4	0.424	10.2	LOS B	2.9	75.1	0.70	0.61	0.70	31.0
East: County Complex														
1	L2	1	0.0	1	0.0	0.015	9.0	LOS A	0.1	1.4	0.65	0.56	0.65	27.2
6	T1	1	0.0	1	0.0	0.015	9.0	LOS A	0.1	1.4	0.65	0.56	0.65	26.1
16	R2	4	0.0	4	0.0	0.015	9.0	LOS A	0.1	1.4	0.65	0.56	0.65	25.5
Approach		6	0.0	6	0.0	0.015	9.0	LOS A	0.1	1.4	0.65	0.56	0.65	25.9
North: 5th Street														
7u	U	57	0.0	58	0.0	0.389	7.8	LOS A	2.5	64.8	0.30	0.15	0.30	31.1
7	L2	45	0.0	45	0.0	0.389	7.8	LOS A	2.5	64.8	0.30	0.15	0.30	27.0
4	T1	276	6.0	279	6.0	0.389	8.0	LOS A	2.5	64.8	0.30	0.15	0.30	31.3
14	R2	243	5.0	245	5.0	0.277	7.0	LOS A	1.5	39.8	0.28	0.14	0.28	30.1
Approach		621	4.6	627	4.6	0.389	7.6	LOS A	2.5	64.8	0.29	0.15	0.29	30.5
West: Old Lynchburg Road														
5	L2	283	2.0	286	2.0	0.459	11.8	LOS B	3.2	82.7	0.71	0.68	0.79	27.8
2	T1	2	0.0	2	0.0	0.459	11.6	LOS B	3.2	82.7	0.71	0.68	0.79	24.5
12	R2	29	14.0	29	14.0	0.459	12.6	LOS B	3.2	82.7	0.71	0.68	0.79	27.8
Approach		314	3.1	317	3.1	0.459	11.8	LOS B	3.2	82.7	0.71	0.68	0.79	27.7
All Vehicles		1591	4.6	1607	4.6	0.459	9.5	LOS A	3.2	82.7	0.54	0.44	0.56	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [5th Street @ Old Lynchburg Road - 2030 Background PM (Site Folder: General)]

Southwood Phase 2
2030 Background Conditions
Site Category: (None)
Roundabout
Sensitivity Analysis (Critical Gap & Follow-up Headway): Results for Parameter Scale = 120.0 %

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	32	0.0	33	0.0	0.344	9.2	LOS A	2.2	55.6	0.70	0.61	0.70	31.6
8	T1	483	1.0	503	1.0	0.344	8.7	LOS A	2.3	58.2	0.69	0.59	0.69	31.8
18	R2	2	0.0	2	0.0	0.344	8.2	LOS A	2.3	58.2	0.69	0.58	0.69	27.1
Approach		517	0.9	539	0.9	0.344	8.7	LOS A	2.3	58.2	0.69	0.59	0.69	31.8
East: County Complex														
1	L2	2	0.0	2	0.0	0.073	9.3	LOS A	0.3	7.1	0.65	0.64	0.65	27.2
6	T1	1	0.0	1	0.0	0.073	9.3	LOS A	0.3	7.1	0.65	0.64	0.65	26.2
16	R2	28	0.0	29	0.0	0.073	9.3	LOS A	0.3	7.1	0.65	0.64	0.65	25.6
Approach		31	0.0	32	0.0	0.073	9.3	LOS A	0.3	7.1	0.65	0.64	0.65	25.7
North: 5th Street														
7u	U	86	5.0	90	5.0	0.655	13.0	LOS B	6.9	174.5	0.34	0.14	0.34	29.4
7	L2	5	0.0	5	0.0	0.655	12.9	LOS B	6.9	174.5	0.34	0.14	0.34	25.7
4	T1	573	0.0	597	0.0	0.655	12.9	LOS B	6.9	174.5	0.34	0.14	0.34	29.8
14	R2	331	0.0	345	0.0	0.384	8.4	LOS A	2.5	61.3	0.23	0.10	0.23	29.5
Approach		995	0.4	1036	0.4	0.655	11.4	LOS B	6.9	174.5	0.30	0.13	0.30	29.6
West: Old Lynchburg Road														
5	L2	308	1.0	321	1.0	0.702	24.6	LOS C	8.1	204.9	0.94	1.23	1.65	24.2
2	T1	1	0.0	1	0.0	0.702	24.5	LOS C	8.1	204.9	0.94	1.23	1.65	21.6
12	R2	51	0.0	53	0.0	0.702	24.5	LOS C	8.1	204.9	0.94	1.23	1.65	24.3
Approach		360	0.9	375	0.9	0.702	24.6	LOS C	8.1	204.9	0.94	1.23	1.65	24.2
All Vehicles		1903	0.6	1982	0.6	0.702	13.1	LOS B	8.1	204.9	0.54	0.47	0.67	28.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix G
Capacity Analysis Worksheets
For 2030 Total Future Conditions

Intersection	
Int Delay, s/veh	7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	353	199	6	217	91
Future Vol, veh/h	5	353	199	6	217	91
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	4	0	13	8
Mvmt Flow	5	384	216	7	236	99

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	742	220	0	0	223	0
Stage 1	220	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.6	6.305	-	-	4.295	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3665	-	-	2.3235	-
Pot Cap-1 Maneuver	370	805	-	-	1275	-
Stage 1	821	-	-	-	-	-
Stage 2	566	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	302	805	-	-	1275	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	461	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14	0	6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	787	1275	-
HCM Lane V/C Ratio	-	-	0.494	0.185	-
HCM Control Delay (s)	-	-	14	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.8	0.7	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	223	0	21	0	0	1	35	526	0	6	290	87
Future Vol, veh/h	223	0	21	0	0	1	35	526	0	6	290	87
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	0	0	0	0	3	0	0	5	6
Mvmt Flow	237	0	22	0	0	1	37	560	0	6	309	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	675	955	155	801	1048	280	402	0	0	560	0	0
Stage 1	321	321	-	634	634	-	-	-	-	-	-	-
Stage 2	354	634	-	167	414	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	336	260	869	279	230	723	1168	-	-	1021	-	-
Stage 1	660	655	-	439	476	-	-	-	-	-	-	-
Stage 2	631	476	-	824	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	326	250	869	264	221	723	1168	-	-	1021	-	-
Mov Cap-2 Maneuver	326	250	-	264	221	-	-	-	-	-	-	-
Stage 1	639	651	-	425	461	-	-	-	-	-	-	-
Stage 2	610	461	-	798	593	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.2	10	0.5	0.1
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1168	-	-	345	723	1021	-	-
HCM Lane V/C Ratio	0.032	-	-	0.752	0.001	0.006	-	-
HCM Control Delay (s)	8.2	-	-	41.2	10	8.5	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	5.9	0	0	-	-

Intersection	
Int Delay, s/veh	88

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	283	2	39	0	1	4	82	696	1	57	45	352	243
Future Vol, veh/h	283	2	39	0	1	4	82	696	1	57	45	352	243
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	0	14	0	0	0	6	3	0	0	0	6	5
Mvmt Flow	286	2	39	0	1	4	83	703	1	58	45	356	245

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1080	1432	178	1254	1676	352	601	0	0	703	704	0	0
Stage 1	562	562	-	869	869	-	-	-	-	-	-	-	-
Stage 2	518	870	-	385	807	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.18	7.5	6.5	6.9	4.22	-	-	6.4	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.44	3.5	4	3.3	2.26	-	-	2.5	2.2	-	-
Pot Cap-1 Maneuver	~ 172	136	798	131	96	650	945	-	-	522	903	-	-
Stage 1	479	513	-	317	372	-	-	-	-	-	-	-	-
Stage 2	509	372	-	615	397	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 139	104	798	100	73	650	945	-	-	639	639	-	-
Mov Cap-2 Maneuver	~ 139	104	-	100	73	-	-	-	-	-	-	-	-
Stage 1	437	430	-	289	339	-	-	-	-	-	-	-	-
Stage 2	460	339	-	488	333	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 483.9	19.5	1	1.7
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	945	-	-	139	602	73	650	639	-	-
HCM Lane V/C Ratio	0.088	-	-	2.057	0.069	0.014	0.006	0.161	-	-
HCM Control Delay (s)	9.2	-	-	$ 552.3	11.4	55	10.6	11.7	-	-
HCM Lane LOS	A	-	-	F	B	F	B	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	23	0.2	0	0	0.6	-	-

Notes

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

Intersection	
Int Delay, s/veh	50.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1	18	17	1	418	0	1041	34	340	710	10
Future Vol, veh/h	30	1	18	17	1	418	0	1041	34	340	710	10
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
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, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	33	1	20	18	1	454	0	1132	37	370	772	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2079	2681	386	2259	2655	566	783	0	0	1169	0	0
Stage 1	1512	1512	-	1132	1132	-	-	-	-	-	-	-
Stage 2	567	1169	-	1127	1523	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 32	22	587	21	23	465	844	-	-	593	-	-
Stage 1	128	184	-	210	281	-	-	-	-	-	-	-
Stage 2	481	269	-	211	182	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	0	8	587	~ 9	9	465	844	-	-	593	-	-
Mov Cap-2 Maneuver	0	8	-	~ 9	9	-	-	-	-	-	-	-
Stage 1	128	69	-	210	281	-	-	-	-	-	-	-
Stage 2	~ 11	269	-	75	68	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1491.1	119.1	0	6.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	844	-	-	8	587	9	465	593	-	-
HCM Lane V/C Ratio	-	-	-	4.212	0.033	2.174	0.977	0.623	-	-
HCM Control Delay (s)	0	-	$	2350.4	11.$	1348.2	66.2	20.6	-	-
HCM Lane LOS	A	-	-	F	B	F	F	C	-	-
HCM 95th %tile Q(veh)	0	-	-	5.5	0.1	3.4	12.4	4.3	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	593	355	1601	202	827
v/c Ratio	1.25	0.64	1.41	0.44	0.40
Control Delay	158.4	20.1	215.1	17.7	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	158.4	20.1	215.1	17.7	4.9
Queue Length 50th (ft)	~424	85	~642	55	88
Queue Length 95th (ft)	#625	182	#779	m75	m85
Internal Link Dist (ft)	1069		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	476	553	1139	461	2062
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.25	0.64	1.41	0.44	0.40

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	546	0	327	0	0	0	0	1080	393	186	761	0
Future Volume (veh/h)	546	0	327	0	0	0	0	1080	393	186	761	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1885	1900	1870				0	1870	1885	1885	1826	0
Adj Flow Rate, veh/h	593	0	355				0	1174	427	202	827	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	0	2				0	2	1	1	5	0
Cap, veh/h	483	0	423				0	829	294	459	2082	0
Arrive On Green	0.27	0.00	0.27				0.00	0.32	0.32	0.42	1.00	0.00
Sat Flow, veh/h	1810	0	1585				0	2665	912	1795	3561	0
Grp Volume(v), veh/h	593	0	355				0	802	799	202	827	0
Grp Sat Flow(s),veh/h/ln	1810	0	1585				0	1777	1706	1795	1735	0
Q Serve(g_s), s	24.0	0.0	19.0				0.0	29.0	29.0	2.4	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	19.0				0.0	29.0	29.0	2.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.53	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	423				0	573	550	459	2082	0
V/C Ratio(X)	1.23	0.00	0.84				0.00	1.40	1.45	0.44	0.40	0.00
Avail Cap(c_a), veh/h	483	0	423				0	573	550	459	2082	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.13	0.13	0.00
Uniform Delay (d), s/veh	33.0	0.0	31.2				0.0	30.5	30.5	20.7	0.0	0.0
Incr Delay (d2), s/veh	120.2	0.0	14.0				0.0	190.6	214.1	0.1	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
%ile BackOfQ(50%),veh/ln	26.1	0.0	8.6				0.0	41.6	43.6	2.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	153.2	0.0	45.2				0.0	221.1	244.6	20.8	0.1	0.0
LnGrp LOS	F	A	D				A	F	F	C	A	A
Approach Vol, veh/h		948						1601			1029	
Approach Delay, s/veh		112.7						232.8			4.1	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	35.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	19.0	29.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	4.4	31.0		26.0		2.0
Green Ext Time (p_c), s	0.4	0.0		0.0		7.7

Intersection Summary			
HCM 6th Ctrl Delay			135.2
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	270	367	503	1264	1204
v/c Ratio	0.79	0.93	0.91	0.54	0.98
Control Delay	51.6	56.2	31.6	5.2	47.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.6	56.2	31.6	5.2	47.9
Queue Length 50th (ft)	145	147	263	145	~313
Queue Length 95th (ft)	#260	#312	m182	m96	#466
Internal Link Dist (ft)	742			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	359	410	554	2355	1226
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.75	0.90	0.91	0.54	0.98

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	259	0	352	483	1213	0	0	676	480
Future Volume (veh/h)	0	0	0	259	0	352	483	1213	0	0	676	480
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1811	1900	1826	1870	1870	0	0	1841	1856
Adj Flow Rate, veh/h				270	0	367	503	1264	0	0	704	500
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				6	0	5	2	2	0	0	4	3
Cap, veh/h				382	0	327	555	2330	0	0	631	445
Arrive On Green				0.21	0.00	0.21	0.53	1.00	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1810	0	1547	1781	3647	0	0	2051	1382
Grp Volume(v), veh/h				270	0	367	503	1264	0	0	628	576
Grp Sat Flow(s),veh/h/ln				1810	0	1547	1781	1777	0	0	1749	1592
Q Serve(g_s), s				12.5	0.0	19.0	18.0	0.0	0.0	0.0	29.0	29.0
Cycle Q Clear(g_c), s				12.5	0.0	19.0	18.0	0.0	0.0	0.0	29.0	29.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.87
Lane Grp Cap(c), veh/h				382	0	327	555	2330	0	0	563	513
V/C Ratio(X)				0.71	0.00	1.12	0.91	0.54	0.00	0.00	1.11	1.12
Avail Cap(c_a), veh/h				382	0	327	555	2330	0	0	563	513
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.9	0.0	35.5	18.2	0.0	0.0	0.0	30.5	30.5
Incr Delay (d2), s/veh				5.9	0.0	87.4	2.3	0.1	0.0	0.0	73.3	78.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.9	0.0	22.5	5.2	0.0	0.0	0.0	22.6	21.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				38.8	0.0	122.9	20.4	0.1	0.0	0.0	103.8	108.6
LnGrp LOS				D	A	F	C	A	A	A	F	F
Approach Vol, veh/h					637			1767			1204	
Approach Delay, s/veh					87.3			5.9			106.1	
Approach LOS					F			A			F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	30.0	35.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	24.0	29.0
Max Q Clear Time (g_c+I1), s		2.0		21.0	20.0	31.0
Green Ext Time (p_c), s		14.9		0.0	0.7	0.0

Intersection Summary		
HCM 6th Ctrl Delay		53.7
HCM 6th LOS		D

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	132	2	93
Average Queue (ft)	65	0	31
95th Queue (ft)	104	0	74
Link Distance (ft)	461	108	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			295
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	TR	L	T	R
Maximum Queue (ft)	182	16	24	5	20	2	4
Average Queue (ft)	76	1	5	0	2	0	0
95th Queue (ft)	137	6	18	3	11	2	3
Link Distance (ft)	619	314		733		1952	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250		290		330
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	T	T	R
Maximum Queue (ft)	250	730	15	20	80	2	13	80	2	2	30
Average Queue (ft)	249	678	1	3	26	0	1	34	0	0	4
95th Queue (ft)	254	793	6	15	63	2	7	65	2	3	18
Link Distance (ft)		673	311			1952	1952		1591	1591	
Upstream Blk Time (%)		89									
Queuing Penalty (veh)		0									
Storage Bay Dist (ft)	250			170	290			290			400
Storage Blk Time (%)	80	55									
Queuing Penalty (veh)	33	155									

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	T	R	L	T	T
Maximum Queue (ft)	280	103	787	100	16	20	31	300	709	563
Average Queue (ft)	260	11	727	43	1	3	2	212	254	179
95th Queue (ft)	310	66	921	124	18	23	15	350	937	810
Link Distance (ft)	265		750		1591	1591			1427	1427
Upstream Blk Time (%)	89		91						2	1
Queuing Penalty (veh)	0		0						9	3
Storage Bay Dist (ft)		115		100			300	300		
Storage Blk Time (%)	98	0	93	31				23	16	
Queuing Penalty (veh)	17	0	388	6				82	54	

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1088	500	968	985	172	116	94
Average Queue (ft)	844	400	532	549	85	36	21
95th Queue (ft)	1419	687	1157	1180	149	129	108
Link Distance (ft)	1075		1427	1427		607	607
Upstream Blk Time (%)	42		0	0			
Queuing Penalty (veh)	0		1	3			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	39	3			0	1	
Queuing Penalty (veh)	129	14			0	1	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	299	303	139	390	333	630	716
Average Queue (ft)	149	161	131	198	81	343	388
95th Queue (ft)	254	273	159	381	246	629	704
Link Distance (ft)	754			607	607	1340	1340
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)	0	0	13	4			
Queuing Penalty (veh)	0	0	79	19			

Network Summary

Network wide Queuing Penalty: 994

Intersection	
Int Delay, s/veh	7.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	346	99	8	418	229
Future Vol, veh/h	8	346	99	8	418	229
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	2	0	1	1
Mvmt Flow	9	376	108	9	454	249

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1146	113	0	0	117	0
Stage 1	113	-	-	-	-	-
Stage 2	1033	-	-	-	-	-
Critical Hdwy	6.6	6.245	-	-	4.115	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3285	-	-	2.2095	-
Pot Cap-1 Maneuver	209	936	-	-	1477	-
Stage 1	917	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	145	936	-	-	1477	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	917	-	-	-	-	-
Stage 2	214	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	5.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	833	1477	-
HCM Lane V/C Ratio	-	-	0.462	0.308	-
HCM Control Delay (s)	-	-	13	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.5	1.3	-

Intersection	
Int Delay, s/veh	21.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	0	51	0	0	1	29	422	0	9	604	170
Future Vol, veh/h	197	0	51	0	0	1	29	422	0	9	604	170
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	6	0	0	0	0	1	0	0	0	2
Mvmt Flow	210	0	54	0	0	1	31	449	0	10	643	181

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	950	1174	322	853	1355	225	824	0	0	449	0	0
Stage 1	663	663	-	511	511	-	-	-	-	-	-	-
Stage 2	287	511	-	342	844	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.02	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.36	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	215	193	662	256	151	784	815	-	-	1122	-	-
Stage 1	417	462	-	519	540	-	-	-	-	-	-	-
Stage 2	696	540	-	652	382	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 207	184	662	227	144	784	815	-	-	1122	-	-
Mov Cap-2 Maneuver	~ 207	184	-	227	144	-	-	-	-	-	-	-
Stage 1	401	458	-	499	519	-	-	-	-	-	-	-
Stage 2	669	519	-	593	379	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	129.6	9.6	0.6	0.1
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	815	-	-	241	784	1122	-	-
HCM Lane V/C Ratio	0.038	-	-	1.095	0.001	0.009	-	-
HCM Control Delay (s)	9.6	-	-	129.6	9.6	8.2	-	-
HCM Lane LOS	A	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	11.5	0	0	-	-

Notes

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

Intersection	
Int Delay, s/veh	189.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	308	1	71	2	0	28	47	608	2	86	5	719	331
Future Vol, veh/h	308	1	71	2	0	28	47	608	2	86	5	719	331
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	5	0	0	0
Mvmt Flow	321	1	74	2	0	29	49	633	2	90	5	749	345

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1354	1672	375	1296	2015	317	1094	0	0	633	635	0	0
Stage 1	939	939	-	731	731	-	-	-	-	-	-	-	-
Stage 2	415	733	-	565	1284	-	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.5	6.9	7.5	6.5	6.9	4.1	-	-	6.5	4.1	-	-
Critical Hdwy Stg 1	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.3	3.5	4	3.3	2.2	-	-	2.55	2.2	-	-
Pot Cap-1 Maneuver	~ 109	97	628	122	59	685	645	-	-	559	958	-	-
Stage 1	~ 286	345	-	384	430	-	-	-	-	-	-	-	-
Stage 2	588	429	-	482	238	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 85	74	628	87	45	685	645	-	-	549	549	-	-
Mov Cap-2 Maneuver	~ 85	74	-	87	45	-	-	-	-	-	-	-	-
Stage 1	~ 264	285	-	355	397	-	-	-	-	-	-	-	-
Stage 2	520	396	-	350	197	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1097.4	13	0.8	1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	645	-	-	85	569	87	685	549	-	-
HCM Lane V/C Ratio	0.076	-	-	3.775	0.132	0.024	0.043	0.173	-	-
HCM Control Delay (s)	11	-	$	1351.1	12.3	47.4	10.5	12.9	-	-
HCM Lane LOS	B	-	-	F	B	E	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	33.1	0.5	0.1	0.1	0.6	-	-

Notes

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

Intersection	
Int Delay, s/veh	20

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1	4	15	1	187	8	1012	30	236	1140	29
Future Vol, veh/h	25	1	4	15	1	187	8	1012	30	236	1140	29
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	26	1	4	15	1	193	8	1043	31	243	1175	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2199	2751	588	2133	2750	522	1205	0	0	1074	0	0
Stage 1	1661	1661	-	1059	1059	-	-	-	-	-	-	-
Stage 2	538	1090	-	1074	1691	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	26	20	430	27	20	497	586	-	-	645	-	-
Stage 1	103	156	-	233	304	-	-	-	-	-	-	-
Stage 2	500	294	-	228	151	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 10	12	430	18	12	497	586	-	-	645	-	-
Mov Cap-2 Maneuver	~ 10	12	-	18	12	-	-	-	-	-	-	-
Stage 1	102	97	-	230	300	-	-	-	-	-	-	-
Stage 2	301	290	-	139	94	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 1304.2	56	0.1	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	586	-	-	10	430	17	497	645	-	-
HCM Lane V/C Ratio	0.014	-	-	2.68	0.01	0.97	0.388	0.377	-	-
HCM Control Delay (s)	11.2	-	$	1502.8	13.5	$ 514.2	16.8	13.9	-	-
HCM Lane LOS	B	-	-	F	B	F	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	4.4	0	2.5	1.8	1.8	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	530	397	1288	370	1105
v/c Ratio	1.12	0.78	1.37	0.67	0.51
Control Delay	112.5	34.1	201.2	24.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	112.5	34.1	201.2	24.6	7.2
Queue Length 50th (ft)	~351	153	~509	177	117
Queue Length 95th (ft)	#546	#296	#642	m139	m81
Internal Link Dist (ft)	1200		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	472	510	942	549	2166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.12	0.78	1.37	0.67	0.51

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	514	0	385	0	0	0	0	955	294	359	1072	0
Future Volume (veh/h)	514	0	385	0	0	0	0	955	294	359	1072	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1900	1900				0	1870	1870	1856	1900	0
Adj Flow Rate, veh/h	530	0	397				0	985	303	370	1105	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0				0	2	2	3	0	0
Cap, veh/h	483	0	429				0	715	219	551	2166	0
Arrive On Green	0.27	0.00	0.27				0.00	0.27	0.27	0.53	1.00	0.00
Sat Flow, veh/h	1810	0	1610				0	2773	820	1767	3705	0
Grp Volume(v), veh/h	530	0	397				0	651	637	370	1105	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1777	1723	1767	1805	0
Q Serve(g_s), s	24.0	0.0	21.6				0.0	24.0	24.0	8.1	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	21.6				0.0	24.0	24.0	8.1	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.48	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	429				0	474	459	551	2166	0
V/C Ratio(X)	1.10	0.00	0.92				0.00	1.37	1.39	0.67	0.51	0.00
Avail Cap(c_a), veh/h	483	0	429				0	474	459	551	2166	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	32.1				0.0	33.0	33.0	16.4	0.0	0.0
Incr Delay (d2), s/veh	70.4	0.0	25.8				0.0	181.5	186.8	0.3	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
%ile BackOfQ(50%),veh/ln	19.5	0.0	11.1				0.0	33.4	33.1	3.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.4	0.0	57.9				0.0	214.5	219.8	16.7	0.1	0.0
LnGrp LOS	F	A	E				A	F	F	B	A	A
Approach Vol, veh/h		927						1288			1475	
Approach Delay, s/veh		83.9						217.1			4.2	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	30.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	24.0	24.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	10.1	26.0		26.0		2.0
Green Ext Time (p_c), s	0.9	0.0		0.0		9.4

Intersection Summary			
HCM 6th Ctrl Delay			98.6
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	344	358	387	1139	1813
v/c Ratio	0.92	0.85	0.85	0.49	1.32
Control Delay	67.6	44.4	24.0	1.7	174.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	44.4	24.0	1.7	174.1
Queue Length 50th (ft)	192	139	190	45	~687
Queue Length 95th (ft)	#352	#293	m139	m31	#827
Internal Link Dist (ft)	819			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	377	423	456	2329	1375
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.91	0.85	0.85	0.49	1.32

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	334	0	347	375	1105	0	0	1120	638
Future Volume (veh/h)	0	0	0	334	0	347	375	1105	0	0	1120	638
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1900	1885	1870	1870	0	0	1885	1885
Adj Flow Rate, veh/h				344	0	358	387	1139	0	0	1155	658
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				1	0	1	2	2	0	0	1	1
Cap, veh/h				382	0	337	456	2330	0	0	854	453
Arrive On Green				0.21	0.00	0.21	0.42	1.00	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1810	0	1598	1781	3647	0	0	2354	1200
Grp Volume(v), veh/h				344	0	358	387	1139	0	0	898	915
Grp Sat Flow(s),veh/h/ln				1810	0	1598	1781	1777	0	0	1791	1669
Q Serve(g_s), s				16.7	0.0	19.0	12.8	0.0	0.0	0.0	34.0	34.0
Cycle Q Clear(g_c), s				16.7	0.0	19.0	12.8	0.0	0.0	0.0	34.0	34.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.72
Lane Grp Cap(c), veh/h				382	0	337	456	2330	0	0	677	631
V/C Ratio(X)				0.90	0.00	1.06	0.85	0.49	0.00	0.00	1.33	1.45
Avail Cap(c_a), veh/h				382	0	337	456	2330	0	0	677	631
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.6	0.0	35.5	22.9	0.0	0.0	0.0	28.0	28.0
Incr Delay (d2), s/veh				23.6	0.0	66.2	1.5	0.1	0.0	0.0	157.3	211.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.6	0.0	21.3	4.9	0.0	0.0	0.0	42.6	49.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				58.2	0.0	101.7	24.4	0.1	0.0	0.0	185.3	239.8
LnGrp LOS				E	A	F	C	A	A	A	F	F
Approach Vol, veh/h					702			1526			1813	
Approach Delay, s/veh					80.3			6.2			212.8	
Approach LOS					F			A			F	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	65.0		25.0	25.0	40.0
Change Period (Y+Rc), s	6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s	59.0		19.0	19.0	34.0
Max Q Clear Time (g_c+I1), s	2.0		21.0	14.8	36.0
Green Ext Time (p_c), s	12.5		0.0	0.5	0.0

Intersection Summary		
HCM 6th Ctrl Delay		111.8
HCM 6th LOS		F

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	176	4	86
Average Queue (ft)	65	0	28
95th Queue (ft)	120	3	67
Link Distance (ft)	461	108	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			295
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	R
Maximum Queue (ft)	230	14	26	4	23	4
Average Queue (ft)	96	1	6	0	2	0
95th Queue (ft)	188	7	21	3	12	3
Link Distance (ft)	619	314		733		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250		290	330
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	R
Maximum Queue (ft)	250	704	17	48	59	2	10	78	22
Average Queue (ft)	249	685	1	15	21	0	1	31	2
95th Queue (ft)	252	738	9	36	49	2	7	63	13
Link Distance (ft)		673	311			1952	1952		
Upstream Blk Time (%)		98							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	250			170	290			290	400
Storage Blk Time (%)	80	50							
Queuing Penalty (veh)	57	155							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	T
Maximum Queue (ft)	243	68	682	100	36	153	172	28	205	24
Average Queue (ft)	123	5	308	68	6	29	34	1	84	1
95th Queue (ft)	281	35	784	129	26	117	132	13	166	24
Link Distance (ft)	265		685			1592	1592			1427
Upstream Blk Time (%)	16		27							
Queuing Penalty (veh)	0		0							
Storage Bay Dist (ft)		115		100	265			300	300	
Storage Blk Time (%)	48	0	49	33		0	0			
Queuing Penalty (veh)	2	0	91	5		0	0			

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	898	500	1449	1455	240	228	118
Average Queue (ft)	550	266	1109	1124	141	62	52
95th Queue (ft)	1175	562	1646	1653	225	142	95
Link Distance (ft)	1206		1427	1427		603	603
Upstream Blk Time (%)	13		7	9			
Queuing Penalty (veh)	0		40	56			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	15	1			0	0	
Queuing Penalty (veh)	57	6			2	0	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	320	238	139	279	155	1386	1391
Average Queue (ft)	175	128	115	73	12	1360	1360
95th Queue (ft)	277	214	162	247	95	1372	1376
Link Distance (ft)	832			603	603	1342	1342
Upstream Blk Time (%)						72	85
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)	0		5	1			
Queuing Penalty (veh)	0		27	5			

Network Summary

Network wide Queuing Penalty: 505

MOVEMENT SUMMARY

Site: 101 [5th St @ Old Lynchburg Rd 2030 Total - AM (Site Folder: General)]

Southwood Phase 2
2030 Future Conditions
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	82	0.0	83	0.0	0.399	8.2	LOS A	2.7	70.8	0.67	0.55	0.67	33.0
8	T1	696	6.0	703	6.0	0.399	8.0	LOS A	2.8	74.2	0.67	0.54	0.67	33.4
18	R2	1	3.0	1	3.0	0.399	7.6	LOS A	2.8	74.2	0.66	0.53	0.66	32.8
Approach		779	5.4	787	5.4	0.399	8.0	LOS A	2.8	74.2	0.67	0.54	0.67	33.3
East: County Complex														
1	L2	1	0.0	1	0.0	0.012	7.2	LOS A	0.0	1.2	0.67	0.54	0.67	33.7
6	T1	1	0.0	1	0.0	0.012	7.2	LOS A	0.0	1.2	0.67	0.54	0.67	33.6
16	R2	4	0.0	4	0.0	0.012	7.2	LOS A	0.0	1.2	0.67	0.54	0.67	32.6
Approach		6	0.0	6	0.0	0.012	7.2	LOS A	0.0	1.2	0.67	0.54	0.67	32.9
North: 5th Street														
7u	U	57	0.0	58	0.0	0.392	6.9	LOS A	2.6	66.6	0.32	0.16	0.32	34.3
7	L2	45	0.0	45	0.0	0.392	6.9	LOS A	2.6	66.6	0.32	0.16	0.32	33.5
4	T1	352	6.0	356	6.0	0.392	7.0	LOS A	2.6	66.6	0.32	0.16	0.32	33.3
14	R2	243	5.0	245	5.0	0.245	6.0	LOS A	1.3	34.3	0.28	0.15	0.28	33.3
Approach		697	4.8	704	4.8	0.392	6.6	LOS A	2.6	66.6	0.30	0.16	0.30	33.4
West: Old Lynchburg Road														
5	L2	283	2.0	286	2.0	0.398	9.2	LOS A	2.6	66.0	0.70	0.62	0.70	31.0
2	T1	2	0.0	2	0.0	0.398	9.0	LOS A	2.6	66.0	0.70	0.62	0.70	30.9
12	R2	39	14.0	39	14.0	0.398	9.9	LOS A	2.6	66.0	0.70	0.62	0.70	29.9
Approach		324	3.4	327	3.4	0.398	9.2	LOS A	2.6	66.0	0.70	0.62	0.70	30.8
All Vehicles		1806	4.8	1824	4.8	0.399	7.7	LOS A	2.8	74.2	0.53	0.40	0.53	32.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [5th St @ Old Lynchburg Rd 2030 Total - PM (Site Folder: General)]

Southwood Phase 2
2030 Future Conditions
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	47	0.0	49	0.0	0.345	7.7	LOS A	2.4	60.4	0.69	0.56	0.69	33.6
8	T1	608	1.0	633	1.0	0.345	7.2	LOS A	2.5	63.4	0.68	0.54	0.68	33.9
18	R2	2	0.0	2	0.0	0.345	6.9	LOS A	2.5	63.4	0.68	0.53	0.68	33.3
Approach		657	0.9	684	0.9	0.345	7.3	LOS A	2.5	63.4	0.68	0.55	0.68	33.9
East: County Complex														
1	L2	2	0.0	2	0.0	0.060	7.5	LOS A	0.3	6.3	0.66	0.62	0.66	33.8
6	T1	1	0.0	1	0.0	0.060	7.5	LOS A	0.3	6.3	0.66	0.62	0.66	33.7
16	R2	28	0.0	29	0.0	0.060	7.5	LOS A	0.3	6.3	0.66	0.62	0.66	32.7
Approach		31	0.0	32	0.0	0.060	7.5	LOS A	0.3	6.3	0.66	0.62	0.66	32.8
North: 5th Street														
7u	U	86	5.0	90	5.0	0.670	11.9	LOS B	7.3	183.8	0.38	0.17	0.38	32.2
7	L2	5	0.0	5	0.0	0.670	11.8	LOS B	7.3	183.8	0.38	0.17	0.38	31.7
4	T1	719	0.0	749	0.0	0.670	11.8	LOS B	7.3	183.8	0.38	0.17	0.38	31.6
14	R2	331	0.0	345	0.0	0.347	7.3	LOS A	2.1	53.1	0.25	0.11	0.25	32.8
Approach		1141	0.4	1189	0.4	0.670	10.5	LOS B	7.3	183.8	0.35	0.15	0.35	32.0
West: Old Lynchburg Road														
5	L2	308	1.0	321	1.0	0.670	21.0	LOS C	7.7	194.6	0.98	1.20	1.58	26.9
2	T1	1	0.0	1	0.0	0.670	20.9	LOS C	7.7	194.6	0.98	1.20	1.58	26.8
12	R2	71	0.0	74	0.0	0.670	20.9	LOS C	7.7	194.6	0.98	1.20	1.58	26.3
Approach		380	0.8	396	0.8	0.670	21.0	LOS C	7.7	194.6	0.98	1.20	1.58	26.8
All Vehicles		2209	0.6	2301	0.6	0.670	11.3	LOS B	7.7	194.6	0.56	0.46	0.66	31.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix H
Capacity Analysis Worksheets
For 2036 Total Background Conditions

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	207	210	4	122	97
Future Vol, veh/h	4	207	210	4	122	97
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	4	0	13	8
Mvmt Flow	4	225	228	4	133	105

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	549	230	0	0	232	0
Stage 1	230	-	-	-	-	-
Stage 2	319	-	-	-	-	-
Critical Hdwy	6.6	6.305	-	-	4.295	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3665	-	-	2.3235	-
Pot Cap-1 Maneuver	485	794	-	-	1265	-
Stage 1	813	-	-	-	-	-
Stage 2	716	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	434	794	-	-	1265	-
Mov Cap-2 Maneuver	434	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	782	1265	-
HCM Lane V/C Ratio	-	-	0.293	0.105	-
HCM Control Delay (s)	-	-	11.5	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.3	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	223	0	12	0	0	1	18	414	0	6	212	87
Future Vol, veh/h	223	0	12	0	0	1	18	414	0	6	212	87
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	0	0	0	0	3	0	0	5	6
Mvmt Flow	237	0	13	0	0	1	19	440	0	6	226	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	496	716	113	603	809	220	319	0	0	440	0	0
Stage 1	238	238	-	478	478	-	-	-	-	-	-	-
Stage 2	258	478	-	125	331	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	452	358	925	387	317	790	1252	-	-	1131	-	-
Stage 1	738	712	-	543	559	-	-	-	-	-	-	-
Stage 2	718	559	-	872	649	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	444	351	925	376	311	790	1252	-	-	1131	-	-
Mov Cap-2 Maneuver	444	351	-	376	311	-	-	-	-	-	-	-
Stage 1	727	708	-	535	551	-	-	-	-	-	-	-
Stage 2	706	551	-	855	646	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.1	9.6	0.3	0.2
HCM LOS	C	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1252	-	-	456	790	1131	-	-
HCM Lane V/C Ratio	0.015	-	-	0.548	0.001	0.006	-	-
HCM Control Delay (s)	7.9	-	-	22.1	9.6	8.2	-	-
HCM Lane LOS	A	-	-	C	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	3.2	0	0	-	-

Intersection	
Int Delay, s/veh	58.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	283	2	29	0	1	4	65	614	1	57	45	289	243
Future Vol, veh/h	283	2	29	0	1	4	65	614	1	57	45	289	243
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	0	14	0	0	0	6	3	0	0	0	6	5
Mvmt Flow	286	2	29	0	1	4	66	620	1	58	45	292	245

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	941	1251	146	1105	1495	310	537	0	0	620	621	0	0
Stage 1	498	498	-	752	752	-	-	-	-	-	-	-	-
Stage 2	443	753	-	353	743	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.18	7.5	6.5	6.9	4.22	-	-	6.4	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.44	3.5	4	3.3	2.26	-	-	2.5	2.2	-	-
Pot Cap-1 Maneuver	~ 218	174	838	168	124	692	1000	-	-	589	969	-	-
Stage 1	523	548	-	373	421	-	-	-	-	-	-	-	-
Stage 2	564	420	-	642	425	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 182	139	838	136	99	692	1000	-	-	710	710	-	-
Mov Cap-2 Maneuver	~ 182	139	-	136	99	-	-	-	-	-	-	-	-
Stage 1	488	469	-	348	393	-	-	-	-	-	-	-	-
Stage 2	522	392	-	527	363	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	296.4	16.5	0.8	1.8
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1000	-	-	182	633	99	692	710	-	-
HCM Lane V/C Ratio	0.066	-	-	1.571	0.049	0.01	0.006	0.145	-	-
HCM Control Delay (s)	8.9	-	-	$ 327.7	11	41.7	10.2	10.9	-	-
HCM Lane LOS	A	-	-	F	B	E	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	18.7	0.2	0	0	0.5	-	-

Notes

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

Intersection	
Int Delay, s/veh	101.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1	18	17	1	386	0	975	34	325	660	10
Future Vol, veh/h	30	1	18	17	1	386	0	975	34	325	660	10
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
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, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	33	1	20	18	1	420	0	1060	37	353	717	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1954	2520	359	2125	2494	530	728	0	0	1097	0	0
Stage 1	1423	1423	-	1060	1060	-	-	-	-	-	-	-
Stage 2	531	1097	-	1065	1434	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	39	28	612	27	29	491	885	-	-	632	-	-
Stage 1	145	204	-	232	303	-	-	-	-	-	-	-
Stage 2	505	291	-	231	201	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 3	12	612	~ 14	13	491	885	-	-	632	-	-
Mov Cap-2 Maneuver	~ 3	12	-	~ 14	13	-	-	-	-	-	-	-
Stage 1	145	90	-	232	303	-	-	-	-	-	-	-
Stage 2	73	291	-	98	89	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	4355.7	74.1	0	5.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	885	-	-	3	612	14	491	632	-	-
HCM Lane V/C Ratio	-	-	-	11.232	0.032	1.398	0.855	0.559	-	-
HCM Control Delay (s)	0	-	$	6878.4	11.1	$ 763.5	42	17.7	-	-
HCM Lane LOS	A	-	-	F	B	F	E	C	-	-
HCM 95th %tile Q(veh)	0	-	-	6	0.1	3.1	8.8	3.5	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	629	349	1519	214	786
v/c Ratio	1.32	0.62	1.33	0.46	0.38
Control Delay	188.9	17.7	184.0	18.5	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	188.9	17.7	184.0	18.5	4.9
Queue Length 50th (ft)	~467	71	~588	63	83
Queue Length 95th (ft)	#673	165	#725	m83	m77
Internal Link Dist (ft)	1069		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	476	565	1139	461	2062
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.32	0.62	1.33	0.46	0.38

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	579	0	321	0	0	0	0	1021	376	197	723	0
Future Volume (veh/h)	579	0	321	0	0	0	0	1021	376	197	723	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1885	1900	1870				0	1870	1885	1885	1826	0
Adj Flow Rate, veh/h	629	0	349				0	1110	409	214	786	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	0	2				0	2	1	1	5	0
Cap, veh/h	483	0	423				0	824	298	459	2082	0
Arrive On Green	0.27	0.00	0.27				0.00	0.32	0.32	0.42	1.00	0.00
Sat Flow, veh/h	1810	0	1585				0	2651	924	1795	3561	0
Grp Volume(v), veh/h	629	0	349				0	765	754	214	786	0
Grp Sat Flow(s),veh/h/ln	1810	0	1585				0	1777	1704	1795	1735	0
Q Serve(g_s), s	24.0	0.0	18.6				0.0	29.0	29.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	18.6				0.0	29.0	29.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.54	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	423				0	573	549	459	2082	0
V/C Ratio(X)	1.30	0.00	0.83				0.00	1.34	1.37	0.47	0.38	0.00
Avail Cap(c_a), veh/h	483	0	423				0	573	549	459	2082	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	31.0				0.0	30.5	30.5	20.8	0.0	0.0
Incr Delay (d2), s/veh	151.1	0.0	12.6				0.0	162.6	179.6	0.1	0.0	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
%ile BackOfQ(50%),veh/ln	30.3	0.0	8.3				0.0	37.1	38.2	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	184.1	0.0	43.7				0.0	193.1	210.1	20.9	0.0	0.0
LnGrp LOS	F	A	D				A	F	F	C	A	A
Approach Vol, veh/h		978						1519			1000	
Approach Delay, s/veh		134.0						201.5			4.5	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	35.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	19.0	29.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	4.9	31.0		26.0		2.0
Green Ext Time (p_c), s	0.5	0.0		0.0		7.2

Intersection Summary			
HCM 6th Ctrl Delay			126.3
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	259	389	491	1254	1218
v/c Ratio	0.73	0.96	0.88	0.54	1.01
Control Delay	46.7	62.2	31.4	6.0	53.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	62.2	31.4	6.0	53.2
Queue Length 50th (ft)	138	163	255	155	~317
Queue Length 95th (ft)	#243	#344	m179	m109	#468
Internal Link Dist (ft)	742			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	359	410	555	2329	1211
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.72	0.95	0.88	0.54	1.01

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	249	0	373	471	1204	0	0	660	509
Future Volume (veh/h)	0	0	0	249	0	373	471	1204	0	0	660	509
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1811	1900	1826	1870	1870	0	0	1841	1856
Adj Flow Rate, veh/h				259	0	389	491	1254	0	0	688	530
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				6	0	5	2	2	0	0	4	3
Cap, veh/h				382	0	327	555	2330	0	0	608	465
Arrive On Green				0.21	0.00	0.21	0.53	1.00	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1810	0	1547	1781	3647	0	0	1980	1442
Grp Volume(v), veh/h				259	0	389	491	1254	0	0	637	581
Grp Sat Flow(s),veh/h/ln				1810	0	1547	1781	1777	0	0	1749	1581
Q Serve(g_s), s				11.9	0.0	19.0	16.8	0.0	0.0	0.0	29.0	29.0
Cycle Q Clear(g_c), s				11.9	0.0	19.0	16.8	0.0	0.0	0.0	29.0	29.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.91
Lane Grp Cap(c), veh/h				382	0	327	555	2330	0	0	563	509
V/C Ratio(X)				0.68	0.00	1.19	0.88	0.54	0.00	0.00	1.13	1.14
Avail Cap(c_a), veh/h				382	0	327	555	2330	0	0	563	509
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				32.7	0.0	35.5	18.0	0.0	0.0	0.0	30.5	30.5
Incr Delay (d2), s/veh				4.8	0.0	112.2	1.8	0.1	0.0	0.0	79.2	84.7
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				5.5	0.0	24.8	5.0	0.0	0.0	0.0	23.5	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				37.4	0.0	147.7	19.7	0.1	0.0	0.0	109.7	115.2
LnGrp LOS				D	A	F	B	A	A	A	F	F
Approach Vol, veh/h					648			1745			1218	
Approach Delay, s/veh					103.6			5.6			112.3	
Approach LOS					F			A			F	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	65.0		25.0	30.0	35.0
Change Period (Y+Rc), s	6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s	59.0		19.0	24.0	29.0
Max Q Clear Time (g_c+I1), s	2.0		21.0	18.8	31.0
Green Ext Time (p_c), s	14.7		0.0	0.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	59.2
HCM 6th LOS	E

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	88	73
Average Queue (ft)	46	21
95th Queue (ft)	75	57
Link Distance (ft)	461	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		295
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LTR	L	L	R
Maximum Queue (ft)	179	14	20	20	2
Average Queue (ft)	72	0	3	1	0
95th Queue (ft)	136	6	13	10	2
Link Distance (ft)	619	314			
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			250	290	330
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	T	UL	T	R
Maximum Queue (ft)	250	683	12	20	68	4	67	4	25
Average Queue (ft)	228	505	0	3	19	0	33	0	2
95th Queue (ft)	309	961	6	14	52	3	60	2	12
Link Distance (ft)		673	311			1952		1591	
Upstream Blk Time (%)		57							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	250			170	290		290		400
Storage Blk Time (%)	62	38							
Queuing Penalty (veh)	19	109							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	T	R	L	T	T
Maximum Queue (ft)	289	115	792	100	12	36	23	299	486	356
Average Queue (ft)	222	20	736	64	1	4	2	183	153	103
95th Queue (ft)	348	88	883	142	13	23	12	329	702	610
Link Distance (ft)	265		750		1591	1591			1427	1427
Upstream Blk Time (%)	65		85						2	1
Queuing Penalty (veh)	0		0						9	5
Storage Bay Dist (ft)		115		100			300	300		
Storage Blk Time (%)	82	0	91	49				15	10	0
Queuing Penalty (veh)	15	0	351	9				50	34	0

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1127	500	998	1027	192	96	94
Average Queue (ft)	1008	464	631	653	91	33	18
95th Queue (ft)	1351	649	1187	1210	162	102	87
Link Distance (ft)	1075		1427	1427		607	607
Upstream Blk Time (%)	62		0	0			
Queuing Penalty (veh)	0		1	2			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	52	4			0	0	
Queuing Penalty (veh)	166	21			0	1	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	286	339	140	398	336	597	670
Average Queue (ft)	142	176	134	201	81	363	419
95th Queue (ft)	234	289	153	387	255	627	720
Link Distance (ft)	754			607	607	1340	1340
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			13	4			
Queuing Penalty (veh)			80	18			

Network Summary

Network wide Queuing Penalty: 890

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	191	104	6	232	242
Future Vol, veh/h	5	191	104	6	232	242
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	2	0	1	1
Mvmt Flow	5	208	113	7	252	263

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	753	117	0	0	120	0
Stage 1	117	-	-	-	-	-
Stage 2	636	-	-	-	-	-
Critical Hdwy	6.6	6.245	-	-	4.115	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3285	-	-	2.2095	-
Pot Cap-1 Maneuver	365	932	-	-	1473	-
Stage 1	913	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	303	932	-	-	1473	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	913	-	-	-	-	-
Stage 2	410	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	885	1473	-
HCM Lane V/C Ratio	-	-	0.241	0.171	-
HCM Control Delay (s)	-	-	10.4	7.9	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.9	0.6	-

Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	0	31	0	0	1	14	291	0	9	456	170
Future Vol, veh/h	197	0	31	0	0	1	14	291	0	9	456	170
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	6	0	0	0	0	1	0	0	0	2
Mvmt Flow	210	0	33	0	0	1	15	310	0	10	485	181

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	690	845	243	603	1026	155	666	0	0	310	0	0
Stage 1	505	505	-	340	340	-	-	-	-	-	-	-
Stage 2	185	340	-	263	686	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.02	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.36	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	331	302	746	387	237	869	933	-	-	1262	-	-
Stage 1	518	544	-	654	643	-	-	-	-	-	-	-
Stage 2	799	643	-	725	451	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	295	746	363	231	869	933	-	-	1262	-	-
Mov Cap-2 Maneuver	325	295	-	363	231	-	-	-	-	-	-	-
Stage 1	510	540	-	644	633	-	-	-	-	-	-	-
Stage 2	785	633	-	687	447	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.1	9.1	0.4	0.1
HCM LOS	E	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	933	-	-	352	869	1262	-	-
HCM Lane V/C Ratio	0.016	-	-	0.689	0.001	0.008	-	-
HCM Control Delay (s)	8.9	-	-	35.1	9.1	7.9	-	-
HCM Lane LOS	A	-	-	E	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	4.9	0	0	-	-

Intersection	
Int Delay, s/veh	123.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	308	1	50	2	0	28	32	506	2	86	5	614	331
Future Vol, veh/h	308	1	50	2	0	28	32	506	2	86	5	614	331
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	5	0	0	0
Mvmt Flow	321	1	52	2	0	29	33	527	2	90	5	640	345

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1160	1425	320	1104	1768	264	985	0	0	527	529	0	0
Stage 1	830	830	-	593	593	-	-	-	-	-	-	-	-
Stage 2	330	595	-	511	1175	-	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.5	6.9	7.5	6.5	6.9	4.1	-	-	6.5	4.1	-	-
Critical Hdwy Stg 1	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.3	3.5	4	3.3	2.2	-	-	2.55	2.2	-	-
Pot Cap-1 Maneuver	~ 152	137	682	168	84	741	709	-	-	653	1048	-	-
Stage 1	333	388	-	464	497	-	-	-	-	-	-	-	-
Stage 2	660	496	-	519	268	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 125	111	682	132	68	741	709	-	-	642	642	-	-
Mov Cap-2 Maneuver	~ 125	111	-	132	68	-	-	-	-	-	-	-	-
Stage 1	~ 317	331	-	442	474	-	-	-	-	-	-	-	-
Stage 2	605	473	-	407	228	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 673.6	11.6	0.6	1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	709	-	-	125	620	132	741	642	-	-
HCM Lane V/C Ratio	0.047	-	-	2.567	0.086	0.016	0.039	0.148	-	-
HCM Control Delay (s)	10.3	-	-	$ 783.2	11.4	32.7	10.1	11.6	-	-
HCM Lane LOS	B	-	-	F	B	D	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	28.7	0.3	0	0.1	0.5	-	-

Notes

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

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1	4	15	1	163	8	926	30	199	1040	29
Future Vol, veh/h	25	1	4	15	1	163	8	926	30	199	1040	29
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	26	1	4	15	1	168	8	955	31	205	1072	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1976	2484	536	1918	2483	478	1102	0	0	986	0	0
Stage 1	1482	1482	-	971	971	-	-	-	-	-	-	-
Stage 2	494	1002	-	947	1512	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	38	30	466	39	30	531	641	-	-	696	-	-
Stage 1	134	191	-	264	334	-	-	-	-	-	-	-
Stage 2	531	323	-	273	184	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 19	21	466	29	21	531	641	-	-	696	-	-
Mov Cap-2 Maneuver	~ 19	21	-	29	21	-	-	-	-	-	-	-
Stage 1	132	135	-	261	330	-	-	-	-	-	-	-
Stage 2	357	319	-	189	130	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 561.4	35.7	0.1	1.9
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	641	-	-	19	466	28	531	696	-	-
HCM Lane V/C Ratio	0.013	-	-	1.411	0.009	0.589	0.316	0.295	-	-
HCM Control Delay (s)	10.7	-	-	$ 645.8	12.8	247.6	14.9	12.3	-	-
HCM Lane LOS	B	-	-	F	B	F	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	3.7	0	1.9	1.3	1.2	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	562	368	1186	392	1010
v/c Ratio	1.19	0.71	1.26	0.71	0.47
Control Delay	137.1	28.8	155.6	25.6	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	137.1	28.8	155.6	25.6	6.7
Queue Length 50th (ft)	~390	129	~443	190	94
Queue Length 95th (ft)	#588	232	#574	m159	m74
Internal Link Dist (ft)	1200		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	472	517	942	549	2166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.19	0.71	1.26	0.71	0.47

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	0	357	0	0	0	0	881	270	380	980	0
Future Volume (veh/h)	545	0	357	0	0	0	0	881	270	380	980	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1900	1900				0	1870	1870	1856	1900	0
Adj Flow Rate, veh/h	562	0	368				0	908	278	392	1010	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0				0	2	2	3	0	0
Cap, veh/h	483	0	429				0	715	218	551	2166	0
Arrive On Green	0.27	0.00	0.27				0.00	0.27	0.27	0.53	1.00	0.00
Sat Flow, veh/h	1810	0	1610				0	2775	819	1767	3705	0
Grp Volume(v), veh/h	562	0	368				0	601	585	392	1010	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1777	1723	1767	1805	0
Q Serve(g_s), s	24.0	0.0	19.6				0.0	24.0	24.0	9.4	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	19.6				0.0	24.0	24.0	9.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.48	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	429				0	474	459	551	2166	0
V/C Ratio(X)	1.16	0.00	0.86				0.00	1.27	1.27	0.71	0.47	0.00
Avail Cap(c_a), veh/h	483	0	429				0	474	459	551	2166	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	31.4				0.0	33.0	33.0	16.6	0.0	0.0
Incr Delay (d2), s/veh	94.7	0.0	15.7				0.0	136.7	139.1	0.4	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
%ile BackOfQ(50%),veh/ln	22.7	0.0	9.1				0.0	27.5	27.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	127.7	0.0	47.0				0.0	169.7	172.1	17.0	0.1	0.0
LnGrp LOS	F	A	D				A	F	F	B	A	A
Approach Vol, veh/h		930						1186			1402	
Approach Delay, s/veh		95.8						170.9			4.8	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	30.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	24.0	24.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	11.4	26.0		26.0		2.0
Green Ext Time (p_c), s	1.0	0.0		0.0		8.2

Intersection Summary			
HCM 6th Ctrl Delay			84.8
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	312	378	367	1115	1812
v/c Ratio	0.86	0.91	0.80	0.47	1.29
Control Delay	59.0	52.5	23.5	1.8	159.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	52.5	23.5	1.8	159.2
Queue Length 50th (ft)	171	149	178	50	~675
Queue Length 95th (ft)	#308	#314	m136	m35	#816
Internal Link Dist (ft)	819			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	377	428	456	2352	1409
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.88	0.80	0.47	1.29

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	303	0	367	356	1082	0	0	1081	677
Future Volume (veh/h)	0	0	0	303	0	367	356	1082	0	0	1081	677
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1900	1885	1870	1870	0	0	1885	1885
Adj Flow Rate, veh/h				312	0	378	367	1115	0	0	1114	698
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				1	0	1	2	2	0	0	1	1
Cap, veh/h				382	0	337	456	2330	0	0	824	478
Arrive On Green				0.21	0.00	0.21	0.42	1.00	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1810	0	1598	1781	3647	0	0	2276	1266
Grp Volume(v), veh/h				312	0	378	367	1115	0	0	898	914
Grp Sat Flow(s),veh/h/ln				1810	0	1598	1781	1777	0	0	1791	1657
Q Serve(g_s), s				14.8	0.0	19.0	11.3	0.0	0.0	0.0	34.0	34.0
Cycle Q Clear(g_c), s				14.8	0.0	19.0	11.3	0.0	0.0	0.0	34.0	34.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.76
Lane Grp Cap(c), veh/h				382	0	337	456	2330	0	0	677	626
V/C Ratio(X)				0.82	0.00	1.12	0.80	0.48	0.00	0.00	1.33	1.46
Avail Cap(c_a), veh/h				382	0	337	456	2330	0	0	677	626
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				33.8	0.0	35.5	22.6	0.0	0.0	0.0	28.0	28.0
Incr Delay (d2), s/veh				12.9	0.0	85.7	1.0	0.1	0.0	0.0	157.7	215.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.6	0.0	23.1	4.5	0.0	0.0	0.0	42.7	49.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				46.8	0.0	121.2	23.6	0.1	0.0	0.0	185.7	243.4
LnGrp LOS				D	A	F	C	A	A	A	F	F
Approach Vol, veh/h					690			1482			1812	
Approach Delay, s/veh					87.6			5.9			214.8	
Approach LOS					F			A			F	

Timer - Assigned Phs	2		4	5	6
Phs Duration (G+Y+Rc), s	65.0		25.0	25.0	40.0
Change Period (Y+Rc), s	6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s	59.0		19.0	19.0	34.0
Max Q Clear Time (g_c+I1), s	2.0		21.0	13.3	36.0
Green Ext Time (p_c), s	12.1		0.0	0.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	115.0
HCM 6th LOS	F

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	85	62
Average Queue (ft)	43	18
95th Queue (ft)	71	50
Link Distance (ft)	461	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		295
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	R
Maximum Queue (ft)	172	12	21	2	23	10
Average Queue (ft)	70	1	3	0	2	0
95th Queue (ft)	131	6	14	2	12	5
Link Distance (ft)	619	314		733		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250		290	330
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	UL	R
Maximum Queue (ft)	250	716	20	42	41	8	82	26
Average Queue (ft)	248	662	1	14	13	0	31	2
95th Queue (ft)	271	821	11	34	37	5	64	13
Link Distance (ft)		673	311			1952		
Upstream Blk Time (%)		84						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)	250			170	290		290	400
Storage Blk Time (%)	78	54						
Queuing Penalty (veh)	40	168						

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L	R
Maximum Queue (ft)	151	79	508	100	31	62	79	19	152	6
Average Queue (ft)	57	6	192	61	4	11	14	1	67	0
95th Queue (ft)	150	36	632	115	21	57	68	11	127	4
Link Distance (ft)	265		685			1592	1592			
Upstream Blk Time (%)	0		14							
Queuing Penalty (veh)	0		0							
Storage Bay Dist (ft)		115		100	265			300	300	290
Storage Blk Time (%)	16	0	23	22						
Queuing Penalty (veh)	1	0	37	3						

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1096	475	1372	1383	241	199	98
Average Queue (ft)	733	346	991	1011	150	54	48
95th Queue (ft)	1386	655	1593	1604	230	124	88
Link Distance (ft)	1206		1427	1427		603	603
Upstream Blk Time (%)	25		3	5			
Queuing Penalty (veh)	0		17	27			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	27	2			0	0	
Queuing Penalty (veh)	96	10			2	0	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	280	277	139	296	219	1384	1388
Average Queue (ft)	153	152	116	77	14	1353	1356
95th Queue (ft)	241	251	159	254	107	1421	1404
Link Distance (ft)	832			603	603	1342	1342
Upstream Blk Time (%)						67	81
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			5	1			
Queuing Penalty (veh)			26	5			

Network Summary

Network wide Queuing Penalty: 432

MOVEMENT SUMMARY

Site: 101 [5th Street @ Old Lynchburg Road - 2036 Background AM (Site Folder: General)]

Southwood Phase 2
2036 Background Conditions
Site Category: (None)
Roundabout
Sensitivity Analysis (Critical Gap & Follow-up Headway): Results for Parameter Scale = 120.0 %

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	65	0.0	66	0.0	0.444	10.8	LOS B	3.1	79.3	0.72	0.65	0.75	30.6
8	T1	614	6.0	620	6.0	0.444	10.5	LOS B	3.1	79.3	0.71	0.62	0.72	30.9
18	R2	1	3.0	1	3.0	0.444	9.9	LOS A	3.1	80.0	0.71	0.61	0.71	26.5
Approach		680	5.4	687	5.4	0.444	10.6	LOS B	3.1	80.0	0.71	0.63	0.73	30.9
East: County Complex														
1	L2	1	0.0	1	0.0	0.015	9.3	LOS A	0.1	1.4	0.66	0.57	0.66	27.1
6	T1	1	0.0	1	0.0	0.015	9.3	LOS A	0.1	1.4	0.66	0.57	0.66	26.1
16	R2	4	0.0	4	0.0	0.015	9.3	LOS A	0.1	1.4	0.66	0.57	0.66	25.5
Approach		6	0.0	6	0.0	0.015	9.3	LOS A	0.1	1.4	0.66	0.57	0.66	25.8
North: 5th Street														
7u	U	57	0.0	58	0.0	0.403	8.0	LOS A	2.6	68.5	0.31	0.16	0.31	31.0
7	L2	45	0.0	45	0.0	0.403	8.0	LOS A	2.6	68.5	0.31	0.16	0.31	26.9
4	T1	289	6.0	292	6.0	0.403	8.2	LOS A	2.6	68.5	0.31	0.16	0.31	31.3
14	R2	243	5.0	245	5.0	0.280	7.1	LOS A	1.6	40.3	0.28	0.14	0.28	30.0
Approach		634	4.7	640	4.7	0.403	7.7	LOS A	2.6	68.5	0.30	0.15	0.30	30.4
West: Old Lynchburg Road														
5	L2	283	2.0	286	2.0	0.465	12.0	LOS B	3.4	86.0	0.72	0.71	0.82	27.7
2	T1	2	0.0	2	0.0	0.465	11.9	LOS B	3.4	86.0	0.72	0.71	0.82	24.4
12	R2	29	14.0	29	14.0	0.465	12.9	LOS B	3.4	86.0	0.72	0.71	0.82	27.7
Approach		314	3.1	317	3.1	0.465	12.1	LOS B	3.4	86.0	0.72	0.71	0.82	27.7
All Vehicles		1634	4.7	1651	4.7	0.465	9.8	LOS A	3.4	86.0	0.55	0.46	0.58	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [5th Street @ Old Lynchburg Road - 2036 Background PM (Site Folder: General)]

Southwood Phase 2
2036 Background Conditions
Site Category: (None)
Roundabout
Sensitivity Analysis (Critical Gap & Follow-up Headway): Results for Parameter Scale = 120.0 %

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	32	0.0	33	0.0	0.360	9.5	LOS A	2.3	59.0	0.71	0.62	0.71	31.5
8	T1	506	1.0	527	1.0	0.360	9.0	LOS A	2.5	61.7	0.70	0.60	0.70	31.7
18	R2	2	0.0	2	0.0	0.360	8.4	LOS A	2.5	61.7	0.70	0.59	0.70	27.0
Approach		540	0.9	563	0.9	0.360	9.0	LOS A	2.5	61.7	0.70	0.60	0.70	31.7
East: County Complex														
1	L2	2	0.0	2	0.0	0.075	9.5	LOS A	0.3	7.3	0.65	0.65	0.65	27.2
6	T1	1	0.0	1	0.0	0.075	9.5	LOS A	0.3	7.3	0.65	0.65	0.65	26.1
16	R2	28	0.0	29	0.0	0.075	9.5	LOS A	0.3	7.3	0.65	0.65	0.65	25.5
Approach		31	0.0	32	0.0	0.075	9.5	LOS A	0.3	7.3	0.65	0.65	0.65	25.6
North: 5th Street														
7u	U	86	5.0	90	5.0	0.681	13.9	LOS B	7.7	194.1	0.37	0.15	0.37	29.1
7	L2	5	0.0	5	0.0	0.681	13.7	LOS B	7.7	194.1	0.37	0.15	0.37	25.5
4	T1	600	0.0	625	0.0	0.681	13.7	LOS B	7.7	194.1	0.37	0.15	0.37	29.4
14	R2	331	0.0	345	0.0	0.389	8.6	LOS A	2.5	62.6	0.23	0.10	0.23	29.5
Approach		1022	0.4	1065	0.4	0.681	12.1	LOS B	7.7	194.1	0.32	0.13	0.32	29.4
West: Old Lynchburg Road														
5	L2	308	1.0	321	1.0	0.726	27.0	LOS D	8.8	220.7	0.96	1.28	1.75	23.6
2	T1	1	0.0	1	0.0	0.726	26.9	LOS D	8.8	220.7	0.96	1.28	1.75	21.1
12	R2	51	0.0	53	0.0	0.726	26.9	LOS D	8.8	220.7	0.96	1.28	1.75	23.7
Approach		360	0.9	375	0.9	0.726	27.0	LOS D	8.8	220.7	0.96	1.28	1.75	23.6
All Vehicles		1953	0.6	2034	0.6	0.726	13.9	LOS B	8.8	220.7	0.55	0.48	0.70	28.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix I
Capacity Analysis Worksheets
For 2036 Total Future Conditions

Intersection	
Int Delay, s/veh	7.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	353	210	6	217	97
Future Vol, veh/h	5	353	210	6	217	97
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	7	4	0	13	8
Mvmt Flow	5	384	228	7	236	105

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	757	232	0	0	235	0
Stage 1	232	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Critical Hdwy	6.6	6.305	-	-	4.295	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3665	-	-	2.3235	-
Pot Cap-1 Maneuver	363	792	-	-	1262	-
Stage 1	811	-	-	-	-	-
Stage 2	564	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	792	-	-	1262	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	811	-	-	-	-	-
Stage 2	459	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	5.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	774	1262	-
HCM Lane V/C Ratio	-	-	0.503	0.187	-
HCM Control Delay (s)	-	-	14.3	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.9	0.7	-

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	223	0	21	0	0	1	35	543	0	6	298	87
Future Vol, veh/h	223	0	21	0	0	1	35	543	0	6	298	87
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	4	0	0	0	0	0	0	3	0	0	5	6
Mvmt Flow	237	0	22	0	0	1	37	578	0	6	317	93

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	692	981	159	823	1074	289	410	0	0	578	0	0
Stage 1	329	329	-	652	652	-	-	-	-	-	-	-
Stage 2	363	652	-	171	422	-	-	-	-	-	-	-
Critical Hdwy	7.58	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.58	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.54	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	327	251	864	269	222	714	1160	-	-	1006	-	-
Stage 1	652	650	-	428	467	-	-	-	-	-	-	-
Stage 2	623	467	-	820	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	317	241	864	254	214	714	1160	-	-	1006	-	-
Mov Cap-2 Maneuver	317	241	-	254	214	-	-	-	-	-	-	-
Stage 1	631	646	-	414	452	-	-	-	-	-	-	-
Stage 2	602	452	-	794	588	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	44.5	10.1	0.5	0.1
HCM LOS	E	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1160	-	-	335	714	1006	-	-
HCM Lane V/C Ratio	0.032	-	-	0.775	0.001	0.006	-	-
HCM Control Delay (s)	8.2	-	-	44.5	10.1	8.6	-	-
HCM Lane LOS	A	-	-	E	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	6.2	0	0	-	-

Intersection	
Int Delay, s/veh	94.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	283	2	39	0	1	4	82	726	1	57	45	365	243
Future Vol, veh/h	283	2	39	0	1	4	82	726	1	57	45	365	243
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	0	14	0	0	0	6	3	0	0	0	6	5
Mvmt Flow	286	2	39	0	1	4	83	733	1	58	45	369	245

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1108	1475	185	1291	1719	367	614	0	0	733	734	0	0
Stage 1	575	575	-	899	899	-	-	-	-	-	-	-	-
Stage 2	533	900	-	392	820	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.18	7.5	6.5	6.9	4.22	-	-	6.4	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.44	3.5	4	3.3	2.26	-	-	2.5	2.2	-	-
Pot Cap-1 Maneuver	~ 164	128	789	123	91	636	935	-	-	499	880	-	-
Stage 1	470	506	-	304	360	-	-	-	-	-	-	-	-
Stage 2	498	360	-	610	392	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 131	97	789	94	69	636	935	-	-	614	614	-	-
Mov Cap-2 Maneuver	~ 131	97	-	94	69	-	-	-	-	-	-	-	-
Stage 1	428	421	-	277	328	-	-	-	-	-	-	-	-
Stage 2	450	328	-	480	326	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 535.2	20.1	0.9	1.7
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	935	-	-	131	585	69	636	614	-	-
HCM Lane V/C Ratio	0.089	-	-	2.182	0.071	0.015	0.006	0.168	-	-
HCM Control Delay (s)	9.2	-	-	$ 611.1	11.6	57.9	10.7	12	-	-
HCM Lane LOS	A	-	-	F	B	F	B	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	23.9	0.2	0	0	0.6	-	-

Notes

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

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	1	18	17	1	418	0	1087	34	340	736	10
Future Vol, veh/h	30	1	18	17	1	418	0	1087	34	340	736	10
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
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, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	33	1	20	18	1	454	0	1182	37	370	800	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2132	2759	400	2323	2733	591	811	0	0	1219	0	0
Stage 1	1540	1540	-	1182	1182	-	-	-	-	-	-	-
Stage 2	592	1219	-	1141	1551	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 29	20	575	19	21	~ 448	824	-	-	568	-	-
Stage 1	123	179	-	195	266	-	-	-	-	-	-	-
Stage 2	465	255	-	207	177	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	7	575	~ 8	7	~ 448	824	-	-	568	-	-
Mov Cap-2 Maneuver	-	7	-	~ 8	7	-	-	-	-	-	-	-
Stage 1	123	62	-	195	266	-	-	-	-	-	-	-
Stage 2	-	255	-	68	62	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		137.9	0	7
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	824	-	-	-	575	8	448	568	-	-
HCM Lane V/C Ratio	-	-	-	-	0.034	2.446	1.014	0.651	-	-
HCM Control Delay (s)	0	-	-	-	11.$	1555.5	76.9	22.4	-	-
HCM Lane LOS	A	-	-	-	B	F	F	C	-	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	3.5	13.5	4.7	-	-

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	629	373	1675	214	861
v/c Ratio	1.32	0.69	1.47	0.46	0.42
Control Delay	188.9	23.6	243.3	18.0	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	188.9	23.6	243.3	18.0	4.8
Queue Length 50th (ft)	~467	105	~689	63	93
Queue Length 95th (ft)	#673	208	#828	m74	m85
Internal Link Dist (ft)	1069		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	476	543	1139	461	2062
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.32	0.69	1.47	0.46	0.42

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	579	0	343	0	0	0	0	1129	412	197	792	0
Future Volume (veh/h)	579	0	343	0	0	0	0	1129	412	197	792	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1885	1900	1870				0	1870	1885	1885	1826	0
Adj Flow Rate, veh/h	629	0	373				0	1227	448	214	861	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	0	2				0	2	1	1	5	0
Cap, veh/h	483	0	423				0	829	293	459	2082	0
Arrive On Green	0.27	0.00	0.27				0.00	0.32	0.32	0.42	1.00	0.00
Sat Flow, veh/h	1810	0	1585				0	2667	910	1795	3561	0
Grp Volume(v), veh/h	629	0	373				0	835	840	214	861	0
Grp Sat Flow(s),veh/h/ln	1810	0	1585				0	1777	1707	1795	1735	0
Q Serve(g_s), s	24.0	0.0	20.3				0.0	29.0	29.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	20.3				0.0	29.0	29.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.53	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	423				0	573	550	459	2082	0
V/C Ratio(X)	1.30	0.00	0.88				0.00	1.46	1.53	0.47	0.41	0.00
Avail Cap(c_a), veh/h	483	0	423				0	573	550	459	2082	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	31.6				0.0	30.5	30.5	20.8	0.0	0.0
Incr Delay (d2), s/veh	151.1	0.0	19.1				0.0	215.7	246.6	0.1	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
%ile BackOfQ(50%),veh/ln	30.3	0.0	9.7				0.0	45.6	48.5	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	184.1	0.0	50.8				0.0	246.2	277.1	20.9	0.1	0.0
LnGrp LOS	F	A	D				A	F	F	C	A	A
Approach Vol, veh/h		1002						1675			1075	
Approach Delay, s/veh		134.5						261.7			4.2	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	25.0	35.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	19.0	29.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	4.9	31.0		26.0		2.0
Green Ext Time (p_c), s	0.5	0.0		0.0		8.2

Intersection Summary			
HCM 6th Ctrl Delay			154.0
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	282	389	528	1329	1266
v/c Ratio	0.79	0.96	0.95	0.57	1.05
Control Delay	51.7	62.2	34.7	5.9	67.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	51.7	62.2	34.7	5.9	67.0
Queue Length 50th (ft)	152	163	278	154	~373
Queue Length 95th (ft)	#276	#344	m180	m97	#505
Internal Link Dist (ft)	742			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	359	410	555	2329	1204
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.79	0.95	0.95	0.57	1.05

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	271	0	373	507	1276	0	0	707	509
Future Volume (veh/h)	0	0	0	271	0	373	507	1276	0	0	707	509
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1811	1900	1826	1870	1870	0	0	1841	1856
Adj Flow Rate, veh/h				282	0	389	528	1329	0	0	736	530
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				6	0	5	2	2	0	0	4	3
Cap, veh/h				382	0	327	555	2330	0	0	628	448
Arrive On Green				0.21	0.00	0.21	0.53	1.00	0.00	0.00	0.32	0.32
Sat Flow, veh/h				1810	0	1547	1781	3647	0	0	2042	1389
Grp Volume(v), veh/h				282	0	389	528	1329	0	0	659	607
Grp Sat Flow(s),veh/h/ln				1810	0	1547	1781	1777	0	0	1749	1591
Q Serve(g_s), s				13.1	0.0	19.0	20.6	0.0	0.0	0.0	29.0	29.0
Cycle Q Clear(g_c), s				13.1	0.0	19.0	20.6	0.0	0.0	0.0	29.0	29.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.87
Lane Grp Cap(c), veh/h				382	0	327	555	2330	0	0	563	513
V/C Ratio(X)				0.74	0.00	1.19	0.95	0.57	0.00	0.00	1.17	1.18
Avail Cap(c_a), veh/h				382	0	327	555	2330	0	0	563	513
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				33.2	0.0	35.5	18.7	0.0	0.0	0.0	30.5	30.5
Incr Delay (d2), s/veh				7.4	0.0	112.2	4.4	0.1	0.0	0.0	94.2	101.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.3	0.0	24.8	5.9	0.0	0.0	0.0	25.9	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				40.5	0.0	147.7	23.0	0.1	0.0	0.0	124.7	131.9
LnGrp LOS				D	A	F	C	A	A	A	F	F
Approach Vol, veh/h					671			1857			1266	
Approach Delay, s/veh					102.7			6.6			128.1	
Approach LOS					F			A			F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	30.0	35.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	24.0	29.0
Max Q Clear Time (g_c+I1), s		2.0		21.0	22.6	31.0
Green Ext Time (p_c), s		16.2		0.0	0.3	0.0

Intersection Summary			
HCM 6th Ctrl Delay			64.1
HCM 6th LOS			E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	1	18	17	1	418	0	1087	34	340	736	10
Future Volume (Veh/h)	30	1	18	17	1	418	0	1087	34	340	736	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	33	1	20	18	1	454	0	1182	37	370	800	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)			5			4						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2132	2759	400	2322	2733	591	811			1219		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2132	2759	400	2322	2733	591	811			1219		
tC, single (s)	7.5	6.5	7.1	7.6	6.5	7.0	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.4	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	0	86	97	0	86	0	100			35		
cM capacity (veh/h)	0	7	575	8	7	448	824			568		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3	SB 4
Volume Total	54	473	0	591	591	37	370	400	400	11
Volume Left	33	18	0	0	0	0	370	0	0	0
Volume Right	20	454	0	0	0	37	0	0	0	11
cSH	0	163	1700	1700	1700	1700	568	1700	1700	1700
Volume to Capacity	3174.33	2.90	0.00	0.35	0.35	0.02	0.65	0.24	0.24	0.01
Queue Length 95th (ft)	Err	1072	0	0	0	0	118	0	0	0
Control Delay (s)	Err	914.8	0.0	0.0	0.0	0.0	22.4	0.0	0.0	0.0
Lane LOS	F	F					C			
Approach Delay (s)	Err	914.8	0.0				7.0			
Approach LOS	F	F								

Intersection Summary			
Average Delay	335.1		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	135	2	104
Average Queue (ft)	66	0	33
95th Queue (ft)	107	2	78
Link Distance (ft)	461	108	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			295
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	L	TR	L	R
Maximum Queue (ft)	224	20	27	2	17	8
Average Queue (ft)	94	1	7	0	1	0
95th Queue (ft)	180	9	22	2	9	5
Link Distance (ft)	619	314		733		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250		290	330
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	T	R
Maximum Queue (ft)	250	723	12	22	85	6	8	75	2	37
Average Queue (ft)	249	679	1	2	26	0	0	32	0	3
95th Queue (ft)	255	793	7	14	62	4	5	62	2	19
Link Distance (ft)		673	311			1952	1952		1591	
Upstream Blk Time (%)		90								
Queuing Penalty (veh)		0								
Storage Bay Dist (ft)	250			170	290			290		400
Storage Blk Time (%)	80	52								
Queuing Penalty (veh)	33	148								

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	R	T	T	R	L	T	T
Maximum Queue (ft)	293	92	786	100	54	68	31	297	757	636
Average Queue (ft)	251	7	737	48	12	13	2	220	306	242
95th Queue (ft)	331	51	877	129	86	89	16	357	1044	960
Link Distance (ft)	265		750		1591	1591			1427	1427
Upstream Blk Time (%)	84		87						3	1
Queuing Penalty (veh)	0		0						14	5
Storage Bay Dist (ft)		115		100			300	300		
Storage Blk Time (%)	95	0	94	39	0	0		29	21	
Queuing Penalty (veh)	17	0	393	7	0	0		108	72	

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1128	500	1138	1154	187	132	112
Average Queue (ft)	996	473	687	704	85	38	25
95th Queue (ft)	1344	639	1394	1408	155	139	124
Link Distance (ft)	1075		1427	1427		607	607
Upstream Blk Time (%)	54		1	2			
Queuing Penalty (veh)	0		10	14			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	50	3			0	1	
Queuing Penalty (veh)	173	19			0	2	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	347	381	140	459	409	847	915
Average Queue (ft)	157	190	134	233	114	535	600
95th Queue (ft)	280	330	156	431	331	932	1015
Link Distance (ft)	754			607	607	1340	1340
Upstream Blk Time (%)					0	0	0
Queuing Penalty (veh)					0	0	0
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)	0	0	17	7			
Queuing Penalty (veh)	1	0	110	36			

Network Summary

Network wide Queuing Penalty: 1162

Intersection	
Int Delay, s/veh	7.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	346	104	8	418	242
Future Vol, veh/h	8	346	104	8	418	242
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	-	-	-	295	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	3	2	0	1	1
Mvmt Flow	9	376	113	9	454	263

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1158	118	0	0	122	0
Stage 1	118	-	-	-	-	-
Stage 2	1040	-	-	-	-	-
Critical Hdwy	6.6	6.245	-	-	4.115	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3285	-	-	2.2095	-
Pot Cap-1 Maneuver	205	930	-	-	1471	-
Stage 1	912	-	-	-	-	-
Stage 2	306	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	142	930	-	-	1471	-
Mov Cap-2 Maneuver	142	-	-	-	-	-
Stage 1	912	-	-	-	-	-
Stage 2	211	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	826	1471	-
HCM Lane V/C Ratio	-	-	0.466	0.309	-
HCM Control Delay (s)	-	-	13.1	8.5	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	2.5	1.3	-

Intersection	
Int Delay, s/veh	24.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	197	0	51	0	0	1	29	431	0	9	622	170
Future Vol, veh/h	197	0	51	0	0	1	29	431	0	9	622	170
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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	290	-	330
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	0	6	0	0	0	0	1	0	0	0	2
Mvmt Flow	210	0	54	0	0	1	31	459	0	10	662	181

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	974	1203	331	872	1384	230	843	0	0	459	0	0
Stage 1	682	682	-	521	521	-	-	-	-	-	-	-
Stage 2	292	521	-	351	863	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.5	7.02	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4	3.36	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	~ 206	186	653	248	145	779	802	-	-	1113	-	-
Stage 1	406	453	-	512	535	-	-	-	-	-	-	-
Stage 2	692	535	-	644	374	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 198	177	653	219	138	779	802	-	-	1113	-	-
Mov Cap-2 Maneuver	~ 198	177	-	219	138	-	-	-	-	-	-	-
Stage 1	390	449	-	492	514	-	-	-	-	-	-	-
Stage 2	664	514	-	585	371	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	147.6	9.6	0.6	0.1
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	802	-	-	231	779	1113	-	-
HCM Lane V/C Ratio	0.038	-	-	1.142	0.001	0.009	-	-
HCM Control Delay (s)	9.7	-	-	147.6	9.6	8.3	-	-
HCM Lane LOS	A	-	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	12.2	0	0	-	-

Notes

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

Intersection	
Int Delay, s/veh	204

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	308	1	71	2	0	28	47	631	2	86	5	746	331
Future Vol, veh/h	308	1	71	2	0	28	47	631	2	86	5	746	331
Conflicting Peds, #/hr	0	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	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	250	-	-	-	-	170	290	-	105	-	290	-	400
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	0	0	0	0	1	0	5	0	0	0
Mvmt Flow	321	1	74	2	0	29	49	657	2	90	5	777	345

Major/Minor	Minor2			Minor1			Major1			Major2			
Conflicting Flow All	1394	1724	389	1334	2067	329	1122	0	0	657	659	0	0
Stage 1	967	967	-	755	755	-	-	-	-	-	-	-	-
Stage 2	427	757	-	579	1312	-	-	-	-	-	-	-	-
Critical Hdwy	7.52	6.5	6.9	7.5	6.5	6.9	4.1	-	-	6.5	4.1	-	-
Critical Hdwy Stg 1	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.52	5.5	-	6.5	5.5	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.51	4	3.3	3.5	4	3.3	2.2	-	-	2.55	2.2	-	-
Pot Cap-1 Maneuver	~ 102	90	615	114	55	673	630	-	-	539	939	-	-
Stage 1	~ 275	335	-	371	420	-	-	-	-	-	-	-	-
Stage 2	579	419	-	473	230	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	~ 79	68	615	81	42	673	630	-	-	530	530	-	-
Mov Cap-2 Maneuver	~ 79	68	-	81	42	-	-	-	-	-	-	-	-
Stage 1	~ 254	275	-	342	387	-	-	-	-	-	-	-	-
Stage 2	511	386	-	340	189	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1206.9	13.3	0.8	1
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	630	-	-	79	553	81	673	530	-	-
HCM Lane V/C Ratio	0.078	-	-	4.061	0.136	0.026	0.043	0.179	-	-
HCM Control Delay (s)	11.2	-	-	$ 1486.1	12.5	50.6	10.6	13.3	-	-
HCM Lane LOS	B	-	-	F	B	F	B	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	33.8	0.5	0.1	0.1	0.6	-	-

Notes

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

Intersection	
Int Delay, s/veh	22

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1	4	15	1	187	8	1051	30	236	1186	29
Future Vol, veh/h	25	1	4	15	1	187	8	1051	30	236	1186	29
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	-	-	None	-	-	None
Storage Length	-	-	115	-	-	100	265	-	300	300	-	290
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	6	0	3	0	1	15	2	5	20
Mvmt Flow	26	1	4	15	1	193	8	1084	31	243	1223	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2268	2840	612	2198	2839	542	1253	0	0	1115	0	0
Stage 1	1709	1709	-	1100	1100	-	-	-	-	-	-	-
Stage 2	559	1131	-	1098	1739	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.12	7.62	6.5	6.96	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.62	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.41	3.56	4	3.33	2.2	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 23	18	415	24	18	482	562	-	-	622	-	-
Stage 1	96	148	-	219	290	-	-	-	-	-	-	-
Stage 2	486	281	-	220	143	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 9	11	415	~ 15	11	482	562	-	-	622	-	-
Mov Cap-2 Maneuver	~ 9	11	-	~ 15	11	-	-	-	-	-	-	-
Stage 1	95	90	-	216	286	-	-	-	-	-	-	-
Stage 2	286	277	-	131	87	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, $	1481.2	64.3	0.1	2.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	562	-	-	9	415	15	482	622	-	-
HCM Lane V/C Ratio	0.015	-	-	2.978	0.01	1.1	0.4	0.391	-	-
HCM Control Delay (s)	11.5	-	-	$ 1707	13.8	$ 612.8	17.4	14.5	-	-
HCM Lane LOS	B	-	-	F	B	F	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	4.5	0	2.6	1.9	1.9	-	-

Notes

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

Lane Group	EBT	EBR	NBT	SBL	SBT
Lane Group Flow (vph)	562	414	1340	392	1153
v/c Ratio	1.19	0.81	1.42	0.71	0.53
Control Delay	137.1	36.9	224.8	25.4	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	137.1	36.9	224.8	25.4	7.5
Queue Length 50th (ft)	~390	165	~543	191	132
Queue Length 95th (ft)	#588	#319	#676	m140	m79
Internal Link Dist (ft)	1200		1442		577
Turn Bay Length (ft)		500		245	
Base Capacity (vph)	472	510	942	549	2166
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	1.19	0.81	1.42	0.71	0.53

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	0	402	0	0	0	0	994	306	380	1118	0
Future Volume (veh/h)	545	0	402	0	0	0	0	994	306	380	1118	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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	
Adj Sat Flow, veh/h/ln	1870	1900	1900				0	1870	1870	1856	1900	0
Adj Flow Rate, veh/h	562	0	414				0	1025	315	392	1153	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	0	0				0	2	2	3	0	0
Cap, veh/h	483	0	429				0	715	218	551	2166	0
Arrive On Green	0.27	0.00	0.27				0.00	0.27	0.27	0.53	1.00	0.00
Sat Flow, veh/h	1810	0	1610				0	2775	818	1767	3705	0
Grp Volume(v), veh/h	562	0	414				0	677	663	392	1153	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1777	1723	1767	1805	0
Q Serve(g_s), s	24.0	0.0	22.8				0.0	24.0	24.0	9.4	0.0	0.0
Cycle Q Clear(g_c), s	24.0	0.0	22.8				0.0	24.0	24.0	9.4	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.47	1.00		0.00
Lane Grp Cap(c), veh/h	483	0	429				0	474	459	551	2166	0
V/C Ratio(X)	1.16	0.00	0.96				0.00	1.43	1.44	0.71	0.53	0.00
Avail Cap(c_a), veh/h	483	0	429				0	474	459	551	2166	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	33.0	0.0	32.6				0.0	33.0	33.0	16.6	0.0	0.0
Incr Delay (d2), s/veh	94.7	0.0	34.2				0.0	204.4	211.8	0.4	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
%ile BackOfQ(50%),veh/ln	22.7	0.0	12.5				0.0	36.4	36.3	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	127.7	0.0	66.7				0.0	237.4	244.8	17.0	0.1	0.0
LnGrp LOS	F	A	E				A	F	F	B	A	A
Approach Vol, veh/h		976						1340			1545	
Approach Delay, s/veh		101.9						241.1			4.4	
Approach LOS		F						F			A	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	30.0	30.0		30.0		60.0
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0
Max Green Setting (Gmax), s	24.0	24.0		24.0		54.0
Max Q Clear Time (g_c+I1), s	11.4	26.0		26.0		2.0
Green Ext Time (p_c), s	1.0	0.0		0.0		10.0

Intersection Summary			
HCM 6th Ctrl Delay			111.2
HCM 6th LOS			F

Lane Group	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	359	378	404	1195	1908
v/c Ratio	0.95	0.89	0.89	0.52	1.40
Control Delay	72.8	50.0	25.7	1.9	207.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	72.8	50.0	25.7	1.9	207.6
Queue Length 50th (ft)	203	153	200	50	~747
Queue Length 95th (ft)	#372	#320	m137	m31	#887
Internal Link Dist (ft)	819			577	1320
Turn Bay Length (ft)		450	140		
Base Capacity (vph)	377	423	456	2320	1367
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.95	0.89	0.89	0.52	1.40

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.

m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	348	0	367	392	1159	0	0	1174	677
Future Volume (veh/h)	0	0	0	348	0	367	392	1159	0	0	1174	677
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1885	1900	1885	1870	1870	0	0	1885	1885
Adj Flow Rate, veh/h				359	0	378	404	1195	0	0	1210	698
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				1	0	1	2	2	0	0	1	1
Cap, veh/h				382	0	337	456	2330	0	0	855	452
Arrive On Green				0.21	0.00	0.21	0.42	1.00	0.00	0.00	0.38	0.38
Sat Flow, veh/h				1810	0	1598	1781	3647	0	0	2358	1197
Grp Volume(v), veh/h				359	0	378	404	1195	0	0	934	974
Grp Sat Flow(s),veh/h/ln				1810	0	1598	1781	1777	0	0	1791	1670
Q Serve(g_s), s				17.6	0.0	19.0	14.2	0.0	0.0	0.0	34.0	34.0
Cycle Q Clear(g_c), s				17.6	0.0	19.0	14.2	0.0	0.0	0.0	34.0	34.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.72
Lane Grp Cap(c), veh/h				382	0	337	456	2330	0	0	677	631
V/C Ratio(X)				0.94	0.00	1.12	0.89	0.51	0.00	0.00	1.38	1.54
Avail Cap(c_a), veh/h				382	0	337	456	2330	0	0	677	631
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.09	0.09	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				34.9	0.0	35.5	23.2	0.0	0.0	0.0	28.0	28.0
Incr Delay (d2), s/veh				31.0	0.0	85.7	2.2	0.1	0.0	0.0	180.5	252.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.7	0.0	23.1	5.2	0.0	0.0	0.0	47.0	56.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				66.0	0.0	121.2	25.4	0.1	0.0	0.0	208.5	280.5
LnGrp LOS				E	A	F	C	A	A	A	F	F
Approach Vol, veh/h					737			1599			1908	
Approach Delay, s/veh					94.3			6.5			245.3	
Approach LOS					F			A			F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		25.0	25.0	40.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	19.0	34.0
Max Q Clear Time (g_c+I1), s		2.0		21.0	16.2	36.0
Green Ext Time (p_c), s		13.5		0.0	0.4	0.0

Intersection Summary			
HCM 6th Ctrl Delay			129.1
HCM 6th LOS			F

Intersection: 1: Old Lynchburg Rd & Hickory St

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	143	4	86
Average Queue (ft)	60	0	30
95th Queue (ft)	99	2	71
Link Distance (ft)	461	108	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			295
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Old Lynchburg Rd & Sunset Ave Ext/Private Entrance

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	TR	L	T	R
Maximum Queue (ft)	227	14	31	2	21	2	13
Average Queue (ft)	95	1	8	0	2	0	1
95th Queue (ft)	189	7	24	2	12	2	8
Link Distance (ft)	619	314		733		1952	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250		290		330
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Old Lynchburg Rd & County Complex & 5th Street

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	LT	R	L	T	T	UL	R
Maximum Queue (ft)	250	718	20	40	54	2	6	77	20
Average Queue (ft)	249	689	2	14	19	0	0	27	2
95th Queue (ft)	253	710	11	33	46	0	4	60	11
Link Distance (ft)		673	311			1952	1952		
Upstream Blk Time (%)		98							
Queuing Penalty (veh)		0							
Storage Bay Dist (ft)	250			170	290			290	400
Storage Blk Time (%)	79	53							
Queuing Penalty (veh)	57	163							

Intersection: 4: 5th Street & Afton Pond Ct/Stagecoach Rd

Movement	EB	EB	WB	WB	NB	NB	NB	NB	SB
Directions Served	LT	R	LT	R	L	T	T	R	L
Maximum Queue (ft)	255	79	713	100	101	322	344	99	204
Average Queue (ft)	135	6	422	76	7	84	93	9	83
95th Queue (ft)	297	42	930	127	54	279	290	92	161
Link Distance (ft)	265		685			1592	1592		
Upstream Blk Time (%)	24		50						
Queuing Penalty (veh)	0		0						
Storage Bay Dist (ft)		115		100	265			300	300
Storage Blk Time (%)	54	0	58	56	0	4	3	0	0
Queuing Penalty (veh)	2	0	108	9	0	0	1	0	1

Intersection: 5: 5th Street & I-64 EB ramp

Movement	EB	EB	NB	NB	SB	SB	SB
Directions Served	LT	R	T	TR	L	T	T
Maximum Queue (ft)	1142	500	1451	1461	232	168	103
Average Queue (ft)	820	398	1258	1268	141	63	52
95th Queue (ft)	1437	668	1695	1696	219	133	86
Link Distance (ft)	1206		1427	1427		603	603
Upstream Blk Time (%)	24		15	19			
Queuing Penalty (veh)	0		97	121			
Storage Bay Dist (ft)		500			245		
Storage Blk Time (%)	31	3			0	0	
Queuing Penalty (veh)	126	15			1	0	

Intersection: 6: 5th Street & I-64 WB ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	T	T	T	TR
Maximum Queue (ft)	353	297	139	304	185	1390	1382
Average Queue (ft)	192	162	117	87	13	1360	1360
95th Queue (ft)	310	265	160	269	98	1375	1371
Link Distance (ft)	832			603	603	1342	1342
Upstream Blk Time (%)						72	84
Queuing Penalty (veh)						0	0
Storage Bay Dist (ft)		450	140				
Storage Blk Time (%)			5	2			
Queuing Penalty (veh)			30	8			

Network Summary

Network wide Queuing Penalty: 739

MOVEMENT SUMMARY

Site: 101 [5th St @ Old Lynchburg Rd 2036 Total - AM (Site Folder: General)]

Southwood Phase 2
2036 Future Conditions
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	82	0.0	83	0.0	0.415	8.5	LOS A	2.9	74.7	0.68	0.56	0.68	32.9
8	T1	726	6.0	733	6.0	0.415	8.3	LOS A	3.0	78.2	0.67	0.55	0.67	33.3
18	R2	1	3.0	1	3.0	0.415	7.8	LOS A	3.0	78.2	0.67	0.53	0.67	32.7
Approach		809	5.4	817	5.4	0.415	8.3	LOS A	3.0	78.2	0.68	0.55	0.68	33.2
East: County Complex														
1	L2	1	0.0	1	0.0	0.012	7.4	LOS A	0.0	1.2	0.67	0.55	0.67	33.6
6	T1	1	0.0	1	0.0	0.012	7.4	LOS A	0.0	1.2	0.67	0.55	0.67	33.5
16	R2	4	0.0	4	0.0	0.012	7.4	LOS A	0.0	1.2	0.67	0.55	0.67	32.5
Approach		6	0.0	6	0.0	0.012	7.4	LOS A	0.0	1.2	0.67	0.55	0.67	32.9
North: 5th Street														
7u	U	57	0.0	58	0.0	0.403	7.0	LOS A	2.7	69.8	0.32	0.16	0.32	34.3
7	L2	45	0.0	45	0.0	0.403	7.0	LOS A	2.7	69.8	0.32	0.16	0.32	33.5
4	T1	365	6.0	369	6.0	0.403	7.2	LOS A	2.7	69.8	0.32	0.16	0.32	33.3
14	R2	243	5.0	245	5.0	0.248	6.1	LOS A	1.3	34.7	0.29	0.15	0.29	33.3
Approach		710	4.8	717	4.8	0.403	6.8	LOS A	2.7	69.8	0.31	0.16	0.31	33.4
West: Old Lynchburg Road														
5	L2	283	2.0	286	2.0	0.403	9.3	LOS A	2.6	67.1	0.71	0.63	0.71	30.9
2	T1	2	0.0	2	0.0	0.403	9.2	LOS A	2.6	67.1	0.71	0.63	0.71	30.8
12	R2	39	14.0	39	14.0	0.403	10.1	LOS B	2.6	67.1	0.71	0.63	0.71	29.8
Approach		324	3.4	327	3.4	0.403	9.4	LOS A	2.6	67.1	0.71	0.63	0.71	30.8
All Vehicles		1849	4.8	1868	4.8	0.415	7.9	LOS A	3.0	78.2	0.54	0.41	0.54	32.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: SIDRA Standard.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [5th St @ Old Lynchburg Rd 2036 Total - PM (Site Folder: General)]

Southwood Phase 2
2036 Future Conditions
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Old Lynchburg Road														
3	L2	47	0.0	49	0.0	0.358	7.9	LOS A	2.5	63.4	0.70	0.57	0.70	33.5
8	T1	631	1.0	657	1.0	0.358	7.4	LOS A	2.6	66.5	0.69	0.55	0.69	33.8
18	R2	2	0.0	2	0.0	0.358	7.0	LOS A	2.6	66.5	0.69	0.54	0.69	33.2
Approach		680	0.9	708	0.9	0.358	7.5	LOS A	2.6	66.5	0.69	0.55	0.69	33.8
East: County Complex														
1	L2	2	0.0	2	0.0	0.062	7.7	LOS A	0.3	6.4	0.67	0.63	0.67	33.7
6	T1	1	0.0	1	0.0	0.062	7.7	LOS A	0.3	6.4	0.67	0.63	0.67	33.6
16	R2	28	0.0	29	0.0	0.062	7.7	LOS A	0.3	6.4	0.67	0.63	0.67	32.6
Approach		31	0.0	32	0.0	0.062	7.7	LOS A	0.3	6.4	0.67	0.63	0.67	32.7
North: 5th Street														
7u	U	86	5.0	90	5.0	0.692	12.6	LOS B	8.0	200.6	0.41	0.18	0.41	31.9
7	L2	5	0.0	5	0.0	0.692	12.5	LOS B	8.0	200.6	0.41	0.18	0.41	31.4
4	T1	746	0.0	777	0.0	0.692	12.5	LOS B	8.0	200.6	0.41	0.18	0.41	31.3
14	R2	331	0.0	345	0.0	0.352	7.4	LOS A	2.2	54.1	0.25	0.12	0.25	32.8
Approach		1168	0.4	1217	0.4	0.692	11.0	LOS B	8.0	200.6	0.36	0.16	0.36	31.7
West: Old Lynchburg Road														
5	L2	308	1.0	321	1.0	0.697	23.2	LOS C	8.4	211.4	1.00	1.25	1.67	26.2
2	T1	1	0.0	1	0.0	0.697	23.1	LOS C	8.4	211.4	1.00	1.25	1.67	26.2
12	R2	71	0.0	74	0.0	0.697	23.1	LOS C	8.4	211.4	1.00	1.25	1.67	25.6
Approach		380	0.8	396	0.8	0.697	23.1	LOS C	8.4	211.4	1.00	1.25	1.67	26.1
All Vehicles		2259	0.6	2353	0.6	0.697	12.0	LOS B	8.4	211.4	0.57	0.47	0.69	31.2

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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.