TRAFFIC IMPACT ANALYSIS

BUC-EE'S
STAFFORD COUNTY, VIRGINIA

FEBRUARY 2026 (VERSION 6)

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EXECUTIVE SUMMARY

A Buc-ee's is proposed in the northwest quadrant of the intersection of Interstate 95 (I-95) and Courthouse Road (Route 630) in Stafford County, Virginia. Currently, the site proposed for development is vacant. The proposed development consists of a 120 fueling position facility and a 74,000 square-foot retail store. Access to the proposed development will be provided along Austin Ridge Drive via one ingress driveway (right-in only), one full-access driveway; creating the fourth leg at the intersection of Sunflower Drive, and one partial-access driveway (right-in only). The project will also have access along Israel Rodriguez Drive, a proposed roadway intersecting Austin Ridge Drive at a signalized intersection north of Sunflower Drive. Access along Israel Rodriguez Drive will be provided via one partial access driveway (right-in/right-out only) and one full access driveway at a roundabout.

Due to the uncertainty of the scale of background development that is anticipated to occur within the study area, an isolated traffic operational analysis (Scenario A) was conducted at the request of Stafford County. The purpose of the analysis is to isolate the traffic impacts of the proposed development by excluding the trips attributed to background developments that have not yet been built. This analysis will serve as a reference for Stafford County for future planning purposes only, to evaluate the anticipated traffic impacts of the proposed development if the background development does not occur within the study area. A supplemental analysis (Scenario B) was prepared that included the background developments that are expected to occur within the study area to serve as a baseline for evaluating the improvements needed to mitigate the traffic attributable to the proposed development. The analyses were conducted for Existing (2023), No-Build (2026 and 2032), and Build (2026 and 2032) conditions. After discussions with Stafford County, the Buc-ee's proposed mitigations were based on Scenario B impacts.

For future conditions analyses, proffered improvements associated with the included background developments were assumed to be operational. The following improvements are recommended to mitigate projected site-generated traffic, note that the dimensions of proposed storage and taper lengths below are the minimum that will be provided. The dimensions are subject to be increased and will be finalized during the OSAR process:

- Austin Ridge Drive and Courthouse Road
    - Construct an additional eastbound through/right lane within the immediate approach of the intersection that would provide a minimum of approximately 320 feet of storage and 200 feet of taper
    - Construct an additional westbound through lane from the southbound I-95 Diverging Diamond Interchange (DDI) ramp signalized intersection to a point immediately west of the Austin Ridge Drive intersection connecting to the existing right-turn lane onto Miracle Drive
    - Widen Austin Ridge Drive to provide three exclusive southbound left-turn lanes and extend the southbound right-turn lane to provide a minimum of approximately 565 feet of storage and 150 feet of taper
- Construct new intersection control type at the intersection of Austin Ridge Drive and Sunflower Drive/Project Driveway 1. The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Construct new intersection control type at the intersection of Austin Ridge Drive and Israel Rodriguez Drive (proposed). The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Optimize signal timings, splits, and offsets at all study area signalized intersections.

- I-95 at Exit 140 Diverging Diamond Interchange
    - Construct a median separated southbound right-turn slip-lane and receiving lane along westbound Courthouse Road that serves as a channelized free-flow right-turn at the intersection of Austin Ridge Drive and Courthouse Road and provides a dedicated buffered lane for traffic bound for the proposed Buc-ee's or northbound Austin Ridge Drive
    - Widen the northbound I-95 off-ramp to provide an additional dedicated ramp lane to eastbound Courthouse Road that would provide a minimum of approximately 435 feet of storage and 295 feet of taper

The analyses conducted within this report used *Synchro 11™* to evaluate network performance per the VDOT *Traffic Operations and Safety Analysis Manual* (TOSAM) requirements for deterministic intersection capacity analyses. Synchro was used at the request of Stafford County to allow for the comparison of the analysis results to the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan, which recommends new development maintain a LOS C or better, or if projected LOS without the project is below C, the proposed project is not to degrade the intersection further.

In addition to using *Synchro 11™* to evaluate network performance, per the request of VDOT, microsimulation (*SimTraffic™*) delay was reported as it is deemed more accurate in oversaturated conditions. Note that the microsimulation delay does not equate to a LOS using HCM methodologies and cannot be accurately compared to the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan therefore, the microsimulation delay results were provided as a reference and were not used to determine the improvements recommended to mitigate expected project traffic.

With the proposed off-site improvements and signal timing optimizations, the results of the isolated traffic operational analysis (Scenario A) indicate that under all future build conditions, all signalized intersections are projected to operate with overall delays equivalent to LOS C or better, and all unsignalized approaches are projected to operate with delays equivalent to LOS C or better, with the exception of the intersections of US Route 1 with Hospital Center Boulevard and Courthouse Road, which were projected to operate with delays equivalent to LOS D. Note that the intersections were projected to operate with delays equivalent to LOS D under no-build conditions, prior to the completion of the project.

With the proposed off-site improvements and signal timing optimizations, the results of the operational analysis for Scenario B indicate that under all future build conditions, all study area intersections are projected to operate in accordance with the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan by maintaining a LOS C or better, or if the projected LOS without the project is below C, the proposed project does not degrade the intersection further. The only exceptions to this are the following intersections:

- Austin Ridge Drive and Courthouse Road under the 2026 Build conditions, which is projected to operate with delays equivalent to LOS D during the weekend peak hour, increasing the projected delay from 32.8 seconds per vehicle to 45.9 seconds per vehicle
- Austin Ridge Drive and Courthouse Road under the 2032 Build conditions, which is projected to operate with delays equivalent to LOS E during the weekend peak hour, increasing the projected delay from 35.7 seconds per vehicle to 59.9 seconds per vehicle
- Courthouse Road and the I-95 on/off-ramp diverging diamond interchange intersections, which is projected to operate with delays equivalent to LOS or worse during the peak hours analyzed
    - Based on discussions with Stafford County and VDOT staff, it was agreed to not hold the operations of the main diverging diamond intersections to the Stafford County

Comprehensive Plan Policy 7.7.7 of the Transportation Plan recommendations do the limitations of the Synchro software modeling a DDI

  - Based on the SimTraffic results for the DDI intersection, it is not anticipated that the proposed development traffic would impact the DDI operations

- US Route 1 and Courthouse Road under 2032 Build conditions, which is projected to operate with delay equivalent to LOS D during the AM peak hour, increasing the projected delay from 45.4 seconds per vehicle to 46.4 seconds per vehicle

  - Based on discussions with Stafford County and VDOT staff, it was agreed that the applicant was not responsible for providing any traffic mitigations to this intersection due to it being located outside of the immediate study area

Due to proposed improvements impacting the adjacent interchange, it is expected that the Virginia Department of Transportation (VDOT) and the Federal Highway Administration (FHWA) will require an Operations and Safety Analysis Report (OSAR). The exact scope and limits of the OSAR have been determined through coordination with these agencies.

As requested by Stafford County Transportation Staff and VDOT, the applicant has proffers that all interchange improvements will be constructed as the OSAR requires of the Applicant in strict compliance with all requirements of the OSAR final report (See Proffer 7.h).

1. INTRODUCTION

1.1 Purpose

Kimley-Horn completed this traffic impact analysis (TIA) to evaluate the traffic impacts of the proposed 120 fueling position Buc-ee's located in the northwest quadrant of the intersection of I-95 and Courthouse Road (Route 630) at Exit 140 in Stafford County, Virginia. The purpose of this study is to evaluate the anticipated future impacts of the proposed development's traffic on the surrounding roadway network and to identify mitigation measures, if warranted.

1.2 Project Location Map

The proposed project is located in the northwest quadrant of the Exit 140 interchange, shown in **Figure 1**. A conceptual site plan is included in **Appendix A**.

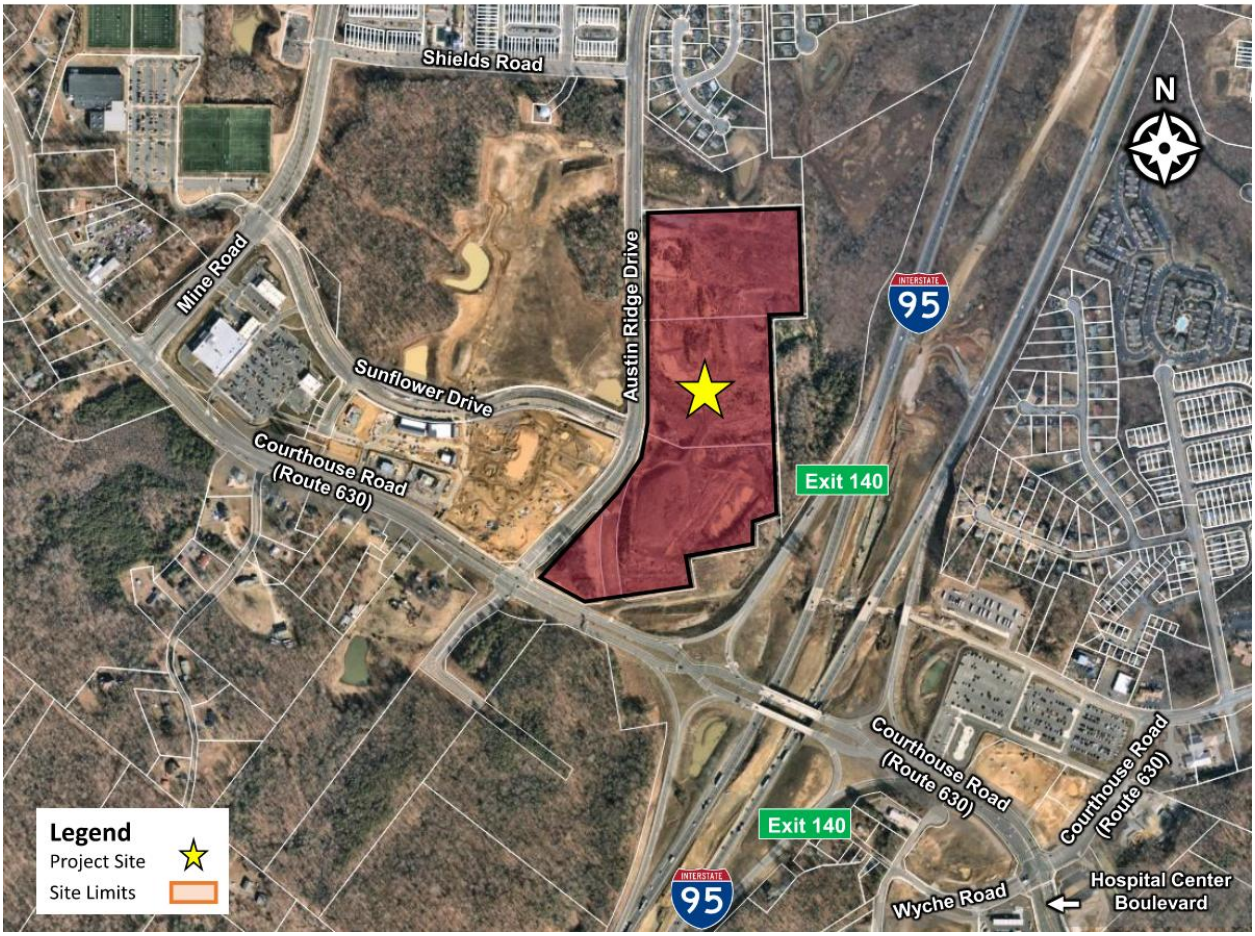

Figure 1: Project Location Map

2. TRAFFIC OPERATIONAL ANALYSIS

2.1 Methodology

Synchro 11™ was used to evaluate network performance per the VDOT *Traffic Operations and Safety Analysis Manual* (TOSAM) requirements for deterministic intersection capacity analyses. HCM 2000 methodologies were used to evaluate signalized intersections and HCM 6th was used to evaluate two-way-stop-controlled intersection performance. Synchro models were updated based on intersection geometry, traffic signal timing, balanced traffic volumes, collected heavy vehicle percentages, and peak hour factors.

In addition to using *Synchro 11™* to evaluate network performance, per the request of VDOT, microsimulation (*SimTraffic™*) delay was reported as it is deemed more accurate in oversaturated conditions. Note that the microsimulation delay does not equate to a LOS using HCM methodologies.

Vehicle queuing analyses were conducted using maximum queues, by lane, obtained from *SimTraffic™*, measured in feet. The SimTraffic models were calibrated to observed existing conditions using the methodology outlined in TOSAM. The calibration process is detailed in the approved *SimTraffic Calibration Memo,* included in **Appendix B**.

Based on VDOT feedback, the SimTraffic models for the future No-Build and Build conditions were calibrated using parameters outlined in the Wisconsin Department of Transportation (WDOT) Synchro and SimTraffic Protocol.

The global setting for the headway at zero (0) miles per hour (mph) and twenty (20) mph driver parameters were adjusted for the future No-Build and Build condition models. All other global headway parameters were kept at default values. **Table 1** presents the adjusted values for the headways at zero (0) mph and twenty (20) mph.

Table 1: Values for Headway in PM and Weekend Peak Hour

Driver Type	1	2	3	4	5	6	7	8	9	10
Headway @ 0 mph (s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Headway @ 20 mph (s)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

The following adjustments were made to the future No-Build and Build condition models to reflect driver behavior making lane changes to choose a lane with less congestion:

- Positioning Advantage (vehicles) = 1.2 vehicles
  - Set to the minimum parameter to influence the model vehicles to avoid lining up in the correct lane until reaching the mandatory lane change point and utilize storage lanes more accurately to expected driver behavior.
- Optional Advantage (vehicles) = 0.5 vehicles
  - Set to the minimum parameter to cause drivers to use lanes evenly.
- Average Lane Change Time (seconds) = 10 seconds
  - Set to the minimum to reduce the average time between lane change maneuvers, to simulate drives utilizing dual storage lanes more accurately.
- Lane Change Variance +/- (%) = 30%
  - Set to maximum to increase awareness when changing lanes to choose a lane with less congestion.
- Mandatory Distance Adjustment (%) = 50%
  - Set to minimum to reduce the distance ahead of a vehicle before attempting a lane change.
- Positioning Distance Adjustment (%) = 60%
  - Set to minimum to reduce the distance ahead of a vehicle before making two lane changes.

The evaluation of traffic operations within the study area included intersection capacity level of service (LOS), microsimulation delay, and queuing analyses during the weekday AM, weekday PM, and Sunday peak hours. For the traffic operational analyses, the projected No-Build conditions served as the baseline for evaluating intersection delays and identifying mitigation measures under the Build conditions.

Intersection capacity defines the volume of traffic that can be accommodated by an intersection at a specified LOS. Capacity is affected by various geometric factors including roadway type (e.g., divided, or undivided), number of lanes, lane widths, and grades. LOS, which is a measure of the degree of congestion, ranges from LOS A (free flowing) to LOS F (a congested, forced flow condition). Delay, measured in seconds per vehicle, and the associated LOS thresholds for signalized and unsignalized intersections based on HCM methodologies are presented in **Table 2**.

Table 2: Intersection Level of Service (LOS) Analysis Criteria

Level of Service (LOS)	Average Control Delay per Vehicle (sec/veh)		Description of Traffic Conditions	SimTraffic Color Scale
	Signalized	Unsignalized		
A	≤ 10	≤ 10	No or minimal delays at intersections with continuous flow traffic. Uncongested operations; high frequency of long gaps available for all left and right-turning traffic; no observable queues.	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15		> 10 and ≤ 20
C	> 20 and ≤ 35	> 15 and ≤ 25	Moderate delays at intersections with satisfactory to good traffic flow. Light congestion; infrequent backups on critical approaches.	> 20 and ≤ 35
D	> 35 and ≤ 55	> 25 and ≤ 35	Increased probability of delays along every approach. Significant congestion on critical approaches, but intersection functional. No long-standing lines formed.	> 35 and ≤ 55
E	> 55 and ≤ 80	> 35 and ≤ 50	Heavy traffic flow condition. Heavy delays are probable. No available gaps for cross-street traffic or main street turning traffic. Limit of stable flow.	> 55
F	> 80	> 50	Unstable traffic flow. Heavy congestion. Traffic moves in forced flow condition. Average delays greater than one minute highly probable. Total breakdown.	

2.2 Key Assumptions

The following assumptions were made for the traffic operational analysis.

- For future conditions, all intersections used the higher of the calculated peak hour factor or 0.92 in accordance with TOSAM. All existing peak hour factors were calculated per TOSAM.
- The collected heavy vehicle percentages were used in the analysis of each individual movement for the existing No-Build and Build conditions.
- All signalized intersections were evaluated using HCM 2000 reports due to *Synchro 11* limitations. All unsignalized intersections were evaluated using HCM 6th Edition.
- Queues were evaluated using calibrated SimTraffic models.

3. EXISTING CONDITIONS

3.1 Existing Roadway Characteristics

Roadway characteristics including geometry and posted speed limits for roadway facilities adjacent to the proposed development are summarized in **Table 3**.

Table 3: Existing Roadway Characteristics

Road	Lanes	Posted Speed (mph)	Functional Classification
Courthouse Road (Route 630)	4 Lanes Divided	40	Major Collector
Austin Ridge Drive	4 Lanes Divided south of Sunflower Drive 4 lanes Undivided north of Sunflower Drive	40	Major Collector
Mine Road	4 Lanes Divided	40	Local
Sunflower Drive	4 Lanes Divided	25	Local
Hospital Center Boulevard	5 Lanes Divided	40	Local
US Route 1	4 Lanes Undivided	35	Principal Arterial

3.2 Existing Traffic Volumes

Existing weekday AM, weekday PM, and Sunday peak hour turning movement counts were collected on Thursday, September 21, 2023, from 7:00 to 9:00 AM and from 3:00 to 6:00 PM and on Sunday, September 24, 2023, from 9:00 AM to 2:00 PM at the following study intersections, as shown in **Figure 2**.

1. Mine Road and Coastal Avenue/Austin Ridge Drive
2. Mine Road and Embrey Mill Park/Sunflower Drive
3. Mine Road and Courthouse Road
4. Austin Ridge Drive and Courthouse Road
5. Austin Ridge Drive and Sunflower Drive
6. Courthouse Road (WB) and I-95 SB Off-Ramp
7. Courthouse Road (EB) and I-95 SB On-Ramp
8. Courthouse Road (EB) and Courthouse Road (WB)
9. Courthouse Road (EB) and I-95 SB Off-Ramp
10. Courthouse Road (WB) and I-95 SB On-Ramp
11. Courthouse Road (EB) and I-95 NB On-Ramp
12. Courthouse Road (WB) and I-95 NB Off-Ramp
13. Courthouse Road (WB) and Courthouse Road (EB)
14. Courthouse Road (WB) and I-95 NB On-Ramp
15. Courthouse Road (EB) and I-95 NB Off-Ramp
16. Courthouse Road/Hospital Center Boulevard and Wyche Road/Courthouse Road
17. US Route 1 (Jefferson Davis Highway) and Hospital Center Boulevard
18. US Route 1 (Jefferson Davis Highway) and Courthouse Road

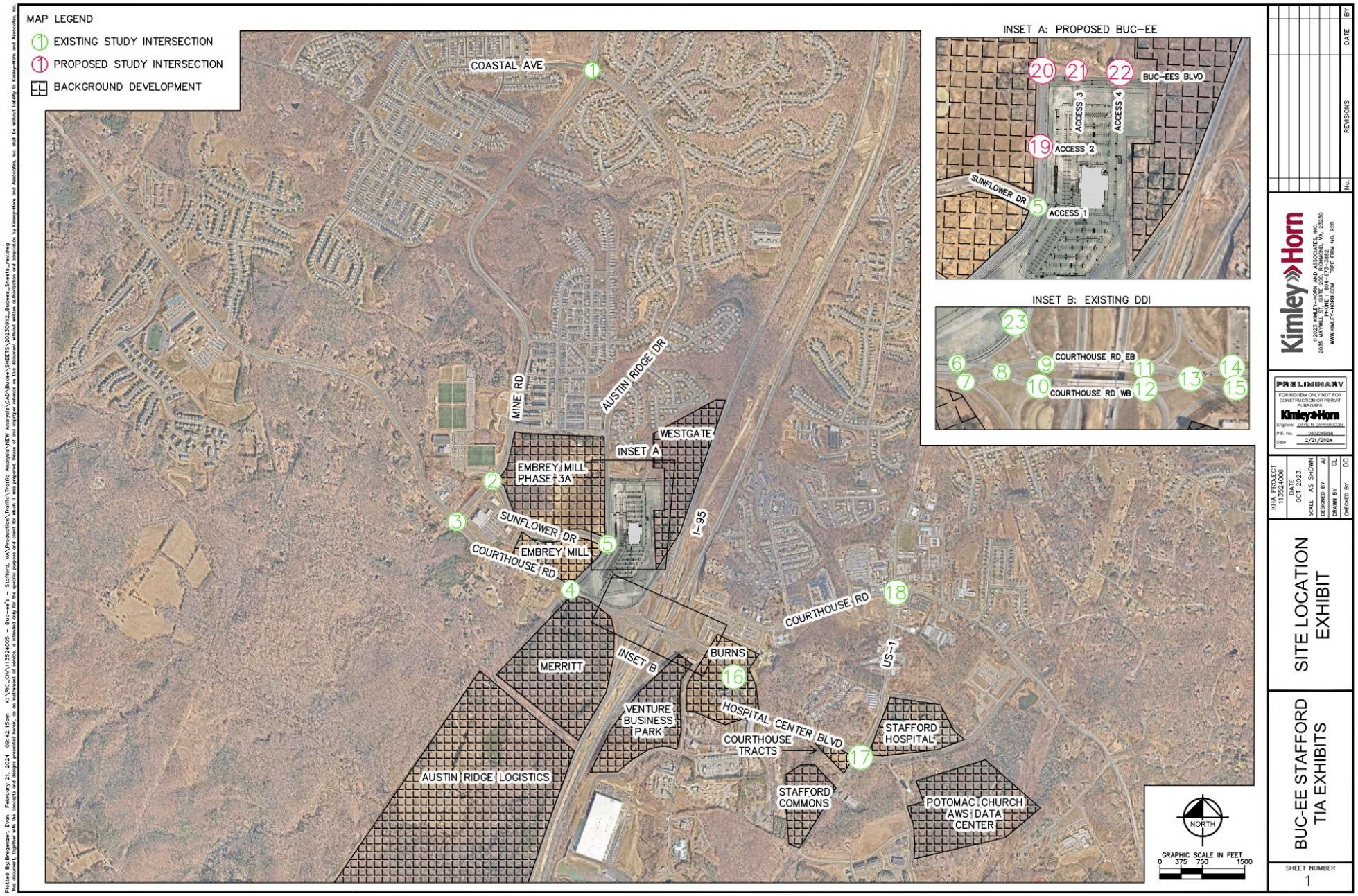

Figure 2: Site Location Exhibit

Network-wide peak hours were determined for the weekday AM, weekday PM, and Sunday peak periods based on traffic volumes at each study intersection. The hours that captured the highest percentage of overall traffic in the network were selected as the network peak hours, which were from 7:30 AM to 8:30 AM, 4:30 PM to 5:30 PM during the weekday and from 11:45 AM to 12:45 PM on Sunday. Per guidance from VDOT and Stafford County staff, existing driveway count data was reviewed for six selected sites and used as the trip generation for this proposed Buc-ee's site.

The existing driveway count data showed the peak hour of generator occurred between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM during the weekday and between 12:00 PM to 3:00 PM during the weekend. To provide a conservative analysis, it was assumed that the peak of per generator occurred during the peak hour of adjacent street traffic. Traffic count data and peak hour determination summary tables are provided in **Appendix C**. Existing traffic signal plans are provided in **Appendix D**. Existing traffic counts were balanced throughout the roadway network. Raw traffic volumes were not adjusted more than ten percent (10%). The 2023 existing traffic volumes are shown in **Appendix I.**

3.3 2023 Existing Conditions Capacity and Queuing Analysis

3.3.1 Existing Conditions Synchro Capacity Analysis

Under existing conditions, all signalized intersections operate at an overall LOS C or better, and all unsignalized approaches operate at LOS C or better, with the exception of the following:

- Courthouse Road and Hospital Center Boulevard (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM, SUN)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 7** and **Appendix F**.

3.3.2 Existing Conditions SimTraffic Capacity Analysis

The total delay for the existing scenario was calculated by movement for each study intersection using *SimTraffic*™. Under existing conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- US Route 1 and Courthouse Road (AM, PM, SUN)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

3.3.3 Existing Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the existing scenario were calculated by movement for each study intersection using *SimTraffic*™. Under existing conditions, all queue lengths are projected to be accommodated within existing storage lanes.

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Diverging Diamond Interchange
    - Intersection 8 – Eastbound Courthouse Road (AM, PM)
    - Intersection 13 – Westbound Courthouse Road (AM, PM)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 8** and **Appendix F**.

4. PROJECTED NO-BUILD CONDITIONS

For the purpose of isolated traffic operational analysis (Scenario A) the projected No-Build conditions represent the future roadway network and background traffic growth prior to the completion of the proposed development but does not include surrounding approved developments. No-Build analyses were conducted for the opening year (2026) and design year (2032) to capture the impacts of the proposed development traffic. To provide a conservative analysis, all traffic signal timings were optimized in the 2032 No-Build models.

4.1 Traffic Growth Rate

A linear growth rate of 2.0% was determined based on input and agreed upon by VDOT and Stafford County staff. The growth rate was applied to the collected turning movements counts to establish volumes for future year (2026 and 2032) conditions. No-Build traffic volumes are shown in **Appendix I**.

4.2 2026 No-Build Conditions Capacity and Queuing Analysis

4.2.1 2026 No-Build Conditions Intersection Capacity Analysis

Under 2026 No-Build conditions, all signalized intersections are projected to operate at LOS C or better and all unsignalized approaches are projected to operate at LOS C or better, with the exception of the following intersections:

- Courthouse Road and Hospital Center Boulevard (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM, SUN)
- Diverging Diamond Interchange
    - Intersection 13: Courthouse Road (EB) and Courthouse Road (WB) (PM)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 7** and **Appendix F**.

4.2.2 2026 No-Build Conditions SimTraffic Capacity Analysis

The total delay for the 2026 No-Build scenario was calculated by movement for each study intersection using *SimTraffic*™. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- US Route 1 and Courthouse Road (AM, PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

4.2.3 2026 No-Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future No-Build scenario were calculated by movement for each study intersection using *SimTraffic*™. All queue lengths are projected to be accommodated within existing storage lanes.

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Diverging Diamond Interchange
  - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
  - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 8** and **Appendix F**.

4.3 2032 No-Build Conditions Capacity and Queuing Analysis

4.3.1 2032 No-Build Conditions Intersection Capacity Analysis

Under 2032 No-Build conditions, all signalized intersections are projected to operate at LOS C or better with the exception of the following intersections:

- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (PM)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 9** and **Appendix F**.

4.3.2 2032 No-Build Conditions SimTraffic Capacity Analysis

The total delay for the 2032 No-Build scenario was calculated by movement for each study intersection using *SimTraffic*™. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

4.3.3 2032 No-Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future No-Build scenario were calculated by movement for each study intersection using *SimTraffic*™. All queue lengths are projected to be accommodated within existing storage lanes.

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Diverging Diamond Interchange
  - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
  - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

Note that for the turning movements not in bold, the maximum queue exceeded the storage length under the No-Build conditions prior to the completion of the project. SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 10** and **Appendix F.**

5. BUILD CONDITIONS

Build conditions represent the future roadway network with the addition of background traffic growth, traffic generated by the proposed project, and proposed roadway improvements. Access to the proposed development will be provided along Austin Ridge Drive via two partial access driveways (right-in only) and one full access driveway; creating the fourth leg at the intersection of Sunflower Drive. The project will also have access along Israel Rodriguez Drive, a proposed roadway intersecting Austin Ridge Drive at a signalized intersection north of Sunflower Drive. Access along Israel Rodriguez Drive will be provided via one partial access driveway (right-in/right-out only) and one full access driveway at a roundabout. The intersection improvements sketch is included in **Figure 3**, following the trip generation section. Build concept sketch is also included in **Appendix A**.

The Build conditions were determined through an iterative process, and the following improvements were included and are proposed to mitigate project traffic along the roadway network, note that the exact dimensions of proposed storage and taper lengths are subject to change and will be finalized during the OSAR process:

- Austin Ridge Drive and Courthouse Road
    - Construct an additional eastbound through/right lane within the immediate approach of the intersection that would provide a minimum of approximately 320 feet of storage and 200 feet of taper
    - Construct an additional westbound through lane from the southbound I-95 Diverging Diamond Interchange (DDI) ramp signalized intersection to a point immediately west of the Austin Ridge Drive intersection connecting to the existing right-turn lane onto Miracle Drive
    - Widen Austin Ridge Drive to provide three exclusive southbound left-turn lanes and extend the southbound right-turn lane to provide a minimum of approximately 565 feet of storage and 150 feet of taper
- Construct new intersection control type at the intersection of Austin Ridge Drive and Sunflower Drive/Project Driveway 1. The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Construct new intersection control type at the intersection of Austin Ridge Drive and Israel Rodriguez Drive (proposed). The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Optimize signal timings, splits, and offsets at all study area signalized intersections.
- I-95 at Exit 140 Diverging Diamond Interchange
    - Construct a median separated southbound right-turn slip-lane and receiving lane along westbound Courthouse Road that serves as a channelized free-flow right-turn at the intersection of Austin Ridge Drive and Courthouse Road and provides a dedicated buffered lane for traffic bound for the proposed Buc-ee's or northbound Austin Ridge Drive
    - The median separated slip-lane from the adjacent interstate is a consistent practice that Buc-ee's has employed at other locations across the country. Based on the applicant's experience, constructing a slip-lane from the interstate that serves as a free-flow entrance into the site has been sufficient in mitigating the traffic impacts on the adjacent interstate off-ramp, preventing queue spill back from impacting mainline operations.

- Widen the northbound I-95 off-ramp to provide an additional dedicated ramp lane to eastbound Courthouse Road that would provide a minimum of approximately 435 feet of storage and 295 feet of taper

As part of the Build concept, Project Driveway 1 will connect to the existing intersection of Austin Ridge Drive and Sunflower Drive to be the fourth leg of the intersection. Note that a signal justification report (SJR) is required by VDOT at this intersection. Additionally, an SJR is required at the newly constructed intersection of Austin Ridge Drive and Israel Rodriguez Drive. However, as stated in VDOT's IIM-TE-387.1, *Requirements for Signal Justification Reports (SJRs) for New and Reconstructed Signals* "this IIM does not apply for signals that are recommended by an approved Interchange Modification Report/Interchange Justification Report (IMR/IJR) and will be constructed in conjunction with the proposed interchange improvements." An IMR (i.e., OSAR) will be conducted that includes the study area intersections in lieu of SJRs to determine the appropriate configuration at the Buc-ee's site driveways. Traffic signals were currently assumed for this analysis, but the intersection control may change during the OSAR evaluation.

5.1 Site Trip Generation

Trip generation for the proposed development was developed using collected traffic data at existing Buc-ee's sites. Per guidance from VDOT and Stafford County staff, existing driveway count data was reviewed for multiple sites across several states. Of the fifteen sites counted by Buc-ee's, six sites were selected based on adjacent roadway AADT in 2021 and were used as the basis for trip generation for this proposed Buc-ee's site. The six selected sites contained the highest trip generation of the fifteen sites. A trip generation memo was completed in October 2023, to summarize the analysis assumptions used to calculate the anticipated trip generation potential for the proposed Buc-ee's and is provided in **Appendix H**. Estimated weekday AM, weekday PM, and SUN peak hour trip generation is summarized in **Table** 4. Detailed trip generation calculations are included in **Appendix H**. Based on direction from Stafford County and VDOT, the exiting traffic volumes at the New Braunfels, TX and Katy, TX sites were increased to match the entering volumes. This increase inflates the Buc-ee's out traffic on Sunday from 998 vehicles to 1,091 vehicles and causes smaller increases in the AM and PM peak hours.

Table 4: Estimated Trip Generation

Location	AM Peak Hour			PM Peak Hour			SUN Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
St. Augustine, FL	408	439	**847**	544	554	**1,098**	801	854	**1,655**
Daytona Beach, FL	572	491	**1,063**	823	847	**1,670**	1,085	1,051	**2,136**
Texas City, TX	300	301	**601**	820	835	**1,655**	1,688	1,721	**3,409**
New Braunfels, TX	757	757	**1,514**	873	873	**1,746**	1,399	1,399	**2,798**
Baytown, TX	473	477	**950**	622	626	**1,248**	747	747	**1,494**
Katy, TX	520	520	**1,040**	635	635	**1,270**	776	776	**1,552**
Average	**505**	**498**	**1,003**	**720**	**728**	**1,448**	**1,083**	**1,091**	**2,174**

Figure 3: Intersection Improvement Sketch

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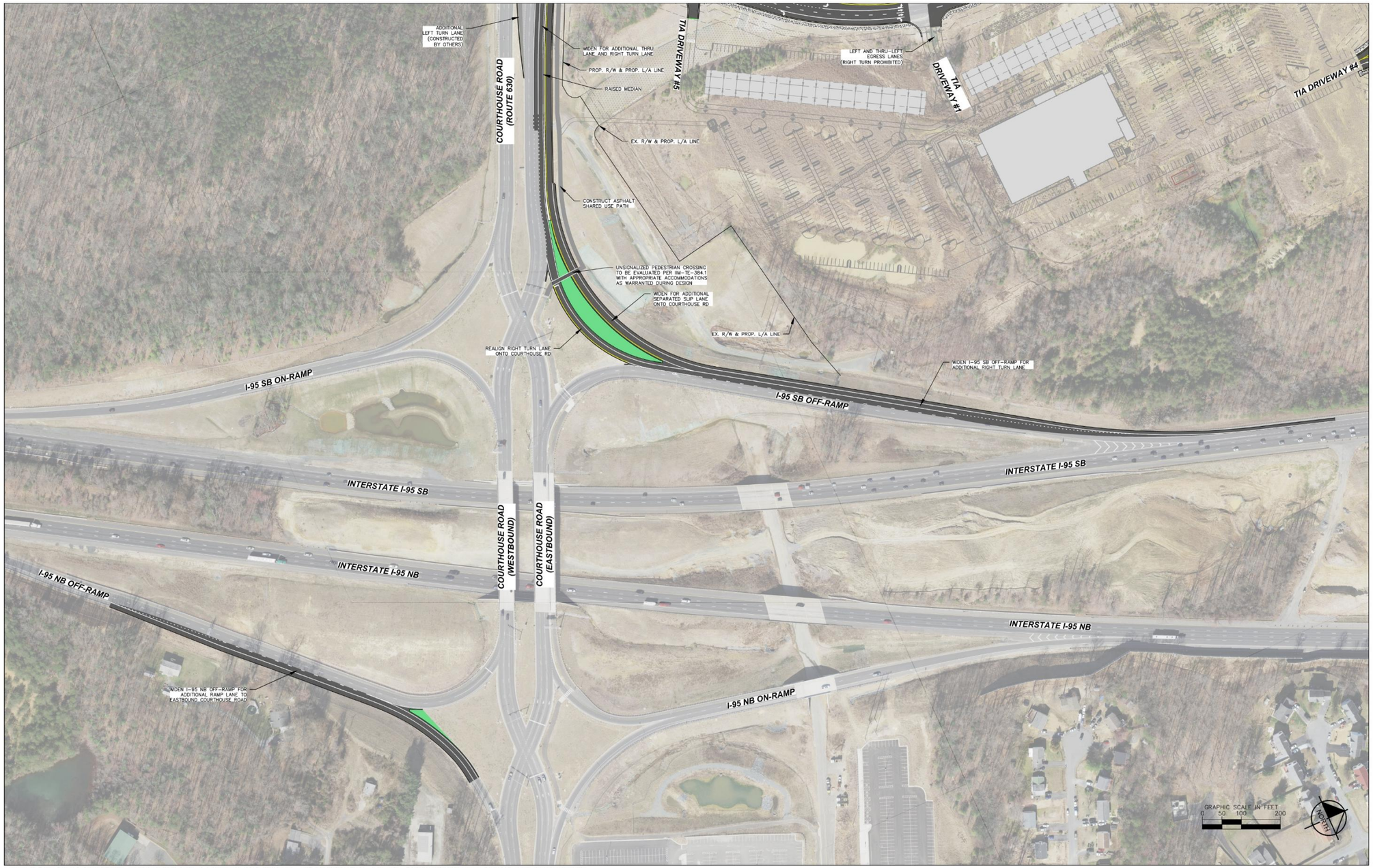

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5.2 Site Trip Distribution and Assignment

Using engineering judgment, existing roadway characteristics within the study area, and input from VDOT and Stafford County staff, the following trip distribution was assumed for the proposed Buc-ee's site. Note that per input from Buc-ee's, for typical sites, approximately 90% of Buc-ee's transactions are customers from outside the local store zip code, indicating that a majority of traffic generated by the development will enter/exit the site using major roadways (i.e., interstates, freeways, principal arterials). Given the site's proximity to I-95, a majority of traffic was assumed to enter/exit the store from I-95.

Weekday

- To and from the north on I-95: 40%
- To and from the south on I-95: 40%
- To and from the east on Courthouse Road: 5%
- To and from the north on Mine Road: 5%
- To and from the north on U.S. 1: 5%
- To and from the south on U.S. 1: 5%

Weekend

- To and from the north on I-95: 45%
- To and from the south on I-95: 45%
- To and from the north on U.S. 1: 5%
- To and from the south on U.S. 1: 5%

Trip assignment volumes at the study intersections were calculated by applying the distribution percentage for a specific turning movement to the total number of inbound or outbound trips generated by the Buc-ee's. Trip distribution and trip assignments for 2026 and 2032 are shown in **Appendix I**. The resulting Build traffic volumes for the weekday AM, weekday PM, and Sunday peak hours are shown in **Appendix I**. The Build traffic volumes were calculated by adding the site-generated trips to the projected No-Build traffic volumes.

5.3 2026 Build Conditions Capacity and Queuing Analysis

5.3.1 2026 Build Conditions Intersection Capacity Analysis

Under 2026 Build conditions, all unsignalized approaches are projected to operate at LOS C or better, and all signalized intersections operate at LOS C or better, with the exception of the following:

- US Route 1 and Hospital Center Boulevard (PM)

Note that the intersection listed above was projected to operate at LOS D or worse under the No-Build conditions prior to the completion of the project.

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 7** and **Appendix F**.

5.3.2 2026 Build Conditions SimTraffic Capacity Analysis

The total delay for the 2026 Build scenario was calculated by movement for each study intersection using *SimTraffic*™. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following intersections:

- Austin Ridge Drive and Courthouse Road (PM, SUN)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM)

Note that of the intersections listed above, all were projected to operate with an overall delay greater than 35 seconds per vehicle, under the No-Build conditions prior to the completion of the project with the exception of the following intersections:

- Austin Ridge Drive and Courthouse Road (PM, SUN)
- US Route 1 and Hospital Center Boulevard (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

5.3.3 2026 Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future Build scenario were calculated by movement for each study intersection using *SimTraffic*™. Based on the queue analysis results, all turn lane queues are projected to be accommodated within the storage length.

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Diverging Diamond Interchange
    - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
    - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 8** and **Appendix F**.

5.4 2032 Build Conditions Capacity and Queuing Analysis

5.4.1 2032 Build Conditions Intersection Capacity Analysis

Under the 2032 Build conditions, all unsignalized approaches are projected to operate at LOS C or better, and all signalized intersections operate at LOS C or better, with the exception of the following:

- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (PM)

Note that of the intersections listed above, all were projected to operate at LOS D or worse under the No-Build conditions prior to the completion of the project.

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 9** and **Appendix F**.

5.4.2 2032 Build Conditions SimTraffic Capacity Analysis

The total delay for the 2032 Build scenario was calculated by movement for each study intersection using *SimTraffic*™. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- Austin Ridge Drive and Courthouse Road (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM)

Note that of the intersections listed above, all were projected to operate with an overall delay greater than 35 seconds per vehicle, under the No-Build conditions prior to the completion of the project with the exception of the following intersection:

- Austin Ridge Drive and Courthouse Road (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

5.4.3 2032 Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future Build scenario were calculated by movement for each study intersection using *SimTraffic*™. Based on the queue analysis results, all turn lane queues are projected to be accommodated within the storage length.

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Diverging Diamond Interchange
    - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
    - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 10** and **Appendix F**.

5.5 Access Management

The Virginia Department of Transportation (VDOT) established access management guidelines for commercial driveway access on the state highway system. VDOT access management standards are described in the *VDOT Road Design Manual, Appendix F,* and outline where intersections or commercial driveways should be located in relation to other access points, signalized intersections, and interchanges. If the VDOT access management spacing standards are not met, an access management exception will be required. **Figure 4** presents the driveway spacing and proposed lane configuration at each project driveway.

Project Driveway 1 (Intersection 5)

Project Driveway 1 will create the fourth leg of the Austin Ridge Drive and Sunflower Drive intersection and is projected to meet traffic signal warrants once the Buc-ee's is open. To meet VDOT traffic signal spacing requirements, the proposed traffic signal must be located at least 660 feet (measured from centerline to centerline) from the existing traffic signal at the Austin Ridge Drive and Courthouse Road intersection. Since the Sunflower Drive intersection is located approximately 1,050 feet north of the adjacent traffic signal at Courthouse Road, the proposed traffic signal meets VDOT access management spacing requirements.

Project Driveway 2 (Intersection 19)

Project Driveway 2 is a proposed, right-in only driveway, along Austin Ridge Drive. To meet VDOT access management spacing requirements, the proposed driveway must be located at least 250 feet (measured from centerline to centerline) from the Austin Ridge Drive and Sunflower Drive intersection. Since the Sunflower Drive intersection is located 475 feet south of the proposed commercial driveway, the proposed access meets VDOT access management spacing requirements.

Israel Rodriguez Drive (Intersection 20)

A signal is proposed at Israel Rodriguez Drive and Austin Ridge Drive upon build-out of the proposed development and is projected to meet traffic signal warrants once the Buc-ee's is open. To meet VDOT access management spacing requirements, the proposed signalized intersection must be located at least 660 feet (measured from centerline to centerline) from the nearest signal. Since the distance to the proposed signal at Austin Ridge Drive and Sunflower Drive is approximately 1,200 feet, the proposed signal meets VDOT access management spacing requirements.

Project Driveway 3 (Intersection 21)

Project Driveway 3 located along Israel Rodriguez Drive is proposed to be a right-in/right-out only, stop-controlled, driveway. To meet VDOT access management spacing requirements, the proposed partial-access driveway must be located at least 250 feet (measured from centerline to centerline) from the Israel Rodriguez Drive intersection. As the proposed driveway is located approximately 275 feet east of the intersection of the proposed roadway and Austin Ridge Drive, the proposed access meets VDOT access management spacing requirements.

Project Driveway 4 (Intersection 22)

Project Driveway 4 located along Israel Rodriguez Drive will be a full-access driveway at a roundabout; the proposed roundabout is required to be located at least 250 feet (measured from the outer edge of the inscribed circle diameter) from the proposed partial access project driveway to the west. As the proposed roundabout is located approximately 275 feet east of the partial access project driveway, the proposed access meets VDOT access management spacing requirements.

Project Driveway 5 (Intersection 23)

Project Driveway 5, located along Austin Ridge Drive, between Courthouse Road and Sunflower Drive, will be an inbound-only free-flow, right-in only driveway along a proposed median separated lane from the

southbound I-95 off-ramp. With the proposed buffer between the lane from the southbound I-95 off-ramp and Courthouse Road and the first few hundred feet of Austin Ridge Drive, VDOT will interpret the end of the ramp terminal to be located within the vicinity of the end of the buffer separation which occurs north of Driveway 5. Given the proposed location of Driveway 5, the NHS and Interstate System Access Control requirements for the location of the end of the limited access and the requirements of VDOT's Access Management Guidelines, the location of Driveway 5 will require both a Design Exception for the location of the proposed end of the limited access line and an Access Management Exception for the spacing of Driveway 5 from the end of the interchange (or end of the buffer separation.) Based on sketch level operational analysis in support of this TIA and the OSAR Framework document, the operational and safety analysis with the OSAR will demonstrate benefits to the surrounding network and the interstate that will support the Design Exception and Access Management Exception.

The proposed spacing between all driveways will comply with the guidelines outlined in the *VDOT Road Design Manual, Appendix F*, or will obtain any access management exceptions as VDOT may require.

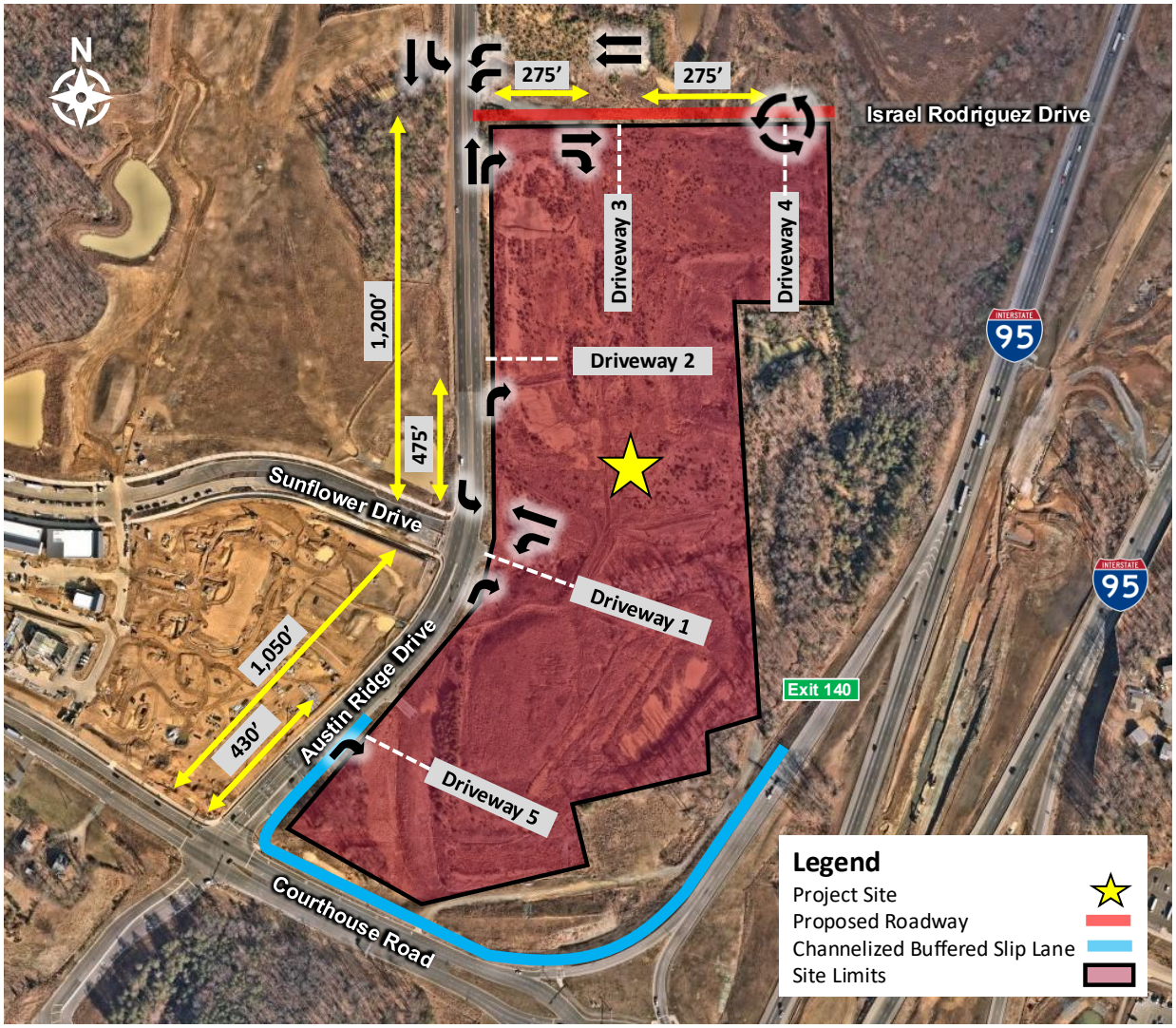

Figure 4: Proposed Driveway Spacing and Geometry

5.6. Signal Warrant Analysis

A signal warrant analysis was conducted for the intersections of Austin Ridge Drive at Sunflower Drive and the proposed intersection of Austin Ridge Drive at Israel Rodriguez Drive. The major and minor street approach future volumes that were used in the signal warrant analysis and the signal warrant analysis results are shown in **Appendix J**.

Warrant Criteria

The traffic signal warrant analysis was performed in accordance with the MUTCD, which outlines nine warrants for the investigation of the need for a new traffic signal. These warrants are summarized below.

- Warrant 1 – Eight-Hour Vehicular Volume
  - Condition A – Minimum Vehicular Volume
  - Condition B – Interruption of Continuous Traffic
  - Condition C – Combination of Warrants
- Warrant 2 – Four-Hour Vehicular Volume
- Warrant 3 – Peak Hour
  - Condition A – Peak Hour Delay
  - Condition B – Peak Hour Volume
- Warrant 4 – Pedestrian Volume
  - Condition A – Peak Hour Volume
  - Condition B – Four-Hour Volume
- Warrant 5 – School Crossing
- Warrant 6 – Coordinated Signal System
- Warrant 7 – Crash Experience
- Warrant 8 – Roadway Network
- Warrant 9 – Intersection Near a Grade (Railroad) Crossing

One or more of the nine warrants should be satisfied before a new traffic signal is considered for installation. However, satisfaction of a warrant does not in itself justify the need for a new signal. A new signal should improve the overall safety and/or operation of the intersection.

MUTCD Warrants 1 (eight-hour vehicular volume), 2 (four-hour vehicular volumes), and 3 (peak-hour vehicular volume) were evaluated for this location. Warrants 4 through 9 are either not applicable, do not meet the threshold for consideration, or data were not obtained to perform the analysis. A summary of the reasoning for not analyzing these warrants is included below:

- Warrant 4: Pedestrian volumes are low in this area and at the study intersection. The traffic volume on the major street does not cause excessive delay for pedestrians crossing the street.
- Warrant 5: The study intersection is not in close proximity to any schools. No school children are projected to cross the major road.
- Warrant 6: A traffic signal is not needed to maintain proper platooning of vehicles at the intersection.
- Warrant 7: The severity and frequency of crashes at this intersection do not call for a new traffic signal. Crash experience is not the principal reason to consider installing a traffic control signal at this intersection.
- Warrant 8: The study intersection includes one major and one minor road. This warrant is to be used for intersections of two or more major routes.
- Warrant 9: This study intersection is not in close proximity to a grade crossing on an intersection approach controlled by a stop or yield sign. This warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, however that is not the case for this study intersection.

A summary of Warrants 1, 2, and 3 is included below[1].

Warrant 1 – Eight-Hour Vehicular Volume

Warrant 1, the eight-hour vehicle warrant, is considered to be met under three conditions. If any of the three conditions are met, the warrant is satisfied. The three conditions and a description of each is listed below:

Condition A: Minimum Vehicular Volume

This warrant is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal.

Condition A is satisfied when the vehicles per hour given in both of the 100 percent columns of Condition A in Table 4C-1 of the 2009 MUTCD exist on the major street and the higher volume minor street approach for the appropriate number of approach lanes on each approach.

Condition B: Interruption of Continuous Traffic

This warrant is intended for application where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Condition B is satisfied when for each of any eight hours of an average day the vehicles per hour given in both of the 100 percent columns of Condition B in Table 4C-1 of the 2009 MUTCD exist on the major street and the higher volume minor street approach for the appropriate number of approach lanes on each approach.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the 70% columns of Table 4C-1 may be used in the analysis of Condition A and B instead of the 100% columns.

Combination Warrant

This warrant is intended for application where a combination of a large volume of intersecting traffic on the minor street suffers excessive delay or conflict in entering or crossing the major street.

The Combination Warrant is satisfied when for each of any eight hours of an average day, the vehicles per hour given in both the 80 percent columns of Condition A and the 80 percent columns of Condition B in Table 4C-1 of the 2009 MUTCD exist on the major street and the higher volume minor street approach for the appropriate number of approach lanes on each approach.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the 56% columns of Table 4C-1 may be used in place of the 80% columns.

Warrants were analyzed with the major and minor street approach for future year (2026) volumes. Based on the traffic volumes discussed above, the following warrants were analyzed to determine if a signal was warranted at the intersection of Willis Road and Coach Road.

Warrant 1 Conclusion

For the intersection of Austin Ridge Drive and Sunflower Drive, the future (2032) isolated analysis traffic volumes meet the warrant thresholds for Condition A, Condition B, or the Combination Warrant. Therefore, the results show that **Warrant 1 is satisfied under future (2032) conditions.**

[1] Source: Manual on Uniform Traffic Control Devices, Chapter 4C, 2009 Edition

For the intersection of Austin Ridge Drive and Israel Rodriguez Drive, the future (2032) isolated analysis traffic volumes does not meet the warrant thresholds for Condition A, Condition B, or the Combination Warrant. Therefore, the results show that **Warrant 1 is not satisfied under future (2032) conditions.**

Warrant 2 – Four-Hour Vehicular Volume

Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal.

Warrant 2 is satisfied when, for each of any four hours of an average day, the plotted points representing the vehicles per hour on both approaches of the major street and the corresponding vehicles per hour on the higher volume minor street approach all fall above the curve provided in Figures 4C-1 of the 2009 MUTCD. Figure 4C-2 of the 2009 MUTCD may be used in place of Figure 4C-1 if the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000.

Warrant 2 Conclusion

For the intersection of Austin Ridge Drive and Sunflower Drive, the future (2032) isolated analysis traffic volumes meet the warrant thresholds for Warrant 2. Therefore, the results show that **Warrant 2 will be satisfied under future (2032) conditions.**

For the intersection of Austin Ridge Drive and Israel Rodriguez Drive, the future (2032) isolated analysis traffic volumes meet the warrant thresholds for Warrant 2. Therefore, the results show that **Warrant 2 will be satisfied under future (2032) conditions.**

Warrant 3 – Peak Hour Vehicular Volume

Warrant 3 is intended to be applied where minor street traffic suffers undue delay when entering or crossing the major street. Warrant 3 is met under two conditions:

Condition A

Condition A is met when all three of the following statements are true for the same one-hour period of an average day.

1. The total stopped time delay experienced by the stop-controlled minor street approach (one approach) exceeds 4 vehicle hours for a one-lane approach or 5 vehicle hours for a two-lane approach.
2. The volume on the same minor street approach equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and
3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

Condition B

Condition B is satisfied when, for any one hour of an average day, the plotted point representing the vehicles per hour on both approaches of the major street and the corresponding vehicles per hour on the higher volume minor street approach falls above the curve provided in Figures 4C-3 of the 2009 MUTCD.

If the posted or statutory speed limit or the 85th percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 of the 2009 MUTCD may be used in place of Figure 4C-3 for the appropriate combination of approach lanes.

Warrant 3 Conclusion

For the intersection of Austin Ridge Drive and Sunflower Drive, the future (2032) isolated analysis traffic volumes do not meet the warrant thresholds for Warrant 3. Therefore, the results show that **Warrant 3 will not be satisfied under future (2032) conditions.**

For the intersection of Austin Ridge Drive and Israel Rodriguez Drive, the future (2032) isolated analysis traffic volumes do not meet the warrant thresholds for Warrant 3. Therefore, the results show that **Warrant 3 will not be satisfied under future (2032) conditions.**

Signal Warrant Analysis Results

Based on the future 2032 isolated analysis condition (Scenario A) volumes at the intersections of Austin Ridge Drive and Sunflower Drive, Warrant 1, Warrant 2, and Warrant 3 are met. At the intersection of Austin Ridge Drive and the proposed Israel Rodriguez Drive, Warrant 2 and Warrant 3 are met. Note that the signal warrant analysis conducted for this report was based on the Scenario A future 2032 build conditions and does not include the trips attributed to background developments.

A summary of warrants is provided in **Table 5.** The results of this analysis show that a traffic signal is warranted and justified at the intersections. Note that further signal warrant justification will be prepared during the completion of the Operations and Safety Analysis Report (OSAR). The exact scope and limits of the OSAR will be determined through coordination with these agencies. The signal warrant analysis results are provided in **Appendix J**.

Table 5: Summary of MUTCD Signal Warrant Analysis

MUTCD Signal Warrants	Warrant Satisfied?	Notes
Intersection of Austin Ridge Drive and Sunflower Drive		
Warrant 1: Eight-Hour Vehicular Volume	Yes	13 of the 8 hours needed were met.
Warrant 1: VDOT ADT Option[1]	N/A	Not Evaluated.
Warrant 2: Four-Hour Vehicular Volume	Yes	8 of the 4 hours needed were met.
Warrant 3: Peak Hour[2]	No	0 of the 1 hour needed were met.
Warrant 4: Pedestrian Volume	N/A	Not evaluated.
Warrant 5: School Crossing	N/A	Not evaluated.
Warrant 6: Coordinated Signal System	N/A	Not evaluated.
Warrant 7: Crash Experience[3]	N/A	Not evaluated.
Warrant 8: Roadway Network	N/A	Not evaluated.
Warrant 9: Intersection Near a Grade Crossing	N/A	Not evaluated.
Intersection of Austin Ridge Drive and Israel Rodriguez Drive		
Warrant 1: Eight-Hour Vehicular Volume	No	7 of the 8 hours needed were met.
Warrant 1: VDOT ADT Option[1]	N/A	Not Evaluated.
Warrant 2: Four-Hour Vehicular Volume	Yes	4 of the 4 hours needed were met.
Warrant 3: Peak Hour[2]	No	0 of the 1 hour needed were met.
Warrant 4: Pedestrian Volume	N/A	Not evaluated.
Warrant 5: School Crossing	N/A	Not evaluated.
Warrant 6: Coordinated Signal System	N/A	Not evaluated.
Warrant 7: Crash Experience[3]	N/A	Not evaluated.
Warrant 8: Roadway Network	N/A	Not evaluated.
Warrant 9: Intersection Near a Grade Crossing	N/A	Not evaluated.

[1] The VDOT ADT Estimate Warrant in the VA Supplement to the MUTCD may be used instead of MUTCD Warrants 1 and 2 if the DTE concurs that it is infeasible to project estimated opening-day volumes over 8 or more hours of the day. Refer to Chapter 4C of the Virginia Supplement to the MUTCD for additional information on the use of this option.

[2] As per MUTCD Section 4C.04, Warrant 3 shall only be applied in unusual cases, such as facilities that attract or discharge large numbers of vehicles over a short period of time.

[3] The Alternative Signal Warrant 7 – Crash Experience documented in FHWA Interim Approval #19 (IA-19) shall be used as per the Virginia Supplement to the MUTCD and the latest edition of IIM-TE-387. The most recent available three years of available crash data shall be used.

5.7 Scenario A - Isolated Analysis Conclusion

Due to the uncertainty of the scale of background development that is anticipated to occur within the study area, an isolated traffic operational analysis (Scenario A) was conducted at the request of Stafford County. The purpose of the isolated analysis is to isolate the traffic impacts of the proposed development by excluding the trips attributed to background developments. The isolated analysis will serve as a reference for Stafford County for future planning purposes, and to evaluate the anticipated traffic impacts of the proposed development if the background development within the study area does not occur as documented in this study. **Table 6** shows the assumed percent buildout of the background development that was captured in the collected traffic counts and included in the Scenario A analysis. The background development not captured in the collected traffic counts were added to the Scenario B analysis.

The evaluation of traffic operations within the study area included intersection capacity level of service (LOS) and queuing analyses during the weekday AM, weekday PM, and weekend peak hours. For the traffic operational analyses, the projected No-Build conditions served as the baseline for evaluating intersection delays and identifying mitigation measures under the Build conditions. The analyses were conducted for No-Build (2026 and 2032), and Build (2026 and 2032) conditions.

Existing conditions represent the roadway network geometry and traffic volumes at the time of this study. No-Build conditions represent the future roadway network prior to the completion of the proposed development; however, traffic attributed to external developments that are scheduled to be completed by the completion year of the project were not included. Build conditions represent the same inclusions as No-Build but also include the proposed development.

With the proposed off-site improvements and signal timing optimizations, the results of the isolated traffic operational analysis (Scenario A) indicate that under all future build conditions, all signalized intersections are projected to operate with overall delays equivalent to LOS C or better, and all unsignalized approaches are projected to operate with delays equivalent to LOS C or better, with the exception of the intersections of US Route 1 with Hospital Center Boulevard and Courthouse Road, which were projected to operate with delays equivalent to LOS D. Note that the intersections were projected to operate with delays equivalent to LOS under no-build conditions, prior to the completion of the project.

Table 6: Scenario A - Background Development Assumptions

Scenario A – Background Development Trip Generation				
Project	Land Use	Assumed Percent Built		
		2023 (Captured in Existing)	2026	2032
Austin Ridge Logistics	High-Cube Transload and Short-Term Storage Warehouse	0%	0%	0%
Burns NE Quadrant	Fast Food Restaurant w/ Drive Through	50%	50%	50%
Burns NW Quadrant	Day Care Center	0%	0%	0%
	General Office Building	0%	0%	0%
	Medical/Dental Office Building	0%	0%	0%
	Strip Retail Plaza	0%	0%	0%
	Fast Food Restaurant w/ Drive Through	0%	0%	0%
Burns SE Quadrant	General Office Building	0%	0%	0%
	Medical/Dental Office Building	0%	0%	0%
	Retail	0%	0%	0%
	Fast Food Restaurant w/ Drive Through	75%	75%	75%
	Supermarket	100%	100%	100%
Burns SW Quadrant	High Turnover Sit Down Restaurant	100%	100%	100%
	Hotel	0%	0%	0%
Courthouse Tracts	Super Convenience Store/Gas Station	75%	75%	75%
	Fast Food Restaurant w/ Drive Through	0%	0%	0%
Embrey Mill (Phase 3A)	Multifamily Housing (Low-Rise)	0%	0%	0%
	Senior Adult Housing (Multifamily)	0%	0%	0%
Embrey Mill Town Center (Revised per Stafford Feb 2024)	Day Care Center	0%	0%	0%
	Shopping Plaza (40-150k)	35%	35%	35%
	Medical/Dental Office Building	75%	75%	75%
	Fast Food Restaurant w/ Drive Through	50%	50%	50%
	Convenience Store/Gas Station	0%	0%	0%
Merrit at Austin Ridge	Industrial Park	0%	0%	0%
AWS Data Center	AWS Data Center (Site-Specific)	0%	0%	0%
Stafford Commons	Shopping Plaza (40-150k)	0%	0%	0%
Stafford Hospital	Medical-Dental Office Building	0%	0%	0%
Venture Business Park	Industrial Park	0%	0%	0%
Westgate	Hotel	0%	0%	0%

Figure 5: Scenario A Background Development Map

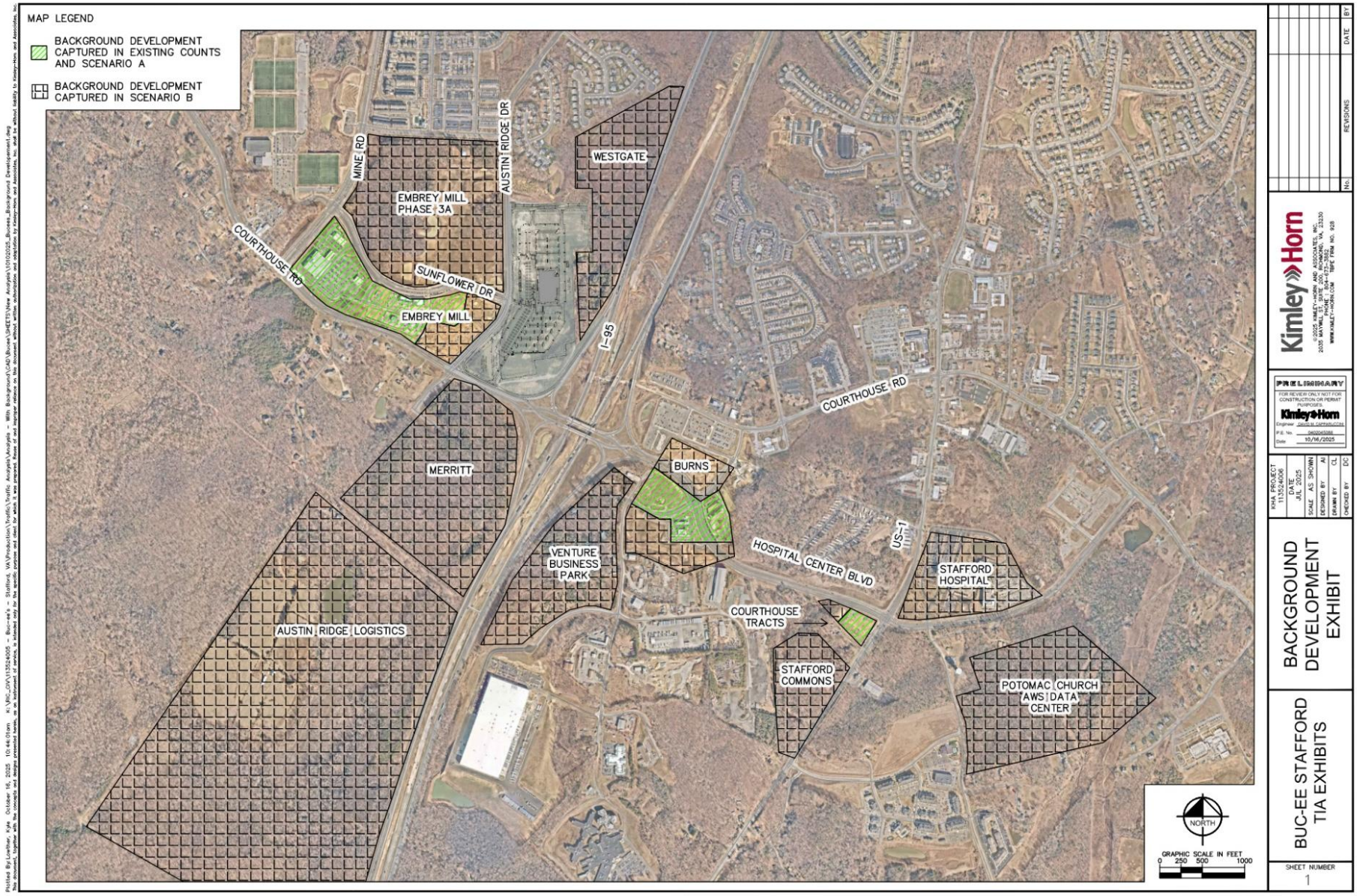

Table 7: Scenario A: Control Delay and LOS Summary (2026)

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2026 No-Build Conditions						2026 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	30.2	C	31.6	C	30.9	C	30.8	C	30.9	C	31.2	C	31.1	C	38.0	D	31.5	C
			Through	30.0	C	34.2	C	31.7	C	30.3	C	32.8	C	31.9	C	30.5	C	34.4	C	30.4	C
			Right	28.8	C	31.3	C	30.2	C	29.1	C	30.3	C	30.4	C	29.3	C	31.4	C	28.9	C
			Approach	30.1	C	31.9	C	30.9	C	30.7	C	31.1	C	31.2	C	31.0	C	36.8	D	31.0	C
		Westbound	Left	27.2	C	29.2	C	28.7	C	27.6	C	28.8	C	28.9	C	27.8	C	31.1	C	28.2	C
			Through	49.9	D	50.2	D	41.6	D	54.0	D	56.1	E	41.8	D	54.3	D	47.2	D	37.1	D
			Right	28.9	C	26.5	C	26.9	C	29.0	C	28.0	C	27.0	C	28.9	C	25.8	C	26.3	C
			Approach	29.5	C	27.7	C	27.5	C	29.8	C	29.3	C	27.6	C	29.7	C	27.0	C	26.8	C
		Northbound	Left	12.2	B	11.5	B	10.5	B	12.1	B	12.4	B	10.5	B	12.0	B	10.1	B	10.2	B
			Through	19.6	B	22.2	C	17.6	B	20.0	B	23.5	C	17.9	B	20.3	C	21.4	C	16.1	B
			Right	15.5	B	16.4	B	14.1	B	15.8	B	17.8	B	14.2	B	16.2	B	17.0	B	13.3	B
			Approach	19.2	B	21.2	C	17.3	B	19.6	B	22.6	C	17.5	B	19.9	B	20.5	C	15.8	B
		Southbound	Left	13.6	B	16.1	B	11.8	B	13.5	B	18.3	B	11.9	B	13.8	B	15.7	B	11.6	B
			Through	13.6	B	15.6	B	12.1	B	13.5	B	16.8	B	12.2	B	13.5	B	13.6	B	11.8	B
			Right	7.6	A	8.2	A	7.9	A	7.5	A	7.9	A	7.9	A	7.4	A	8.4	A	8.4	A
			Approach	12.8	B	14.8	B	11.4	B	12.7	B	16.1	B	11.5	B	12.9	B	13.7	B	11.3	B
		Intersection		**21.3**	**C**	**19.4**	**B**	**17.2**	**B**	**21.6**	**C**	**20.6**	**C**	**17.4**	**B**	**21.7**	**C**	**18.9**	**B**	**16.6**	**B**
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Through	36.5	D	40.6	D	33.7	C	36.7	D	39.2	D	34.1	C	44.2	D	64.8	E	43.7	D
			Right	34.2	C	36.6	D	30.6	C	34.4	C	35.3	D	30.8	C	33.6	C	59.1	E	31.1	C
			Approach	35.5	D	38.7	D	31.9	C	35.7	D	37.5	D	32.2	C	39.5	D	62.2	E	36.4	D
		Westbound	Left	37.2	D	39.5	D	36.8	D	37.5	D	38.2	D	37.5	D	34.6	C	63.3	E	33.3	C
			Through	0.0	A	37.8	D	35.7	D	0.0	A	36.6	D	36.3	D	0.0	A	61.0	E	32.3	C
			Right	34.0	C	31.9	C	27.6	C	34.2	C	28.3	C	28.1	C	29.9	C	51.9	D	25.8	C
			Approach	36.4	D	38.0	D	34.5	C	36.8	D	36.3	D	35.2	D	31.5	C	58.8	E	31.4	C
		Northbound	Left	15.2	B	25.1	C	28.2	C	15.2	B	29.7	C	29.3	C	14.9	B	17.7	B	28.2	C
			Through	17.1	B	25.1	C	32.2	C	17.1	B	29.3	C	32.6	C	18.2	B	22.0	C	29.1	C
			Right	14.5	B	17.4	B	23.5	C	14.4	B	19.9	B	23.6	C	15.4	B	14.1	B	20.7	C
			Approach	16.6	B	25.0	C	30.4	C	16.7	B	29.3	C	31.0	C	17.5	B	20.2	C	28.7	C
		Southbound	Left	14.8	B	19.1	B	24.2	C	14.7	B	19.9	B	24.4	C	14.5	B	15.3	B	22.8	C
			Through	18.6	B	28.2	C	31.8	C	18.7	B	30.2	C	32.0	C	18.5	B	30.9	C	29.7	C
			Right	17.1	B	24.9	C	29.4	C	17.1	B	26.0	C	29.5	C	16.8	B	27.6	C	27.2	C
			Approach	18.2	B	25.9	C	29.0	C	18.3	B	27.5	C	29.3	C	18.1	B	27.4	C	27.2	C
		Intersection		**19.0**	**B**	**27.2**	**C**	**30.6**	**C**	**19.0**	**B**	**29.7**	**C**	**31.1**	**C**	**19.8**	**B**	**29.2**	**C**	**30.1**	**C**
3	Mine Road & Courthouse Road	Eastbound	Left	6.6	A	10.3	B	13.6	B	6.9	A	11.0	B	14.2	B	9.6	A	10.6	B	10.7	B
			Through	4.4	A	6.0	A	6.6	A	4.7	A	6.3	A	6.9	A	6.8	A	6.3	A	6.0	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	4.7	A	7.6	A	9.6	A	5.0	A	8.1	A	10.0	A	7.2	A	7.8	A	8.0	A
		Westbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	29.4	C	4.1	A	16.6	B	32.5	C	3.9	A	17.0	B	15.0	B	4.6	A	16.1	B
			Right	42.6	D	1.9	A	8.4	A	17.9	B	7.5	A	8.3	A	6.0	A	13.6	B	7.0	A
			Approach	33.0	C	3.3	A	13.1	B	28.6	C	5.2	A	13.3	B	12.7	B	7.7	A	12.3	B
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
		Southbound	Left	53.5	D	50.3	D	20.5	C	53.1	D	50.1	D	20.4	C	35.6	D	64.4	E	38.9	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	34.5	C	24.2	C	9.2	A	33.7	C	23.1	C	9.2	A	20.9	C	29.9	C	20.1	C
			Approach	49.0	D	39.9	D	16.5	B	48.5	D	39.3	D	16.4	B	32.1	C	50.6	D	32.2	C
		Intersection		**22.9**	**C**	**15.3**	**B**	**13.1**	**B**	**21.5**	**C**	**16.0**	**B**	**13.3**	**B**	**13.8**	**B**	**19.7**	**B**	**18.1**	**B**
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	12.3	B	8.9	A	17.5	B	10.6	B	16.3	B	17.1	B	18.5	B	10.2	B	22.1	C
			Through	19.1	B	12.1	B	24.1	C	17.5	B	18.7	B	23.9	C	23.3	C	11.2	B	28.0	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	19.0	B	12.0	B	24.0	C	17.4	B	18.7	B	23.8	C	23.1	C	11.1	B	27.9	C
		Westbound	Left	97.2	F	71.6	E	41.7	D	113.6	F	89.8	F	42.7	D	237.3	F	88.0	F	81.0	F
			Through	11.9	B	16.9	B	21.8	C	6.5	A	12.8	B	21.6	C	23.6	C	24.0	C	26.0	C
			Right	75.2	E	63.1	E	11.6	B	39.8	D	38.5	D	11.8	B	9.6	A	7.1	A	6.0	A
			Approach	33.7	C	28.4	C	19.7	B	18.6	B	19.4	B	19.6	B	18.5	B	17.3	B	15.1	B
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	57.2	E	0.0	A	0.0	A	57.2	E	0.0	A	0.0	A	69.3	E	0.0	A	0.0	A
			Right	55.9	E	0.0	A	0.0	A	55.9	E	0.0	A	0.0	A	60.2	E	0.0	A	0.0	A
			Approach	56.6	E	0.0	A	0.0	A	56.6	E	0.0	A	0.0	A	64.8	E	0.0	A	0.0	A
		Southbound	Left	55.0	D	60.8	E	30.2	C	55.1	E	63.4	E	30.7	C	60.9	E	45.5	D	45.6	D
			Through	58.4	E	66.8	E	30.5	C	58.5	E	71.1	E	31.2	C	0.0	A	0.0	A	0.0	A
			Right	36.3	D	37.2	D	19.7	B	35.9	D	37.1	D	19.9	B	46.8	D	196.2	F	73.9	E
			Approach	55.3	E	59.9	E	29.5	C	55.4	E	62.7	E	30.1	C	60.2	E	56.6	E	46.0	D
		Intersection		**31.2**	**C**	**27.2**	**C**	**22.9**	**C**	**24.2**	**C**	**25.5**	**C**	**22.9**	**C**	**31.7**	**C**	**27.1**	**C**	**30.0**	**C**
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	13.1	B	13.1	B	10.7	B	13.3	B	13.2	B	10.8	B	35.3	D	34.7	C	35.2	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	N.A.		N.A.		N.A.	
			Right	9.7	A	9.6	A	9.1	A	9.7	A	9.6	A	9.1	A	33.9	C	34.1	C	35.0	C
			Approach	10.7	B	10.4	B	9.3	A	10.8	B	10.4	B	9.2	A	34.3	C	34.3	C	35.0	C
		Westbound	Left	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		28.6	C	30.8	C	30.2	C
			Through													28.5	C	30.8	C	30.2	-
			Approach													28.6	C	30.8	C	30.2	C
		Northbound	Left	8.3	A	8.0	A	7.7	A	8.3	A	8.1	A	7.7	A	5.3	A	6.6	A	8.5	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	6.1	A	7.6	A	9.5	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	2.2	A	2.5	A	3.4	A
			Approach	0.3	A	0.1	A	0.1	A	0.3	A	0.1	A	0.1	A	5.1	A	6.1	A	7.0	A
		Southbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	5.1	A	8.1	A	6.5	A
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	5.1	A	8.1	A	6.5	A
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	**8.1**	**B**	**10.9**	**B**	**10.7**	**B**
6	Courthouse Road (WB) & Ramp D	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Right	10.1	B	27.3	C	7.4	A	10.7	B	27.9	C	7.7	A	14.4	B	20.9	C	14.1	B
			Approach	10.1	B	27.3	C	7.4	A	10.7	B	27.9	C	7.7	A	14.4	B	20.9	C	14.1	B
		Intersection		**1.1**	**A**	**5.6**	**A**	**1.4**	**A**	**1.2**	**A**	**5.7**	**A**	**1.4**	**A**	**1.3**	**A**	**3.4**	**A**	**1.5**	**A**
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	11.0	B	29.7	C	7.9	A	15.4	B	30.8	C	8.3	A	18.4	B	23.7	C	18.4	B
			Approach	11.0	B	29.7	C	7.9	A	15.4	B	30.8	C	8.3	A	18.4	B	23.7	C	18.4	B
		Westbound	Through	28.6	C	7.3	A	61.5	E	28.3	C	8.1	A	59.3	E	41.0	D	32.4	C	27.7	C
			Approach	28.6	C	7.3	A	61.5	E	28.3	C	8.1	A	59.3	E	41.0	D	32.4	C	27.7	C
		Intersection		**19.9**	**B**	**17.0**	**B**	**34.8**	**C**	**21.9**	**C**	**18.0**	**B**	**33.9**	**C**	**29.8**	**C**	**28.5**	**C**	**23.0**	**C**
9	Courthouse Road (EB) & Spur D	Eastbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Left	39.1	D	18.9	B	35.8	D	37.8	D	19.1	B	35.3	D	31.2	C	27.5	C	24.1	C
			Approach	39.1	D	18.9	B	35.8	D	37.8	D	19.1	B	35.3	D	31.2	C	27.5	C	24.1	C
		Intersection		**11.6**	**B**	**7.6**	**A**	**9.6**	**A**	**11.3**	**B**	**7.7**	**A**	**9.5**	**A**	**7.7**	**A**	**8.7**	**A**	**3.9**	**A**
10	Courthouse Road (WB) & Spur C	Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Courthouse Road (EB) & Spur A	Eastbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Courthouse Road (WB) & Spur B	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A
		Northbound	Left	9.7	A	10.9	B	6.9	A	9.4	A	11.6	B	7.1	A	11.1	B	14.3	B	10.0	A
			Approach	9.7	A	10.9	B	6.9	A	9.4	A	11.6	B	7.1	A	11.1	B	14.3	B	10.0	A
		Intersection		**3.1**	**A**	**2.9**	**A**	**2.1**	**A**	**3.0**	**A**	**3.1**	**A**	**2.1**	**A**	**4.6**	**A**	**5.5**	**A**	**5.3**	**A**
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	9.1	A	15.6	B	8.2	A
			Approach	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	9.1	A	15.6	B	8.2	A
		Westbound	Through	41.9	D	46.1	D	39.4	D	51.2	D	54.9	D	39.4	D	43.6	D	33.0	C	31.5	C
			Approach	41.9	D	46.1	D	39.4	D	51.2	D	54.9	D	39.4	D	43.6	D	33.0	C	31.5	C
		Intersection		**23.8**	**C**	**33.0**	**C**	**22.5**	**C**	**30.3**	**C**	**37.1**	**D**	**22.3**	**C**	**25.0**	**C**	**23.4**	**C**	**19.2**	**B**
14	Courthouse Road (WB) & Ramp A	Westbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Northbound	Right	48.5	D	39.0	D	37.3	D	38.5	D	34.2	C	34.3	C	37.2	D	26.8	C	32.5	C
			Approach	48.5	D	39.0	D	37.3	D	38.5	D	34.2	C	34.3	C	37.2	D	26.8	C	32.5	C
		Intersection		**11.9**	**B**	**5.7**	**A**	**6.3**	**A**	**9.5**	**A**	**5.0**	**A**	**5.8**	**A**	**8.8**	**A**	**3.7**	**A**	**4.8**	**A**

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2026 No-Build Conditions						2026 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	54.1	D	56.4	E	35.2	D	49.4	D	52.4	D	35.5	D	68.2	E	57.3	E	66.9	E
			Through	19.8	B	42.8	D	21.2	C	21.0	C	46.7	D	21.3	C	12.7	B	25.8	C	8.4	A
			Right	19.5	B	39.0	D	20.5	C	20.4	C	42.2	D	20.6	C	12.8	B	23.6	C	7.4	A
			Approach	30.8	C	45.0	D	23.0	C	30.1	C	47.3	D	23.2	C	29.8	C	31.4	C	15.4	B
		Westbound	Left	14.2	B	17.3	B	17.2	B	14.9	B	18.1	B	17.2	B	13.9	B	17.9	B	14.7	B
			Through	25.5	C	26.5	C	23.5	C	27.1	C	27.6	C	23.9	C	26.4	C	29.8	C	21.0	C
			Right	22.6	C	22.9	C	21.3	C	23.7	C	23.6	C	21.5	C	22.8	C	25.1	C	18.4	B
			Approach	24.9	C	25.9	C	23.4	C	26.4	C	27.0	C	23.7	C	25.8	C	29.2	C	20.9	C
		Northbound	Left	60.9	E	59.9	E	35.0	C	63.2	E	62.1	E	35.3	D	53.7	D	58.6	E	43.4	D
			Through	53.0	D	51.0	D	32.9	C	53.0	D	51.0	D	33.1	C	50.3	D	53.0	D	40.7	D
			Right	47.9	D	46.6	D	30.5	C	46.7	D	46.5	D	30.7	C	44.6	D	47.3	D	36.8	D
			Approach	58.3	E	57.4	E	34.4	C	60.0	E	59.1	E	34.8	C	52.2	D	56.7	E	42.7	D
		Southbound	Left	49.0	D	46.3	D	34.8	C	47.8	D	45.5	D	35.1	D	52.3	D	51.6	D	43.8	D
			Through	49.0	D	46.1	D	34.8	C	47.8	D	45.4	D	35.1	D	52.3	D	51.4	D	43.8	D
			Right	30.8	C	33.2	C	21.3	C	30.1	C	33.1	C	21.5	C	31.8	C	35.9	D	29.4	C
			Approach	31.9	C	34.6	C	22.3	C	31.2	C	34.4	C	22.6	C	33.1	C	37.6	D	30.6	C
		Intersection		**31.6**	**C**	**39.5**	**D**	**24.3**	**C**	**31.6**	**C**	**40.9**	**D**	**24.5**	**C**	**31.0**	**C**	**34.1**	**C**	**21.9**	**C**
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	37.0	D	49.2	D	35.0	C	35.2	D	52.0	D	35.0	C	35.4	D	50.7	D	35.6	D
			Through	33.3	C	45.1	D	30.4	C	33.8	C	48.0	D	33.5	C	34.3	C	51.6	D	31.3	C
			Right	19.6	B	29.4	C	20.9	C	19.6	B	32.4	C	22.6	C	19.6	B	31.7	C	22.6	C
			Approach	28.7	C	38.6	D	25.7	C	28.7	C	41.4	D	27.7	C	28.9	C	42.5	D	27.3	C
		Westbound	Left	37.9	D	48.6	D	37.2	D	35.6	D	51.9	D	34.9	C	36.1	D	52.8	D	38.3	D
			Through	31.9	C	38.7	D	31.0	C	32.3	C	40.5	D	32.1	C	33.6	C	42.8	D	32.9	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	33.0	C	41.4	D	32.6	C	32.9	C	43.5	D	32.9	C	34.0	C	45.5	D	34.3	C
		Northbound	Left	33.1	C	44.8	D	33.3	C	33.9	C	47.8	D	32.9	C	34.2	C	48.8	D	34.0	C
			Through	18.1	B	22.2	C	16.5	B	21.3	C	22.9	C	15.9	B	21.0	C	20.3	C	16.2	B
			Right	11.4	B	13.5	B	11.3	B	12.4	B	13.7	B	9.9	A	12.3	B	12.3	B	11.2	B
			Approach	22.2	C	31.9	C	23.4	C	24.4	C	33.7	C	22.8	C	24.7	C	33.8	C	24.6	C
		Southbound	Left	44.6	D	52.9	D	42.8	D	39.9	D	56.0	E	43.1	D	40.4	D	55.6	E	43.9	D
			Through	24.7	C	35.9	D	24.8	C	26.9	C	37.6	D	24.7	C	27.2	C	34.8	C	25.7	C
			Right	15.1	B	19.3	B	13.7	B	15.4	B	20.2	C	13.5	B	15.5	B	17.7	B	13.9	B
			Approach	24.6	C	34.5	C	23.7	C	25.7	C	36.1	D	23.5	C	25.2	C	32.8	C	23.3	C
		Intersection		**26.1**	**C**	**36.3**	**D**	**25.4**	**C**	**27.2**	**C**	**38.5**	**D**	**25.9**	**C**	**27.4**	**C**	**38.3**	**D**	**26.3**	**C**
18	US Route 1 & Courthouse Road	Eastbound	Left	s	s	s	s	s	s	64.9	E	75.9	E	66.6	E	54.2	D	43.5	D	38.5	D
			Through	69.5	E	67.6	E	64.6	E	59.7	E	71.2	E	60.0	E	32.8	C	38.7	D	35.5	D
			Right	54.4	D	59.2	E	56.2	E	56.7	E	67.4	E	58.4	E	29.0	C	35.8	D	34.5	C
			Approach	67.6	E	64.6	E	63.0	E	62.2	E	71.6	E	63.6	E	44.1	D	39.5	D	37.1	D
		Westbound	Left	s	s	s	s	s	s	57.9	E	70.1	E	59.6	E	28.1	C	37.1	D	36.0	D
			Through	67.2	E	89.6	F	61.4	E	64.1	E	77.7	E	61.6	E	32.6	C	42.9	D	37.5	D
			Right	56.4	E	65.7	E	57.0	E	57.7	E	67.5	E	58.4	E	28.0	C	35.3	D	35.2	D
			Approach	60.5	E	79.7	E	59.0	E	59.5	E	72.0	E	59.6	E	29.4	C	38.7	D	36.0	D
		Northbound	Left	s	s	s	s	s	s	24.6	C	40.8	D	50.5	D	20.4	C	29.1	C	25.8	C
			Through	35.8	D	66.7	E	58.2	E	28.7	C	45.9	D	57.9	E	27.0	C	34.9	C	29.3	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	35.8	D	66.7	E	58.2	E	28.2	C	45.5	D	57.5	E	26.1	C	34.5	C	29.2	C
		Southbound	Left	s	s	s	s	s	s	50.9	D	43.2	D	16.6	B	25.0	C	25.2	C	21.5	C
			Through	57.5	E	47.5	D	21.8	C	57.7	E	50.6	D	19.0	B	28.5	C	33.1	C	25.7	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	57.5	E	47.5	D	21.8	C	56.6	E	48.9	D	18.7	B	28.0	C	31.4	C	25.2	C
		Intersection		**50.9**	**D**	**58.3**	**E**	**39.8**	**D**	**47.0**	**D**	**54.4**	**D**	**38.0**	**D**	**29.1**	**C**	**34.0**	**C**	**28.5**	**C**
19	Austin Ridge Driveway & Driveway 2	Northbound	Through	N.A		N.A		N.A.		N.A		N.A		N.A.		-	-	-	-	-	-
			Right													-	-	-	-	-	-
			Approach													-	-	-	-	-	-
		Southbound	Through													-	-	-	-	-	-
			Approach													-	-	-	-	-	-
		Intersection														-	-	-	-	-	-
20	Austin Ridge Driveway & Buc-ee's Boulevard	Westbound	Left	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		27.7	C	29.0	C	24.3	C
			Approach													27.7	C	29.0	C	24.3	C
		Northbound	Left													0.0	A	0.0	A	0.0	A
			Through													4.5	A	5.7	A	3.4	A
			Right													0.5	A	0.5	A	1.0	A
			Approach													3.9	A	4.8	A	2.6	A
		Southbound	Left													3.9	A	4.4	A	0.0	A
			Through													4.4	A	5.8	A	11.3	B
			Right													s	s	s	s	s	s
			Approach													4.3	A	5.6	A	11.3	B
		Intersection														11.2	B	14.0	B	16.9	B

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Table 8: Scenario A: Maximum Queue Lengths (2026)

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2026 No-Build Conditions			2026 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	570	570	128	123	95	134	131	95	132	115	88
			Through	Continuous	Continuous	39	42	47	40	61	54	32	47	50
			Right	660	660	22	33	32	22	34	30	22	28	30
		Westbound	Left	250	250	54	57	34	55	54	39	55	48	39
			Through	Continuous	Continuous	56	47	43	40	49	39	38	47	39
			Right	Continuous	Continuous	127	104	86	120	101	96	139	117	92
		Northbound	Left	400	400	36	29	17	25	29	19	34	32	19
			Through	Continuous	Continuous	124	122	87	110	131	97	116	124	82
			Right	360	360	32	40	3	30	36	2	29	37	2
		Southbound	Left	250	250	108	203	116	115	201	101	127	205	97
			Through	Continuous	Continuous	85	200	75	67	135	63	59	131	64
			Right	310	310	24	42	15	27	40	14	33	40	25
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	50	112	156	52	110	158	45	134	160
			Right	275	275	20	55	82	18	52	80	22	49	75
		Westbound	Left	350	350	45	77	75	34	65	74	30	79	68
			Through	Continuous	Continuous	0	23	35	0	24	35	0	28	35
			Right	245	245	27	24	25	24	26	27	44	46	35
		Northbound	Left	300	300	80	283	206	83	285	220	69	241	217
			Through	Continuous	Continuous	100	287	161	115	301*	164	110	240	145
			Right	240	240	18	30	27	25	31	30	24	28	28
		Southbound	Left	330	330	48	122	120	48	145	119	56	127	229
			Through	Continuous	Continuous	149	234	135	123	220	122	118	254	129
			Right	340	340	36	68	53	40	65	47	45	67	43
3	Mine Road & Courthouse Road	Eastbound	Left	320	320	114	239	145	113	216	143	106	271	155
			Through	Continuous	Continuous	134	129	89	141	122	68	134	140	77
			Right	Continuous	Continuous	141	132	75	146	128	67	128	144	76
		Westbound	Left	170	170	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	204	207	132	223	174	139	188	183	140
			Right	Continuous	Continuous	82	108	84	90	109	115	85	109	123
		Northbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	0	0	0	0	0	0	0	0	0
			Right	s	s	s	s	s	s	s	s	s	s	s
		Southbound	Left	525	525	176	230	141	204	262	150	182	308	181
			Right	440	440	77	136	74	81	156	78	64	181	103
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	300	300	44	57	28	47	94	28	72	100	20
			Through	Continuous	Continuous	193	240	209	209	276	250	226	201	220
			Right	Continuous	415	234	302	236	204	281	262	221	199	215
		Westbound	Left	225	360	45	34	70	51	36	100	70	118	92
			Through	Continuous	Continuous	93	222	285	102	179	260	261	345	198
			Right	Continuous	Continuous	68	64	87	126	101	102	300	333	236
		Northbound	Left	200	200	s	s	s	s	s	s	s	S	s
			Through	Continuous	Continuous	9	0	0	7	0	0	2	0	0
			Right	200	200	6	0	0	6	0	0	0	0	0
		Southbound	Left	320	655	178	193	98	161	170	86	356	450	586*
			Through	Continuous	Continuous	175	188	116	158	163	86	1	80	160
			Right	350	635	54	91	46	55	87	44	309	584*	303
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	Continuous	Continuous	16	18	17	10	17	12	10	21	7
			Through	Continuous	N.A.	0	0	0	0	0	0	0	0	0
			Right	250	Continuous	21	25	19	25	22	18	13	47	22
		Westbound	Left	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	135	157	168
			Through		Continuous							125	145	149
		Northbound	Left	375	250	25	16	8	31	21	11	36	26	14
			Through	Continuous	Continuous	0	0	0	0	0	0	130	138	164
			Right	Continuous	Continuous	0	0	0	0	0	0	45	46	54
		Southbound	Left	350	350	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	0	0	0	0	0	0	87	128	170
			Right	Continuous	Continuous	0	0	0	0	0	0	82	118	162
6	Courthouse Road (WB) & Ramp D	Westbound	Through	Continuous	Continuous	6	6	3	9	30	26	10	6	22
		Southbound	Right	Continuous	Continuous	93	227	84	79	244	89	109	219	134
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	Continuous	Continuous	89	48	6	5	27	0	100	113	102
			Right	Continuous	Continuous	27	45	8	0	31	0	72	113	17
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	Continuous	Continuous	230	231	188	136*	158*	131*	231*	244*	233*
		Westbound	Through	Continuous	Continuous	220	142	202	292*	125	188*	433*	222	479*
9	Courthouse Road (EB) & Spur D	Eastbound	Through	Continuous	Continuous	30	23	12	0	24	18	11	25	54
		Southbound	Left	Continuous	Continuous	227	189	121	200	183	117	223	235	104
10	Courthouse Road (WB) & Spur C	Westbound	Left	Continuous	Continuous	69	30	30	126	134	38	164	294	113
			Through	Continuous	Continuous	102	28	70	148	172	44	289	370	335
11	Courthouse Road (EB) & Spur A	Eastbound	Left	Continuous	Continuous	62	187	2	137	179	49	216	205	331
			Through	Continuous	Continuous	4	179	0	81	169	36	124	164	266
12	Courthouse Road (WB) & Spur B	Westbound	Through	Continuous	Continuous	32	25	3	23	20	0	14	22	12
		Northbound	Left	Continuous	Continuous	115	140	97	127	129	67	210	214*	255*
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	Continuous	Continuous	169	201	119	201*	289*	156*	244*	284*	386*
		Westbound	Through	Continuous	Continuous	290	294	198	262	279	171	282	279	225
14	Courthouse Road (WB) & Ramp A	Westbound	Through	Continuous	Continuous	153	216	0	11	39	2	28	40	19
			Right	Continuous	Continuous	161	189	0	0	0	0	7	56	13
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	Continuous	Continuous	14	25	3	29	16	9	13	11	3
		Northbound	Right	Continuous	Continuous	309	254	177	329	234	158	301	234	170

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2026 No-Build Conditions			2026 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	250	250	212	223	87	222	232	81	215	228	82
			Through	Continuous	Continuous	157	278	152	187	284	133	161	275	57
			Right	250	250	141	248	127	142	214	105	115	230	64
		Westbound	Left	200	200	73	66	20	82	74	20	66	112	13
			Through	Continuous	Continuous	169	200	151	192	178	118	187	237	125
			Right	250	250	28	25	7	31	20	0	33	35	1
		Northbound	Left	325	325	178	192	155	159	170	132	153	172	124
			Through	Continuous	Continuous	72	73	40	74	70	48	85	66	34
			Right	220	220	65	71	54	61	59	49	56	66	51
		Southbound	Left	250	250	58	64	38	51	75	38	57	90	45
			Through	Continuous	Continuous	60	72	39	61	73	42	72	79	45
			Right	420	420	245	285	126	264	270	117	238	326	144
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	550	550	88	107	84	93	132	69	106	146	87
			Through	Continuous	Continuous	192	262	133	186	300	143	193	314	118
			Right	Continuous	Continuous	153	386	200	222	444	220	171	446	227
		Westbound	Left	175	175	111	169	94	112	151	102	110	170	97
			Through	Continuous	Continuous	140	193	95	140	162	90	138	180	99
			Right	s	s	151	188	101	147	160	99	148	174	95
		Northbound	Left	390	390	199	226	155	166	208	110	161	223	128
			Through	Continuous	Continuous	168	120	98	155	123	71	164	156	70
			Right	760	760	32	56	15	40	53	23	42	45	30
		Southbound	Left	490	490	74	101	68	80	100	53	75	88	59
			Through	Continuous	Continuous	142	311	178	149	363	176	121	239	165
			Right	500	500	91	160	101	101	203	98	123	152	135
18	US Route 1 & Courthouse Road	Eastbound	Left	s	Continuous	s	s	s	162	191	114	103	142	102
			Through	Continuous	Continuous	218	321	141	118	144	60	88	110	53
			Right	Continuous	250	78	204	63	53	92	31	53	79	38
		Westbound	Left	s	150	s	s	s	126	143	63	98	105	52
			Through	Continuous	Continuous	226	298	122	187	240	112	297	146	86
			Right	Continuous	Continuous	384	216	157	380	242	158	486	179	123
		Northbound	Left	s	300	s	s	s	241	110	60	115	69	59
			Through	Continuous	Continuous	337	288	192	340	252	180	241	178	150
			Right	s	s	s	s	s	346	252	179	224	178	150
		Southbound	Left	s	696	s	s	s	154	311	108	101	174	102
			Through	Continuous	Continuous	293	463	231	248	406	178	158	265	169
			Right	s	s	s	s	s	308	420	197	224	295	180
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	0	0
		Westbound	Right		Continuous							0	0	0
		Northbound	Through		Continuous							0	0	0
			Right		150							0	0	0
		Southbound	Through		Continuous							0	0	0
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	N.A.	s	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	s	s	s
			Through		Continuous							0	0	0
			Right		s							s	s	s
		Westbound	Left		Continuous							130	191	307
			Through		Continuous							0	0	0
			Right		s							s	s	s
		Northbound	Left		Continuous							0	0	0
			Through		Continuous							120	167	97
			Right		150							21	59	56
		Southbound	Left		150							39	62	0
			Through		Continuous							121	141	158
			Right		Continuous							0	0	0

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Table 9: Scenario A: Analysis Control Delay and LOS Summary (2032)

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2032 No-Build Conditions						2032 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	30.2	C	31.6	C	30.9	C	43.5	D	31.5	C	32.4	C	32.2	C	35.5	D	32.4	C
			Through	30.0	C	34.2	C	31.7	C	29.1	C	30.9	C	30.7	C	33.4	C	34.0	C	30.7	C
			Right	28.8	C	31.3	C	30.2	C	27.9	C	28.8	C	29.1	C	32.0	C	31.7	C	29.1	C
			Approach	30.1	C	31.9	C	30.9	C	41.9	D	31.1	C	31.8	C	32.3	C	34.8	C	31.8	C
		Westbound	Left	27.2	C	29.2	C	28.7	C	27.7	C	28.4	C	28.4	C	28.3	C	31.5	C	28.4	C
			Through	49.9	D	50.2	D	41.6	D	44.5	D	50.2	D	38.1	D	62.9	E	53.5	D	38.1	D
			Right	28.9	C	26.5	C	26.9	C	34.2	C	36.2	D	26.5	C	30.0	C	28.9	C	26.5	C
			Approach	29.5	C	27.7	C	27.5	C	34.1	C	36.2	D	27.0	C	30.9	C	30.0	C	27.0	C
		Northbound	Left	12.2	B	11.5	B	10.5	B	11.1	B	11.6	B	10.1	B	12.1	B	10.8	B	10.1	B
			Through	19.6	B	22.2	C	17.6	B	17.2	B	17.9	B	16.3	B	21.3	C	24.0	C	16.3	B
			Right	15.5	B	16.4	B	14.1	B	14.1	B	14.0	B	13.3	B	15.1	B	19.2	B	13.3	B
			Approach	19.2	B	21.2	C	17.3	B	16.8	B	17.2	B	16.0	B	20.6	C	23.0	C	16.0	B
		Southbound	Left	13.6	B	16.1	B	11.8	B	12.7	B	27.7	C	11.8	B	14.1	B	18.5	B	11.8	B
			Through	13.6	B	15.6	B	12.1	B	12.4	B	15.9	B	11.9	B	13.7	B	14.7	B	11.9	B
			Right	7.6	A	8.2	A	7.9	A	8.3	A	8.4	A	8.4	A	7.3	A	7.8	A	8.4	A
			Approach	12.8	B	14.8	B	11.4	B	12.0	B	18.7	B	11.4	B	13.1	B	15.1	B	11.4	B
		Intersection		**21.3**	**C**	**19.4**	**B**	**17.2**	**B**	**23.2**	**C**	**22.2**	**C**	**16.8**	**B**	**22.4**	**C**	**20.6**	**C**	**16.8**	**B**
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Through	36.5	D	40.6	D	33.7	C	37.8	D	62.7	E	49.3	D	36.3	D	68.9	E	53.0	D
			Right	34.2	C	36.6	D	30.6	C	34.3	C	55.0	D	45.2	D	32.9	C	59.6	E	31.7	C
			Approach	35.5	D	38.7	D	31.9	C	36.3	D	59.1	E	46.9	D	34.8	D	64.6	E	40.7	D
		Westbound	Left	37.2	D	39.5	D	36.8	D	37.1	D	58.2	E	58.5	E	35.5	D	63.2	E	33.8	C
			Through	0.0	A	37.8	D	35.7	D	0.0	A	57.4	E	56.9	E	0.0	A	60.6	E	32.7	C
			Right	34.0	C	31.9	C	27.6	C	33.5	C	46.6	D	45.5	D	30.8	C	51.4	D	26.1	C
			Approach	36.4	D	38.0	D	34.5	C	36.3	D	56.1	E	55.3	E	32.5	C	58.7	E	31.9	C
		Northbound	Left	15.2	B	25.1	C	28.2	C	15.2	B	16.9	B	15.4	B	15.8	B	18.8	B	31.5	C
			Through	17.1	B	25.1	C	32.2	C	17.3	B	15.1	B	21.2	C	19.0	B	22.6	C	29.5	C
			Right	14.5	B	17.4	B	23.5	C	14.4	B	14.8	B	22.1	C	15.9	B	14.0	B	20.5	C
			Approach	16.6	B	25.0	C	30.4	C	16.8	B	15.8	B	18.6	B	18.3	B	21.0	C	30.3	C
		Southbound	Left	14.8	B	19.1	B	24.2	C	14.7	B	16.4	B	23.4	C	15.2	B	15.5	B	23.1	C
			Through	18.6	B	28.2	C	31.8	C	18.7	B	39.7	D	35.6	D	19.2	B	34.1	C	30.0	C
			Right	17.1	B	24.9	C	29.4	C	16.8	B	34.0	C	32.9	C	17.3	B	29.9	C	27.3	C
			Approach	18.2	B	25.9	C	29.0	C	18.2	B	34.3	C	31.3	C	18.8	B	29.9	C	27.4	C
		Intersection		**19.0**	**B**	**27.2**	**C**	**30.6**	**C**	**19.1**	**B**	**28.9**	**C**	**31.5**	**C**	**20.2**	**C**	**30.7**	**C**	**31.8**	**C**
3	Mine Road & Courthouse Road	Eastbound	Left	6.6	A	10.3	B	13.6	B	7.7	A	12.9	B	9.7	A	10.7	B	12.9	B	9.5	A
			Through	4.4	A	6.0	A	6.6	A	5.3	A	7.2	A	5.7	A	7.9	A	7.3	A	5.7	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	4.7	A	7.6	A	9.6	A	5.7	A	9.3	A	7.4	A	8.3	A	9.3	A	7.3	A
		Westbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	29.4	C	4.1	A	16.6	B	6.8	A	5.6	A	3.3	A	16.9	B	6.5	A	9.0	A
			Right	42.6	D	1.9	A	8.4	A	4.4	A	1.8	A	2.4	A	6.2	A	18.8	B	66.8	E
			Approach	33.0	C	3.3	A	13.1	B	6.1	A	4.3	A	2.9	A	14.2	B	10.6	B	33.6	C
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
		Southbound	Left	53.5	D	50.3	D	20.5	C	48.0	D	32.5	C	41.9	D	34.2	C	62.8	E	65.2	E
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	34.5	C	24.2	C	9.2	A	28.7	C	16.1	B	44.6	D	19.4	B	27.1	C	32.2	C
			Approach	49.0	D	39.9	D	16.5	B	43.4	D	25.9	C	42.8	D	30.6	C	48.5	D	53.5	D
		Intersection		**22.9**	**C**	**15.3**	**B**	**13.1**	**B**	**13.2**	**B**	**12.2**	**B**	**19.0**	**B**	**14.6**	**B**	**20.8**	**C**	**31.8**	**C**
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	12.3	B	8.9	A	17.5	B	10.6	B	9.4	A	6.0	A	21.0	C	11.5	B	10.5	B
			Through	19.1	B	12.1	B	24.1	C	16.2	B	11.2	B	7.6	A	27.4	C	12.4	B	14.0	B
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	0.0	A	0.0	A
			Approach	19.0	B	12.0	B	24.0	C	16.1	B	11.2	B	7.6	A	27.1	C	12.4	B	13.9	B
		Westbound	Left	97.2	F	71.6	E	41.7	D	99.8	F	111.5	F	89.1	F	144.9	F	91.9	F	75.2	E
			Through	11.9	B	16.9	B	21.8	C	11.4	B	11.0	B	4.0	A	28.1	C	26.9	C	26.5	C
			Right	75.2	E	63.1	E	11.6	B	71.6	E	14.4	B	0.1	A	10.3	B	7.0	A	6.1	A
			Approach	33.7	C	28.4	C	19.7	B	32.2	C	12.3	B	4.9	A	20.7	C	19.3	B	15.8	B
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	57.2	E	0.0	A	0.0	A	52.2	D	0.0	A	0.0	A	69.7	E	0.0	A	0.0	A
			Right	55.9	E	0.0	A	0.0	A	50.9	D	0.0	A	0.0	A	60.1	E	0.0	A	0.0	A
			Approach	56.6	E	0.0	A	0.0	A	51.6	D	0.0	A	0.0	A	64.9	E	0.0	A	0.0	A
		Southbound	Left	55.0	D	60.8	E	30.2	C	51.5	D	57.9	E	57.9	E	56.1	E	49.1	D	50.0	D
			Through	58.4	E	66.8	E	30.5	C	56.1	E	60.9	E	59.7	E	0.0	A	0.0	A	0.0	A
			Right	36.3	D	37.2	D	19.7	B	31.5	C	38.3	D	42.6	D	44.1	D	227.9	F	73.9	E
			Approach	55.3	E	59.9	E	29.5	C	52.2	D	56.6	E	57.3	E	55.6	E	62.5	E	50.4	D
		Intersection		**31.2**	**C**	**27.2**	**C**	**22.9**	**C**	**28.9**	**C**	**18.4**	**B**	**14.0**	**B**	**32.3**	**C**	**29.6**	**C**	**28.9**	**C**
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	13.1	B	13.1	B	10.7	B	14.2	B	14.1	B	11.2	B	35.9	D	34.5	C	35.3	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	9.7	A	9.6	A	9.1	A	9.9	A	9.8	A	9.2	A	33.9	C	33.9	C	35.0	D
			Approach	10.7	B	10.4	B	9.3	A	11.3	B	10.8	B	9.4	A	34.5	C	34.1	C	35.1	D
		Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	28.9	C	33.4	C	30.9	C
			Through	-	-	-	-	-	-	-	-	-	-	-	-	28.9	C	33.4	C	30.9	C
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	28.9	C	33.4	C	30.9	C
		Northbound	Left	8.3	A	8.0	A	7.7	A	8.4	A	8.2	A	7.8	A	6.0	A	7.9	A	8.1	A
			Through	†	†	†	†	†	†	†	†	†	†	†	†	6.8	A	9.1	A	9.2	A
			Right	†	†	†	†	†	†	†	†	†	†	†	†	3.2	A	3.7	A	5.4	A
			Approach	0.3	A	0.1	A	0.1	A	0.3	A	0.1	A	0.1	A	5.9	A	7.6	A	7.7	A
		Southbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	†	†	†	†	†	†	†	†	†	†	†	†	5.3	A	5.8	A	7.3	A
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	5.3	A	5.8	A	7.3	A
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**8.4**	**A**	**10.7**	**B**	**11.5**	**B**
6	Courthouse Road (WB) & Ramp D	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Right	10.1	B	27.3	C	7.4	A	12.2	B	17.3	B	8.1	A	16.0	B	23.8	C	15.8	B
			Approach	10.1	B	27.3	C	7.4	A	12.2	B	17.3	B	8.1	A	16.0	B	23.8	C	15.8	B
		Intersection		**1.1**	**A**	**5.6**	**A**	**1.4**	**A**	**1.4**	**A**	**3.6**	**A**	**1.5**	**A**	**1.5**	**A**	**4.0**	**A**	**1.8**	**A**
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	11.0	B	29.7	C	7.9	A	11.1	B	19.8	B	4.4	A	21.1	C	26.6	C	20.6	C
			Approach	11.0	B	29.7	C	7.9	A	11.1	B	19.8	B	4.4	A	21.1	C	26.6	C	20.6	C
		Westbound	Through	28.6	C	7.3	A	61.5	E	19.5	B	20.7	C	24.1	A	36.2	D	34.7	C	40.3	D
			Approach	28.6	C	7.3	A	61.5	E	19.5	B	20.7	C	24.1	A	36.2	D	34.7	C	40.3	D
		Intersection		**19.9**	**B**	**17.0**	**B**	**34.8**	**C**	**15.4**	**B**	**20.3**	**C**	**14.3**	**B**	**28.7**	**C**	**31.1**	**C**	**30.5**	**C**
9	Courthouse Road (EB) & Spur D	Eastbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Left	39.1	D	18.9	B	35.8	D	32.2	C	36.7	D	46.1	D	29.3	C	29.0	C	31.3	C
			Approach	39.1	D	18.9	B	35.8	D	32.2	C	36.7	D	46.1	D	29.3	C	29.0	C	31.3	C
		Intersection		**11.6**	**B**	**7.6**	**A**	**9.6**	**A**	**9.6**	**A**	**14.7**	**B**	**12.4**	**B**	**7.4**	**A**	**9.4**	**A**	**5.2**	**A**
10	Courthouse Road (WB) & Spur C	Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
11	Courthouse Road (EB) & Spur A	Eastbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
12	Courthouse Road (WB) & Spur B	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Northbound	Left	9.7	A	10.9	B	6.9	A	10.8	B	13.2	B	7.3	A	12.6	B	16.6	B	10.5	B
			Approach	9.7	A	10.9	B	6.9	A	11.8	B	13.6	B	7.9	A	12.6	B	16.6	B	10.5	B
		Intersection		**3.1**	**A**	**2.9**	**A**	**2.1**	**A**	**3.5**	**A**	**3.5**	**A**	**2.2**	**A**	**5.1**	**A**	**6.2**	**A**	**5.4**	**A**
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	9.8	A	18.5	B	9.4	A
			Approach	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	9.8	A	18.5	B	9.4	A
		Westbound	Through	41.9	D	46.1	D	39.4	D	33.1	C	39.7	D	44.7	D	37.8	D	50.7	D	59.3	E
			Approach	41.9	D	46.1	D	39.4	D	33.1	C	39.7	D	44.7	D	37.8	D	50.7	D	59.3	E
		Intersection		**23.8**	**C**	**33.0**	**C**	**22.5**	**C**	**21.5**	**C**	**22.8**	**C**	**22.9**	**C**	**22.7**	**C**	**32.9**	**C**	**33.1**	**C**
14	Courthouse Road (WB) & Ramp A	Westbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Northbound	Right	48.5	D	39.0	D	37.3	D	34.0	C	36.9	D	44.7	D	36.8	D	41.5	D	49.0	D
			Approach	48.5	D	39.0	D	37.3	D	34.0	C	36.9	D	44.7	D	36.8	D	41.5	D	49.0	D
		Intersection		**11.9**	**B**	**5.7**	**A**	**6.3**	**A**	**8.4**	**A**	**5.5**	**A**	**7.6**	**A**	**8.7**	**A**	**5.9**	**A**	**7.4**	**A**

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2032 No-Build Conditions						2032 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	54.1	D	56.4	E	35.2	D	40.3	D	51.6	D	78.9	E	69.5	E	59.1	E	58.8	E
			Through	19.8	B	42.8	D	21.2	C	13.7	B	17.4	B	9.0	A	14.5	B	28.3	C	17.2	B
			Right	19.5	B	39.0	D	20.5	C	13.8	B	16.0	B	8.7	A	14.6	B	25.6	C	16.1	B
			Approach	30.8	C	45.0	D	23.0	C	22.3	C	23.9	C	18.8	B	31.6	C	33.7	C	22.2	C
		Westbound	Left	14.2	B	17.3	B	17.2	B	14.3	B	5.0	A	12.5	B	14.7	B	11.9	B	12.7	B
			Through	25.5	C	26.5	C	23.5	C	26.4	C	11.3	B	18.2	B	28.8	C	28.6	C	18.9	B
			Right	22.6	C	22.9	C	21.3	C	22.7	C	26.8	C	16.2	B	24.4	C	26.8	C	16.4	B
			Approach	24.9	C	25.9	C	23.4	C	25.8	C	11.7	B	18.0	B	28.0	C	27.9	C	18.8	B
		Northbound	Left	60.9	E	59.9	E	35.0	C	48.6	D	58.7	E	58.6	E	53.7	D	58.7	E	58.6	E
			Through	53.0	D	51.0	D	32.9	C	45.3	D	52.3	D	53.7	D	49.7	D	52.3	D	53.7	D
			Right	47.9	D	46.6	D	30.5	C	39.6	D	46.7	D	49.8	D	43.9	D	46.7	D	49.8	D
			Approach	58.3	E	57.4	E	34.4	C	47.1	D	56.6	E	57.5	E	52.0	D	56.6	E	57.5	E
		Southbound	Left	49.0	D	46.3	D	34.8	C	49.5	D	50.3	D	58.4	E	51.9	D	50.4	D	58.0	E
			Through	49.0	D	46.1	D	34.8	C	49.3	D	50.2	D	58.3	E	51.8	D	50.2	D	57.9	E
			Right	30.8	C	33.2	C	21.3	C	30.2	C	35.4	D	42.2	D	31.7	C	35.4	D	42.2	D
			Approach	31.9	C	34.6	C	22.3	C	31.4	C	36.9	D	43.5	D	33.0	C	37.0	D	43.5	D
		Intersection		**31.6**	**C**	**39.5**	**D**	**24.3**	**C**	**26.8**	**C**	**26.3**	**C**	**26.8**	**C**	**32.4**	**C**	**34.8**	**C**	**27.7**	**C**
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	37.0	D	49.2	D	35.0	C	38.0	D	78.6	E	37.0	D	37.4	D	110.3	F	37.1	D
			Through	33.3	C	45.1	D	30.4	C	35.2	D	34.6	C	33.1	C	36.0	D	30.3	C	32.5	C
			Right	19.6	B	29.4	C	20.9	C	20.5	C	62.2	E	26.3	C	20.0	B	29.7	C	24.1	C
			Approach	28.7	C	38.6	D	25.7	C	30.1	C	52.1	D	29.8	C	30.1	C	41.3	D	28.7	C
		Westbound	Left	37.9	D	48.6	D	37.2	D	37.2	D	64.5	E	37.7	D	38.3	D	64.5	E	40.1	D
			Through	31.9	C	38.7	D	31.0	C	31.8	C	42.2	D	31.5	C	35.5	D	42.9	D	34.0	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	33.0	C	41.4	D	32.6	C	32.7	C	48.1	D	33.1	C	36.0	D	48.6	D	35.6	D
		Northbound	Left	33.1	C	44.8	D	33.3	C	35.0	C	58.0	E	32.6	C	36.5	D	59.6	E	35.1	D
			Through	18.1	B	22.2	C	16.5	B	21.5	C	22.0	C	14.5	B	22.0	C	22.2	C	16.5	B
			Right	11.4	B	13.5	B	11.3	B	12.2	B	13.3	B	9.8	A	12.6	B	13.5	B	11.2	B
			Approach	22.2	C	31.9	C	23.4	C	24.9	C	38.1	D	22.0	C	26.0	C	39.9	D	25.1	C
		Southbound	Left	44.6	D	52.9	D	42.8	D	43.8	D	64.4	E	47.1	D	42.9	D	64.4	E	46.8	D
			Through	24.7	C	35.9	D	24.8	C	28.2	C	37.4	D	23.3	C	28.6	C	38.4	D	27.0	C
			Right	15.1	B	19.3	B	13.7	B	17.1	B	21.5	C	13.6	B	16.3	B	21.8	C	14.6	B
			Approach	24.6	C	34.5	C	23.7	C	27.4	C	36.6	D	22.7	C	26.7	C	36.9	D	24.7	C
		Intersection		**26.1**	**C**	**36.3**	**D**	**25.4**	**C**	**28.0**	**C**	**44.2**	**D**	**26.1**	**C**	**28.8**	**C**	**40.8**	**D**	**27.4**	**C**
18	US Route 1 & Courthouse Road	Eastbound	Left	s	s	s	s	s	s	69.2	E	55.1	E	36.8	D	69.2	E	50.5	D	41.9	D
			Through	69.5	E	67.6	E	64.6	E	33.6	C	38.1	D	28.3	C	33.6	C	39.1	D	37.9	D
			Right	54.4	D	59.2	E	56.2	E	29.2	C	33.6	C	26.9	C	29.2	C	35.3	D	36.7	D
			Approach	67.6	E	64.6	E	63.0	E	52.7	D	43.0	D	33.0	C	52.8	D	42.1	D	40.0	D
		Westbound	Left	s	s	s	s	s	s	28.3	C	34.2	C	28.3	C	28.3	C	38.6	D	38.6	D
			Through	67.2	E	89.6	F	61.4	E	34.6	C	42.9	D	30.4	C	35.0	C	63.1	E	40.4	D
			Right	56.4	E	65.7	E	57.0	E	28.2	C	32.3	C	27.2	C	28.2	C	35.8	D	37.6	D
			Approach	60.5	E	79.7	E	59.0	E	30.1	C	36.9	D	28.4	C	30.2	C	47.2	D	38.6	D
		Northbound	Left	s	s	s	s	s	s	20.6	C	27.1	C	20.2	C	20.5	C	29.9	C	27.7	C
			Through	35.8	D	66.7	E	58.2	E	28.6	C	33.3	C	22.9	C	30.0	C	41.7	D	32.1	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	35.8	D	66.7	E	58.2	E	27.5	C	32.8	C	22.8	C	28.8	C	40.9	D	31.9	C
		Southbound	Left	s	s	s	s	s	s	25.6	C	24.8	C	19.9	B	25.6	C	22.6	C	21.4	C
			Through	57.5	E	47.5	D	21.8	C	28.8	C	37.4	D	26.3	C	32.0	C	30.0	C	25.9	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	57.5	E	47.5	D	21.8	C	28.3	C	34.5	C	25.4	C	31.1	C	28.3	C	25.3	C
		Intersection		**50.9**	**D**	**58.3**	**E**	**39.8**	**D**	**30.7**	**C**	**35.6**	**D**	**25.8**	**C**	**32.0**	**C**	**35.3**	**D**	**29.9**	**C**
19	Austin Ridge Driveway & Driveway 2	Westbound	Left	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		-	-	-	-	-	-
			Approach													-	-	-	-	-	-
		Northbound	Through													-	-	-	-	-	-
			Right													-	-	-	-	-	-
			Approach													-	-	-	-	-	-
		Southbound	Through													-	-	-	-	-	-
			Approach													-	-	-	-	-	-
		Intersection														-	-	-	-	-	-
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	N.A.		N.A.		N.A.		N.A.		N.A.		N.A.		0.0	A	0.0	A	0.0	A
			Through													0.0	A	0.0	A	0.0	A
			Right													0.0	A	0.0	A	0.0	A
			Approach													0.0	A	0.0	A	0.0	A
		Westbound	Left													27.7	C	29.2	C	24.0	C
			Right													-	-	s	s	s	s
			Approach													27.7	C	29.2	C	24.0	C
		Northbound	Left													0.0	A	0.0	A	0.0	A
			Through													6.4	A	3.8	A	4.8	A
			Right													1.1	A	0.5	A	0.5	A
			Approach													5.8	A	3.3	A	3.4	A
		Southbound	Left													4.5	A	4.4	A	0.0	A
			Through													6.4	A	6.0	A	9.3	A
			Right													s	s	s	s	s	s
			Approach													6.3	A	5.9	A	9.3	A
		Intersection														12.1	B	13.1	B	16.2	B

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Table 10: Scenario A: Maximum Queue Lengths (2032)

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2032 No-Build Conditions			2032 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	570	570	128	123	95	163	126	92	146	150	92
			Through	Continuous	Continuous	39	42	47	49	49	59	43	63	55
			Right	660	660	22	33	32	22	32	28	24	33	37
		Westbound	Left	250	250	54	57	34	47	63	36	48	54	37
			Through	Continuous	Continuous	56	47	43	48	51	38	44	47	41
			Right	Continuous	Continuous	127	104	86	128	115	96	135	139	104
		Northbound	Left	400	400	36	29	17	41	38	19	38	38	21
			Through	Continuous	Continuous	124	122	87	128	109	91	139	130	94
			Right	360	360	32	40	3	32	37	4	32	46	16
		Southbound	Left	250	250	108	203	116	114	231	112	134	219	104
			Through	Continuous	Continuous	85	200	75	67	190	71	77	187	73
			Right	310	310	24	42	15	22	42	33	33	42	23
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	50	112	156	52	151	204	57	138	186
			Right	275	275	20	55	82	30	70	83	22	59	118
		Westbound	Left	350	350	45	77	75	37	79	81	36	97	56
			Through	Continuous	Continuous	0	23	35	0	34	42	0	36	41
			Right	245	245	27	24	25	24	33	33	38	52	29
		Northbound	Left	300	300	80	283	206	73	282	240	74	277	232
			Through	Continuous	Continuous	100	287	161	130	311*	173	130	288	166
			Right	240	240	18	30	27	27	28	30	30	30	31
		Southbound	Left	330	330	48	122	120	46	160	133	51	170	128
			Through	Continuous	Continuous	149	234	135	130	238	140	126	255	119
			Right	340	340	36	68	53	40	69	50	45	69	48
3	Mine Road & Courthouse Road	Eastbound	Left	320	320	114	239	145	116	279	177	122	312	165
			Through	Continuous	Continuous	134	129	89	131	176	84	139	287	94
			Right	Continuous	Continuous	141	132	75	131	164	96	154	158	100
		Westbound	Left	170	170	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	204	207	132	102	182	63	255	226	119
			Right	Continuous	Continuous	82	108	84	81	101	90	79	123	106
		Northbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	0	0	0	0	0	0	0	0	0
			Right	s	s	s	s	s	s	s	s	s	s	s
		Southbound	Left	525	525	176	230	141	189	333	238	178	370	380
			Right	440	440	77	136	74	76	149	121	71	188	201
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	300	300	44	57	28	91	138	26	73	106	25
			Through	Continuous	Continuous	193	240	209	313	348	204	256	202	182
			Right	Continuous	415	234	302	236	325	347	218	249	204	176
		Westbound	Left	225	360	45	34	70	46	38	75	60	146	103
			Through	Continuous	Continuous	93	222	285	106	237	102	307	385	257
			Right	Continuous	Continuous	68	64	87	106	113	46	306	323	313
		Northbound	Left	200	200	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	9	0	0	8	0	0	2	0	0
			Right	200	200	6	0	0	4	0	0	0	0	0
		Southbound	Left	320	655	178	193	98	159	201	142	360	415	528*
			Through	Continuous	Continuous	175	188	116	168	203	140	5	0	52
			Right	350	635	54	91	46	61	99	60	268	468*	300
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	Continuous	Continuous	16	18	17	13	14	9	12	24	16
			Through	Continuous	N.A.	0	0	0	0	0	0	0	0	0
			Right	250	Continuous	21	25	19	9	24	14	21	29	29
		Westbound	Left	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	135	152	167
			Through		Continuous							129	137	150
		Northbound	Left	375	250	25	16	8	41	19	8	43	31	13
			Through	Continuous	Continuous	0	0	0	0	0	0	122	147	153
			Right	Continuous	Continuous	0	0	0	0	0	0	43	56	57
		Southbound	Left	350	350	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	0	0	0	0	0	0	90	91	100
			Right	Continuous	Continuous	0	0	0	0	0	0	77	0	98
6	Courthouse Road (WB) & Ramp D	Westbound	Through	Continuous	Continuous	6	6	3	17	19	10	8	23	8
		Southbound	Right	Continuous	Continuous	93	227	84	95	208	94	143	242	136
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	Continuous	Continuous	89	48	6	30	46	0	105	129	164
			Right	Continuous	Continuous	27	45	8	5	50	0	44	155	135
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	Continuous	Continuous	230	231	188	161*	177*	131*	236*	260*	295*
		Westbound	Through	Continuous	Continuous	220	142	202	220*	407*	202*	488*	225	512*
9	Courthouse Road (EB) & Spur D	Eastbound	Through	Continuous	Continuous	30	23	12	20	28	9	30	32	60
		Southbound	Left	Continuous	Continuous	227	189	121	202	282	159	223	263	122
10	Courthouse Road (WB) & Spur C	Westbound	Left	Continuous	Continuous	69	30	30	122	300	66	217	436	268
			Through	Continuous	Continuous	102	28	70	76	263	58	344	463	368
11	Courthouse Road (EB) & Spur A	Eastbound	Left	Continuous	Continuous	62	187	2	205	173	27	324	271	411
			Through	Continuous	Continuous	4	179	0	105	160	0	194	230	330
12	Courthouse Road (WB) & Spur B	Westbound	Through	Continuous	Continuous	32	25	3	43	57	12	25	65	36
		Northbound	Left	Continuous	Continuous	115	140	97	137	127	87	233	220*	265*
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	Continuous	Continuous	169	201	119	225*	280*	120*	314*	350*	450*
		Westbound	Through	Continuous	Continuous	290	294	198	180*	248*	170*	192*	361*	213*
14	Courthouse Road (WB) & Ramp A	Westbound	Through	Continuous	Continuous	153	216	0	10	78	0	22	191	43
			Right	Continuous	Continuous	161	189	0	0	0	0	5	110	5
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	Continuous	Continuous	14	25	3	21	30	0	20	25	0
		Northbound	Right	Continuous	Continuous	309	254	177	330	300	197	344	320	210

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2032 No-Build Conditions			2032 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	250	250	212	223	87	230	214	104	240	249	122
			Through	Continuous	Continuous	157	278	152	208	284	114	243	350	197
			Right	250	250	141	248	127	114	207	80	124	248	135
		Westbound	Left	200	200	73	66	20	67	59	21	80	61	20
			Through	Continuous	Continuous	169	200	151	179	231	132	210	231	159
			Right	250	250	28	25	7	32	52	2	36	22	0
		Northbound	Left	325	325	178	192	155	150	186	152	155	179	165
			Through	Continuous	Continuous	72	73	40	73	92	49	75	116	64
			Right	220	220	65	71	54	72	68	57	65	69	59
		Southbound	Left	250	250	58	64	38	51	71	53	60	104	56
			Through	Continuous	Continuous	60	72	39	70	140	51	68	94	60
			Right	420	420	245	285	126	259	296	177	246	277	192
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	550	550	88	107	84	98	156	78	103	176	105
			Through	Continuous	Continuous	192	262	133	208	553	136	215	352	165
			Right	Continuous	Continuous	153	386	200	226	471	231	227	510	320
		Westbound	Left	175	175	111	169	94	125	174	108	109	174	102
			Through	Continuous	Continuous	140	193	95	141	222	97	142	234	94
			Right	s	s	151	188	101	150	195	104	160	212	104
		Northbound	Left	390	390	199	226	155	170	289	111	193	259	154
			Through	Continuous	Continuous	168	120	98	182	204	82	200	216	88
			Right	760	760	32	56	15	72	61	23	49	68	36
		Southbound	Left	490	490	74	101	68	77	108	64	72	96	59
			Through	Continuous	Continuous	142	311	178	124	273	166	135	286	188
			Right	500	500	91	160	101	94	163	112	119	191	164
18	US Route 1 & Courthouse Road	Eastbound	Left	s	Continuous	s	s	s	113	137	103	123	137	97
			Through	Continuous	Continuous	218	321	141	89	112	52	91	107	56
			Right	Continuous	250	78	204	63	55	85	33	59	79	40
		Westbound	Left	s	150	s	s	s	118	109	52	141	148	56
			Through	Continuous	Continuous	226	298	122	540	148	74	921	223	95
			Right	Continuous	Continuous	384	216	157	709	178	116	909	186	145
		Northbound	Left	s	300	s	s	s	176	73	48	136	81	53
			Through	Continuous	Continuous	337	288	192	247	204	129	253	194	158
			Right	s	s	s	s	s	244	195	130	248	199	156
		Southbound	Left	s	696	s	s	s	113	226	90	108	196	108
			Through	Continuous	Continuous	293	463	231	151	259	158	184	257	215
			Right	s	s	s	s	s	189	278	171	224	270	231
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	0	0
		Westbound	Right		Continuous							0	0	0
		Northbound	Through		Continuous							0	28	0
			Right		150							0	0	0
		Southbound	Through		Continuous							0	0	0
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	N.A.	s	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	s	s	s
			Through		Continuous							0	0	0
			Right		s							s	s	s
		Westbound	Left		Continuous							148	193	268
			Through		Continuous							150	0	0
			Right		s							s	s	s
		Northbound	Left		Continuous							0	115	0
			Through		Continuous							0	20	98
			Right		150							68	53	39
		Southbound	Left		150							45	141	0
			Through		Continuous							152	0	138
			Right		Continuous							0	0	0

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

6. SUPPLEMENTAL ANALYSIS

A supplemental analysis (Scenario B) was prepared that includes the background developments that are expected to occur within the study area to serve as a baseline for evaluating the improvements needed to mitigate the traffic attributable to the proposed development. The same traffic operational analysis methodology and key assumptions detailed previously is applicable to the supplemental analysis.

6.1 Projected No-Build Conditions

The projected No-Build conditions represent the future roadway network and background traffic growth prior to the completion of the proposed development. Surrounding approved developments included as part of No-Build conditions and estimated level of completion of each development were identified by VDOT and Stafford County staff. No-Build analyses were conducted for the opening year (2026) and design year (2032) to capture the impacts of the background development traffic. To provide a conservative analysis, all traffic signal timings were optimized in the 2032 No-Build models.

Peak hour traffic generated by the surrounding approved developments was referenced from previous traffic impact analyses and by using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 11th Edition. Background development locations and land uses were identified and confirmed based on VDOT and County input. **Table 11** summarizes the surrounding approved developments included as part of No-Build conditions and their expected completion percentage. Trip generation estimated for each of the developments is included in **Appendix G**. Background trip distributions and trip assignments are located in **Appendix I**. Austin Ridge Commercial development was not included in the background developments since Buc-ee's would be constructed in this location. Prior to the proposed Buc-ee's being developed, Austin Ridge Commercial had a submitted site plan showing approximately 90,000 square feet of commercial, which amounts to approximately 8,000 to 9,000 daily trips.

Table 11: Background Development Build Outs

Approved Development	Assumed Percent Built	
	2026	2032
Austin Ridge Logistics Center	25%	100%
Burns NE	50%	100%
Burns NW	50%	100%
Burns SE	50%	100%
Burns SW	50%	100%
Courthouse Tracts	100%	100%
Embrey Mill Phase 3A	10%	100%
Embrey Mill Commercial	50%	100%
Merritt at Austin Ridge	50%	100%
Potomac Church AWS Data Center(1)	50%	100%
Stafford Commons	0%	100%
Stafford Hospital	25%	100%
Venture Business Park	50%	100%
Westgate	20%	20%

Notes: (1) Per the provided *Trip Generation Assessment* for the *Potomac Church AWS Data Center*, weekday trip generation was used, and weekend trip generation was estimated using the weekday PM peak hour volumes. Weekday and weekend trip generation assignments were assumed as a 50/50 in-out split.

Trip distributions and assignments for background developments were approved by VDOT and Stafford County. Note that due to the expected increase in background future traffic volumes along Austin Ridge Drive and Courthouse Road, trip distribution assumptions were adjusted to reflect greater utilization of

Sunflower Drive and Courthouse Road to access the I-95 interchange. Additionally, based on correspondence with Stafford County, it was determined that the Westgate Center would be limited to 20% buildout, approximately 129,000 square feet of mixed-use commercial, due to the uncertainty of when it would be built out.

6.1.1 Proffered Improvements

Proffered off-site improvements associated with the approved development included in background conditions were reviewed to capture improvements that will be implemented on the roadway network prior to the build-out of Buc-ee's. Per discussion with Stafford County and VDOT, the following proffered improvements were included in the No-Build and Build analyses:

Burns Corner (dated November 30, 2020)

- Courthouse Road at Austin Ridge Drive – Construct a third westbound thru lane approach tapering back to the existing two lanes west of the intersection.
    - Per discussions with Stafford County, traffic attributed to Burns Corners was limited to 19,249 vehicles per day (vpd). The proffered improvement is to be built after the traffic exceeds the 19,249 vpd; therefore, the improvement was not included in the no-build.
- Courthouse Road (Old Route 630) at Jefferson Davis Highway (Route 1) – Restripe the eastbound approach to provide a left/through lane and a through/right lane.
- Construct a continuous, dedicated westbound right turn lane at the Wyche Road/ Courthouse Road intersection extending back to the Land Bay 2 entrance.
    - Per recent aerial imagery, it appears that this improvement has already been implemented and was included in Existing through Build conditions.
- Re-stripe the northwest approach on Courthouse Road at intersection of Courthouse Road and Hospital Center Boulevard to provide a fourth (4th) northwest bound through lane that will be shared with the right-turn movement to Courthouse Road and continue as a westbound through lane across the frontage of Land Bay 1 to the northbound I-95 interchange on-ramp.
    - Per recent aerial imagery, it appears that the westbound shared through/right lane has been built as a right turn lane. The existing geometry was used for existing conditions and the updated lane configuration with the 4th westbound through lane across Land Bay 1 was included in No-Build conditions.
- Construct a free-flow eastbound right-turn lane approaching Jefferson Davis Highway (Route 1).
    - Per recent aerial imagery, the existing improvements at this intersection do not include this improvement and therefore was not included.
- Construct a 400 ft. southbound acceptance lane with a 250 ft. taper for the free flow eastbound right turn lane on Hospital Center Boulevard.
    - Per recent aerial imagery, the existing improvements at this intersection do not include this improvement and therefore was not included.

Austin Ridge Logistics (dated November 11, 2022)

- Construction of a new westbound left-turn lane along courthouse road with 260 feet of storage and a 200 foot taper.
- Construction (and dedication) of a two-lane extension of Austin Ridge Drive to allow for transportation connection to Route 630.
    - Per recent aerial imagery, it appears that this improvement has already been implemented and was included in Existing conditions through Build conditions.

Embrey Mill Phase 3A (estimated completion 2026)

- Construction of a full-access roadway that will intersect will Austin Ridge Drive and create an eastbound approach, approximately located across from the proposed Israel Rodriguez Drive
- Construction of a partial access (right-in/right-out) driveway that will intersection with Austin Ridge Drive and create an eastbound approach, approximately located across from the proposed Buc-ee's Driveway 2

Stafford County funded Route 1 improvements (estimated completion 2025)

- Construction of dedicated left-turn lanes from Richmond Highway onto Courthouse Road
- Eastbound Courthouse Road will be widened to provide a dedicated left-turn, right-turn, and through lane
- Westbound Courthouse Road will be re-striped to provide a dedicated left-turn, right-turn, and through lane

Per the *Traffic Impact Analysis for the Austin Ridge Logistics Center*, dated March 8th, 2022, an additional northbound left-turn lane at the intersection of Courthouse Road/Hospital Center Boulevard and Courthouse Road/Wyche Road is to be constructed due to a separate development. These proffered improvements can be found in **Appendix G**.

Courthouse Tracts, Venture Business Park, and the Potomac Church proffer statements do not include proffers that would affect this project's network; therefore, no additional proffers were included.

6.2 2026 No-Build Conditions Capacity and Queuing Analysis

6.2.1 2026 No-Build Conditions Synchro Capacity Analysis

Under 2026 No-Build conditions, all signalized intersections are projected to operate at an overall LOS C or better, and all unsignalized approaches operate at LOS C or better, with the exception of the following:

- Austin Ridge Drive and Courthouse Road (AM, PM)
- Courthouse Road and Hospital Center Boulevard (AM, PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM, SUN)
- Austin Ridge Drive and Israel Rodriguez Drive (AM, PM)
- Diverging Diamond Interchange
    - Intersection 13 – Courthouse Road (WB) and Courthouse Road (EB) (AM)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 12** and **Appendix F**.

6.2.2 2026 No-Build Conditions SimTraffic Capacity Analysis

The total delay for the 2026 No-Build scenario was calculated by movement for each study intersection using *SimTraffic™*. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- Austin Ridge Drive and Courthouse Road (PM)
- Austin Ridge Drive and Sunflower Drive (PM)
- Courthouse Road and Hospital Center Boulevard (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM, SUN)
- Austin Ridge Drive and Israel Rodriguez Drive (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

6.2.3 2026 No-Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future No-Build scenario were calculated by movement for each study intersection using *SimTraffic*™. All queue lengths are projected to be accommodated within existing storage lanes with the exception of the following movements.

- Austin Ridge Drive and Courthouse Road
  - Eastbound left-turn movement (AM, PM, SUN)
  - Westbound left-turn movement (PM, SUN)
  - Southbound left-turn movement (PM)
  - Southbound right-turn movement (PM)
- Courthouse Road and Hospital Center Boulevard
  - Westbound right-turn movement (PM)
  - Southbound right-turn movement (PM)

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Austin Ridge Drive and Courthouse Road
  - Southbound left-turn movement (PM)
  - Southbound right-turn movement (PM)
- Austin Ridge Drive and Sunflower Drive
  - Southbound through movement (PM)
  - Southbound right-turn movement (PM)
- Diverging Diamond Interchange
  - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
  - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 13** and **Appendix F**.

6.3 2032 No-Build Conditions Capacity and Queuing Analysis

6.3.1 2032 No-Build Conditions Synchro Capacity Analysis

Under 2032 No-Build conditions, all study intersections are projected to operate at an overall LOS C or better, and all unsignalized approaches operate at LOS C or better, with the exception of the following:

- Mine Road and Austin Ridge Drive (AM)
- Mine Road and Sunflower Drive (PM, SUN)
- Mine Road and Courthouse Road (PM)
- Austin Ridge Drive and Courthouse Road (AM, PM, SUN)
- Austin Ridge and Sunflower Drive (PM)
- Courthouse Road and Hospital Center Boulevard (AM)
- US Route 1 and Hospital Center Boulevard (AM, PM, SUN)
- US Route 1 and Courthouse Road (AM, PM)
- Diverging Diamond Interchange
  - Intersection 8 – Courthouse Road (EB) and Courthouse Road (WB) (PM)
  - Intersection 13 – Courthouse Road (EB) and Courthouse Road (WB) (PM)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 14** and **Appendix F**.

6.3.2 2032 No-Build Conditions SimTraffic Capacity Analysis

The total delay for the 2032 No-Build scenario was calculated by movement for each study intersection using *SimTraffic™*. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- Mine Road and Sunflower Drive (PM)
- Austin Ridge Drive and Courthouse Road (AM, PM)
- Austin Ridge Drive and Sunflower Drive (PM)
- Courthouse Road and Hospital Center Boulevard (AM, PM, SUN)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM)
- Diverging Diamond Interchange
    - Intersection 10 – Courthouse Road (WB) and I-95 southbound on-ramp (PM)
    - Intersection 12 – Courthouse Road (WB) and I-95 northbound off-ramp (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

6.3.3 2032 No-Build Conditions SimTraffic Queuing Analysis

The maximum vehicle queue lengths for the future No-Build scenario were calculated by movement for each study intersection using SimTraffic™. All queue lengths are projected to be accommodated within existing storage lanes with the exception of the following movements.

- Austin Ridge Drive and Courthouse Road
    - Westbound left-turn movement (AM, PM, SUN)
    - Southbound left-turn movement (AM, PM, SUN)
- Courthouse Road and Hospital Center Boulevard
    - Eastbound left-turn movement (AM)
    - Westbound right-turn movement (AM, PM)
    - Southbound right-turn movement (PM)

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Austin Ridge Drive and Courthouse Road
    - Southbound left-turn movement (PM)
    - Southbound through movement (PM)
- Austin Ridge Drive and Sunflower Drive
    - Eastbound left-turn movement (PM)
    - Eastbound through movement (PM)
- Courthouse Road and Hospital Center Boulevard
    - Westbound through movement (PM)
- Diverging Diamond Interchange
    - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
    - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)
    - Intersection 15 – Eastbound Courthouse Road & Ramp B (PM)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 15** and **Appendix F**.

6.4 Build Conditions

Build conditions represent the future roadway network with the addition of background traffic growth, background geometric improvements, surrounding development traffic, traffic generated by the proposed project, and proposed roadway improvements. Access to the proposed development will be provided along Austin Ridge Drive via two partial access driveways (right-in only) and one full access driveway; creating the fourth leg at the intersection of Sunflower Drive. The project will also have access along Israel Rodriguez Drive, a proposed roadway intersecting Austin Ridge Drive at a signalized intersection north of Sunflower Drive. Access along Israel Rodriguez Drive will be provided via one partial access driveway (right-in/right-out only) and one full access driveway at a roundabout.

The Build conditions were determined through an iterative process, and the following improvements were included and are proposed to mitigate project traffic along the roadway network, note that the exact dimensions of proposed storage and taper lengths are subject to change and will be finalized during the OSAR process:

- Austin Ridge Drive and Courthouse Road
    - Construct an additional eastbound through/right lane within the immediate approach of the intersection that would provide a minimum of approximately 320 feet of storage and 200 feet of taper
    - Construct an additional westbound through lane from the southbound I-95 Diverging Diamond Interchange (DDI) ramp signalized intersection to a point immediately west of the Austin Ridge Drive intersection connecting to the existing right-turn lane onto Miracle Drive
    - Widen Austin Ridge Drive to provide three exclusive southbound left-turn lanes and extend the southbound right-turn lane to provide a minimum of approximately 565 feet of storage and 150 feet of taper
- Construct new intersection control type at the intersection of Austin Ridge Drive and Sunflower Drive/Project Driveway 1. The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Construct new intersection control type at the intersection of Austin Ridge Drive and Israel Rodriguez Drive (proposed). The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Optimize signal timings, splits, and offsets at all study area signalized intersections.
- I-95 at Exit 140 Diverging Diamond Interchange
    - Construct a median separated southbound right-turn slip-lane and receiving lane along westbound Courthouse Road that serves as a channelized free-flow right-turn at the intersection of Austin Ridge Drive and Courthouse Road and provides a dedicated buffered lane for traffic bound for the proposed Buc-ee's or northbound Austin Ridge Drive
    - The median separated slip-lane from the adjacent interstate is a consistent practice that Buc-ee's has employed at other locations across the country. Based on the applicant's experience, constructing a slip-lane from the interstate that serves as a free-flow entrance into the site has been sufficient in mitigating the traffic impacts on the adjacent interstate off-ramp, preventing queue spill back from impacting mainline operations.
    - Widen the northbound I-95 off-ramp to provide an additional dedicated ramp lane to eastbound Courthouse Road that would provide a minimum of approximately 435 feet of storage and 295 feet of taper

The intersection improvements sketch is included in **Figure 3**, following the trip generation section. Build concept sketch is also included in **Appendix A**.

As part of the Build concept, Project Driveway 1 will connect to the existing intersection of Austin Ridge Drive and Sunflower Drive to be the fourth leg of the intersection. Note that a signal justification report (SJR) is required by VDOT at this intersection. Additionally, an SJR is required at the newly constructed intersection of Austin Ridge Drive and Israel Rodriguez Drive. However, as stated in VDOT's IIM-TE-387.1, *Requirements for Signal Justification Reports (SJRs) for New and Reconstructed Signals* "this IIM does not apply for signals that are recommended by an approved Interchange Modification Report/Interchange Justification Report (IMR/IJR) and will be constructed in conjunction with the proposed interchange improvements." An IMR (i.e., OSAR) will be conducted that includes the study area intersections in lieu of SJRs to determine the appropriate configuration at the Buc-ee's site driveways.

6.5 2026 Build Conditions Capacity and Queuing Analysis

6.5.1 2026 Build Conditions Synchro Capacity Analysis

Under 2026 Build conditions, all signalized intersections are projected to operate at LOS C or better, and all unsignalized approaches operate at LOS C or better, with the exception of the following:

- Austin Ridge Drive and Courthouse Road (AM, PM, SUN)
- Courthouse Road and Hospital Center Boulevard (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM)

Note that of the intersections listed above, all were projected to operate at LOS D or worse under the No-Build conditions prior to the completion of the project.

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 12** and **Appendix F**.

6.5.2 2026 Build Conditions SimTraffic Capacity Analysis

The total delay for the 2026 Build scenario was calculated by movement for each study intersection using *SimTraffic™*. Under these conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- Austin Ridge Drive and Courthouse Road (AM, PM, SUN)
- Austin Ridge Drive and Sunflower Drive (PM)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM)
- Austin Ridge Drive and Embrey Mill Phase 3A/Buc-ee's Driveway #2 (PM)

Note that of the intersections listed above, all were projected to operate with an overall delay greater than 35 seconds per vehicle, under the No-Build conditions prior to the completion of the project with the exception of the following intersections:

- Austin Ridge Drive and Courthouse Road (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

6.5.3 2026 Build Conditions SimTraffic Queuing Analysis

Based on the queue analysis results, all turn lane queues are projected to be accommodated within the storage length with the exception of the following movements.

- Austin Ridge Drive and Courthouse Road
    - Southbound left-turn movement (AM, PM, SUN)

- Southbound right-turn movement (SUN)

Note that of the turn lanes listed above, all queues were projected to extend past the storage length under the No-Build conditions prior to the completion of the project with the exception of the following:

- Austin Ridge Drive and Courthouse Road
  - Southbound left-turn movement (AM, SUN)
  - Southbound right-turn movement (SUN

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Austin Ridge Drive and Courthouse Road
  - Southbound left-turn movement (AM, PM, SUN)
  - Southbound right-turn movement (PM)
- Austin Ridge Drive and Sunflower Drive
  - Southbound through movement (PM)
  - Southbound right-turn movement (PM)
- Diverging Diamond Interchange
  - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
  - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 13** and **Appendix F**.

6.6 2032 Build Conditions Capacity and Queuing Analysis

6.6.1 2032 Build Conditions Synchro Capacity Analysis

Under 2032 Build conditions, all signalized intersections are projected to operate at LOS C or better, and all unsignalized approaches operate at LOS C or better, with the exception of the following:

- Mine Road and Austin Ridge Drive (AM)
- Mine Road and Sunflower Drive (PM, SUN)
- Mine Road and Courthouse Road (PM)
- Austin Ridge Drive and Courthouse Road (AM, PM, SUN)
- Courthouse Road and Hospital Center Boulevard (AM)
- US Route 1 and Hospital Center Boulevard (AM, PM, SUN)
- US Route 1 and Courthouse Road (AM, PM)
- Diverging Diamond Interchange
  - Intersection 8 – Courthouse Road (EB) and Courthouse Road (WB) (AM, PM)
  - Intersection 13 – Courthouse Road (EB) and Courthouse Road (WB) (AM, PM, SUN)

Note that of the intersections listed above, all were projected to operate at LOS D or worse under the No-Build conditions prior to the completion of the project with the exception of the following intersections:

- Diverging Diamond Interchange
  - Intersection 8 – Courthouse Road (EB) and Courthouse Road (WB) (AM)
  - Intersection 13 – Courthouse Road (EB) and Courthouse Road (WB) (AM, SUN)

The intersection capacity analysis results are included in **Appendix E**. Control delay and LOS results are summarized in **Table 14** and **Appendix F**.

6.6.2 2032 Build Conditions SimTraffic Capacity Analysis

The total delay for the 2032 Build scenario was calculated by movement for each study intersection using *SimTraffic™*. Under existing conditions, all intersections operate at an overall delay less than 35 seconds per vehicle, with the exception of the following:

- Mine Road and Sunflower Drive (PM)
- Austin Ridge Drive and Courthouse Road (AM, PM, SUN)
- Austin Ridge Drive and Sunflower Drive (PM, SUN)
- Courthouse Road and Hospital Center Boulevard (AM, PM, SUN)
- US Route 1 and Hospital Center Boulevard (PM)
- US Route 1 and Courthouse Road (AM, PM)
- Austin Ridge Drive and Embrey Mill Phase 3A/ Buc-ee's Driveway #2
- Austin Ridge Drive and Israel Rodriguez Drive (PM, SUN)
- Diverging Diamond Interchange
    - Intersection 10 – Courthouse Road (WB) and I-95 southbound on-ramp (PM)
    - Intersection 11 – Courthouse Road (EB) and I-95 northbound on-ramp (AM, PM)
    - Intersection 12 – Courthouse Road (WB) and I-95 northbound off-ramp (PM)
    - Intersection 13 – Courthouse Road (EB) and Courthouse Road (WB) (PM)
    - Intersection 14 – Courthouse Road and I-95 northbound on-ramp (PM)

Note that of the intersections listed above, all were projected to operate with an overall delay greater than 35 seconds per vehicle, under the No-Build conditions prior to the completion of the project with the exception of the following intersections:

- Austin Ridge Drive and Courthouse Road (SUN)
- Austin Ridge Drive and Sunflower Drive (SUN)
- Austin Ridge Drive and Embrey Mill Phase 3A/ Buc-ee's Driveway #2
- Austin Ridge Drive and Israel Rodriguez Drive (PM, SUN)
- Diverging Diamond Interchange
    - Intersection 11 – Courthouse Road (EB) and I-95 northbound on-ramp (AM, PM)
    - Intersection 13 – Courthouse Road (EB) and Courthouse Road (WB) (PM)
    - Intersection 14 – Courthouse Road and I-95 northbound on-ramp (PM)

The SimTraffic performance analysis results are included in **Appendix E** and summarized in **Appendix F**.

6.6.3 2032 Build Conditions SimTraffic Queuing Analysis

Based on the queue analysis results, all turn lane queues are projected to be accommodated within the storage length with the exception of the following movements.

- Austin Ridge Drive and Courthouse Road
    - Southbound left-turn movement (PM, SUN)
- Courthouse Road and Hospital Center Boulevard
    - Eastbound left-turn movement (AM)
    - Westbound right-turn movement (AM, PM)
    - Southbound left-turn movement (PM)

Note that of the turn lanes listed above, all queues were projected to extend past storage length under the No-Build conditions prior to the completion of the project with the exception of the following:

- Austin Ridge Drive and Courthouse Road
    - Southbound left-turn movement (AM)

Note that the queues for the following through movements extended past the link length in the models and were adjusted to account for the queue that spillback through upstream intersections:

- Austin Ridge Drive and Courthouse Road
  - Southbound left-turn movement (PM, SUN)
  - Southbound through movement (PM, SUN)
- Austin Ridge Drive and Sunflower Drive
  - Eastbound left-turn movement (PM)
  - Eastbound right-turn movement (PM)
  - Southbound through movement (PM, SUN)
  - Southbound right-turn movement (PM, SUN)
- Diverging Diamond Interchange
  - Intersection 8 – Eastbound Courthouse Road (AM, PM, SUN)
  - Intersection 13 – Westbound Courthouse Road (AM, PM, SUN)

SimTraffic microsimulation delay results are included in **Appendix E**. The queue results are summarized in **Table 15** and **Appendix F**.

Table 12: Scenario B: Control Delay and LOS Summary (2026)

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2026 No-Build Conditions						2026 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	30.2	C	31.6	C	30.9	C	32.5	C	34.0	C	32.9	C	35.6	D	42.5	D	32.0	C
			Through	30.0	C	34.2	C	31.7	C	34.2	C	35.9	D	33.4	C	32.1	C	41.9	D	30.8	C
			Right	28.8	C	31.3	C	30.2	C	32.8	C	33.3	C	31.9	C	31.0	C	39.1	D	29.4	C
			Approach	30.1	C	31.9	C	30.9	C	32.7	C	34.2	C	32.8	C	35.2	D	42.0	D	31.5	C
		Westbound	Left	27.2	C	29.2	C	28.7	C	29.1	C	31.6	C	30.4	C	29.2	C	37.6	D	28.6	C
			Through	49.9	D	50.2	D	41.6	D	57.9	E	65.4	E	46.6	D	51.9	D	67.9	E	37.9	D
			Right	28.9	C	26.5	C	26.9	C	30.3	C	31.2	C	27.6	C	34.2	C	32.7	C	28.2	C
			Approach	29.5	C	27.7	C	27.5	C	31.1	C	32.3	C	28.2	C	34.4	C	34.0	C	28.5	C
		Northbound	Left	12.2	B	11.5	B	10.5	B	11.8	B	11.8	B	10.1	B	10.9	B	9.4	A	10.0	B
			Through	19.6	B	22.2	C	17.6	B	21.7	C	26.1	C	19.3	B	19.6	B	29.4	C	16.6	B
			Right	15.5	B	16.4	B	14.1	B	15.3	B	18.9	B	14.8	B	15.0	B	21.9	C	13.2	B
			Approach	19.2	B	21.2	C	17.3	B	21.2	C	25.2	C	18.9	B	19.2	B	28.3	C	16.4	B
		Southbound	Left	13.6	B	16.1	B	11.8	B	14.3	B	30.1	C	12.4	B	13.8	B	18.5	B	12.6	B
			Through	13.6	B	15.6	B	12.1	B	13.7	B	16.6	B	12.2	B	12.5	B	13.0	B	12.0	B
			Right	7.6	A	8.2	A	7.9	A	7.1	A	7.3	A	7.5	A	7.4	A	6.8	A	8.3	A
			Approach	12.8	B	14.8	B	11.4	B	13.4	B	20.4	C	11.7	B	12.6	B	14.4	B	11.8	B
		Intersection		**21.3**	**C**	**19.4**	**B**	**17.2**	**B**	**21.8**	**C**	**24.3**	**C**	**17.9**	**B**	**22.2**	**C**	**22.4**	**C**	**17.2**	**B**
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Through	36.5	D	40.6	D	33.7	C	37.6	D	42.7	D	37.6	D	38.1	D	72.7	E	57.8	E
			Right	34.2	C	36.6	D	30.6	C	35.2	D	38.6	D	33.9	C	35.1	D	64.4	E	50.6	D
			Approach	35.5	D	38.7	D	31.9	C	36.6	D	40.8	D	35.4	D	36.8	D	68.9	E	53.6	D
		Westbound	Left	37.2	D	39.5	D	36.8	D	34.8	C	38.6	D	38.1	D	34.0	C	67.8	E	56.9	E
			Through	0.0	A	37.8	D	35.7	D	0.0	A	35.7	D	35.4	D	0.0	A	65.7	E	52.5	D
			Right	34.0	C	31.9	C	27.6	C	27.8	C	27.9	C	27.8	C	27.6	C	50.4	D	41.4	D
			Approach	36.4	D	38.0	D	34.5	C	32.6	C	35.8	D	35.1	D	31.3	C	63.3	E	52.4	D
		Northbound	Left	15.2	B	25.1	C	28.2	C	17.9	B	42.3	D	32.9	C	17.8	B	10.0	A	18.7	B
			Through	17.1	B	25.1	C	32.2	C	23.4	C	33.8	C	36.4	D	23.0	C	15.0	B	27.2	C
			Right	14.5	B	17.4	B	23.5	C	16.8	B	19.2	B	22.7	C	16.4	B	63.3	E	19.5	B
			Approach	16.6	B	25.0	C	30.4	C	21.6	C	35.5	D	33.9	C	21.3	C	17.3	B	23.4	C
		Southbound	Left	14.8	B	19.1	B	24.2	C	18.0	B	25.3	C	28.4	C	17.9	B	17.6	B	22.3	C
			Through	18.6	B	28.2	C	31.8	C	23.8	C	33.1	C	35.0	C	23.4	C	33.6	C	32.5	C
			Right	17.1	B	24.9	C	29.4	C	21.1	C	27.8	C	31.6	C	20.8	C	29.4	C	29.9	C
			Approach	18.2	B	25.9	C	29.0	C	22.7	C	30.4	C	32.3	C	22.4	C	29.1	C	28.6	C
		Intersection		**19.0**	**B**	**27.2**	**C**	**30.6**	**C**	**24.1**	**C**	**33.9**	**C**	**33.9**	**C**	**23.9**	**C**	**30.3**	**C**	**34.6**	**C**
3	Mine Road & Courthouse Road	Eastbound	Left	6.6	A	10.3	B	13.6	B	9.2	A	20.8	C	21.5	C	9.1	A	20.3	C	12.1	B
			Through	4.4	A	6.0	A	6.6	A	6.6	A	9.1	A	8.5	A	6.7	A	9.0	A	7.4	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	4.7	A	7.6	A	9.6	A	7.1	A	13.5	B	13.9	B	7.1	A	13.1	B	9.3	A
		Westbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	29.4	C	4.1	A	16.6	B	35.9	D	12.0	B	19.8	B	4.2	A	12.3	B	21.9	C
			Right	42.6	D	1.9	A	8.4	A	32.2	C	21.3	C	7.9	A	0.6	A	11.2	B	8.4	A
			Approach	33.0	C	3.3	A	13.1	B	34.9	C	15.0	B	15.4	B	3.3	A	11.9	B	16.9	B
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
		Southbound	Left	53.5	D	50.3	D	20.5	C	52.1	D	46.7	D	21.3	C	54.6	D	49.8	D	46.4	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	34.5	C	24.2	C	9.2	A	29.1	C	16.1	B	9.0	A	30.4	C	42.2	D	84.4	F
			Approach	49.0	D	39.9	D	16.5	B	48.0	D	36.4	D	17.8	B	50.3	D	47.3	D	57.3	E
		Intersection		**22.9**	**C**	**15.3**	**B**	**13.1**	**B**	**25.3**	**C**	**20.5**	**C**	**15.7**	**B**	**15.0**	**B**	**21.9**	**C**	**28.5**	**C**
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	12.3	B	8.9	A	17.5	B	13.4	B	33.6	C	22.1	C	21.2	C	71.2	E	36.5	D
			Through	19.1	B	12.1	B	24.1	C	29.8	C	21.8	C	34.3	C	27.1	C	23.2	C	41.3	D
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	19.0	B	12.0	B	24.0	C	29.3	C	22.6	C	34.0	C	26.8	C	27.6	C	41.2	D
		Westbound	Left	97.2	F	71.6	E	41.7	D	84.4	F	61.4	E	54.6	D	90.0	F	80.9	F	55.6	E
			Through	11.9	B	16.9	B	21.8	C	15.2	B	30.4	C	30.6	C	18.4	B	38.8	D	41.1	D
			Right	75.2	E	63.1	E	11.6	B	139.9	F	125.8	F	12.7	B	119.2	F	36.7	D	18.3	B
			Approach	33.7	C	28.4	C	19.7	B	58.0	E	58.9	E	26.9	C	63.9	E	38.5	D	30.0	C
		Northbound	Left	0.0	A	0.0	A	0.0	A	56.6	E	54.2	D	51.0	D	35.9	D	62.0	E	42.5	D
			Through	57.2	E	0.0	A	0.0	A	55.9	E	53.4	D	50.6	D	60.5	E	70.2	E	58.1	E
			Right	55.9	E	0.0	A	0.0	A	50.6	D	49.4	D	45.0	D	47.2	D	57.7	E	50.4	D
			Approach	56.6	E	0.0	A	0.0	A	53.9	D	52.0	D	48.5	D	51.3	D	63.6	E	52.4	D
		Southbound	Left	55.0	D	60.8	E	30.2	C	66.6	E	305.2	F	44.9	D	50.6	D	88.4	F	67.6	E
			Through	58.4	E	66.8	E	30.5	C	79.6	E	309.6	F	46.0	D	61.2	E	64.7	E	41.0	D
			Right	36.3	D	37.2	D	19.7	B	32.8	C	36.1	D	29.0	C	56.1	E	45.8	D	34.4	C
			Approach	55.3	E	59.9	E	29.5	C	69.0	E	274.0	F	43.9	D	51.0	D	84.6	F	66.7	E
		Intersection		**31.2**	**C**	**27.2**	**C**	**22.9**	**C**	**48.9**	**D**	**89.2**	**F**	**32.8**	**C**	**48.9**	**D**	**49.4**	**D**	**45.9**	**D**
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	13.1	B	13.1	B	10.7	B	17.8	C	30.7	D	15.0	B	30.7	C	37.2	D	35.1	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	-	-	-	-	-	-
			Right	9.7	A	9.6	A	9.1	A	10.5	B	12.0	B	10.1	B	29.0	C	33.2	D	33.0	C
			Approach	10.7	B	10.4	B	9.3	A	13.7	B	18.8	C	11.7	B	29.7	C	34.6	C	33.7	C
		Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	28.7	C	33.4	C	31.9	C
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.4	C	31.9	C
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	28.7	C	33.4	C	31.9	C
		Northbound	Left	8.3	A	8.0	A	7.7	A	8.8	A	9.4	A	8.3	A	7.5	A	8.6	A	10.6	B
			Through	†	†	†	†	†	†	†	†	†	†	†	†	8.5	A	9.5	A	11.0	B
			Right	†	†	†	†	†	†	†	†	†	†	†	†	7.2	A	8.1	A	4.1	A
			Approach	0.3	A	0.1	A	0.1	A	0.4	A	0.3	A	0.3	A	8.2	A	9.2	A	8.6	A
		Southbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	†	†	†	†	†	†	†	†	†	†	†	†	7.9	A	9.3	A	10.3	B
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	7.9	A	9.3	A	10.3	B
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	**10.8**	**B**	**12.6**	**B**	**13.4**	**B**
6	Courthouse Road (WB) & Ramp D	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Right	10.1	B	27.3	C	7.4	A	16.6	B	39.7	D	12.3	B	21.3	C	38.4	D	22.0	C
			Approach	10.1	B	27.3	C	7.4	A	16.6	B	39.7	D	12.3	B	21.3	C	38.4	D	22.0	C
		Intersection		**1.1**	**A**	**5.6**	**A**	**1.4**	**A**	**2.8**	**A**	**8.6**	**A**	**2.6**	**A**	**3.0**	**A**	**7.1**	**A**	**3.2**	**A**
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	11.0	B	29.7	C	7.9	A	14.8	B	30.9	C	14.0	B	16.7	B	31.7	C	28.7	C
			Approach	11.0	B	29.7	C	7.9	A	14.8	B	30.9	C	14.0	B	16.7	B	31.7	C	28.7	C
		Westbound	Through	28.6	C	7.3	A	61.5	E	24.6	C	19.5	B	37.3	D	22.9	C	29.8	C	33.2	C
			Approach	28.6	C	7.3	A	61.5	E	24.6	C	19.5	B	37.3	D	22.9	C	29.8	C	33.2	C
		Intersection		**19.9**	**B**	**17.0**	**B**	**34.8**	**C**	**19.8**	**B**	**24.6**	**C**	**25.6**	**C**	**19.8**	**B**	**30.7**	**C**	**30.9**	**C**
9	Courthouse Road (EB) & Spur D	Eastbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Left	39.1	D	18.9	B	35.8	D	30.9	C	19.9	B	28.6	C	27.1	C	27.8	C	26.9	C
			Approach	39.1	D	18.9	B	35.8	D	30.9	C	19.9	B	28.6	C	27.1	C	27.8	C	26.9	C
		Intersection		**11.6**	**B**	**7.6**	**A**	**9.6**	**A**	**8.8**	**A**	**6.4**	**A**	**6.8**	**A**	**6.7**	**A**	**7.6**	**A**	**4.5**	**A**
10	Courthouse Road (WB) & Spur C	Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Courthouse Road (EB) & Spur A	Eastbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Courthouse Road (WB) & Spur B	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Northbound	Left	9.7	A	10.9	B	6.9	A	13.9	B	21.3	C	11.1	B	16.3	B	25.0	C	15.2	B
			Approach	9.7	A	10.9	B	6.9	A	9.4	A	11.6	B	7.1	A	16.3	B	25.0	C	15.2	B
		Intersection		**3.1**	**A**	**2.9**	**A**	**2.1**	**A**	**4.6**	**A**	**5.7**	**A**	**3.3**	**A**	**6.5**	**A**	**8.8**	**A**	**7.1**	**A**
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	42.0	D	22.4	C	10.9	B
			Approach	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	42.0	D	22.4	C	10.9	B
		Westbound	Through	41.9	D	46.1	D	39.4	D	47.2	D	25.8	C	34.8	C	28.2	C	42.2	D	46.0	D
			Approach	41.9	D	46.1	D	39.4	D	47.2	D	25.8	C	34.8	C	28.2	C	42.2	D	46.0	D
		Intersection		**23.8**	**C**	**33.0**	**C**	**22.5**	**C**	**36.9**	**D**	**27.4**	**C**	**21.8**	**C**	**34.5**	**C**	**31.8**	**C**	**27.6**	**C**
14	Courthouse Road (WB) & Ramp A	Westbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A
			Approach	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A
		Northbound	Right	48.5	D	39.0	D	37.3	D	37.8	D	26.9	C	28.6	C	38.5	D	35.6	D	36.4	D
			Approach	48.5	D	39.0	D	37.3	D	37.8	D	26.9	C	28.6	C	38.5	D	35.6	D	36.4	D
		Intersection		**11.9**	**B**	**5.7**	**A**	**6.3**	**A**	**9.2**	**A**	**4.1**	**A**	**5.1**	**A**	**9.0**	**A**	**5.2**	**A**	**5.9**	**A**

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2026 No-Build Conditions						2026 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	54.1	D	56.4	E	35.2	D	57.7	E	59.0	E	40.9	D	49.4	D	88.0	F	50.9	D
			Through	19.8	B	42.8	D	21.2	C	30.7	C	35.4	D	26.7	C	16.4	B	15.5	B	23.9	C
			Right	19.5	B	39.0	D	20.5	C	30.4	C	29.8	C	25.9	C	14.8	B	13.2	B	22.8	C
			Approach	30.8	C	45.0	D	23.0	C	38.1	D	38.8	D	28.5	C	25.0	C	27.3	C	27.0	C
		Westbound	Left	14.2	B	17.3	B	17.2	B	16.8	B	22.7	C	19.3	B	15.7	B	23.2	C	16.8	B
			Through	25.5	C	26.5	C	23.5	C	29.5	C	30.1	C	26.5	C	29.6	C	35.1	D	21.6	C
			Right	22.6	C	22.9	C	21.3	C	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	24.9	C	25.9	C	23.4	C	28.5	C	29.7	C	25.9	C	28.6	C	34.5	C	21.2	C
		Northbound	Left	60.9	E	59.9	E	35.0	C	60.5	E	69.9	E	40.0	D	55.7	E	67.6	E	42.8	D
			Through	53.0	D	51.0	D	32.9	C	52.9	D	50.9	D	37.0	D	52.6	D	60.2	E	39.3	D
			Right	47.9	D	46.6	D	30.5	C	45.7	D	46.3	D	31.8	C	46.7	D	52.2	D	34.4	C
			Approach	58.3	E	57.4	E	34.4	C	57.8	E	66.0	E	38.9	D	54.2	D	65.4	E	41.6	D
		Southbound	Left	49.0	D	46.3	D	34.8	C	47.2	D	45.9	D	39.4	D	53.6	D	59.0	E	44.5	D
			Through	49.0	D	46.1	D	34.8	C	46.7	D	45.0	D	39.0	D	52.8	D	57.9	E	43.8	D
			Right	30.8	C	33.2	C	21.3	C	29.2	C	33.1	C	25.2	C	32.6	C	42.2	D	31.5	C
			Approach	31.9	C	34.6	C	22.3	C	30.8	C	34.8	C	26.8	C	34.5	C	44.4	D	32.9	C
		Intersection		**31.6**	**C**	**39.5**	**D**	**24.3**	**C**	**36.0**	**D**	**38.6**	**D**	**29.0**	**C**	**29.8**	**C**	**35.9**	**D**	**27.8**	**C**
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	37.0	D	49.2	D	35.0	C	40.3	D	68.3	E	41.2	D	54.8	D	87.7	F	65.8	E
			Through	33.3	C	45.1	D	30.4	C	38.4	D	59.7	E	39.2	D	38.5	D	50.9	D	34.1	C
			Right	19.6	B	29.4	C	20.9	C	19.1	B	46.0	D	24.0	C	20.4	C	61.9	E	30.0	C
			Approach	28.7	C	38.6	D	25.7	C	32.4	C	55.5	E	32.5	C	35.1	D	62.0	E	38.7	D
		Westbound	Left	37.9	D	48.6	D	37.2	D	43.2	D	73.2	E	41.8	D	42.4	D	68.3	E	46.4	D
			Through	31.9	C	38.7	D	31.0	C	35.1	D	52.8	D	37.9	D	31.3	C	42.2	D	32.9	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	33.0	C	41.4	D	32.6	C	36.6	D	57.3	E	38.8	D	33.4	C	47.9	D	36.0	D
		Northbound	Left	33.1	C	44.8	D	33.3	C	40.0	D	66.0	E	37.6	D	39.0	D	58.7	E	40.2	D
			Through	18.1	B	22.2	C	16.5	B	26.4	C	30.2	C	18.9	B	25.4	C	26.4	C	17.4	B
			Right	11.4	B	13.5	B	11.3	B	15.8	B	17.4	B	11.5	B	14.8	B	16.1	B	11.9	B
			Approach	22.2	C	31.9	C	23.4	C	30.3	C	48.3	D	28.1	C	29.6	C	43.5	D	29.7	C
		Southbound	Left	44.6	D	52.9	D	42.8	D	43.5	D	76.0	E	47.4	D	49.2	D	63.1	E	52.2	D
			Through	24.7	C	35.9	D	24.8	C	33.1	C	52.6	D	31.4	C	35.2	D	48.2	D	29.5	C
			Right	15.1	B	19.3	B	13.7	B	19.9	B	30.0	C	17.4	B	23.0	C	27.1	C	18.1	B
			Approach	24.6	C	34.5	C	23.7	C	30.4	C	48.7	D	28.1	C	32.6	C	43.5	D	26.3	C
		Intersection		**26.1**	**C**	**36.3**	**D**	**25.4**	**C**	**32.1**	**C**	**52.8**	**D**	**31.3**	**C**	**32.5**	**C**	**51.3**	**D**	**33.2**	**C**
18	US Route 1 & Courthouse Road	Eastbound	Left	s	s	s	s	s	s	66.4	E	77.0	E	64.1	E	90.5	F	61.6	E	41.9	D
			Through	69.5	E	67.6	E	64.6	E	59.5	E	70.5	E	58.1	E	37.1	D	42.2	D	28.8	C
			Right	54.4	D	59.2	E	56.2	E	56.1	E	66.4	E	56.3	E	31.5	C	37.7	D	27.1	C
			Approach	67.6	E	64.6	E	63.0	E	63.0	E	71.8	E	61.4	E	66.4	E	48.5	D	36.4	D
		Westbound	Left	s	s	s	s	s	s	59.1	E	73.2	E	60.8	E	31.9	C	42.5	D	30.0	C
			Through	67.2	E	89.6	F	61.4	E	65.0	E	81.1	F	61.6	E	38.7	D	52.9	D	30.7	C
			Right	56.4	E	65.7	E	57.0	E	57.3	E	67.7	E	57.9	E	30.4	C	37.3	D	27.3	C
			Approach	60.5	E	79.7	E	59.0	E	59.7	E	74.1	E	59.7	E	33.0	C	44.5	D	29.0	C
		Northbound	Left	s	s	s	s	s	s	29.1	C	47.3	D	46.0	D	20.9	C	27.7	C	20.4	C
			Through	35.8	D	66.7	E	58.2	E	35.7	D	58.5	E	55.4	E	29.8	C	37.8	D	26.7	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	35.8	D	66.7	E	58.2	E	34.9	C	57.9	E	55.0	D	28.7	C	37.3	D	26.5	C
		Southbound	Left	s	s	s	s	s	s	45.3	D	37.2	D	20.9	C	25.3	C	26.0	C	19.5	B
			Through	57.5	E	47.5	D	21.8	C	56.5	E	46.0	D	25.1	C	37.8	D	45.2	D	32.3	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	57.5	E	47.5	D	21.8	C	55.0	D	44.2	D	24.6	C	36.2	D	41.4	D	30.9	C
		Intersection		**50.9**	**D**	**58.3**	**E**	**39.8**	**D**	**49.2**	**D**	**54.9**	**D**	**41.0**	**D**	**35.5**	**D**	**41.6**	**D**	**29.8**	**C**
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	N.A.		N.A.		N.A.		10.0	A	11.0	B	9.7	A	11.5	B	13.9	B	13.8	B
			Approach							10.0	A	11.0	B	9.7	A	11.5	B	13.9	B	13.8	B
		Westbound	Right							N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
			Approach							N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
		Northbound	Through							-	-	-	-	-	-	-	-	-	-	-	-
			Right							-	-	-	-	-	-	-	-	-	-	-	-
			Approach							-	-	-	-	-	-	-	-	-	-	-	-
		Southbound	Through							-	-	-	-	-	-	-	-	-	-	-	-
			Right							-	-	-	-	-	-	-	-	-	-	-	-
			Approach							-	-	-	-	-	-	-	-	-	-	-	-
		Intersection								-	-	-	-	-	-	-	-	-	-	-	-
20	Austin Ridge Driveway & Israel Rodriguez Drive	Eastbound	Left	N.A.		N.A.		N.A.		s	s	s	s	s	s	s	s	s	s	s	s
			Through							13.7	B	16.0	C	11.8	B	31.8	C	36.9	D	36.8	D
			Right							s	s	s	s	s	s	s	s	s	s	s	s
			Approach							13.7	B	16.0	C	11.8	B	31.8	C	36.9	D	36.8	D
		Westbound	Left							s	s	s	s	s	s	25.2	C	26.6	C	24.7	C
			Through							27.0	D	603.5	F	22.9	C	s	s	s	s	s	s
			Right							s	s	s	s	s	s	20.7	C	17.7	B	15.4	B
			Approach							27.0	D	603.5	F	22.9	C	25.0	C	26.0	C	24.5	C
		Northbound	Left							8.3	A	8.3	A	7.9	A	1.7	A	3.1	A	6.2	A
			Through							-	-	-	-	-	-	3.3	A	5.9	A	8.7	A
			Right							s	s	s	s	s	s	0.1	A	0.9	A	3.5	A
			Approach							0.1	A	0.1	A	0.1	A	2.3	A	3.4	A	6.2	A
		Southbound	Left							8.5	A	9.5	A	8.2	A	5.8	A	12.3	B	14.7	B
			Through							-	-	-	-	-	-	8.1	A	13.7	B	18.9	B
			Right							s	s	s	s	s	s	s	s	s	s	s	s
			Approach							0.4	A	1.0	A	0.6	A	7.9	A	13.5	B	18.6	B
		Intersection								-	-	-	-	-	-	10.8	B	14.6	B	18.3	B

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Table 13: Scenario B: Maximum Queue Lengths (2026)

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2026 No-Build Conditions			2026 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	570	570	128	123	95	154	116	94	132	160	91
			Through	Continuous	Continuous	39	42	47	43	51	48	37	52	50
			Right	660	660	22	33	32	22	34	28	20	32	28
		Westbound	Left	250	250	54	57	34	47	64	32	48	61	39
			Through	Continuous	Continuous	56	47	43	42	46	41	42	46	45
			Right	Continuous	Continuous	127	104	86	145	152	119	139	183	115
		Northbound	Left	400	400	36	29	17	39	42	19	31	40	19
			Through	Continuous	Continuous	124	122	87	145	152	121	130	158	102
			Right	360	360	32	40	3	28	44	6	334	41	7
		Southbound	Left	250	250	108	203	116	165	248	144	172	244	134
			Through	Continuous	Continuous	85	200	75	95	329	86	108	288	76
			Right	310	310	24	42	15	24	92	19	23	156	24
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	50	112	156	54	114	162	53	155	259
			Right	275	275	20	55	82	20	54	91	22	57	127
		Westbound	Left	350	350	45	77	75	69	103	111	72	144	216
			Through	Continuous	Continuous	0	23	35	2	25	37	0	28	37
			Right	245	245	27	24	25	43	54	50	46	50	47
		Northbound	Left	300	300	80	283	206	85	287	222	86	268	221
			Through	Continuous	Continuous	100	287	161	140	337*	196	154	292	183
			Right	240	240	18	30	27	48	184	55	48	166	50
		Southbound	Left	330	330	48	122	120	86	200	177	100	214	154
			Through	Continuous	Continuous	149	234	135	168	236	139	164	266	152
			Right	340	340	36	68	53	44	73	46	50	73	45
3	Mine Road & Courthouse Road	Eastbound	Left	320	320	114	239	145	142	288	176	152	318	207
			Through	Continuous	Continuous	134	129	89	171	248	77	165	415	125
			Right	Continuous	Continuous	141	132	75	173	188	76	162	259	120
		Westbound	Left	170	170	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	204	207	132	246	261	176	141	353	219
			Right	Continuous	Continuous	82	108	84	119	138	122	86	136	127
		Northbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	0	0	0	0	0	0	0	0	0
			Right	s	s	s	s	s	s	s	s	s	s	s
		Southbound	Left	525	525	176	230	141	265	300	223	314	364	314
			Right	440	440	77	136	74	77	218	198	78	156	116
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	300	300	44	57	28	359	398	452*	135	206	71
			Through	Continuous	Continuous	193	240	209	364	420	452*	293	326	298
			Right	Continuous	415	234	302	236	105	39	332	281	316	288
		Westbound	Left	225	360	45	34	70	187	309	437*	126	275	145
			Through	Continuous	Continuous	93	222	285	192	148	183	168	520*	279
			Right	Continuous	Continuous	68	64	87	3	15	11	292	520*	469*
		Northbound	Left	200	200	s	s	s	11	16	12	4	16	10
			Through	Continuous	Continuous	9	0	0	12	22	10	11	31	13
			Right	200	200	6	0	0	235	463	212	2	19	11
		Southbound	Left	320	655	178	193	98	222	1914*	207	769*	1915*	827*
			Through	Continuous	Continuous	175	188	116	73	350	86	376	1915*	482
			Right	350	635	54	91	46	44	1914*	46	238	1915*	192
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	Continuous	Continuous	16	18	17	0	823	1	62	102	71
			Through	Continuous	N.A.	0	0	0	0	0	0	N.A.	N.A.	N.A.
			Right	250	Continuous	21	25	19	39	243	31	50	154	60
		Westbound	Left	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	146	308	207
			Through	N.A.	Continuous							127	298	188
		Northbound	Left	375	250	25	16	8	42	33	34	53	59	48
			Through	Continuous	Continuous	0	0	0	0	0	0	164	211	183
			Right	Continuous	Continuous	0	0	0	0	0	0	59	56	72
		Southbound	Left	350	350	0	0	0	0	0	0	0	0	24
			Through	Continuous	Continuous	0	0	0	0	1472*	0	197	1045*	317
			Right	Continuous	Continuous	0	0	0	0	1472*	2	186	1045*	320
6	Courthouse Road (WB) & Ramp D	Westbound	Through	Continuous	Continuous	6	6	3	76	29	175	6	85	34
		Southbound	Right	Continuous	Continuous	93	227	84	175	364	172	213	397*	234
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	Continuous	Continuous	89	48	6	63	177	47	134	250	219
			Right	Continuous	Continuous	27	45	8	26	205	23	107	458*	232
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	Continuous	Continuous	230	231	188	194*	308*	178*	265*	381*	350*
		Westbound	Through	Continuous	Continuous	220	142	202	456*	191*	315*	464*	721*	567*
9	Courthouse Road (EB) & Spur D	Eastbound	Through	Continuous	Continuous	30	23	12	4	60	31	43	116	76
		Southbound	Left	Continuous	Continuous	227	189	121	233	201	156	230	270	140
10	Courthouse Road (WB) & Spur C	Westbound	Left	Continuous	Continuous	69	30	30	312	47	171	248	582	347
			Through	Continuous	Continuous	102	28	70	259	72	246	320	577	423
11	Courthouse Road (EB) & Spur A	Eastbound	Left	Continuous	Continuous	62	187	2	384	348	88	412	569	437
			Through	Continuous	Continuous	4	179	0	312	341	74	373	532	289
12	Courthouse Road (WB) & Spur B	Westbound	Through	Continuous	Continuous	32	25	3	42	35	6	81	723*	59
		Northbound	Left	Continuous	Continuous	115	140	97	196	162	103	249*	403*	260*
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	Continuous	Continuous	169	201	119	432*	461*	194*	493*	652*	629*
		Westbound	Through	Continuous	Continuous	290	294	198	220*	239*	175*	272*	567*	222*
14	Courthouse Road (WB) & Ramp A	Westbound	Through	Continuous	Continuous	153	216	0	50	69	5	102	397*	52
			Right	Continuous	Continuous	161	189	0	0	0	0	2	103	16
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	Continuous	Continuous	14	25	3	22	66	6	18	20	5
		Northbound	Right	Continuous	Continuous	309	254	177	336	305	219	379*	397*	253

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2026 No-Build Conditions			2026 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	250	250	212	223	87	246	250	201	241	249	152
			Through	Continuous	Continuous	157	278	152	309	387	244	314	399*	233
			Right	250	250	141	248	127	241	249	224	216	250	203
		Westbound	Left	200	200	73	66	20	144	181	103	164	194	84
			Through	Continuous	Continuous	169	200	151	197	429*	150	215	263	142
			Right	250	250	28	25	7	187	375	150	186	241	136
		Northbound	Left	325	325	178	192	155	183	322	206	180	250	170
			Through	Continuous	Continuous	72	73	40	68	818	90	87	295	40
			Right	220	220	65	71	54	72	52	74	78	89	70
		Southbound	Left	250	250	58	64	38	66	161	60	69	123	64
			Through	Continuous	Continuous	60	72	39	59	1006	37	63	113	40
			Right	420	420	245	285	126	233	1016	152	269	365	149
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	550	550	88	107	84	124	233	138	128	212	134
			Through	Continuous	Continuous	192	262	133	273	417	194	268	403	164
			Right	Continuous	Continuous	153	386	200	203	462	245	180	528	263
		Westbound	Left	175	175	111	169	94	168	174	140	144	174	125
			Through	Continuous	Continuous	140	193	95	206	1005	150	187	308	136
			Right	s	s	151	188	101	224	1004	151	188	298	134
		Northbound	Left	390	390	199	226	155	231	378	176	227	310	171
			Through	Continuous	Continuous	168	120	98	202	782	80	198	195	99
			Right	760	760	32	56	15	73	135	36	60	74	29
		Southbound	Left	490	490	74	101	68	110	135	68	92	125	60
			Through	Continuous	Continuous	142	311	178	201	563	198	127	301	177
			Right	500	500	91	160	101	204	408	183	185	261	176
18	US Route 1 & Courthouse Road	Eastbound	Left	s	Continuous	s	s	s	178	284	152	127	139	100
			Through	Continuous	Continuous	218	321	141	125	309	69	90	115	60
			Right	Continuous	250	78	204	63	51	122	40	51	85	38
		Westbound	Left	s	150	s	s	s	138	149	80	128	133	76
			Through	Continuous	Continuous	226	298	122	222	549	98	554	175	72
			Right	Continuous	Continuous	384	216	157	365	408	161	688	174	104
		Northbound	Left	s	300	s	s	s	266	150	60	129	77	36
			Through	Continuous	Continuous	337	288	192	366	335	236	252	232	154
			Right	s	s	s	s	s	359	321	242	280	228	150
		Southbound	Left	s	696	s	s	s	140	386	111	110	191	100
			Through	Continuous	Continuous	293	463	231	307	743	224	195	294	173
			Right	s	s	s	s	s	345	751	232	226	303	179
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	Continuous	Continuous	N.A.	N.A.	N.A.	24	60	26	28	84	32
		Westbound	Right	Continuous	Continuous				0	0	0	0	0	0
		Northbound	Through	Continuous	Continuous				0	0	0	0	0	0
			Right	N.A.	150				0	0	0	0	0	0
		Southbound	Through	Continuous	Continuous				0	587	0	22	588	170
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	s	s	N.A.	N.A.	N.A.	s	s	s	s	s	s
			Through	Continuous	Continuous				32	35	28	29	34	32
			Right	s	s				s	s	s	s	s	s
		Westbound	Left	s	Continuous				s	s	s	s	s	s
			Through	Continuous	s				77	545	111	162	434	293
			Right	s	Continuous				s	s	s	23	224	31
		Northbound	Left	Continuous	Continuous				14	24	11	16	20	16
			Through	Continuous	Continuous				15	21	17	106	156	91
			Right	s	150				s	s	s	40	91	45
		Southbound	Left	150	150				33	91	38	58	139	55
			Through	Continuous	Continuous				0	186	0	138	310	165
			Right	s	Continuous				s	s	s	s	s	s

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Table 14: Scenario B: Control Delay and LOS Summary (2032)

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2032 No-Build Conditions						2032 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	30.2	C	31.6	C	30.9	C	50.8	D	64.5	E	38.0	D	79.7	E	71.4	E	38.0	D
			Through	30.0	C	34.2	C	31.7	C	31.8	C	55.4	E	36.4	D	37.5	D	56.6	E	36.4	D
			Right	28.8	C	31.3	C	30.2	C	30.3	C	51.3	D	34.0	C	35.7	D	53.0	D	34.0	C
			Approach	30.1	C	31.9	C	30.9	C	48.7	D	61.7	E	37.3	D	75.0	E	67.2	E	37.3	D
		Westbound	Left	27.2	C	29.2	C	28.7	C	28.9	C	51.6	D	34.4	C	34.6	C	53.4	D	34.4	C
			Through	49.9	D	50.2	D	41.6	D	46.5	D	64.0	E	47.6	D	57.5	E	64.4	E	47.6	D
			Right	28.9	C	26.5	C	26.9	C	398.7	F	38.0	D	40.0	D	114.3	F	40.6	D	40.0	D
			Approach	29.5	C	27.7	C	27.5	C	369.5	F	39.4	D	40.0	D	108.8	F	41.7	D	40.0	D
		Northbound	Left	12.2	B	11.5	B	10.5	B	10.6	B	8.4	A	9.1	A	9.2	A	8.0	A	9.1	A
			Through	19.6	B	22.2	C	17.6	B	17.9	B	45.8	D	23.9	C	22.9	C	46.2	D	23.9	C
			Right	15.5	B	16.4	B	14.1	B	12.8	B	29.6	C	17.7	B	16.9	B	30.5	C	17.7	B
			Approach	19.2	B	21.2	C	17.3	B	17.6	B	44.2	D	23.5	C	22.5	C	44.6	D	23.5	C
		Southbound	Left	13.6	B	16.1	B	11.8	B	22.8	C	43.9	D	14.4	B	14.5	B	49.3	D	14.4	B
			Through	13.6	B	15.6	B	12.1	B	13.3	B	12.7	B	12.3	B	11.5	B	11.7	B	12.3	B
			Right	7.6	A	8.2	A	7.9	A	8.0	A	6.1	A	7.3	A	6.9	A	5.9	A	7.3	A
			Approach	12.8	B	14.8	B	11.4	B	16.5	B	23.1	C	12.6	B	12.4	B	25.0	C	12.6	B
		Intersection		**21.3**	**C**	**19.4**	**B**	**17.2**	**B**	**102.8**	**F**	**32.7**	**C**	**21.8**	**C**	**43.0**	**D**	**34.4**	**C**	**21.8**	**C**
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Through	36.5	D	40.6	D	33.7	C	71.5	E	87.1	F	57.7	E	66.8	E	101.5	F	75.3	E
			Right	34.2	C	36.6	D	30.6	C	67.9	E	65.8	E	49.8	D	62.0	E	66.7	E	59.9	E
			Approach	35.5	D	38.7	D	31.9	C	69.9	E	77.3	E	53.1	D	64.7	E	85.6	F	66.3	E
		Westbound	Left	37.2	D	39.5	D	36.8	D	67.0	E	61.3	E	52.5	D	59.6	E	61.9	E	63.8	E
			Through	0.0	A	37.8	D	35.7	D	0.0	A	52.9	D	45.7	D	0.0	A	55.8	E	55.8	E
			Right	34.0	C	31.9	C	27.6	C	52.1	D	36.6	D	33.1	C	45.8	D	29.6	C	37.3	D
			Approach	36.4	D	38.0	D	34.5	C	62.9	E	55.5	E	47.3	D	55.0	D	52.6	D	56.7	E
		Northbound	Left	15.2	B	25.1	C	28.2	C	6.8	A	22.3	C	18.9	B	17.7	B	46.7	D	16.0	B
			Through	17.1	B	25.1	C	32.2	C	13.7	B	35.2	D	33.9	C	27.2	C	29.9	C	27.7	C
			Right	14.5	B	17.4	B	23.5	C	19.7	B	69.1	E	47.0	D	23.5	C	3.1	A	30.3	C
			Approach	16.6	B	25.0	C	30.4	C	14.1	B	36.4	D	31.2	C	25.2	C	30.8	C	24.5	C
		Southbound	Left	14.8	B	19.1	B	24.2	C	14.9	B	30.3	C	32.5	C	15.3	B	47.2	D	28.1	C
			Through	18.6	B	28.2	C	31.8	C	20.7	C	48.4	D	44.9	D	20.6	C	50.7	D	39.7	D
			Right	17.1	B	24.9	C	29.4	C	17.7	B	38.5	D	38.6	D	17.5	B	39.9	D	35.0	D
			Approach	18.2	B	25.9	C	29.0	C	19.5	B	42.3	D	39.9	D	19.4	B	48.2	D	35.2	D
		Intersection		**19.0**	**B**	**27.2**	**C**	**30.6**	**C**	**27.1**	**C**	**43.6**	**D**	**40.0**	**D**	**30.1**	**C**	**43.2**	**D**	**39.9**	**D**
3	Mine Road & Courthouse Road	Eastbound	Left	6.6	A	10.3	B	13.6	B	14.6	B	157.3	F	25.3	C	15.1	B	123.0	F	22.8	C
			Through	4.4	A	6.0	A	6.6	A	11.2	B	14.6	B	12.6	B	11.2	B	12.9	B	12.3	B
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	4.7	A	7.6	A	9.6	A	11.9	B	71.3	E	18.0	B	12.0	B	55.5	E	16.8	B
		Westbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	29.4	C	4.1	A	16.6	B	7.2	A	27.7	C	25.0	C	26.1	C	26.1	C	20.0	C
			Right	42.6	D	1.9	A	8.4	A	23.7	C	11.3	B	12.9	B	8.0	A	6.0	A	0.1	A
			Approach	33.0	C	3.3	A	13.1	B	11.9	B	22.1	C	20.5	C	21.0	C	19.3	B	12.5	B
		Northbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
		Southbound	Left	53.5	D	50.3	D	20.5	C	56.7	E	45.0	D	35.9	D	44.0	D	57.2	E	54.4	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	34.5	C	24.2	C	9.2	A	96.2	F	6.2	A	40.9	D	46.6	D	37.5	D	37.5	D
			Approach	49.0	D	39.9	D	16.5	B	63.4	E	32.7	C	37.3	D	44.4	D	51.0	D	49.8	D
		Intersection		**22.9**	**C**	**15.3**	**B**	**13.1**	**B**	**24.4**	**C**	**40.7**	**D**	**25.6**	**C**	**22.7**	**C**	**39.7**	**D**	**27.0**	**C**
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	12.3	B	8.9	A	17.5	B	23.4	C	56.6	E	20.1	C	30.2	C	133.5	F	27.5	C
			Through	19.1	B	12.1	B	24.1	C	62.9	E	30.9	C	31.0	C	64.9	E	67.9	E	50.5	D
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	19.0	B	12.0	B	24.0	C	61.9	E	32.1	C	30.7	C	63.6	E	72.4	E	50.0	D
		Westbound	Left	97.2	F	71.6	E	41.7	D	132.8	F	72.6	E	86.1	F	86.8	F	63.5	E	127.6	F
			Through	11.9	B	16.9	B	21.8	C	15.4	B	150.3	F	22.4	C	41.5	D	188.4	F	42.6	D
			Right	75.2	E	63.1	E	11.6	B	13.1	B	19.9	B	8.2	A	16.6	B	36.6	D	61.4	E
			Approach	33.7	C	28.4	C	19.7	B	26.2	C	110.8	F	23.3	C	36.3	D	130.5	F	55.6	E
		Northbound	Left	0.0	A	0.0	A	0.0	A	71.3	E	74.2	E	63.0	E	40.3	D	30.2	C	70.7	E
			Through	57.2	E	0.0	A	0.0	A	69.6	E	70.6	E	60.2	E	72.0	E	78.3	E	71.5	E
			Right	55.9	E	0.0	A	0.0	A	59.6	E	62.2	E	52.4	D	59.1	E	60.9	E	54.6	D
			Approach	56.6	E	0.0	A	0.0	A	65.9	E	67.7	E	57.5	E	61.6	E	63.8	E	64.2	E
		Southbound	Left	55.0	D	60.8	E	30.2	C	107.6	F	246.2	F	68.8	E	56.3	E	91.0	F	73.8	E
			Through	58.4	E	66.8	E	30.5	C	120.5	F	255.8	F	82.9	F	66.1	E	80.6	F	36.1	D
			Right	36.3	D	37.2	D	19.7	B	40.9	D	40.4	D	33.8	C	63.1	E	86.3	F	22.1	C
			Approach	55.3	E	59.9	E	29.5	C	109.1	F	230.7	F	71.2	E	56.7	E	90.6	F	72.5	E
		Intersection		**31.2**	**C**	**27.2**	**C**	**22.9**	**C**	**53.7**	**D**	**109.5**	**F**	**35.7**	**D**	**50.0**	**D**	**104.2**	**F**	**59.9**	**E**
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	13.1	B	13.1	B	10.7	B	37.2	E	330.3	F	33.2	D	33.9	C	31.2	C	37.5	D
			Through	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Right	9.7	A	9.6	A	9.1	A	12.2	B	17.4	C	12.1	B	31.8	C	41.8	D	47.2	D
			Approach	10.7	B	10.4	B	9.3	A	20.9	C	103.0	F	18.2	C	32.6	C	38.9	D	44.4	D
		Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	28.6	C	35.1	D	30.9	C
			Through	-	-	-	-	-	-	-	-	-	-	-	-	28.5	C	35.1	D	30.9	C
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	28.5	C	35.1	D	30.9	C
		Northbound	Left	8.3	A	8.0	A	7.7	A	9.9	A	12.0	B	9.2	A	25.8	C	280.8	F	109.3	F
			Through	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	B	9.9	A	10.3	B
			Right	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	A	5.6	A	9.9	A
			Approach	0.3	A	0.1	A	0.1	A	1.4	A	1.8	A	1.7	A	12.1	B	37.9	D	18.9	B
		Southbound	Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
			Through	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.7	B	10.0	A	19.3	B
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	13.7	B	10.0	A	19.3	B
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**15.5**	**B**	**25.6**	**C**	**22.3**	**C**
6	Courthouse Road (WB) & Ramp D	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Southbound	Right	10.1	B	27.3	C	7.4	A	31.9	C	80.1	F	25.5	C	32.8	C	94.5	F	40.1	D
			Approach	10.1	B	27.3	C	7.4	A	31.9	C	80.1	F	25.5	C	32.8	C	94.5	F	40.1	D
		Intersection		**1.1**	**A**	**5.6**	**A**	**1.4**	**A**	**6.3**	**A**	**17.2**	**B**	**5.8**	**A**	**5.7**	**A**	**18.2**	**B**	**7.0**	**A**
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	11.0	B	29.7	C	7.9	A	26.9	C	32.0	C	21.3	C	49.8	D	73.6	E	31.0	C
			Approach	11.0	B	29.7	C	7.9	A	26.9	C	32.0	C	21.3	C	49.8	D	73.6	E	31.0	C
		Westbound	Through	28.6	C	7.3	A	61.5	E	29.7	C	73.5	E	22.6	C	43.5	D	66.5	E	33.6	C
			Approach	28.6	C	7.3	A	61.5	E	29.7	C	73.5	E	22.6	C	43.5	D	66.5	E	33.6	C
		Intersection		**19.9**	**B**	**17.0**	**B**	**34.8**	**C**	**28.3**	**C**	**54.8**	**D**	**22.0**	**C**	**46.7**	**D**	**69.7**	**E**	**32.3**	**C**
9	Courthouse Road (EB) & Spur D	Eastbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.0	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.0	A	0.1	A
		Southbound	Left	39.1	D	18.9	B	35.8	D	31.6	C	29.5	C	28.9	C	27.2	C	28.9	C	24.8	C
			Approach	39.1	D	18.9	B	35.8	D	31.6	C	29.5	C	28.9	C	27.2	C	28.9	C	24.8	C
		Intersection		**11.6**	**B**	**7.6**	**A**	**9.6**	**A**	**8.6**	**A**	**8.5**	**A**	**6.4**	**A**	**6.7**	**A**	**7.3**	**A**	**4.2**	**A**
10	Courthouse Road (WB) & Spur C	Westbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
11	Courthouse Road (EB) & Spur A	Eastbound	Left	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
12	Courthouse Road (WB) & Spur B	Westbound	Through	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A
			Approach	0.1	A	0.1	A	0.0	A	0.1	A	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A
		Northbound	Left	9.7	A	10.9	B	6.9	A	26.0	C	31.1	C	19.1	B	27.8	C	42.6	D	27.4	C
			Approach	9.7	A	10.9	B	6.9	A	11.8	B	13.6	B	7.9	A	27.8	C	42.6	D	27.4	C
		Intersection		**3.1**	**A**	**2.9**	**A**	**2.1**	**A**	**8.7**	**A**	**7.8**	**A**	**5.7**	**A**	**10.7**	**B**	**13.3**	**B**	**11.7**	**B**
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	47.4	D	81.9	F	45.5	D
			Approach	8.4	A	22.6	C	7.6	A	0.0	A	0.0	A	0.0	A	47.4	D	81.9	F	45.5	D
		Westbound	Through	41.9	D	46.1	D	39.4	D	31.8	C	52.3	D	34.9	C	29.6	C	31.2	C	37.0	D
			Approach	41.9	D	46.1	D	39.4	D	31.8	C	52.3	D	34.9	C	29.6	C	31.2	C	37.0	D
		Intersection		**23.8**	**C**	**33.0**	**C**	**22.5**	**C**	**28.4**	**C**	**55.1**	**E**	**26.7**	**C**	**39.5**	**D**	**56.5**	**E**	**41.5**	**D**
14	Courthouse Road (WB) & Ramp A	Westbound	Through	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Right	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Approach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Intersection		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
			Approach	0.1	A	0.1	A	0.1	A	0.2	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A
		Northbound	Right	48.5	D	39.0	D	37.3	D	51.5	D	35.5	D	32.1	C	47.3	D	32.7	C	36.0	D
			Approach	48.5	D	39.0	D	37.3	D	51.5	D	35.5	D	32.1	C	47.3	D	32.7	C	36.0	D
		Intersection		**11.9**	**B**	**5.7**	**A**	**6.3**	**A**	**12.3**	**B**	**5.6**	**A**	**5.8**	**A**	**11.0**	**B**	**5.1**	**A**	**6.1**	**A**

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Intersection Number and Description		Approach	Lane Group	2023 Existing Conditions						2032 No-Build Conditions						2032 Build Conditions					
				AM		PM		SUN		AM		PM		SUN		AM		PM		SUN	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	54.1	D	56.4	E	35.2	D	56.1	E	100.6	F	75.4	E	66.7	E	82.3	F	99.1	F
			Through	19.8	B	42.8	D	21.2	C	26.5	C	19.0	B	21.7	C	25.5	C	10.5	B	16.0	B
			Right	19.5	B	39.0	D	20.5	C	23.2	C	13.7	B	21.9	C	24.8	C	8.0	A	14.5	B
			Approach	30.8	C	45.0	D	23.0	C	33.1	C	31.1	C	28.7	C	35.0	C	21.1	C	25.8	C
		Westbound	Left	14.2	B	17.3	B	17.2	B	23.7	C	60.5	E	20.0	B	23.8	C	79.0	E	21.4	C
			Through	25.5	C	26.5	C	23.5	C	38.8	D	19.2	B	26.3	C	36.8	D	29.6	C	27.5	C
			Right	22.6	C	22.9	C	21.3	C	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	24.9	C	25.9	C	23.4	C	37.4	D	21.5	C	25.6	C	35.7	D	32.2	C	26.8	C
		Northbound	Left	60.9	E	59.9	E	35.0	C	68.1	E	74.7	E	56.7	E	60.5	E	72.8	E	66.8	E
			Through	53.0	D	51.0	D	32.9	C	60.9	E	56.9	E	48.2	D	54.4	D	56.5	E	56.4	E
			Right	47.9	D	46.6	D	30.5	C	50.5	D	48.3	D	40.1	D	44.4	D	50.0	D	47.7	D
			Approach	58.3	E	57.4	E	34.4	C	65.1	E	70.9	E	54.3	D	57.8	E	69.5	E	63.9	E
		Southbound	Left	49.0	D	46.3	D	34.8	C	63.4	E	66.9	E	59.1	E	60.1	E	130.4	F	66.2	E
			Through	49.0	D	46.1	D	34.8	C	61.9	E	63.4	E	57.3	E	58.2	E	71.1	E	64.6	E
			Right	30.8	C	33.2	C	21.3	C	37.8	D	48.8	D	41.7	D	35.1	D	53.1	D	48.4	D
			Approach	31.9	C	34.6	C	22.3	C	40.6	D	51.3	D	44.0	D	37.8	D	61.7	E	50.8	D
		Intersection		**31.6**	**C**	**39.5**	**D**	**24.3**	**C**	**38.1**	**D**	**35.0**	**C**	**33.2**	**C**	**37.5**	**D**	**35.0**	**C**	**34.0**	**C**
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	37.0	D	49.2	D	35.0	C	116.9	F	164.2	F	113.9	F	83.5	F	133.0	F	45.0	D
			Through	33.3	C	45.1	D	30.4	C	46.7	D	94.4	F	42.5	D	48.0	D	62.4	E	48.8	D
			Right	19.6	B	29.4	C	20.9	C	20.0	B	125.2	F	46.6	D	20.3	C	68.6	E	52.4	D
			Approach	28.7	C	38.6	D	25.7	C	47.9	D	117.4	F	56.6	E	44.7	D	76.7	E	49.8	D
		Westbound	Left	37.9	D	48.6	D	37.2	D	61.6	E	153.2	F	46.7	D	89.0	F	186.3	F	47.4	D
			Through	31.9	C	38.7	D	31.0	C	30.5	C	115.5	F	34.6	C	32.5	C	72.1	E	49.2	D
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	33.0	C	41.4	D	32.6	C	35.9	D	122.9	F	37.1	D	42.4	D	94.3	F	48.9	D
		Northbound	Left	33.1	C	44.8	D	33.3	C	51.7	D	109.0	F	46.8	D	51.0	D	156.0	F	43.7	D
			Through	18.1	B	22.2	C	16.5	B	34.9	C	39.2	D	20.6	C	33.8	C	46.2	D	21.9	C
			Right	11.4	B	13.5	B	11.3	B	21.9	C	23.0	C	12.7	B	22.4	C	28.4	C	12.8	B
			Approach	22.2	C	31.9	C	23.4	C	39.8	D	76.9	E	35.3	D	39.3	D	108.3	F	34.4	C
		Southbound	Left	44.6	D	52.9	D	42.8	D	162.6	F	75.3	E	52.1	D	101.0	F	72.1	E	55.4	E
			Through	24.7	C	35.9	D	24.8	C	49.1	D	94.9	F	37.0	D	46.5	D	199.9	F	44.7	D
			Right	15.1	B	19.3	B	13.7	B	33.1	C	38.8	D	23.1	C	31.2	C	51.1	D	26.6	C
			Approach	24.6	C	34.5	C	23.7	C	64.8	E	77.9	E	33.0	C	50.7	D	144.7	F	38.1	D
		Intersection		**26.1**	**C**	**36.3**	**D**	**25.4**	**C**	**45.7**	**D**	**103.4**	**F**	**43.2**	**D**	**43.4**	**D**	**100.3**	**F**	**43.2**	**D**
18	US Route 1 & Courthouse Road	Eastbound	Left	s	s	s	s	s	s	66.0	E	87.6	F	79.5	E	68.4	E	115.5	F	69.7	E
			Through	69.5	E	67.6	E	64.6	E	40.5	D	48.6	D	33.7	C	44.5	D	65.9	E	36.9	D
			Right	54.4	D	59.2	E	56.2	E	36.6	D	41.9	D	30.7	C	40.4	D	56.9	E	34.3	C
			Approach	67.6	E	64.6	E	63.0	E	54.7	D	62.9	E	61.0	E	57.7	E	83.9	F	56.4	E
		Westbound	Left	s	s	s	s	s	s	45.0	D	70.8	E	45.3	D	55.5	E	80.2	F	55.2	E
			Through	67.2	E	89.6	F	61.4	E	61.7	E	84.7	F	42.0	D	88.5	F	90.8	F	51.3	D
			Right	56.4	E	65.7	E	57.0	E	38.1	D	42.4	D	31.6	C	43.1	D	56.6	E	35.9	D
			Approach	60.5	E	79.7	E	59.0	E	46.0	D	66.1	E	38.7	D	58.1	E	76.0	E	46.1	D
		Northbound	Left	s	s	s	s	s	s	24.7	C	30.2	C	23.1	C	27.3	C	38.3	D	24.4	C
			Through	35.8	D	66.7	E	58.2	E	37.8	D	66.0	E	34.6	C	43.6	D	68.2	E	35.1	D
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	35.8	D	66.7	E	58.2	E	36.3	D	64.4	E	34.2	C	41.7	D	67.0	E	34.7	C
		Southbound	Left	s	s	s	s	s	s	28.8	C	27.8	C	18.6	B	28.6	C	32.2	C	20.0	C
			Through	57.5	E	47.5	D	21.8	C	55.3	E	69.6	E	26.9	C	43.3	D	55.0	D	29.9	C
			Right	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s
			Approach	57.5	E	47.5	D	21.8	C	52.2	D	61.6	E	26.0	C	41.7	D	50.8	D	28.8	C
		Intersection		**50.9**	**D**	**58.3**	**E**	**39.8**	**D**	**45.4**	**D**	**63.1**	**E**	**33.1**	**C**	**46.4**	**D**	**62.2**	**E**	**35.0**	**C**
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	N.A.		N.A.		N.A.		10.7	B	12.7	B	10.5	B	12.6	B	17.0	C	15.8	C
			Approach							10.7	B	12.7	B	10.5	B	12.6	B	17.0	C	15.8	C
		Westbound	Right							0.0	A	0	A	0	A	-	-	-	-	-	-
			Approach							0.0	A	0	A	0	A	-	-	-	-	-	-
		Northbound	Through							-	-	-	-	-	-	-	-	-	-	-	-
			Right							-	-	-	-	-	-	-	-	-	-	-	-
			Approach							-	-	-	-	-	-	-	-	-	-	-	-
		Southbound	Through							-	-	-	-	-	-	-	-	-	-	-	-
			Right							-	-	-	-	-	-	-	-	-	-	-	-
			Approach							-	-	-	-	-	-	-	-	-	-	-	-
		Intersection								-	-	-	-	-	-	-	-	-	-	-	-
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	N.A.		N.A.		N.A.		s	s	s	s	s	s	s	s	s	s	s	s
			Through							18.8	C	43.3	E	15.4	C	34.5	C	33.0	C	34.7	C
			Right							s	s	s	s	s	s	s	s	s	s	s	s
			Approach							18.8	C	43.3	E	15.4	C	34.5	C	33.0	C	34.7	C
		Westbound	Left							s	s	s	s	s	s	33.1	C	50.2	D	25.2	C
			Through							57.7	F	1000+	F	64.0	F	s	s	s	s	s	s
			Right							s	s	s	s	s	s	25.6	C	21.1	C	15.0	B
			Approach							57.7	F	1000+	F	64.0	F	32.9	C	48.3	D	24.9	C
		Northbound	Left							8.7	A	8.9	A	8.2	A	7.2	A	6.9	A	25.2	C
			Through							-	-	-	-	-	-	9.9	A	14.3	B	32.6	C
			Right							s	s	s	s	s	s	0.0	A	43.7	D	4.8	A
			Approach							0.4	A	0.5	A	0.5	A	7.3	A	24.5	C	21.6	C
		Southbound	Left							8.8	A	10.2	B	8.5	A	8.0	A	16.4	B	17.3	B
			Through							-	-	-	-	-	-	12.3	B	16.8	B	25.4	C
			Right							s	s	s	s	s	s	s	s	s	s	s	s
			Approach							0.3	A	0.8	A	0.5	A	12.0	B	16.8	B	25.0	C
		Intersection								-	-	-	-	-	-	**15.8**	**B**	**30.7**	**C**	**24.2**	**C**

Note: – Synchro does not report delay for free-flow movements; no delay reported
s Shared lane
N.A. Movement does not exist for scenario

Table 15: Scenario B: Maximum Queue Lengths (2032)

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2032 No-Build Conditions			2032 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
1	Mine Road & Coastal Avenue/Austin Ridge Drive	Eastbound	Left	570	570	128	123	95	142	192	114	162	188	102
			Through	Continuous	Continuous	39	42	47	33	58	44	35	62	60
			Right	660	660	22	33	32	22	39	35	24	39	31
		Westbound	Left	250	250	54	57	34	51	63	38	54	64	39
			Through	Continuous	Continuous	56	47	43	52	60	35	43	59	45
			Right	Continuous	Continuous	127	104	86	192	266	169	198	284	172
		Northbound	Left	400	400	36	29	17	41	37	20	40	38	20
			Through	Continuous	Continuous	124	122	87	162	290	160	207	331	171
			Right	360	360	32	40	3	28	48	12	32	77	7
		Southbound	Left	250	250	108	203	116	243	249	185	229	249	199
			Through	Continuous	Continuous	85	200	75	196	444	117	191	464	100
			Right	310	310	24	42	15	36	38	24	25	35	25
2	Mine Road & Sunflower Drive	Eastbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	50	112	156	70	161	218	67	144	236
			Right	275	275	20	55	82	24	68	136	24	62	151
		Westbound	Left	350	350	45	77	75	202	268	284	190	333	300
			Through	Continuous	Continuous	0	23	35	0	34	35	2	28	39
			Right	245	245	27	24	25	55	68	68	56	91	87
		Northbound	Left	300	300	80	283	206	80	293	269	88	293	273
			Through	Continuous	Continuous	100	287	161	177	404*	279	214	458*	303*
			Right	240	240	18	30	27	62	240	192	114	240	240
		Southbound	Left	330	330	48	122	120	130	303	251	140	325	244
			Through	Continuous	Continuous	149	234	135	198	360	233	196	446	238
			Right	340	340	36	68	53	40	125	55	40	238	48
3	Mine Road & Courthouse Road	Eastbound	Left	320	320	114	239	145	268	320	319	262	320	319
			Through	Continuous	Continuous	134	129	89	288	701	398	320	683	465
			Right	Continuous	Continuous	141	132	75	291	448	220	313	453	156
		Westbound	Left	170	170	0	0	0	0	0	0	0	0	0
			Through	Continuous	Continuous	204	207	132	286	427	256	348	609*	156
			Right	Continuous	Continuous	82	108	84	127	168	157	154	293	254
		Northbound	Left	s	s	s	s	s	s	s	s	s	s	s
			Through	Continuous	Continuous	0	0	0	0	0	0	0	0	0
			Right	s	s	s	s	s	s	s	s	s	s	s
		Southbound	Left	525	525	176	230	141	447	449	423	383	502	594*
			Right	440	440	77	136	74	100	161	142	130	220	212
4	Austin Ridge Drive & Courthouse Road	Eastbound	Left	300	300	44	57	28	298	292	146	299	288	118
			Through	Continuous	Continuous	193	240	209	663*	633*	459*	662*	670*	455*
			Right	Continuous	415	234	302	236	663*	633*	459*	415	395	383
		Westbound	Left	225	360	45	34	70	354	359	359	351	359	222
			Through	Continuous	Continuous	93	222	285	570*	713*	581*	418	516*	334
			Right	Continuous	Continuous	68	64	87	268	713*	272	369	516*	407
		Northbound	Left	200	200	s	s	s	15	45	25	14	91	26
			Through	Continuous	Continuous	9	0	0	25	68	35	26	183	72
			Right	200	200	6	0	0	22	58	35	13	140	56
		Southbound	Left	320	655	178	193	98	416	1291*	350	636*	1899*	1911*
			Through	Continuous	Continuous	175	188	116	404	1291*	330	80	1899*	1911*
			Right	350	635	54	91	46	243	350	186	176	202	135
5	Austin Ridge Drive & Sunflower Drive	Eastbound	Left	Continuous	Continuous	16	18	17	103	1386*	113	71	1057*	94
			Through	Continuous	N.A.	0	0	0	0	1386*	0	N.A.	N.A.	N.A.
			Right	250	Continuous	21	25	19	70	229	65	71	1057*	210
		Westbound	Left	N.A.	Continuous	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	123	348	235
			Through		Continuous							108	348	202
		Northbound	Left	375	250	25	16	8	90	331	81	166	161	155
			Through	Continuous	Continuous	0	0	0	0	706*	0	191	202	187
			Right	Continuous	Continuous	0	0	0	0	205	0	48	50	64
		Southbound	Left	350	350	0	0	0	0	0	0	0	23	132
			Through	Continuous	Continuous	0	0	0	0	421	0	194	1029*	1049*
			Right	Continuous	Continuous	0	0	0	0	426	6	182	1029*	1049*
6	Courthouse Road (WB) & Ramp D	Westbound	Through	Continuous	Continuous	6	6	3	63	214	73	20	81	46
		Southbound	Right	Continuous	Continuous	93	227	84	328	725*	353	373	569*	417
7	Courthouse Road (EB) & Ramp C	Eastbound	Through	Continuous	Continuous	89	48	6	348*	463*	241	624*	698*	698*
			Right	Continuous	Continuous	27	45	8	348*	463*	269*	624*	698*	698*
8	Courthouse Road (EB) & Courthouse Road (WB)	Eastbound	Through	Continuous	Continuous	230	231	188	479*	594*	131*	755*	829*	829*
		Westbound	Through	Continuous	Continuous	220	142	202	584*	741*	551*	584*	757*	711*
9	Courthouse Road (EB) & Spur D	Eastbound	Through	Continuous	Continuous	30	23	12	103	145	63	177	202	104
		Southbound	Left	Continuous	Continuous	227	189	121	306	1108*	198	938*	571*	182
10	Courthouse Road (WB) & Spur C	Westbound	Left	Continuous	Continuous	69	30	30	432	598	425	394	607	566
			Through	Continuous	Continuous	102	28	70	440	597	407	440	613	567
11	Courthouse Road (EB) & Spur A	Eastbound	Left	Continuous	Continuous	62	187	2	500	575	239	589	594	560
			Through	Continuous	Continuous	4	179	0	483	575	204	598	600	529
12	Courthouse Road (WB) & Spur B	Westbound	Through	Continuous	Continuous	32	25	3	56	198	58	103	218	168
		Northbound	Left	Continuous	Continuous	115	140	97	409*	1643*	208	1301*	1646*	341*
13	Courthouse Road (WB) & Courthouse Road (EB)	Eastbound	Through	Continuous	Continuous	169	201	119	603*	695*	324*	718*	720*	657*
		Westbound	Through	Continuous	Continuous	290	294	198	264*	566*	325*	259*	954*	402*
14	Courthouse Road (WB) & Ramp A	Westbound	Through	Continuous	Continuous	153	216	0	94	396	155	89	784*	232
			Right	Continuous	Continuous	161	189	0	13	365	0	0	784*	0
15	Courthouse Road (EB) & Ramp B	Eastbound	Through	Continuous	Continuous	14	25	3	94	42	19	143	51	24
		Northbound	Right	Continuous	Continuous	309	254	177	687*	1755*	352	907*	944*	361*

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

Intersection Number and Description		Type of Control	Lane Group	Effective Existing Storage	Effective Build Storage	2023 Existing Conditions			2032 No-Build Conditions			2032 Build Conditions		
						AM	PM	SUN	AM	PM	SUN	AM	PM	SUN
16	Courthouse Road/Hospital Center Boulevard & Wyche Road/Courthouse Road	Eastbound	Left	250	250	212	223	87	251	246	248	251	235	249
			Through	Continuous	Continuous	157	278	152	776*	321	385	769*	294	467*
			Right	250	250	141	248	127	250	181	250	250	181	250
		Westbound	Left	200	200	73	66	20	200	199	183	200	199	186
			Through	Continuous	Continuous	169	200	151	312	952*	195	304	1513*	244
			Right	250	250	28	25	7	284	350	198	280	390	226
		Northbound	Left	325	325	178	192	155	240	311	271	219	317	275
			Through	Continuous	Continuous	72	73	40	129	608	94	115	544	112
			Right	220	220	65	71	54	124	123	138	131	141	125
		Southbound	Left	250	250	58	64	38	100	165	96	100	154	93
			Through	Continuous	Continuous	60	72	39	70	528	50	90	133	61
			Right	420	420	245	285	126	331	705	214	344	498	216
17	US Route 1 & Hospital Center Boulevard	Eastbound	Left	550	550	88	107	84	154	364	185	154	381	170
			Through	Continuous	Continuous	192	262	133	400	554	231	374	466	245
			Right	Continuous	Continuous	153	386	200	257	582	328	240	475	310
		Westbound	Left	175	175	111	169	94	174	174	156	174	174	174
			Through	Continuous	Continuous	140	193	95	271	1690	178	235	1061	220
			Right	s	s	151	188	101	258	1689	183	232	1063	218
		Northbound	Left	390	390	199	226	155	326	390	257	340	390	340
			Through	Continuous	Continuous	168	120	98	278	987	127	355	1034	231
			Right	760	760	32	56	15	115	118	48	109	161	45
		Southbound	Left	490	490	74	101	68	178	211	70	168	368	87
			Through	Continuous	Continuous	142	311	178	167	954	194	164	871	242
			Right	500	500	91	160	101	237	404	194	266	493	242
18	US Route 1 & Courthouse Road	Eastbound	Left	s	Continuous	s	s	s	159	170	122	175	217	127
			Through	Continuous	Continuous	218	321	141	109	136	84	125	183	76
			Right	Continuous	250	78	204	63	63	88	37	64	96	35
		Westbound	Left	s	150	s	s	s	149	148	88	149	149	98
			Through	Continuous	Continuous	226	298	122	1935	226	93	2146	280	98
			Right	Continuous	Continuous	384	216	157	1868	207	135	2142	236	145
		Northbound	Left	s	300	s	s	s	255	117	53	243	276	78
			Through	Continuous	Continuous	337	288	192	338	291	174	341	401	259
			Right	s	s	s	s	s	338	303	173	340	398	266
		Southbound	Left	s	696	s	s	s	112	219	101	121	287	102
			Through	Continuous	Continuous	293	463	231	254	372	215	28	458	238
			Right	s	s	s	s	s	298	389	230	319	460	255
19	Austin Ridge Driveway & Driveway 2	Eastbound	Right	Continuous	Continuous	N.A.	N.A.	N.A.	35	78	51	39	250	204
		Westbound	Right	Continuous	Continuous				0	0	0	0	0	0
		Northbound	Through	Continuous	Continuous				0	0	0	0	0	0
			Right	N.A.	150				0	0	0	0	0	0
		Southbound	Through	Continuous	Continuous				0	90	0	0	572	587
20	Austin Ridge Driveway & Buc-ee's Boulevard	Eastbound	Left	s	s	N.A.	N.A.	N.A.	s	s	s	s	s	s
			Through	Continuous	Continuous				58	136	67	72	215	121
			Right	s	s				s	s	s	s	s	s
		Westbound	Left	s	Continuous				s	s	s	179	462	461
			Through	Continuous	s				99	432	158	25	270	270
			Right	s	Continuous				s	s	s	0	0	0
		Northbound	Left	Continuous	Continuous				34	39	44	41	86	110
			Through	Continuous	Continuous				5	39	2	289	312	383
			Right	s	150				s	s	s	150	150	150
		Southbound	Left	150	150				32	66	36	82	149	138
			Through	Continuous	Continuous				0	28	2	201	706	488
			Right	s	Continuous				s	s	s	s	s	s

Note: Effective storage length is equal to the storage length plus half of the taper length, per VDOT Traffic Operations and Safety Analysis Manual (TOSAM) version 2.0

* Queues reported extend past the link length and were adjusted to account for the queue that is projected to spill back through upstream nodes

s Shared lane

N.A. Movement does not exist for scenario

6.7 Roundabout Analysis

Per the request of VDOT, an analysis of the proposed roundabout along Israel Rodriguez Drive was conducted using *Sidra Intersection 9.1™* to evaluate how the roundabout would function with Westgate traffic and the traffic attributable to the proposed development. Due to the uncertainty of the Westgate development and insufficient information on how access to the site will be provided, the Sidra model was developed according to the Build concept sketch included in **Appendix A**.

Sidra Intersection 9.1™ was used to evaluate the traffic operations of the proposed roundabout for the AM, PM, and Sunday peak hours.

Table 16: Roundabout Analysis Results

Intersection Number and Description		Approach	Lane Group	2032 Build Conditions					
				AM	PM	SUN	AM	PM	SUN
				Delay (s)	Delay (s)	Delay (s)	Queue (ft)	Queue (ft)	Queue (ft)
22	Israel Rodriguez Drive/Westgate Driveway and Buc-ee's Boulevard	Eastbound	Left	3.5	4.5	3.7	21	56	27
			Through	3.5	4.5	3.7	21	56	27
			Approach	3.5	4.5	3.7	-	-	-
		Westbound	Through	4.4	9.7	8.9	8	64	24
			Right	4.4	9.7	8.9	8	64	24
			Approach	4.4	9.7	8.9	-	-	-
		Northbound	Left	4.2	6.3	6.4	16	30	47
			Right	4.2	6.3	6.4	16	30	47
			Approach	4.2	6.3	6.4	-	-	-
		Intersection		4.0	6.6	6.1	-	-	-

Based on the results of the analysis, the roundabout is projected to operate with an overall average delay of 6.6 seconds or less. The 95th percentile queues are projected to minimal, with the highest queue reported occurring during the PM peak hour and extending less than three vehicle lengths.

Note that this analysis was conducted assuming that Westgate consists of 129,000 square feet of mixed-use development and access to the site is provided based on the right-of-way noted in the Build concept sketch included in **Appendix A**.

9. CONCLUSION AND RECOMMENDATIONS

A Buc-ee's is proposed in the northwest quadrant of the intersection of Interstate 95 (I-95) and Courthouse Road (Route 630) in Stafford County, Virginia. Currently, the site proposed for development is vacant. The proposed development consists of a 120 fueling position facility and a 74,000 square-foot retail store. Access to the proposed development will be provided along Austin Ridge Drive via one ingress driveway (right-in only), one full-access driveway; creating the fourth leg at the intersection of Sunflower Drive, and one partial-access driveway (right-in only). The project will also have access along Israel Rodriguez Drive, a proposed roadway intersecting Austin Ridge Drive at a signalized intersection north of Sunflower Drive. Access along Israel Rodriguez Drive will be provided via one partial access driveway (right-in/right-out only) and one full access driveway at a roundabout.

Due to the uncertainty of the scale of background development that is anticipated to occur within the study area, an isolated traffic operational analysis (Scenario A) was conducted at the request of Stafford County. The purpose of the analysis is to isolate the traffic impacts of the proposed development by excluding the trips attributed to background developments that have not yet been built. This analysis will serve as a reference for Stafford County for future planning purposes only, to evaluate the anticipated traffic impacts of the proposed development if the background development does not occur within the study area. A supplemental analysis (Scenario B) was prepared that included the background developments that are expected to occur within the study area to serve as a baseline for evaluating the improvements needed to mitigate the traffic attributable to the proposed development. The analyses were conducted for Existing (2023), No-Build (2026 and 2032), and Build (2026 and 2032) conditions. After discussions with Stafford County, the Buc-ee's proposed mitigations were based on Scenario B impacts.

For future conditions analyses, proffered improvements associated with the included background developments were assumed to be operational. The following improvements are recommended to mitigate projected site-generated traffic, note that the dimensions of proposed storage and taper lengths below are the minimum that will be provided. The dimensions are subject to be increased and will be finalized during the OSAR process:

- Austin Ridge Drive and Courthouse Road
    - Construct an additional eastbound through/right lane within the immediate approach of the intersection that would provide a minimum of approximately 320 feet of storage and 200 feet of taper
    - Construct an additional westbound through lane from the southbound I-95 Diverging Diamond Interchange (DDI) ramp signalized intersection to a point immediately west of the Austin Ridge Drive intersection connecting to the existing right-turn lane onto Miracle Drive
    - Widen Austin Ridge Drive to provide three exclusive southbound left-turn lanes and extend the southbound right-turn lane to provide a minimum of approximately 565 feet of storage and 150 feet of taper
- Construct new intersection control type at the intersection of Austin Ridge Drive and Sunflower Drive/Project Driveway 1. The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Construct new intersection control type at the intersection of Austin Ridge Drive and Israel Rodriguez Drive (proposed). The intersection control type will be constructed in accordance with the recommendations from the OSAR as approved by VDOT and Stafford County. For the purposes of the analysis conducted in the TIA, the intersection control type was assumed to be a traffic signal.
- Optimize signal timings, splits, and offsets at all study area signalized intersections.

- I-95 at Exit 140 Diverging Diamond Interchange
    - Construct a median separated southbound right-turn slip-lane and receiving lane along westbound Courthouse Road that serves as a channelized free-flow right-turn at the intersection of Austin Ridge Drive and Courthouse Road and provides a dedicated buffered lane for traffic bound for the proposed Buc-ee's or northbound Austin Ridge Drive
    - Widen the northbound I-95 off-ramp to provide an additional dedicated ramp lane to eastbound Courthouse Road that would provide a minimum of approximately 435 feet of storage and 295 feet of taper

The analyses conducted within this report used *Synchro 11™* to evaluate network performance per the VDOT *Traffic Operations and Safety Analysis Manual* (TOSAM) requirements for deterministic intersection capacity analyses. Synchro was used at the request of Stafford County to allow for the comparison of the analysis results to the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan, which recommends new development maintain a LOS C or better, or if projected LOS without the project is below C, the proposed project is not to degrade the intersection further.

In addition to using *Synchro 11™* to evaluate network performance, per the request of VDOT, microsimulation (*SimTraffic™*) delay was reported as it is deemed more accurate in oversaturated conditions. Note that the microsimulation delay does not equate to a LOS using HCM methodologies and cannot be accurately compared to the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan therefore, the microsimulation delay results were provided as a reference and were not used to determine the improvements recommended to mitigate expected project traffic.

With the proposed off-site improvements and signal timing optimizations, the results of the isolated traffic operational analysis (Scenario A) indicate that under all future build conditions, all signalized intersections are projected to operate with overall delays equivalent to LOS C or better, and all unsignalized approaches are projected to operate with delays equivalent to LOS C or better, with the exception of the intersections of US Route 1 with Hospital Center Boulevard and Courthouse Road, which were projected to operate with delays equivalent to LOS D. Note that the intersections were projected to operate with delays equivalent to LOS D under no-build conditions, prior to the completion of the project.

With the proposed off-site improvements and signal timing optimizations, the results of the operational analysis for Scenario B indicate that under all future build conditions, all study area intersections are projected to operate in accordance with the Stafford County Comprehensive Plan Policy 7.7.7 of the Transportation Plan by maintaining a LOS C or better, or if the projected LOS without the project is below C, the proposed project does not degrade the intersection further. The only exceptions to this are the following intersections:

- Austin Ridge Drive and Courthouse Road under the 2026 Build conditions, which is projected to operate with delays equivalent to LOS D during the weekend peak hour, increasing the projected delay from 32.8 seconds per vehicle to 45.9 seconds per vehicle
- Austin Ridge Drive and Courthouse Road under the 2032 Build conditions, which is projected to operate with delays equivalent to LOS E during the weekend peak hour, increasing the projected delay from 35.7 seconds per vehicle to 59.9 seconds per vehicle
- Courthouse Road and the I-95 on/off-ramp diverging diamond interchange intersections, which is projected to operate with delays equivalent to LOS or worse during the peak hours analyzed
    - Based on discussions with Stafford County and VDOT staff, it was agreed to not hold the operations of the main diverging diamond intersections to the Stafford County

Comprehensive Plan Policy 7.7.7 of the Transportation Plan recommendations do the limitations of the Synchro software modeling a DDI

- Based on the SimTraffic results for the DDI intersection, it is not anticipated that the proposed development traffic would impact the DDI operations

- US Route 1 and Courthouse Road under 2032 Build conditions, which is projected to operate with delay equivalent to LOS D during the AM peak hour, increasing the projected delay from 45.4 seconds per vehicle to 46.4 seconds per vehicle
    - Based on discussions with Stafford County and VDOT staff, it was agreed that the applicant was not responsible for providing any traffic mitigations to this intersection due to it being located outside of the immediate study area

Due to proposed improvements impacting the adjacent interchange, it is expected that the Virginia Department of Transportation (VDOT) and the Federal Highway Administration (FHWA) will require an Operations and Safety Analysis Report (OSAR). The exact scope and limits of the OSAR have been determined through coordination with these agencies.

As requested by Stafford County Transportation Staff and VDOT, the applicant has proffers that all interchange improvements will be constructed as the OSAR requires of the Applicant in strict compliance with all requirements of the OSAR final report (See Proffer 7.h).