

5017 Weddington-Matthews Road

Traffic Impact Analysis

Weddington, North Carolina

Prepared for:

Toll Brothers, Inc.

March 2025

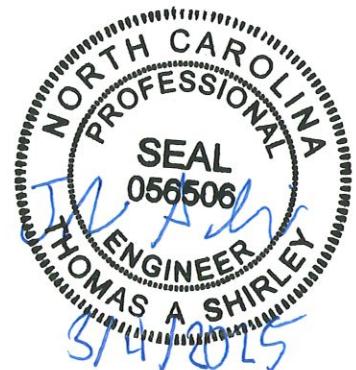
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Kimley»Horn

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5017 Weddington-Matthews Road
Weddington, North Carolina

Prepared for:

Toll Brothers, Inc.
Charlotte, North Carolina



Updates in March 2025

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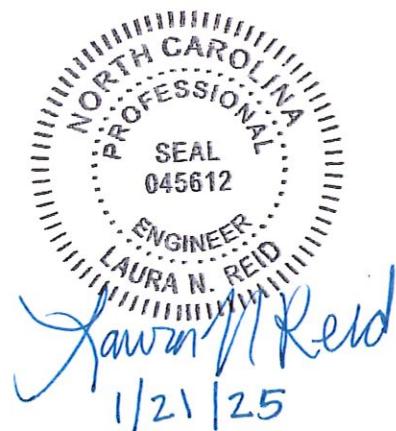


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1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to evaluate the vehicular traffic impacts on the surrounding transportation infrastructure as a result of the proposed 5017 Weddington-Matthews Road development. The primary objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To identify improvements to mitigate the proposed development's traffic impacts.

The proposed 5017 Weddington-Matthews Road development is located along both sides of Weddington-Matthews Road between Willow Oaks Trail and Greenbrook Parkway in Weddington, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 47 single-family detached homes; 9 single-family detached homes on the west side of Weddington-Matthews Road and 38 single-family detached homes on the east side of Weddington-Matthews Road.

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Bonner Drive Extension – the northbound leg of an existing, unsignalized, full-movement intersection of Bonner Drive and Amanda Drive
- Access A – an unsignalized, full-movement connection to Weddington-Matthews Road approximately 1,580 feet south of the intersection of Amanda Drive and Weddington-Matthews Road; this access serves both sides of the development.

North Carolina Department of Transportation (NCDOT) TIA Scoping Checklist was prepared based on the provided site plan that documented the scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Town of Weddington staff. The approved TIA Scoping Checklist, along with NCDOT and Town scoping comments and approval emails, are included in the **Appendix**. The analysis in this TIA is based on the updated development plan and build-out year described above and is included in the **Appendix**. The development plan was revised after approval of the TIA Scoping Checklist to reduce density from 49 units (12 west and 37 east) to 47 units (9 west and 38 east) and the build-out year from 2027 to 2029.

The following AM, Midday (MID), and PM peak-hour scenarios were analyzed to determine the proposed development's transportation impacts on the surrounding network:

- 2024 Existing Conditions
- 2029 Background Conditions
- 2029 Build-out Conditions

Based on coordination with the Town and NCDOT, this TIA evaluated operations under each of the AM, MID, and PM peak-hour scenarios above for the following study area intersections:

1. Weddington-Matthews Road and Tilley Morris Road
2. Weddington-Matthews Road and Amanda Drive
3. Amanda Drive and Bonner Drive
4. Hemby Road/Beulah Church Road and Weddington-Matthews Road
5. Weddington-Matthews Road and Access A

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#) and set forth by the [Town of Weddington Traffic Impact Analysis \(TIA\) Process and Procedures Manual](#), and to identify transportation improvements that may be required to mitigate these impacts.

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants contained herein, *and feedback from NCDOT and Town Staff*, the following site and mitigation improvements are identified for the proposed 5017 Weddington-Matthews Road development:

Amanda Drive and Bonner Drive

- Extension of the northbound approach of Bonner Drive into the proposed development with one ingress lane and one egress lane.

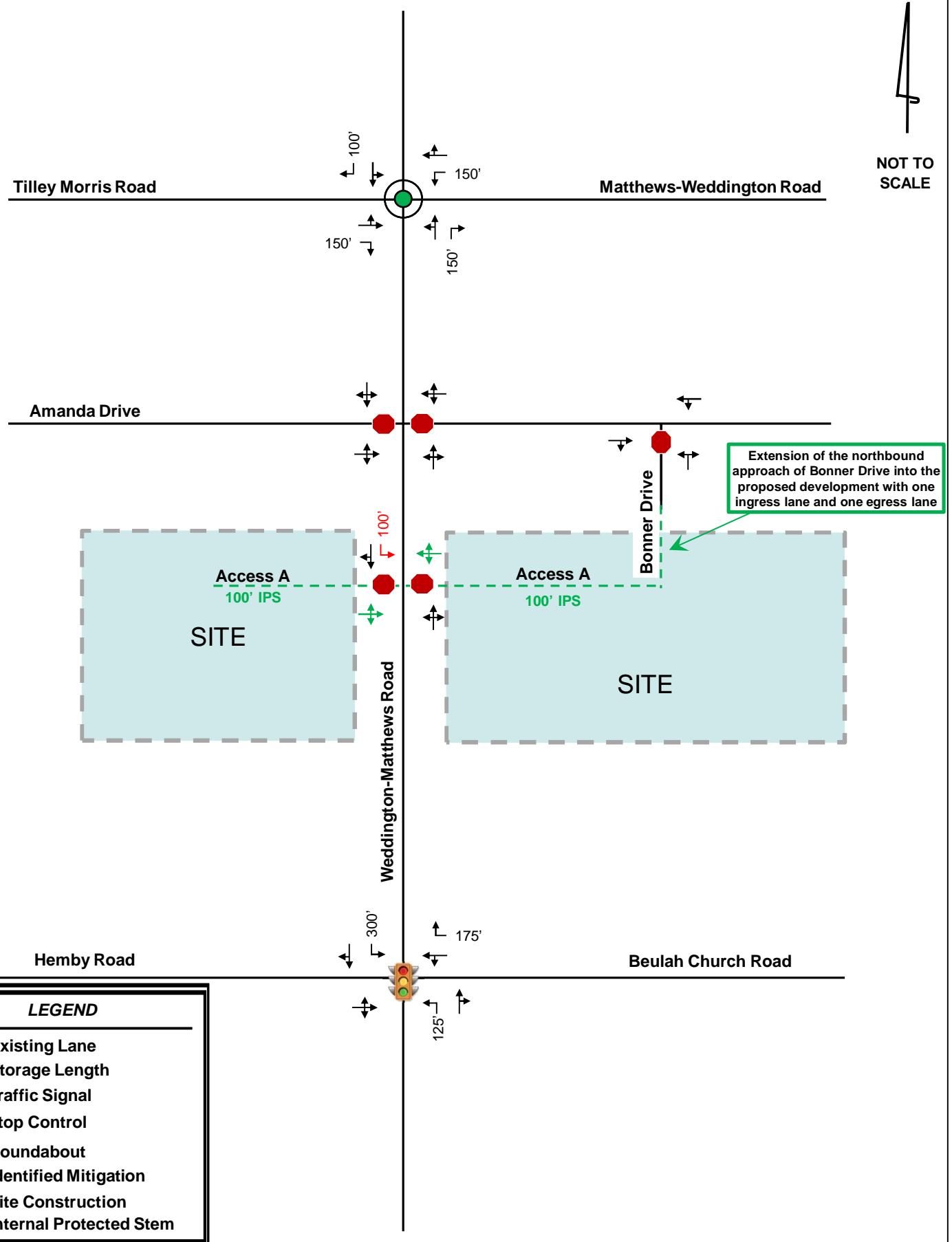
Weddington-Matthews Road and Access A

- Construction of the eastbound and westbound approaches of Access A with one ingress lane, one egress lane, stop-control, and an internal protected stem (IPS) of 100 feet.
- *Construct a southbound left-turn lane with 100 feet of storage and appropriate taper.*

No additional improvements are identified to mitigate other study area intersections.

The site improvements identified within the study area is shown in **Figure 1.1**. The improvements shown on these figures are subject to approval by NCDOT and the Town of Weddington. All additions and attachments to the State and Town roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.

Note that changes from the original TIA submittal (sealed 1/21/2025) are shown in italics throughout the study.



2.0 Introduction

The proposed 5017 Weddington-Matthews Road development is located along both sides of Weddington-Matthews Road between Willow Oaks Trail and Greenbrook Parkway in Weddington, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 47 single-family detached homes; 9 single-family detached homes on the west side of Weddington-Matthews Road and 38 single-family detached homes on the east side of Weddington-Matthews Road.

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Bonner Drive Extension – the northbound leg of an existing, unsignalized, full-movement intersection of Bonner Drive and Amanda Drive
- Access A – an unsignalized, full-movement connection to Weddington-Matthews Road approximately 1,580 feet south of the intersection of Amanda Drive and Weddington-Matthews Road; this access serves both sides of the development.

North Carolina Department of Transportation (NCDOT) TIA Scoping Checklist was prepared based on the provided site plan that documented the scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Town of Weddington staff. The approved TIA Scoping Checklist, along with NCDOT and Town scoping comments and approval emails, are included in the **Appendix**. The analysis in this TIA is based on the updated development plan and build-out year described above and is included in the **Appendix**. The development plan was revised after approval of the TIA Scoping Checklist to reduce density from 49 units (12 west and 37 east) to 47 units (9 west and 38 east) and the build-out year from 2027 to 2029.

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#) and set forth by the [Town of Weddington Traffic Impact Analysis \(TIA\) Process and Procedures Manual](#), and to identify transportation improvements that may be required to mitigate these impacts.

3.0 Existing Traffic Conditions

Existing traffic conditions were coordinated with Town of Weddington and NCDOT staff and collected through field observations, review of available online data, and turning-movement counts to establish the existing conditions baseline analysis.

3.1 STUDY AREA

Based on coordination with the Town and NCDOT, the study area for this TIA includes the following existing intersections:

1. Weddington-Matthews Road and Tilley Morris Road
2. Weddington-Matthews Road and Amanda Drive
3. Amanda Drive and Bonner Drive
4. Hemby Road/Beulah Church Road and Weddington-Matthews Road

Figure 3.1 shows the study area intersections and the site location, **Figure 3.2** shows the proposed site plan for the development, and **Figure 3.3** shows the existing roadway geometry at the study intersections.

The primary roadways in the vicinity of the site are Weddington-Matthews Road, Tilley Morris Road, Matthews-Weddington Road, Hemby Road, Beulah Church Road, Amanda Drive, and Bonner Drive.

Weddington-Matthews Road is a two-lane, undivided major collector with a posted speed limit of 45 miles per hour (mph) in the vicinity of the proposed development. Weddington-Matthews Road carries an annual average daily traffic (AADT) volume of 6,100 vehicles per day (vpd) south of Hemby Road based on 2024 NCDOT AADT data and 7,900 vpd south of Tilley Morris Road based on 2023 NCDOT AADT data.

Tilley Morris Road is a two-lane, undivided minor collector with a posted speed limit of 45 mph in the vicinity of the proposed development. Tilley Morris Road carries an AADT volume of 14,400 vpd west of Weddington-Matthews Road based on 2024 NCDOT AADT data.

The westbound leg of Matthews-Weddington Road at the intersection with Tilley Morris Road is an undivided minor arterial with a posted speed of 45 mph in the vicinity of the proposed development. This leg carries an AADT volume of 15,900 vpd east of the intersection of Tilley Morris Road and Matthews-Weddington Road based on 2024 AADT data.

Hemby Road is a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Hemby Road carries an AADT volume of 6,600 vpd west of Weddington-Matthews Road based on 2023 NCDOT AADT data.

Beulah Church Road is a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Beulah Church Road carries an AADT volume of 7,900 vpd east of Weddington-Matthews Road based on 2023 NCDOT AADT data.

Amanda Drive is a two-lane, undivided local road with a posted speed limit of 25 mph in the vicinity of the proposed development. NCDOT AADT data is not available for Amanda Drive.

Bonner Drive is a two-lane, undivided local road with a posted speed limit of 25 mph in the vicinity of the proposed development. NCDOT AADT data is not available for Bonner Drive.

3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT

AM (7:00-9:00 AM), MID (2:00-4:00 PM), and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian, and bicycle counts were collected by Quality Counts on Wednesday, November 13, 2024, at the following intersections:

- Weddington-Matthews Road and Tilley Morries Road
- Weddington-Matthews Road and Amanda Drive
- Amanda Drive and Bonner Drive
- Hemby Road/Beulah Church Road and Weddington-Matthews Road
- Weddington-Matthews Road and Greenbrook Parkway

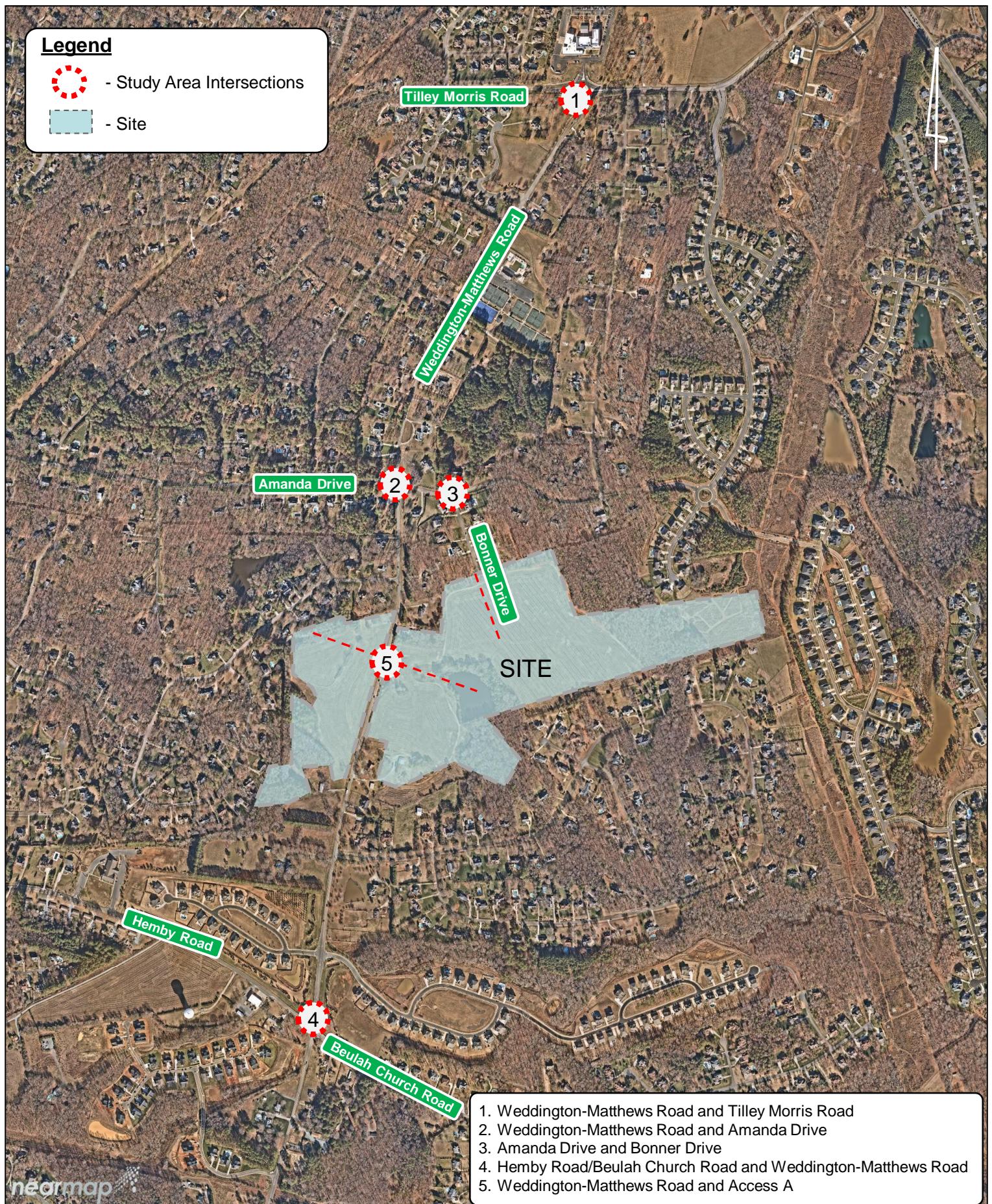
The turning-movement counts collected by Quality Counts were utilized for the existing volumes at the study area intersections. The turning-movement counts collected at the intersection of Weddington-Matthews Road and Greenbrook Parkway, a non-study area intersection, were used to establish northbound and southbound traffic at Access A.

Volume balancing was performed along Amanda Drive between Weddington-Matthews Road and Bonner Drive. No volume balancing was performed between the *remaining* study area intersections due to the presence of *side streets and/or multiple* residential driveways. Peak-hour intersection turning-movement count data is provided in the **Appendix**.

Figure 3.4 illustrates the 2024 existing AM, MID, and PM peak-hour traffic volumes.

Legend

- Study Area Intersections
- Site



1. Weddington-Matthews Road and Tilley Morris Road
2. Weddington-Matthews Road and Amanda Drive
3. Amanda Drive and Bonner Drive
4. Hemby Road/Beulah Church Road and Weddington-Matthews Road
5. Weddington-Matthews Road and Access A

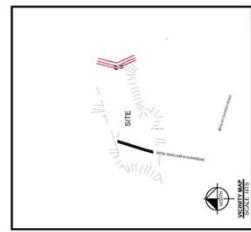
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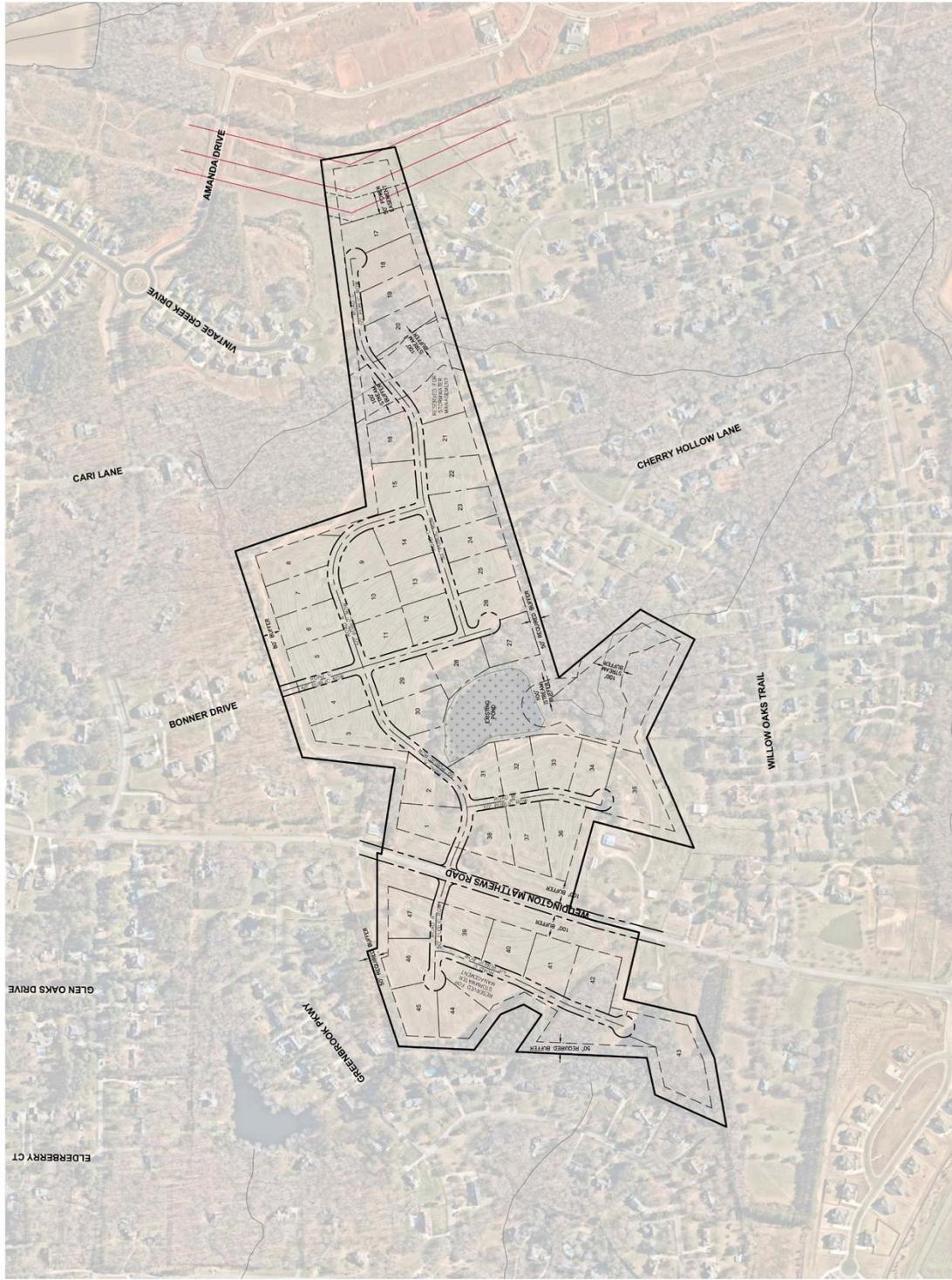
5017 Weddington-Matthews Road
Traffic Impact Analysis

Study Area/
Site Location

Figure
3.1

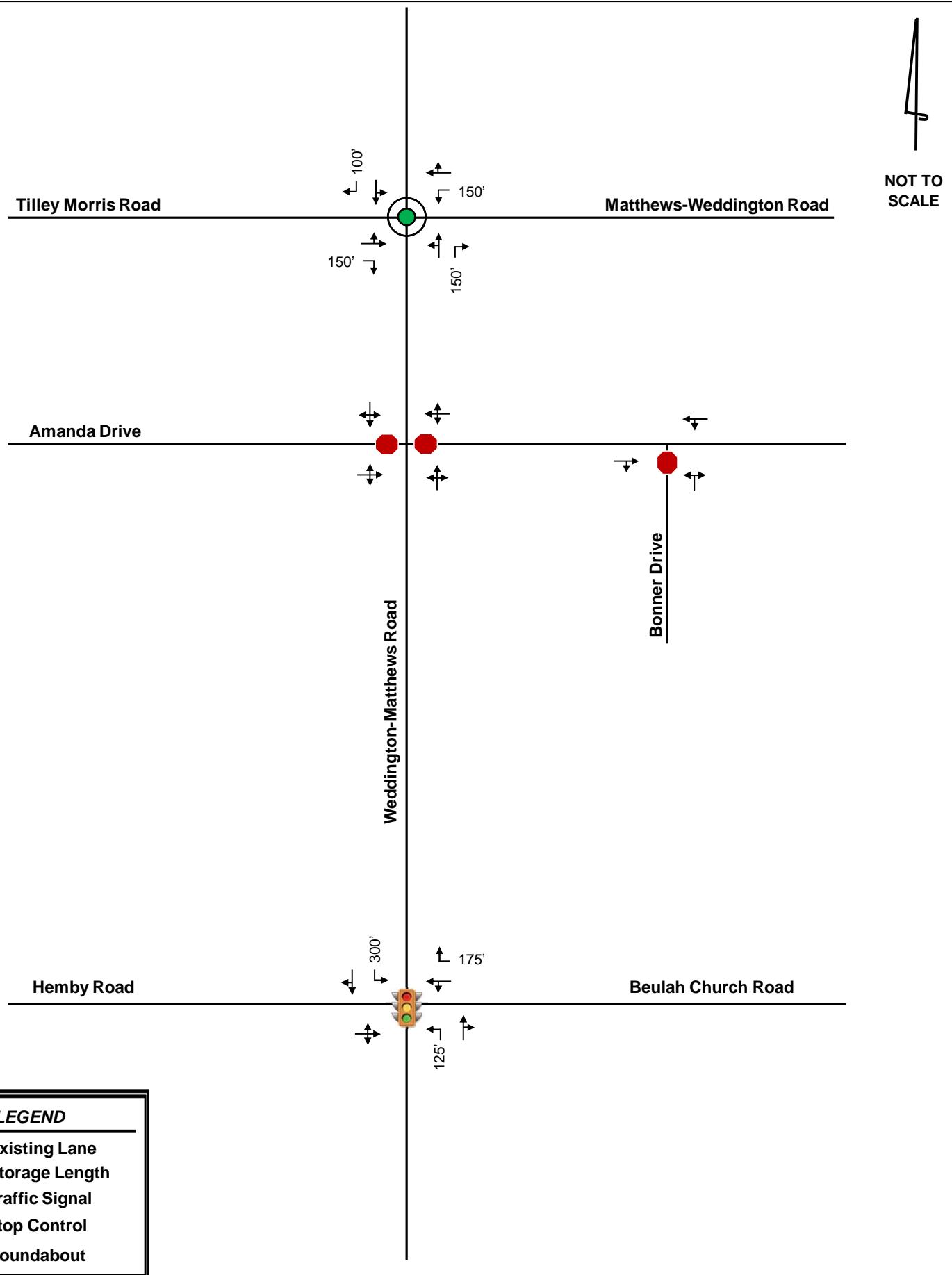


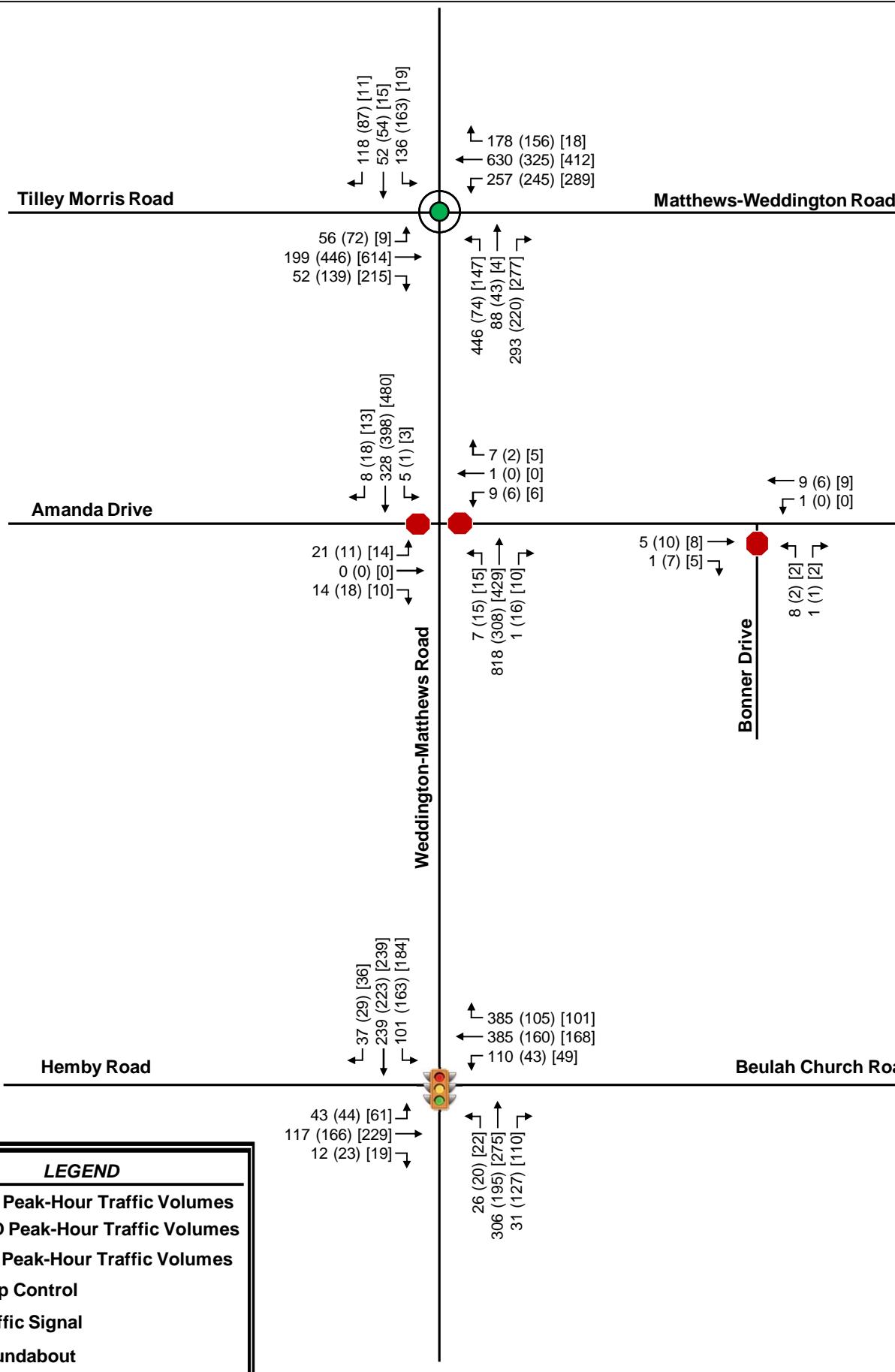
SITE DATA TABLE	
GENERAL SITE DATA	
PROPERTY NUMBER:	REINHOLD, VACANT
LAND USE:	RESIDENTIAL
ZONING/DEMOCR:	R-1 (C-1) (Area of Residential)
TEMA COOP/NAME:	STRATOSPHERE, STRATOSPHERE
LOT INFORMATION	
LOT NUMBER:	47
PREPARED BY:	0.5000
PREPARED BY:	4,000 SF (100' x 40')
REQUIRED DRIVE SEPARATION:	100' (25' x 40')
COMMON OPEN SPACE	
COMMON OPEN SPACE PROVIDED:	28,320 SF (200' x 144')
COMMON OPEN SPACE PROVIDED:	28,320 SF (200' x 144')
INFRASTRUCTURE	
ST. FEET OF CURB & GUTTER:	100' (25' x 40')
PLANNED FOR CONSTRUCTION:	100' (25' x 40')
ESTIMATED IMPROVEMENT CALCULATIONS	
ACRES (SF/FT²):	53.52 ACRES
ROWS (SF/FT²):	2,125 ACRES
ROW:	14 ACRES (100' x 40')
TOTAL:	14 ACRES (100' x 40')



CONCEPT PLAN
SHEET 1 of 1
August 19, 2024
THIS PLAN IS CONCEPTUAL IN NATURE AND HAS BEEN PRODUCED WITHOUT THE BENEFIT OF A SURVEY, CODE RESEARCH, OR CONTACT WITH THE CITY, COUNTY, ETC.

Kimley»Horn WEDDINGTON - MATTHEWS ROAD SITE





4.0 Background Traffic Volume Development

Projected background (non-project) traffic is defined as the expected growth or change in traffic volumes on the surrounding roadway network between the year the existing counts were collected (2024) and the expected build-out year (2029) absent the construction and opening of the proposed project. This includes both non-specific general growth based on historical increase in local traffic volumes (historical background growth), along with specific growth and/or change in traffic volumes caused by either approved, but not yet fully-constructed, off-site developments and/or planned transportation projects specifically identified within the vicinity of the proposed development.

4.1 HISTORICAL BACKGROUND GROWTH TRAFFIC

Historical background growth is the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area, and accounts for growth that is independent of specific off-site developments or planned transportation projects. Historical background growth traffic is calculated using an annual growth rate, which is applied to the existing traffic volumes up to the future horizon years. As shown in the approved NCDOT scoping checklist, an annual growth rate of two percent (2%) was applied to the 2024 existing peak-hour traffic volumes to calculate base 2029 background traffic volumes. This growth rate was determined based on review of historical NCDOT AADT maps in coordination with NCDOT and Town of Weddington.

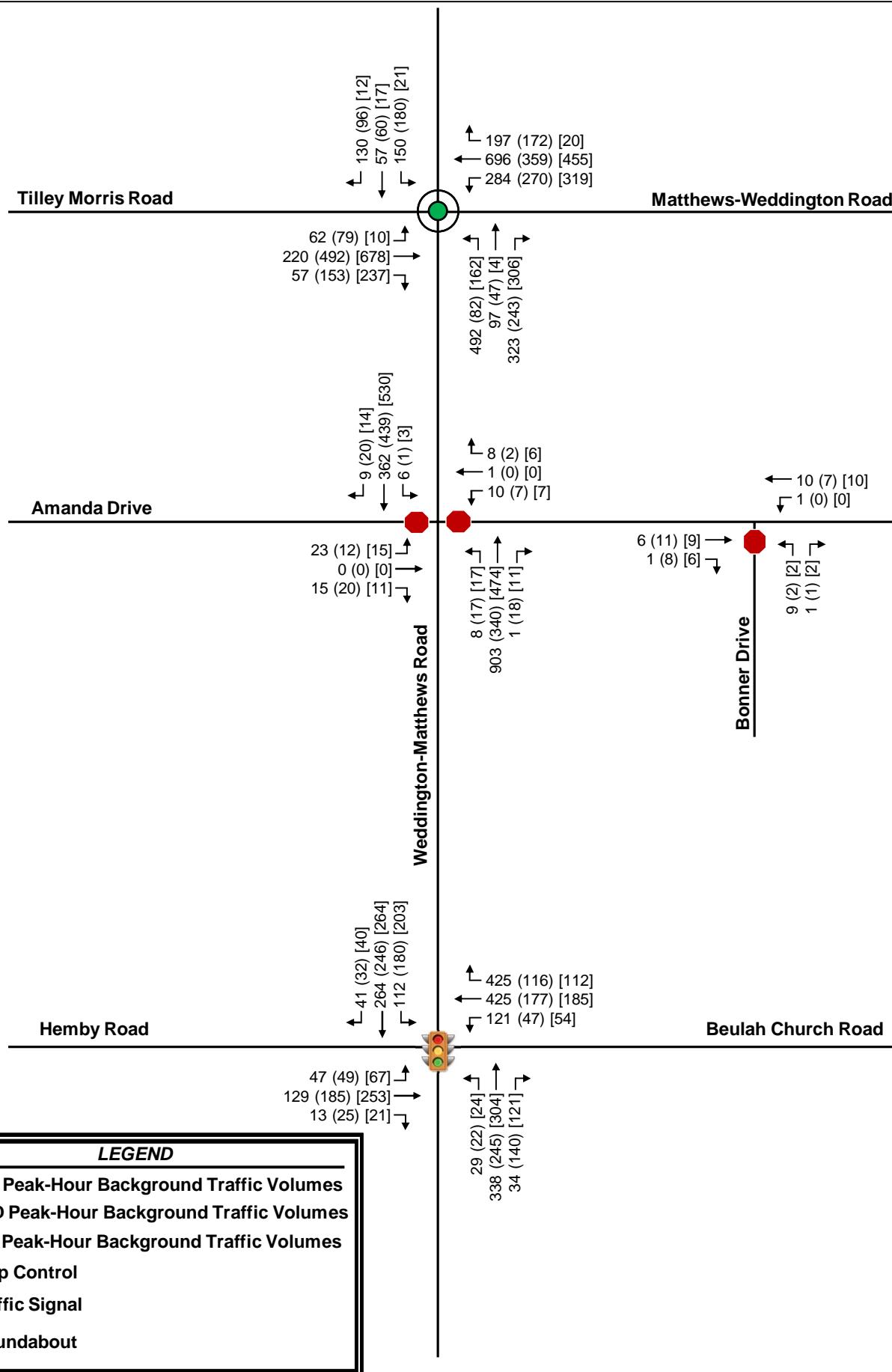
4.2 APPROVED DEVELOPMENTS

At the direction of the Town of Weddington and NCDOT staff, no approved developments were identified for inclusion in this TIA at the time of the scoping process.

4.3 PLANNED TRANSPORTATION PROJECTS

No funded transportation projects impacting vehicular capacity have been identified within the study area based on review NCDOT's State Transportation Improvement Program (STIP).

Figure 4.1 shows the projected 2029 background AM, MID, and PM peak-hour traffic volumes.



5.0 Site Traffic Volume Development

Site traffic developed for this TIA is defined as the vehicle trips expected to be generated and added to the study area by construction of the proposed development, and the distribution and assignment of that traffic throughout the surrounding network.

5.1 SITE ACCESS

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points:

- Bonner Drive Extension – the northbound leg of an existing, unsignalized, full-movement intersection of Bonner Drive and Amanda Drive
- Access A – an unsignalized, full-movement connection to Weddington-Matthews Road approximately 1,580 feet south of the intersection of Amanda Drive and Weddington-Matthews Road; this access serves both sides of the development.

5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition, 2021).

To obtain the MID peak-hour trip generation volumes, a MID factor was calculated. This factor was determined by dividing the network-wide MID peak-hour (3:00 PM to 4:00 PM) hourly distribution by the network-wide PM peak-hour (4:30 PM to 5:30 PM) hourly distribution for the chosen land use. These hourly distribution values are reported in *Trip Generation Manual* (Institute of Transportation Engineers, Eleventh Edition, 2023). This factor was then multiplied by the PM peak-hour trips to determine the MID peak-hour trips. For these calculations, it was assumed that the in/out percentages in the MID peak-hour are the same as the PM peak-hour.

Based on the site plan, the proposed development is currently envisioned to consist of 47 single-family detached homes; 9 single-family detached homes on the west side of Weddington-Matthews Road and 38 single-family detached homes on the east side of Weddington-Matthews Road.

Table 5.1 summarizes the projected trip generation for the proposed development. During a typical weekday, it has the potential to generate 39, 43, and 50 net new external trips during the AM, MID, and PM peak hours, respectively. As noted previously, the values in this trip gen table have been reduced from what was shown in the scoping document based on the current site plan.

Table 5.1 - Trip Generation

Land Use	Intensity	Units	Daily	AM Peak Hour			MID Peak Hour			PM Peak Hour			
				Total	In	Out	Total	In	Out	Total	In	Out	
210 - Single-Family Detached Housing (West Parcel)	9	DU	110	8	2	6	9	6	3	10	6	4	
210 - Single-Family Detached Housing (East Parcel)	38	DU	414	31	8	23	34	21	13	40	25	15	
Total Net New External Trips				524	39	10	29	43	27	16	50	31	19

5.3 SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

The proposed development's trips were assigned to the surrounding network based on AADT, surrounding land uses, locations of similar land use, and population densities in the area. The following site traffic distribution was reviewed and approved as part of the TIA Scoping Checklist by the Town of Weddington and NCDOT:

- 25% to/from the west along Tilley Morris Road
- 35% to/from the east along Matthews-Weddington Road
- 15% to/from the west along Hemby Road
- 15% to/from the east along Beulah Church Road
- 10% to/from the south along Weddington-Matthews Road

The overall site traffic distribution and assignment can be seen in **Figure 5.1**.

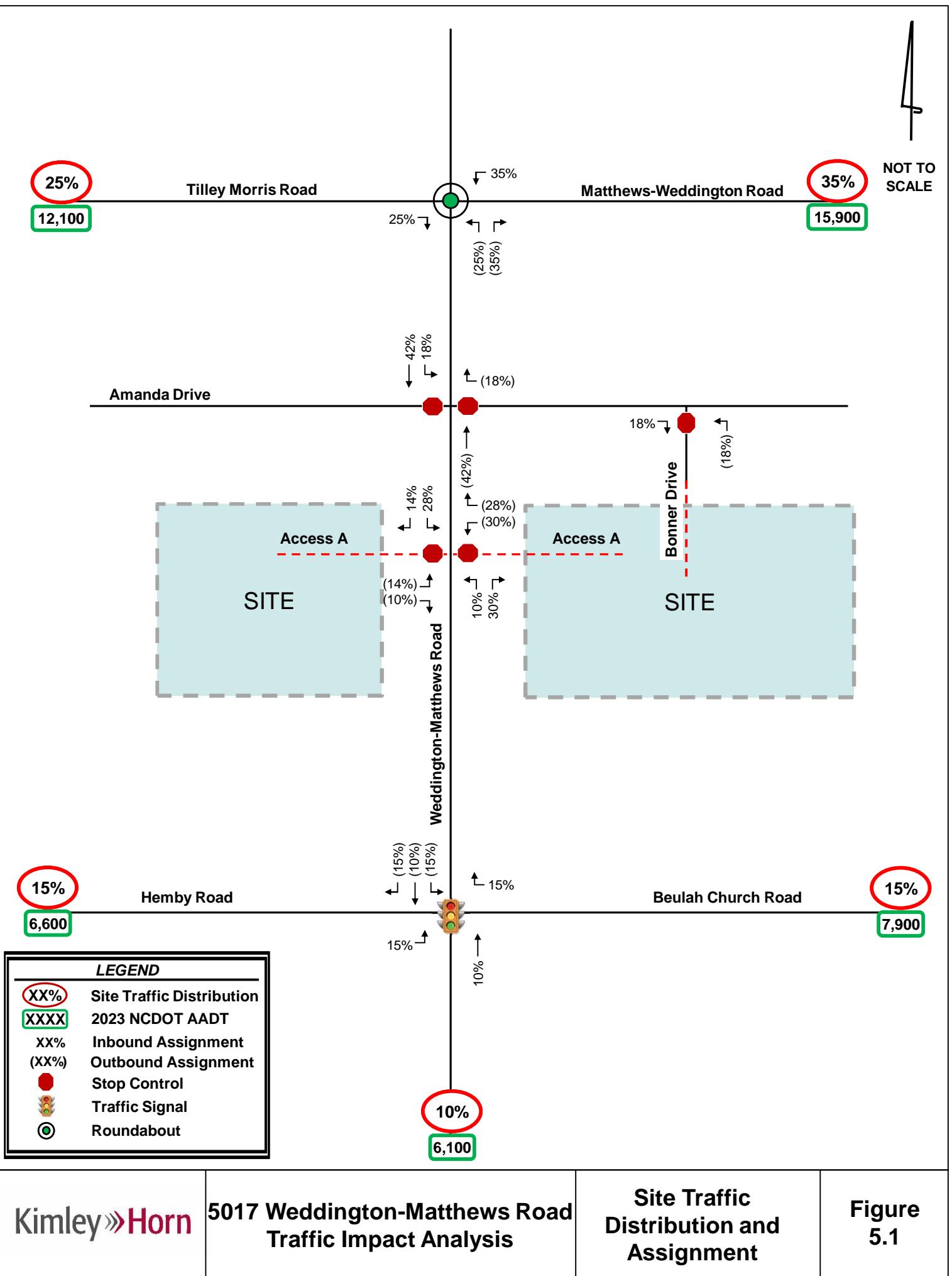
Trips were balanced to match the number of vehicles entering and exiting the development on either side of Weddington-Matthews Road shown in **Table 5.1**.

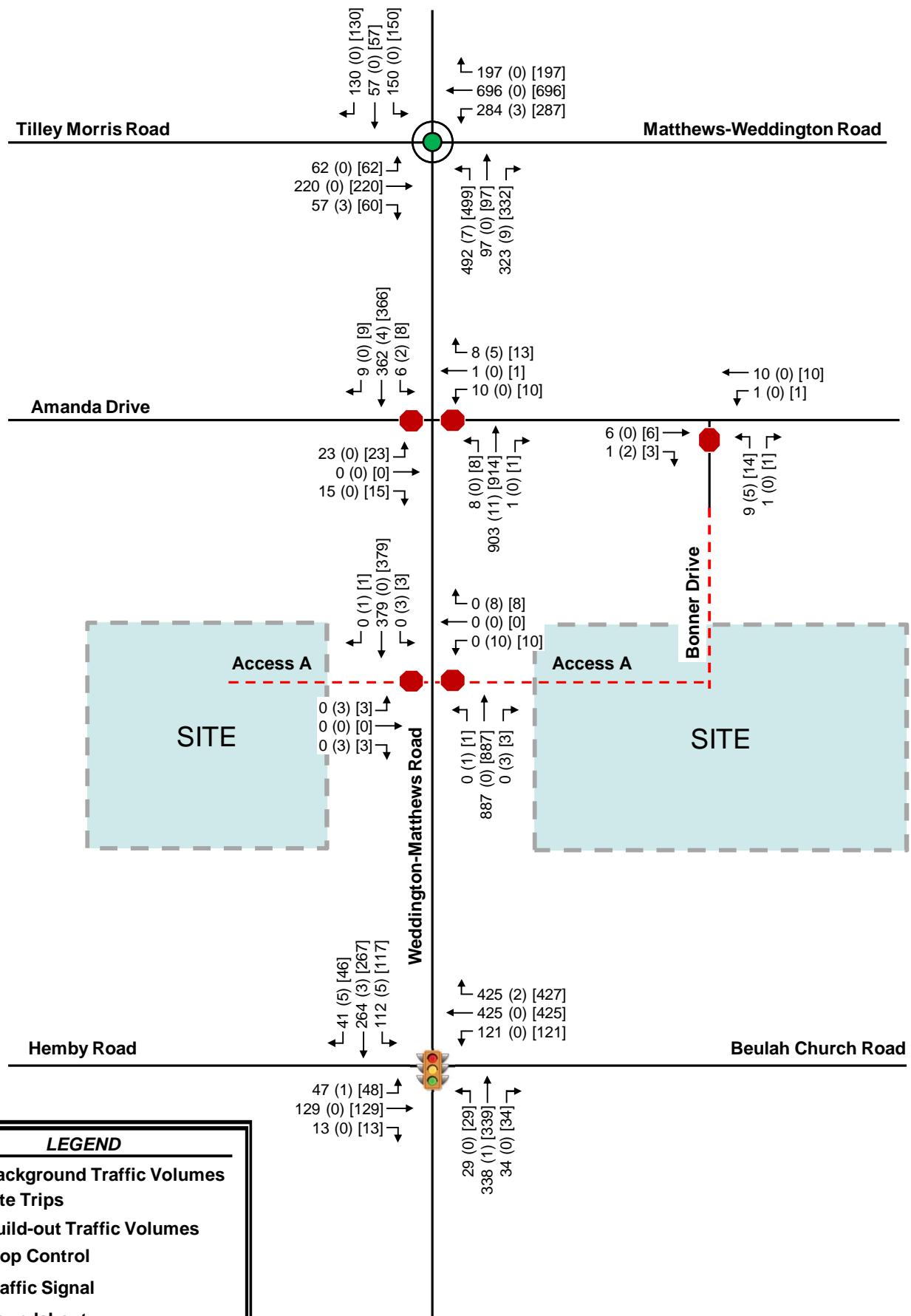
5.4 BUILD-OUT TRAFFIC VOLUMES

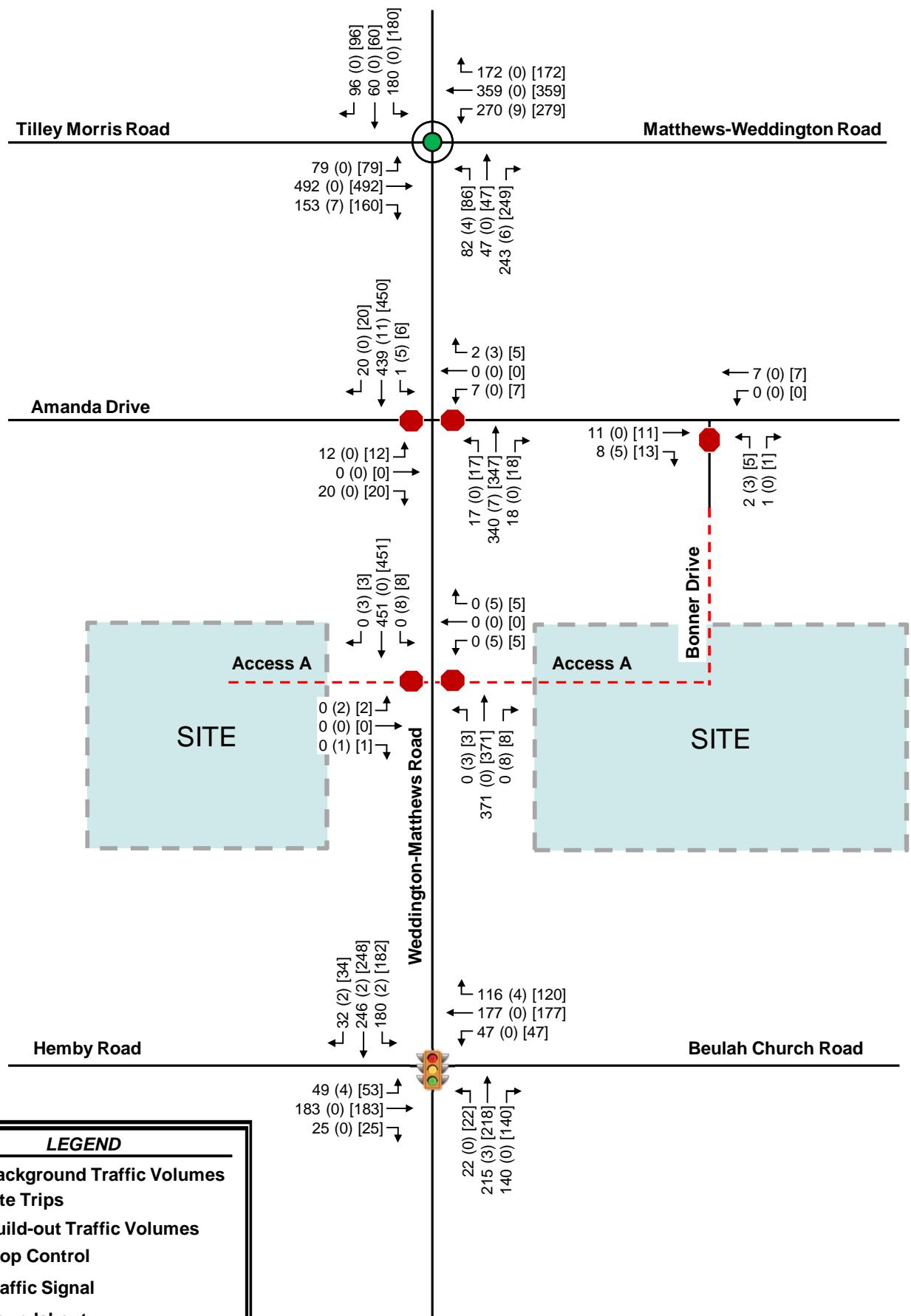
The build-out traffic volumes include the assignment of the projected site traffic generation added to the appropriate background traffic volumes. Build-out traffic volumes are shown in the following figures:

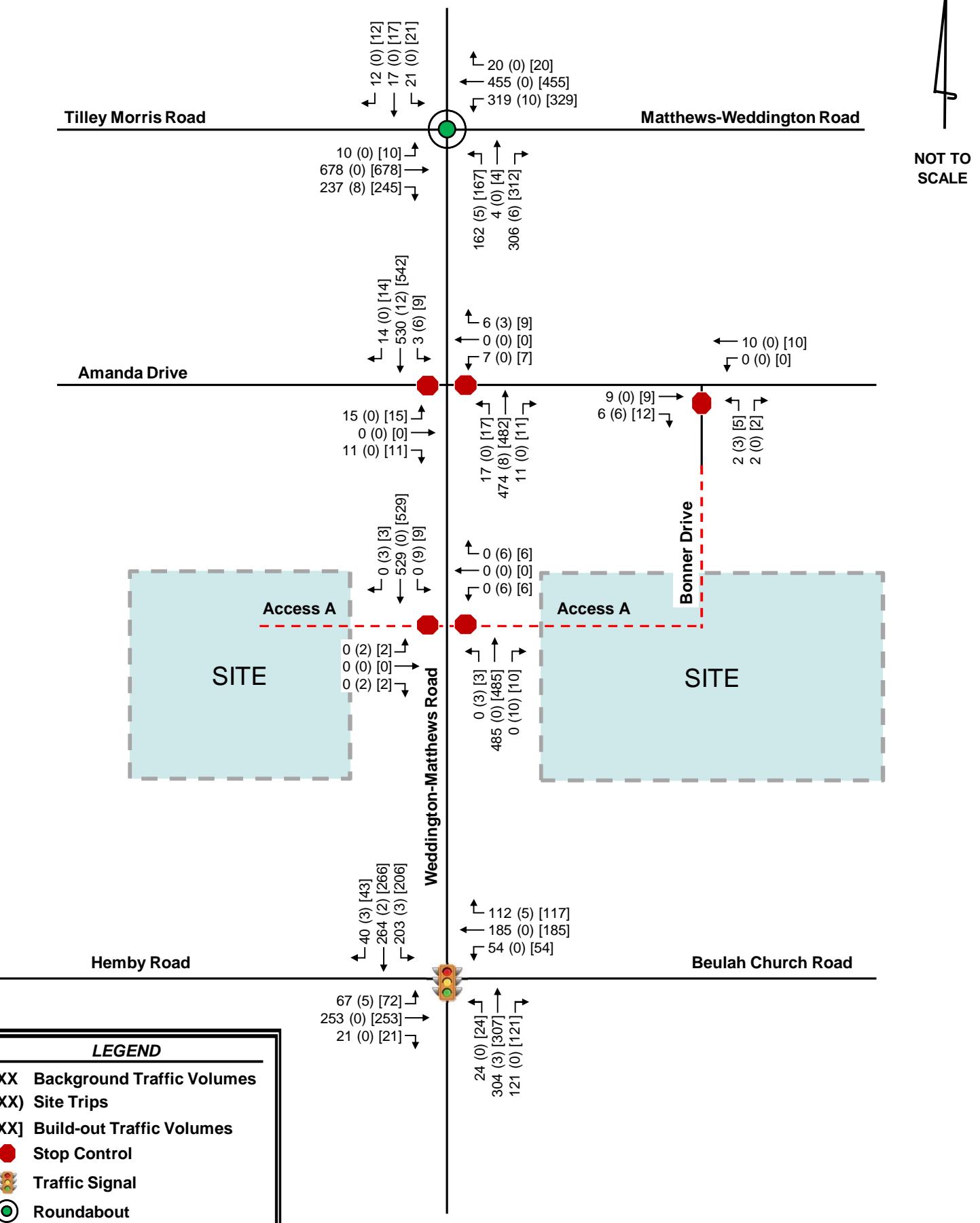
- **Figure 5.2** – 2029 Build-out AM Peak-Hour Traffic Volumes
- **Figure 5.3** – 2029 Build-out MID Peak-Hour Traffic Volumes
- **Figure 5.4** – 2029 Build-out PM Peak-Hour Traffic Volumes

Intersection volume development worksheets for all intersections within the study network are provided in the **Appendix**.









6.0 Capacity Analysis

Based on the requirements set forth by the [Town of Weddington Traffic Impact Analysis \(TIA\) Process and Procedures Manual](#) and in accordance with the traffic study guidelines in the [NCDOT Policy on Street and Driveway Access to North Carolina Highways](#), capacity analyses were performed at the study area intersections for each of the following AM, MID, and PM peak-hour scenarios:

- 2024 Existing Conditions
- 2029 Background Conditions
- 2029 Build-out Conditions

Capacity analyses were performed for the AM, MID, and PM peak hours using Synchro Version 12 and SIDRA Version 9.1 software to determine the operating characteristics at the study area intersections of the adjacent street network and to evaluate the impacts of the proposed development. Although Synchro Version 12 was utilized for analysis, files have been saved down and submitted as Synchro Version 11 for compatibility with the software possessed by the reviewing agencies. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under prevailing operational, geometric and controlling conditions within a set time duration. This software program uses methodologies contained in the *Highway Capacity Manual* (HCM) to determine the operating characteristics of an intersection.

The HCM 6th Edition defines LOS as a “quantitative stratification of a performance measure or measures representing quality of service” and is used to “translate complex numerical performance results into a simple A-F system representative of travelers’ perceptions of the quality of service provided by a facility or service”. The HCM defines six levels of service, LOS A through LOS F, with A having the best operating conditions from the traveler’s perspective and F having the worst. However, it must be understood that “the LOS letter result hides much of the complexity of facility performance”, and that “the appropriate LOS for a given system element in the community is a decision for local policy makers”. According to the HCM, “for cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travelers’ desires against society’s desires and financial resources. Nevertheless, during low-volume periods of the day, a system element may operate at LOS A.”

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay at the side-street approaches, typically during the highest volume periods of the day, the AM and PM peak periods. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little or no delay.

LOS for signalized intersections is reported for the intersection as a whole, and typically during the highest volume periods of the day. One or more movements at an intersection may experience a low level-of-service, while the intersection as a whole may operate acceptably.

LOS for roundabout intersections is reported for the intersection as a whole but uses the same control delay thresholds as unsignalized intersections. However, if the volume-to-capacity ratio on an approach of the intersection is greater than 1.0, that approach or intersection is reported as LOS F regardless of the reported control delay.

Table 6.0-A and **Table 6.0-B** list the LOS control delay thresholds published in the HCM for unsignalized/roundabout and signalized intersections, respectively, as well as the unsignalized operational descriptions assumed herein.

Table 6.0-A Vehicular LOS Control Delay Thresholds for Unsignalized/Roundabout Intersections		
Level-of-Service	Average Control Delay per Vehicle [sec/veh]	
A	≤ 10	Short Delays
B	$> 10 - 15$	
C	$> 15 - 25$	
D	$> 25 - 35$	Moderate Delays
E	$> 35 - 50$	
F	> 50	Long Delays

Table 6.0-B Vehicular LOS Control Delay Thresholds for Signalized Intersections	
Level-of-Service	Average Control Delay per Vehicle [sec/veh]
A	≤ 10
B	$> 10 - 20$
C	$> 20 - 35$
D	$> 35 - 55$
E	$> 55 - 80$
F	> 80

The signal geometric plans for the signalized intersection of Hemby Road/Beulah Church Road and Weddington-Matthews Road was obtained from NCDOT's signal plan database and was used in the development of the existing conditions Synchro network.

Based on the provided signal plans, the intersection of Hemby Road/Beulah Church Road and Weddington-Matthews Road is isolated and not part of a coordinated signal system. Using the signal plans provided by NCDOT, cycle lengths and splits were optimized in existing, background, and build-out conditions. The signal plans are included in the **Appendix**.

The following modifications from the background data collected were applied to the capacity analyses to meet [NCDOT Congestion Management Capacity Analysis Guidelines](#):

- Right-turn-on-red (RTOR) operations were not allowed.
- Lost time adjust was added to the yellow and all-red times provided in the existing signal and time-of-day plans to maintain a total lost time of 5 seconds for each movement.
- A minimum of 4 vehicles per hour were used for permissible movements, excluding movements into and out of the proposed site and the intersection of Amanda Drive and Bonner Drive under all analysis scenarios

In the existing condition, the observed peak hour factor (PHF) was used in the analysis, whereas a 0.9 PHF was used for all future conditions with the exception of the Wedding-Matthews Road and Tilley Morris intersection. A weighted PHF was used in the AM and MID peak hours to account for the impacts of existing school traffic.

In the existing condition, the observed heavy vehicle percentage was used in the analysis, subject to a 2% minimum. A weighted heavy vehicle percentage was calculated for future conditions for movements over 10% that had site trips assigned to them.

A reduction in delay is shown for certain approaches between the existing and background conditions due to the use of a 0.9 PHF in the background scenario (unless otherwise noted). Compared to the observed PHFs, an increase in PHF to 0.9 causes the traffic volume to be more evenly distributed throughout the 60-minute peak-hour in the model, which results in a reduction in the average approach delay.

Mitigation for traffic impacts caused by the proposed development were noted and recommended based on NCDOT and Town of Weddington mitigation requirements. When determining the proposed development's traffic impact to the study area intersections, the background and build-out conditions were compared. The mitigation requirements for each agency are outlined below.

NCDOT Mitigation Requirements

Based on the [NCDOT's Policy on Street and Driveway Access to North Carolina Highways](#), “the applicant shall be required to identify mitigation improvements to the roadway network if at least one of the following conditions exists when comparing background to build-out conditions:

- The total average delay at an intersection or individual approach increases by 25% or greater, while maintaining the same level of service (LOS),
- The LOS degrades by at least one level,
- Or the LOS is “F”.

Town of Weddington Mitigation Requirements

Based on the [Town of Weddington Traffic Impact Analysis \(TIA\) Process and Procedures Manual](#), the following are the Town of Weddington mitigation requirements:

- “Determination of turn lane storage lengths for signalized intersections shall be based on the SimTraffic Maximum Queue or Synchro 95th Percentile Queue, whichever is greater.
- Determination of turn lane storage lengths for unsignalized intersections shall be based on the Warrant for Left and Right-Turn lanes graph published by the [NCDOT].
- The baseline LOS for unsignalized intersections at build-out shall be LOS C.
- Unsignalized access locations at project build-out shall be mitigated (if needed) to obtain LOS C.”

Synchro LOS results and 95th percentile queues are reported in the following subsections. Capacity analysis reports generated by Synchro Version 12 and Sidra Version 9.1 software and queuing and blocking reports generated by the SimTraffic microsimulation model are included in the **Appendix**.

6.1 WEDDINGTON-MATTHEWS ROAD AND TILLEY MORRIS ROAD

Table 6.1 summarizes the LOS, control delay, and 95th percentile queue lengths at the unsignalized, roundabout intersection of Weddington-Matthews Road and Tilley Morris Road. *Results in the Table below have been updated, per Town comments on the original TIA.*

		Table 6.1 - Weddington-Matthews Road and Tilley Morris Road									
Condition	Measure	EB		WB		NB		SB		Intersection LOS (Delay)	
		EBLT	EBR	WBL	WBTR	NBLT	NBR	SBLT	SBR		
AM Peak Hour											
2024 Existing	LOS (Delay)	B (10.7)		F (301.3)		C (24.4)		E (46.5)		F (141.7)	
	SIDRA 95th Q	64'	10'	84'	4262'	430'	83'	167'	81'		
2029 Background	LOS (Delay)	B (12.9)		F (418.4)		E (44.4)		F (70.2)		F (200.7)	
	SIDRA 95th Q	83'	11'	112'	5526'	822'	111'	323'	106'		
2029 Build-out	LOS (Delay)	B (12.9)		F (419.5)		E (46.2)		F (71.4)		F (201.1)	
	SIDRA 95th Q	83'	12'	115'	5537'	865'	117'	330'	107'		
MID Peak Hour											
2024 Existing	LOS (Delay)	D (28.6)		A (9.5)		C (15.9)		C (16.7)		C (17.6)	
	SIDRA 95th Q	301'	32'	28'	149'	30'	72'	154'	29'		
2029 Background	LOS (Delay)	F (56.7)		B (11.2)		C (20.6)		D (25.1)		D (28.8)	
	SIDRA 95th Q	648'	41'	32'	229'	37'	95'	238'	38'		
2029 Build-out	LOS (Delay)	F (58.8)		B (11.3)		C (21.0)		D (26.3)		D (29.7)	
	SIDRA 95th Q	673'	43'	34'	231'	39'	99'	246'	38'		
PM Peak Hour											
2024 Existing	LOS (Delay)	B (11.9)		A (6.4)		A (9.7)		A (6.7)		A (9.4)	
	SIDRA 95th Q	223'	26'	32'	57'	23'	55'	5'	2'		
2029 Background	LOS (Delay)	C (16.9)		A (7.2)		B (12.2)		A (7.7)		B (12.3)	
	SIDRA 95th Q	373'	31'	39'	70'	28'	74'	6'	2'		
2029 Build-out	LOS (Delay)	C (17.4)		A (7.3)		B (12.4)		A (7.8)		B (12.6)	
	SIDRA 95th Q	381'	33'	40'	71'	30'	77'	6'	2'		
Background Storage				175'		150'		150'		100'	
										Exceeds storage	

As shown in **Table 6.1**, under 2024 existing conditions, the overall intersection currently operates at LOS F during the AM peak hour, LOS C during the MID peak hour, and LOS A during the PM peak hour.

Under 2029 background conditions, the overall intersection is expected to operate at LOS F during the AM peak hour and drop to LOS D and LOS B during the MID and PM peak hours respectively. With the addition of site traffic, the overall intersection is expected to continue to operate LOS F during the AM peak hour, LOS D during the MID peak hour, and LOS B during PM peak hour. Given the overall intersection and approach delays increase by no more than two seconds from background to build-out conditions, no improvements are identified for capacity purposes.

Based on review of the SIDRA 95th percentile queues, the westbound through-right and northbound left-through lane queues are projected to be long during the AM peak hour. Since the addition of site traffic by the proposed site is not expected to significantly increase the projected queue lengths beyond background conditions, developer improvements are not recommended.

Additionally, based on review of the SIDRA 95th percentile queues, the southbound right-turn queue exiting Union Day School is expected to exceed available storage under background and build-out conditions during the AM peak hour. Given that the proposed site is not expected to significantly

increase the queue and queues exceed the storage by less than one car length, extension of this turn lane is not recommended as developer responsibility.

Based on a review of the SimTraffic maximum queues, the northbound right-turn, southbound right-turn, and westbound left-turn queues are expected to exceed the available storage under existing, background, and build-out conditions in the AM peak hour. As shown in the screenshot below during AM background conditions, the northbound right-turn and westbound left-turn lane storages are under-utilized due to starvation caused by the northbound left-through and westbound through-right lane queues, respectively. As this condition exists with and without the proposed development and the site is not proposed to add significant additional traffic to these movements, extension of the turn lanes at this intersection is not recommended as a developer improvement.



Long SimTraffic maximum queues are also projected along the southbound approach during the MID peak hour under existing, background, and build-out conditions.

Long SimTraffic maximum queues are projected along the eastbound approach during the MID and PM peak hours under existing, background, and build-out conditions. As this condition exists with and without the proposed development and the site is not proposed to add significant additional traffic to the eastbound right-turn movement, extension of this turn lane is not recommended as a developer improvement.

Video footage from existing TMC collection at the intersections of Weddington-Matthews Road and Tilley Morris Road and Weddington-Matthews Road and Amanda Drive confirms that the northbound queue does not extend as far as the SimTraffic model reflects; however, the exact location of maximum queue cannot be determined from video footage.

6.2 WEDDINGTON-MATTHEWS ROAD AND AMANDA DRIVE

Table 6.2 summarizes the LOS, control delay, and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Weddington-Matthews Road and Amanda Drive.

Table 6.2 - Weddington-Matthews Road and Amanda Drive							
Condition	Measure	EB	WB	NB		SB	
		EBLTR	WBLTR	NBL*	NBTR	SBL*	SBTR
AM Peak Hour							
2024 Existing	LOS (Delay)	F (56.3)	F (58.9)	A (8.1)	A (0.0)	B (11.3)	A (0.0)
	Synchro 95th Q	48'	43'	0'	0'	3'	0'
2029 Background	LOS (Delay)	E (41.5)	E (42.5)	A (8.2)	A (0.0)	B (11.3)	A (0.0)
	Synchro 95th Q	33'	18'	0'	0'	0'	0'
2029 Build-out	LOS (Delay)	E (44.7)	E (40.8)	A (8.2)	A (0.0)	B (11.1)	A (0.0)
	Synchro 95th Q	35'	20'	0'	0'	0'	0'
MID Peak Hour							
2024 Existing	LOS (Delay)	C (19.0)	C (20.4)	A (8.7)	A (0.0)	A (8.3)	A (0.0)
	Synchro 95th Q	15'	10'	3'	0'	0'	0'
2029 Background	LOS (Delay)	C (16.5)	C (19.4)	A (8.6)	A (0.0)	A (8.1)	A (0.0)
	Synchro 95th Q	10'	5'	3'	0'	0'	0'
2029 Build-out	LOS (Delay)	C (16.9)	C (19.4)	A (8.6)	A (0.0)	A (8.1)	A (0.0)
	Synchro 95th Q	10'	5'	3'	0'	0'	0'
PM Peak Hour							
2024 Existing	LOS (Delay)	C (20.6)	C (22.7)	A (8.5)	A (0.0)	A (8.4)	A (0.0)
	Synchro 95th Q	13'	8'	3'	0'	0'	0'
2029 Background	LOS (Delay)	D (25.6)	C (23.1)	A (8.8)	A (0.0)	A (8.5)	A (0.0)
	Synchro 95th Q	15'	8'	3'	0'	0'	0'
2029 Build-out	LOS (Delay)	D (27.1)	C (22.6)	A (8.8)	A (0.0)	A (8.6)	A (0.0)
	Synchro 95th Q	15'	8'	3'	0'	0'	0'
*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions							

As shown in **Table 6.2**, under 2024 existing conditions, the stop-controlled eastbound and westbound approaches of Amanda Drive currently operate with long delays during the AM peak hour and short delays during the MID and PM peak hours.

Under 2029 background conditions, the stop-controlled eastbound and westbound approaches are expected to operate with short to moderate delays during the AM and PM peak hours and short delays during the MID peak hour. The decrease in delay can be attributed to the PHF being 0.9, as describe in **Section 6.0**.

With the addition of site traffic, the stop-controlled eastbound and westbound approaches are expected to continue to operate with short to moderate delays during the AM and PM peak hours and short delays during the MID peak hour with minimal increases in Synchro 95th queueing. Therefore, no improvements are identified for capacity purposes at this intersection.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0**

6.3 AMANDA DRIVE AND BONNER DRIVE

Table 6.3 summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Amanda Drive and Bonner Drive.

		Table 6.3 - Amanda Drive and Bonner Drive			
Condition	Measure	EB	WB		NB
		EBTR	WBL*	WBT	NBLR
AM Peak Hour					
2024 Existing	LOS (Delay)	A (0.0)	A (8.1)	A (0.0)	A (8.9)
	Synchro 95th Q	0'	0'	0'	3'
2029 Background	LOS (Delay)	A (0.0)	A (8.1)	A (0.0)	A (8.7)
	Synchro 95th Q	0'	0'	0'	0'
2029 Build-out	LOS (Delay)	A (0.0)	A (8.1)	A (0.0)	A (8.7)
	Synchro 95th Q	0'	0'	0'	3'
MID Peak Hour					
2024 Existing	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (9.0)
	Synchro 95th Q	0'	0'	0'	0'
2029 Background	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (8.9)
	Synchro 95th Q	0'	0'	0'	0'
2029 Build-out	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (8.8)
	Synchro 95th Q	0'	0'	0'	0'
PM Peak Hour					
2024 Existing	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (8.9)
	Synchro 95th Q	0'	0'	0'	0'
2029 Background	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (8.7)
	Synchro 95th Q	0'	0'	0'	0'
2029 Build-out	LOS (Delay)	A (0.0)	A (0.0)	A (0.0)	A (8.7)
	Synchro 95th Q	0'	0'	0'	0'

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

As shown in **Table 6.3**, under 2024 existing conditions, the stop-controlled northbound approach of Bonner Drive currently operate with short delays during all peak hours.

Under 2029 background conditions, the stop-controlled northbound approach is expected to continue to operate with short delays during all peak hours. The decreases in delay can be attributed to the PHF being 0.9, as describe in **Section 6.0**.

With the addition of site traffic, the stop-controlled northbound approach is expected to continue to operate with short delays during all peak hours with minimal increases in queueing. Therefore, no improvements are identified for capacity purposes at this intersection.

Based on the anticipated SimTraffic maximum queues (reports included in the **Appendix**), the northbound approach of Bonner should be extended into the proposed site with one ingress lane and one egress lane.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0**.

6.4 HEMBY ROAD/BEULAH CHURCH ROAD AND WEDDINGTON-MATTHEWS ROAD

Table 6.4 summarizes the LOS, control delay, and 95th percentile queue lengths at the signalized intersection of Hemby Road/Beulah Church Road and Weddington-Matthews Road.

Table 6.4 - Hemby Road/Beulah Church Road and Weddington-Matthews Road									
Condition	Measure	EB	WB		NB		SB		Intersection
		EBLTR	WBLT	WBR	NBL	NBTR	SBL	SBTR	
AM Peak Hour									
2024 Existing	LOS (Delay)	B (11.7)	B (18.2)		C (21.9)		C (24.0)		B (19.6)
	Synchro 95th Q	93'	#311'	178'	18'	174'	70'	148'	
2029 Background	LOS (Delay)	B (10.6)	B (17.9)		C (23.8)		C (24.8)		B (19.8)
	Synchro 95th Q	83'	#342'	204'	24'	209'	#103'	169'	
2029 Build-out	LOS (Delay)	B (10.7)	B (17.9)		C (23.9)		C (26.0)		C (20.2)
	Synchro 95th Q	84'	#343'	205'	24'	210'	#111'	174'	
MID Peak Hour									
2024 Existing	LOS (Delay)	B (19.0)	B (17.8)		B (12.6)		B (16.2)		B (15.9)
	Synchro 95th Q	145'	141'	63'	9'	97'	73'	88'	
2029 Background	LOS (Delay)	B (16.4)	B (14.7)		B (13.4)		B (14.2)		B (14.5)
	Synchro 95th Q	146'	127'	69'	14'	148'	98'	110'	
2029 Build-out	LOS (Delay)	B (16.8)	B (14.8)		B (13.5)		B (14.4)		B (14.7)
	Synchro 95th Q	151'	128'	71'	14'	149'	99'	112'	
PM Peak Hour									
2024 Existing	LOS (Delay)	C (24.1)	B (16.4)		B (15.4)		C (20.9)		B (19.2)
	Synchro 95th Q	184'	131'	60'	14'	174'	112'	104'	
2029 Background	LOS (Delay)	C (22.5)	B (16.5)		B (14.4)		B (18.6)		B (17.8)
	Synchro 95th Q	#240'	142'	68'	15'	175'	#153'	115'	
2029 Build-out	LOS (Delay)	C (22.9)	B (16.5)		B (14.7)		B (19.5)		B (18.3)
	Synchro 95th Q	#238'	138'	70'	15'	184'	#161'	123'	
Background Storage				175'	125'		300'		
Exceeds storage									
# 95th percentile volume exceeds capacity, queue may be longer									

As shown in **Table 6.4**, under 2024 existing conditions, the overall intersection operates at LOS B for all peak hours with each approach operating at LOS C or better.

Under 2029 background conditions, the overall intersection is expected to continue to operate at LOS B for all peak hours with each approach operating at LOS C or better. The decreases in delay can be attributed to the PHF being 0.9 and the optimization of splits as described in **Section 6.0**. Adjustments in the proportion of traffic utilizing each movement at an intersection leads to different relative amounts of green time being assigned to each movement after optimizing.

With the addition of site traffic, the overall intersection and its approaches are expected to operate at LOS C or better during all peak hours. The LOS is expected to drop from LOS B to LOS C during the AM peak hour with the addition of site traffic; however, this is an increase of 0.4 seconds of delay. Therefore, no improvements are identified for capacity purposes.

Based on review of the Synchro 95th percentile queues, the westbound right-turn queue along Beulah Church Road is expected to exceed the available storage under existing, background, and build-out conditions during the AM peak hour. Given that the proposed site is not expected to

significantly increase the queue, extension of this turn lane is not recommended as developer responsibility.

Based on a review of the SimTraffic maximum queues, the westbound right-turn queue is expected to exceed the available storage in the AM peak hour under existing, background, and build-out conditions. However, the westbound right-turn storage is under-utilized due to starvation caused by the westbound through lane queues. As this condition exists with and without the proposed development and the site is not proposed to add significant additional traffic to these movements, extension of the turn lane is not recommended as a developer improvement.

6.5 WEDDINGTON-MATTHEWS ROAD AND ACCESS A

Table 6.5 summarizes the LOS, control delay, and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Weddington-Matthews Road and Access A.

		Table 6.5 - Weddington-Matthews Road and Access A					
Condition	Measure	EB	WB	NB		SB	
		EBLTR	WBLTR	NBL*	NBTR	SBL*	SBTR
AM Peak Hour							
2029 Build-out	LOS (Delay)	D (25.0)	D (31.4)	A (8.2)	A (0.0)	B (10.2)	A (0.0)
	Synchro 95th Q	3'	10'	0'	0'	0'	0'
MID Peak Hour							
2029 Build-out	LOS (Delay)	C (17.4)	C (15.7)	A (8.4)	A (0.0)	A (8.2)	A (0.0)
	Synchro 95th Q	0'	3'	0'	0'	0'	0'
PM Peak Hour							
2029 Build-out	LOS (Delay)	C (19.7)	C (19.8)	A (8.7)	A (0.0)	A (8.6)	A (0.0)
	Synchro 95th Q	3'	5'	0'	0'	0'	0'

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

As shown in **Table 6.5**, the stop-controlled eastbound and westbound approaches of Access A are projected to operate with moderate delays during the AM peak hour and short delays during the MID and PM peak hours under build-out conditions.

It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little to no delay. Additionally, given minimal turning traffic, additional turn lane improvements yield little improvement to side-street approach delay. Therefore, no additional improvements are identified for capacity purposes.

Based on the projected SimTraffic maximum queues (reports included in the **Appendix**), the eastbound and westbound approaches of Access A are recommended to be constructed with one ingress lane, one egress lane, stop-control, and the NCDOT minimum IPS of 100 feet.

Based on feedback from NCDOT TIA review, a 100' southbound left-turn lane is recommended along Weddington-Matthews Road at Access A. This improvement is not included in the analysis above, as it is not necessary for capacity purposes.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0**.

7.0 Auxiliary Turn Lane Warrants

Warrants for additional turn-lane improvements for unsignalized intersection beyond those necessary for capacity were determined based on a review of the figure titled 'Warrant for Left and Right-Turn Lanes' found on page 80 in the [NCDOT Policy On Street And Driveway Access to North Carolina Highways](#). The results of the warrants for left and right-turn lanes under the 2029 build-out conditions indicate that turn lanes are not warranted at the proposed site accesses and unsignalized intersection of Weddington-Matthews Road and Amanda Drive. The turn-lane warrant figures are included in the **Appendix**.

8.0 Identified Mitigation Improvements

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants contained herein, *and feedback from with NCDOT and Town staff*, the following site improvements are identified for the proposed 5017 Weddington-Matthews Road development:

Amanda Drive and Bonner Drive

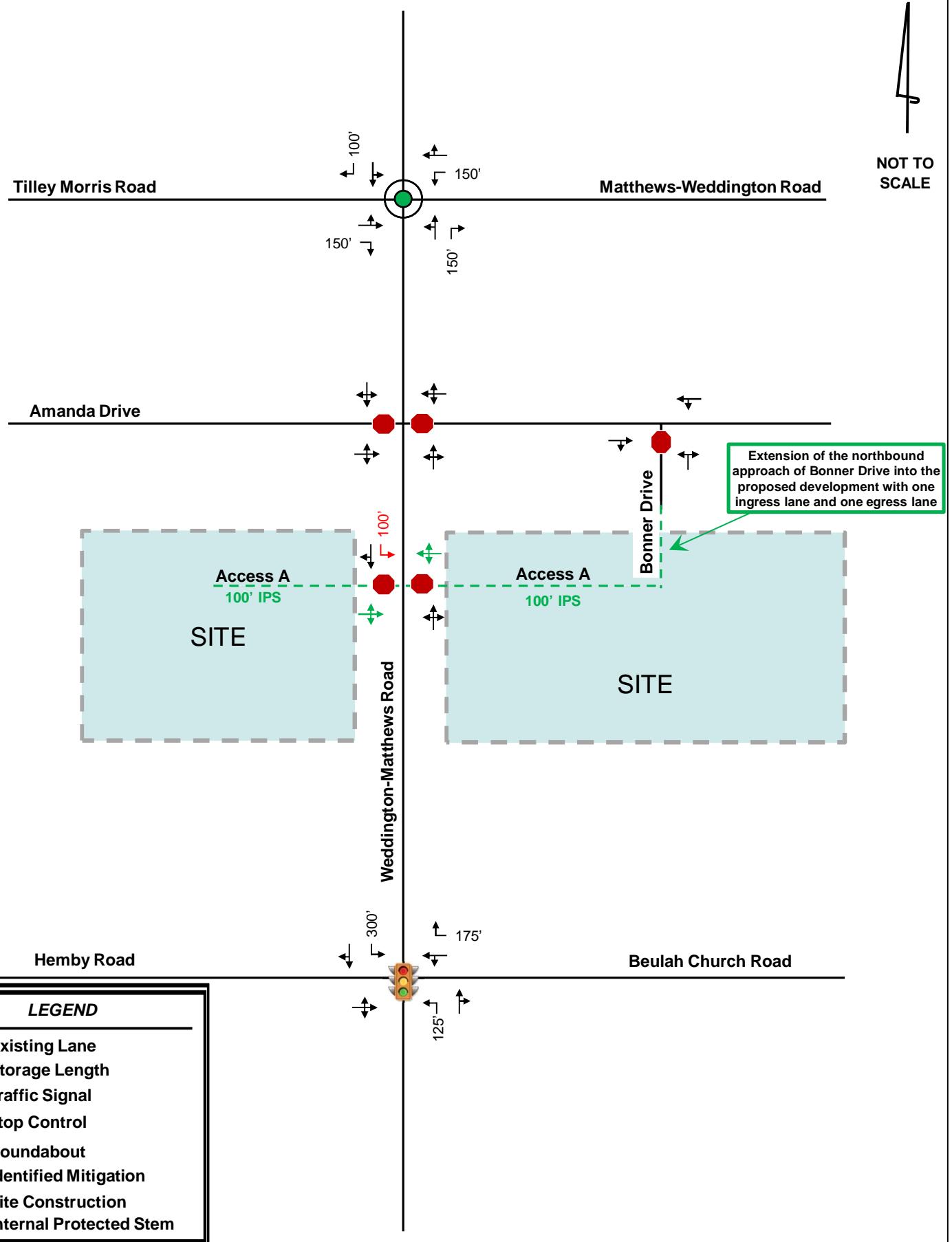
- Extension of the northbound approach of Bonner Drive into the proposed development with one ingress lane and one egress lane.

Weddington-Matthews Road and Access A

- Construction of the eastbound and westbound approaches of Access A with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- *Construct a southbound left-turn lane with 100 feet of storage and appropriate taper.*

No additional improvements are identified to mitigate other study area intersections.

The site improvements identified within the study area is shown in **Figure 8.1**. The improvements shown on these figures are subject to approval by NCDOT and the Town of Weddington. All additions and attachments to the State and Town roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.



Appendix

NCDOT Scoping Checklist



NCDOT Traffic Impact Analysis Need Screening / Scoping Request



A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: 5017 Weddington-Matthews Road Previous Name: If Applicable _____

Location: 5017 Weddington-Matthews Road County: Union Municipality: Weddington

Project Description: 12 single-family detached homes on the west side of Weddington-Matthews Road and 37 single-family detached homes on the east side of Weddington-Matthews Road (49 single-family homes total)

Project Contact:	Applicant	TIA Consultant
Company Name	Toll Brothers	Kimley-Horn and Associates
Contact Person	Robert Price	Laura Reid, PE
Phone Number	(704) 849-2625	(704) 319-7696
Email	rprice1@tollbrothers.com	laura.reid@kimley-horn.com
Mailing Address	9130 Kings Parade Boulevard Charlotte, NC 28273	200 South Tryon Street, Suite 200 Charlotte, NC 28202

Site Plan Prepared By: Kimley-Horn And Associates Site Plan Date: April 4, 2024

See site plan/vicinity map requirements on page 2.

Parcel Size: 94.03 Acre(s) Anticipated Build-Out Year: 2027

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
210	SF Det. (West)	12	DU	143	Adj. Street	3	8	11	9	5	14	ITE Equation
210	SF Det. (East)	37	DU	404	Adj. Street	8	22	30	25	14	39	ITE Equation
Total		49	DU	547		11	30	41	34	19	53	

Refer to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#) for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used: See attached for MD Trip Gen

- The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.
- The estimated site trips meet the municipal TIA trip threshold of >500 daily and/or >50 peak hour
- This project is located in a known [STIP](#) and/ or local CIP project #
- This project includes a rezoning request.
- The proposed site access is located within 1,000 feet of an interchange.
- The Applicant requests for a new or modified control-of-access break.
- The Applicant requests for a new or modified median break.

Applicant's Signature

Effective Date: 10/01/2017 (Version 17-721)

Print Name

Date

Page 1 of 2



NCDOT Traffic Impact Analysis Need Screening / Scoping Request



Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: 5017 Weddington-Matthews Road **Project Reference Number:** _____

A TIA is Required by the Local Government. In addition, the study area is expected to include NCDOT maintained transportation facilities.

A TIA is Required by NCDOT, per the [Policy on Street and Driveway Access to North Carolina Highways](#).

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

A TIA is NOT required. This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

Additional Comments:

The TIA need decision is made by the NCDOT Division _____ District _____ on _____.

NCDOT District Representative's Signature
Email concurrence may be used in lieu of the signature.

Print Name



NCDOT TIA Scoping Checklist



Project Name: 5017 Weddington-Matthews Road

TIA Scoping Date: 08/14/24

TIA Need Screening Forms are Attached. Project Reference #: _____ Decision Date: _____

Site Plan and Access

Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.

Refer to NCDOT's [Policy on Street and Driveway Access to North Carolina Highways](#) pages 14 and 15 for site plan requirements.

Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	Wedd-Matt Rd	Conventional Full-Mvmt	2-Way Stop	1580	South	Amanda/W-M Rd
Access B						
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	Proposed Interconnectivity (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1	Amanda Dr	Bonner Dr	N/A	Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

Bonner Drive is being extended south of its current terminus as part of the proposed development

Proposed K-12 School Site

- NCDOT [MSTA School Traffic Calculator](#) for _____ shall be used.
- Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).
- Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.
- Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).



NCDOT TIA Scoping Checklist



☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

**Explain local or other data sources, if used:

See attached for MD Trip Gen

Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size Unit		Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
Total Existing Site Trips												X



NCDOT TIA Scoping Checklist



☒ Trip Distribution

Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).

Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

- Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)
- Inter-Development Trips (if ‘internal’ trips cross public streets)
- Pass-By Trips
- Diverted Trips
- Each Analysis Period

Mode Split

Provide Data Source and Justification

Mode Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

Identify proper infrastructure and accommodation for other modes of travel.

☒ Analysis Peak Periods:

- Weekday AM Peak 7:00 - 9:00 AM
- Weekday PM Peak 4:00 - 6:00 PM
- Weekday Midday Peak _____
- Weekday PM School Peak 2:00 - 4:00 PM
- Weekend _____ Peak _____
- Other _____



NCDOT TIA Scoping Checklist



Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under “Site Plan and Access” on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	Wedd-Matt Rd	Tilley Morris Rd	Yield	Require New Counts			
#2	Wedd-Matt Rd	Amanda Dr	2-Way Stop	Require New Counts			
#3	Amanda Dr	Bonner Dr	2-Way Stop	Require New Counts			
#4	Hemby/Beulah	Wedd-Matt Rd	Signal	Require New Counts			
#5							
#6							
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101							
#102							
#103							
#104							
#105							

The following data will be collected:

- New traffic turning movement counts in 15-min intervals 5-min intervals (near schools)
Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.
- To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:

intersections numbered: #1 - AM and school peak hours

and access points numbered:

- Traffic Forecast Data for TIP:
- Roadway/Intersection Configuration & Traffic Control
- Traffic Signal Phasing & Timing Data
- Crash Data: _____ Period: _____
- Other: _____



NCDOT TIA Scoping Checklist



Future Year Conditions

Project Build-Out Year: 2027

Future Analysis Year(s): 2027

Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description		Year Complete
None			
Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements
None			

Annual Growth Factor: 2 %

Justification/Data Source: NCDOT AADT data

Local Comprehensive Transportation Plan Compliance

Identify Applicable Local Transportation Planning Documents

CRTPO MTP/CTP

Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #
Weddington-Matthews Rd	Major Collector	45				
Hemby/Beulah	Local	45				
Amanda Dr	Local	25				
Bonner Dr	Local	25				
Tilley Morris Dr	Minor Collector	45				



NCDOT TIA Scoping Checklist



Study Method

The traffic analysis shall follow the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:
 5. TIP Design Year Analysis _____
6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- Signal Warrant Analysis for accesses/intersections _____
- Multi-Modal Level of Service Analysis _____
- School Loading Zone Traffic Simulation _____
- Phasing Analysis (scope separately as needed) _____
- Safety/Crash Analysis _____
- Control-of-Access Modification Justification _____
- Median Break / Modification Justification _____
- Other _____

Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS).

To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

- Div. Traffic Engr
- Regional Traffic Engr
- Congestion Management
- Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required			
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

- Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)



NCDOT TIA Scoping Checklist



Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

Signature

Print Name

Date

TIA CONSULTANT

Signature

Laura Reid, PE

08/14/2024

Print Name

Date

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

Signature

Print Name

Date

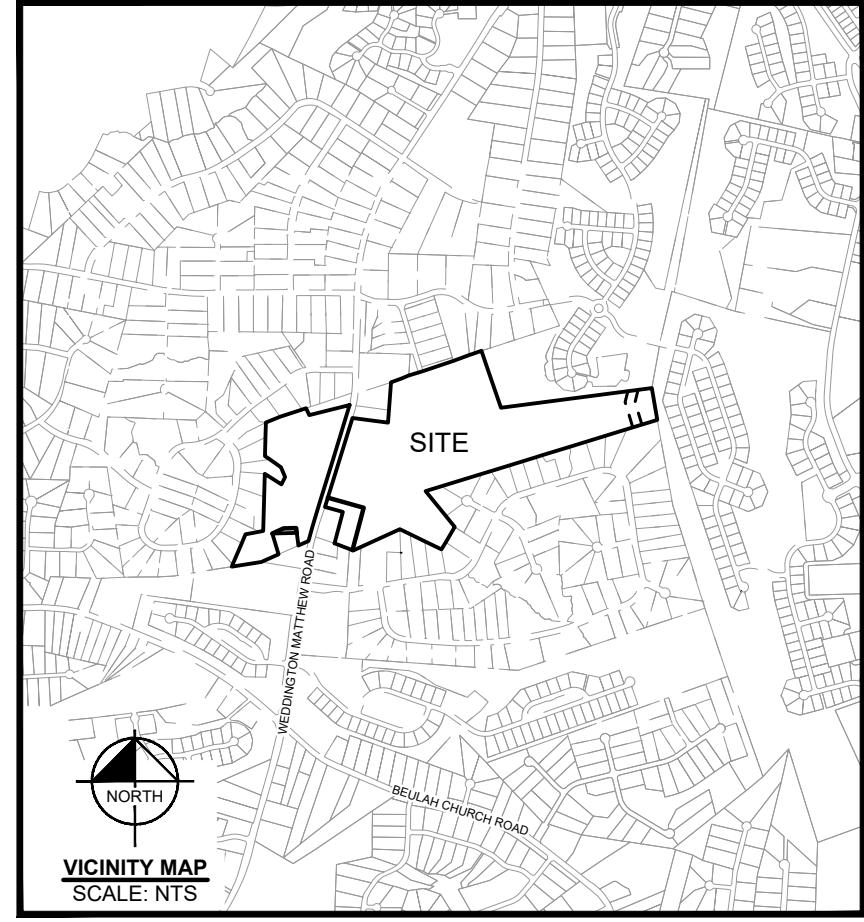
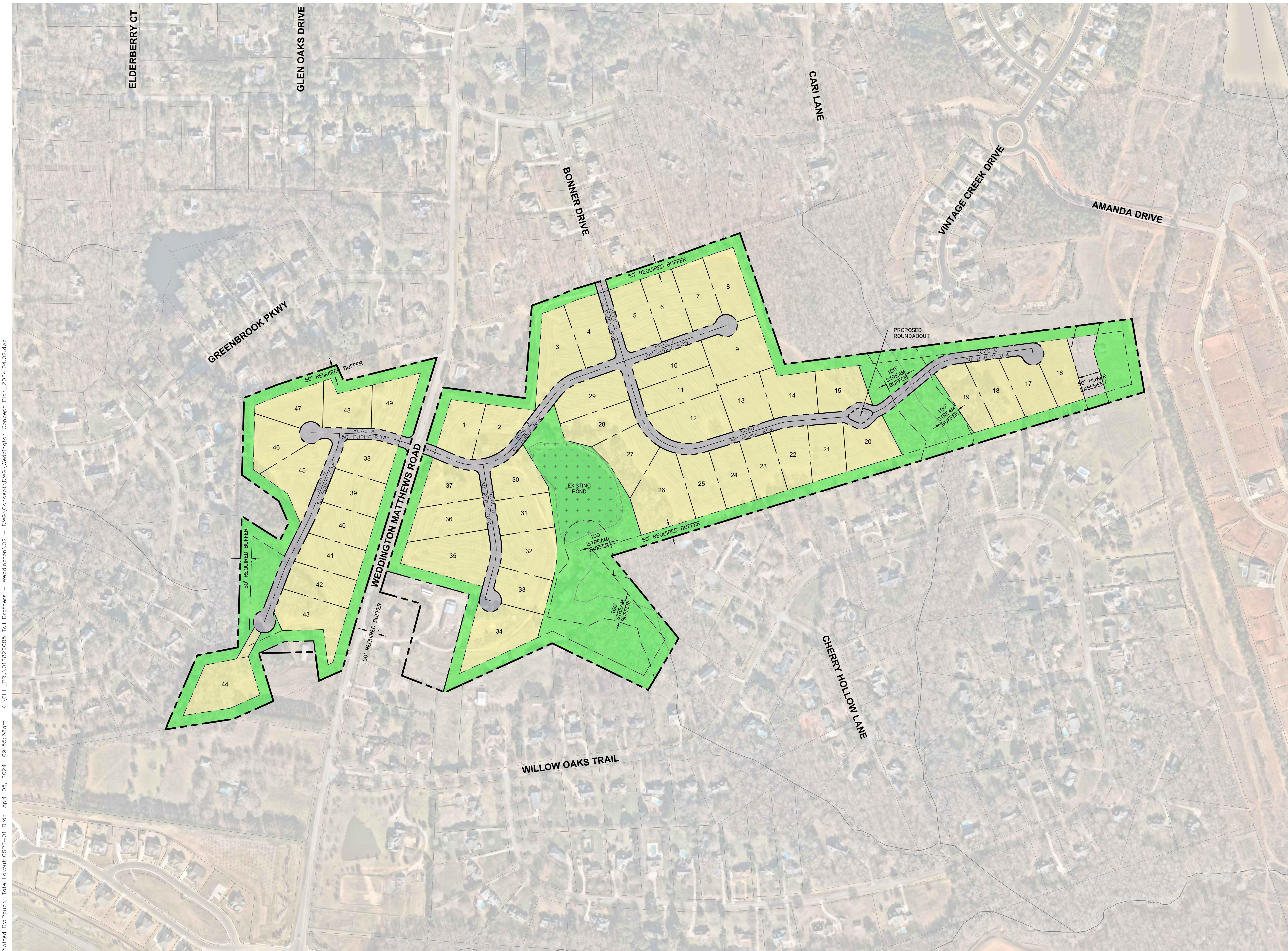
Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division ____ District ____ on _____.

Signature
Email concurrence may be used in lieu of the signature.

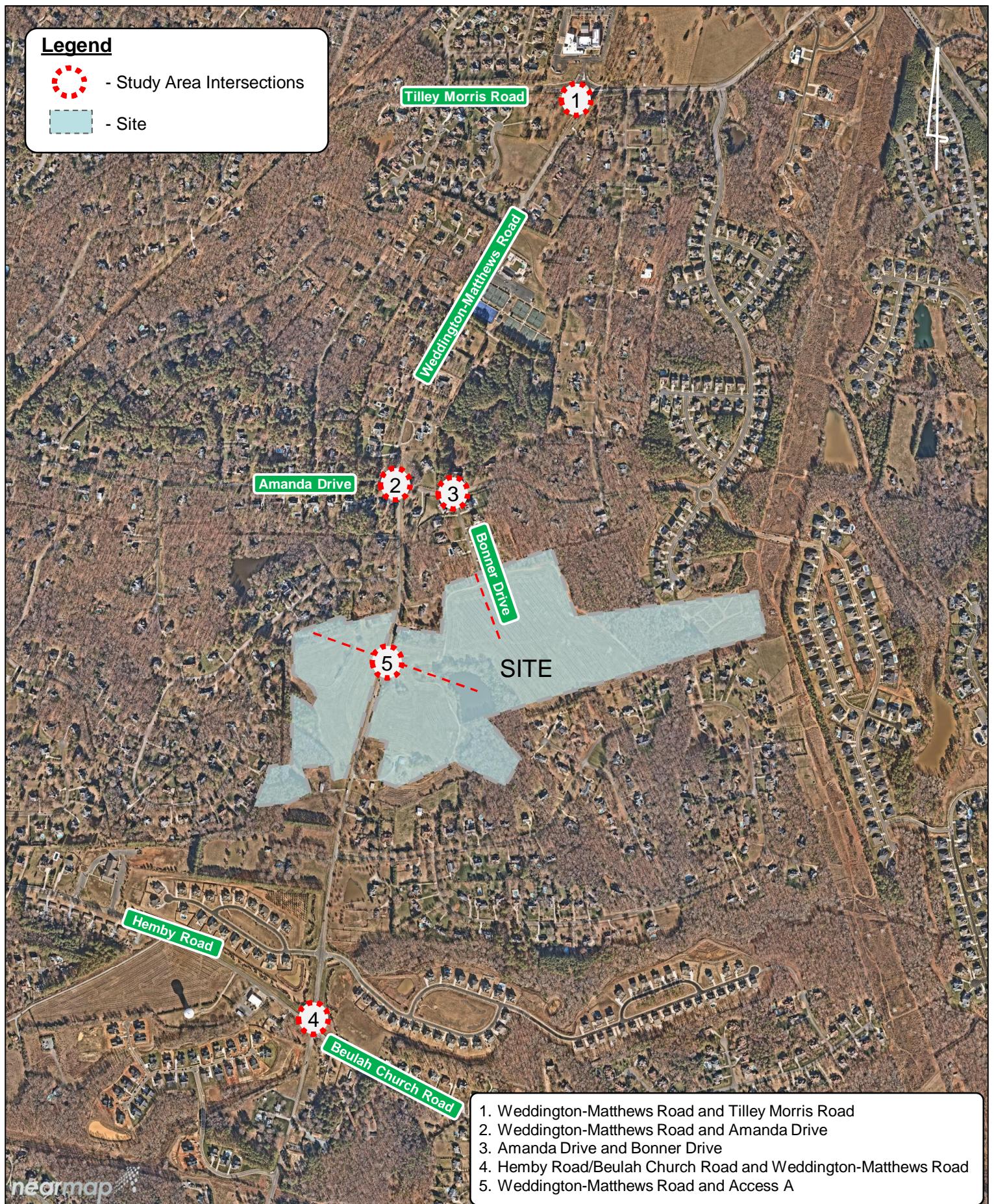
Print Name



SITE DATA TABLE	
DEVELOPMENT DATA:	
TAX PARCEL ID:	06120011
LAND USE:	RESIDENTIAL/VACANT
TOTAL SITE AREA:	94.03± ACRES
ZONING DISTRICT:	R-CD (Town of Weddington)
ZONING DATA:	
FEMA FLOOD PANEL:	3710447700L, 3710448700J
LOT INFORMATION:	
SINGLE FAMILY LOTS:	49
PROPOSED DENSITY:	0.5 DUA
TYPICAL LOT SIZE:	40,000 SF (120' Min. Width)
REQUIRED HOUSE SETBACKS:	FRONT: 50' SIDE: 15' REAR: 40'
COMMON OPEN SPACE:	
REQUIRED:	9.4± ACRES (10%)
PROVIDED:	29.8± ACRES (32%)
BUFFER YARDS:	
50' PERIMETER BUFFER:	
100' THOROUGHFARE BUFFER (CAN BE REDUCED TO 50' WITH PLANTED EVERGREEN MATERIAL)	
ESTIMATED IMPERVIOUS CALCULATIONS:	
HOMES (70' x 70'): ±5.51 ACRES	
DRIVEWAYS (20' x 60'): ±1.35 ACRES	
ROW: ±7.94 ACRES	
TOTAL: 14.8 ACRES (16% OF SITE)	

Legend

- Study Area Intersections
- Site



1. Weddington-Matthews Road and Tilley Morris Road
2. Weddington-Matthews Road and Amanda Drive
3. Amanda Drive and Bonner Drive
4. Hemby Road/Beulah Church Road and Weddington-Matthews Road
5. Weddington-Matthews Road and Access A

nearmap

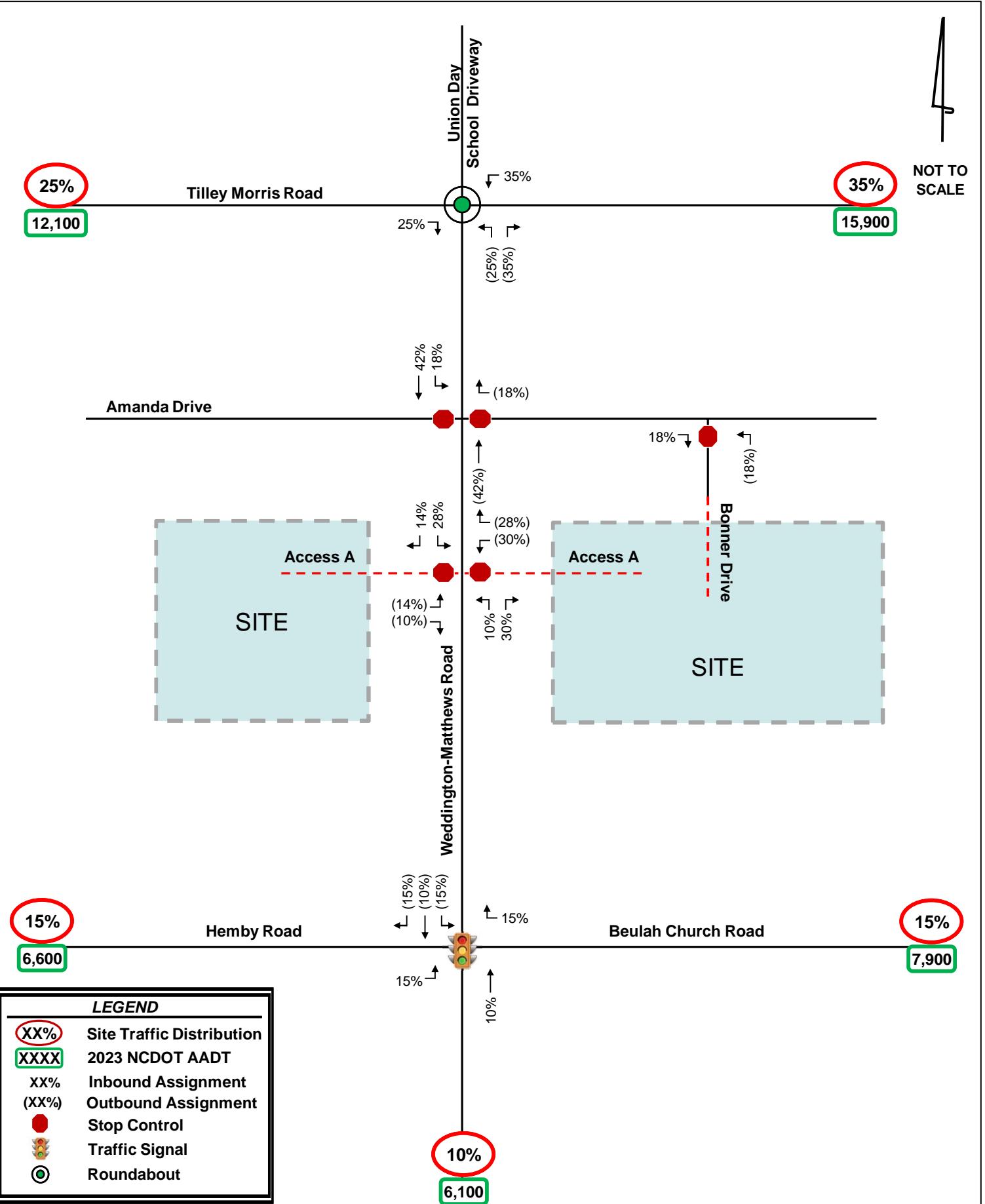


Table 1 - Trip Generation

Land Use	Intensity	Units	Daily	AM Peak Hour			MD Peak Hour			PM Peak Hour		
				Total	In	Out	Total	In	Out	Total	In	Out
210 - Single-Family Detached Housing (West Parcel)	12	DU	143	11	3	8	12	8	4	14	9	5
210 - Single-Family Detached Housing (East Parcel)	37	DU	404	30	8	22	33	21	12	39	25	14
Total Net New External Trips			547	41	11	30	45	29	16	53	34	19

Zuend, Lauren

From: Gardner, Zachary L <zlgardner@ncdot.gov>
Sent: Friday, September 6, 2024 8:04 AM
To: Reid, Laura; Gregory Gordos; Helms, Amelia C; Weltner, Robert C
Cc: Robert Price; Zuend, Lauren; Fisher, Bonnie
Subject: RE: [External] 5017 Weddington Matthews Road - TIA Scoping

Good morning,

NCDOT will provide a cursory review of the TIA.

No further comments from NCDOT on this scoping document. I'll defer to the Town for any comments they may have.

Thanks,
Zach Gardner, PE
Division 10 Traffic Engineer
North Carolina Department of Transportation

704-983-4400 office
zlgardner@ncdot.gov

716 W. Main Street
Albemarle, NC 28001



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Thursday, August 29, 2024 8:57 AM
To: Gregory Gordos <ggordos@townofweddington.com>; Helms, Amelia C <aachelms@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>
Cc: Robert Price <rprice1@tollbrothers.com>; Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Fisher, Bonnie <BFisher@LaBellaPC.com>
Subject: [External] 5017 Weddington Matthews Road - TIA Scoping

CAUTION: External email. Do not click links or open attachments unless verified. Report suspicious emails with the Report Message button located on your Outlook menu bar on the Home tab.

Hi all,

See attached for the TIA scoping document for 5017 Weddington Matthews Road located in Weddington, NC. We've included Town and NCDOT on this email chain, but note that the trip generation for this site falls below the NCDOT TIA threshold.

Please let us know if you have any questions/comments as you review or if you'd like to get a meeting scheduled to discuss.

Thanks,

Laura Reid, PE (NC & SC)

Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com

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Zuend, Lauren

From: Gregory Gordos <ggordos@townofweddington.com>
Sent: Friday, October 25, 2024 9:26 AM
To: Reid, Laura
Cc: Zuend, Lauren; Robert Price
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

That is correct.



Greg Gordos
Town Planner
Phone: 704-846-2709
Cell: 980-210-1822
ggordos@townofweddington.com
1924 Weddington Road
Weddington, NC 28104
www.townofweddington.com
Rural Living Redefined

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Thursday, October 24, 2024 10:04 PM
To: Gregory Gordos <ggordos@townofweddington.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Greg,

Based on a review of these comments, it appears that there are no significant concerns identified in the LaBella review. Can you confirm that the scoping is approved by the Town? Once we confirm, we can check back in with NCDOT on any additional comments from them.

Thanks,

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

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From: Gregory Gordos <ggordos@townofweddington.com>
Sent: Thursday, October 24, 2024 11:37 AM
To: Reid, Laura <laura.reid@kimley-horn.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Laura,

Please see attached letter.



Greg Gordos
Town Planner
Phone: 704-846-2709
Cell: 980-210-1822
g gordos@townofweddington.com
1924 Weddington Road
Weddington, NC 28104
www.townofweddington.com
Rural Living Redefined

From: Gregory Gordos
Sent: Wednesday, October 23, 2024 11:46 AM
To: Reid, Laura <laura.reid@kimley-horn.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

(LaBella) will check in with our Traffic Engineer and find out status and get back to you as soon as possible.



Greg Gordos
Town Planner
Phone: 704-846-2709
Cell: 980-210-1822
g gordos@townofweddington.com
1924 Weddington Road
Weddington, NC 28104
www.townofweddington.com
Rural Living Redefined

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Tuesday, October 22, 2024 3:52 PM
To: Gregory Gordos <g gordos@townofweddington.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Greg,

Any updates from LaBella on their review of this scope?

Thanks!

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
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From: Gregory Gordos <ggordos@townofweddington.com>
Sent: Wednesday, October 2, 2024 3:55 PM
To: Reid, Laura <laura.reid@kimley-horn.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Laura,

Emailing LaBella now to confirm.
The last I spoke with Bonnie, she stated review was underway but 3-4 weeks out.



Greg Gordos
Town Planner
Phone: 704-846-2709
Cell: 980-210-1822
ggordos@townofweddington.com
1924 Weddington Road
Weddington, NC 28104
www.townofweddington.com
Rural Living Redefined

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Wednesday, October 2, 2024 3:46 PM
To: Gregory Gordos <ggordos@townofweddington.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Greg,

Hope you've been having a great week! Just wanted to follow-up on the scoping review for this site. Let us know if there's anything else we can provide as LaBella wraps up their comments.

Thanks,

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

Celebrating 17 years as one of FORTUNE's 100 Best Companies to Work For

From: Reid, Laura
Sent: Wednesday, September 18, 2024 1:23 PM
To: Gregory Gordos <ggordos@townofweddington.com>
Cc: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Greg,

Appreciate your patience while we coordinated on our end. The project team would like to proceed with the LaBella review of the TIA scoping document for this site.

Please let us know if you need anything else from us to keep that process moving forward.

Thanks,

Laura Reid, PE (NC & SC)

Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com

Connect with us: Twitter | LinkedIn | Facebook | Instagram

Celebrating 17 years as one of FORTUNE's 100 Best Companies to Work For

From: Gregory Gordos <ggordos@townofweddington.com>

Sent: Monday, September 9, 2024 3:51 PM

To: Reid, Laura <laura.reid@kimley-horn.com>

Subject: RE: 5017 Weddington Matthews Road - TIA Scoping

Hi Laura,

This is town staff's first introduction to this project/we have not had a pre-application meeting to discuss. Are you and the client ready for a Scoping document review for by LaBella Associates? It would be invoiced upon the review's completion.



Greg Gordos

Town Planner

Phone: 704-846-2709

Cell: 980-210-1822

ggordos@townofweddington.com

1924 Weddington Road

Weddington, NC 28104

www.townofweddington.com

Rural Living Redefined

From: Reid, Laura <laura.reid@kimley-horn.com>

Sent: Thursday, August 29, 2024 8:57 AM

To: Gregory Gordos <ggordos@townofweddington.com>; Helms, Amelia C <achelms@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>

Cc: Robert Price <rprice1@tollbrothers.com>; Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Fisher, Bonnie <bfisher@labellapc.com>

Subject: 5017 Weddington Matthews Road - TIA Scoping

Hi all,

See attached for the TIA scoping document for 5017 Weddington Matthews Road located in Weddington, NC. We've included Town and NCDOT on this email chain, but note that the trip generation for this site falls below the NCDOT TIA threshold.

Please let us know if you have any questions/comments as you review or if you'd like to get a meeting scheduled to discuss.

Thanks,

Laura Reid, PE (NC & SC)

Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202

October 23, 2024

Mr. Greg Gordos, AICP
Town Planer
Town of Weddington
1924 Weddington Road
Weddington, NC 28104

RE: Review of the Scoping for Traffic Impact Analysis (TIA)

5017 Weddington-Matthews Road
Town of Weddington, NC
Project No. 2242731

Mr. Gordos:

In accordance with your request, the following is our review of the Scoping document prepared for Toll Brothers, by Laura Reid, P.E., Kimley Horn & Associates, dated, August 14, 2024.

The Applicant is proposing to develop 49 single-family residential units on two parcels of approximately 94.03 acres of vacant land located on Weddington-Matthews Road between Amanda Drive and Hemby Road. The west parcel is proposed to contain 12 single-family units, and the east parcel is proposed to contain 37 single-family dwelling units. The applicant proposes to study five (5) intersections consisting of: Tilley Morris Road and Weddington-Matthews Road; Weddington-Matthews Road and Amanda Drive; Amanda Drive and Bonner Drive; Weddington-Matthews Road and Hemby Road/Beulah Church Road; and Weddington-Matthews Road and Access "A."

A. Intersections to be Studied.

From an overall transportation perspective, the intersections to be studied appear to be appropriate to determine the traffic impacts of the proposed development.

B. Trip Generation.

The Scoping document identifies the Single-family Housing as Land-use 210 which is considered appropriate for this application. Further, the Scoping Document appropriately indicates that the two Sites will be treated separately for analysis purposes.

C. TIA Trip Threshold

The Scoping Document indicates that the trip generation meets Weddington Municipal TIA threshold of >500 daily trips or >50 peak hour trips, but do not meet the NCDOT's TIA threshold of > 3000 daily trips.



D. Trip Distribution and Assignment

The Scoping Document indicates that the Horizon Year is 2027. Trips distribution is based on the 2023 NCDOT AADT.

E. Analysis Peak Periods

The Scoping Document indicates three time periods for analysis purposes; AM peak hour, PM peak hour and the school dismissal period of 2:00 to 4:00 p.m.

E. Conclusion

We trust the information herein is sufficient for your immediate needs. Please do not hesitate to contact me at 914-269-5610 or Mr. Watson at 704-941-2112 should you have any questions.

Respectfully submitted,

Bernard Adler, P.E.
Senior Transportation Consultant
LaBella Associates
One North Broadway, Suite 803
White Plains, NY 10601

Danny L. Watson, PE, CFM, PMP
Senior Civil Engineer
Project Manager

NCDOT and Town of Weddington (LaBella) Comments

Zuend, Lauren

From: Helms, Amelia C <achelms@ncdot.gov>
Sent: Thursday, February 20, 2025 2:23 PM
To: Zuend, Lauren; Gregory Gordos; Reid, Laura; Gardner, Zachary L; Weltner, Robert C; Lee, Tou Y
Cc: Robert Price; Loftin, Andrew; Richard, Elizabeth; Wilson, Robert
Subject: RE: [External] RE: 5017 Weddington Matthews Road - TIA Submittal
Attachments: 2025-01-21 S&S 5017 Weddington-Matthews_REPORT+APPENDIX.pdf

Lauren,

Our comments are listed below:

- Section 3.2 states that no volume balancing was performed between the study area intersections, however the volumes in Figure 3.4 appear to have been balanced.
- The District will require a 100' southbound left turn lane on Weddington Matthews Rd at Access A.

Thank you,

Amelia Helms, P.E.
District Engineer
Division 10 - District 3
North Carolina Department of Transportation

704 218 5100 office
704 292 1800 fax
achelms@ncdot.gov

130 South Sutherland Avenue
Monroe, NC 28112



Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>
Sent: Thursday, February 20, 2025 9:19 AM
To: Gregory Gordos <ggordos@townofweddington.com>; Reid, Laura <laura.reid@kimley-horn.com>; Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>
Cc: Robert Price <rprice1@tollbrothers.com>; Loftin, Andrew <Andrew.Loftin@kimley-horn.com>; Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Wilson, Robert <RWilson@LaBellaPC.com>
Subject: [External] RE: 5017 Weddington Matthews Road - TIA Submittal

Some people who received this message don't often get email from lauren.zuend@kimley-horn.com. [Learn why this is important](#)

CAUTION: External email. Do not click links or open attachments unless verified. Report suspicious emails with the Report Message button located on your Outlook menu bar on the Home tab.

Thank you for providing the comments, we'll take a look and let you know if we have any questions. NCDOT do you have any additional comments or do you concur with the Town?

Lauren Zuend | EIT

Kimley-Horn | 200 South Tryon Street, Ste. #200, Charlotte, NC 28202

Direct: 704 936 0114

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From: Gregory Gordos <ggordos@townofweddington.com>

Sent: Wednesday, February 19, 2025 4:36 PM

To: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>; Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>

Cc: Robert Price <rprice1@tollbrothers.com>; Loftin, Andrew <Andrew.Loftin@kimley-horn.com>; Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Wilson, Robert <RWilson@LaBellaPC.com>

Subject: RE: 5017 Weddington Matthews Road - TIA Submittal

You don't often get email from ggordos@townofweddington.com. Learn why this is important

Good afternoon,

Please see attached document.



Greg Gordos

Town Planner

Phone: 704-846-2709

Cell: 980-210-1822

ggordos@townofweddington.com

1924 Weddington Road
Weddington, NC 28104

www.townofweddington.com

Rural Living Redefined

From: Zuend, Lauren <Lauren.Zuend@kimley-horn.com>

Sent: Wednesday, February 19, 2025 4:06 PM

To: Reid, Laura <laura.reid@kimley-horn.com>; Gardner, Zachary L <zlgardner@ncdot.gov>; Gregory Gordos <ggordos@townofweddington.com>; Helms, Amelia C <achelms@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>

Cc: Robert Price <rprice1@tollbrothers.com>; Loftin, Andrew <Andrew.Loftin@kimley-horn.com>; Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>

Subject: RE: 5017 Weddington Matthews Road - TIA Submittal

Hi Everyone,

Checking back in regarding the 5017 Weddington-Matthews Road TIA study. Please let us know if you have any questions or need anything else as you review.

Hope everyone is staying safe and warm during the snow day today!

February 14, 2025

Mr. Greg Gordos
Town Planner
Town of Weddington
1924 Weddington Road
Weddington, NC 28104

RE: Review of Traffic Impact Analysis (TIA)
5017 Weddington Matthews Road
Town of Weddington, NC

Mr. Gordos:

Pursuant to your request, LaBella Associates has reviewed the Traffic Impact Analysis (TIA) for the proposed development, prepared for Toll Brothers, by Laura Reid, PE, Kimley Horn & Associates, dated January 2025.

The Applicant is proposing to develop 47 single-family residential units on two parcels located on either side of Weddington-Matthews Road between Greenbrook Parkway and Willow Oaks Trail. The west side parcel is proposed to contain 9 single-family detached units, and the east side parcel is proposed to contain 38 single-family detached units. The access for the proposed development will be via two accesses: a full movement access at the intersection of Bonner Drive and Amanda Drive for east side development. Bonner Drive is proposed to be extended to the internal roadway of the proposed project. Second access, Access A, a full movement unsignalized connection to Weddington-Matthews Road which will serve both east side and west side parcels.

It is noted that the proposed development plan is revised compared to the TIA scoping checklist previously submitted dated August 14, 2024. The proposed development has reduced the number of units from 49 units in the scoping checklist to 47 units in the TIA and the build year is changed from 2027 to 2029.

The following are our findings and comments in response to the Traffic Impact Analysis

A. Study Intersections

The traffic Impact Analysis (TIA) analyzed five (5) intersections consisting of: 1. Weddington-Matthews Road and Tilley Morris Road; 2. Weddington-Matthews Road and Amanda Drive; 3. Amanda Drive and Bonner Drive; 4. Hemby Road/Beulah Church Road and Weddington-Matthews Road; 5. Weddington-Matthews Road and Access A. The study intersections are as per the Scope.



B. Traffic Volume Turning-Movement Counts

The TIA states that the turning-movement count was conducted by Quality Counts on November 13, 2024, during AM peak hours of 7:00 a.m. to 9:00 a.m., Midday peak hours of 2:00 p.m. to 4:00 p.m. and PM peak hours of 4:00 p.m. to 6:00 p.m. The day and time of data collection are appropriate since they are typical of regular highway peak hours.

C. Background Traffic Volumes

The TIA indicates that Background volumes are the projected background traffic volumes with a 2% per growth rate to the year 2029. No other developments in the vicinity of the site that may generate traffic on Weddington-Matthews Road were considered.

D. Trip Generation

Traffic generated by the 47 single family detached homes was determined from data contained in the ITE publication, Trip Generation, 11th Edition, Single Family (Detached) LUC 210. The traffic distribution was determined based on the regional roadway network and is acceptable.

E. Operating Conditions

The Existing, Background and Build capacity analysis was performed using Synchro, Version 12 and SIDRA Version 9.1 software. The maximum queue lengths at the intersections studied are based on Sim Traffic, a traffic simulation software.

Based on the Synchro analyses, with the proposed development the operating conditions remain similar in the Build condition when compared to the Background condition. Additionally, the 95th percentile queue does not exceed the storage capacity of the existing lane geometry. However, the SIDRA analysis is incorrectly analyzed.

The SIDRA analysis for the roundabout at the intersection of Tilley Morris Road and Weddington-Matthews Road is incorrectly interpreting the eastbound and northbound right-turn lanes as bypass lanes. The right turn lanes do not act as a bypass lane, they enter the roundabout and must YIELD to the through traffic. The Applicant needs to re-analyze the roundabout analyses and update all the queue lengths for the Existing, Background and Build conditions.

Further, Applicant states that the Roundabout analysis states that at the intersection of Tilley Morris Road and Weddington-Matthews Road, the overall intersection operates with LOS F during the AM peak hour for Existing, Background and Build conditions. With the proposed development the delay increases by no more than two seconds from Background to Build conditions and hence no improvement measures were proposed. However, included with the submission package were Synchro files that depict an extended westbound left-turn bay. It is possible that the mitigation would through/right turning vehicles the opportunity to not queue behind left turning vehicles. This mitigation is not discussed in the report. Is this mitigation that could be explored?



F. Identified Mitigation Improvements

TIA identifies the access to the development as mitigation measures. However, since these are a part of the access to the development, they are not considered mitigation but necessary components of the development.

G. Summary

The following are actions needed to be taken to prepare an acceptable TIA

- Revise SIDRA analyses for the Existing, Background and Build conditions.
- Update the Queue lengths based on the revised SIDRA for the intersection of Tilley Morris Road and Weddington-Matthews Road.

We trust the information herein is sufficient for your immediate needs. Please do not hesitate to contact me at 914-269-5610 or Bob Wilson at 704-941-2139 should you have any questions

Respectfully submitted,

LaBella Associates

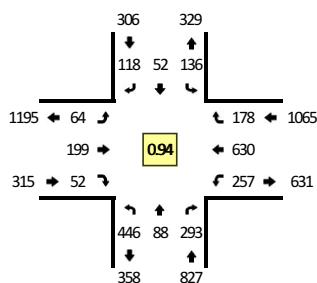
Bernard Adler, P.E.
Senior Transportation Consultant

Robert E. Wilson, PE
Senior Civil Engineer

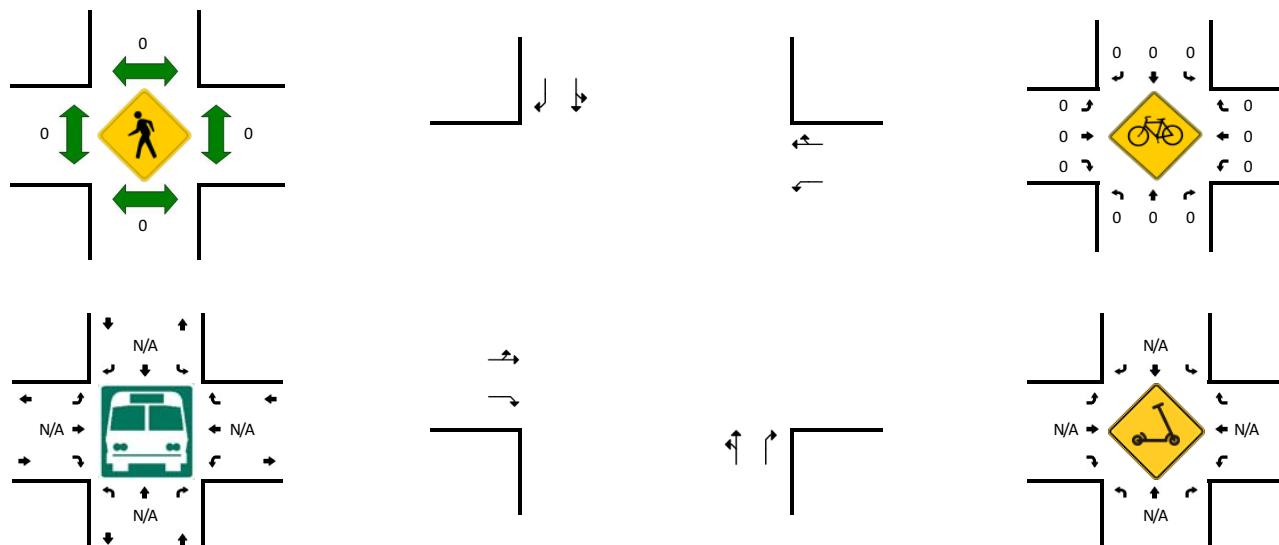
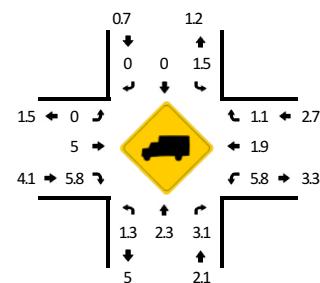
Turning Movement Counts

LOCATION: Matthews Weddington Rd -- Tilley Morris Rd/Matthews Weddington Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824001
DATE: Wed, Nov 13 2024



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	Matthews Weddington Rd (Northbound)				Matthews Weddington Rd (Southbound)				Tilley Morris Rd/Matthews Weddington Rd (Eastbound)				Tilley Morris Rd/Matthews Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	76	11	113	0	2	0	3	0	6	28	4	0	59	152	18	1	473	
7:15 AM	123	19	101	0	2	1	0	0	13	57	8	0	85	160	31	0	600	
7:30 AM	149	32	78	0	36	16	36	0	17	42	9	0	73	120	57	1	666	
7:45 AM	103	32	49	0	61	23	56	0	26	44	17	0	47	128	66	0	652	2391
8:00 AM	71	5	65	0	37	12	26	0	7	56	18	1	49	222	24	2	595	2513
8:15 AM	65	2	66	0	6	2	1	0	1	40	12	0	52	173	5	1	426	2339
8:30 AM	60	0	56	0	3	1	0	0	2	52	10	0	61	190	1	1	437	2110
8:45 AM	32	0	65	0	3	1	0	0	3	58	16	0	64	167	2	1	412	1870
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	596	128	312	0	144	64	144	0	68	168	36	0	292	480	228	4	2664	
Heavy Trucks	4	0	16		4	0	0		0	8	4		16	4	0		56	
Buses																	0	
Pedestrians	0	0	0		0	0	0		0	0	0		0	0	0		0	
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0	
Scooters																		

Comments:

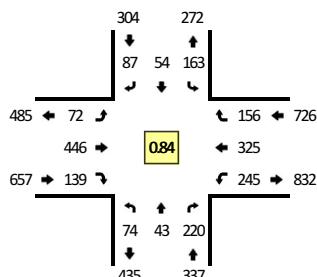
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SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

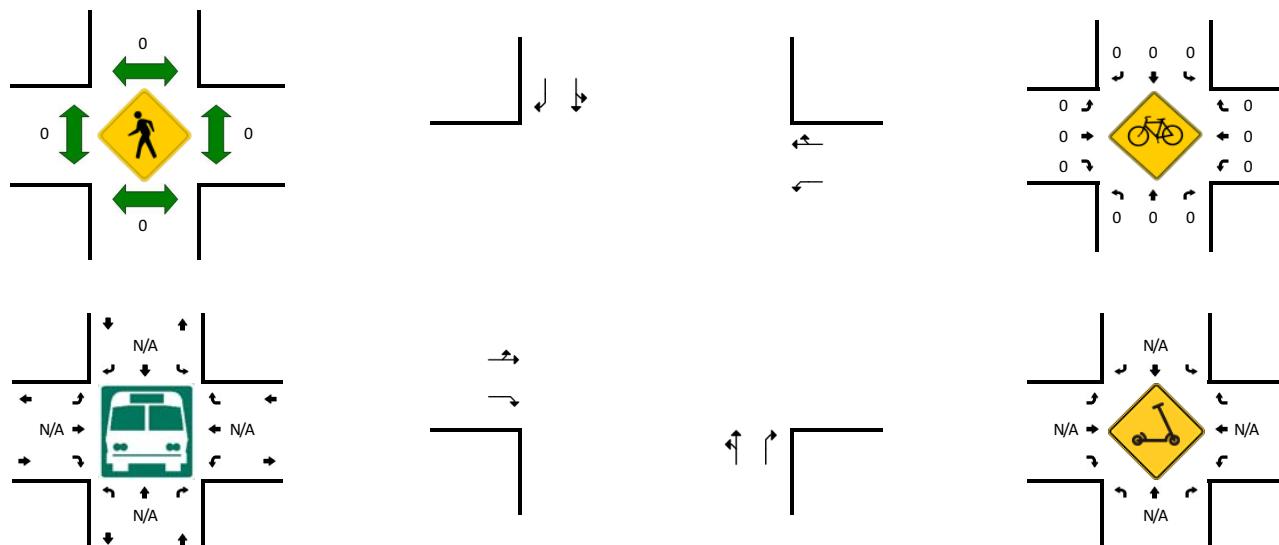
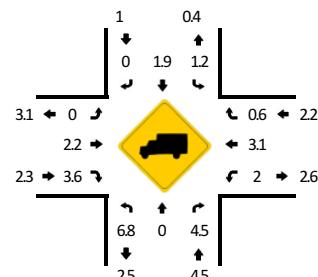
LOCATION: Matthews Weddington Rd -- Tilley Morris Rd/Matthews Weddington Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824003

DATE: Wed, Nov 13 2024



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:30 PM -- 3:45 PM



15-Min Count Period Beginning At	Matthews Weddington Rd (Northbound)				Matthews Weddington Rd (Southbound)				Tilley Morris Rd/Matthews Weddington Rd (Eastbound)				Tilley Morris Rd/Matthews Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	11	1	48	0	3	2	1	0	2	76	28	1	74	70	3	3	323	
2:15 PM	12	0	30	0	3	0	0	0	1	93	19	0	54	54	2	1	269	
2:30 PM	20	1	42	0	0	0	1	0	2	81	21	0	41	75	0	2	286	
2:45 PM	16	1	47	0	0	1	1	0	4	83	31	0	54	80	4	1	323	1201
3:00 PM	13	10	54	0	0	0	1	0	27	111	16	0	54	86	63	1	436	1314
3:15 PM	20	15	71	1	16	5	5	0	22	120	29	0	65	78	47	1	495	1540
3:30 PM	22	18	50	0	97	28	47	0	21	103	44	0	65	64	43	1	603	1857
3:45 PM	18	0	45	0	49	21	34	1	2	112	50	0	57	97	3	1	490	2024
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	88	72	200	0	388	112	188	0	84	412	176	0	260	256	172	4	2412	
Heavy Trucks	12	0	4		4	0	0		0	8	0		8	4	0		40	
Buses																	0	
Pedestrians	0				0				0				0				0	
Bicycles	0				0				0				0				0	
Scooters	0				0				0				0				0	

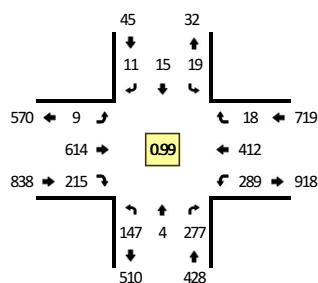
Comments:

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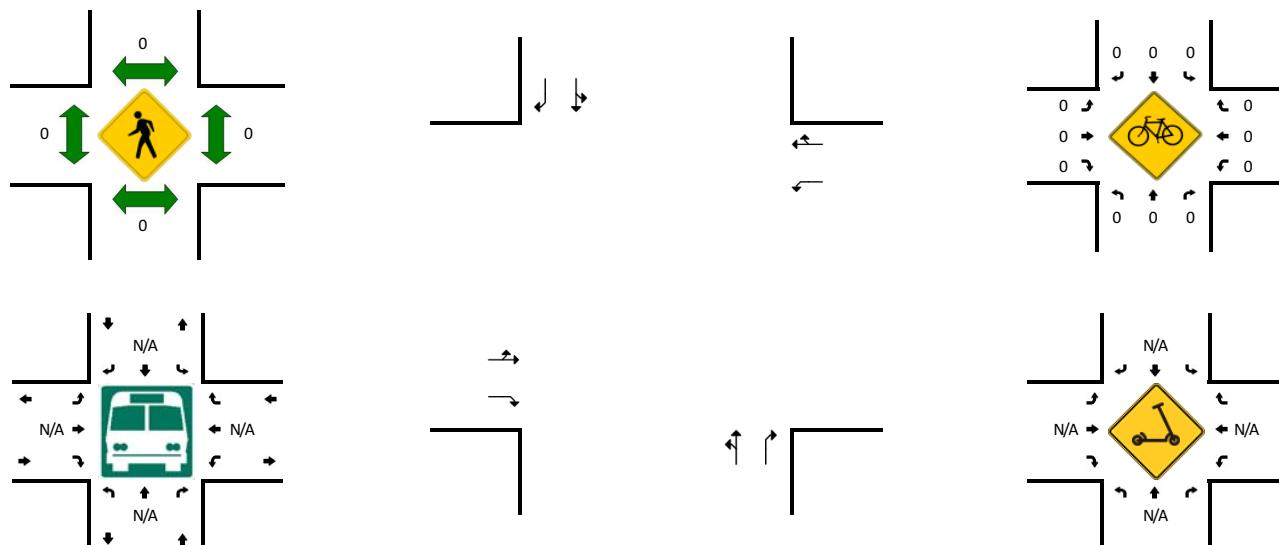
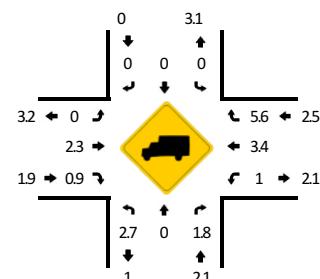
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LOCATION: Matthews Weddington Rd -- Tilley Morris Rd/Matthews Weddington Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824002
DATE: Wed, Nov 13 2024



Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM



15-Min Count Period Beginning At	Matthews Weddington Rd (Northbound)				Matthews Weddington Rd (Southbound)				Tilley Morris Rd/Matthews Weddington Rd (Eastbound)				Tilley Morris Rd/Matthews Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	1	60	0	12	2	5	0	3	116	47	0	72	72	3	2	410	
4:15 PM	26	2	58	0	3	3	4	0	1	145	42	1	58	82	5	2	432	
4:30 PM	31	2	62	0	9	7	7	0	1	153	55	0	69	105	9	4	514	
4:45 PM	39	0	62	0	1	5	2	0	3	160	55	0	70	108	4	1	510	1866
5:00 PM	41	0	78	0	6	1	0	0	2	161	57	0	61	94	2	2	505	1961
5:15 PM	36	2	75	0	2	2	2	1	3	140	48	0	80	105	3	2	501	2030
5:30 PM	32	1	77	0	6	1	0	1	2	129	52	0	72	104	8	1	486	2002
5:45 PM	16	7	69	1	1	1	4	0	2	149	54	1	86	90	11	0	492	1984
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	124	8	248	0	36	28	28	0	4	612	220	0	276	420	36	16	2056	
Heavy Trucks	0	0	8	0	0	0	0	0	0	12	4	0	0	28	4	0	56	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Report generated on 11/18/2024 11:58 AM

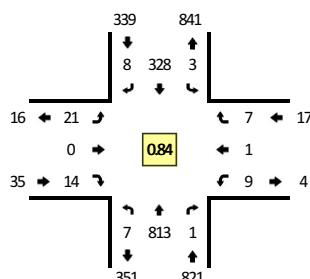
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

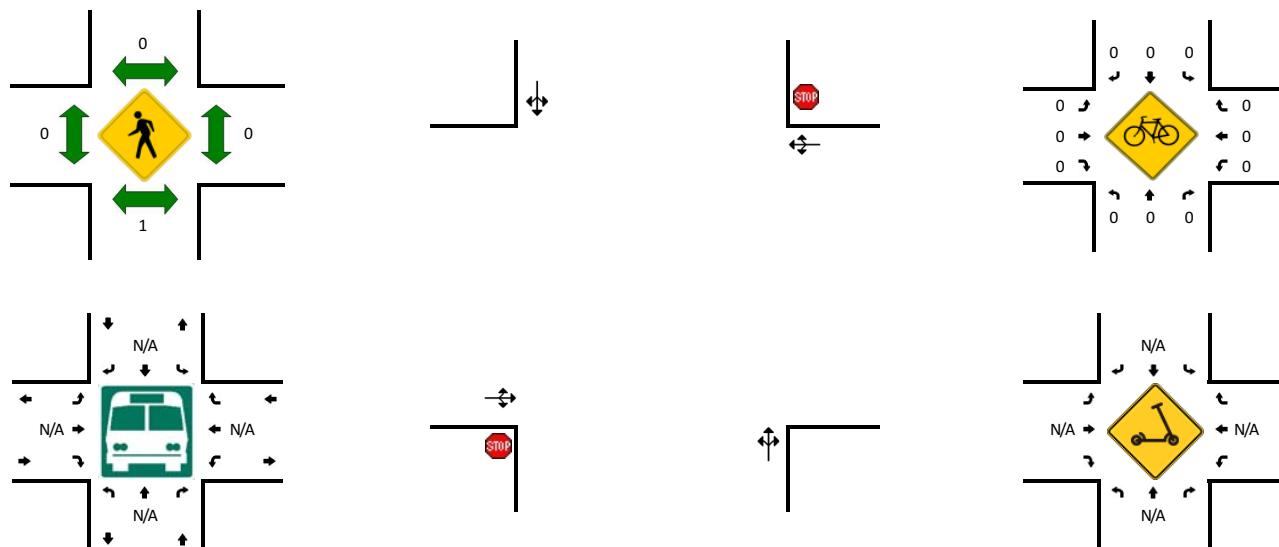
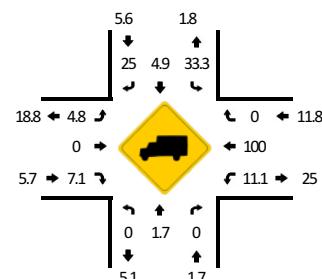
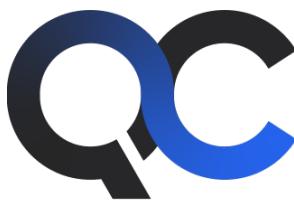
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824004
DATE: Wed, Nov 13 2024



Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Amanda Dr (Eastbound)				Amanda Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	169	0	0	0	62	0	0	8	0	3	0	1	0	1	0	245	
7:15 AM	2	233	0	0	0	81	3	0	8	0	4	0	1	1	2	0	335	
7:30 AM	2	245	0	0	2	96	3	0	4	0	3	0	4	0	1	0	360	
7:45 AM	2	166	1	0	1	89	2	0	1	0	4	0	3	0	3	0	272	1212
8:00 AM	2	133	1	0	2	78	2	0	4	0	2	0	0	0	2	0	226	1193
8:15 AM	2	119	0	0	1	62	1	0	3	0	2	0	2	0	2	0	194	1052
8:30 AM	3	108	1	0	0	70	2	0	5	0	3	0	1	0	3	0	196	888
8:45 AM	1	96	1	0	0	79	1	0	2	0	6	0	0	0	0	0	186	802
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	980	0	0	8	384	12	0	16	0	12	0	16	0	4	0	1440	
Heavy Trucks	0	12	0		4	12	0		4	0	0		4	0	0		36	
Buses																		
Pedestrians																		0
Bicycles																		0
Scooters																		0

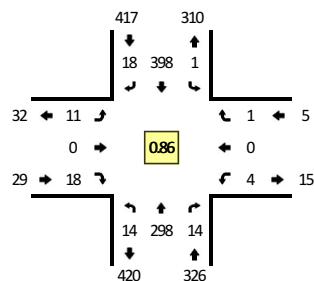
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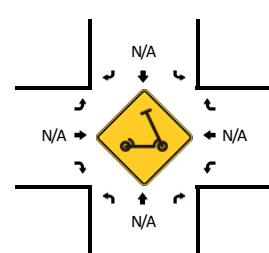
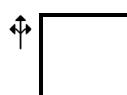
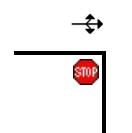
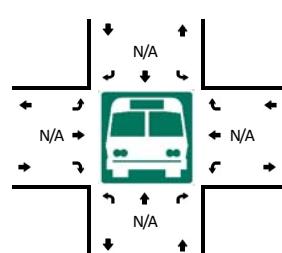
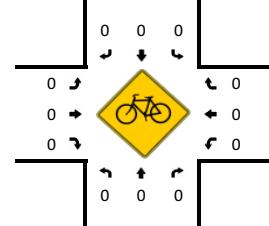
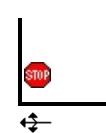
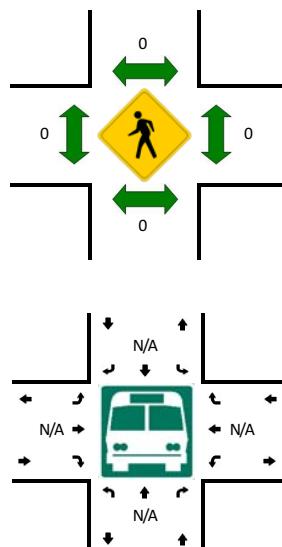
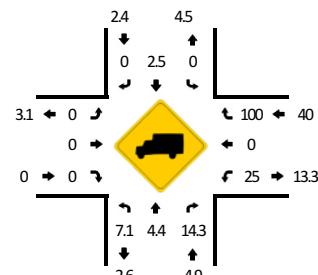
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Weddington Matthews Rd -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824006
DATE: Wed, Nov 13 2024



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:30 PM -- 3:45 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Amanda Dr (Eastbound)				Amanda Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	2	36	1	0	0	87	2	0	5	0	2	0	0	0	0	0	135	
2:15 PM	4	29	0	0	1	76	1	0	2	1	3	0	1	0	0	0	118	
2:30 PM	1	40	1	0	0	54	4	0	2	1	2	0	2	1	0	0	108	
2:45 PM	1	52	1	0	2	79	4	0	1	0	5	0	1	1	1	0	148	509
3:00 PM	3	62	3	0	0	61	4	0	2	0	4	0	0	0	0	0	139	513
3:15 PM	4	102	8	0	1	86	3	0	4	0	3	0	2	0	0	0	213	608
3:30 PM	7	78	1	0	0	128	6	0	3	0	4	0	0	0	0	0	227	727
3:45 PM	0	56	2	0	0	123	5	0	2	0	7	0	2	0	1	0	198	777
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	28	312	4	0	0	512	24	0	12	0	16	0	0	0	0	0	908	
Heavy Trucks	4	12	4	0	0	8	0	0	0	0	0	0	0	0	0	0	28	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

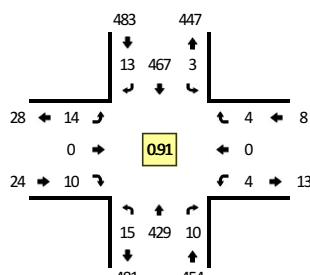
Comments:

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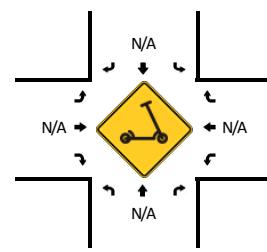
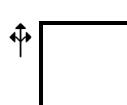
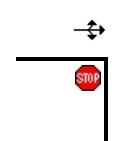
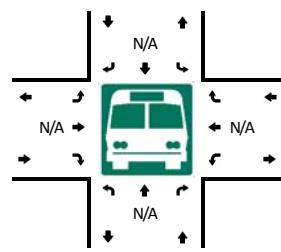
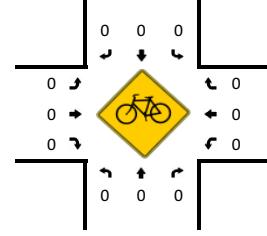
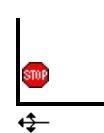
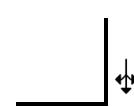
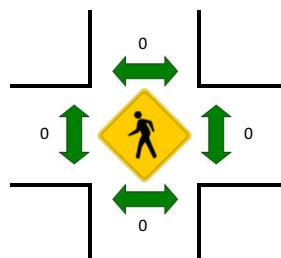
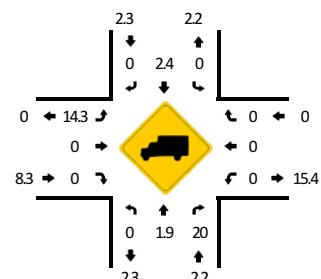
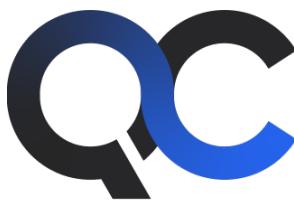
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Weddington Matthews Rd -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824005
DATE: Wed, Nov 13 2024



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Amanda Dr (Eastbound)				Amanda Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	74	1	0	0	110	0	0	3	0	2	0	1	0	0	0	191	
4:15 PM	6	79	1	0	4	95	4	0	3	0	7	0	0	0	1	0	200	
4:30 PM	3	94	0	0	1	125	2	0	2	0	3	0	0	0	1	0	231	
4:45 PM	3	94	1	0	1	120	2	0	3	0	3	0	1	0	4	0	232	854
5:00 PM	3	118	3	0	1	123	6	0	5	0	4	0	3	0	1	0	267	930
5:15 PM	3	109	1	0	0	109	3	0	3	0	2	0	0	0	1	0	231	961
5:30 PM	4	105	1	0	1	119	3	0	2	0	1	0	0	0	1	0	237	967
5:45 PM	5	97	5	0	1	116	1	0	4	0	3	0	1	0	1	0	234	969
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	12	472	12	0	4	492	24	0	20	0	16	0	12	0	4	0	1068	
Heavy Trucks	0	4	0		0	8	0		4	0	0		0	0	0		16	
Buses																		
Pedestrians																		0
Bicycles																		0
Scooters																		0

Comments:

Report generated on 11/18/2024 11:58 AM

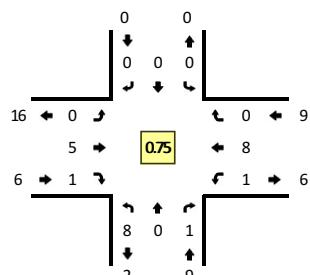
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

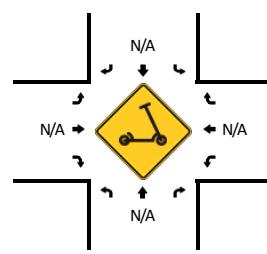
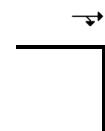
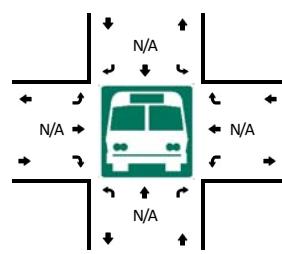
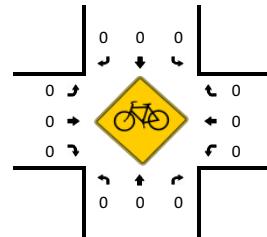
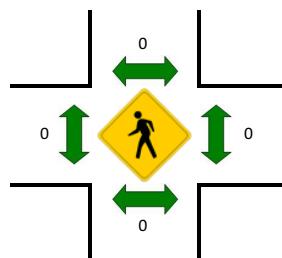
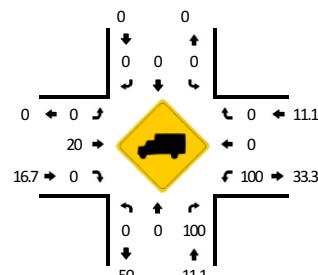
Method for determining peak hour: Total Entering Volume

LOCATION: Bonner Dr -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824007
DATE: Wed, Nov 13 2024



Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



15-Min Count Period Beginning At	Bonner Dr (Northbound)				Bonner Dr (Southbound)				Amanda Dr (Eastbound)				Amanda Dr (Westbound)				Total	Hourly Totals	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2		
7:15 AM	1	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	5		
7:30 AM	2	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	5		
7:45 AM	2	0	0	0	0	0	0	0	0	1	1	0	0	4	0	0	8	20	
8:00 AM	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	22
8:15 AM	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	5	22	
8:30 AM	1	0	1	0	0	0	0	0	0	1	0	0	0	3	0	0	7	24	
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	17
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total		
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U			
All Vehicles	8	0	0	0	0	0	0	0	0	4	4	0	0	16	0	0	32		
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

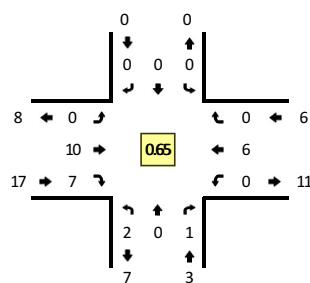
Comments:

Report generated on 11/18/2024 11:58 AM

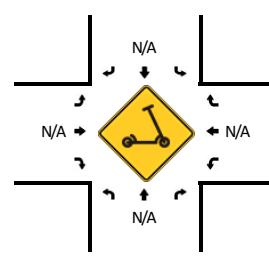
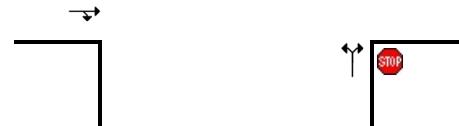
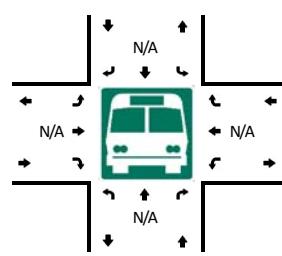
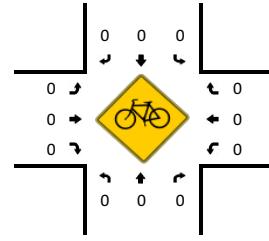
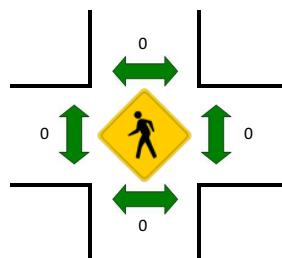
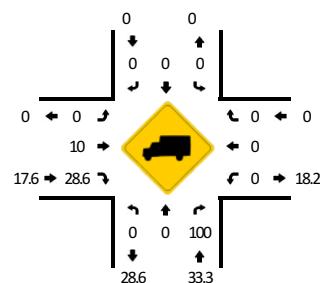
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

LOCATION: Bonner Dr -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824009
DATE: Wed, Nov 13 2024



Peak-Hour: 2:30 PM -- 3:30 PM
 Peak 15-Min: 3:15 PM -- 3:30 PM



15-Min Count Period Beginning At	Bonner Dr (Northbound)				Bonner Dr (Southbound)				Amanda Dr (Eastbound)				Amanda Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2:15 PM	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3
2:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	5
2:45 PM	2	0	1	0	0	0	0	0	0	0	3	0	0	1	0	0	0	7
3:00 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0	0	0	4
3:15 PM	0	0	0	0	0	0	0	0	0	7	2	0	0	1	0	0	0	10
3:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	22
3:45 PM	1	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	5
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	0	0	0	28	8	0	0	4	0	0	0	40
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

Report generated on 11/18/2024 11:58 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

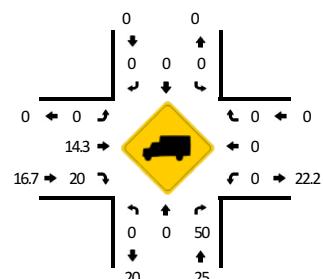
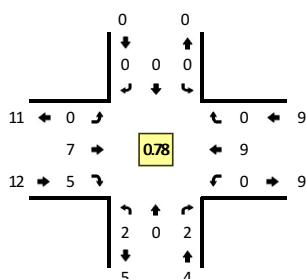
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

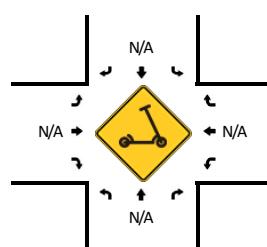
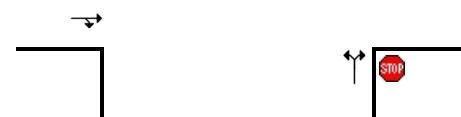
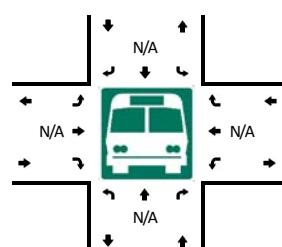
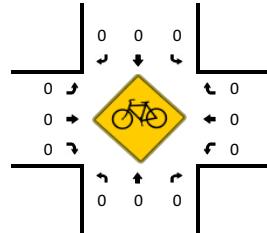
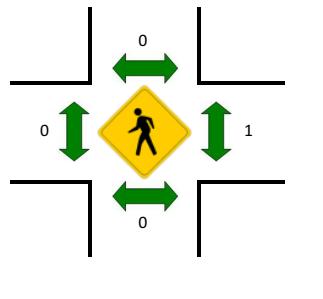
LOCATION: Bonner Dr -- Amanda Dr
CITY/STATE: Weddington, NC

QC JOB #: 16824008
DATE: Wed, Nov 13 2024

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



TRUE DATA TO IMPROVE MOBILITY



Comments:

Report generated on 11/18/2024 11:58 AM

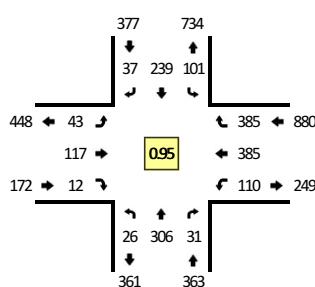
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

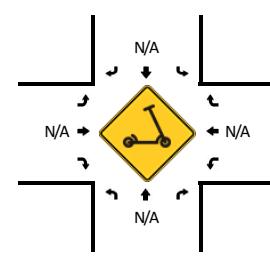
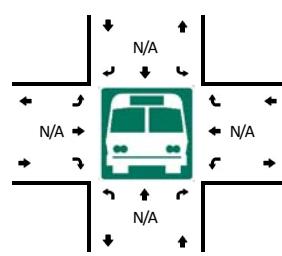
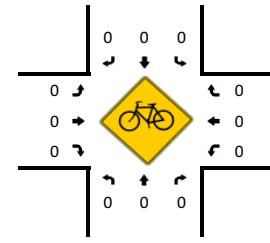
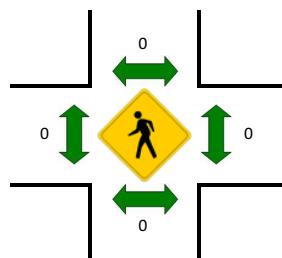
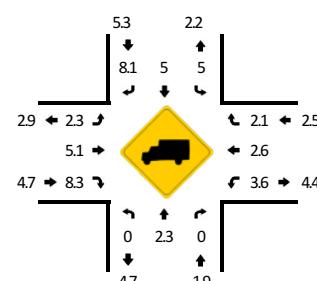
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Hemby Rd/Beulah Church Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824010
DATE: Wed, Nov 13 2024



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:15 AM -- 7:30 AM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Hemby Rd/Beulah Church Rd (Eastbound)				Hemby Rd/Beulah Church Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	52	13	0	13	29	17	0	17	8	0	0	8	109	99	0	367	
7:15 AM	2	80	7	0	18	53	11	0	12	32	6	0	24	104	122	0	471	
7:30 AM	12	93	6	0	26	69	11	0	16	23	2	0	24	73	116	0	471	
7:45 AM	6	68	9	0	35	67	12	0	3	31	3	0	29	109	90	0	462	1771
8:00 AM	6	65	9	0	22	50	3	0	12	31	1	0	33	99	57	0	388	1792
8:15 AM	4	46	11	0	22	52	8	0	11	37	2	0	23	78	56	0	350	1671
8:30 AM	4	43	9	0	21	47	10	0	6	28	2	0	23	57	54	0	304	1504
8:45 AM	6	59	19	0	20	57	6	0	7	31	4	0	21	67	35	0	332	1374
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	8	320	28	0	72	212	44	0	48	128	24	0	96	416	488	0	1884	
Heavy Trucks	0	0	0		12	20	0		0	4	4		0	4	8		52	
Buses																	0	
Pedestrians																	0	
Bicycles																	0	
Scooters																	0	

Comments:

Report generated on 11/18/2024 11:58 AM

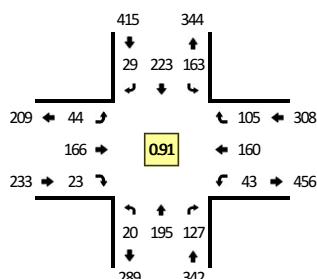
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

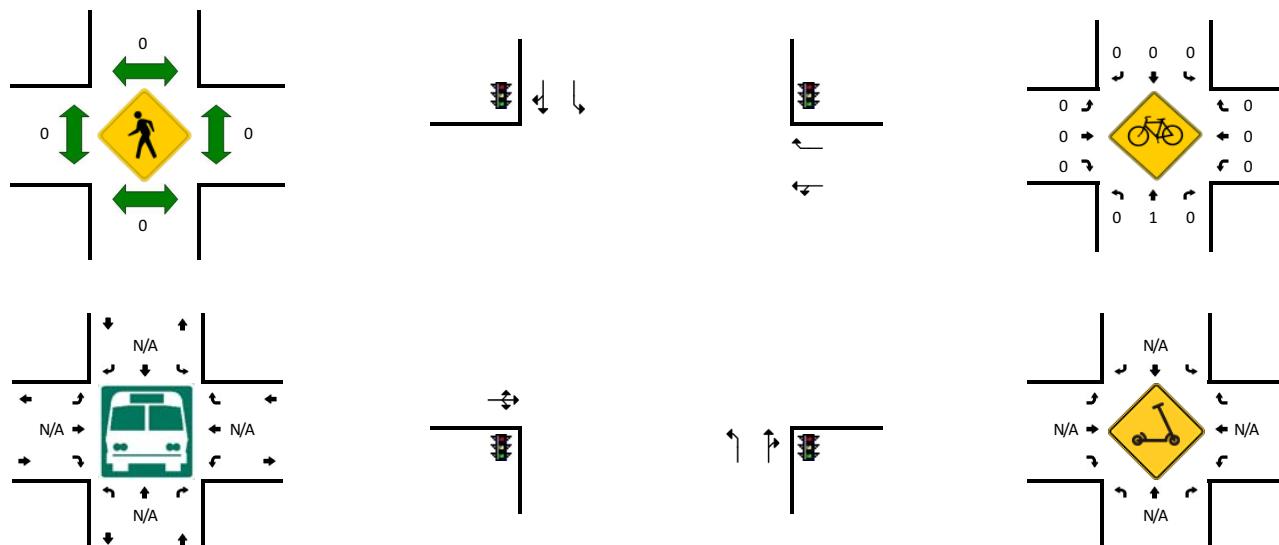
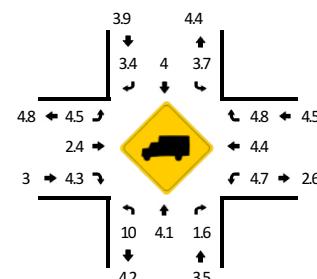
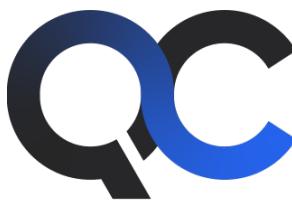
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Hemby Rd/Beulah Church Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824012
DATE: Wed, Nov 13 2024



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:15 PM -- 3:30 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Hemby Rd/Beulah Church Rd (Eastbound)				Hemby Rd/Beulah Church Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	2	27	6	0	29	30	15	0	5	33	3	0	12	33	17	0	212	
2:15 PM	2	14	9	0	21	47	7	0	5	31	1	0	17	28	16	0	198	
2:30 PM	2	27	12	0	10	34	4	0	11	46	4	0	15	33	15	0	213	
2:45 PM	0	35	21	0	32	43	4	0	3	37	4	0	12	34	21	0	246	869
3:00 PM	3	41	16	0	16	42	5	0	13	48	7	0	7	34	21	0	253	910
3:15 PM	11	75	33	0	33	56	7	0	11	35	5	0	9	44	39	0	358	1070
3:30 PM	4	44	38	0	54	62	8	0	12	43	5	0	18	44	26	0	358	1215
3:45 PM	2	35	40	0	60	63	9	0	8	40	6	0	9	38	19	0	329	1298
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	44	300	132	0	132	224	28	0	44	140	20	0	36	176	156	0	1432	
Heavy Trucks	8	16	4	0	8	16	0	0	0	12	0	0	0	16	8	0	88	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Report generated on 11/18/2024 11:58 AM

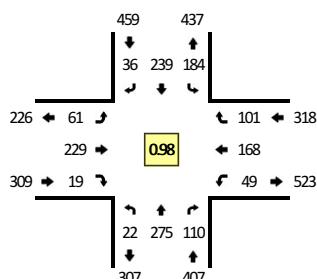
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

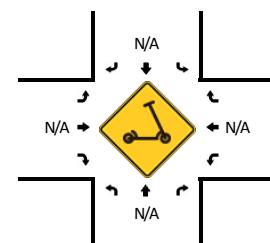
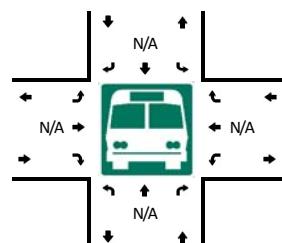
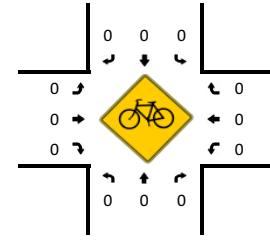
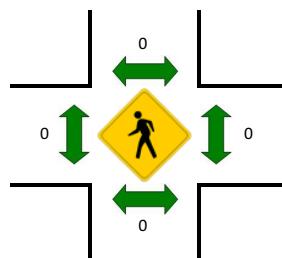
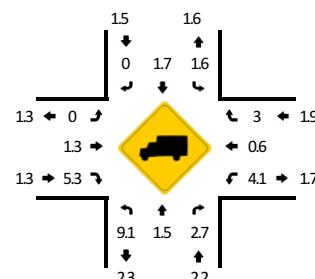
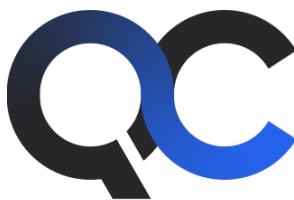
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Hemby Rd/Beulah Church Rd
CITY/STATE: Weddington, NC

QC JOB #: 16824011
DATE: Wed, Nov 13 2024



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Hemby Rd/Beulah Church Rd (Eastbound)				Hemby Rd/Beulah Church Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	3	45	15	0	46	54	3	0	7	48	5	0	5	40	20	0	291	
4:15 PM	7	49	12	0	37	56	4	0	5	47	5	0	14	46	38	0	320	
4:30 PM	4	57	16	0	53	58	10	0	6	54	1	0	13	37	32	0	341	
4:45 PM	2	71	21	0	55	58	9	0	11	52	5	0	14	41	26	0	365	
5:00 PM	4	72	26	0	51	66	9	0	16	61	4	0	4	42	27	0	382	1408
5:15 PM	4	78	25	0	32	47	9	0	11	74	4	0	18	39	30	0	371	1459
5:30 PM	7	74	38	0	57	54	8	0	12	37	3	0	14	37	17	0	358	1476
5:45 PM	7	51	21	0	44	72	10	0	22	57	8	0	13	50	27	0	382	1493
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound					
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	16	288	104	0	204	264	36	0	64	244	16	0	16	168	108	0	1528	
Heavy Trucks	0	0	4	0	8	4	0	0	0	4	0	8	4	0	8	0	32	
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

Report generated on 11/18/2024 11:58 AM

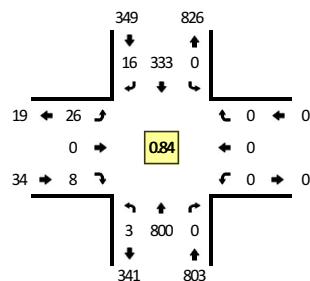
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

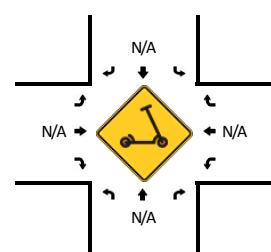
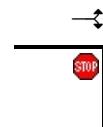
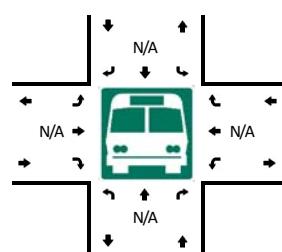
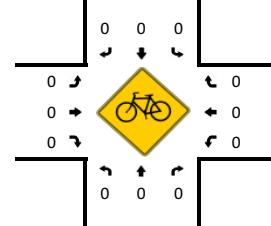
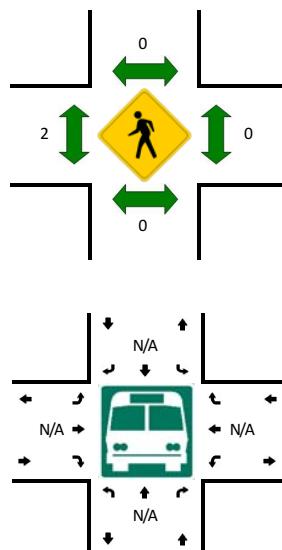
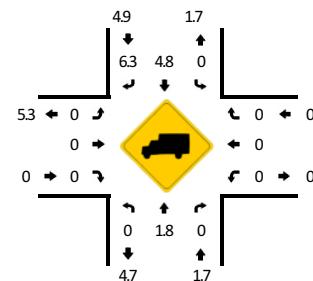
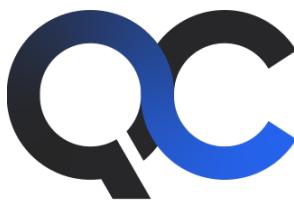
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Greenbrook Pkwy
CITY/STATE: Weddington, NC

QC JOB #: 16824013
DATE: Wed, Nov 13 2024



Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Greenbrook Pkwy (Eastbound)				Greenbrook Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	158	0	0	0	65	2	0	11	0	1	0	0	0	0	0	237	
7:15 AM	3	229	0	0	0	79	5	0	10	0	2	0	0	0	0	0	328	
7:30 AM	0	243	0	0	0	95	7	0	4	0	2	0	0	0	0	0	351	
7:45 AM	0	170	0	0	0	94	2	0	1	0	3	0	0	0	0	0	270	1186
8:00 AM	4	131	0	0	0	76	4	0	3	0	1	0	0	0	0	0	219	1168
8:15 AM	1	120	0	0	0	63	1	0	3	0	1	0	0	0	0	0	189	1029
8:30 AM	0	103	0	0	0	73	3	0	10	0	4	0	0	0	0	0	193	871
8:45 AM	2	87	0	0	0	79	5	0	7	0	5	0	0	0	0	0	185	786
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	972	0	0	0	380	28	0	16	0	8	0	0	0	0	0	1404	
Heavy Trucks	0	8	0	0	0	12	0	0	0	0	0	0	0	0	0	0	20	
Buses																		
Pedestrians																		0
Bicycles																		0
Scooters																		0

Comments:

Report generated on 11/18/2024 11:58 AM

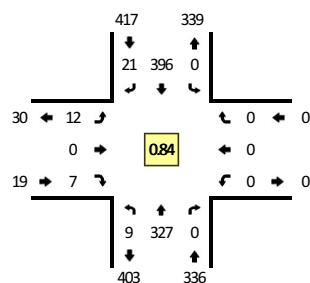
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

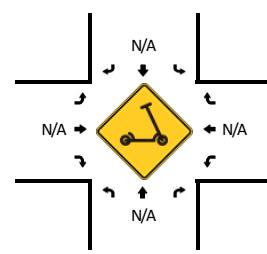
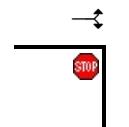
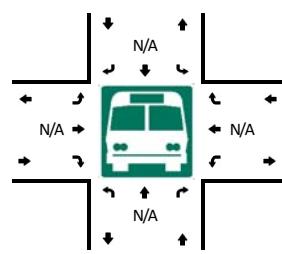
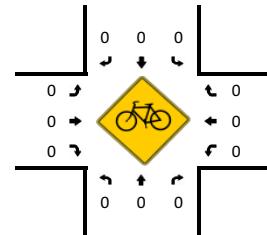
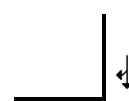
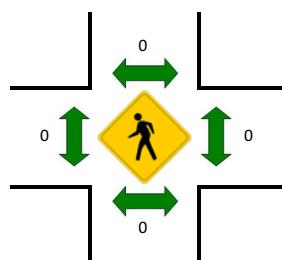
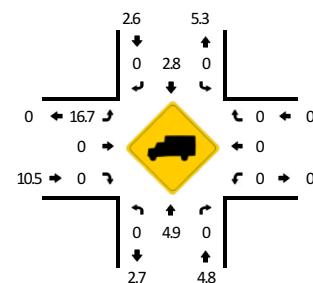
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Greenbrook Pkwy
CITY/STATE: Weddington, NC

QC JOB #: 16824015
DATE: Wed, Nov 13 2024



Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:30 PM -- 3:45 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Greenbrook Pkwy (Eastbound)				Greenbrook Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	1	46	0	0	0	81	7	0	6	0	0	0	0	0	0	0	141	
2:15 PM	1	33	0	0	0	79	3	0	5	0	2	0	0	0	0	0	123	
2:30 PM	1	49	0	0	0	51	4	0	3	0	0	0	0	0	0	0	108	
2:45 PM	1	63	0	0	0	81	5	0	3	0	1	0	0	0	0	0	154	526
3:00 PM	1	66	0	0	0	64	0	0	3	0	0	0	0	0	0	0	134	519
3:15 PM	4	116	0	0	0	85	5	0	4	0	3	0	0	0	0	0	217	613
3:30 PM	3	89	0	0	0	122	10	0	3	0	4	0	0	0	0	0	231	736
3:45 PM	1	56	0	0	0	125	6	0	2	0	0	0	0	0	0	0	190	772
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	12	356	0	0	0	488	40	0	12	0	16	0	0	0	0	0	924	
Heavy Trucks	0	12	0	0	0	8	0	0	8	0	0	0	0	0	0	0	28	
Buses																		
Pedestrians																		0
Bicycles																		0
Scooters																		0

Comments:

Report generated on 11/18/2024 11:58 AM

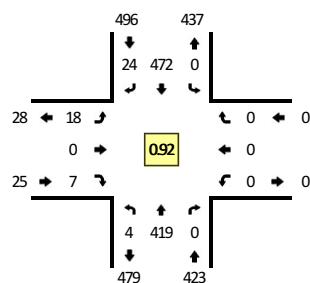
SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

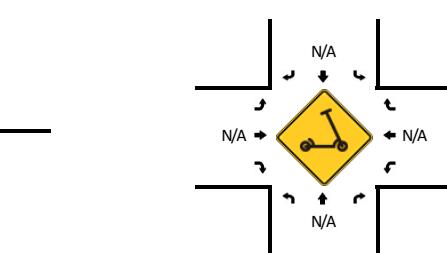
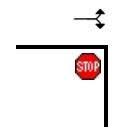
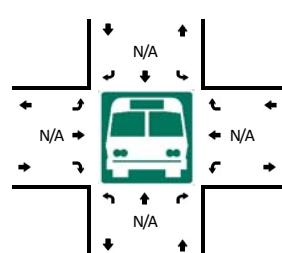
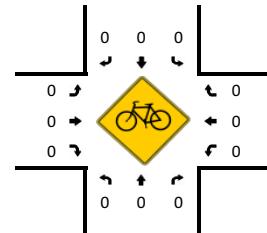
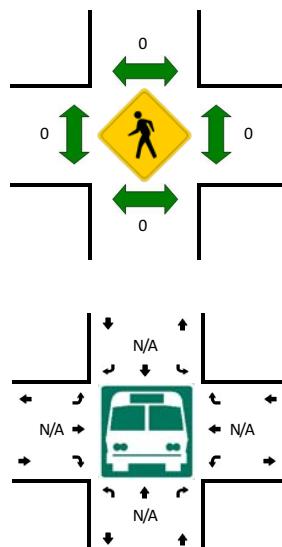
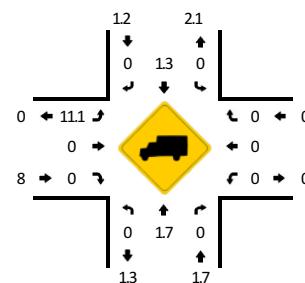
Method for determining peak hour: Total Entering Volume

LOCATION: Weddington Matthews Rd -- Greenbrook Pkwy
CITY/STATE: Weddington, NC

QC JOB #: 16824014
DATE: Wed, Nov 13 2024



Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



15-Min Count Period Beginning At	Weddington Matthews Rd (Northbound)				Weddington Matthews Rd (Southbound)				Greenbrook Pkwy (Eastbound)				Greenbrook Pkwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	75	0	0	0	107	5	0	3	0	2	0	0	0	0	0	192	
4:15 PM	3	79	0	0	0	98	6	0	6	0	0	0	0	0	0	0	192	
4:30 PM	0	93	0	0	0	125	3	0	4	0	2	0	0	0	0	0	227	
4:45 PM	2	99	0	0	0	116	6	0	5	0	1	0	0	0	0	0	229	840
5:00 PM	2	115	0	0	0	126	8	0	5	0	1	0	0	0	0	0	257	905
5:15 PM	0	112	0	0	0	105	7	0	4	0	3	0	0	0	0	0	231	944
5:30 PM	2	108	0	0	0	105	6	0	1	0	2	0	0	0	0	0	224	941
5:45 PM	4	95	0	0	0	119	3	0	3	0	2	0	0	0	0	0	226	938
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	460	0	0	0	504	32	0	20	0	4	0	0	0	0	0	1028	
Heavy Trucks	0	12	0	0	0	8	0	0	0	0	0	0	0	0	0	0	20	
Buses																		
Pedestrians																		0
Bicycles																		0
Scooters																		0

Comments:

Report generated on 11/18/2024 11:58 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Intersection Volume Development

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Tilley Morris Road
COUNT DATE: Wednesday, November 13, 2024

AM Peak Hour

AM 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	56	199	52	0	257	630	178	0	446	88	293	0	136	52	118
Volume Balancing																	
AM 2024 EXISTING TRAFFIC		0	56	199	52	0	257	630	178	0	446	88	293	0	136	52	118
AM 2024 Existing/2029 Background PHF		0.90	0.62	0.87	0.72	0.90	0.76	0.71	0.67	0.90	0.75	0.69	0.73	0.90	0.56	0.57	0.53
AM 2029 Build PHF		0.90	0.62	0.87	0.73	0.90	0.76	0.71	0.67	0.90	0.75	0.69	0.73	0.90	0.56	0.57	0.53
AM Existing/Background Heavy Vehicle Percentage		2%	2%	5%	6%	2%	6%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
AM Build Heavy Vehicle Percentage		2%	2%	5%	6%	2%	6%	2%	2%	2%	2%	2%	3%	2%	2%	2%	2%
AM 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2029 BACKGROUND TRAFFIC GROWTH		0	6	21	5	0	27	66	19	0	46	9	30	0	14	5	12
AM 2029 BACKGROUND TRAFFIC		0	62	220	57	0	284	696	197	0	492	97	323	0	150	57	130
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering					25%		35%									
	Exiting										25%		35%				
TOTAL AM PROJECT TRIPS		0	0	0	3	0	3	0	0	0	7	0	9	0	0	0	0
AM 2029 BUILD-OUT TRAFFIC		0	62	220	60	0	287	696	197	0	499	97	332	0	150	57	130

MID Peak Hour

MID 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	72	446	139	0	245	325	156	0	74	43	220	0	163	54	87
Volume Balancing																	
MID 2024 EXISTING TRAFFIC		0	72	446	139	0	245	325	156	0	74	43	220	0	163	54	87
AM 2024 Existing/2029 Background PHF		0.90	0.67	0.93	0.70	0.90	0.93	0.84	0.62	0.90	0.84	0.60	0.78	0.90	0.42	0.48	0.46
MID 2029 Build PHF		0.90	0.67	0.93	0.71	0.90	0.93	0.84	0.62	0.90	0.84	0.60	0.78	0.90	0.42	0.48	0.46
MID Existing/Background Heavy Vehicle Percentage		2%	2%	2%	4%	2%	2%	3%	2%	2%	7%	2%	5%	2%	2%	2%	2%
MID Build Heavy Vehicle Percentage		2%	2%	2%	4%	2%	2%	3%	2%	2%	7%	2%	5%	2%	2%	2%	2%
MID 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
MID 2029 BACKGROUND TRAFFIC GROWTH		0	7	46	14	0	25	34	16	0	8	4	23	0	17	6	9
MID 2029 BACKGROUND TRAFFIC		0	79	492	153	0	270	359	172	0	82	47	243	0	180	60	96
SITE TRAFFIC DISTRIBUTION																	
Net New Distribution	Entering					25%		35%									
	Exiting										25%		35%				
TOTAL MID PROJECT TRIPS		0	0	0	7	0	9	0	0	0	4	0	6	0	0	0	0
MID 2029 BUILD-OUT TRAFFIC		0	79	492	160	0	279	359	172	0	86	47	249	0	180	60	96

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Tilley Morris Road
COUNT DATE: Wednesday, November 13, 2024

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	9	614	215	0	289	412	18	0	147	4	277	0	19	15	11	
Volume Balancing																	
PM 2024 EXISTING TRAFFIC	0	9	614	215	0	289	412	18	0	147	4	277	0	19	15	11	
PM 2024 Existing/2029 Background PHF	0.90	0.75	0.95	0.94	0.90	0.88	0.95	0.50	0.90	0.90	0.50	0.89	0.90	0.53	0.54	0.39	
PM 2029 Build PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Existing/Background Heavy Vehicle Percentage	2%	2%	2%	2%	2%	3%	6%	2%	3%	2%	2%	2%	2%	2%	2%	2%	
PM Build Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	3%	6%	2%	3%	2%	2%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	1	64	22	0	30	43	2	0	15	0	29	0	2	2	1	
PM 2029 BACKGROUND TRAFFIC	0	10	678	237	0	319	455	20	0	162	4	306	0	21	17	12	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering					25%		35%									
	Exiting										25%	35%					
TOTAL PM PROJECT TRIPS	0	0	0	8	0	10	0	0	0	5	0	6	0	0	0	0	
PM 2029 BUILD-OUT TRAFFIC	0	10	678	245	0	329	455	20	0	167	4	312	0	21	17	12	

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Amanda Drive
COUNT DATE: Wednesday, November 13, 2024

AM Peak Hour

AM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	21	0	14	0	9	1	7	0	7	813	1	0	3	328	8	
Volume Balancing											5				2		
AM 2024 EXISTING TRAFFIC	0	21	0	14	0	9	1	7	0	7	818	1	0	5	328	8	
AM 2024 Existing PHF	0.90	0.66	0.90	0.88	0.90	0.56	0.25	0.58	0.90	0.88	0.83	0.25	0.90	0.38	0.85	0.67	
AM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
AM Existing/Background Heavy Vehicle Percentage	2%	5%	2%	7%	2%	11%	100%	2%	2%	2%	2%	2%	2%	2%	33%	5%	
AM Build Heavy Vehicle Percentage	2%	5%	2%	7%	2%	11%	100%	2%	2%	2%	2%	2%	2%	2%	25%	5%	
AM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
AM 2029 BACKGROUND TRAFFIC GROWTH	0	2	0	1	0	1	0	1	0	1	85	0	0	1	34	1	
AM 2029 BACKGROUND TRAFFIC	0	23	0	15	0	10	1	8	0	8	903	1	0	6	362	9	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering														18%	42%	
	Exiting														42%		
TOTAL AM PROJECT TRIPS	0	0	0	0	0	0	0	5	0	0	11	0	0	2	4	0	
AM 2029 BUILD-OUT TRAFFIC	0	23	0	15	0	10	1	13	0	8	914	1	0	8	366	9	

MID Peak Hour

MID 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts	0	11	0	18	0	4	0	1	0	14	298	14	0	1	398	18
Volume Balancing						2		1		1	10	2				
MID 2024 EXISTING TRAFFIC	0	11	0	18	0	6	0	2	0	15	308	16	0	1	398	18
MID 2024 Existing PHF	0.90	0.69	0.90	0.64	0.90	0.50	0.90	0.25	0.90	0.50	0.73	0.44	0.90	0.25	0.78	0.75
MID 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
MID Existing/Background Heavy Vehicle Percentage	2%	2%	2%	2%	2%	25%	2%	2%	2%	7%	4%	14%	2%	2%	3%	2%
MID Build Heavy Vehicle Percentage	2%	2%	2%	2%	2%	25%	2%	2%	2%	7%	4%	14%	2%	2%	3%	2%
MID 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
MID 2029 BACKGROUND TRAFFIC GROWTH	0	1	0	2	0	1	0	0	0	2	32	2	0	0	41	2
MID 2029 BACKGROUND TRAFFIC	0	12	0	20	0	7	0	2	0	17	340	18	0	1	439	20
SITE TRAFFIC DISTRIBUTION																
Net New Distribution	Entering													18%	42%	
	Exiting													42%		
TOTAL MID PROJECT TRIPS	0	0	0	0	0	0	0	3	0	0	7	0	0	5	11	0
MID 2029 BUILD-OUT TRAFFIC	0	12	0	20	0	7	0	5	0	17	347	18	0	6	450	20

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Amanda Drive
COUNT DATE: Wednesday, November 13, 2024

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	14	0	10	0	4	0	4	0	15	429	10	0	3	467	13	
Volume Balancing						2		1								13	
PM 2024 EXISTING TRAFFIC	0	14	0	10	0	6	0	5	0	15	429	10	0	3	480	13	
PM 2024 Existing PHF	0.90	0.70	0.95	0.63	0.90	0.33	0.90	1.00	0.90	0.75	0.91	0.50	0.90	0.75	0.95	0.54	
PM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Existing/Background Heavy Vehicle Percentage	2%	14%	2%	2%	2%	2%	2%	2%	2%	2%	2%	20%	2%	2%	2%	2%	
PM Build Heavy Vehicle Percentage	2%	14%	2%	2%	2%	2%	2%	2%	2%	2%	2%	20%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	1	0	1	0	1	0	1	0	2	45	1	0	0	50	1	
PM 2029 BACKGROUND TRAFFIC	0	15	0	11	0	7	0	6	0	17	474	11	0	3	530	14	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering															18%	42%
	Exiting															42%	
TOTAL PM PROJECT TRIPS	0	0	0	0	0	0	0	0	3	0	0	8	0	0	6	12	0
PM 2029 BUILD-OUT TRAFFIC	0	15	0	11	0	7	0	9	0	17	482	11	0	9	542	14	

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Amanda Drive and Bonner Drive
COUNT DATE: Wednesday, November 13, 2024

AM Peak Hour

AM 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	0	5	1	0	1	8	0	0	8	0	1	0	0	0	0
Volume Balancing								1									
AM 2024 EXISTING TRAFFIC		0	0	5	1	0	1	9	0	0	8	0	1	0	0	0	0
AM 2024 Existing PHF		0.90	0.90	0.63	0.25	0.90	0.25	0.50	0.90	0.90	0.67	0.90	0.25	0.90	0.90	0.90	0.90
AM 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
AM Existing/Background Heavy Vehicle Percentage		2%	2%	20%	2%	2%	100%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%
AM Build Heavy Vehicle Percentage		2%	2%	20%	2%	2%	100%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%
AM 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2029 BACKGROUND TRAFFIC GROWTH		0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0
AM 2029 BACKGROUND TRAFFIC		0	0	6	1	0	1	10	0	0	9	0	1	0	0	0	0
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering					18%											
	Exiting											18%					
TOTAL AM PROJECT TRIPS		0	0	0	2	0	0	0	0	0	5	0	0	0	0	0	0
AM 2029 BUILD-OUT TRAFFIC		0	0	6	3	0	1	10	0	0	14	0	1	0	0	0	0

MID Peak Hour

MID 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	0	10	7	0	0	6	0	0	2	0	1	0	0	0	0
Volume Balancing																	
MID 2024 EXISTING TRAFFIC		0	0	10	7	0	0	6	0	0	2	0	1	0	0	0	0
MID 2024 Existing PHF		0.90	0.90	0.36	0.58	0.90	0.90	0.50	0.90	0.90	0.25	0.90	0.25	0.90	0.90	0.90	0.90
MID 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
MID Existing/Background Heavy Vehicle Percentage		2%	2%	10%	29%	2%	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%
MID Build Heavy Vehicle Percentage		2%	2%	10%	19%	2%	2%	2%	2%	2%	2%	2%	2%	100%	2%	2%	2%
MID 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
MID 2029 BACKGROUND TRAFFIC GROWTH		0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
MID 2029 BACKGROUND TRAFFIC		0	0	11	8	0	0	7	0	0	2	0	1	0	0	0	0
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering					18%											
	Exiting										18%						
TOTAL MID PROJECT TRIPS		0	0	0	5	0	0	0	0	0	3	0	0	0	0	0	0
MID 2029 BUILD-OUT TRAFFIC		0	0	11	13	0	0	7	0	0	5	0	1	0	0	0	0

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Amanda Drive and Bonner Drive
COUNT DATE: Wednesday, November 13, 2024

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	0	7	5	0	0	9	0	0	2	0	2	0	0	0	0	
Volume Balancing				1													
PM 2024 EXISTING TRAFFIC	0	0	8	5	0	0	9	0	0	2	0	2	0	0	0	0	
PM 2024 Existing PHF	0.90	0.90	0.95	0.42	0.90	0.90	0.45	0.90	0.90	0.50	0.90	0.25	0.90	0.90	0.90	0.90	
PM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Existing/Background Heavy Vehicle Percentage	2%	2%	14%	20%	2%	2%	2%	2%	2%	2%	2%	50%	2%	2%	2%	2%	
PM Build Heavy Vehicle Percentage	2%	2%	14%	11%	2%	2%	2%	2%	2%	2%	2%	50%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	0	1	1	0	0	1	0									
PM 2029 BACKGROUND TRAFFIC	0	0	9	6	0	0	10	0	0	2	0	2	0	0	0	0	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering				18%												
	Exiting											18%					
TOTAL PM PROJECT TRIPS																	
PM 2029 BUILD-OUT TRAFFIC	0	0	9	12	0	0	10	0	0	5	0	2	0	0	0	0	

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Hemby Road/Beulah Church Road and Weddington-Matthews Road
 COUNT DATE: Wednesday, November 13, 2024

AM Peak Hour

AM 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	43	117	12	0	110	385	385	0	26	306	31	0	101	239	37
Volume Balancing																	
AM 2024 EXISTING TRAFFIC		0	43	117	12	0	110	385	385	0	26	306	31	0	101	239	37
AM 2024 Existing PHF		0.90	0.67	0.91	0.50	0.90	0.83	0.88	0.79	0.90	0.54	0.82	0.86	0.90	0.72	0.87	0.77
AM 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
AM Existing/Background Heavy Vehicle Percentage		2%	2%	5%	8%	2%	4%	3%	2%	2%	2%	2%	2%	2%	5%	5%	8%
AM Build Heavy Vehicle Percentage		2%	2%	5%	8%	2%	4%	3%	2%	2%	2%	2%	2%	2%	5%	5%	8%
AM 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2029 BACKGROUND TRAFFIC GROWTH		0	4	12	1	0	11	40	40	0	3	32	3	0	11	25	4
AM 2029 BACKGROUND TRAFFIC		0	47	129	13	0	121	425	425	0	29	338	34	0	112	264	41
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering			15%						15%				10%			
	Exiting														15%	10%	15%
TOTAL AM PROJECT TRIPS		0	1	0	0	0	0	0	2	0	0	1	0	0	5	3	5
AM 2029 BUILD-OUT TRAFFIC		0	48	129	13	0	121	425	427	0	29	339	34	0	117	267	46

MID Peak Hour

MID 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	44	166	23	0	43	160	105	0	20	195	127	0	163	223	29
Volume Balancing																	
MID 2024 EXISTING TRAFFIC		0	44	166	23	0	43	160	105	0	20	195	127	0	163	223	29
MID 2024 Existing PHF		0.90	0.85	0.87	0.82	0.90	0.60	0.91	0.67	0.90	0.46	0.65	0.79	0.90	0.68	0.89	0.81
MID 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
MID Existing/Background Heavy Vehicle Percentage		2%	5%	2%	4%	2%	5%	4%	5%	2%	10%	4%	2%	2%	4%	4%	3%
MID Build Heavy Vehicle Percentage		2%	5%	2%	4%	2%	5%	4%	5%	2%	10%	4%	2%	2%	4%	4%	3%
MID 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
MID 2029 BACKGROUND TRAFFIC GROWTH		0	5	17	2	0	4	17	11	0	2	20	13	0	17	23	3
MID 2029 BACKGROUND TRAFFIC		0	49	183	25	0	47	177	116	0	22	215	140	0	180	246	32
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering			15%						15%				10%			
	Exiting														15%	10%	15%
TOTAL MID PROJECT TRIPS		0	4	0	0	0	0	0	4	0	0	3	0	0	2	2	2
MID 2029 BUILD-OUT TRAFFIC		0	53	183	25	0	47	177	120	0	22	218	140	0	182	248	34

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Hemby Road/Beulah Church Road and Weddington-Matthews Road
 COUNT DATE: Wednesday, November 13, 2024

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	61	229	19	0	49	168	101	0	22	275	110	0	184	239	36	
Volume Balancing																	
PM 2024 EXISTING TRAFFIC	0	61	229	19	0	49	168	101	0	22	275	110	0	184	239	36	
PM 2024 Existing PHF	0.90	0.69	0.95	0.59	0.90	0.68	0.84	0.84	0.90	0.79	0.88	0.72	0.90	0.81	0.83	0.90	
PM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Existing/Background Heavy Vehicle Percentage	2%	2%	2%	5%	2%	4%	2%	3%	2%	9%	2%	3%	2%	2%	2%	2%	
PM Build Heavy Vehicle Percentage	2%	2%	2%	5%	2%	4%	2%	3%	2%	9%	2%	3%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	6	24	2	0	5	17	11	0	2	29	11	0	19	25	4	
PM 2029 BACKGROUND TRAFFIC	0	67	253	21	0	54	185	112	0	24	304	121	0	203	264	40	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering			15%						15%				10%			
	Exiting														15%	10%	15%
TOTAL PM PROJECT TRIPS	0	5	0	0	0	0	0	0	5	0	0	3	0	0	3	2	3
PM 2029 BUILD-OUT TRAFFIC	0	72	253	21	0	54	185	117	0	24	307	121	0	206	266	43	

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Access A
 COUNT DATE: -

AM Peak Hour

AM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
AM 2024 EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	803	0	0	0	343	0

AM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
AM Build Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%

AM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
AM 2029 BACKGROUND TRAFFIC GROWTH	0	0	0	0	0	0	0	0	0	0	84	0	0	0	36	0

AM 2029 BACKGROUND TRAFFIC	0	0	0	0	0	0	0	0	0	0	887	0	0	0	379	0
-----------------------------------	---	---	---	---	---	---	---	---	---	---	-----	---	---	---	-----	---

SITE TRAFFIC DISTRIBUTION

LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering										10%	30%		28%		14%	
	Exiting	14%		10%		30%		28%									
TOTAL AM PROJECT TRIPS	0	3	0	3	0	10	0	8	0	1	0	3	0	3	0	1	

AM 2029 BUILD-OUT TRAFFIC

AM 2029 BUILD-OUT TRAFFIC	0	3	0	3	0	10	0	8	0	1	887	3	0	3	379	1
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MID Peak Hour

MID 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
---------------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

MID 2024 EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	336	0	0	0	408	0
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MID 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
MID Build Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	3%	2%

MID 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
MID 2029 BACKGROUND TRAFFIC GROWTH	0	0	0	0	0	0	0	0	0	0	35	0	0	0	42	0

MID 2029 BACKGROUND TRAFFIC	0	0	0	0	0	0	0	0	0	0	371	0	0	0	451	0
------------------------------------	---	---	---	---	---	---	---	---	---	---	-----	---	---	---	-----	---

SITE TRAFFIC DISTRIBUTION

Net New Distribution	Entering									10%	30%		28%	14%		
	Exiting		14%		10%		30%		28%							
TOTAL MID PROJECT TRIPS	0	2	0	1	0	5	0	5	0	3	0	8	0	8	0	3

MID 2029 BUILD-OUT TRAFFIC

MID 2029 BUILD-OUT TRAFFIC	0	2	0	1	0	5	0	5	0	3	371	8	0	8	451	3
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INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Access A
 COUNT DATE: -

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
PM 2024 EXISTING TRAFFIC	0	0	0	0	0	0	0	0	0	0	439	0	0	0	479	0	
PM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Build Heavy Vehicle Percentage	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	0	0	0	0	0	0	0	0	0	46	0	0	0	50	0	
PM 2029 BACKGROUND TRAFFIC	0	0	0	0	0	0	0	0	0	0	485	0	0	0	529	0	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering										10%	30%		28%	14%		
	Exiting			14%		10%		30%	28%								
	TOTAL PM PROJECT TRIPS	0	2	0	2	0	6	0	6	0	3	0	10	0	9	0	3
PM 2029 BUILD-OUT TRAFFIC	0	2	0	2	0	6	0	6	0	3	485	10	0	9	529	3	

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Greenbrook Parkway
COUNT DATE: Wednesday, November 13, 2024

AM Peak Hour

AM 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	26	0	8	0	0	0	0	0	3	800	0	0	0	333	16
Volume Balancing																2	
AM 2024 EXISTING TRAFFIC		0	26	0	8	0	0	0	0	0	3	800	0	0	0	335	16
AM 2024 Existing PHF		0.90	0.59	0.90	0.67	0.90	0.90	0.90	0.90	0.90	0.25	0.82	0.90	0.90	0.90	0.88	0.57
AM 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
AM Existing/Background Heavy Vehicle Percentage		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%
AM Build Heavy Vehicle Percentage		2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	6%
AM 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
AM 2029 BACKGROUND TRAFFIC GROWTH		0	3	0	1	0	0	0	0	0	0	83	0	0	0	35	2
AM 2029 BACKGROUND TRAFFIC		0	29	0	9	0	0	0	0	0	3	884	0	0	0	370	18
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering																42%
	Exiting																
TOTAL AM PROJECT TRIPS		0	0	0	0	0	0	0	0	0	0	11	0	0	0	4	0
AM 2029 BUILD-OUT TRAFFIC		0	29	0	9	0	0	0	0	0	3	895	0	0	0	374	18

MID Peak Hour

MID 2024 EXISTING TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Adjusted Turning Movement Counts		0	12	0	7	0	0	0	0	0	9	327	0	0	0	396	21
Volume Balancing																5	
MID 2024 EXISTING TRAFFIC		0	12	0	7	0	0	0	0	0	9	327	0	0	0	401	21
MID 2024 Existing PHF		0.90	0.75	0.90	0.44	0.90	0.90	0.90	0.90	0.90	0.56	0.71	0.90	0.90	0.90	0.79	0.53
MID 2029 PHF		0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
MID Existing/Background Heavy Vehicle Percentage		2%	17%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	3%	2%
MID Build Heavy Vehicle Percentage		2%	17%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	2%	3%	2%
MID 2029 BACKGROUND TRAFFIC		EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Years To Buildout		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
Annual Growth Rate		2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
MID 2029 BACKGROUND TRAFFIC GROWTH		0	1	0	1	0	0	0	0	0	1	34	0	0	0	42	2
MID 2029 BACKGROUND TRAFFIC		0	13	0	8	0	0	0	0	0	10	361	0	0	0	443	23
SITE TRAFFIC DISTRIBUTION																	
Net New Distribution	Entering																42%
	Exiting																
TOTAL MID PROJECT TRIPS		0	0	0	0	0	0	0	0	0	0	7	0	0	0	11	0
MID 2029 BUILD-OUT TRAFFIC		0	13	0	8	0	0	0	0	0	10	368	0	0	0	454	23

INTERSECTION TRAFFIC VOLUME DEVELOPMENT

INTERSECTION: Weddington-Matthews Road and Greenbrook Parkway
 COUNT DATE: Wednesday, November 13, 2024

PM Peak Hour

PM 2024 EXISTING TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Adjusted Turning Movement Counts	0	18	0	7	0	0	0	0	0	4	419	0	0	0	472	24	
Volume Balancing		1									16						
PM 2024 EXISTING TRAFFIC	0	19	0	7	0	0	0	0	0	4	435	0	0	0	472	24	
PM 2024 Existing PHF	0.90	0.90	0.95	0.58	0.90	0.90	0.90	0.90	0.90	0.50	0.91	0.90	0.92	0.90	0.94	0.75	
PM 2029 PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
PM Existing/Background Heavy Vehicle Percentage	2%	11%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	
PM Build Heavy Vehicle Percentage	2%	11%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	
PM 2029 BACKGROUND TRAFFIC	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
PM 2029 BACKGROUND TRAFFIC GROWTH	0	2	0	1	0	0	0	0	0	0	45	0	0	0	49	2	
PM 2029 BACKGROUND TRAFFIC	0	21	0	8	0	0	0	0	0	4	481	0	0	0	521	26	
SITE TRAFFIC DISTRIBUTION																	
LAND USE	TYPE	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Net New Distribution	Entering															42%	
	Exiting															42%	
TOTAL PM PROJECT TRIPS	0	0	0	0	0	0	0	0	0	0	8	0	0	0	12	0	
PM 2029 BUILD-OUT TRAFFIC	0	21	0	8	0	0	0	0	0	4	489	0	0	0	533	26	

Signal Plan

Intersection Capacity Analysis

2024 Existing Conditions

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2024 Existing AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	199	52	257	630	178	446	88	293	136	52	118
Future Volume (vph)	56	199	52	257	630	178	446	88	293	136	52	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.965				0.850			0.850
Flt Protected		0.986		0.950			0.960			0.965		
Satd. Flow (prot)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Flt Permitted		0.986		0.950			0.960			0.965		
Satd. Flow (perm)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.62	0.87	0.72	0.76	0.71	0.67	0.75	0.69	0.73	0.56	0.57	0.53
Heavy Vehicles (%)	2%	5%	6%	6%	2%	2%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	90	229	72	338	887	266	595	128	401	243	91	223
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	319	72	338	1153	0	0	723	401	0	334	223
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 103.5%

ICU Level of Service G

Analysis Period (min) 15

SITE LAYOUT

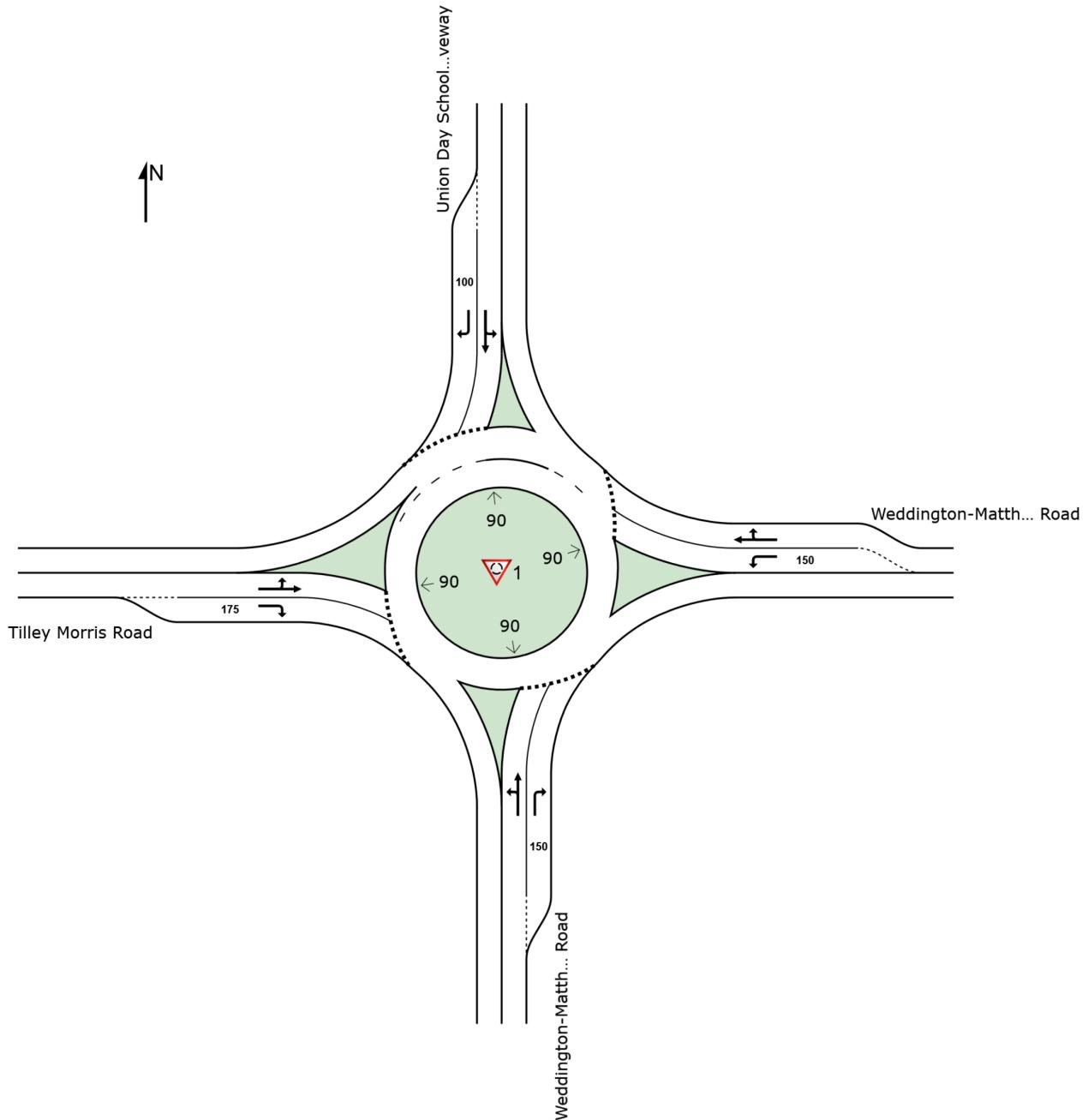
Site: 1 [2024 Existing AM (Site Folder: 2024 Existing)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

⚠ Site: 1 [2024 Existing AM (Site Folder: 2024 Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que Dist] ft	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	595 2.0	595 2.0	0.888	31.7	LOS D	16.9	429.6	1.00	1.40	2.64	24.0
8	T1	All MCs	128 2.0	128 2.0	0.888	31.7	LOS D	16.9	429.6	1.00	1.40	2.64	20.7
18	R2	All MCs	401 3.0	401 3.0	0.502	11.4	LOS B	3.3	83.2	0.70	0.68	0.98	32.3
Approach			1124 2.4	1124 2.4	0.888	24.4	LOS C	16.9	429.6	0.89	1.14	2.05	25.8
East: Weddington-Matthews Road													
1	L2	All MCs	338 6.0	338 6.0	0.576	16.9	LOS C	3.2	84.1	0.78	0.84	1.18	27.7
6	T1	All MCs	887 2.0	887 2.0	1.805	382.9	LOS F	167.8	4262.2	1.00	5.91	17.99	5.1
16	R2	All MCs	266 2.0	266 2.0	1.805	382.9	LOS F	167.8	4262.2	1.00	5.91	17.99	4.9
Approach			1491 2.9	1491 2.9	1.805	301.3	LOS F	167.8	4262.2	0.95	4.76	14.17	6.3
North: Union Day School Driveway													
7	L2	All MCs	243 2.0	243 2.0	0.889	54.7	LOS F	6.6	166.6	0.96	1.54	2.47	17.1
4	T1	All MCs	91 2.0	91 2.0	0.889	54.7	LOS F	6.6	166.6	0.96	1.54	2.47	17.3
14	R2	All MCs	223 2.0	223 2.0	0.679	34.2	LOS D	3.2	81.3	0.90	1.14	1.53	20.6
Approach			557 2.0	557 2.0	0.889	46.5	LOS E	6.6	166.6	0.93	1.38	2.09	18.3
West: Tilley Morris Road													
5	L2	All MCs	90 2.0	90 2.0	0.456	11.1	LOS B	2.5	63.6	0.70	0.70	0.95	25.6
2	T1	All MCs	229 5.0	229 5.0	0.456	11.8	LOS B	2.5	63.6	0.70	0.70	0.95	31.7
12	R2	All MCs	72 6.0	72 6.0	0.107	6.5	LOS A	0.4	9.5	0.56	0.50	0.56	34.3
Approach			391 4.5	391 4.5	0.456	10.7	LOS B	2.5	63.6	0.68	0.66	0.88	30.4
All Vehicles			3563 2.8	3563 2.8	1.805	141.7	LOS F	167.8	4262.2	0.90	2.64	7.00	11.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	4	14	9	4	7	7	818	4	5	328	8
Future Volume (vph)	21	4	14	9	4	7	7	818	4	5	328	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.958			0.963			0.998	
Flt Protected						0.982					0.998	
Satd. Flow (prot)	0	1675	0	0	1275	0	0	1859	0	0	1774	0
Flt Permitted		0.970				0.982					0.998	
Satd. Flow (perm)	0	1675	0	0	1275	0	0	1859	0	0	1774	0
Link Speed (mph)			25			25			45			45
Link Distance (ft)			1285			469			1472			1543
Travel Time (s)			35.0			12.8			22.3			23.4
Peak Hour Factor	0.66	0.90	0.88	0.56	0.25	0.58	0.88	0.83	0.25	0.38	0.85	0.67
Heavy Vehicles (%)	5%	2%	7%	11%	100%	2%	2%	2%	2%	33%	5%	25%
Adj. Flow (vph)	32	4	16	16	16	12	8	986	16	13	386	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	0	0	44	0	0	1010	0	0	411	0
Sign Control		Stop				Stop			Free			Free

Intersection Summary

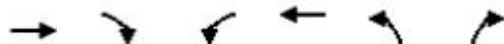
Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.2% ICU Level of Service B

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+
Traffic Vol, veh/h	21	4	14	9	4	7	7	818	4	5	328	8
Future Vol, veh/h	21	4	14	9	4	7	7	818	4	5	328	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	90	88	56	25	58	88	83	25	38	85	67
Heavy Vehicles, %	5	2	7	11	100	2	2	2	2	33	5	25
Mvmt Flow	32	4	16	16	16	12	8	986	16	13	386	12
Major/Minor												
Minor2		Minor1			Major1			Major2				
Conflicting Flow All	1442	1436	392	1438	1434	994	398	0	0	1002	0	0
Stage 1	418	418	-	1010	1010	-	-	-	-	-	-	-
Stage 2	1024	1018	-	428	424	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.27	7.21	7.5	6.22	4.12	-	-	4.43	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.363	3.599	4.9	3.318	2.218	-	-	2.497	-	-
Pot Cap-1 Maneuver	108	133	646	106	84	297	1161	-	-	583	-	-
Stage 1	607	591	-	278	218	-	-	-	-	-	-	-
Stage 2	280	315	-	588	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	85	127	646	97	80	297	1161	-	-	583	-	-
Mov Cap-2 Maneuver	85	127	-	97	80	-	-	-	-	-	-	-
Stage 1	597	574	-	274	215	-	-	-	-	-	-	-
Stage 2	245	310	-	553	437	-	-	-	-	-	-	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s/v	56.3			58.9			0.1			0.4		
HCM LOS	F			F								
Minor Lane/Major Mvmt		NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	1161	-	-	120	109	583	-	-				
HCM Lane V/C Ratio	0.007	-	-	0.435	0.405	0.023	-	-				
HCM Control Delay (s/veh)	8.1	0	-	56.3	58.9	11.3	0	-				
HCM Lane LOS	A	A	-	F	F	B	A	-				
HCM 95th %tile Q (veh)	0	-	-	1.9	1.7	0.1	-	-				



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	5	1	1	9	8	1
Future Volume (vph)	5	1	1	9	8	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.955				0.966	
Flt Protected				0.991	0.964	
Satd. Flow (prot)	1592	0	0	1571	1399	0
Flt Permitted				0.991	0.964	
Satd. Flow (perm)	1592	0	0	1571	1399	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.63	0.25	0.25	0.50	0.67	0.25
Heavy Vehicles (%)	20%	2%	100%	2%	2%	100%
Adj. Flow (vph)	8	4	4	18	12	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	0	0	22	16	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	3.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	4	2	1
Traffic Vol, veh/h	5	1	1	9	8	1
Future Vol, veh/h	5	1	1	9	8	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	25	25	50	67	25
Heavy Vehicles, %	20	2	100	2	2	100
Mvmt Flow	8	4	4	18	12	4
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	12	0	36	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	-	-	5.1	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3.1	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1148	-	977	845
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1148	-	973	845
Mov Cap-2 Maneuver	-	-	-	-	973	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	993	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	1.5	8.9			
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	937	-	-	1148	-	
HCM Lane V/C Ratio	0.017	-	-	0.003	-	
HCM Control Delay (s/veh)	8.9	-	-	8.1	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q (veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2024 Existing AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	117	12	110	385	385	26	306	31	101	239	37
Future Volume (vph)	43	117	12	110	385	385	26	306	31	101	239	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%			3%	
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.985				0.850		0.987			0.978	
Flt Protected		0.985			0.988		0.950			0.950		
Satd. Flow (prot)	0	1756	0	0	1818	1583	1743	1811	0	1693	1736	0
Flt Permitted		0.709			0.864		0.472			0.358		
Satd. Flow (perm)	0	1264	0	0	1590	1583	866	1811	0	638	1736	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.67	0.91	0.50	0.83	0.88	0.79	0.54	0.82	0.86	0.72	0.87	0.77
Heavy Vehicles (%)	2%	5%	8%	4%	3%	2%	2%	2%	2%	5%	5%	8%
Adj. Flow (vph)	64	129	24	133	438	487	48	373	36	140	275	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	0	0	571	487	48	409	0	140	323	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	27.0	27.0		27.0	27.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	20.6	20.6		20.6	20.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0				5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	26.5				26.5	26.5	18.2	18.2		18.2	18.2	
Actuated g/C Ratio	0.48				0.48	0.48	0.33	0.33		0.33	0.33	
v/c Ratio	0.36				0.74	0.64	0.17	0.68		0.66	0.56	
Control Delay (s/veh)	11.7				20.1	16.0	14.8	22.7		34.1	19.6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.7			20.1	16.0	14.8	22.7		34.1	19.6		
LOS	B			C	B	B	C		C	B		
Approach Delay (s/veh)	11.7			18.2			21.9			24.0		
Approach LOS	B			B			C			C		
Queue Length 50th (ft)	42			143	113	11	118		40	88		
Queue Length 95th (ft)	93			#311	178	18	174		70	148		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125			300			
Base Capacity (vph)	654			823	819	352	737		259	706		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.33			0.69	0.59	0.14	0.55		0.54	0.46		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 54.8

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 19.6

Intersection LOS: B

Intersection Capacity Utilization 80.3%

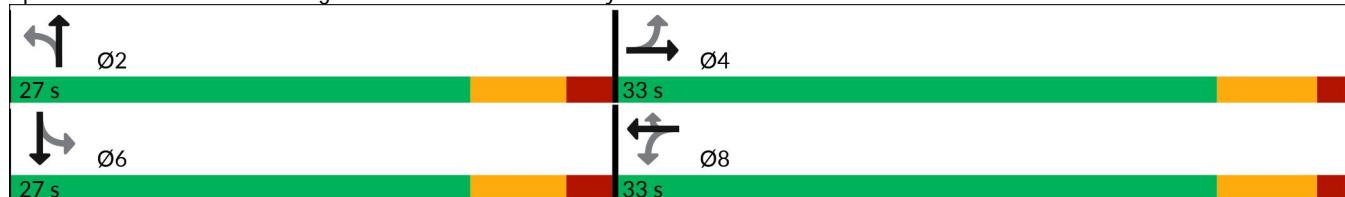
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2024 Existing MID



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	446	139	245	325	156	74	43	220	163	54	87
Future Volume (vph)	72	446	139	245	325	156	74	43	220	163	54	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.941				0.850			0.850
Flt Protected		0.991		0.950				0.973			0.963	
Satd. Flow (prot)	0	1846	1553	1770	1742	0	0	1765	1538	0	1794	1583
Flt Permitted		0.991		0.950				0.973			0.963	
Satd. Flow (perm)	0	1846	1553	1770	1742	0	0	1765	1538	0	1794	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.67	0.93	0.70	0.93	0.84	0.62	0.84	0.60	0.78	0.42	0.48	0.46
Heavy Vehicles (%)	2%	2%	4%	2%	3%	2%	7%	2%	5%	2%	2%	2%
Adj. Flow (vph)	107	480	199	263	387	252	88	72	282	388	113	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	587	199	263	639	0	0	160	282	0	501	189
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 82.6%

ICU Level of Service E

Analysis Period (min) 15

SITE LAYOUT

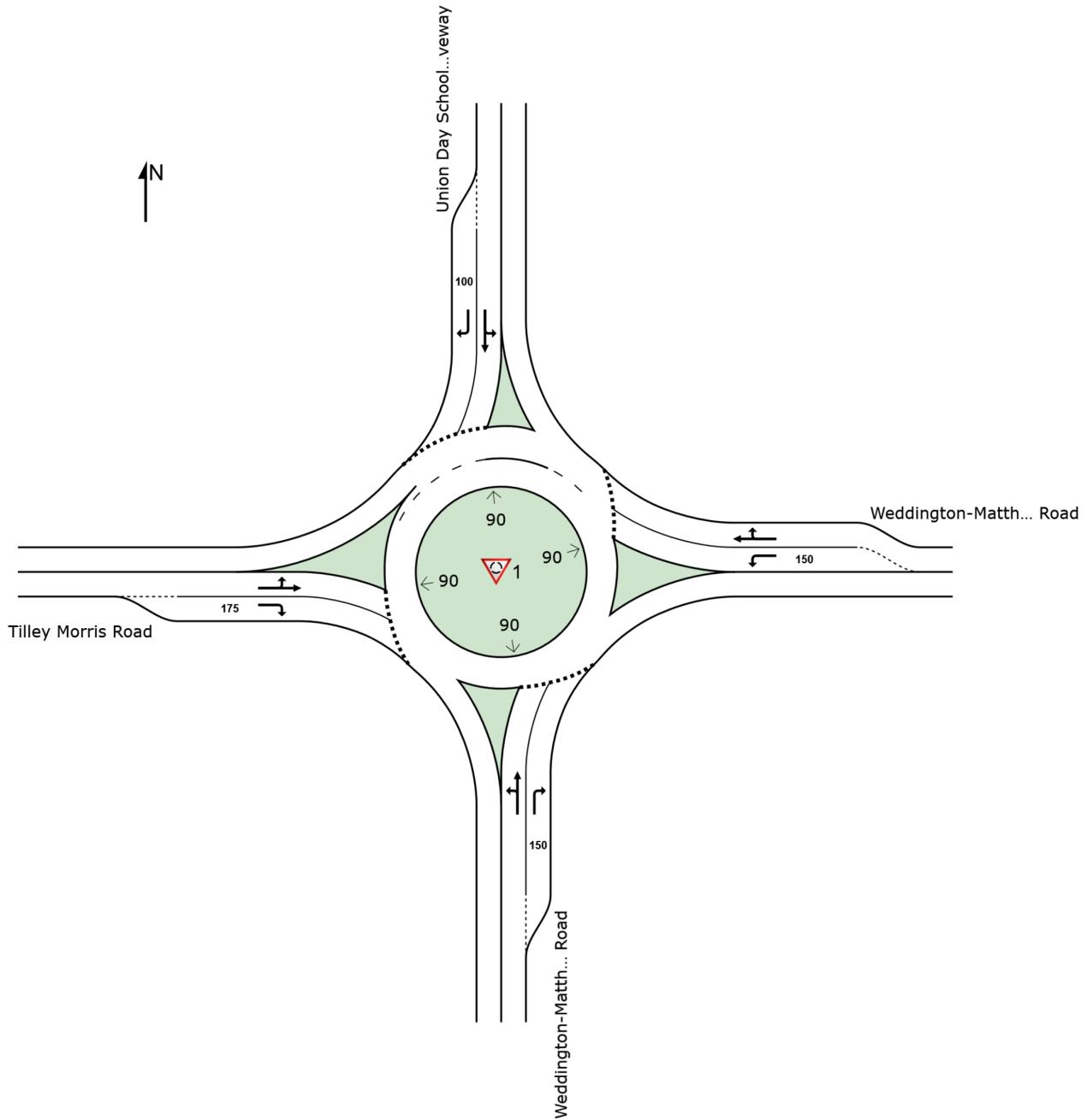
Site: 1 [2024 Existing MID (Site Folder: 2024 Existing)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2024 Existing MID (Site Folder: 2024 Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	88 7.0	88 7.0	0.313	12.6	LOS B	1.2	30.0	0.69	0.71	0.79	30.3
8	T1	All MCs	72 2.0	72 2.0	0.313	10.8	LOS B	1.2	30.0	0.69	0.71	0.79	25.5
18	R2	All MCs	282 5.0	282 5.0	0.556	18.2	LOS C	2.8	72.2	0.78	0.88	1.19	29.1
Approach			442 4.9	442 4.9	0.556	15.9	LOS C	2.8	72.2	0.75	0.82	1.04	28.7
East: Weddington-Matthews Road													
1	L2	All MCs	263 2.0	263 2.0	0.245	5.6	LOS A	1.1	28.0	0.43	0.28	0.43	32.5
6	T1	All MCs	387 3.0	387 3.0	0.599	11.1	LOS B	5.8	149.2	0.65	0.50	0.85	32.8
16	R2	All MCs	252 2.0	252 2.0	0.599	11.0	LOS B	5.8	149.2	0.65	0.50	0.85	26.3
Approach			902 2.4	902 2.4	0.599	9.5	LOS A	5.8	149.2	0.58	0.44	0.73	30.6
North: Union Day School Driveway													
7	L2	All MCs	388 2.0	388 2.0	0.704	19.5	LOS C	6.1	153.8	0.83	1.11	1.58	23.0
4	T1	All MCs	113 2.0	113 2.0	0.704	19.5	LOS C	6.1	153.8	0.83	1.11	1.58	23.4
14	R2	All MCs	189 2.0	189 2.0	0.293	9.3	LOS A	1.1	28.9	0.64	0.59	0.65	26.7
Approach			690 2.0	690 2.0	0.704	16.7	LOS C	6.1	153.8	0.78	0.97	1.32	24.0
West: Tilley Morris Road													
5	L2	All MCs	107 2.0	107 2.0	0.877	35.0	LOS D	11.8	300.9	0.98	1.34	2.50	20.4
2	T1	All MCs	480 2.0	480 2.0	0.877	35.0	LOS D	11.8	300.9	0.98	1.34	2.50	24.3
12	R2	All MCs	199 4.0	199 4.0	0.309	9.6	LOS A	1.2	31.5	0.65	0.61	0.70	33.0
Approach			786 2.5	786 2.5	0.877	28.6	LOS D	11.8	300.9	0.89	1.16	2.05	25.3
All Vehicles			2819 2.7	2819 2.7	0.877	17.6	LOS C	11.8	300.9	0.74	0.83	1.29	26.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	4	18	6	4	4	15	308	16	4	398	18
Future Volume (vph)	11	4	18	6	4	4	15	308	16	4	398	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932			0.990			0.994	
Flt Protected					0.982			0.997			0.999	
Satd. Flow (prot)	0	1688	0	0	1572	0	0	1787	0	0	1833	0
Flt Permitted					0.982			0.997			0.999	
Satd. Flow (perm)	0	1688	0	0	1572	0	0	1787	0	0	1833	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1285			469			1472			1543	
Travel Time (s)		35.0			12.8			22.3			23.4	
Peak Hour Factor	0.69	0.90	0.64	0.50	0.90	0.25	0.50	0.73	0.44	0.25	0.78	0.75
Heavy Vehicles (%)	2%	2%	2%	25%	2%	2%	7%	4%	14%	2%	3%	2%
Adj. Flow (vph)	16	4	28	12	4	16	30	422	36	16	510	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	32	0	0	488	0	0	550	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 36.8% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	4	18	6	4	4	15	308	16	4	398	18
Future Vol, veh/h	11	4	18	6	4	4	15	308	16	4	398	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	69	90	64	50	90	25	50	73	44	25	78	75
Heavy Vehicles, %	2	2	2	25	2	2	7	4	14	2	3	2
Mvmt Flow	16	4	28	12	4	16	30	422	36	16	510	24

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1064	1072	522	1070	1066	440	534	0	0	458	0	0
Stage 1	554	554	-	500	500	-	-	-	-	-	-	-
Stage 2	510	518	-	570	566	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	201	220	555	180	222	617	1009	-	-	1103	-	-
Stage 1	517	514	-	512	543	-	-	-	-	-	-	-
Stage 2	546	533	-	468	507	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	184	207	555	160	209	617	1009	-	-	1103	-	-
Mov Cap-2 Maneuver	184	207	-	160	209	-	-	-	-	-	-	-
Stage 1	496	503	-	492	521	-	-	-	-	-	-	-
Stage 2	506	512	-	431	496	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	19	20.4			0.5			0.2		
HCM LOS	C	C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1009	-	-	306	266	1103	-	-		
HCM Lane V/C Ratio	0.03	-	-	0.159	0.122	0.015	-	-		
HCM Control Delay (s/veh)	8.7	0	-	19	20.4	8.3	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q (veh)	0.1	-	-	0.6	0.4	0	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	10	7	0	6	2	1
Future Volume (vph)	10	7	0	6	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.959				0.955	
Flt Protected					0.968	
Satd. Flow (prot)	1575	0	0	1863	1304	0
Flt Permitted					0.968	
Satd. Flow (perm)	1575	0	0	1863	1304	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.36	0.58	0.90	0.50	0.25	0.25
Heavy Vehicles (%)	10%	29%	2%	2%	2%	100%
Adj. Flow (vph)	28	12	0	12	8	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	12	12	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2	1		
Traffic Vol, veh/h	10	7	0	6	2	1
Future Vol, veh/h	10	7	0	6	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	36	58	90	50	25	25
Heavy Vehicles, %	10	29	2	2	2	100
Mvmt Flow	28	12	0	12	8	4
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	40	0	46	34
Stage 1	-	-	-	-	34	-
Stage 2	-	-	-	-	12	-
Critical Hdwy	-	-	4.12	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1570	-	964	817
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	1011	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1570	-	964	817
Mov Cap-2 Maneuver	-	-	-	-	964	-
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	1011	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0	9			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	909	-	-	1570	-	
HCM Lane V/C Ratio	0.013	-	-	-	-	
HCM Control Delay (s/veh)	9	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2024 Existing MID

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	166	23	43	160	105	20	195	127	163	223	29
Future Volume (vph)	44	166	23	43	160	105	20	195	127	163	223	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%			3%	
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.986				0.850		0.948			0.981	
Flt Protected		0.990				0.986		0.950			0.950	
Satd. Flow (prot)	0	1795	0	0	1796	1538	1616	1717	0	1710	1767	0
Flt Permitted		0.889			0.847		0.584			0.411		
Satd. Flow (perm)	0	1612	0	0	1543	1538	994	1717	0	740	1767	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.85	0.87	0.82	0.60	0.91	0.67	0.46	0.65	0.79	0.68	0.89	0.81
Heavy Vehicles (%)	5%	2%	4%	5%	4%	5%	10%	4%	2%	4%	4%	3%
Adj. Flow (vph)	52	191	28	72	176	157	43	300	161	240	251	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	271	0	0	248	157	43	461	0	240	287	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	22.0	22.0		22.0	22.0	22.0	38.0	38.0		38.0	38.0	
Total Split (%)	36.7%	36.7%		36.7%	36.7%	36.7%	63.3%	63.3%		63.3%	63.3%	
Maximum Green (s)	16.0	16.0		16.0	16.0	16.0	31.6	31.6		31.6	31.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	15.4			15.4	15.4	21.3	21.3	21.3		21.3	21.3	
Actuated g/C Ratio	0.33			0.33	0.33	0.45	0.45	0.45		0.45	0.45	
v/c Ratio	0.52			0.49	0.31	0.10	0.59	0.72		0.72	0.36	
Control Delay (s/veh)	19.0			18.8	16.2	7.6	13.0	24.0		24.0	9.6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.0			18.8	16.2	7.6	13.0		24.0	9.6		
LOS	B			B	B	A	B		C	A		
Approach Delay (s/veh)	19.0			17.8			12.6			16.2		
Approach LOS	B			B			B			B		
Queue Length 50th (ft)	56			51	30	7	92		52	50		
Queue Length 95th (ft)	145			141	63	9	97		73	88		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125			300			
Base Capacity (vph)	605			579	577	724	1252		539	1288		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.45			0.43	0.27	0.06	0.37		0.45	0.22		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 47.1

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay (s/veh): 15.9

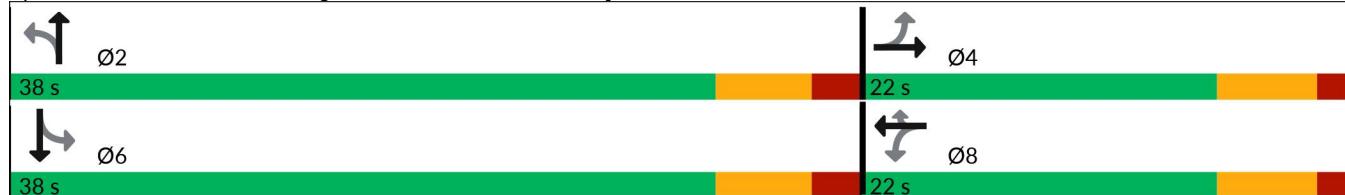
Intersection LOS: B

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2024 Existing



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	614	215	289	412	18	147	4	277	19	15	11
Future Volume (vph)	9	614	215	289	412	18	147	4	277	19	15	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.989				0.850			0.850
Flt Protected		0.999		0.950				0.955			0.973	
Satd. Flow (prot)	0	1861	1583	1770	1820	0	0	1762	1583	0	1812	1583
Flt Permitted		0.999		0.950				0.955			0.973	
Satd. Flow (perm)	0	1861	1583	1770	1820	0	0	1762	1583	0	1812	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.75	0.95	0.94	0.88	0.95	0.50	0.90	0.50	0.89	0.53	0.54	0.39
Heavy Vehicles (%)	2%	2%	2%	2%	3%	6%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	12	646	229	328	434	36	163	8	311	36	28	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	658	229	328	470	0	0	171	311	0	64	28
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 80.6%

ICU Level of Service D

Analysis Period (min) 15

SITE LAYOUT

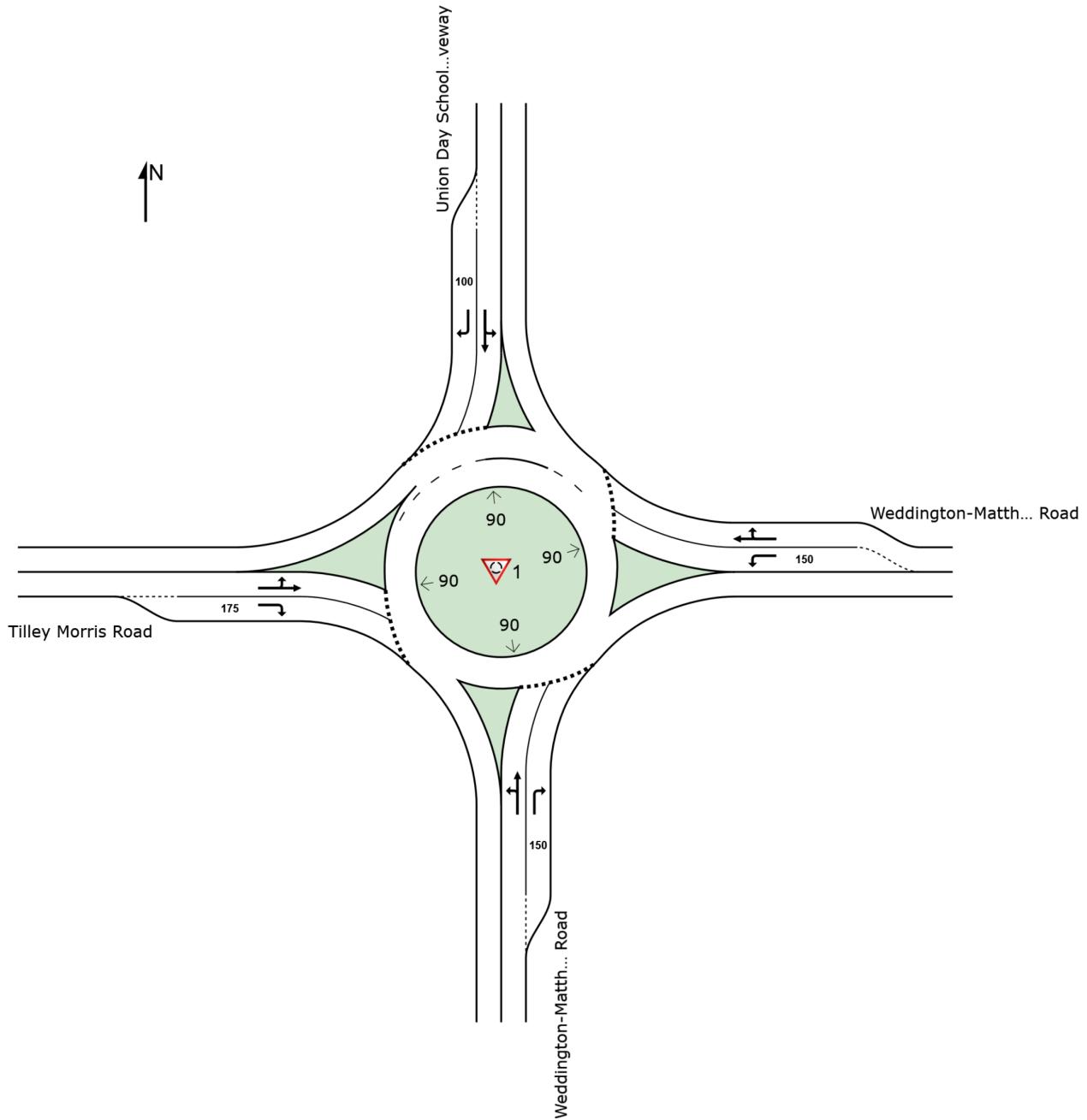
Site: 1 [2024 Existing PM (Site Folder: 2024 Existing)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2024 Existing PM (Site Folder: 2024 Existing)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	160 3.0	160 3.0	0.234	7.9	LOS A	0.9	22.9	0.61	0.54	0.61	31.4
8	T1	All MCs	4 2.0	4 2.0	0.234	7.6	LOS A	0.9	22.9	0.61	0.54	0.61	26.0
18	R2	All MCs	301 2.0	301 2.0	0.422	10.7	LOS B	2.2	54.6	0.69	0.67	0.87	32.7
Approach			465 2.3	465 2.3	0.422	9.7	LOS A	2.2	54.6	0.66	0.62	0.78	32.2
East: Weddington-Matthews Road													
1	L2	All MCs	314 2.0	314 2.0	0.267	5.4	LOS A	1.3	32.3	0.36	0.19	0.36	32.6
6	T1	All MCs	448 3.0	448 3.0	0.402	7.1	LOS A	2.2	57.0	0.42	0.23	0.42	34.9
16	R2	All MCs	20 6.0	20 6.0	0.402	7.3	LOS A	2.2	57.0	0.42	0.23	0.42	27.6
Approach			782 2.7	782 2.7	0.402	6.4	LOS A	2.2	57.0	0.39	0.21	0.39	33.7
North: Union Day School Driveway													
7	L2	All MCs	21 2.0	21 2.0	0.061	6.7	LOS A	0.2	5.0	0.58	0.57	0.58	26.7
4	T1	All MCs	16 2.0	16 2.0	0.061	6.7	LOS A	0.2	5.0	0.58	0.57	0.58	27.1
14	R2	All MCs	12 2.0	12 2.0	0.022	6.9	LOS A	0.1	1.8	0.59	0.54	0.59	27.5
Approach			49 2.0	49 2.0	0.061	6.7	LOS A	0.2	5.0	0.59	0.56	0.59	27.0
West: Tilley Morris Road													
5	L2	All MCs	10 2.0	10 2.0	0.680	14.0	LOS B	8.8	222.8	0.78	0.74	1.28	25.3
2	T1	All MCs	667 2.0	667 2.0	0.680	14.0	LOS B	8.8	222.8	0.78	0.74	1.28	31.6
12	R2	All MCs	234 2.0	234 2.0	0.235	5.9	LOS A	1.0	25.8	0.48	0.33	0.48	35.2
Approach			911 2.0	911 2.0	0.680	11.9	LOS B	8.8	222.8	0.70	0.64	1.07	32.3
All Vehicles			2207 2.3	2207 2.3	0.680	9.4	LOS A	8.8	222.8	0.58	0.48	0.76	32.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	0	10	6	0	5	15	429	10	3	480	13
Future Volume (vph)	14	0	10	6	0	5	15	429	10	3	480	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.940			0.971			0.995			0.994	
Flt Protected		0.973			0.962			0.998				
Satd. Flow (prot)	0	1599	0	0	1740	0	0	1837	0	0	1852	0
Flt Permitted		0.973			0.962			0.998				
Satd. Flow (perm)	0	1599	0	0	1740	0	0	1837	0	0	1852	0
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		1285			469			1472			1543	
Travel Time (s)		35.0			12.8			22.3			23.4	
Peak Hour Factor	0.70	0.90	0.63	0.33	0.90	1.00	0.75	0.91	0.50	0.75	0.95	0.54
Heavy Vehicles (%)	14%	2%	2%	2%	2%	2%	2%	2%	20%	2%	2%	2%
Adj. Flow (vph)	20	0	16	18	0	5	20	471	20	4	505	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	23	0	0	511	0	0	533	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 43.5%

ICU Level of Service A

Analysis Period (min) 15

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+
Traffic Vol, veh/h	14	0	10	6	0	5	15	429	10	3	480	13
Future Vol, veh/h	14	0	10	6	0	5	15	429	10	3	480	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	90	63	33	90	100	75	91	50	75	95	54
Heavy Vehicles, %	14	2	2	2	2	2	2	2	20	2	2	2
Mvmt Flow	20	0	16	18	0	5	20	471	20	4	505	24
Major/Minor												
Minor2		Minor1			Major1			Major2				
Conflicting Flow All	1049	1056	517	1054	1058	481	529	0	0	491	0	0
Stage 1	525	525	-	521	521	-	-	-	-	-	-	-
Stage 2	524	531	-	533	537	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	195	225	558	204	225	585	1038	-	-	1072	-	-
Stage 1	515	529	-	539	532	-	-	-	-	-	-	-
Stage 2	515	526	-	531	523	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	189	218	558	193	218	585	1038	-	-	1072	-	-
Mov Cap-2 Maneuver	189	218	-	193	218	-	-	-	-	-	-	-
Stage 1	501	526	-	524	518	-	-	-	-	-	-	-
Stage 2	497	512	-	513	520	-	-	-	-	-	-	-
Approach												
EB			WB			NB			SB			
HCM Control Delay, s/v	20.6			22.7			0.3		0.1			
HCM LOS	C			C			A		A			
Minor Lane/Major Mvmt			NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1038	-	-	267	226	1072	-	-	-	-		
HCM Lane V/C Ratio	0.019	-	-	0.134	0.103	0.004	-	-	-	-		
HCM Control Delay (s/veh)	8.5	0	-	20.6	22.7	8.4	0	-	-	-		
HCM Lane LOS	A	A	-	C	C	A	A	-	-	-		
HCM 95th %tile Q (veh)	0.1	-	-	0.5	0.3	0	-	-	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	8	5	0	9	2	2
Future Volume (vph)	8	5	0	9	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.938				0.910	
Flt Protected					0.984	
Satd. Flow (prot)	1526	0	0	1863	1270	0
Flt Permitted					0.984	
Satd. Flow (perm)	1526	0	0	1863	1270	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.58	0.42	0.90	0.45	0.50	0.25
Heavy Vehicles (%)	14%	20%	2%	2%	2%	50%
Adj. Flow (vph)	14	12	0	20	4	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	20	12	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2	2		
Traffic Vol, veh/h	8	5	0	9	2	2
Future Vol, veh/h	8	5	0	9	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	58	42	90	45	50	25
Heavy Vehicles, %	14	20	2	2	2	50
Mvmt Flow	14	12	0	20	4	8
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	26	0	40	20
Stage 1	-	-	-	-	20	-
Stage 2	-	-	-	-	20	-
Critical Hdwy	-	-	4.12	-	6.42	6.7
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.75
Pot Cap-1 Maneuver	-	-	1588	-	972	935
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	1003	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1588	-	972	935
Mov Cap-2 Maneuver	-	-	-	-	972	-
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	1003	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0	8.9			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	947	-	-	1588	-	
HCM Lane V/C Ratio	0.013	-	-	-	-	
HCM Control Delay (s/veh)	8.9	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2024 Existing PM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	229	19	49	168	101	22	275	110	184	239	36
Future Volume (vph)	61	229	19	49	168	101	22	275	110	184	239	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%		3%		3%
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.990				0.850		0.951			0.982	
Flt Protected		0.990			0.987		0.950			0.950		
Satd. Flow (prot)	0	1812	0	0	1829	1568	1631	1739	0	1743	1802	0
Flt Permitted		0.865			0.816		0.523			0.375		
Satd. Flow (perm)	0	1584	0	0	1512	1568	898	1739	0	688	1802	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.69	0.77	0.59	0.68	0.84	0.84	0.79	0.88	0.72	0.81	0.83	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	3%	9%	2%	3%	2%	2%	2%
Adj. Flow (vph)	88	297	32	72	200	120	28	313	153	227	288	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	417	0	0	272	120	28	466	0	227	328	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	25.0	25.0		25.0	25.0	25.0	35.0	35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%	41.7%	58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	28.6	28.6		28.6	28.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	19.3			19.3	19.3	21.6	21.6	21.6		21.6	21.6	
Actuated g/C Ratio	0.38			0.38	0.38	0.42	0.42	0.42		0.42	0.42	
v/c Ratio	0.70			0.48	0.20	0.07	0.63	0.78		0.43		
Control Delay (s/veh)	24.1			17.5	14.0	8.7	15.8	33.6		12.1		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.1			17.5	14.0	8.7	15.8		33.6	12.1		
LOS	C			B	B	A	B		C	B		
Approach Delay (s/veh)	24.1			16.4			15.4			20.9		
Approach LOS	C			B			B			C		
Queue Length 50th (ft)	102			60	23	5	106		57	67		
Queue Length 95th (ft)	184			131	60	14	174		112	104		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125			300			
Base Capacity (vph)	634			605	628	539	1044		413	1082		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.66			0.45	0.19	0.05	0.45		0.55	0.30		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 51.2

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 19.2

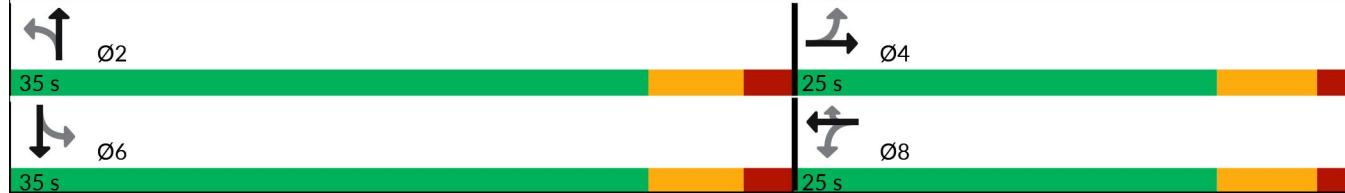
Intersection LOS: B

Intersection Capacity Utilization 76.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



2029 Background Conditions

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

2029 Background AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	220	57	284	696	197	492	97	323	150	57	130
Future Volume (vph)	62	220	57	284	696	197	492	97	323	150	57	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.965				0.850			0.850
Flt Protected		0.986		0.950			0.960			0.965		
Satd. Flow (prot)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Flt Permitted		0.986		0.950			0.960			0.965		
Satd. Flow (perm)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107			1131			2099			1065	
Travel Time (s)		16.8			17.1			31.8			29.0	
Peak Hour Factor	0.62	0.87	0.72	0.76	0.71	0.67	0.75	0.69	0.73	0.56	0.57	0.53
Heavy Vehicles (%)	2%	5%	6%	6%	2%	2%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	100	253	79	374	980	294	656	141	442	268	100	245
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	79	374	1274	0	0	797	442	0	368	245
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 112.6%

ICU Level of Service H

Analysis Period (min) 15

SITE LAYOUT

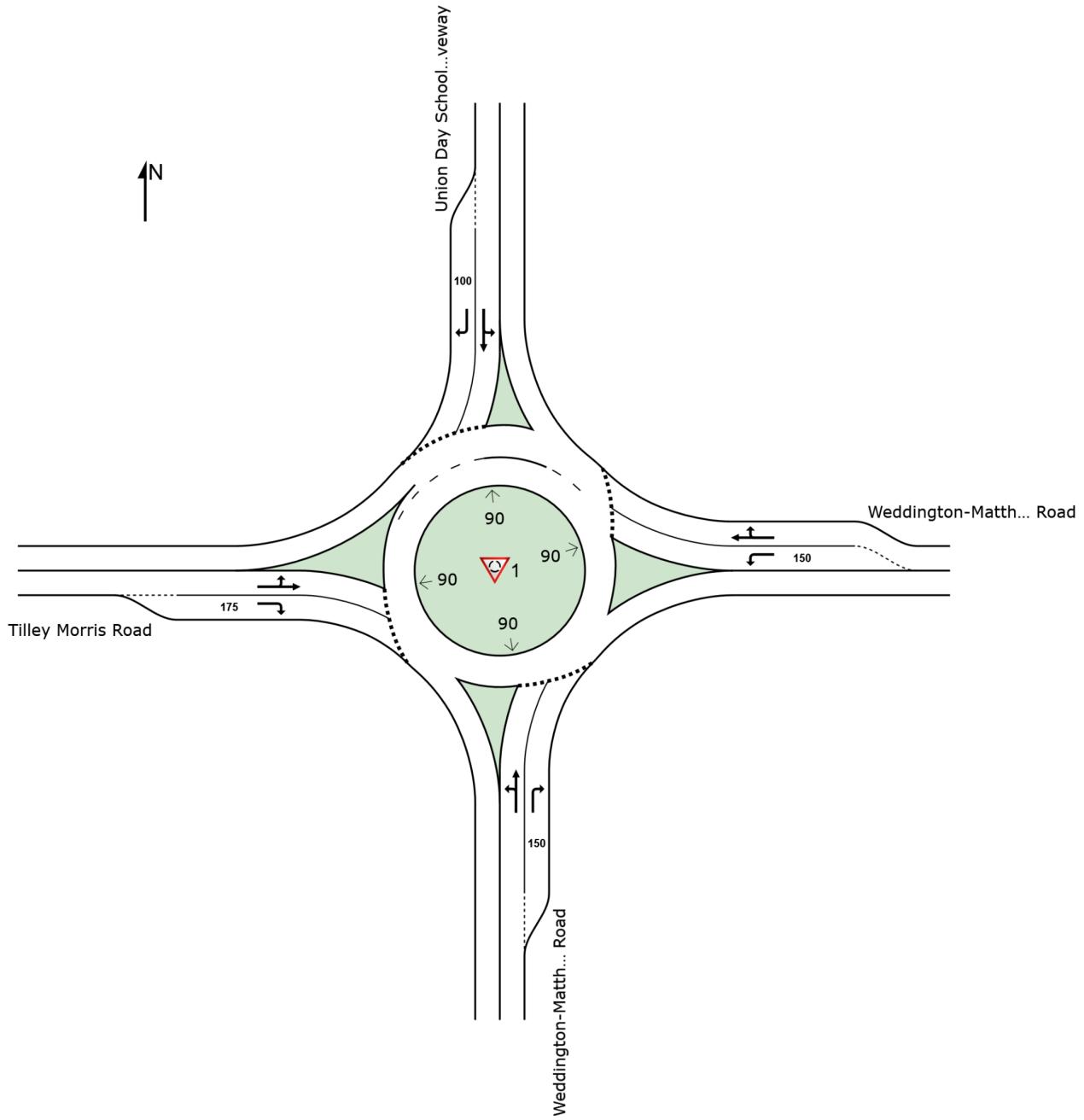
Site: 1 [2029 Background AM (Site Folder: 2029 Background)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

▼ Site: 1 [2029 Background AM (Site Folder: 2029 Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	656 2.0	656 2.0	1.030	61.3	LOS F	32.4	822.2	1.00	2.13	4.56	18.4
8	T1	All MCs	141 2.0	141 2.0	1.030	61.3	LOS F	32.4	822.2	1.00	2.13	4.56	16.4
18	R2	All MCs	442 3.0	442 3.0	0.583	13.9	LOS B	4.3	110.5	0.76	0.79	1.20	31.1
Approach			1239 2.4	1239 2.4	1.030	44.4	LOS E	32.4	822.2	0.91	1.65	3.36	21.1
East: Weddington-Matthews Road													
1	L2	All MCs	374 6.0	374 6.0	0.685	22.9	LOS C	4.3	111.5	0.84	0.96	1.41	25.9
6	T1	All MCs	980 2.0	980 2.0	2.136	531.2	LOS F	217.6	5526.1	1.00	6.67	21.13	3.8
16	R2	All MCs	294 2.0	294 2.0	2.136	531.2	LOS F	217.6	5526.1	1.00	6.67	21.13	3.7
Approach			1648 2.9	1648 2.9	2.136	418.4	LOS F	217.6	5526.1	0.96	5.38	16.66	4.8
North: Union Day School Driveway													
7	L2	All MCs	268 2.0	268 2.0	1.023	86.4	LOS F	12.7	323.1	1.00	2.20	4.12	13.8
4	T1	All MCs	100 2.0	100 2.0	1.023	86.6	LOS F	12.7	323.1	1.00	2.20	4.12	14.0
14	R2	All MCs	245 2.0	245 2.0	0.783	45.8	LOS E	4.2	106.4	0.93	1.28	1.84	18.6
Approach			613 2.0	613 2.0	1.023	70.2	LOS F	12.7	323.1	0.97	1.83	3.21	15.4
West: Tilley Morris Road													
5	L2	All MCs	100 2.0	100 2.0	0.536	13.7	LOS B	3.2	82.9	0.75	0.80	1.14	24.9
2	T1	All MCs	253 5.0	253 5.0	0.536	14.5	LOS B	3.2	82.9	0.75	0.80	1.14	30.6
12	R2	All MCs	79 6.0	79 6.0	0.125	7.1	LOS A	0.4	11.0	0.59	0.53	0.59	34.0
Approach			432 4.5	432 4.5	0.536	12.9	LOS B	3.2	82.9	0.72	0.75	1.04	29.6
All Vehicles			3932 2.8	3932 2.8	2.136	200.7	LOS F	217.6	5526.1	0.92	3.14	8.65	8.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Lanes, Volumes, Timings

2: Weddington-Matthews Road & Amanda Drive

5017 Weddington-Matthews Road TIA

2029 Background AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	15	10	4	8	8	903	4	6	362	9
Future Volume (vph)	23	4	15	10	4	8	8	903	4	6	362	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.951			0.949			0.999	
Flt Protected					0.973			0.978			0.999	
Satd. Flow (prot)	0	1667	0	0	1440	0	0	1861	0	0	1786	0
Flt Permitted		0.973			0.978						0.999	
Satd. Flow (perm)	0	1667	0	0	1440	0	0	1861	0	0	1786	0
Link Speed (mph)					25			25			45	45
Link Distance (ft)					1285			469			1472	1543
Travel Time (s)					35.0			12.8			22.3	23.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	7%	11%	100%	2%	2%	2%	2%	33%	5%	25%
Adj. Flow (vph)	26	4	17	11	4	9	9	1003	4	7	402	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	24	0	0	1016	0	0	419	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.1% ICU Level of Service B

Analysis Period (min) 15

Intersection															
Int Delay, s/veh	2.1														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+			
Traffic Vol, veh/h	23	4	15	10	4	8	8	903	4	6	362	9			
Future Vol, veh/h	23	4	15	10	4	8	8	903	4	6	362	9			
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0			
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free			
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None			
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-			
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90			
Heavy Vehicles, %	5	2	7	11	100	2	2	2	2	33	5	25			
Mvmt Flow	26	4	17	11	4	9	9	1003	4	7	402	10			
Major/Minor	Minor2	Minor1			Major1			Major2							
Conflicting Flow All	1451	1446	407	1455	1449	1005	412	0	0	1007	0	0			
Stage 1	421	421	-	1023	1023	-	-	-	-	-	-	-			
Stage 2	1030	1025	-	432	426	-	-	-	-	-	-	-			
Critical Hdwy	7.15	6.52	6.27	7.21	7.5	6.22	4.12	-	-	4.43	-	-			
Critical Hdwy Stg 1	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-			
Follow-up Hdwy	3.545	4.018	3.363	3.599	4.9	3.318	2.218	-	-	2.497	-	-			
Pot Cap-1 Maneuver	107	132	633	103	82	293	1147	-	-	580	-	-			
Stage 1	604	589	-	274	215	-	-	-	-	-	-	-			
Stage 2	278	312	-	585	449	-	-	-	-	-	-	-			
Platoon blocked, %								-	-	-	-	-			
Mov Cap-1 Maneuver	97	128	633	95	79	293	1147	-	-	580	-	-			
Mov Cap-2 Maneuver	97	128	-	95	79	-	-	-	-	-	-	-			
Stage 1	593	580	-	269	211	-	-	-	-	-	-	-			
Stage 2	259	306	-	556	442	-	-	-	-	-	-	-			
Approach	EB			WB			NB			SB					
HCM Control Delay, s/veh	41.5			42.5			0.1			0.2					
HCM LOS	E			E			B			A					
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR							
Capacity (veh/h)	1147	-	-	144	120	580	-	-							
HCM Lane V/C Ratio	0.008	-	-	0.324	0.204	0.011	-	-							
HCM Control Delay (s/veh)	8.2	0	-	41.5	42.5	11.3	0	-							
HCM Lane LOS	A	A	-	E	E	B	A	-							
HCM 95th %tile Q (veh)	0	-	-	1.3	0.7	0	-	-							



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	6	1	1	10	9	1
Future Volume (vph)	6	1	1	10	9	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.983				0.988	
Flt Protected				0.996	0.957	
Satd. Flow (prot)	1586	0	0	1718	1620	0
Flt Permitted				0.996	0.957	
Satd. Flow (perm)	1586	0	0	1718	1620	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	20%	2%	100%	2%	2%	100%
Adj. Flow (vph)	7	1	1	11	10	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	0	12	11	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	1	1	1	1
Traffic Vol, veh/h	6	1	1	10	9	1
Future Vol, veh/h	6	1	1	10	9	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	20	2	100	2	2	100
Mvmt Flow	7	1	1	11	10	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	8	0	21	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	-	-	5.1	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3.1	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1152	-	996	847
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1010	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1152	-	995	847
Mov Cap-2 Maneuver	-	-	-	-	995	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1009	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0.7	8.7			
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	978	-	-	1152	-	
HCM Lane V/C Ratio	0.011	-	-	0.001	-	
HCM Control Delay (s/veh)	8.7	-	-	8.1	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Background AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	129	13	121	425	425	29	338	34	112	264	41
Future Volume (vph)	47	129	13	121	425	425	29	338	34	112	264	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%			3%	
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.991				0.850		0.986			0.980	
Flt Protected		0.988				0.989		0.950			0.950	
Satd. Flow (prot)	0	1772	0	0	1820	1583	1743	1809	0	1693	1740	0
Flt Permitted		0.755			0.873		0.442			0.340		
Satd. Flow (perm)	0	1354	0	0	1607	1583	811	1809	0	606	1740	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	8%	4%	3%	2%	2%	2%	2%	5%	5%	8%
Adj. Flow (vph)	52	143	14	134	472	472	32	376	38	124	293	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	0	0	606	472	32	414	0	124	339	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	34.0	34.0		34.0	34.0	34.0	26.0	26.0		26.0	26.0	
Total Split (%)	56.7%	56.7%		56.7%	56.7%	56.7%	43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	19.6	19.6		19.6	19.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	27.6			27.6	27.6	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.50			0.50	0.50	0.32	0.32	0.32		0.32	0.32	
v/c Ratio	0.31			0.76	0.60	0.12	0.71	0.64		0.64	0.60	
Control Delay (s/veh)	10.6			20.3	14.7	14.9	24.5	34.1		21.4		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.6			20.3	14.7	14.9	24.5		34.1	21.4		
LOS	B			C	B	B	C		C	C		
Approach Delay (s/veh)	10.6			17.9			23.8			24.8		
Approach LOS	B			B			C			C		
Queue Length 50th (ft)	41			160	110	8	123		36	97		
Queue Length 95th (ft)	83			#342	204	24	209		#103	169		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125			300			
Base Capacity (vph)	712			845	832	308	689		231	662		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.29			0.72	0.57	0.10	0.60		0.54	0.51		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 19.8

Intersection LOS: B

Intersection Capacity Utilization 85.8%

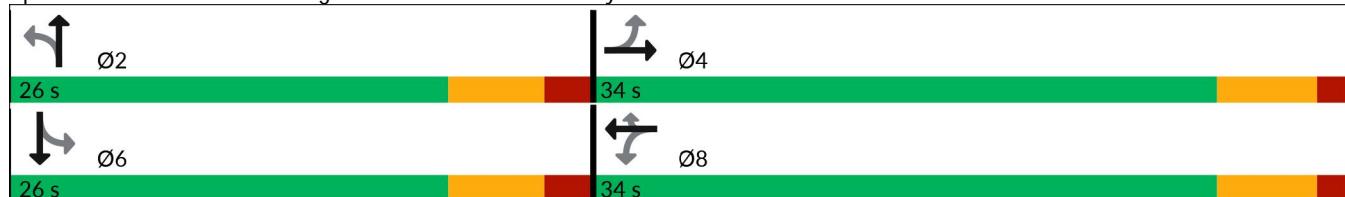
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

2020 Background MID



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	492	153	270	359	172	82	47	243	180	60	96
Future Volume (vph)	79	492	153	270	359	172	82	47	243	180	60	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.941				0.850			0.850
Flt Protected		0.991		0.950				0.973			0.963	
Satd. Flow (prot)	0	1846	1553	1770	1742	0	0	1764	1538	0	1794	1583
Flt Permitted		0.991		0.950				0.973			0.963	
Satd. Flow (perm)	0	1846	1553	1770	1742	0	0	1764	1538	0	1794	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.67	0.93	0.70	0.93	0.84	0.62	0.84	0.60	0.78	0.42	0.48	0.46
Heavy Vehicles (%)	2%	2%	4%	2%	3%	2%	7%	2%	5%	2%	2%	2%
Adj. Flow (vph)	118	529	219	290	427	277	98	78	312	429	125	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	647	219	290	704	0	0	176	312	0	554	209
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

SITE LAYOUT

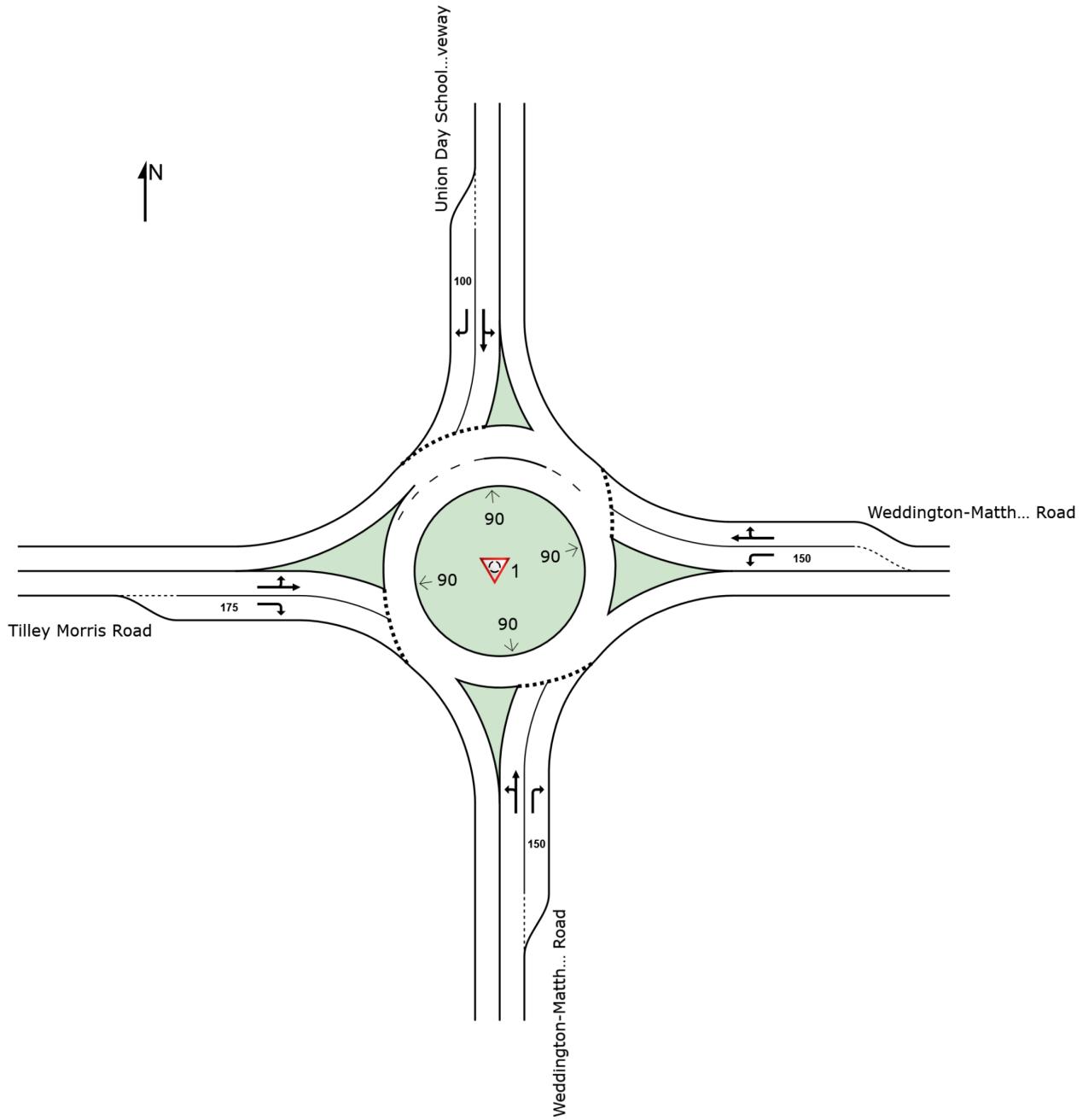
▼ Site: 1 [2029 Background MID (Site Folder: 2029 Background)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2029 Background MID (Site Folder: 2029 Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance															
Mov ID	Turn Class	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] % veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph			
South: Weddington-Matthews Road															
3	L2	All MCs	98	7.0	98	7.0	0.372	14.8	LOS B	1.4	37.2	0.72	0.77	0.90	29.5
8	T1	All MCs	78	2.0	78	2.0	0.372	12.7	LOS B	1.4	37.2	0.72	0.77	0.90	24.9
18	R2	All MCs	312	5.0	312	5.0	0.662	24.4	LOS C	3.6	94.6	0.83	0.99	1.41	26.9
Approach			487	4.9	487	4.9	0.662	20.6	LOS C	3.6	94.6	0.79	0.91	1.23	27.1
East: Weddington-Matthews Road															
1	L2	All MCs	290	2.0	290	2.0	0.276	6.1	LOS A	1.3	32.2	0.46	0.30	0.46	32.3
6	T1	All MCs	427	3.0	427	3.0	0.675	13.4	LOS B	9.0	228.5	0.74	0.66	1.15	31.7
16	R2	All MCs	277	2.0	277	2.0	0.675	13.3	LOS B	9.0	228.5	0.74	0.66	1.15	25.6
Approach			995	2.4	995	2.4	0.675	11.2	LOS B	9.0	228.5	0.66	0.56	0.95	29.9
North: Union Day School Driveway															
7	L2	All MCs	429	2.0	429	2.0	0.836	30.5	LOS D	9.4	237.8	0.92	1.46	2.22	20.8
4	T1	All MCs	125	2.0	125	2.0	0.836	30.5	LOS D	9.4	237.8	0.92	1.46	2.22	21.0
14	R2	All MCs	209	2.0	209	2.0	0.349	10.9	LOS B	1.5	37.6	0.67	0.70	0.80	26.2
Approach			762	2.0	762	2.0	0.836	25.1	LOS D	9.4	237.8	0.85	1.25	1.83	22.0
West: Tilley Morris Road															
5	L2	All MCs	118	2.0	118	2.0	1.044	72.0	LOS F	25.5	647.7	1.00	2.08	4.79	15.3
2	T1	All MCs	529	2.0	529	2.0	1.044	72.0	LOS F	25.5	647.7	1.00	2.08	4.79	17.4
12	R2	All MCs	219	4.0	219	4.0	0.369	11.4	LOS B	1.6	40.5	0.69	0.70	0.84	32.2
Approach			866	2.5	866	2.5	1.044	56.7	LOS F	25.5	647.7	0.92	1.73	3.79	19.2
All Vehicles			3110	2.7	3110	2.7	1.044	28.8	LOS D	25.5	647.7	0.80	1.11	2.00	23.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	4	20	7	4	4	17	340	18	4	439	20
Future Volume (vph)	12	4	20	7	4	4	17	340	18	4	439	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.924			0.994			0.994	
Flt Protected					0.984			0.998				
Satd. Flow (prot)	0	1694	0	0	1578	0	0	1802	0	0	1834	0
Flt Permitted					0.984			0.998				
Satd. Flow (perm)	0	1694	0	0	1578	0	0	1802	0	0	1834	0
Link Speed (mph)					25			45			45	
Link Distance (ft)					1285			1472			1543	
Travel Time (s)					35.0			12.8			22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	25%	2%	2%	7%	4%	14%	2%	3%	2%
Adj. Flow (vph)	13	4	22	8	4	4	19	378	20	4	488	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	16	0	0	417	0	0	514	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 40.1%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	4	20	7	4	4	17	340	18	4	439	20
Future Vol, veh/h	12	4	20	7	4	4	17	340	18	4	439	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	25	2	2	7	4	14	2	3	2
Mvmt Flow	13	4	22	8	4	4	19	378	20	4	488	22

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	937	943	499	946	944	388	510	0	0	398	0	0
Stage 1	507	507	-	426	426	-	-	-	-	-	-	-
Stage 2	430	436	-	520	518	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	245	263	572	220	262	660	1030	-	-	1161	-	-
Stage 1	548	539	-	564	586	-	-	-	-	-	-	-
Stage 2	603	580	-	499	533	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	235	255	572	204	254	660	1030	-	-	1161	-	-
Mov Cap-2 Maneuver	235	255	-	204	254	-	-	-	-	-	-	-
Stage 1	535	536	-	550	572	-	-	-	-	-	-	-
Stage 2	580	566	-	473	530	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	16.5	19.4			0.4			0.1		
HCM LOS	C	C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1030	-	-	354	267	1161	-	-		
HCM Lane V/C Ratio	0.018	-	-	0.113	0.062	0.004	-	-		
HCM Control Delay (s/veh)	8.6	0	-	16.5	19.4	8.1	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q (veh)	0.1	-	-	0.4	0.2	0	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	11	8	0	7	2	1
Future Volume (vph)	11	8	0	7	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.942				0.955	
Flt Protected					0.968	
Satd. Flow (prot)	1515	0	0	1863	1304	0
Flt Permitted					0.968	
Satd. Flow (perm)	1515	0	0	1863	1304	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	29%	2%	2%	2%	100%
Adj. Flow (vph)	12	9	0	8	2	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	0	8	3	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2	1		
Traffic Vol, veh/h	11	8	0	7	2	1
Future Vol, veh/h	11	8	0	7	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	29	2	2	2	100
Mvmt Flow	12	9	0	8	2	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	21	0	25	17
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.12	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1595	-	991	837
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1595	-	991	837
Mov Cap-2 Maneuver	-	-	-	-	991	-
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1015	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0	8.9			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	934	-	-	1595	-	
HCM Lane V/C Ratio	0.004	-	-	-	-	
HCM Control Delay (s/veh)	8.9	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Background MID

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	183	25	47	177	116	22	215	140	180	246	32
Future Volume (vph)	49	183	25	47	177	116	22	215	140	180	246	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%		3%		3%
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.987				0.850		0.941			0.983	
Flt Protected		0.991			0.990		0.950			0.950		
Satd. Flow (prot)	0	1799	0	0	1805	1538	1616	1706	0	1710	1771	0
Flt Permitted		0.892			0.882		0.559			0.463		
Satd. Flow (perm)	0	1620	0	0	1608	1538	951	1706	0	833	1771	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	4%	5%	4%	5%	10%	4%	2%	4%	4%	3%
Adj. Flow (vph)	54	203	28	52	197	129	24	239	156	200	273	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	285	0	0	249	129	24	395	0	200	309	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	25.0	25.0		25.0	25.0	25.0	35.0	35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%	41.7%	58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	28.6	28.6		28.6	28.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	16.3			16.3	16.3	19.1	19.1	19.1		19.1	19.1	
Actuated g/C Ratio	0.36			0.36	0.36	0.42	0.42	0.42		0.42	0.42	
v/c Ratio	0.49			0.44	0.24	0.06	0.56	0.56		0.58	0.42	
Control Delay (s/veh)	16.4			15.5	13.3	8.6	13.7	13.7		18.3	11.6	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.4			15.5	13.3	8.6	13.7		18.3	11.6		
LOS	B			B	B	A	B		B	B		
Approach Delay (s/veh)	16.4			14.7			13.4			14.2		
Approach LOS	B			B			B			B		
Queue Length 50th (ft)	53			45	22	4	73		37	53		
Queue Length 95th (ft)	146			127	69	14	148		98	110		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125				300		
Base Capacity (vph)	738			732	700	650	1166		569	1210		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.39			0.34	0.18	0.04	0.34		0.35	0.26		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 45.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay (s/veh): 14.5

Intersection LOS: B

Intersection Capacity Utilization 72.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

2029 Background PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	678	237	319	455	20	162	4	306	21	17	12
Future Volume (vph)	10	678	237	319	455	20	162	4	306	21	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.994				0.850			0.850
Flt Protected		0.999		0.950				0.953			0.973	
Satd. Flow (prot)	0	1861	1583	1770	1831	0	0	1758	1583	0	1812	1583
Flt Permitted		0.999		0.950				0.953			0.973	
Satd. Flow (perm)	0	1861	1583	1770	1831	0	0	1758	1583	0	1812	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	6%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	753	263	354	506	22	180	4	340	23	19	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	764	263	354	528	0	0	184	340	0	42	13
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 87.2%

ICU Level of Service E

Analysis Period (min) 15

SITE LAYOUT

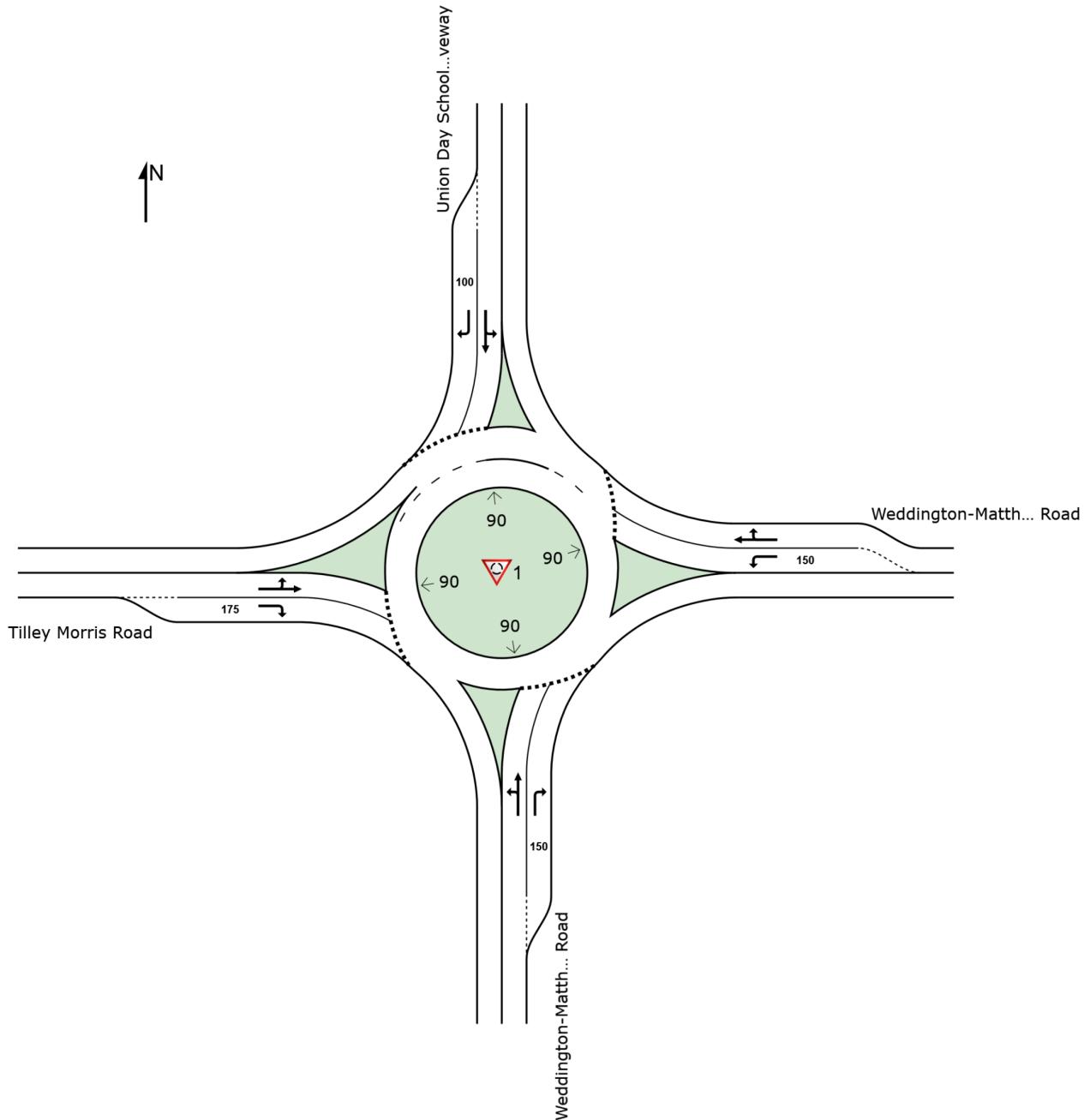
Site: 1 [2029 Background PM (Site Folder: 2029 Background)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2029 Background PM (Site Folder: 2029 Background)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	180	3.0	180	3.0	0.288	9.3	LOS A	1.1	28.3	0.65	0.60
8	T1	All MCs	4	2.0	4	2.0	0.288	9.0	LOS A	1.1	28.3	0.65	0.60
18	R2	All MCs	340	2.0	340	2.0	0.520	13.8	LOS B	2.9	74.3	0.75	0.78
Approach			524	2.3	524	2.3	0.520	12.2	LOS B	2.9	74.3	0.71	0.72
East: Weddington-Matthews Road													
1	L2	All MCs	354	2.0	354	2.0	0.307	6.0	LOS A	1.5	38.6	0.39	0.22
6	T1	All MCs	506	3.0	506	3.0	0.464	8.0	LOS A	2.7	70.3	0.48	0.27
16	R2	All MCs	22	6.0	22	6.0	0.464	8.4	LOS A	2.7	70.3	0.48	0.27
Approach			882	2.7	882	2.7	0.464	7.2	LOS A	2.7	70.3	0.44	0.25
North: Union Day School Driveway													
7	L2	All MCs	23	2.0	23	2.0	0.078	7.6	LOS A	0.2	6.3	0.62	0.62
4	T1	All MCs	19	2.0	19	2.0	0.078	7.6	LOS A	0.2	6.3	0.62	0.62
14	R2	All MCs	13	2.0	13	2.0	0.028	7.8	LOS A	0.1	2.2	0.63	0.61
Approach			56	2.0	56	2.0	0.078	7.7	LOS A	0.2	6.3	0.62	0.61
West: Tilley Morris Road													
5	L2	All MCs	11	2.0	11	2.0	0.802	20.5	LOS C	14.7	372.7	0.94	1.05
2	T1	All MCs	753	2.0	753	2.0	0.802	20.5	LOS C	14.7	372.7	0.94	1.05
12	R2	All MCs	263	2.0	263	2.0	0.276	6.6	LOS A	1.2	31.0	0.52	0.38
Approach			1028	2.0	1028	2.0	0.802	16.9	LOS C	14.7	372.7	0.83	0.88
All Vehicles			2490	2.3	2490	2.3	0.802	12.3	LOS B	14.7	372.7	0.67	1.01
31.3													

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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10:02:47 AM

Project: K:\CHL_PRJ\012826085 Toll Brothers - Weddington\08 - Other KHA Disciplines\TRAFFIC\08B_SIDRA\2025-02-27 Intersection 1
Updated.sip9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	11	7	4	6	17	474	11	4	530	14
Future Volume (vph)	15	4	11	7	4	6	17	474	11	4	530	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.951			0.950			0.997	
Flt Protected					0.975			0.979			0.998	
Satd. Flow (prot)	0	1628	0	0	1732	0	0	1846	0	0	1855	0
Flt Permitted					0.975			0.979			0.998	
Satd. Flow (perm)	0	1628	0	0	1732	0	0	1846	0	0	1855	0
Link Speed (mph)					25			25			45	
Link Distance (ft)					1285			469			1472	
Travel Time (s)					35.0			12.8			22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	2%	2%	2%	2%	2%	2%	2%	20%	2%	2%	2%
Adj. Flow (vph)	17	4	12	8	4	7	19	527	12	4	589	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	19	0	0	558	0	0	609	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 47.0%

ICU Level of Service A

Analysis Period (min) 15

Intersection													
Int Delay, s/veh	1.2												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+	
Traffic Vol, veh/h	15	4	11	7	4	6	17	474	11	4	530	14	
Future Vol, veh/h	15	4	11	7	4	6	17	474	11	4	530	14	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90	
Heavy Vehicles, %	14	2	2	2	2	2	2	2	20	2	2	2	
Mvmt Flow	17	4	12	8	4	7	19	527	12	4	589	16	
Major/Minor	Minor2	Minor1			Major1			Major2					
Conflicting Flow All	1182	1182	597	1184	1184	533	605	0	0	539	0	0	
Stage 1	605	605	-	571	571	-	-	-	-	-	-	-	
Stage 2	577	577	-	613	613	-	-	-	-	-	-	-	
Critical Hdwy	7.24	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-	
Critical Hdwy Stg 1	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.626	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-	
Pot Cap-1 Maneuver	158	190	503	166	189	547	973	-	-	1029	-	-	
Stage 1	465	487	-	506	505	-	-	-	-	-	-	-	
Stage 2	482	502	-	480	483	-	-	-	-	-	-	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	149	184	503	155	183	547	973	-	-	1029	-	-	
Mov Cap-2 Maneuver	149	184	-	155	183	-	-	-	-	-	-	-	
Stage 1	452	484	-	492	491	-	-	-	-	-	-	-	
Stage 2	459	488	-	461	480	-	-	-	-	-	-	-	
Approach	EB		WB			NB			SB				
HCM Control Delay, s/veh	25.6	23.1		0.3			0.1						
HCM LOS	D	C											
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	973	-	-	208	218	1029	-	-					
HCM Lane V/C Ratio	0.019	-	-	0.16	0.087	0.004	-	-					
HCM Control Delay (s/veh)	8.8	0	-	25.6	23.1	8.5	0	-					
HCM Lane LOS	A	A	-	D	C	A	A	-					
HCM 95th %tile Q (veh)	0.1	-	-	0.6	0.3	0	-	-					



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	9	6	0	10	2	2
Future Volume (vph)	9	6	0	10	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.944				0.932	
Flt Protected					0.976	
Satd. Flow (prot)	1540	0	0	1863	1372	0
Flt Permitted					0.976	
Satd. Flow (perm)	1540	0	0	1863	1372	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	20%	2%	2%	2%	50%
Adj. Flow (vph)	10	7	0	11	2	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	0	11	4	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2	2		
Traffic Vol, veh/h	9	6	0	10	2	2
Future Vol, veh/h	9	6	0	10	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	20	2	2	2	50
Mvmt Flow	10	7	0	11	2	2

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	17	0	25
Stage 1	-	-	-	-	14
Stage 2	-	-	-	-	11
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1600	-	991
Stage 1	-	-	-	-	1009
Stage 2	-	-	-	-	1012
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1600	-	991
Mov Cap-2 Maneuver	-	-	-	-	991
Stage 1	-	-	-	-	1009
Stage 2	-	-	-	-	1012

Approach	EB	WB	NB		
HCM Control Delay, s/v	0	0	8.7		
HCM LOS			A		
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	966	-	-	1600	-
HCM Lane V/C Ratio	0.005	-	-	-	-
HCM Control Delay (s/veh)	8.7	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q (veh)	0	-	-	0	-

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Background PM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	253	21	54	185	112	24	304	121	203	264	40
Future Volume (vph)	67	253	21	54	185	112	24	304	121	203	264	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%			3%	
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.992				0.850		0.957			0.980	
Flt Protected		0.990				0.989		0.950			0.950	
Satd. Flow (prot)	0	1817	0	0	1834	1568	1631	1751	0	1743	1798	0
Flt Permitted		0.878			0.859		0.521			0.380		
Satd. Flow (perm)	0	1611	0	0	1593	1568	895	1751	0	697	1798	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	3%	9%	2%	3%	2%	2%	2%
Adj. Flow (vph)	74	281	23	60	206	124	27	338	134	226	293	44
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	378	0	0	266	124	27	472	0	226	337	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	24.0	24.0		24.0	24.0	24.0	36.0	36.0		36.0	36.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	29.6	29.6		29.6	29.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	17.8			17.8	17.8	21.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.36			0.36	0.36	0.43	0.43	0.43		0.43	0.43	
v/c Ratio	0.65			0.47	0.22	0.07	0.62	0.75		0.43		
Control Delay (s/veh)	22.5			17.4	14.5	8.3	14.8	29.1		11.5		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.5			17.4	14.5	8.3	14.8		29.1	11.5		
LOS	C			B	B	A	B		C	B		
Approach Delay (s/veh)	22.5			16.5			14.4			18.6		
Approach LOS	C			B			B			B		
Queue Length 50th (ft)	90			58	24	4	103		53	66		
Queue Length 95th (ft)	#240			142	68	15	175		#153	115		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125				300		
Base Capacity (vph)	636			629	619	576	1128		449	1159		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.59			0.42	0.20	0.05	0.42		0.50	0.29		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 49.6

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay (s/veh): 17.8

Intersection LOS: B

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



2029 Build-out Conditions

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2029 Build AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	220	60	287	696	197	499	97	332	150	57	130
Future Volume (vph)	62	220	60	287	696	197	499	97	332	150	57	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.965				0.850			0.850
Flt Protected		0.986		0.950			0.960			0.965		
Satd. Flow (prot)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Flt Permitted		0.986		0.950			0.960			0.965		
Satd. Flow (perm)	0	1799	1524	1703	1798	0	0	1788	1568	0	1798	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107			1131			2099			1065	
Travel Time (s)		16.8			17.1			31.8			29.0	
Peak Hour Factor	0.62	0.87	0.73	0.76	0.71	0.67	0.75	0.69	0.73	0.56	0.57	0.53
Heavy Vehicles (%)	2%	5%	6%	6%	2%	2%	2%	2%	3%	2%	2%	2%
Adj. Flow (vph)	100	253	82	378	980	294	665	141	455	268	100	245
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	82	378	1274	0	0	806	455	0	368	245
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 113.0%

ICU Level of Service H

Analysis Period (min) 15

SITE LAYOUT

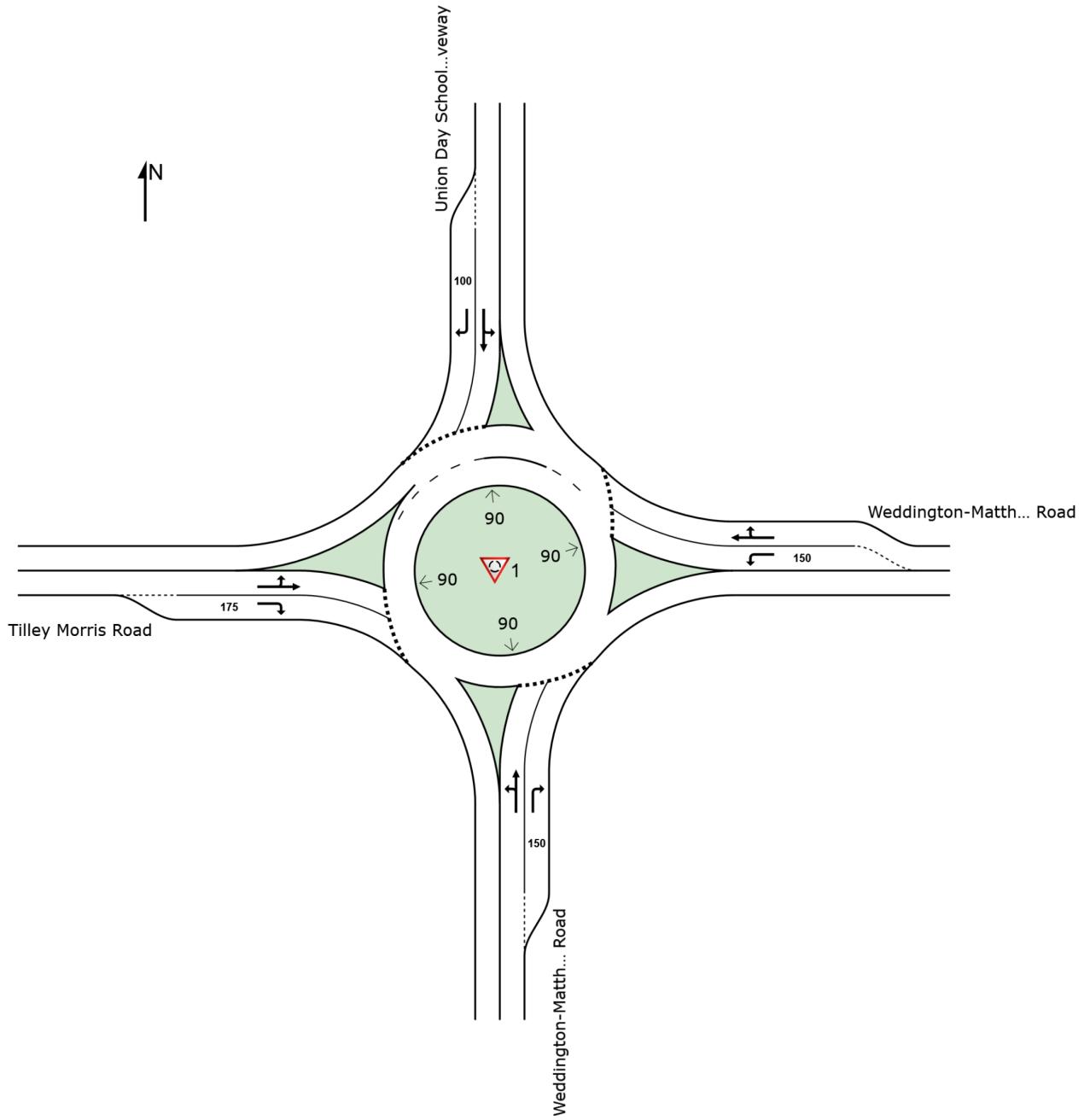
Site: 1 [2029 Build AM (Site Folder: 2029 Build)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2029 Build AM (Site Folder: 2029 Build)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	665 2.0	665 2.0	1.041	64.2	LOS F	34.1	865.2	1.00	2.19	4.75	18.0
8	T1	All MCs	141 2.0	141 2.0	1.041	64.2	LOS F	34.1	865.2	1.00	2.19	4.75	16.0
18	R2	All MCs	455 3.0	455 3.0	0.598	14.4	LOS B	4.6	117.4	0.77	0.81	1.24	30.9
Approach			1261 2.4	1261 2.4	1.041	46.2	LOS E	34.1	865.2	0.92	1.69	3.48	20.7
East: Weddington-Matthews Road													
1	L2	All MCs	378 6.0	378 6.0	0.694	23.5	LOS C	4.4	114.5	0.84	0.97	1.44	25.7
6	T1	All MCs	980 2.0	980 2.0	2.141	533.7	LOS F	218.0	5537.4	1.00	6.68	21.17	3.8
16	R2	All MCs	294 2.0	294 2.0	2.141	533.7	LOS F	218.0	5537.4	1.00	6.68	21.17	3.7
Approach			1652 2.9	1652 2.9	2.141	419.5	LOS F	218.0	5537.4	0.96	5.38	16.66	4.8
North: Union Day School Driveway													
7	L2	All MCs	268 2.0	268 2.0	1.028	87.9	LOS F	13.0	330.2	1.00	2.23	4.20	13.7
4	T1	All MCs	100 2.0	100 2.0	1.028	88.1	LOS F	13.0	330.2	1.00	2.23	4.20	13.8
14	R2	All MCs	245 2.0	245 2.0	0.786	46.5	LOS E	4.2	107.3	0.93	1.28	1.86	18.5
Approach			613 2.0	613 2.0	1.028	71.4	LOS F	13.0	330.2	0.97	1.85	3.26	15.3
West: Tilley Morris Road													
5	L2	All MCs	100 2.0	100 2.0	0.537	13.7	LOS B	3.2	83.1	0.75	0.80	1.14	24.9
2	T1	All MCs	253 5.0	253 5.0	0.537	14.5	LOS B	3.2	83.1	0.75	0.80	1.14	30.6
12	R2	All MCs	82 6.0	82 6.0	0.130	7.2	LOS A	0.4	11.5	0.59	0.54	0.59	33.9
Approach			435 4.5	435 4.5	0.537	12.9	LOS B	3.2	83.1	0.72	0.75	1.04	29.6
All Vehicles			3961 2.8	3961 2.8	2.141	201.1	LOS F	218.0	5537.4	0.92	3.15	8.68	8.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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10:02:47 AM

Project: K:\CHL_PRJ\012826085 Toll Brothers - Weddington\08 - Other KHA Disciplines\TRAFFIC\08B_SIDRA\2025-02-27 Intersection 1
Updated.sip9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	4	15	10	4	13	8	914	4	8	366	9
Future Volume (vph)	23	4	15	10	4	13	8	914	4	8	366	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.951			0.935			0.999	
Flt Protected						0.981					0.999	
Satd. Flow (prot)	0	1667	0	0	1465	0	0	1861	0	0	1787	0
Flt Permitted		0.973				0.981					0.999	
Satd. Flow (perm)	0	1667	0	0	1465	0	0	1861	0	0	1787	0
Link Speed (mph)			25			25			45			45
Link Distance (ft)			1285			469			1472			1543
Travel Time (s)			35.0			12.8			22.3			23.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	7%	11%	100%	2%	2%	2%	2%	25%	5%	25%
Adj. Flow (vph)	26	4	17	11	4	14	9	1016	4	9	407	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	29	0	0	1029	0	0	426	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	4	15	10	4	13	8	914	4	8	366	9
Future Vol, veh/h	23	4	15	10	4	13	8	914	4	8	366	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	5	2	7	11	100	2	2	2	2	25	5	25
Mvmt Flow	26	4	17	11	4	14	9	1016	4	9	407	10

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1475	1468	412	1477	1471	1018	417	0	0	1020	0	0
Stage 1	430	430	-	1036	1036	-	-	-	-	-	-	-
Stage 2	1045	1038	-	441	435	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.27	7.21	7.5	6.22	4.12	-	-	4.35	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.21	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.363	3.599	4.9	3.318	2.218	-	-	2.425	-	-
Pot Cap-1 Maneuver	103	128	629	99	79	288	1142	-	-	598	-	-
Stage 1	598	583	-	269	211	-	-	-	-	-	-	-
Stage 2	273	308	-	578	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	123	629	91	76	288	1142	-	-	598	-	-
Mov Cap-2 Maneuver	91	123	-	91	76	-	-	-	-	-	-	-
Stage 1	587	571	-	264	207	-	-	-	-	-	-	-
Stage 2	249	302	-	547	435	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/veh	44.7	40.8			0.1			0.2		
HCM LOS	E	E								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1142	-	-	136	130	598	-	-		
HCM Lane V/C Ratio	0.008	-	-	0.343	0.231	0.015	-	-		
HCM Control Delay (s/veh)	8.2	0	-	44.7	40.8	11.1	0	-		
HCM Lane LOS	A	A	-	E	E	B	A	-		
HCM 95th %tile Q (veh)	0	-	-	1.4	0.8	0	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	6	3	1	10	14	1
Future Volume (vph)	6	3	1	10	14	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.959				0.992	
Flt Protected				0.996	0.955	
Satd. Flow (prot)	1590	0	0	1718	1670	0
Flt Permitted				0.996	0.955	
Satd. Flow (perm)	1590	0	0	1718	1670	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	20%	2%	100%	2%	2%	100%
Adj. Flow (vph)	7	3	1	11	16	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	0	12	17	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	3.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	1	4	1	1
Traffic Vol, veh/h	6	3	1	10	14	1
Future Vol, veh/h	6	3	1	10	14	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	20	2	100	2	2	100
Mvmt Flow	7	3	1	11	16	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	10	0	22	9
Stage 1	-	-	-	-	9	-
Stage 2	-	-	-	-	13	-
Critical Hdwy	-	-	5.1	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	3.1	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1150	-	995	846
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1010	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1150	-	994	846
Mov Cap-2 Maneuver	-	-	-	-	994	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1009	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0.7	8.7			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	983	-	-	1150	-	
HCM Lane V/C Ratio	0.017	-	-	0.001	-	
HCM Control Delay (s/veh)	8.7	-	-	8.1	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q (veh)	0.1	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Build AM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	129	13	121	425	427	29	339	34	117	267	46
Future Volume (vph)	48	129	13	121	425	427	29	339	34	117	267	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%		3%		3%
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.991				0.850		0.986			0.978	
Flt Protected		0.988			0.989		0.950			0.950		
Satd. Flow (prot)	0	1772	0	0	1820	1583	1743	1809	0	1693	1736	0
Flt Permitted		0.749			0.872		0.429			0.338		
Satd. Flow (perm)	0	1344	0	0	1605	1583	787	1809	0	602	1736	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	8%	4%	3%	2%	2%	2%	2%	5%	5%	8%
Adj. Flow (vph)	53	143	14	134	472	474	32	377	38	130	297	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	210	0	0	606	474	32	415	0	130	348	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	34.0	34.0		34.0	34.0	34.0	26.0	26.0		26.0	26.0	
Total Split (%)	56.7%	56.7%		56.7%	56.7%	56.7%	43.3%	43.3%		43.3%	43.3%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	19.6	19.6		19.6	19.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	27.6			27.6	27.6	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.50			0.50	0.50	0.32	0.32	0.32		0.32	0.32	
v/c Ratio	0.32			0.76	0.60	0.13	0.71	0.67		0.67	0.62	
Control Delay (s/veh)	10.7			20.4	14.7	15.0	24.6	37.1		21.9		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)	10.7			20.4	14.7	15.0	24.6		37.1	21.9		
LOS	B			C	B	B	C		D	C		
Approach Delay (s/veh)	10.7			17.9			23.9			26.0		
Approach LOS	B			B			C			C		
Queue Length 50th (ft)	41			160	111	8	124		38	100		
Queue Length 95th (ft)	84			#343	205	24	210		#111	174		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125				300		
Base Capacity (vph)	706			844	832	299	689		229	661		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.30			0.72	0.57	0.11	0.60		0.57	0.53		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 55.7

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 20.2

Intersection LOS: C

Intersection Capacity Utilization 85.9%

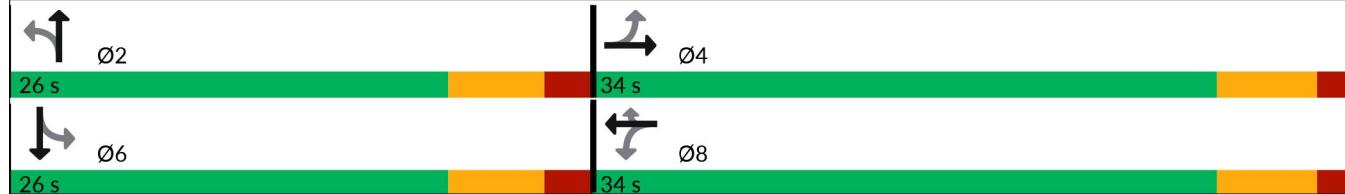
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road



5: Weddington-Matthews Road & Access A



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	3	10	0	8	1	887	3	3	379	1
Future Volume (vph)	3	0	3	10	0	8	1	887	3	3	379	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t						0.939						
Flt Protected						0.973						
Satd. Flow (prot)	0	1694	0	0	1702	0	0	1863	0	0	1810	0
Flt Permitted		0.976				0.973						
Satd. Flow (perm)	0	1694	0	0	1702	0	0	1863	0	0	1810	0
Link Speed (mph)		25				25			45			45
Link Distance (ft)		1078				1059			3102			1472
Travel Time (s)		29.4				28.9			47.0			22.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	5%	2%
Adj. Flow (vph)	3	0	3	11	0	9	1	986	3	3	421	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	20	0	0	990	0	0	425	0
Sign Control		Stop				Stop			Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.5% ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	10	0	8	1	887	3	3	379	1
Future Vol, veh/h	3	0	3	10	0	8	1	887	3	3	379	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	5	2
Mvmt Flow	3	0	3	11	0	9	1	986	3	3	421	1

Major/Minor	Minor2	Minor1			Major1		Major2		
Conflicting Flow All	1422	1419	422	1419	1418	988	422	0	0
Stage 1	428	428	-	990	990	-	-	-	-
Stage 2	994	991	-	429	428	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	4.12
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	2.218
Pot Cap-1 Maneuver	114	137	632	114	137	300	1137	-	699
Stage 1	605	585	-	297	324	-	-	-	-
Stage 2	295	324	-	604	585	-	-	-	-
Platoon blocked, %							-	-	-
Mov Cap-1 Maneuver	110	136	632	113	136	300	1137	-	699
Mov Cap-2 Maneuver	110	136	-	113	136	-	-	-	-
Stage 1	604	581	-	296	323	-	-	-	-
Stage 2	286	323	-	597	581	-	-	-	-

Approach	EB	WB			NB		SB	
HCM Control Delay, s/v	25	31.4			0		0.1	
HCM LOS	D	D						
<hr/>								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1137	-	-	187	156	699	-	-
HCM Lane V/C Ratio	0.001	-	-	0.036	0.128	0.005	-	-
HCM Control Delay (s/veh)	8.2	0	-	25	31.4	10.2	0	-
HCM Lane LOS	A	A	-	D	D	B	A	-
HCM 95th %tile Q (veh)	0	-	-	0.1	0.4	0	-	-

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2029 Build MID



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	492	160	279	359	172	86	47	249	180	60	96
Future Volume (vph)	79	492	160	279	359	172	86	47	249	180	60	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.941				0.850			0.850
Flt Protected		0.991		0.950				0.972			0.963	
Satd. Flow (prot)	0	1846	1553	1770	1742	0	0	1762	1538	0	1794	1583
Flt Permitted		0.991		0.950				0.972			0.963	
Satd. Flow (perm)	0	1846	1553	1770	1742	0	0	1762	1538	0	1794	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.67	0.93	0.71	0.93	0.84	0.62	0.84	0.60	0.78	0.42	0.48	0.46
Heavy Vehicles (%)	2%	2%	4%	2%	3%	2%	7%	2%	5%	2%	2%	2%
Adj. Flow (vph)	118	529	225	300	427	277	102	78	319	429	125	209
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	647	225	300	704	0	0	180	319	0	554	209
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

SITE LAYOUT

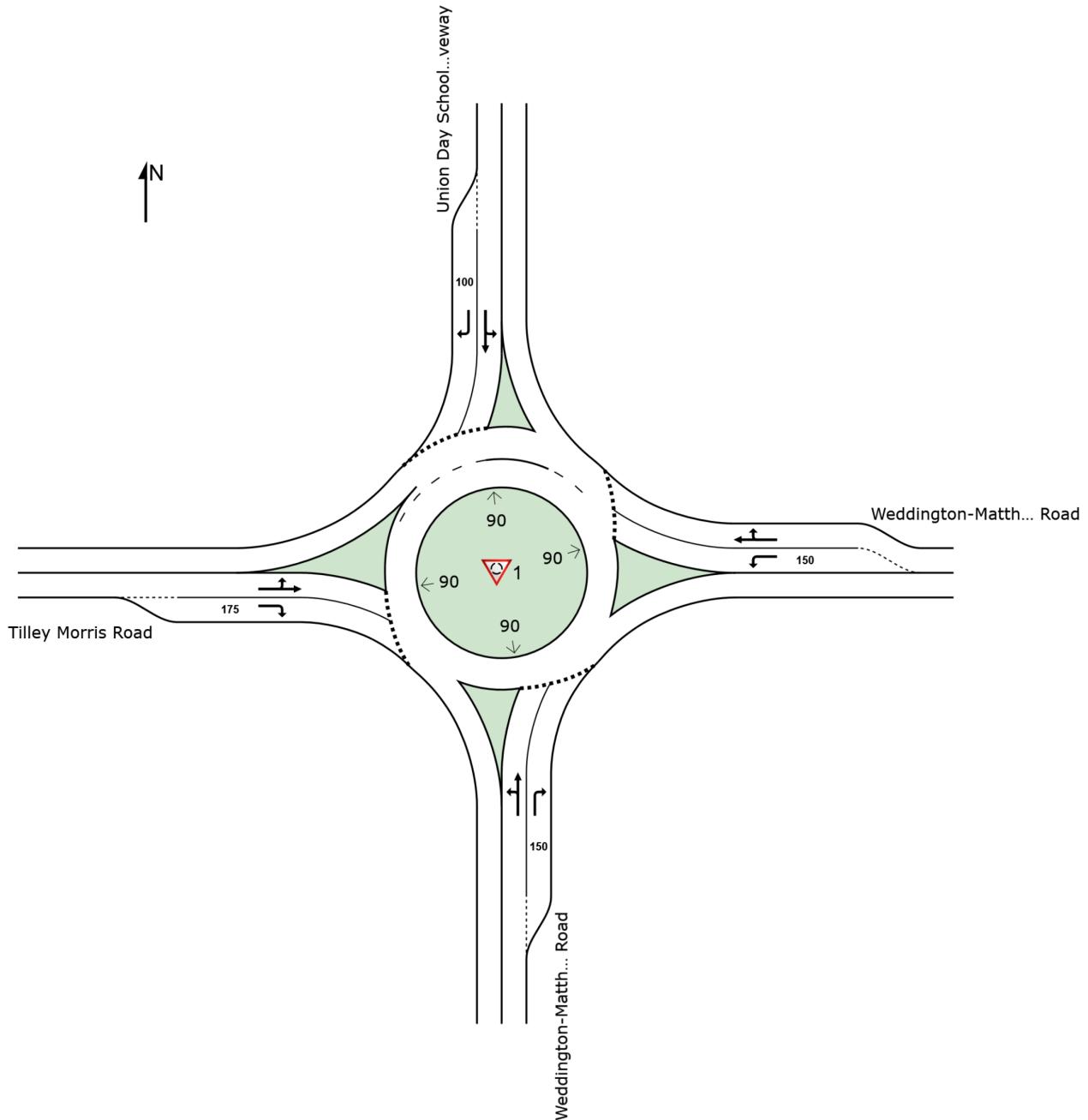
Site: 1 [2029 Build MID (Site Folder: 2029 Build)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2029 Build MID (Site Folder: 2029 Build)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	102	7.0	102	7.0	0.380	14.9	LOS B	1.5	38.5	0.72	0.78
8	T1	All MCs	78	2.0	78	2.0	0.380	12.8	LOS B	1.5	38.5	0.72	0.78
18	R2	All MCs	319	5.0	319	5.0	0.675	25.0	LOS D	3.8	98.7	0.83	1.00
Approach			500	4.9	500	4.9	0.675	21.0	LOS C	3.8	98.7	0.79	0.92
East: Weddington-Matthews Road													
1	L2	All MCs	300	2.0	300	2.0	0.286	6.2	LOS A	1.3	33.7	0.46	0.31
6	T1	All MCs	427	3.0	427	3.0	0.678	13.6	LOS B	9.0	230.9	0.75	0.67
16	R2	All MCs	277	2.0	277	2.0	0.678	13.4	LOS B	9.0	230.9	0.75	0.67
Approach			1005	2.4	1005	2.4	0.678	11.3	LOS B	9.0	230.9	0.66	0.56
North: Union Day School Driveway													
7	L2	All MCs	429	2.0	429	2.0	0.848	32.0	LOS D	9.7	245.8	0.93	1.50
4	T1	All MCs	125	2.0	125	2.0	0.848	32.0	LOS D	9.7	245.8	0.93	1.50
14	R2	All MCs	209	2.0	209	2.0	0.354	11.1	LOS B	1.5	38.3	0.68	0.71
Approach			762	2.0	762	2.0	0.848	26.3	LOS D	9.7	245.8	0.86	1.29
West: Tilley Morris Road													
5	L2	All MCs	118	2.0	118	2.0	1.054	75.2	LOS F	26.5	673.1	1.00	2.13
2	T1	All MCs	529	2.0	529	2.0	1.054	75.2	LOS F	26.5	673.1	1.00	2.13
12	R2	All MCs	225	4.0	225	4.0	0.384	11.8	LOS B	1.7	42.9	0.70	0.71
Approach			872	2.5	872	2.5	1.054	58.8	LOS F	26.5	673.1	0.92	1.77
All Vehicles			3139	2.7	3139	2.7	1.054	29.7	LOS D	26.5	673.1	0.80	1.13
20.6													23.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	4	20	7	4	5	17	347	18	6	450	20
Future Volume (vph)	12	4	20	7	4	5	17	347	18	6	450	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.924			0.955			0.994	
Flt Protected					0.984			0.978			0.998	
Satd. Flow (prot)	0	1694	0	0	1581	0	0	1802	0	0	1833	0
Flt Permitted					0.984			0.978			0.998	
Satd. Flow (perm)	0	1694	0	0	1581	0	0	1802	0	0	1833	0
Link Speed (mph)					25			25			45	
Link Distance (ft)					1285			469			1472	
Travel Time (s)					35.0			12.8			22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	25%	2%	2%	7%	4%	14%	2%	3%	2%
Adj. Flow (vph)	13	4	22	8	4	6	19	386	20	7	500	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	18	0	0	425	0	0	529	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.6% ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	4	20	7	4	5	17	347	18	6	450	20
Future Vol, veh/h	12	4	20	7	4	5	17	347	18	6	450	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	25	2	2	7	4	14	2	3	2
Mvmt Flow	13	4	22	8	4	6	19	386	20	7	500	22

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	964	969	511	972	970	396	522	0	0	406	0	0
Stage 1	525	525	-	434	434	-	-	-	-	-	-	-
Stage 2	439	444	-	538	536	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.35	6.52	6.22	4.17	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.35	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.725	4.018	3.318	2.263	-	-	2.218	-	-
Pot Cap-1 Maneuver	235	254	563	211	253	653	1019	-	-	1153	-	-
Stage 1	536	529	-	558	581	-	-	-	-	-	-	-
Stage 2	597	575	-	488	523	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	224	246	563	195	245	653	1019	-	-	1153	-	-
Mov Cap-2 Maneuver	224	246	-	195	245	-	-	-	-	-	-	-
Stage 1	523	524	-	545	567	-	-	-	-	-	-	-
Stage 2	573	561	-	461	518	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/v	16.9	19.4			0.4			0.1		
HCM LOS	C	C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	1019	-	-	342	267	1153	-	-		
HCM Lane V/C Ratio	0.019	-	-	0.117	0.067	0.006	-	-		
HCM Control Delay (s/veh)	8.6	0	-	16.9	19.4	8.1	0	-		
HCM Lane LOS	A	A	-	C	C	A	A	-		
HCM 95th %tile Q (veh)	0.1	-	-	0.4	0.2	0	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	11	13	0	7	5	1
Future Volume (vph)	11	13	0	7	5	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.927				0.981	
Flt Protected					0.959	
Satd. Flow (prot)	1534	0	0	1863	1541	0
Flt Permitted					0.959	
Satd. Flow (perm)	1534	0	0	1863	1541	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	19%	2%	2%	2%	100%
Adj. Flow (vph)	12	14	0	8	6	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	8	7	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2	3	5	1
Traffic Vol, veh/h	11	13	0	7	5	1
Future Vol, veh/h	11	13	0	7	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	19	2	2	2	100
Mvmt Flow	12	14	0	8	6	1
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	26	0	27	19
Stage 1	-	-	-	-	19	-
Stage 2	-	-	-	-	8	-
Critical Hdwy	-	-	4.12	-	6.42	7.2
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	4.2
Pot Cap-1 Maneuver	-	-	1588	-	988	834
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	1015	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1588	-	988	834
Mov Cap-2 Maneuver	-	-	-	-	988	-
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	1015	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0	8.8			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	959	-	-	1588	-	
HCM Lane V/C Ratio	0.007	-	-	-	-	
HCM Control Delay (s/veh)	8.8	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Build MID

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	183	25	47	177	120	22	218	140	182	248	34
Future Volume (vph)	53	183	25	47	177	120	22	218	140	182	248	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%		3%		3%
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.987				0.850		0.941			0.982	
Flt Protected		0.990			0.990		0.950			0.950		
Satd. Flow (prot)	0	1797	0	0	1805	1538	1616	1706	0	1710	1769	0
Flt Permitted		0.883			0.883		0.553			0.459		
Satd. Flow (perm)	0	1603	0	0	1610	1538	941	1706	0	826	1769	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	2%	4%	5%	4%	5%	10%	4%	2%	4%	4%	3%
Adj. Flow (vph)	59	203	28	52	197	133	24	242	156	202	276	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	290	0	0	249	133	24	398	0	202	314	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	25.0	25.0		25.0	25.0	25.0	35.0	35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%	41.7%	58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	28.6	28.6		28.6	28.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0			5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)	16.4			16.4	16.4	19.2	19.2	19.2		19.2	19.2	
Actuated g/C Ratio	0.36			0.36	0.36	0.42	0.42	0.42		0.42	0.42	
v/c Ratio	0.51			0.43	0.24	0.06	0.56	0.59		0.59	0.43	
Control Delay (s/veh)	16.8			15.6	13.5	8.6	13.8	18.6		18.6	11.7	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.8			15.6	13.5	8.6	13.8		18.6	11.7		
LOS	B			B	B	A	B		B	B		
Approach Delay (s/veh)	16.8			14.8			13.5			14.4		
Approach LOS	B			B			B			B		
Queue Length 50th (ft)	55			46	23	4	74		38	54		
Queue Length 95th (ft)	151			128	71	14	149		99	112		
Internal Link Dist (ft)	935			1002			1152			3022		
Turn Bay Length (ft)					175	125				300		
Base Capacity (vph)	726			729	696	666	1208		585	1252		
Starvation Cap Reductn	0			0	0	0	0		0	0		
Spillback Cap Reductn	0			0	0	0	0		0	0		
Storage Cap Reductn	0			0	0	0	0		0	0		
Reduced v/c Ratio	0.40			0.34	0.19	0.04	0.33		0.35	0.25		

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 46

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay (s/veh): 14.7

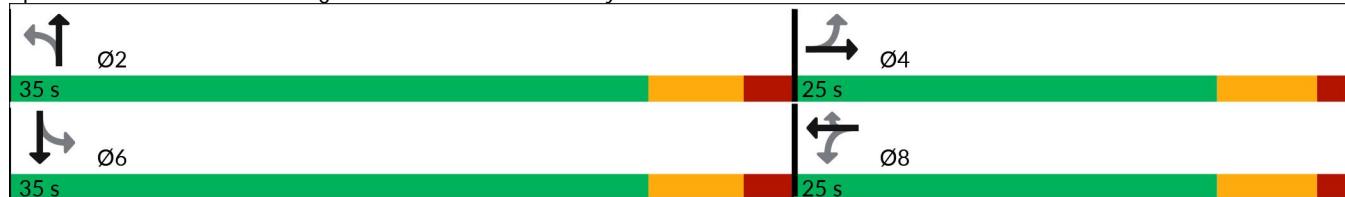
Intersection LOS: B

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	1	5	0	5	3	371	8	8	451	3
Future Volume (vph)	2	0	1	5	0	5	3	371	8	8	451	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.955			0.932			0.997	
Flt Protected					0.968			0.976			0.999	
Satd. Flow (prot)	0	1722	0	0	1694	0	0	1806	0	0	1841	0
Flt Permitted					0.968			0.976			0.999	
Satd. Flow (perm)	0	1722	0	0	1694	0	0	1806	0	0	1841	0
Link Speed (mph)					25			25			45	
Link Distance (ft)					1199			1029			3102	
Travel Time (s)					32.7			28.1			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	5%	2%	2%	3%	2%
Adj. Flow (vph)	2	0	1	6	0	6	3	412	9	9	501	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	12	0	0	424	0	0	513	0
Sign Control			Stop			Stop			Free			Free

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 39.1%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+
Traffic Vol, veh/h	2	0	1	5	0	5	3	371	8	8	451	3
Future Vol, veh/h	2	0	1	5	0	5	3	371	8	8	451	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	5	2	2	3	2
Mvmt Flow	2	0	1	6	0	6	3	412	9	9	501	3

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	947	948	503	944	945	417	504	0	0	421	0	0
Stage 1	521	521	-	423	423	-	-	-	-	-	-	-
Stage 2	426	427	-	521	522	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	241	261	569	242	262	636	1061	-	-	1138	-	-
Stage 1	539	532	-	609	588	-	-	-	-	-	-	-
Stage 2	606	585	-	539	531	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	236	257	569	239	258	636	1061	-	-	1138	-	-
Mov Cap-2 Maneuver	236	257	-	239	258	-	-	-	-	-	-	-
Stage 1	537	526	-	607	586	-	-	-	-	-	-	-
Stage 2	598	583	-	532	525	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB				
HCM Control Delay, s/v	17.4	15.7			0.1			0.1				
HCM LOS	C	C										
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1061	-	-	293	347	1138	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.011	0.032	0.008	-	-				
HCM Control Delay (s/veh)	8.4	0	-	17.4	15.7	8.2	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q (veh)	0	-	-	0	0.1	0	-	-				

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway 2029 Build PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	678	245	329	455	20	167	4	312	21	17	12
Future Volume (vph)	10	678	245	329	455	20	167	4	312	21	17	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		175	150		0	0		150	0		100
Storage Lanes	0		1	1		0	0		1	0		1
Taper Length (ft)	25			175			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t			0.850		0.994				0.850			0.850
Flt Protected		0.999		0.950				0.953			0.973	
Satd. Flow (prot)	0	1861	1583	1770	1831	0	0	1758	1583	0	1812	1583
Flt Permitted		0.999		0.950				0.953			0.973	
Satd. Flow (perm)	0	1861	1583	1770	1831	0	0	1758	1583	0	1812	1583
Link Speed (mph)		45		45			45			25		
Link Distance (ft)		1107		1131			2099			1065		
Travel Time (s)		16.8		17.1			31.8			29.0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	3%	6%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	753	272	366	506	22	186	4	347	23	19	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	764	272	366	528	0	0	190	347	0	42	13
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Roundabout

Intersection Capacity Utilization 87.5%

ICU Level of Service E

Analysis Period (min) 15

SITE LAYOUT

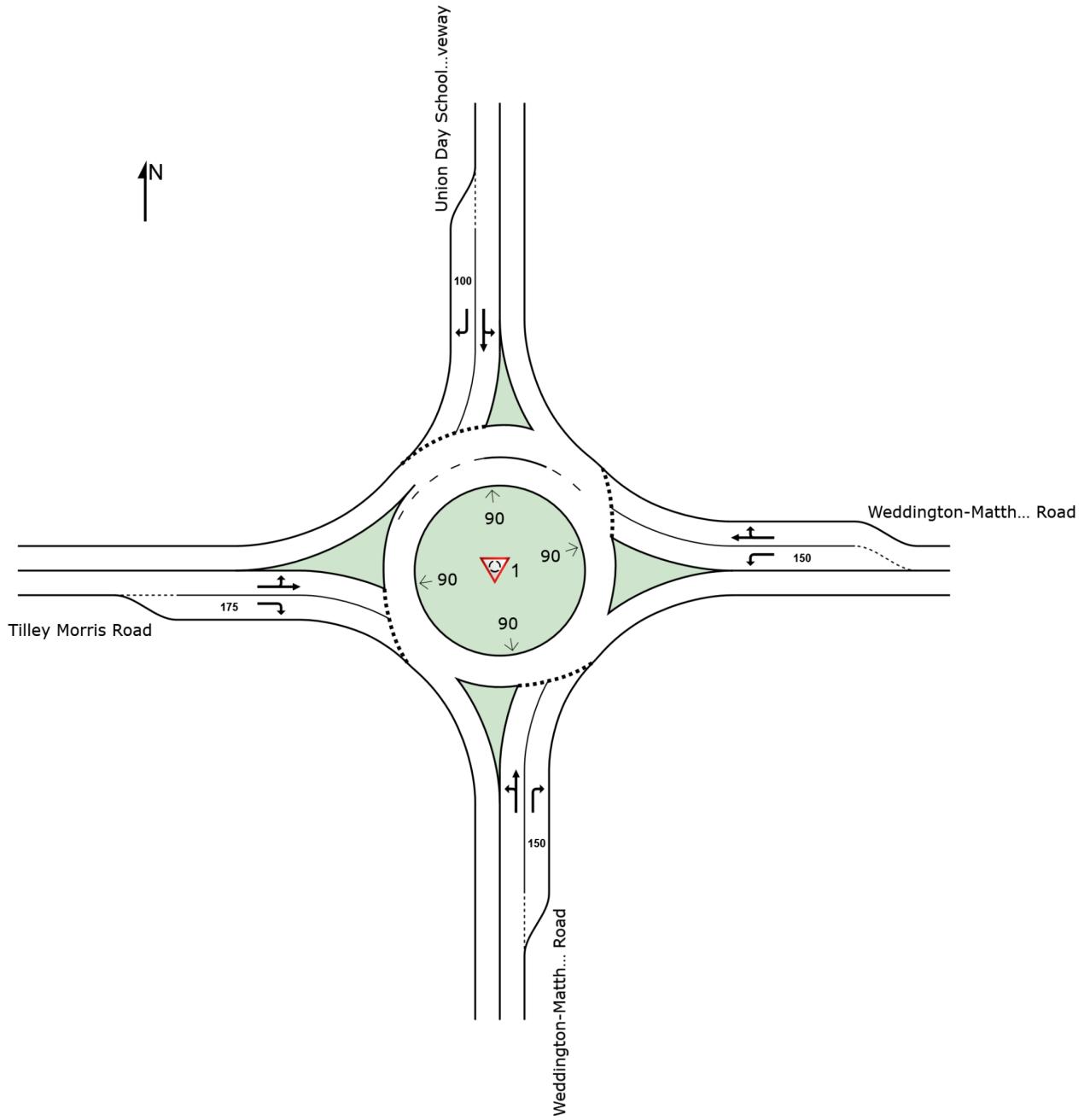
Site: 1 [2029 Build PM (Site Folder: 2029 Build)]

New Site

Site Category: (None)

Roundabout

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 1 [2029 Build PM (Site Folder: 2029 Build)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Site

Site Category: (None)

Roundabout

Vehicle Movement Performance													
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h	Arrival Flows [Total HV] veh/h	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh]	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph	
South: Weddington-Matthews Road													
3	L2	All MCs	186	3.0	186	3.0	0.297	9.4	LOS A	1.2	29.6	0.65	0.61
8	T1	All MCs	4	2.0	4	2.0	0.297	9.2	LOS A	1.2	29.6	0.65	0.61
18	R2	All MCs	347	2.0	347	2.0	0.530	14.1	LOS B	3.0	76.9	0.75	0.79
Approach			537	2.3	537	2.3	0.530	12.4	LOS B	3.0	76.9	0.72	0.73
East: Weddington-Matthews Road													
1	L2	All MCs	366	2.0	366	2.0	0.319	6.1	LOS A	1.6	40.4	0.40	0.23
6	T1	All MCs	506	3.0	506	3.0	0.466	8.1	LOS A	2.8	70.6	0.48	0.28
16	R2	All MCs	22	6.0	22	6.0	0.466	8.4	LOS A	2.8	70.6	0.48	0.28
Approach			893	2.7	893	2.7	0.466	7.3	LOS A	2.8	70.6	0.45	0.26
North: Union Day School Driveway													
7	L2	All MCs	23	2.0	23	2.0	0.079	7.7	LOS A	0.3	6.4	0.62	0.62
4	T1	All MCs	19	2.0	19	2.0	0.079	7.7	LOS A	0.3	6.4	0.62	0.62
14	R2	All MCs	13	2.0	13	2.0	0.028	8.0	LOS A	0.1	2.3	0.64	0.61
Approach			56	2.0	56	2.0	0.079	7.8	LOS A	0.3	6.4	0.63	0.62
West: Tilley Morris Road													
5	L2	All MCs	11	2.0	11	2.0	0.810	21.3	LOS C	15.0	381.1	0.95	1.09
2	T1	All MCs	753	2.0	753	2.0	0.810	21.3	LOS C	15.0	381.1	0.95	1.09
12	R2	All MCs	272	2.0	272	2.0	0.289	6.8	LOS A	1.3	32.6	0.53	0.39
Approach			1037	2.0	1037	2.0	0.810	17.4	LOS C	15.0	381.1	0.84	0.90
All Vehicles			2522	2.3	2522	2.3	0.810	12.6	LOS B	15.0	381.1	0.67	0.63
31.2													

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: Same as Sign Control.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: US HCM 6.

Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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10:02:48 AM

Project: K:\CHL_PRJ\012826085 Toll Brothers - Weddington\08 - Other KHA Disciplines\TRAFFIC\08B_SIDRA\2025-02-27 Intersection 1
Updated.sip9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	4	11	7	4	9	17	482	11	9	542	14
Future Volume (vph)	15	4	11	7	4	9	17	482	11	9	542	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.951			0.997			0.997	
Flt Protected					0.975			0.998			0.999	
Satd. Flow (prot)	0	1628	0	0	1718	0	0	1847	0	0	1855	0
Flt Permitted					0.975			0.998			0.999	
Satd. Flow (perm)	0	1628	0	0	1718	0	0	1847	0	0	1855	0
Link Speed (mph)					25			45			45	
Link Distance (ft)					1285			1472			1543	
Travel Time (s)					35.0			12.8			22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	2%	2%	2%	2%	2%	2%	2%	20%	2%	2%	2%
Adj. Flow (vph)	17	4	12	8	4	10	19	536	12	10	602	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	22	0	0	567	0	0	628	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 45.5%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	4	11	7	4	9	17	482	11	9	542	14
Future Vol, veh/h	15	4	11	7	4	9	17	482	11	9	542	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	14	2	2	2	2	2	2	2	20	2	2	2
Mvmt Flow	17	4	12	8	4	10	19	536	12	10	602	16

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1217	1216	610	1218	1218	542	618	0	0	548	0	0
Stage 1	630	630	-	580	580	-	-	-	-	-	-	-
Stage 2	587	586	-	638	638	-	-	-	-	-	-	-
Critical Hdwy	7.24	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.24	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.626	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	149	181	494	157	181	540	962	-	-	1021	-	-
Stage 1	450	475	-	500	500	-	-	-	-	-	-	-
Stage 2	475	497	-	465	471	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	139	173	494	145	173	540	962	-	-	1021	-	-
Mov Cap-2 Maneuver	139	173	-	145	173	-	-	-	-	-	-	-
Stage 1	437	468	-	486	486	-	-	-	-	-	-	-
Stage 2	449	483	-	442	464	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB		
HCM Control Delay, s/veh	27.1	22.6			0.3			0.1		
HCM LOS	D	C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	962	-	-	196	227	1021	-	-		
HCM Lane V/C Ratio	0.02	-	-	0.17	0.098	0.01	-	-		
HCM Control Delay (s/veh)	8.8	0	-	27.1	22.6	8.6	0	-		
HCM Lane LOS	A	A	-	D	C	A	A	-		
HCM 95th %tile Q (veh)	0.1	-	-	0.6	0.3	0	-	-		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Volume (vph)	9	12	0	10	5	2
Future Volume (vph)	9	12	0	10	5	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t	0.924				0.966	
Flt Protected					0.964	
Satd. Flow (prot)	1563	0	0	1863	1552	0
Flt Permitted					0.964	
Satd. Flow (perm)	1563	0	0	1863	1552	0
Link Speed (mph)	25			25	25	
Link Distance (ft)	469			1133	1077	
Travel Time (s)	12.8			30.9	29.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	11%	2%	2%	2%	50%
Adj. Flow (vph)	10	13	0	11	6	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	0	11	8	0
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 13.3% ICU Level of Service A

Analysis Period (min) 15

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	4	2			
Traffic Vol, veh/h	9	12	0	10	5	2
Future Vol, veh/h	9	12	0	10	5	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	11	2	2	2	50
Mvmt Flow	10	13	0	11	6	2
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	23	0	28	17
Stage 1	-	-	-	-	17	-
Stage 2	-	-	-	-	11	-
Critical Hdwy	-	-	4.12	-	6.42	6.7
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.75
Pot Cap-1 Maneuver	-	-	1592	-	987	938
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1012	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1592	-	987	938
Mov Cap-2 Maneuver	-	-	-	-	987	-
Stage 1	-	-	-	-	1006	-
Stage 2	-	-	-	-	1012	-
Approach	EB	WB	NB			
HCM Control Delay, s/v	0	0	8.7			
HCM LOS			A			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	972	-	-	1592	-	
HCM Lane V/C Ratio	0.008	-	-	-	-	
HCM Control Delay (s/veh)	8.7	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q (veh)	0	-	-	0	-	

Lanes, Volumes, Timings

5017 Weddington-Matthews Road TIA

4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

2029 Build PM

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	253	21	54	185	117	24	307	121	206	266	43
Future Volume (vph)	72	253	21	54	185	117	24	307	121	206	266	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		1%			0%			3%			3%	
Storage Length (ft)	0		0	0		175	125		0	300		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	25			25			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.992				0.850		0.958			0.979	
Flt Protected		0.990				0.989		0.950			0.950	
Satd. Flow (prot)	0	1817	0	0	1834	1568	1631	1753	0	1743	1796	0
Flt Permitted		0.869			0.857		0.512			0.377		
Satd. Flow (perm)	0	1595	0	0	1589	1568	879	1753	0	692	1796	0
Right Turn on Red			No			No			No		No	
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1015			1082			1232			3102	
Travel Time (s)		15.4			16.4			18.7			47.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	5%	4%	2%	3%	9%	2%	3%	2%	2%	2%
Adj. Flow (vph)	80	281	23	60	206	130	27	341	134	229	296	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	384	0	0	266	130	27	475	0	229	344	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	12.0	12.0		12.0	12.0	
Minimum Split (s)	13.0	13.0		13.0	13.0	13.0	18.4	18.4		18.4	18.4	
Total Split (s)	25.0	25.0		25.0	25.0	25.0	35.0	35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%	41.7%	58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0	19.0	28.6	28.6		28.6	28.6	
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.1	2.1		2.1	2.1	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	-1.4	-1.4	-1.4		-1.4	-1.4	
Total Lost Time (s)	5.0				5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0	0.0	15.0	15.0		15.0	15.0	
Time To Reduce (s)	15.0	15.0		15.0	15.0	15.0	30.0	30.0		30.0	30.0	
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	
Act Effct Green (s)		18.4			18.4	18.4	22.2	22.2		22.2	22.2	
Actuated g/C Ratio		0.36			0.36	0.36	0.44	0.44		0.44	0.44	
v/c Ratio		0.67			0.46	0.23	0.07	0.62		0.76	0.44	
Control Delay (s/veh)		22.9			17.5	14.7	8.6	15.1		30.9	11.9	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		22.9			17.5	14.7	8.6	15.1		30.9	11.9	
LOS		C			B	B	A	B		C	B	
Approach Delay (s/veh)		22.9			16.5			14.7			19.5	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		95			60	27	5	109		57	71	
Queue Length 95th (ft)		#238			138	70	15	184		#161	123	
Internal Link Dist (ft)		935			1002			1152			3022	
Turn Bay Length (ft)						175	125				300	
Base Capacity (vph)		648			645	637	535	1068		421	1094	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.59			0.41	0.20	0.05	0.44		0.54	0.31	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 50.9

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 18.3

Intersection LOS: B

Intersection Capacity Utilization 82.9%

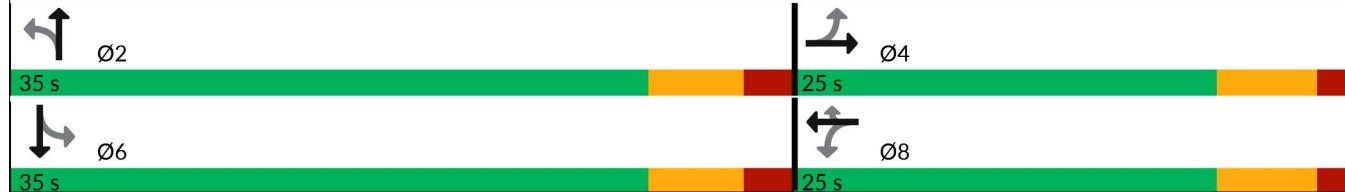
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	2	6	0	6	3	485	10	9	529	3
Future Volume (vph)	2	0	2	6	0	6	3	485	10	9	529	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t					0.932				0.997			0.999
Flt Protected					0.976			0.976				0.999
Satd. Flow (prot)	0	1694	0	0	1694		0	0	1857	0	0	1859
Flt Permitted		0.976			0.976							0.999
Satd. Flow (perm)	0	1694	0	0	1694		0	0	1857	0	0	1859
Link Speed (mph)		25			25			45			45	
Link Distance (ft)		939			1139			3102			1472	
Travel Time (s)		25.6			31.1			47.0			22.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	0	2	7	0	7	3	539	11	10	588	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	14	0	0	553	0	0	601	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 44.1%

ICU Level of Service A

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	+	+	+	+	+	+	+	+	+	+	+	+
Traffic Vol, veh/h	2	0	2	6	0	6	3	485	10	9	529	3
Future Vol, veh/h	2	0	2	6	0	6	3	485	10	9	529	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	2	7	0	7	3	539	11	10	588	3

Major/Minor	Minor2	Minor1			Major1			Major2				
Conflicting Flow All	1164	1166	590	1162	1162	545	591	0	0	550	0	0
Stage 1	610	610	-	551	551	-	-	-	-	-	-	-
Stage 2	554	556	-	611	611	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	171	194	508	172	195	538	985	-	-	1020	-	-
Stage 1	482	485	-	519	515	-	-	-	-	-	-	-
Stage 2	517	513	-	481	484	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	166	190	508	169	191	538	985	-	-	1020	-	-
Mov Cap-2 Maneuver	166	190	-	169	191	-	-	-	-	-	-	-
Stage 1	480	478	-	517	513	-	-	-	-	-	-	-
Stage 2	509	511	-	472	477	-	-	-	-	-	-	-

Approach	EB	WB			NB			SB			
HCM Control Delay, s/v	19.7	19.8			0.1			0.1			
HCM LOS	C	C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR			
Capacity (veh/h)	985	-	-	250	257	1020	-	-			
HCM Lane V/C Ratio	0.003	-	-	0.018	0.052	0.01	-	-			
HCM Control Delay (s/veh)	8.7	0	-	19.7	19.8	8.6	0	-			
HCM Lane LOS	A	A	-	C	C	A	A	-			
HCM 95th %tile Q (veh)	0	-	-	0.1	0.2	0	-	-			

Queuing and Blocking Reports

2024 Existing Conditions

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	B10	SB	SB
Directions Served	LT	R	L	TR	LT	R	T	LT	R
Maximum Queue (ft)	112	18	324	1080	1814	300	557	996	150
Average Queue (ft)	43	1	188	500	698	144	89	550	90
95th Queue (ft)	85	11	400	1283	1952	372	533	1204	201
Link Distance (ft)	1004			1024	1964		1454	970	
Upstream Blk Time (%)				33	14		1	40	
Queuing Penalty (veh)				0	113		4	0	
Storage Bay Dist (ft)	175	150			150			100	
Storage Blk Time (%)		4	48	54			75	0	
Queuing Penalty (veh)	34	133	167				96	1	

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	60	94	74	68
Average Queue (ft)	20	15	7	4
95th Queue (ft)	48	53	48	28
Link Distance (ft)	1195	394	1400	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	46
Average Queue (ft)	8
95th Queue (ft)	32
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	357	279	226	46	198	124	171
Average Queue (ft)	115	133	92	11	103	49	84
95th Queue (ft)	373	232	173	33	173	101	146
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			175	125		300	
Storage Blk Time (%)		3	0		4		
Queuing Penalty (veh)		15	2		1		

Network Summary

Network wide Queuing Penalty: 567

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	1034	300	86	39	111	71	937	150
Average Queue (ft)	410	129	33	8	43	22	235	58
95th Queue (ft)	1052	367	66	29	86	58	769	160
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	20					6		
Queuing Penalty (veh)	0					0		
Storage Bay Dist (ft)		175	150			150		100
Storage Blk Time (%)	45				0		29	0
Queuing Penalty (veh)	65				0		42	0

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	44	42	69	36
Average Queue (ft)	14	8	8	1
95th Queue (ft)	34	30	39	14
Link Distance (ft)	1195	394	1400	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	4
95th Queue (ft)	26
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	210	208	149	55	190	246	195
Average Queue (ft)	79	73	28	7	78	76	62
95th Queue (ft)	171	170	99	31	147	170	133
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		175	125		300		
Storage Blk Time (%)		3			1	0	0
Queuing Penalty (veh)		4			0	0	0

Network Summary

Network wide Queuing Penalty: 113

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	963	300	109	32	97	77	61	41
Average Queue (ft)	460	156	38	8	47	32	18	4
95th Queue (ft)	1043	394	79	30	81	72	48	22
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	19							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)		175	150		150		100	
Storage Blk Time (%)	59		0					
Queuing Penalty (veh)	128		0					

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	66	27	129	25
Average Queue (ft)	13	5	13	1
95th Queue (ft)	39	21	71	11
Link Distance (ft)	1195	394	1400	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	45
Average Queue (ft)	4
95th Queue (ft)	24
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	428	216	99	81	235	269	271
Average Queue (ft)	150	70	26	9	103	106	79
95th Queue (ft)	403	151	69	44	181	229	210
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		175	125		300		
Storage Blk Time (%)	1	0		4	3		
Queuing Penalty (veh)	1	0		1	8		

Network Summary

Network wide Queuing Penalty: 138

2029 Background Conditions

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	B10	SB	SB
Directions Served	LT	R	L	TR	LT	R	T	LT	R
Maximum Queue (ft)	116	51	324	1075	2064	300	1446	997	150
Average Queue (ft)	49	4	217	563	1164	253	379	767	109
95th Queue (ft)	94	25	417	1302	2411	424	1341	1287	214
Link Distance (ft)	1004			1024	1964		1454	970	
Upstream Blk Time (%)				31	34		5	57	
Queuing Penalty (veh)				0	319		48	0	
Storage Bay Dist (ft)	175	150			150			100	
Storage Blk Time (%)		18	57		91			93	0
Queuing Penalty (veh)	172	169	297				124	0	

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	B5	SB
Directions Served	LTR	LTR	LTR	T	LTR
Maximum Queue (ft)	121	73	742	125	83
Average Queue (ft)	29	16	121	17	6
95th Queue (ft)	79	50	675	169	39
Link Distance (ft)	1195	394	1400	3018	1454
Upstream Blk Time (%)			3		
Queuing Penalty (veh)			24		
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	60
Average Queue (ft)	11
95th Queue (ft)	38
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	404	278	271	108	265	156	198
Average Queue (ft)	124	144	107	14	130	63	98
95th Queue (ft)	331	241	207	60	220	129	172
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		175		125		300	
Storage Blk Time (%)		4		1		9	
Queuing Penalty (veh)		18		5		3	

Network Summary

Network wide Queuing Penalty: 1179

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	1058	300	118	67	138	74	1019	150
Average Queue (ft)	642	206	35	11	50	28	451	80
95th Queue (ft)	1275	431	75	44	101	68	1183	190
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	40						31	
Queuing Penalty (veh)	0						0	
Storage Bay Dist (ft)		175	150			150		100
Storage Blk Time (%)	73		0	0	0		47	0
Queuing Penalty (veh)	115		0	0	1		61	0

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	47	104	39
Average Queue (ft)	16	9	11	2
95th Queue (ft)	39	30	55	21
Link Distance (ft)	1195	394	1400	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	36
Average Queue (ft)	2
95th Queue (ft)	18
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	198	249	136	48	196	184	151
Average Queue (ft)	77	79	30	10	95	83	63
95th Queue (ft)	153	180	90	31	162	146	127
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		175	125		300		
Storage Blk Time (%)		2			2		
Queuing Penalty (veh)		2			1		

Network Summary

Network wide Queuing Penalty: 180

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	1062	300	116	48	123	84	60	37
Average Queue (ft)	926	283	40	14	56	33	20	5
95th Queue (ft)	1312	396	83	40	103	73	51	23
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	75							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)		175	150			150		100
Storage Blk Time (%)	96	0	0			0		
Queuing Penalty (veh)	228	0	0			1		

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	67	28	108	27
Average Queue (ft)	17	8	17	1
95th Queue (ft)	46	24	71	11
Link Distance (ft)	1195	394	1400	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	43
Average Queue (ft)	5
95th Queue (ft)	28
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	445	256	129	87	216	223	203
Average Queue (ft)	195	96	26	11	103	98	71
95th Queue (ft)	423	197	81	50	174	181	143
Link Distance (ft)	952	1022			1176		3018
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		175	125		300		
Storage Blk Time (%)		3			3	0	0
Queuing Penalty (veh)		4			1	0	0

Network Summary

Network wide Queuing Penalty: 234

2029 Build-out Conditions

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	B10	SB	SB
Directions Served	LT	R	L	TR	LT	R	T	LT	R
Maximum Queue (ft)	165	56	324	1078	2059	300	1475	1012	150
Average Queue (ft)	55	6	217	546	1149	222	425	839	109
95th Queue (ft)	117	31	416	1317	2468	429	1449	1255	216
Link Distance (ft)	1004			1024	1964		1454	970	
Upstream Blk Time (%)				31	36		10	59	
Queuing Penalty (veh)				0	343		91	0	
Storage Bay Dist (ft)		175	150			150			100
Storage Blk Time (%)	0		18	51	81			96	1
Queuing Penalty (veh)	0		152	158	274			126	1

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	165	80	1137	107
Average Queue (ft)	36	22	226	10
95th Queue (ft)	116	62	989	54
Link Distance (ft)	1195	394	1388	1454
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			8	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	53
Average Queue (ft)	13
95th Queue (ft)	41
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	456	390	261	44	266	220	251
Average Queue (ft)	150	150	110	10	124	84	95
95th Queue (ft)	389	290	216	30	210	203	189
Link Distance (ft)	952	1022			1176		3008
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			175	125		300	
Storage Blk Time (%)		6	1		8	1	0
Queuing Penalty (veh)		24	7		2	5	0

Intersection: 5: Weddington-Matthews Road & Access A

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	29	45	378	18
Average Queue (ft)	5	12	29	1
95th Queue (ft)	22	37	263	9
Link Distance (ft)	1034	1014	3008	1388
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 1191

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	1048	300	142	126	121	82	1008	150
Average Queue (ft)	675	200	44	20	47	29	410	76
95th Queue (ft)	1319	429	125	123	97	69	1115	185
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	48						26	
Queuing Penalty (veh)	0						0	
Storage Bay Dist (ft)		175	150			150		100
Storage Blk Time (%)	77		0	2	0		45	0
Queuing Penalty (veh)	126		0	7	1		59	0

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	45	42	92	21
Average Queue (ft)	15	11	12	1
95th Queue (ft)	35	30	55	8
Link Distance (ft)	1195	394	1387	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	53
Average Queue (ft)	9
95th Queue (ft)	37
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	164	165	92	77	191	212	175
Average Queue (ft)	78	75	31	9	96	84	66
95th Queue (ft)	149	144	78	45	163	160	132
Link Distance (ft)	952	1022			1176		3007
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			175	125		300	
Storage Blk Time (%)		1			2	0	0
Queuing Penalty (veh)		1			1	0	0

Intersection: 5: Weddington-Matthews Road & Access A

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	33	40	6	35
Average Queue (ft)	3	8	0	2
95th Queue (ft)	19	30	3	15
Link Distance (ft)	1155	984	3007	1387
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 196

Intersection: 1: Weddington-Matthews Road & Tilley Morris Road & Union Day School Driveway

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	LT	R	LT	R
Maximum Queue (ft)	1062	300	107	49	115	79	53	35
Average Queue (ft)	988	296	45	12	52	34	21	5
95th Queue (ft)	1229	350	85	37	92	71	50	24
Link Distance (ft)	1004			1024	1964		970	
Upstream Blk Time (%)	86							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)		175	150			150		100
Storage Blk Time (%)	100				0			
Queuing Penalty (veh)	245				0			

Intersection: 2: Weddington-Matthews Road & Amanda Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	72	45	95	68
Average Queue (ft)	18	11	12	5
95th Queue (ft)	47	32	52	35
Link Distance (ft)	1195	394	1390	1454
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Bonner Drive & Amanda Drive

Movement	NB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	8
95th Queue (ft)	33
Link Distance (ft)	1049
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Weddington-Matthews Road & Hemby Road/Beulah Church Road

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	L	TR	L	TR
Maximum Queue (ft)	456	315	173	34	214	315	295
Average Queue (ft)	194	115	32	7	112	137	88
95th Queue (ft)	413	258	118	23	181	272	218
Link Distance (ft)	952	1022			1176		3009
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			175	125		300	
Storage Blk Time (%)		7			4	4	0
Queuing Penalty (veh)		9			1	12	0

Intersection: 5: Weddington-Matthews Road & Access A

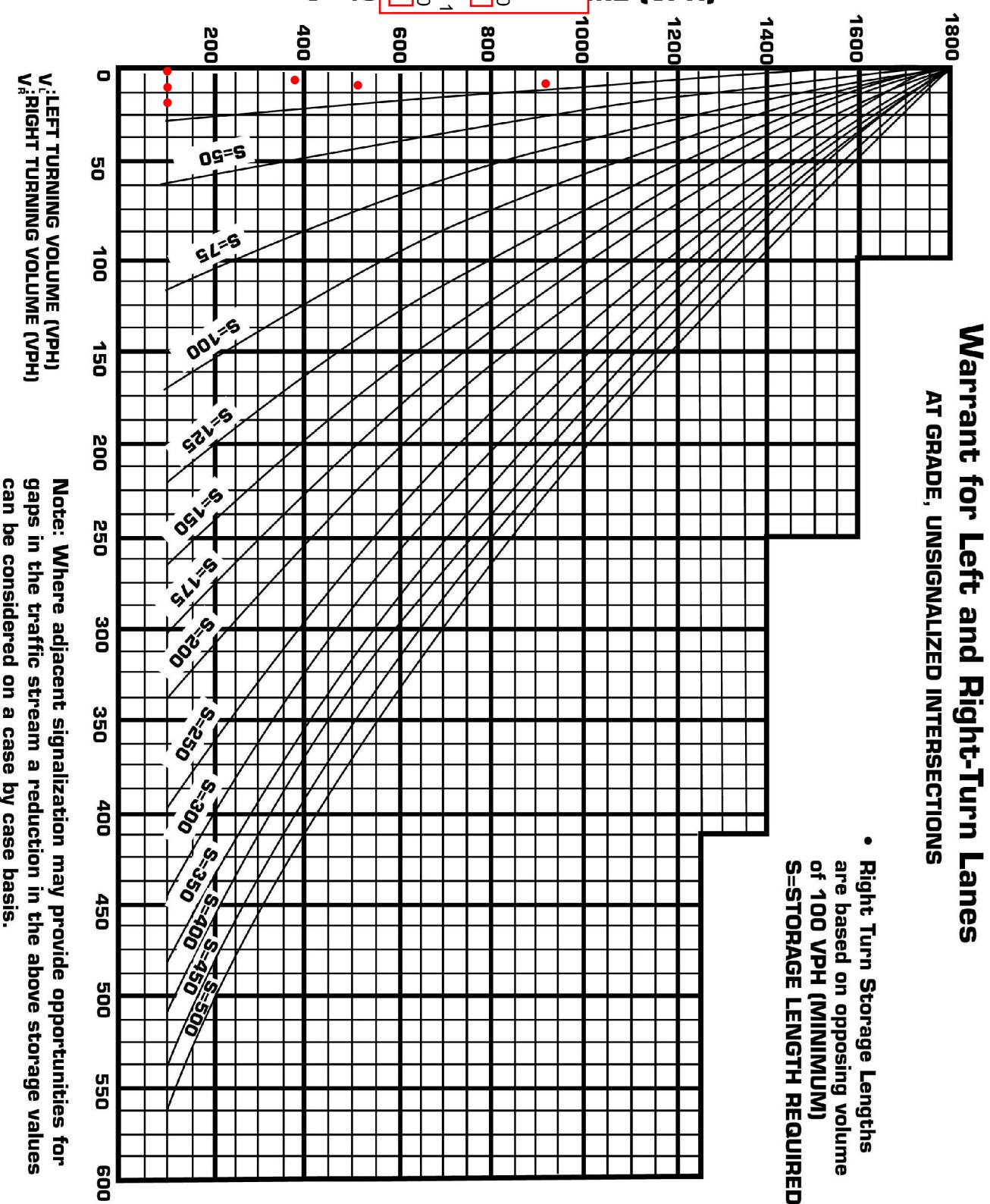
Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	33	29	15	50
Average Queue (ft)	4	11	1	3
95th Queue (ft)	22	34	6	22
Link Distance (ft)	897	1096	3009	1390
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 267

Auxiliary Turn-Lane Warrants

July 2003



2029 Background

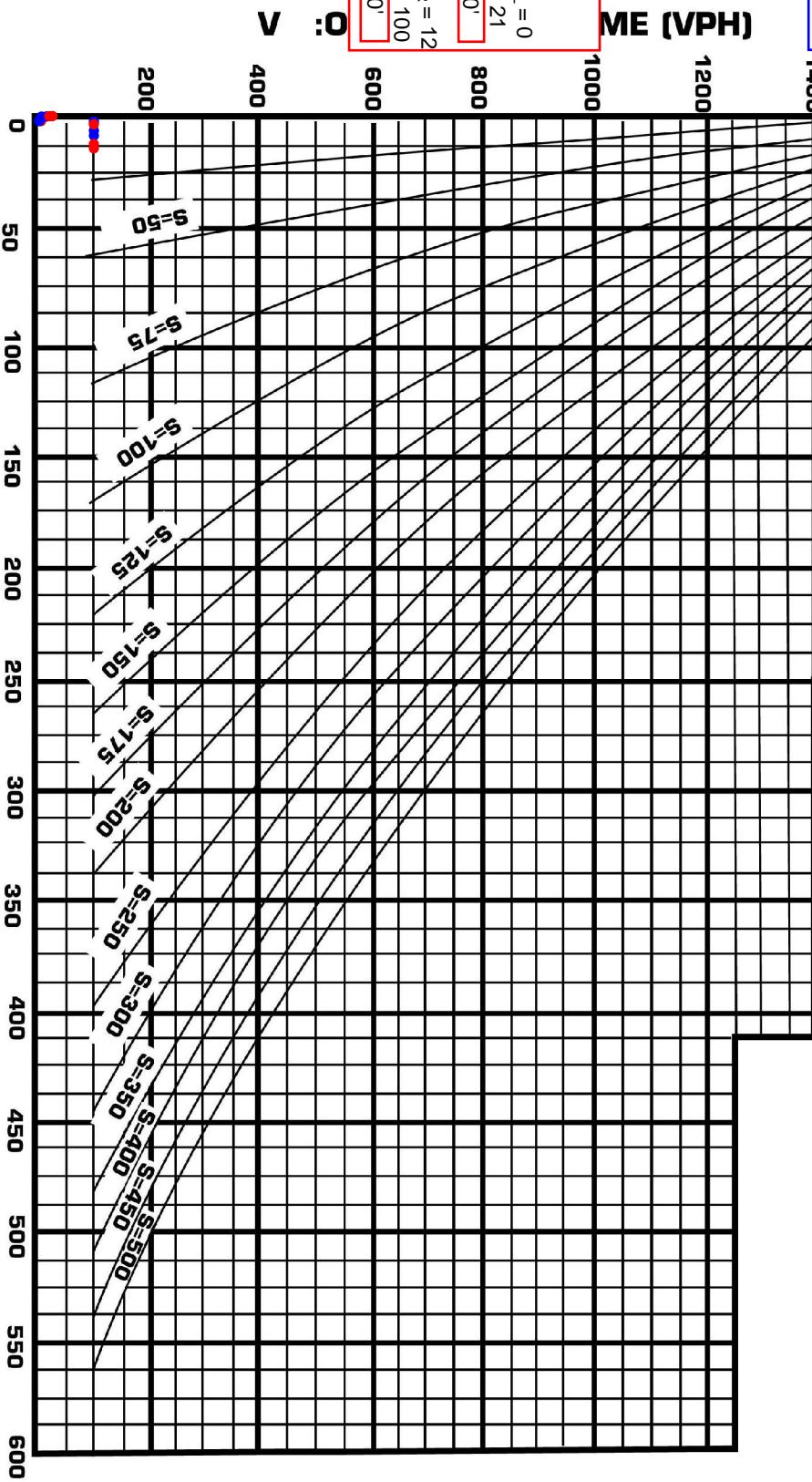
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$S = 0'$	$S = 0'$	$S = 0'$

Warrant for Left and Right-Turn Lanes

AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)

S=STORAGE LENGTH REQUIRED

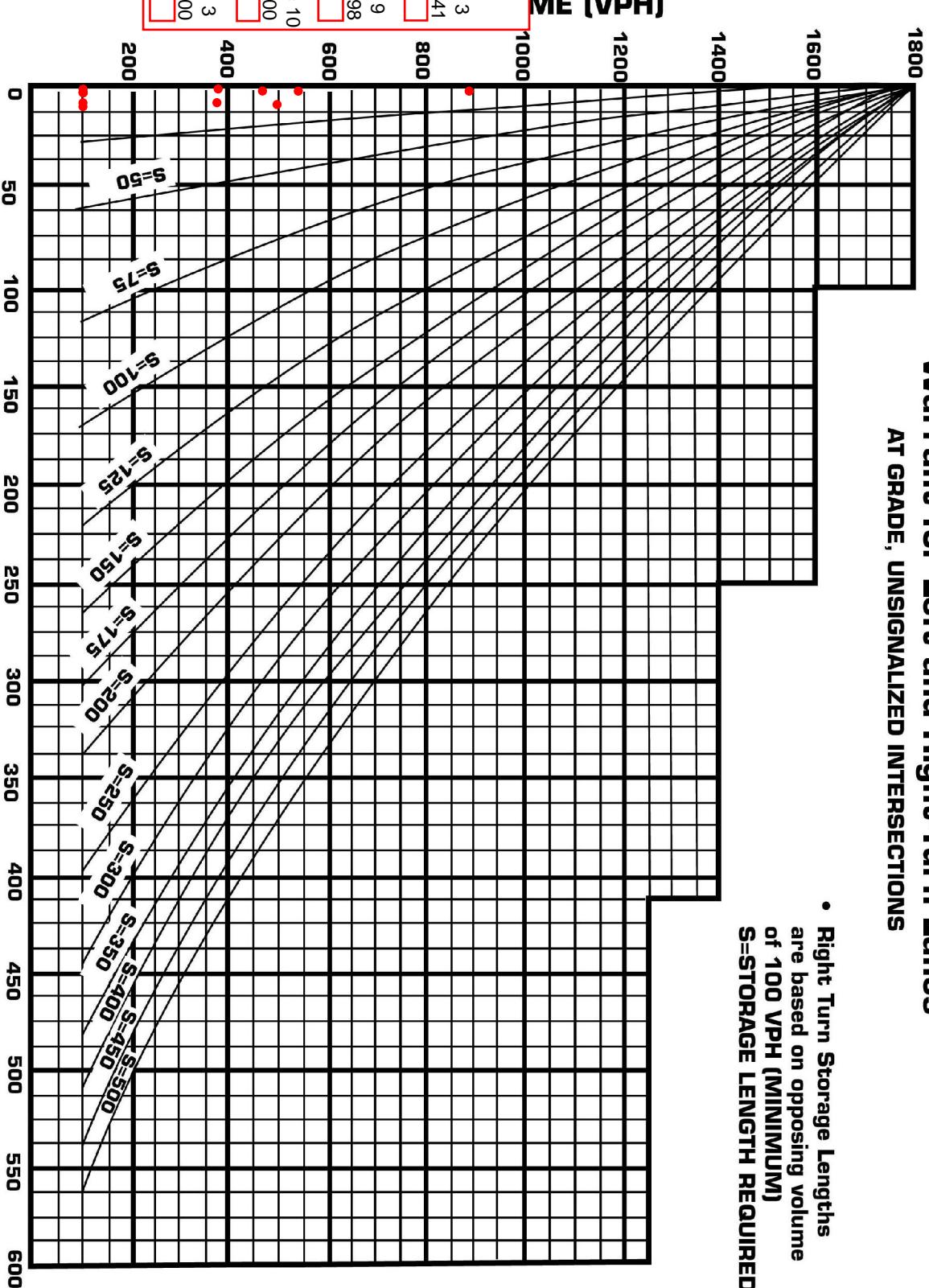


July 2003

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

Warrant for Left and Right-Turn Lanes AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
- S=STORAGE LENGTH REQUIRED



July 2003

V_L : LEFT TURNING VOLUME (VPH)
 V_R : RIGHT TURNING VOLUME (VPH)

Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

