TECHNICAL MEMORANDUM

Date: Wednesday, November 30, 2022

To: Michael Elabarger
Town of Rolesville
Senior Planner

From: Brittany Chase, P.E.
Traffic Engineer
Exult Engineering

Subject: Proposed Rolesville Mixed-Use
South Main Street at Wall Creek Drive - Capacity Analysis

BACKGROUND

Exult Engineering has been contracted by Toy Storage, LLC to perform traffic engineering services for the proposed Rolesville Mixed-Use Site located at 503 South Main Street. The proposed site is located on the northeast quadrant of South Main Street (US 401) and Wall Creek Drive as shown on the Vicinity Map on Figure 1. As shown on the Site Plan on Figure 2, the proposed site consists of 13,500 square feet of retail at ground-level with 11 residential units on the second floor. The residential units will be contained within one floor of the building. Proposed access for the site consists of one full movement driveway on Wall Creek Drive as well as connectivity to the adjacent parcel to the east (Pete Smith Tire & Quick Lube and Storage Max). The site is currently zoned as a combination of Residential (R) and Residential & Planned Unit Development (R&PUD) and requires rezoning to General Commercial. The proposed site is expected to be built-out by 2024. The purpose of this letter, as requested by Town staff, is serve as an addendum to the previously submitted *Trip Generation Letter* (October 3, 2022) and to discuss the impact of the proposed site at the intersection of South Main Street and Wall Creek Drive.

EXISTING CONDITIONS

A site visit was performed on Monday, November 21, 2022 to observe existing field conditions. Existing lane geometry for the study intersection is shown on Figure 3. Peak-hour turning movement traffic counts were available for an intersection (South Main Street at Burlington Mills Road) to the southwest of the study intersection collected on Tuesday, May 17, 2022. The peak-hour approach and departure volumes from the intersection of South Main Street at Burlington Mills Road were used in combination with trips calculated for the Existing Wall Creek Subdivision to determine the volumes at the South Main Street and Wall Creek Drive intersection. The proposed distribution applied to the Existing Wall Creek Subdivision trip generation was based on existing traffic patterns along South Main Street and access to surrounding land uses.

Detailed traffic volume calculations are included as attachments to this memorandum. The trip generation for the Existing Wall Creek Subdivision were based on rates and equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Figure 4 depicts the 2022 AM and PM Peak Hour Existing Traffic Volumes.

FUTURE CONDITIONS

Based on historic Average Daily Traffic (ADT) volumes in the vicinity, a 1.5% annual growth rate was assumed and applied to the 2022 traffic volumes to determine background traffic growth. The growth was applied to account for widespread area growth. The following approved development was also considered as it is expected to contribute to the traffic volume at the study intersection:

- Wallbrook – A mixed-use development (commercial and residential) located on South Main Street at Burlington Mills Road. According to the *Revised Wallbrook Development Traffic Impact Analysis*, the development is expected to be built-out in 2025. Construction has not yet begun on the approved development, therefore, approximately 50% of the approved development traffic was included in the buildout year analysis.

All other approved development traffic is expected to be accounted for in the background annual growth rate. Developments in the area that have not yet been approved were not included in the future year analysis. The approved development traffic was added to the background traffic growth to determine future year no-build traffic volumes. The 2024 No-Build AM and PM Peak Hour Traffic Volumes are shown in Figures 5 and 6.

TRIP GENERATION

The proposed Rolesville Mixed-Use Development is to consist of 13,500 square feet of retail at ground-level with 11 residential units on the second floor. The trip generation for the proposed site, as presented in the previously submitted *Trip Generation Letter* dated October 3, 2022, was also based on rates and equations published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. NCDOT Congestion Management Rates vs. Equations spreadsheet was used for guidance.

As shown in Table 1, reductions in total site trips were applied to account for internal capture between the land uses. Internal capture accounts for trips to the site that are expected to access other land uses within the site during a given trip. Internal capture rates were applied based on methodology presented in the *ITE Trip Generation Handbook, 3rd Edition*. The NCDOT Sample Internal Capture Spreadsheet was used for internal capture calculations. A conservative vehicle occupancy of 1.10 was assumed.

Table 1: Trip Generation for Proposed Site and Previous Use

Land Use			Daily	AM Peak Hour			PM Peak Hour		
				Total	Enter	Exit	Total	Enter	Exit
Proposed Site									
215: Single-Family Attached Housing	11	d.u.	34	5	1	4	3	2	1
822: Strip Retail Plaza (<40k)	13,500	s.f.	800	35	21	14	96	48	48
Total			**834**	**40**	**22**	**18**	**99**	**50**	**49**
Internal Capture									
Internal Capture			*-20*	*0*	*0*	*0*	*-2*	*-1*	*-1*
Total "New" Trips			**814**	**40**	**22**	**18**	**97**	**49**	**48**

References: *Trip Generation Manual*, 11th Edition, Institute of Transportation Engineers, September 2021

As shown in Table 1, the proposed development is expected to generate 814 net new daily trips, 40 new AM peak hour trips (22 entering, 18 exiting), and 97 new PM peak hour trips (49 entering, 48 exiting). Applying the equations in accordance with NCDOT *Congestion Management Guidelines* for the single family attached land use, the AM Peak Hour site trip calculations result in a negative value. Therefore, the average rate was applied instead for the AM Peak Hour. It is important to note that because the proposed site is a redevelopment of a previous use (single-family residential home), there are trips associated with the previous use that were on the surrounding roadway network when the single-family home was occupied that will no longer be assigned to the roadway network.

The proposed Site Distribution and Assignment for the residential portion of the proposed site was based on existing traffic patterns along South Main Street, access to major commuter roadways, and access to surrounding employment centers and retail uses. The Site Distribution and Assignment for the residential portion of the site is shown on Figure 7. The proposed Site Distribution and Assignment for the commercial portion of the proposed site was based on access to major roadways and access to surrounding residential and retail land uses. The commercial Site Distribution and Assignment is shown on Figure 8.

It is important to note that all of the proposed development site traffic directly accessing South Main Street was assigned to the intersection of South Main Street at Wall Creek Drive. A minimal amount of proposed development site traffic is expected to access the other access points along South Main Street via the adjacent shopping center. However, aside from the site trips assigned to the shopping center, site trips were not specifically assigned to these access points in order to remain conservative at the study intersection. The trip assignment was applied to the trips generated for the proposed development to determine the projected 2024 AM and PM peak hour site traffic. The projected buildout traffic volumes are shown in Figure 9 (2024 AM Peak Hour Buildout Traffic Volumes) and Figure 10 (2024 PM Peak Hour Buildout Traffic Volumes).

CAPACITY ANALYSIS

The study intersection was analyzed under 2022 existing, 2024 no-build and 2024 buildout conditions to identify the potential traffic impact of the proposed development on the roadway network. The current update (version 10.3) of Synchro Professional software was used to determine the LOS, delay, and expected queue length of the study intersection. Synchro reports were created using the HCM 6th Edition option. The NCDOT Congestion Management Capacity Analysis Guidelines were referenced to perform the traffic analysis presented herein. The following inputs were used for the study intersection:

- Peak Hour Factor (PHF) of .90 was used for existing and future scenarios.
- A percent heavy vehicle percentage of 2% was used for all scenarios.

Table 2 summarizes the capacity analysis results for the unsignalized intersection of South Main Street at Wall Creek Drive. Based on the results of the capacity analysis shown below, the proposed Rolesville Mixed-Use Development is expected to have minimal impact on the existing intersection of South Main Street at Wall Creek Drive. The northbound minor street approach is expected to continue to operate with acceptable (short) delays and level-of-service during the buildout scenario. The anticipated increase in delay (at most, 2.2 seconds during the peak hour) for the northbound minor street approach when comparing the no-build conditions with the buildout conditions is negligible.

As shown in Table 2, the anticipated queue length associated with the northbound left-turn and right-turn movements on Wall Creek Drive is minimal (25’ or less during the peak hours which equates to one vehicle length). The anticipated queue length for the westbound left-turn movement from South Main Street to Wall Creek Drive is also minimal (8’ or less during the peak hours).

Table 2: Level-of-Service: South Main Street at Wall Creek Drive

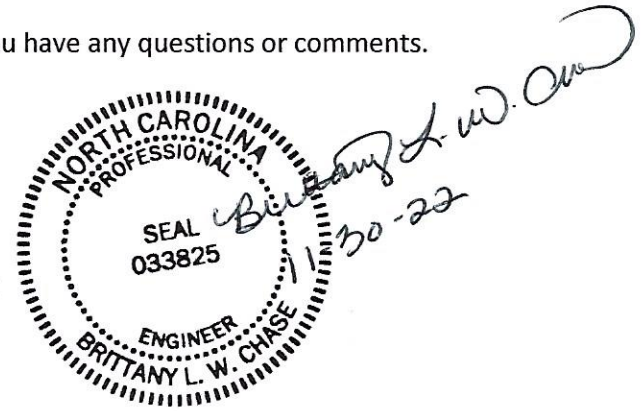
Condition	AM Peak		PM Peak	
	LOS and Delay (sec/veh)	Turn Lane Synchro 95% Queue Length (feet)	LOS and Delay (sec/veh)	Turn Lane Synchro 95% Queue Length (feet)
2022 Existing	WBL – A (9.1) NB – C (20.2)	WBL – 0' NBL – 15' NBR – 5'	WBL – A (9.7) NB – C (18.2)	WBL – 3' NBL – 8' NBR – 3'
2024 No-Build	WBL – A (9.5) NB – C (23.4)	WBL – 0' NBL – 20' NBR – 5'	WBL – B (10.4) NB – C (21.5)	WBL – 3' NBL – 10' NBR – 5'
2024 Buildout	WBL – A (9.6) NB – C (24.5)	WBL – 3' NBL – 25' NBR – 8'	WBL – B (10.7) NB – C (23.7)	WBL – 8' NBL – 23' NBR – 13'

CONCLUSION

Based on the analysis presented herein, the projected traffic impact from the proposed Rolesville Mixed-Use Development at the existing study intersection is minimal. The capacity analysis shows the study intersection is anticipated to operate acceptably and the projected queue lengths associated with the turning movements are minimal, which reduces safety concerns on South Main Street. Given the results of the capacity analysis, there are no roadway improvements recommended to mitigate traffic impact of the proposed site.

Please let me know if you have any questions or comments.

Sincerely,



Brittany Chase, P.E.
Exult Engineering

cc: Meredith Gruber, PA, AICP, Town of Rolesville
Keith Gettle, PE, Gettle Engineering and Design, PLLC
Janet Mills, Toy Storage, LLC

Attachments: Figures 1-10
Scoping Correspondence
Traffic Count Data
Existing and Approved Development Traffic Calculations
Intersection Volume Development Worksheet
Synchro Reports

ATTACHMENTS

FIGURES

Rolesville Mixed Use

Vicinity Map

Town of Rolesville, NCDOT Division 5

LEGEND

(#) Intersection #

Figure 1

EXULT ENGINEERING

Rolesville Mixed Use

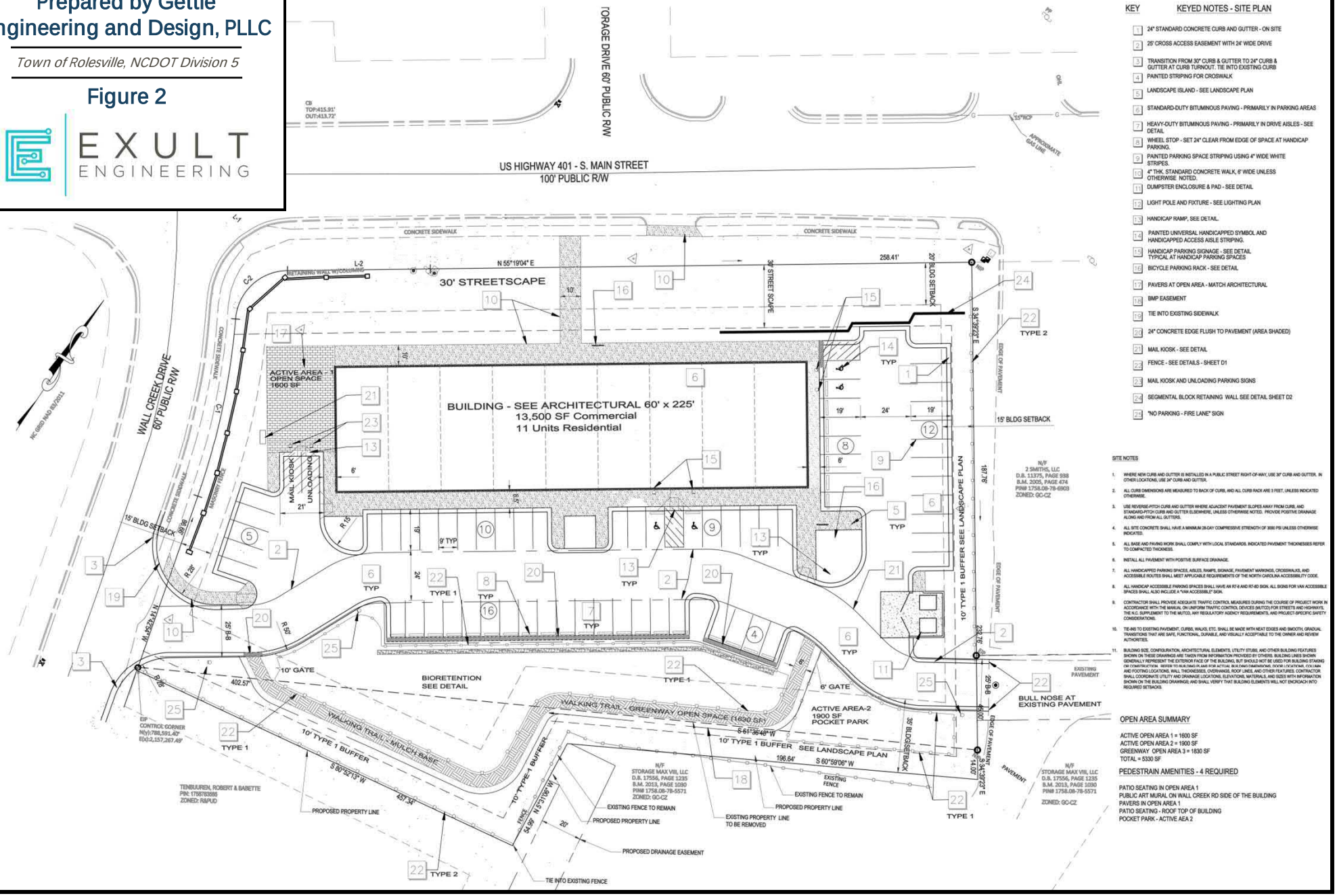
Proposed Site Plan

Prepared by Gettle Engineering and Design, PLLC

Town of Rolesville, NCDOT Division 5

Figure 2

EXULT ENGINEERING



KEY — KEYED NOTES - SITE PLAN

1. 24" STANDARD CONCRETE CURB AND GUTTER - ON SITE
2. 25' CROSS ACCESS EASEMENT WITH 24' WIDE DRIVE
3. TRANSITION FROM 30" CURB & GUTTER TO 24" CURB & GUTTER AT CURB TURNOUT. TIE INTO EXISTING CURB
4. PAINTED STRIPING FOR CROSWALK
5. LANDSCAPE ISLAND - SEE LANDSCAPE PLAN
6. STANDARD-DUTY BITUMINOUS PAVING - PRIMARILY IN PARKING AREAS
7. HEAVY-DUTY BITUMINOUS PAVING - PRIMARILY IN DRIVE AISLES - SEE DETAIL
8. WHEEL STOP - SET 24" CLEAR FROM EDGE OF SPACE AT HANDICAP PARKING.
9. PAINTED PARKING SPACE STRIPING USING 4" WIDE WHITE STRIPES.
10. 4" THK. STANDARD CONCRETE WALK, 6' WIDE UNLESS OTHERWISE NOTED.
11. DUMPSTER ENCLOSURE & PAD - SEE DETAIL
12. LIGHT POLE AND FIXTURE - SEE LIGHTING PLAN
13. HANDICAP RAMP, SEE DETAIL.
14. PAINTED UNIVERSAL HANDICAPPED SYMBOL AND HANDICAPPED ACCESS AISLE STRIPING.
15. HANDICAP PARKING SIGNAGE - SEE DETAIL TYPICAL AT HANDICAP PARKING SPACES
16. BICYCLE PARKING RACK - SEE DETAIL
17. PAVERS AT OPEN AREA - MATCH ARCHITECTURAL
18. BMP EASEMENT
19. TIE INTO EXISTING SIDEWALK
20. 24" CONCRETE EDGE FLUSH TO PAVEMENT (AREA SHADED)
21. MAIL KIOSK - SEE DETAIL
22. FENCE - SEE DETAILS - SHEET D1
23. MAIL KIOSK AND UNLOADING PARKING SIGNS
24. SEGMENTAL BLOCK RETAINING WALL SEE DETAIL SHEET D2
25. "NO PARKING - FIRE LANE" SIGN

SITE NOTES

1. WHERE NEW CURB AND GUTTER IS INSTALLED IN A PUBLIC STREET RIGHT-OF-WAY, USE 30" CURB AND GUTTER. IN OTHER LOCATIONS, USE 24" CURB AND GUTTER.
2. ALL CURB DIMENSIONS ARE MEASURED TO BACK OF CURB, AND ALL CURB RADII ARE 3 FEET, UNLESS INDICATED OTHERWISE.
3. USE REVERSE-PITCH CURB AND GUTTER WHERE ADJACENT PAVEMENT SLOPES AWAY FROM CURB, AND STANDARD-PITCH CURB AND GUTTER ELSEWHERE, UNLESS OTHERWISE NOTED. PROVIDE POSITIVE DRAINAGE ALONG AND FROM ALL GUTTERS.
4. ALL SITE CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI UNLESS OTHERWISE INDICATED.
5. ALL BASE AND PAVING WORK SHALL COMPLY WITH LOCAL STANDARDS. INDICATED PAVEMENT THICKNESSES REFER TO COMPACTED THICKNESS.
6. INSTALL ALL PAVEMENT WITH POSITIVE SURFACE DRAINAGE.
7. ALL HANDICAPPED PARKING SPACES, AISLES, RAMPS, SIGNAGE, PAVEMENT MARKINGS, CROSSWALKS, AND ACCESSIBLE ROUTES SHALL MEET APPLICABLE REQUIREMENTS OF THE NORTH CAROLINA ACCESSIBILITY CODE.
8. ALL HANDICAP ACCESSIBLE PARKING SPACES SHALL HAVE AN R7-8 AND R7-8D SIGN. ALL SIGNS FOR VAN ACCESSIBLE SPACES SHALL ALSO INCLUDE A "VAN ACCESSIBLE" SIGN.
9. CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES DURING THE COURSE OF PROJECT WORK IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS. THE N.C. SUPPLEMENT TO THE MUTCD, ANY REGULATORY AGENCY REQUIREMENTS, AND PROJECT-SPECIFIC SAFETY CONSIDERATIONS.
10. TIE-INS TO EXISTING PAVEMENT, CURBS, WALKS, ETC. SHALL BE MADE WITH NEAT EDGES AND SMOOTH, GRADUAL TRANSITIONS THAT ARE SAFE, FUNCTIONAL, DURABLE, AND VISUALLY ACCEPTABLE TO THE OWNER AND REVIEW AUTHORITIES.
11. BUILDING SIZE, CONFIGURATION, ARCHITECTURAL ELEMENTS, UTILITY STUBS, AND OTHER BUILDING FEATURES SHOWN ON THESE DRAWINGS ARE TAKEN FROM INFORMATION PROVIDED BY OTHERS. BUILDING LINES SHOWN GENERALLY REPRESENT THE EXTERIOR FACE OF THE BUILDING, BUT SHOULD NOT BE USED FOR BUILDING STAKING OR CONSTRUCTION. REFER TO BUILDING PLANS FOR ACTUAL BUILDING DIMENSIONS, DOOR LOCATIONS, COLUMN AND FOOTING LOCATIONS, WALL THICKNESSES, OVERHANGS, ROOF LINES, AND OTHER FEATURES. CONTRACTOR SHALL COORDINATE UTILITY AND DRAINAGE LOCATIONS, ELEVATIONS, MATERIALS, AND SIZES WITH INFORMATION SHOWN ON THE BUILDING DRAWINGS, AND SHALL VERIFY THAT BUILDING ELEMENTS WILL NOT ENCROACH INTO REQUIRED SETBACKS.

OPEN AREA SUMMARY

ACTIVE OPEN AREA 1 = 1600 SF
ACTIVE OPEN AREA 2 = 1900 SF
GREENWAY OPEN AREA 3 = 1830 SF
TOTAL = 5330 SF

PEDESTRAIN AMENITIES - 4 REQUIRED

PATIO SEATING IN OPEN AREA 1
PUBLIC ART MURAL ON WALL CREEK RD SIDE OF THE BUILDING
PAVERS IN OPEN AREA 1
PATIO SEATING - ROOF TOP OF BUILDING
POCKET PARK - ACTIVE AEA 2

Rolesville Mixed Use

Existing Lane Geometry

LEGEND

Stop Control — *Approach Lane*

Speed Limit — *Departure Lane*

XX' - Full Storage Length

Town of Rolesville, NCDOT Division 5

Figure 3

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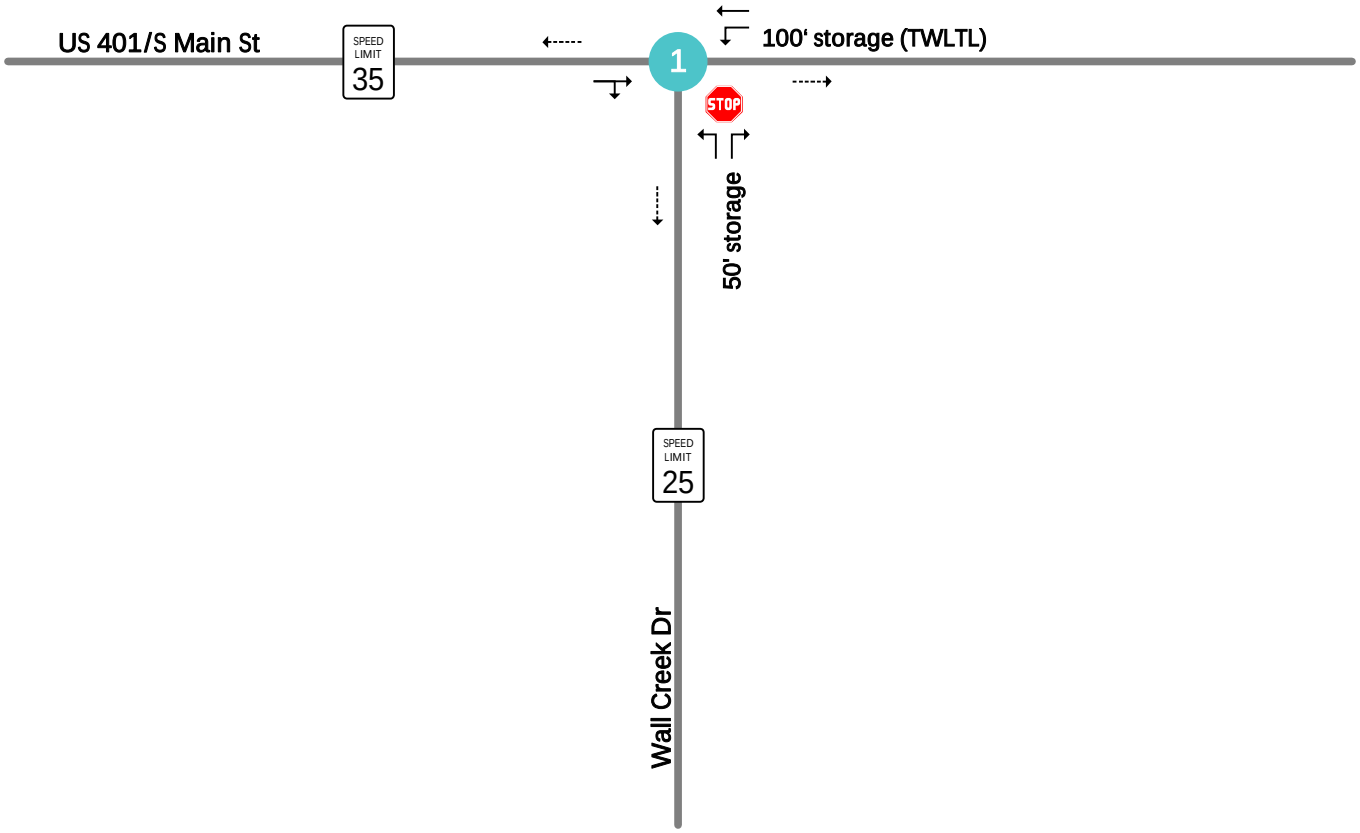


Rolesville Mixed Use

Existing 2022 AM and PM Traffic Volumes

LEGEND

(XX) XX – (PM) AM Traffic Volumes

Town of Rolesville, NCDOT Division 5

Figure 4

EXULT ENGINEERING

Rolesville Mixed Use

2024 AM Peak Hour No-Build Traffic

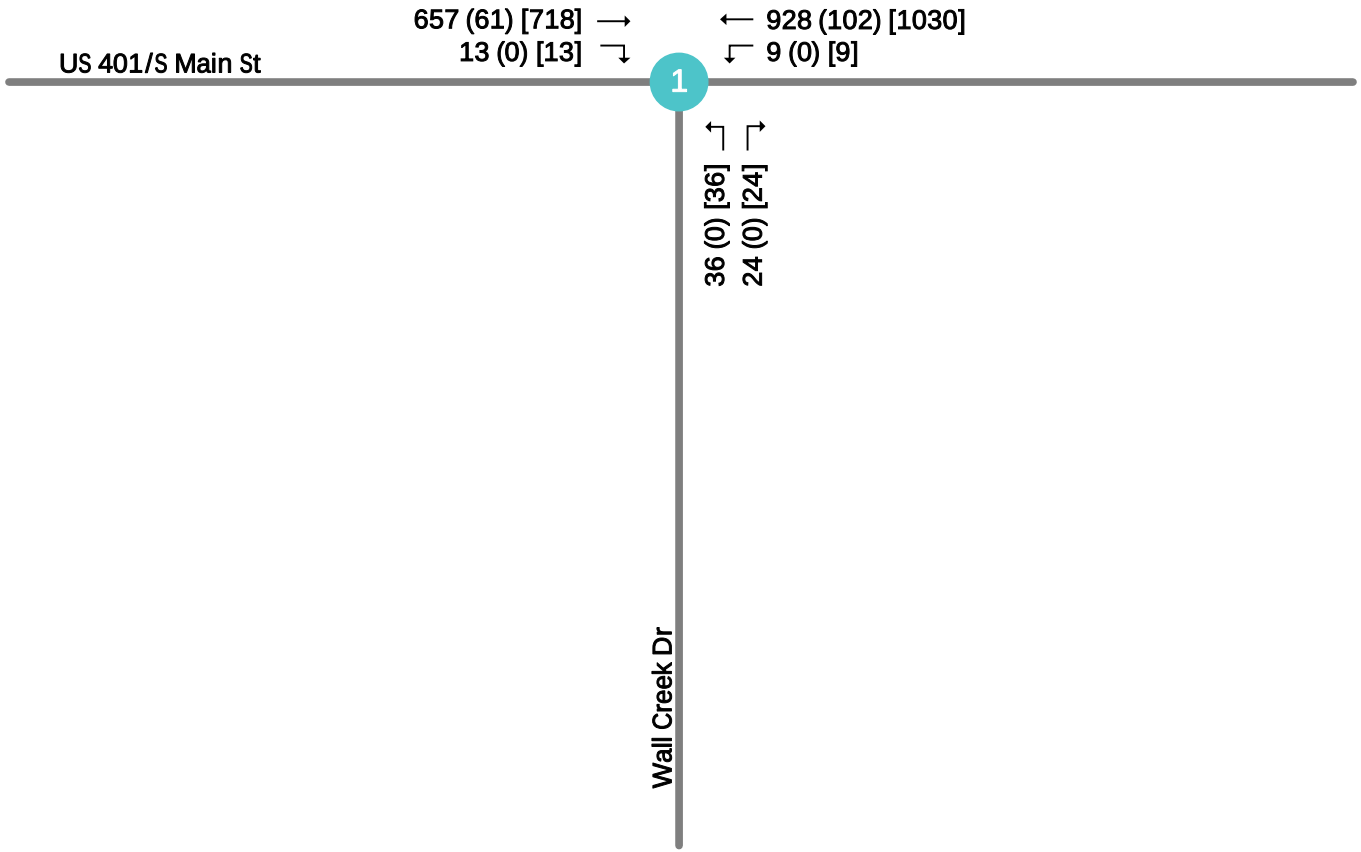
LEGEND

XX – 2024 Background Traffic Due to Growth Rate
(XX) – Approved Development Traffic
[XX] – 2024 Total No-Build Traffic
XX + (XX) = [XX]

Town of Rolesville, NCDOT Division 5

Figure 5

EXULT ENGINEERING



Rolesville Mixed Use

2024 PM Peak Hour No-Build Traffic

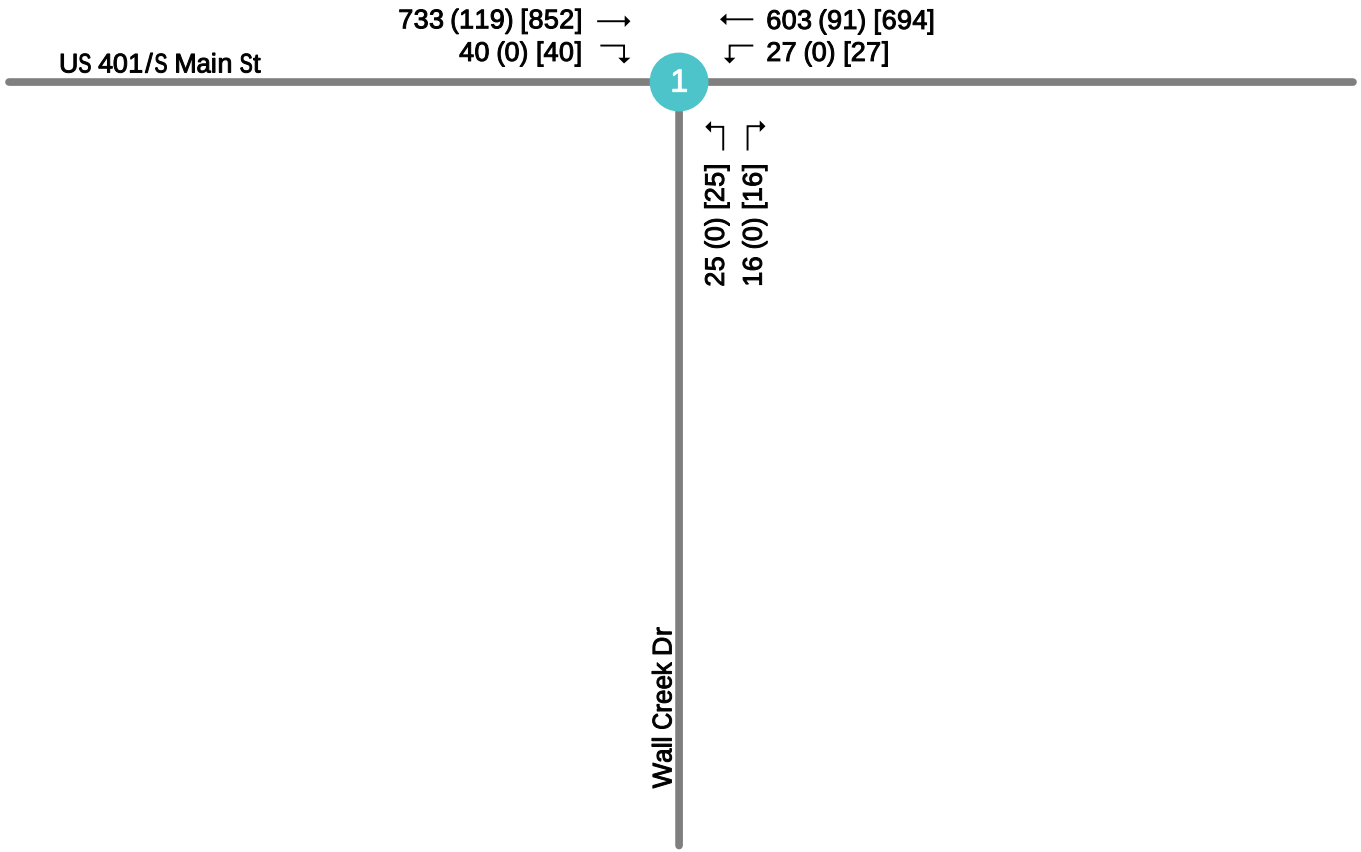
LEGEND

XX – 2024 Background Traffic Due to Growth Rate
(XX) – Approved Development Traffic
[XX] – 2024 Total No-Build Traffic
XX + (XX) = [XX]

Town of Rolesville, NCDOT Division 5

Figure 6

EXULT ENGINEERING



Rolesville Mixed Use

Residential Site Traffic Distribution & Assignment

LEGEND

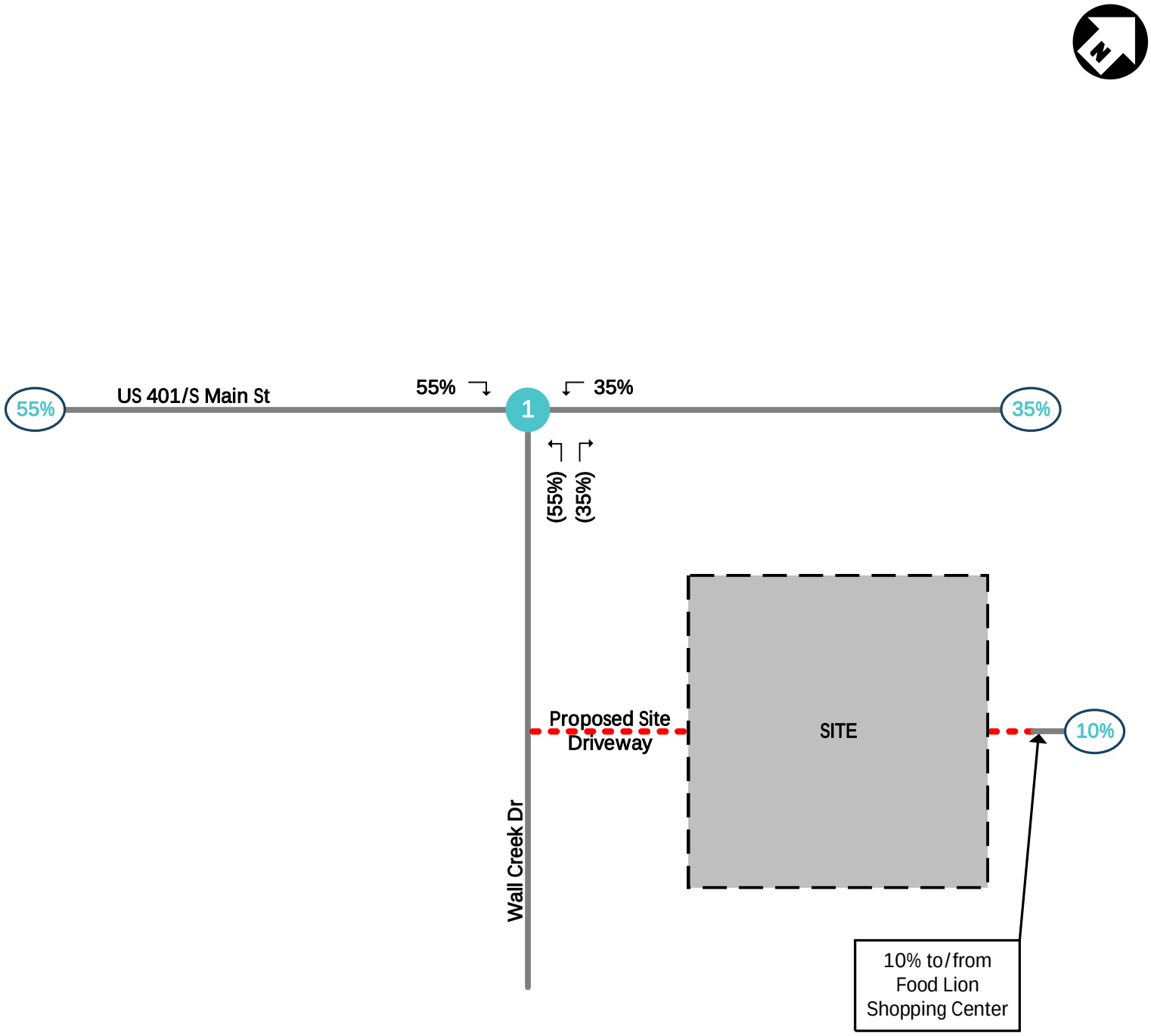
(XX%) – Outbound Site Traffic
XX% – Inbound Site Traffic

XX% *– Overall Distribution*

Town of Rolesville, NCDOT Division 5

Figure 7

EXULT ENGINEERING



Rolesville Mixed Use

Commercial Site Traffic Distribution & Assignment

LEGEND

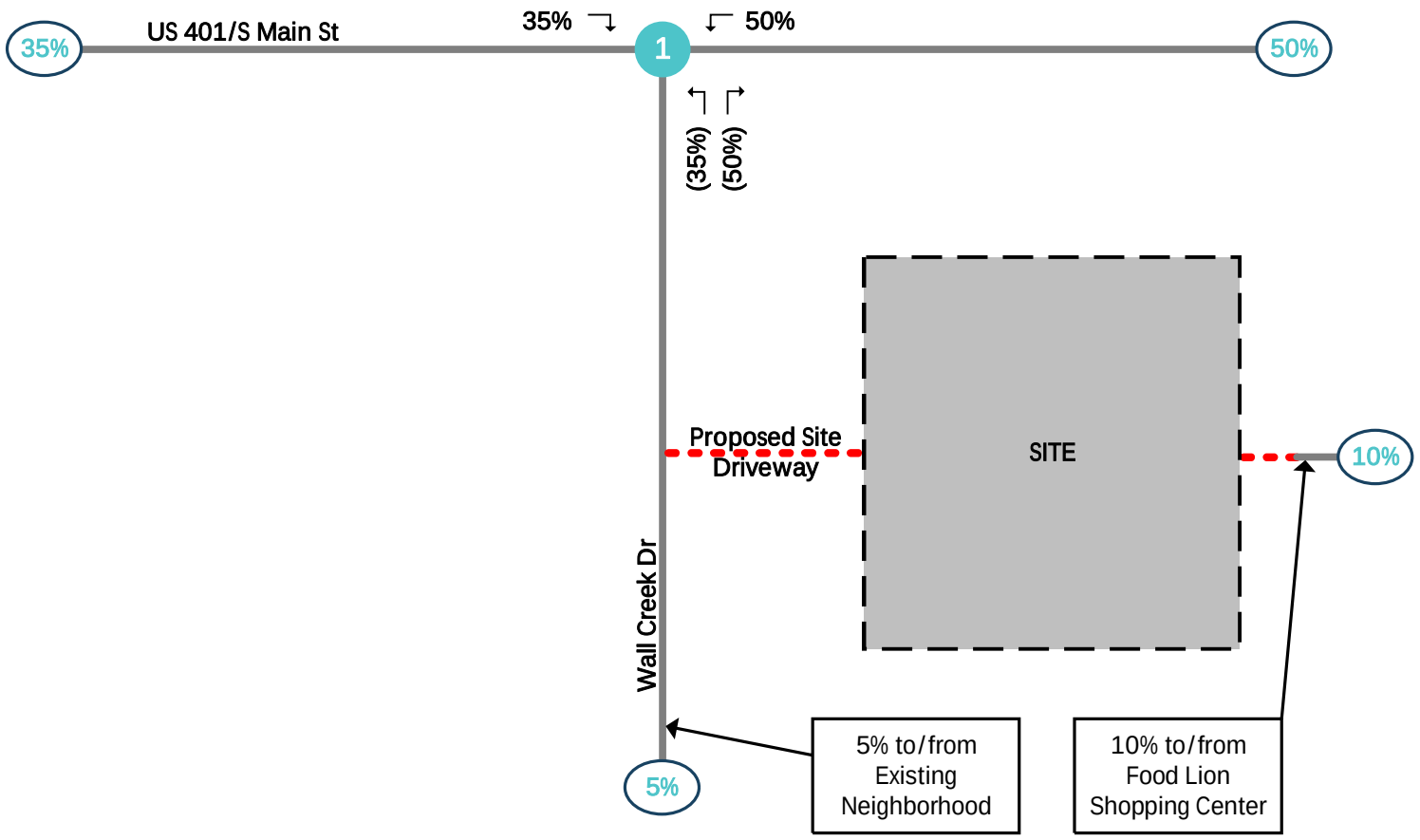
(XX%) – Outbound Site Traffic
XX% – Inbound Site Traffic

XX% *– Overall Distribution*

Town of Rolesville, NCDOT Division 5

Figure 8

EXULT ENGINEERING



Rolesville Mixed Use

2024 AM Peak Hour Buildout Traffic

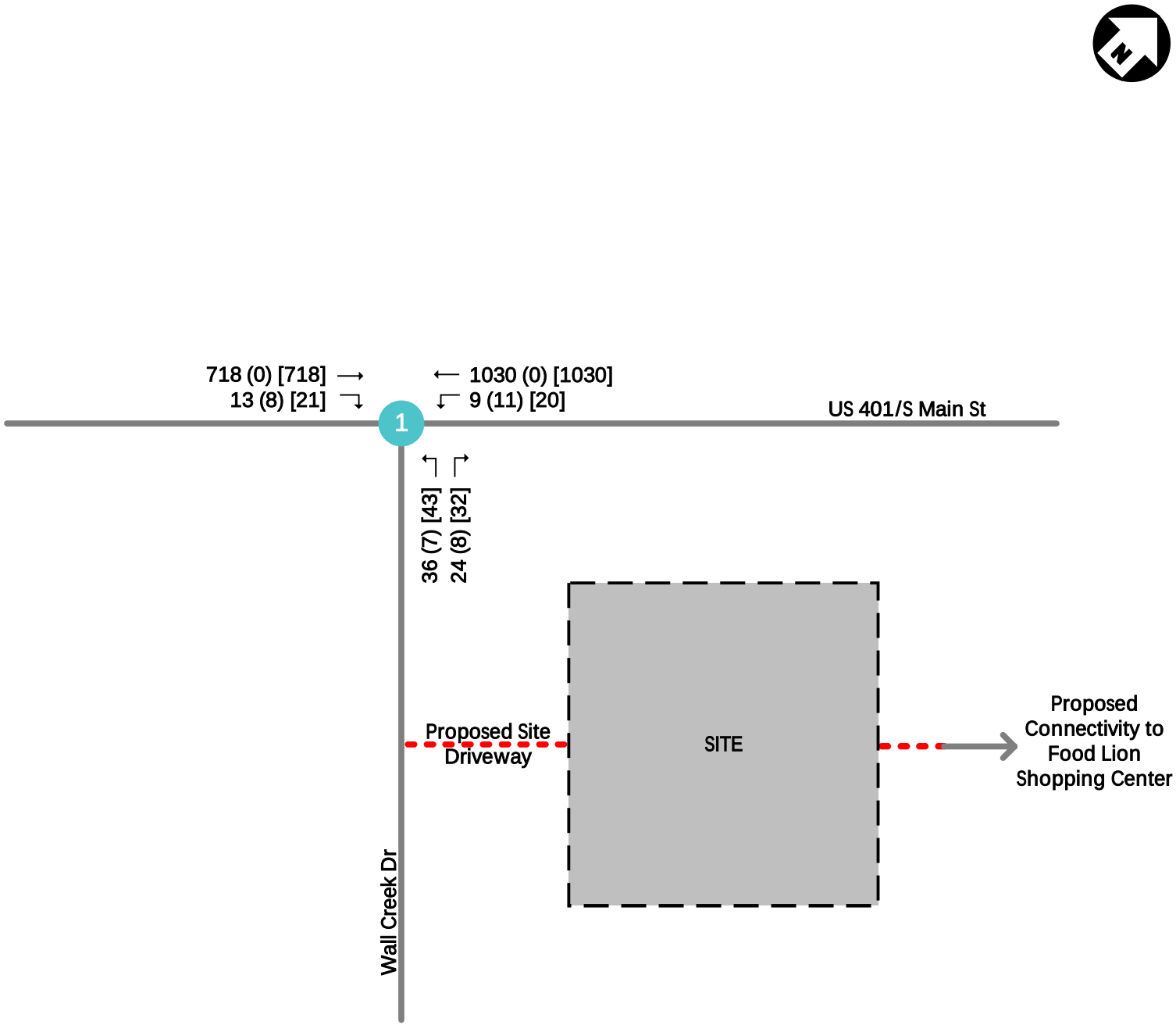
LEGEND

XX – No-Build Traffic
(XX) – Site Traffic
[XX] – Total Buildout Traffic
XX + (XX) = [XX]

Town of Rolesville, NCDOT Division 5

Figure 9

EXULT ENGINEERING



Rolesville Mixed Use

2024 PM Peak Hour Buildout Traffic

LEGEND

XX – No-Build Traffic
(XX) – Site Traffic
[XX] – Total Buildout Traffic
XX + (XX) = [XX]

Town of Rolesville, NCDOT Division 5

Figure 10

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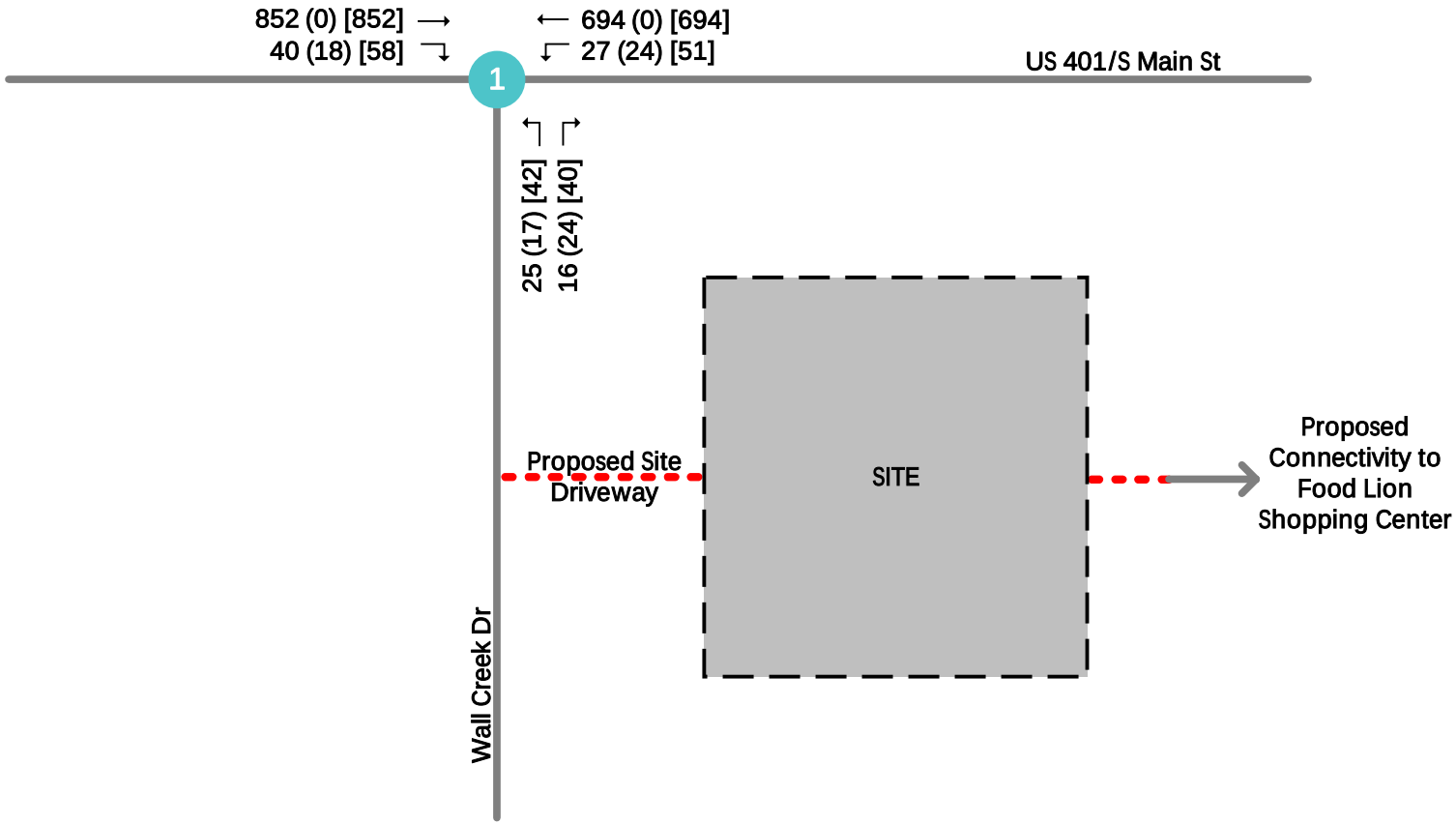

CAPACITY ANALYSIS SCOPING CORRESPONDENCE

Brittany Chase

From: Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Sent: Friday, October 28, 2022 8:40 AM
To: Brittany Chase
Cc: Gruber, Meredith a; kpgettle@gmail.com
Subject: RE: [External] RE: SP 22-06/503 S. Main - Trip Gen Letter feedback

Good morning,

I feel that scope is acceptable and will provide the Town the information desired outside of a full TIA. It is much appreciated.

2nd Submittal comments will be published in about a week (by 11/7/22); a TRC meeting appointment will be offered (to the Applicant) for/on 11/10/22. Then the next submittal date/option will be December 1st – I hope that your Memo can be completed to meet that 12/1/22 date. If not, I am fine working with you to accept it at whatever date it is ready after 12/1/22, and work it into that active review cycle.

** Based on the feedback from Staff so far, there will be correction comments thus necessitating a 3rd submittal and review. This should be expected given the large-scale site redesign, and 1st submittal of architectural elevations, presented with V2.

Thank you all.
Mike E.

From: Brittany Chase <Brittany@ExultEngineering.com>
Sent: Thursday, October 27, 2022 7:04 PM
To: Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Cc: Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; kpgettle@gmail.com
Subject: RE: [External] RE: SP 22-06/503 S. Main - Trip Gen Letter feedback

Hi Michael –

We appreciate you all working through these details with us. After a little more thought, I think we can perform what you are looking for without collecting new counts:

- Utilize the 2022 traffic counts from the Tom's Creek TIA at the intersection of Main Street/US 401 at Burlington Mills Road to determine existing traffic volumes along Main Street/US 401. While there are a few driveways in between Burlington Mills Road and Wall Creek Drive, this methodology will still result in a reasonable/accurate estimate.
- Generate trips for the Wall Creek subdivision based on the existing number of homes (using ITE manual). We will then assign these trips to the intersection (entering and exiting) at Wall Creek Drive.
- The 2022 volumes on Main Street and the Wall Creek Drive trips will be analyzed as "existing" conditions.
- We will then add the proposed development trips on top at the intersection of Main Street and Wall Creek Drive and analyze.

- We will summarize our results (LOS, delay, and queue length) for the two scenarios in a Technical Memorandum (letter).

Please let me know if this sounds acceptable to the Town.

Thank you!

Brittany Chase, P.E.
Exult Engineering | P.O. Box 99277, Raleigh, NC 27624
Office: 984-500-5428 | Mobile: 919-610-4444
Email: Brittany@ExultEngineering.com
Website: www.ExultEngineering.com

From: Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Sent: Wednesday, October 26, 2022 5:05 PM
To: Brittany Chase <Brittany@ExultEngineering.com>
Cc: Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; kpgettle@gmail.com
Subject: RE: [External] RE: SP 22-06/503 S. Main - Trip Gen Letter feedback

Good afternoon,

Thank you for the bullet points and such, please let me elaborate some.

1. The impetus for the request is not to create a cost-burden or any extreme extra work on the part of the developer.
2. Yes, due to the timing of the submittal and the adoption of the related Text Amendment, this project / SP 22-06 has shown it does NOT hit the TIA triggers of 100 peak hour or 1,000 daily trips. IF subject to the Text Amendment, this project would have to perform a TIA unless waived by the LDA for other reasons.
3. Considerations:
    a. Nearby intersection with Burlington Mills is moving and changing (new B.M intersection will be 4-way fully signalized and >2,000' away, "old" B.M. signal to be removed).
    b. Nearby intersection of Main/Rogers/Redford intersection is considered fully built and >1,200' away.
    c. The upcoming LAPP project to completely redesign and build-out Main Street in the expected impact range on Main.
    d. Wall Creek Drive is already built with a Left-turn lane onto Main with approximately 150' of storage.

*Regarding Wallbrook – without elaborating, please do the [existing + site traffic] analysis assuming Wall Creek to S. Main via Wallbrook is not built. This would represent present conditions and I suppose 'worst case'. You are welcome to offer a scenario with that connection through Wallbrook also (ie best case).

The ask is to have vetted the question of this development on the Wall Creek/Main and the applicant to provide some viable data, outside of the TIA process and the length and expense that comes with that.

If there are (unfortunately) no existing Traffic Counts at this intersection, and the only way to answer the question is to attain existing counts, I suppose that is necessary. Again, incurring costs was not intentional, but this exercise should prove to be far less expensive than a complete TIA would have been.

Thanks for your time and effort on this point.

Mike E.
Senior Planner

From: Brittany Chase <Brittany@ExultEngineering.com>
Sent: Wednesday, October 26, 2022 3:07 PM
To: Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Cc: Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>; kpgettle@gmail.com
Subject: [External] RE: SP 22-06/503 S. Main - Trip Gen Letter feedback

Hi Michael –

Great timing - I was actually just typing up an email to send to you to clarify the Town's additional requirements for the site. It was great to see you at Planning Board and I wanted to thank you for touching base with me prior to the meeting regarding this project.

Based on your email below, a TIA will not be required. However, the Town is interested in the site impacts on the existing queue. We understand the Town would like for us to:

- Collect new traffic counts at the intersection of US 401/Main Street and Wallcreek Drive.
- Assign site traffic to the intersection.
- Perform capacity analysis for both the existing conditions and the existing + site traffic conditions
- Summarize the analysis in a Technical Memorandum (letter) for submittal.

We would imagine this site would be developed relatively quickly and do not see the necessity of preparing a no-build condition (future year without site traffic). However, if there are approved developments in the area (such as Wallbrook) that are expected to be built PRIOR to the buildout of this site, we should probably consider those. I do not believe Wallbrook has broken ground yet so this may not need to be considered. I am still confirming with the Site Civil engineer on the anticipated buildout year of the proposed site. Please let me know if the Town agrees with this methodology.

Thank you!

EXULT
ENGINEERING

Brittany Chase, P.E.
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Office: 984-500-5428 | Mobile: 919-610-4444
Email: Brittany@ExultEngineering.com
Website: www.ExultEngineering.com

From: Elabarger, Michael S <michael.elabarger@rolesville.nc.gov>
Sent: Wednesday, October 26, 2022 2:39 PM
To: Brittany Chase <Brittany@ExultEngineering.com>
Cc: Gruber, Meredith a <meredith.gruber@rolesville.nc.gov>
Subject: SP 22-06/503 S. Main - Trip Gen Letter feedback

Good afternoon, Brittany,

Following up our brief conversation the other night on this topic – Town Staff accepts the trip generation letter as demonstrating that the proposed project is just below the LDO Section 8.C. thresholds for requiring a full TIA. Staff notes and clarifies that SP 22-06 was submitted on 7/27/22 and precedes the Text Amendment approved by the Town Board on 10/4/22 that revised LDO Section 8.C. to lower the thresholds for requiring a TIA basically in half.

SP 22-06 is an administratively processed/approved type of application, there will not be any QJ or Legislative hearing as part of its approval process.

The project was redesigned from the 1st Submittal to the 2nd Submittal (and the trip generation was based on this 2nd submittal), removing the driveway directly onto S. Main Street and thus leaving the site with 2 means of access – a two-way internal private drive connection to the shopping center and a full-service driveway onto Wall Creek Drive (a residential street) .

Staff would request that the intersection of Wall Creek Drive and S. Main Street be studied and existing and existing + project build-out traffic counts be provided. The concern is primarily the Left turns out, and how that might create queues negatively affecting the Wall Creek neighborhood residents who (at this time) only have access via Wall Creek Drive to Main Street.

This can come either separate or with the next Submittal. Please let me know if there are questions.

Thank you!

Michael Elabarger
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Rolesville, NC 27571
www.rolesvillenc.gov
919.554.6517

NEW SUBMITTAL PROCESS in effect – visit Submittal Process 2022

PLEASE REVIEW THIS MESSAGE CAREFULLY BEFORE CLICKING ANY LINKS.

2022 TRAFFIC COUNT DATA

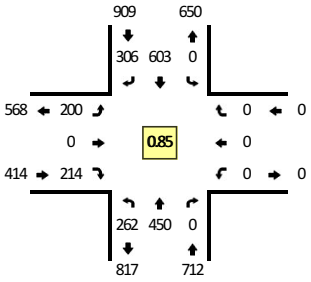
Type of peak hour being reported: Intersection Peak

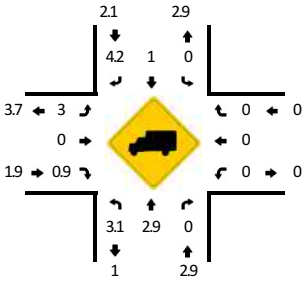
Method for determining peak hour: Total Entering Volume

LOCATION: S Main St/Louisburg Rd -- Burlington Mills Rd
CITY/STATE: Rolesville, NC

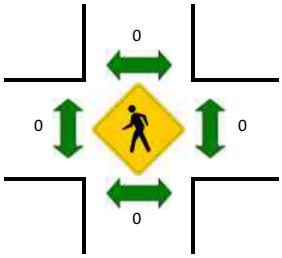
QC JOB #: 15808011
DATE: Tue, May 17 2022

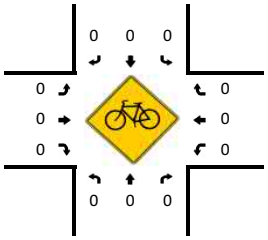
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

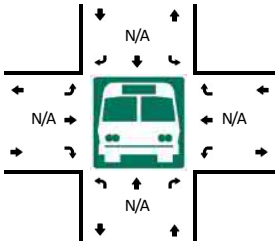


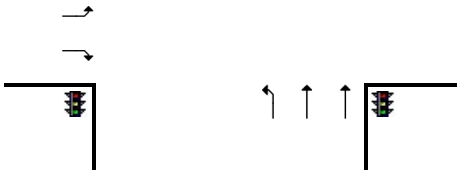


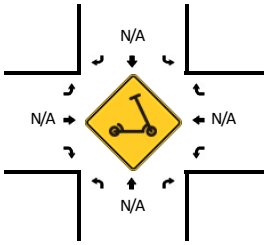
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	S Main St/Louisburg Rd (Northbound)				S Main St/Louisburg Rd (Southbound)				Burlington Mills Rd (Eastbound)				Burlington Mills Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	16	61	0	0	0	178	38	0	20	0	15	0	0	0	0	0	328	
7:15 AM	18	94	0	0	0	185	56	0	19	0	15	0	0	0	0	0	387	
7:30 AM	61	132	0	0	0	155	66	0	36	0	39	0	0	0	0	0	489	
7:45 AM	91	127	0	0	0	142	82	0	71	0	87	0	0	0	0	0	600	1804
8:00 AM	92	97	0	0	0	121	102	0	74	0	73	0	0	0	0	0	559	2035
8:15 AM	24	78	0	0	0	120	51	0	55	0	46	0	0	0	0	0	374	2022
8:30 AM	9	86	0	0	0	105	32	0	45	0	21	0	0	0	0	0	298	1831
8:45 AM	13	98	0	0	0	131	41	0	64	0	13	0	0	0	0	0	360	1591

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	364	508	0	0	0	568	328	0	284	0	348	0	0	0	0	0	2400
Heavy Trucks	16	16	0		0	8	16		0	0	0		0	0	0		56
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 5/23/2022 2:32 PM

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

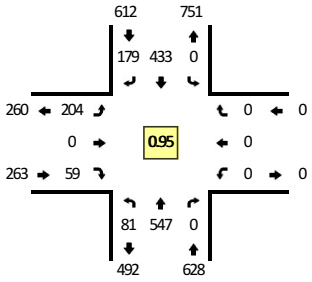
Type of peak hour being reported: Intersection Peak

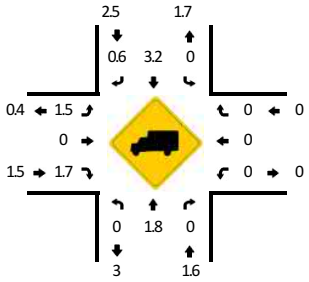
Method for determining peak hour: Total Entering Volume

LOCATION: S Main St/Louisburg Rd -- Burlington Mills Rd
CITY/STATE: Rolesville, NC

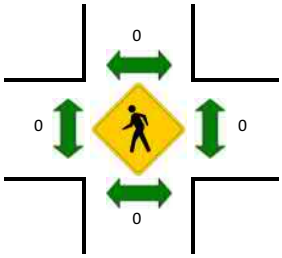
QC JOB #: 15808012
DATE: Tue, May 17 2022

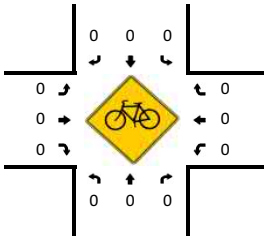
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

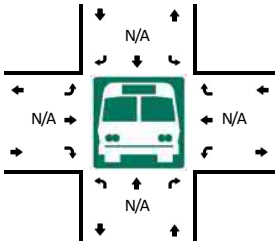


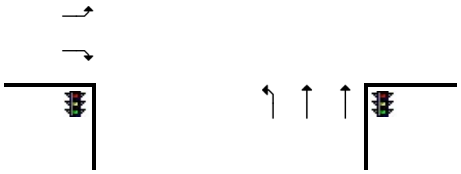


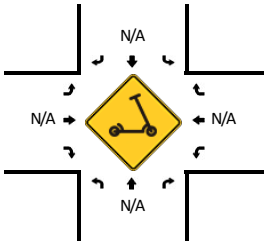
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	S Main St/Louisburg Rd (Northbound)				S Main St/Louisburg Rd (Southbound)				Burlington Mills Rd (Eastbound)				Burlington Mills Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	21	126	0	0	0	137	50	0	41	0	19	0	0	0	0	0	394	
4:15 PM	19	142	0	0	0	115	25	0	31	0	17	0	0	0	0	0	349	
4:30 PM	20	119	0	0	0	102	37	0	27	0	18	0	0	0	0	0	323	
4:45 PM	20	112	0	0	0	91	40	0	40	0	16	0	0	0	0	0	319	1385
5:00 PM	17	116	0	0	0	115	40	0	55	0	15	0	0	0	0	0	358	1349
5:15 PM	13	132	0	0	0	116	40	0	54	0	10	0	0	0	0	0	365	1365
5:30 PM	22	140	0	0	0	108	46	0	48	0	22	0	0	0	0	0	386	1428
5:45 PM	29	159	0	0	0	94	53	0	47	0	12	0	0	0	0	0	394	1503

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	116	636	0	0	0	376	212	0	188	0	48	0	0	0	0	0	1576
Heavy Trucks	0	8	0		0	8	0		4	0	0		0	0	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

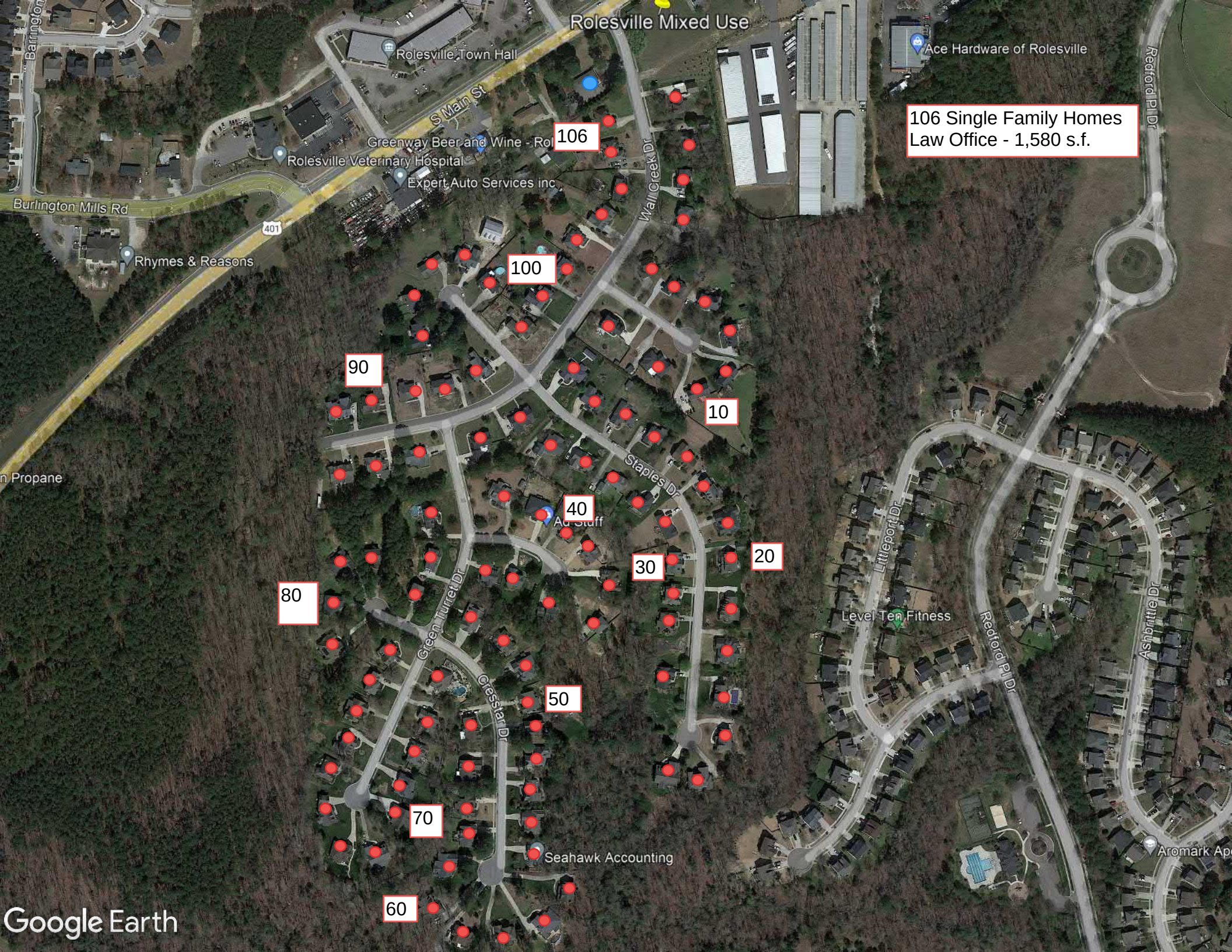
Report generated on 5/23/2022 2:32 PM

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

Count station	2019	2015	Annual Growth
Main Street NE of Burlington Mills*	14000	15000	-2.27%
Burlington Mills W. of Main Street	4500	3300	8.06%
Rogers N. of Main	9000	9900	-2.35%
Average			1.14%

*Based on 2016 Base year due to construction of US 401 Bypass

EXISTING AND APPROVED DEVELOPMENT TRAFFIC CALCULATIONS


Rolesville Mixed Use
Rolesville Town Hall
Ace Hardware of Rolesville
S Main St
Greenway Beer and Wine - Rol
Rolesville Veterinary Hospital
Expert Auto Services inc
Burlington Mills Rd
401
Rhymes & Reasons
Wall Creek Dr
Redford Pl Dr
106 Single Family Homes
Law Office - 1,580 s.f.
106
100
90
10
Staples Dr
40
30
20
80
Green Turret Dr
Cresstar Dr
50
70
60
Littleport Dr
Level Ten Fitness
Ashbrittle Dr
Seahawk Accounting
Aromark Ap
Google Earth

ITE Trip Generation (11th Edition)
Rolesville Mixed Use - Wall Creek Drive Existing Development Trips

Site Trips

LUC	Land Use	Intensity	Units	Avg Rate or Equation?	Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
					Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
					Daily Trips			*AM Trips*	*AM Trips In*	*AM Trips Out*	*PM Trips*	*PM Trips In*	*PM Trips Out*
210	Single Family Attached	**106**	*Dwelling Unit(s)*	*Eq*	1,066	533	533	79	20	59	105	66	39
712	Small Office Building	**1.58**	*1,000 Sq Ft*	*Eq*	24	12	12	3	2	1	3	1	2
				Total	**1,090**	**545**	**545**	**82**	**22**	**60**	**108**	**67**	**41**

EXULT ENGINEERING

www.ExultEngineering.com

Date: 11-18-22 Sheet _____ of _____

Project: Rolesville Mixed Use Task: _____

Engineer: _____

Serving our clients, communities, & team with excellence.

Wall Creek Dr - Existing Development Trip Gen

AM - 22 in, 60 out
PM - 67 in, 41 out

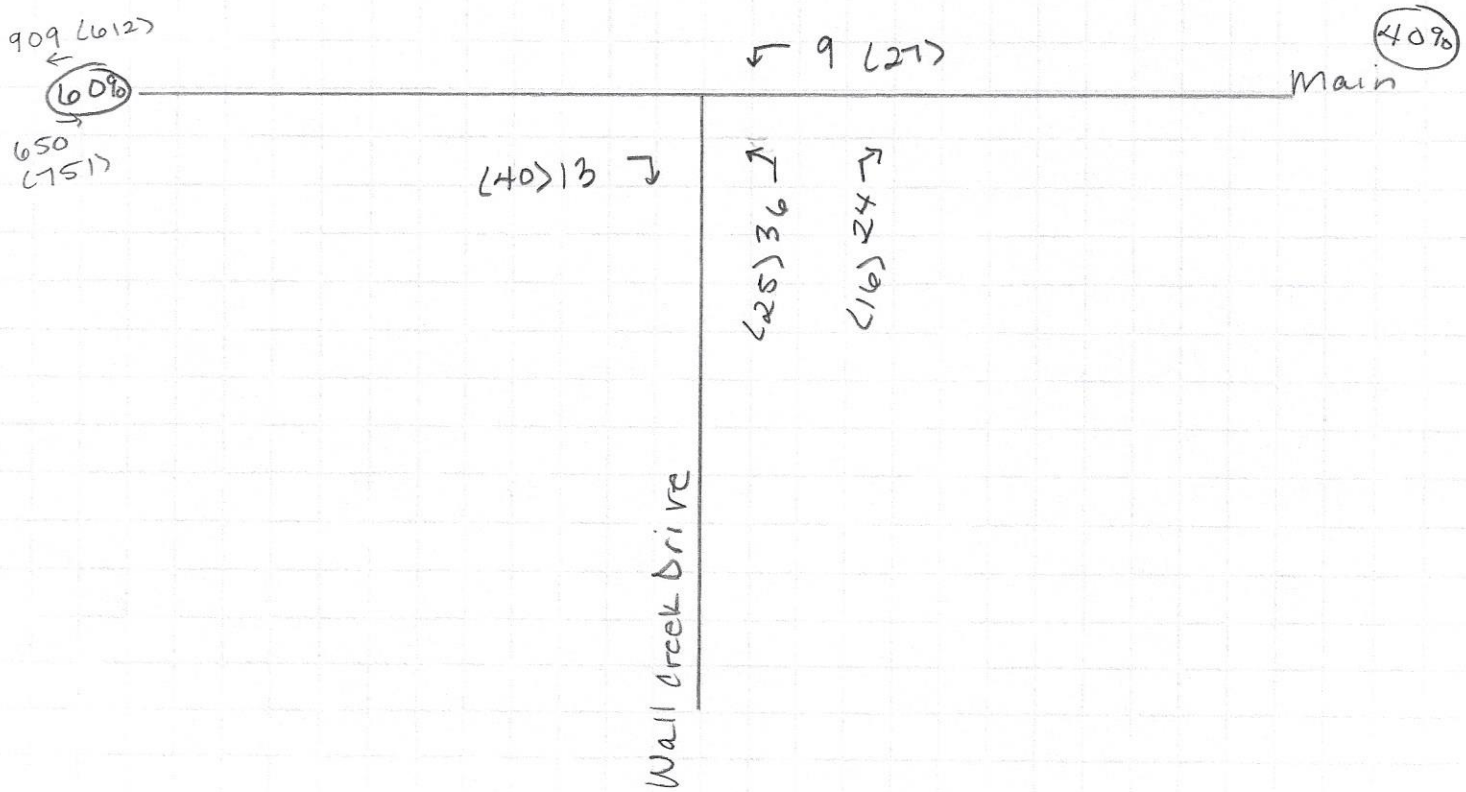
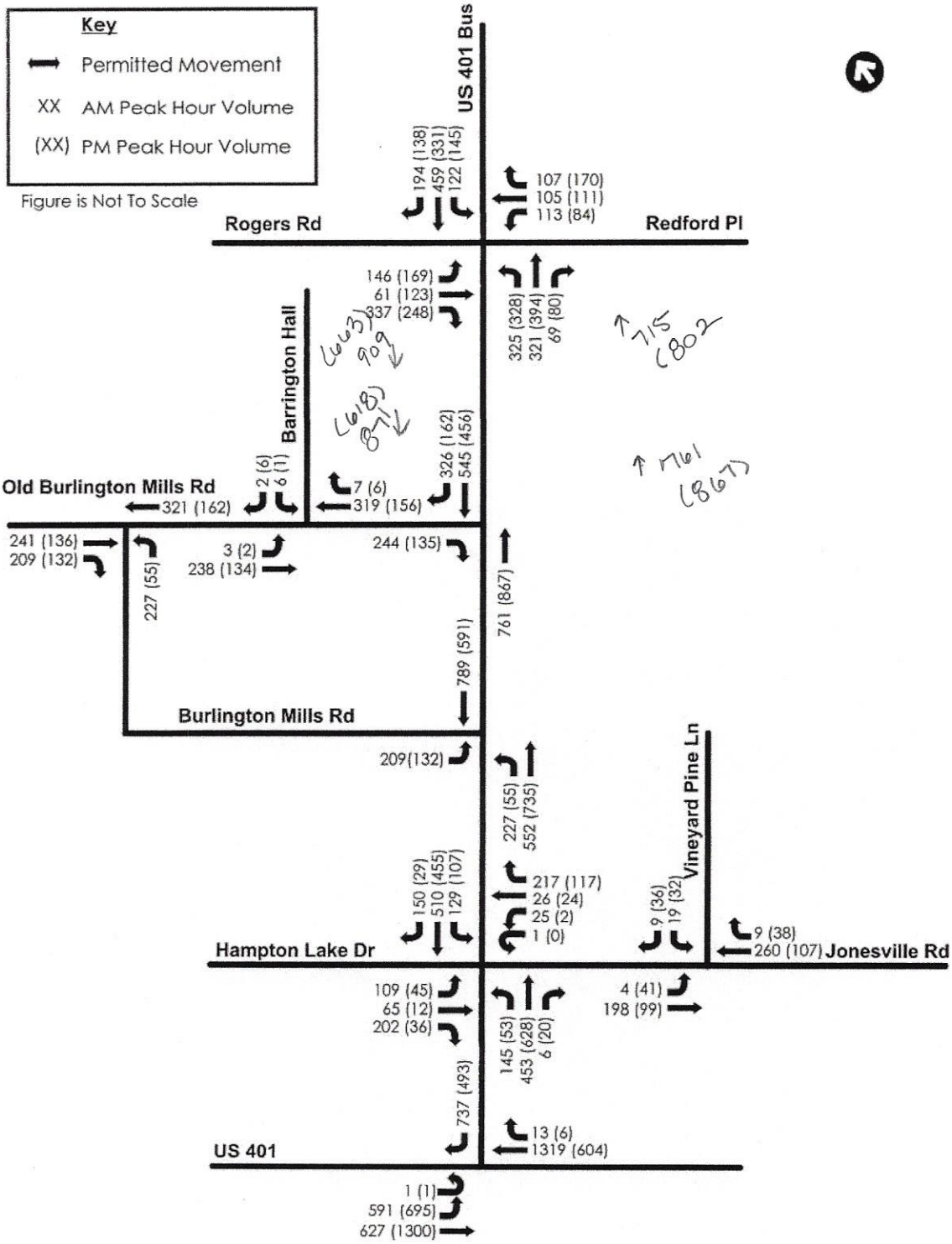
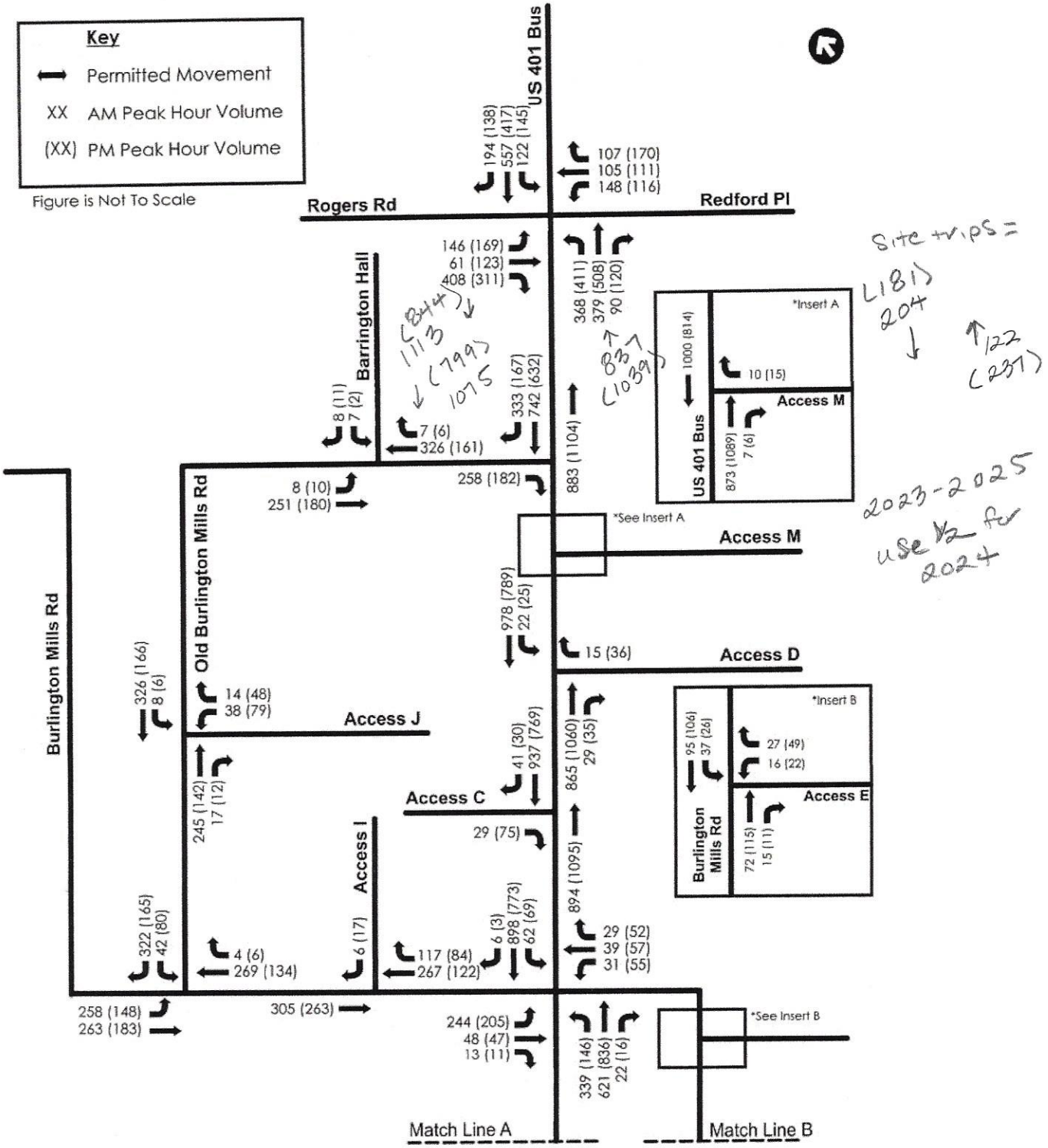


Figure 6: 2025 No-Build Traffic Volumes



Traffic Volumes
August 11, 2020

Figure 7: 2025 Build Traffic Volumes



PROPOSED SITE TRIP GENERATION AND INTERSECTION VOLUME DEVELOPMENT WORKSHEET

ITE Trip Generation (11th Edition)
Rolesville Mixed Use

Site Trips

LUC	Land Use	Intensity	Units	Avg Rate or Equation?	Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
					Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
					Daily Trips			*AM Trips*	*AM Trips In*	*AM Trips Out*	*PM Trips*	*PM Trips In*	*PM Trips Out*
215	Single Family Attached	**11**	*Dwelling Unit(s)*	*Eq*	34	17	17	5	1	4	3	2	1
822	Strip Retail Plaza (<40K)	**13.5**	*1,000 Sq Ft*	*Eq*	800	400	400	35	21	14	96	48	48
				Total	**834**	**417**	**417**	**40**	**22**	**18**	**99**	**50**	**49**

Internal Capture

Land Use Code(s)	Land Use	Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
		Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
	Office	-	-	-	0	0	0	0	0	0
	Retail	-	-	-	0	0	0	1	0	1
	Restaurant	-	-	-	0	0	0	0	0	0
	Cinema/Entertainment	-	-	-	0	0	0	0	0	0
	Residential	-	-	-	0	0	0	1	1	0
	Hotel	-	-	-	0	0	0	0	0	0
	All Other Land Uses	-	-	-	0	0	0	0	0	0
	Total	***20***	***10***	***10***	***0***	***0***	***0***	***2***	***1***	***1***

External Trips

LUC	Land Use	Daily Trips			AM Peak Hour Trips			PM Peak Hour Trips		
		Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
215	Single Family Attached	-	-	-	5	1	4	2	1	1
822	Strip Retail Plaza (<40K)	-	-	-	35	21	14	95	48	47
	Total	***814***	***407***	***407***	***40***	***22***	***18***	***97***	***49***	***48***

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	822			35	21	14
Restaurant				0	0	0
Cinema/Entertainment				0	0	0
Residential	215			5	1	4
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
				40	22	18

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	43	24	19
Internal Capture Percentage	0%	0%	0%
External Vehicle-Trips[5]	40	22	18
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	0%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	0%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).
[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
[6]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

EXULT ADDED TABLE: TOTAL INTERNAL CAPTURE VEHICULAR TRIPS

Origin Land Use	ENTERING TRIPS			EXITING TRIPS		
	Internal	External	Total	Internal	External	Total
Office	0	0	0	0	0	0
Retail	0	21	21	0	14	14
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	0	4	4
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Project Name:	0
Analysis Period:	**AM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	0	0	1.10	0	0
Retail	1.10	21	23	1.10	14	15
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	1	1	1.10	4	4
Hotel	1.10	0	0	1.10	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	4		2	0	2	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	1	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		7	0	0	0	0
Retail	0		0	0	0	0
Restaurant	0	2		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	4	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	23	23	21	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	15	15	14	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	4	4	4	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[2]Person-Trips
[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:		**Organization:**	
Project Location:		**Performed By:**	
Scenario Description:		**Date:**	
Analysis Year:		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office				0	0	0
Retail	822			96	48	48
Restaurant				0	0	0
Cinema/Entertainment				0	0	0
Residential	215			3	2	1
Hotel				0	0	0
All Other Land Uses[2]				0	0	0
				99	50	49

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.10	0%	0%	1.10	0%	0%
Retail	1.10	0%	0%	1.10	0%	0%
Restaurant	1.10	0%	0%	1.10	0%	0%
Cinema/Entertainment	1.10	0%	0%	1.10	0%	0%
Residential	1.10	0%	0%	1.10	0%	0%
Hotel	1.10	0%	0%	1.10	0%	0%
All Other Land Uses[2]	1.10	0%	0%	1.10	0%	0%

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	109	55	54
Internal Capture Percentage	2%	2%	2%
External Vehicle-Trips[5]	97	49	48
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	0%	2%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	50%	0%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).
[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
[6]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

EXULT ADDED TABLE: TOTAL INTERNAL CAPTURE VEHICULAR TRIPS

Origin Land Use	ENTERING TRIPS			EXITING TRIPS		
	Internal	External	Total	Internal	External	Total
Office	0	0	0	0	0	0
Retail	0	48	48	1	47	48
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	1	2	0	1	1
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Project Name:	0
Analysis Period:	**PM Street Peak Hour**

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends

Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.10	0	0	1.10	0	0
Retail	1.10	48	53	1.10	48	52.8
Restaurant	1.10	0	0	1.10	0	0
Cinema/Entertainment	1.10	0	0	1.10	0	0
Residential	1.10	2	2	1.10	1	1.1
Hotel	1.10	0	0	1.10	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	1		15	2	14	3
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		4	0	0	0	0
Retail	0		0	0	1	0
Restaurant	0	27		0	0	0
Cinema/Entertainment	0	2	0		0	0
Residential	0	5	0	0		0
Hotel	0	1	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)

Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	0	53	53	48	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	1	1	2	1	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)

Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles[1]	Transit[2]	Non-Motorized[2]
Office	0	0	0	0	0	0
Retail	1	52	53	47	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	0	1	1	1	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses[3]	0	0	0	0	0	0

[1]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
[2]Person-Trips
[3]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

Intersection Development Worksheet
Intersection #1 - Main Street at Wall Creek Drive

AM PEAK HOUR

	Northbound Wall Creek Drive				Southbound -				Eastbound Main Street				Westbound Main Street			
	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
2022 Existing Traffic																
2022 Traffic Count										650				909		
Trips Generated for Wall Creek Drive	*36*		*24*							*-13*	*13*		*9*	*-9*		
2022 Existing Traffic	36	0	24	0	0	0	0	0	0	637	13	0	9	900	0	0
Background Growth Calculation																
Growth Factor	0.00	0.03	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.03	0.00	0.03	0.03	0.03
2024 Background Growth	0	0	0	0	0	0	0	0	0	20	0	0	0	28	0	0
2024 Background Traffic Due to Growth Factor	36	0	24	0	0	0	0	0	0	657	13	0	9	928	0	0
Approved Developments																
Wallbrook	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*122*	*0*	*0*	*0*	*204*	*0*	*0*
50%	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*61*	*0*	*0*	*0*	*102*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
0%	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Approved Development Traffic	0	0	0	0	0	0	0	0	0	61	0	0	0	102	0	0
Final No-Build Growth																
Background Growth Total																
2024 No-Build Traffic	36	0	24	0	0	0	0	0	0	718	13	0	9	1030	0	0
Trip Assignment - Residential																
Outbound Assigned Percentage	*55%*	*0%*	*35%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Outbound Primary Site Trips	*2*	*0*	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Inbound Assigned Percentage	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*55%*	*0%*	*35%*	*0%*	*0%*	*0%*
Inbound Primary Site Trips	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*
Total Primary Site Trips	2	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Trip Assignment - Commercial																
Outbound Assigned Percentage	*35%*	*0%*	*50%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Outbound Primary Site Trips	*5*	*0*	*7*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Inbound Assigned Percentage	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*35%*	*0%*	*50%*	*0%*	*0%*	*0%*
Inbound Primary Site Trips	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*7*	*0*	*11*	*0*	*0*	*0*
Total Primary Site Trips	5	0	7	0	0	0	0	0	0	0	7	0	11	0	0	0
Total Project Traffic	7	0	8	0	0	0	0	0	0	0	8	0	11	0	0	0
2024 Buildout Volumes	43	0	32	0	0	0	0	0	0	718	21	0	20	1030	0	0

PM PEAK HOUR

	Northbound Wall Creek Drive				Southbound -				Eastbound Main Street				Westbound Main Street			
	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn
2022 Existing Traffic																
2022 Traffic Count										751				612		
Balancing	*25*		*16*							*-40*	*40*		*27*	*-27*		
2022 Existing Traffic	25	0	16	0	0	0	0	0	0	711	40	0	27	585	0	0
Background Growth Calculation																
Growth Factor	0.00	0.03	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.00	0.03	0.00	0.03	0.03	0.03
2024 Background Growth	0	0	0	0	0	0	0	0	0	22	0	0	0	18	0	0
2024 Background Traffic Due to Growth Factor	25	0	16	0	0	0	0	0	0	733	40	0	27	603	0	0
Approved Developments																
Wallbrook	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*237*	*0*	*0*	*0*	*181*	*0*	*0*
50%	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*119*	*0*	*0*	*0*	*91*	*0*	*0*
0	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
0%	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total Approved Development Traffic	0	0	0	0	0	0	0	0	0	119	0	0	0	91	0	0
Final No-Build Growth																
Background Growth Total																
2024 No-Build Traffic	25	0	16	0	0	0	0	0	0	852	40	0	27	694	0	0
Trip Assignment - Residential																
Outbound Assigned Percentage	*55%*	*0%*	*35%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Outbound Primary Site Trips	*1*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Inbound Assigned Percentage	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*55%*	*0%*	*35%*	*0%*	*0%*	*0%*
Inbound Primary Site Trips	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*0*
Total Primary Site Trips	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Trip Assignment - Commercial																
Outbound Assigned Percentage	*35%*	*0%*	*50%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
Outbound Primary Site Trips	*16*	*0*	*24*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Inbound Assigned Percentage	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*35%*	*0%*	*50%*	*0%*	*0%*	*0%*
Inbound Primary Site Trips	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*17*	*0*	*24*	*0*	*0*	*0*
Total Primary Site Trips	16	0	24	0	0	0	0	0	0	0	17	0	24	0	0	0
Total Project Traffic	17	0	24	0	0	0	0	0	0	0	18	0	24	0	0	0
2024 Buildout Volumes	42	0	40	0	0	0	0	0	0	852	58	0	51	694	0	0

SYNCHRO REPORTS

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	637	13	9	900	36	24
Future Volume (vph)	637	13	9	900	36	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1857	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1857	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	722	0	10	1000	40	27
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	637	13	9	900	36	24
Future Vol, veh/h	637	13	9	900	36	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	708	14	10	1000	40	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	722	0	1735	715
Stage 1	-	-	-	-	715	-
Stage 2	-	-	-	-	1020	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	880	-	96	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	348	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	880	-	95	431
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	344	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	225	431	-	-	880	-
HCM Lane V/C Ratio	0.178	0.062	-	-	0.011	-
HCM Control Delay (s)	24.4	13.9	-	-	9.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	711	40	27	585	25	16
Future Volume (vph)	711	40	27	585	25	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1850	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1850	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	834	0	30	650	28	18
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	711	40	27	585	25	16
Future Vol, veh/h	711	40	27	585	25	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	790	44	30	650	28	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	834	0	1522	812
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	710	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	799	-	130	379
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	487	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	799	-	125	379
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	468	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	18.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	263	379	-	-	799	-
HCM Lane V/C Ratio	0.106	0.047	-	-	0.038	-
HCM Control Delay (s)	20.3	15	-	-	9.7	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	718	13	9	1030	36	24
Future Volume (vph)	718	13	9	1030	36	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1859	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1859	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	812	0	10	1144	40	27
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	718	13	9	1030	36	24
Future Vol, veh/h	718	13	9	1030	36	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	798	14	10	1144	40	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	812	0	1969	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	1164	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	814	-	69	382
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	297	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	814	-	68	382
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	293	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	23.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	190	382	-	-	814	-
HCM Lane V/C Ratio	0.211	0.07	-	-	0.012	-
HCM Control Delay (s)	28.9	15.1	-	-	9.5	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.2	-	-	0	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	852	40	27	694	25	16
Future Volume (vph)	852	40	27	694	25	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1852	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1852	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	991	0	30	771	28	18
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	852	40	27	694	25	16
Future Vol, veh/h	852	40	27	694	25	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	947	44	30	771	28	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	991	0	1800	969
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	831	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	698	-	88	308
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	428	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	698	-	84	308
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	368	-
Stage 2	-	-	-	-	410	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	215	308	-	-	698	-
HCM Lane V/C Ratio	0.129	0.058	-	-	0.043	-
HCM Control Delay (s)	24.2	17.4	-	-	10.4	-
HCM Lane LOS	C	C	-	-	B	-
HCM 95th %tile Q(veh)	0.4	0.2	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	718	21	20	1030	43	32
Future Volume (vph)	718	21	20	1030	43	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1855	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1855	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	821	0	22	1144	48	36
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	718	21	20	1030	43	32
Future Vol, veh/h	718	21	20	1030	43	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	798	23	22	1144	48	36

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	821	0	1998	810
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	1188	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	808	-	66	380
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	289	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	808	-	64	380
Mov Cap-2 Maneuver	-	-	-	-	184	-
Stage 1	-	-	-	-	438	-
Stage 2	-	-	-	-	281	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	24.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	184	380	-	-	808	-
HCM Lane V/C Ratio	0.26	0.094	-	-	0.028	-
HCM Control Delay (s)	31.3	15.4	-	-	9.6	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	1	0.3	-	-	0.1	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	852	58	51	694	42	40
Future Volume (vph)	852	58	51	694	42	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	50
Storage Lanes		0	1		1	1
Taper Length (ft)			25		100	
Satd. Flow (prot)	1846	0	1770	1863	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1846	0	1770	1863	1770	1583
Link Speed (mph)	35			35	25	
Link Distance (ft)	528			718	395	
Travel Time (s)	10.3			14.0	10.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1011	0	57	771	47	44
Enter Blocked Intersection	No	No	No	No	1 veh	1 veh
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	852	58	51	694	42	40
Future Vol, veh/h	852	58	51	694	42	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	947	64	57	771	47	44

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1011	0	1864	979
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	885	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	686	-	80	303
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	403	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	686	-	73	303
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	370	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	23.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	201	303	-	-	686	-
HCM Lane V/C Ratio	0.232	0.147	-	-	0.083	-
HCM Control Delay (s)	28.2	18.9	-	-	10.7	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.3	-