



Memo

To: Mayor and Town Board of Commissioners

From: Julie Spriggs, GISP, CFM, CZO, Planner II

Date: February 24, 2021

Re: C.1 Special Use Permit 20-02, Wallbrook

Summary Information

Property Address: 0 S Main Street
PINs: 1758 56 8976 and 1758 45 8905
Owners: Wallbrook Landco, LLC
Deeded Acreage: 57.37+- acres
Current Zoning: Commercial Outlying Special Use District (CO-SUD)
Developer: Crosland Southeast
Contacts: Austin Williams

Background and Existing Conditions

The parcel to the south with PIN 1758 45 8905 is inside Rolesville's corporate boundary. The property to the north with PIN 1758 56 8976 is in the Town's extraterritorial jurisdiction (ETJ). Annexation of the parcel is required for connection to public water and sewer utilities. The current zoning district for these properties is Commercial Outlying Special Use District (CO-SUD). The surrounding zoning districts are Office and Professional Special Use District (OP-SUD) for the front two corner lots at 4501 and 4502 Vineyard Pine Lane, the Wake County ABC store, and a vacant lot on Vineyard Pine Lane. Across Jonesville Road is Residential 1 District (R1), the location of one single-family home and vacant land. North of the request is zoned Commercial Outlying Special Use District (CO-SUD), Commercial Outlying Condition Zoning (CO-CZ), and Industrial Special Use District (I-SUD). To the east and south of the rezoning site are single-family homes in Carlton Pointe subdivision zoned Residential and Planned Unit Development (R & PUD).

The applicant requests a Special Use Permit to include a mixed-use development project along S Main Street between Burlington Mills Road and Jonesville Road, involving residential and commercial portions on the south of Main Street.

Unified Development Ordinance (UDO)

On February 5, 2019, the Board of Commissioners approved by a unanimous vote text amendment TA 18-04. The text amendment allows townhouses to be permitted with a special use permit in the Commercial Outlying District.

The UDO specifies any residential use areas shall be permitted with the maximum density of residential units per gross acreage based upon the dwelling type designated therein as follows:

- (1) Single-family shall not exceed six (6) dwelling units per acre.
- (2) Townhouse shall not exceed ten (10) dwelling units per acre.
- (3) Multi-family shall not exceed sixteen (16) dwelling units per acre

The proposed development has an overall density of 6.6 units per gross acre for townhouse residential use for approximately 23 acres. Section 8.3.12 outlines a 15% open space requirements. Thirty-five percent of required open space gross acreage must be open space as improved recreation space area for specific recreation activity shown on the site plan or preliminary subdivision plan, with the remaining 65% as unimproved open space area.

Neighborhood Meeting

On February 8, 2021, a virtual neighborhood meeting was held due to COVID-19 restrictions. The applicant has revised the special use permit application as requested by the neighborhood comments. The neighborhood meeting information is attached.

2017 Rolesville Comprehensive Plan

The Comprehensive Plan Future Land Use Map classifies these parcels for mixed-use. Neighborhoods with a mix of uses offer residents the ability to live, shop, work, and play, in one community. The design and scale of the development encourages active living through a comprehensive and interconnected network of walkable streets that often support multiple modes of transportation.

2002 Thoroughfare Plan and Traffic Impact Analysis (TIA)

The 2002 Thoroughfare Plan calls for Jonesville Road as a three-lane major highway, and at the existing intersection of Vineyard Pine Lane is an existing three-lane highway improvement up to South Main Street.

The Town currently has a Locally Administrated Projects Program (LAPP) grant for the Main Street Vision Plan under design. The developer and the Town have worked together to ensure the recommended improvements are incorporated to alleviate most congestion that will result from the development. NCDOT and the Technical Review Committee will review submittals before approvals and make recommendations or modifications to those recommendations as needed to ensure the proposed improvements meet the spirit of the Main Street Plan/LAPP grant.

The applicant has submitted a Traffic Impact Study, an addendum, a revised Traffic Study, and meeting notes from continued discussions on the TIA and LAPP project. Both studies, the addendum, and the meeting notes are included as attachments.

Planning Staff and TRC Review of Application

The Technical Review Committee has reviewed the proposed concept plan. A recommendation is not made at this time, as it is a concept plan, and further review of preliminary plats or site plans will be required. Planning Staff finds the application and submitted documentation complete. Staff is unable to make a recommendation as evidence and testimony are provided during the hearing.

Special Use Permit Findings

The following findings, based on evidence and testimony received at an evidentiary hearing, must be made by the Town Board to approve any special use permit:

- (A) That the proposed development and/or use will not materially endanger the public health or safety;
- (B) That the proposed development and/or use will not substantially injure the value of adjoining property;
- (C) That the proposed development and/or use will be in harmony with the scale, bulk, coverage, density, and character of the neighborhood in which it is located;
- (D) That the proposed development and/or use will generally conform with the Comprehensive Plan and other official plans adopted by the Town;
- (E) That the proposed development and/or use is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection, and similar facilities;
- (F) That the proposed development and/or use will not cause undue traffic congestion or create a traffic hazard;
- (G) That the proposed development and use comply with all applicable requirements of this ordinance.

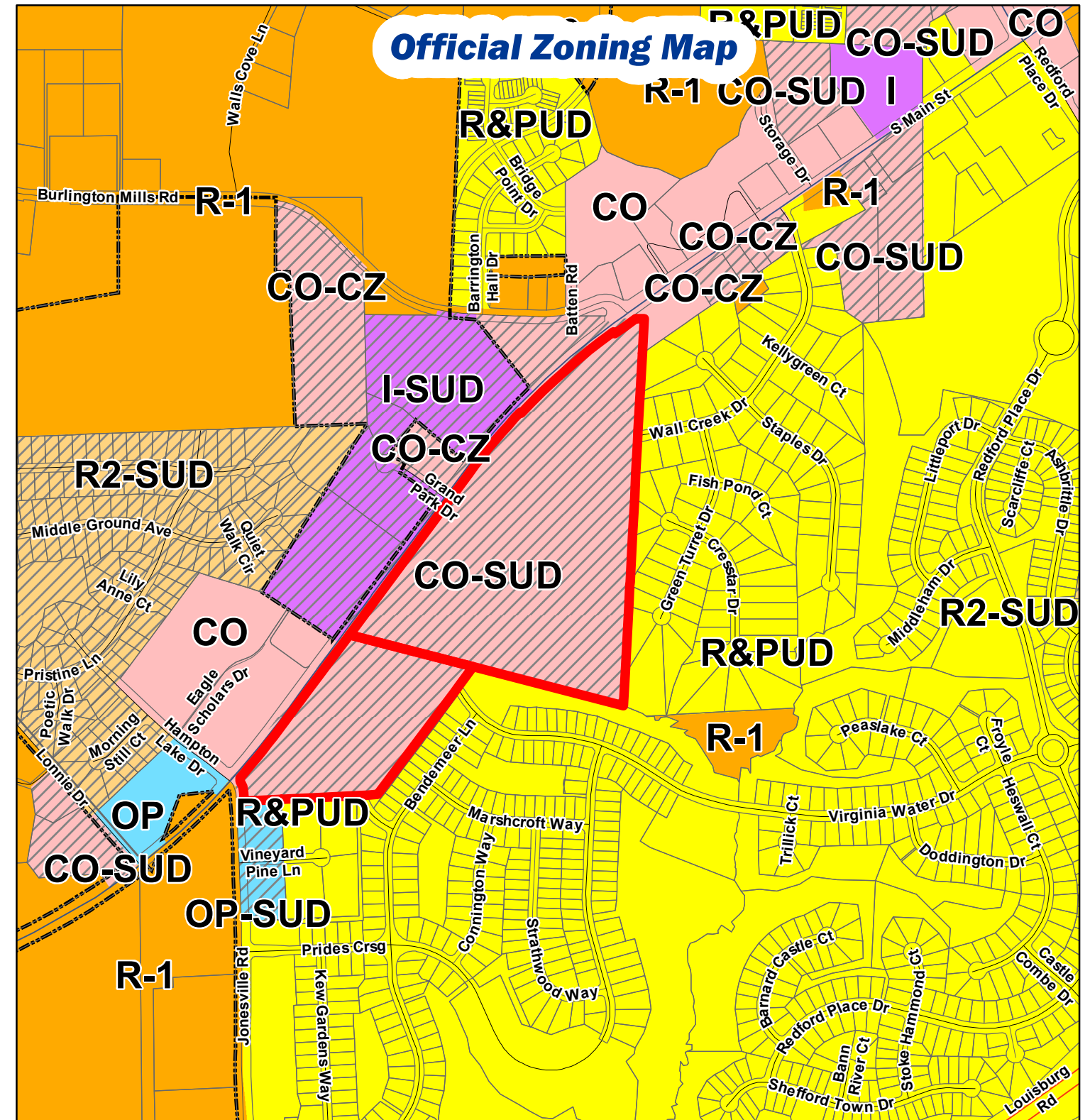
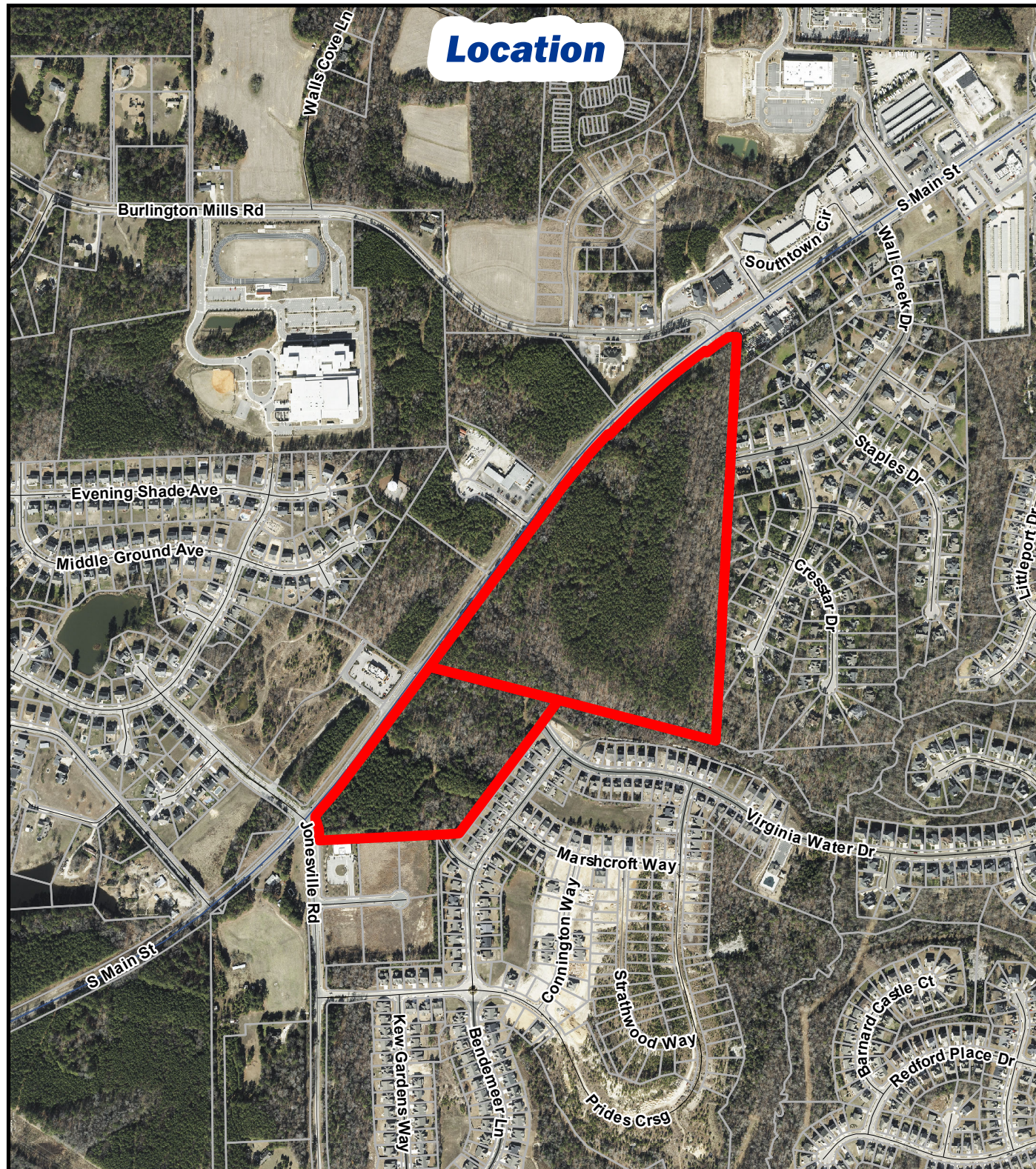
Suggested Town Board motion

I move to approve SUP 20-02 Wallbrook, based upon the evidence and testimony received at the hearing to determine the findings of fact.

Attachments

SUP 20-02 Location Map
SUP 20-02 Special Use Permit Application
SUP 20-02 SUP Application Maps
SUP 20-02 Wallbrook Traffic Impact Analyses (February 2020, August 2020)
SUP 20-02 TIA Addendum Memo
SUP 20-02 NCDOT Congestion Management Letter
SUP 20-02 Neighborhood Meeting Documents
SUP 20-02 Application Update Letter
SUP 20-02 Application Update Map
SUP 20-02 Application Update Conditions

SUP 20-02 Wallbrook



Legend

- SUP 20-02 Wallbrook
- Rolesville Town Limits
- ETJ





SPECIAL USE PERMIT APPLICATION

FOR PUBLIC HEARING AND APPROVAL BY THE TOWN BOARD OF COMMISSIONERS

Section A. ***SUBMITTAL CHECKLIST***

Prior to submittal, contact Planning and Development staff to review this completed application for completeness and to verify the parcel(s) information. Do not leave this completed application on the front desk without review. Incomplete application submittal packages will not be processed. Please schedule an appointment for application review to ensure prompt service upon arrival.

SUBMITTAL PACKAGE MUST INCLUDE ALL OF THE FOLLOWING: (CHECK OFF)

- APPLICATION FEE.** The fee for Special Use Permit application in a non-residential zoning district is \$600. The fee for a Special Use Permit application in a residential zoning district is \$300 plus \$8 per unit. Payments may be made by cash or by check, but not by credit card. Checks made payable: Town of Rolesville.
 - THREE ORIGINALS OF THIS APPLICATION FORM** completed (Section B), signed by the property owner and notarized.
 - THREE COPIES OF PROPOSED PLANS.** Maximum sheet size shall be 30" x 42". Plans must be to engineering scale (1" = 20', 1" = 100', etc.). Proposed plans must be prepared by a licensed professional and need an engineer's, surveyor's, or landscape architect's seal. A list of items required to be shown on the plans, from sections 3.1.2 and 3.1.3 of the Rolesville UDO, are attached in Section E. Information shown on the plan should relate to the findings that must be made by the Board of Commissioners. See Section 3.6.2 and Article 8 of the Rolesville UDO for specific findings the Board is to make for this special use.
 - A DIGITAL COPY OF THE PLAN AND ELEVATIONS.** A digital copy of the plan must be included with the submission of the above mentioned plan proposals. The digital image should be provided in pdf format on a CD. If the plan was not digitally created, provide an 8 ½" x 11" reduction of the plan.
-

PROCEDURE FOR HEARING AND APPROVAL OF A SPECIAL USE PERMIT BY BOARD OF COMMISSIONERS:

It is very important that this application is complete, accurate, and the signature of the property owner is notarized! A special use hearing is a quasi-judicial proceeding, and the special use permit may be invalidated if any information is inaccurate or incomplete.

If the initial application is complete, it will be reviewed by staff. If the application contains a site plan, it will be reviewed by the Town's Technical Review Committee (TRC) in the interim. After receiving comments from town staff and TRC, the special use permit will most likely be heard by the Board of Commissioners approximately four (4) weeks later at a public hearing.

Applicant must be present at the hearing to present the case for issuance of the special use permit. Town staff will provide a written draft set of findings for the Board to consider. Staff will contact the applicant with the time and place of the proceeding and will also provide a draft of the special use findings prior to the hearing.

Section B.

SUMMARY INFORMATION – (SHOW ON PLANS)

DEVELOPMENT NAME: Wallbrook

LOCATION: 0 S Main Street, Rolesville, NC 27571

Show Wake County Property Identification (PIN) Number(s) on plan. Submit PIN Map. See Submittal Checklist on front page.

ZONING DISTRICT: CO-SUD TOTAL SITE ACREAGE: 57.37 AC

SPECIAL USE REQUESTED:

Dwelling-Townhouse.

OWNER/DEVELOPER:

NAMES(S): Property Owner: Wallbrook Landco LLC

ADDRESS: 121 West Trade Street, Suite 2550, Charlotte, NC 28202

TELEPHONE: (704) 621-6430 FAX: _____

EMAIL: awilliams@csere.com

STAFF CONTACT FOR COMMENTS OR QUESTIONS:

NAMES(S): Developer: Crosland Southeast Contact: Austin Williams


ADDRESS: 121 West Trade Street, Suite 2550, Charlotte, NC 28202

TELEPHONE: (704) 621-6430 FAX: _____

EMAIL: awilliams@csere.com

OWNER'S SIGNATURE:

I hereby certify that the information contained herein is true and completed. I understand that if any item is found to be otherwise after evidentiary hearing before the Town Board of Commissioners, that the action of the Board may be invalidated.

Date: 11/12/2020 Signed: 

STATE OF NC
COUNTY OF Mecklenburg

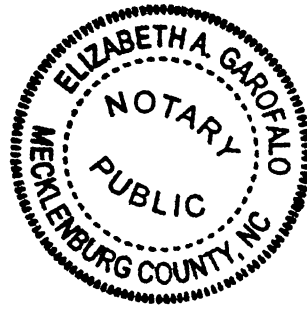
Austin Williams

I, a Notary Public, do hereby certify that
Austin Williams personally appeared
before me this day and acknowledged the due execution of the
foregoing instrument. This the

12th day of November, 2020. My commission expires March 29, 2025

Signed: Elizabeth A. Garofalo

SEAL



Section C.
APPLICANT STATEMENT

Section 3.6.2 of the Unified Development Ordinance (UDO) imposes the following FINDINGS before a special use permit may be issued. Please address each of them in the area below as they relate to this request. The applicant should be prepared to demonstrate that, if the land is used in a manner consistent with the plans, specifications, and other information presented to the Town Board of Commissioners, the proposed use will comply with each of the following findings. *(Attach additional sheets if necessary):*

1. That the proposed development and/or use will not materially endanger the public health or safety;
See attached.

2. That the proposed development and/or use will not substantially injure the value of adjoining property;
See attached.

3. That the proposed development and/or use will be in harmony with the scale, bulk, coverage, density, and character of the neighborhood in which it is located;
See attached.

4. That the proposed development and/or use will generally conform with the Comprehensive plan and other official plans adopted by the Town;
See attached.

5. That the proposed development and/or use is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection, and similar facilities;
See attached.

6. That the proposed development and/or use will not cause undue traffic congestion or create a traffic hazard;
See attached.

- (G) That the proposed development and use comply with all applicable requirements of this ordinance.
See attached.

--	--	--	--

Section E.

Items to be included on submitted plans, found in sections 3.1.2 and 3.1.3 in the Rolesville UDO. Items missing will result in an incomplete application. All applications shall be in the form prescribed by the Zoning Administrator and shall include a plot or site plan drawn to scale which shall clearly show:

- The actual shape and dimensions of the lot to be built upon or used and total acreage in the lot.
- The location of the proposed structure or use on the lot.
- The exact location and size of existing structures and uses, including the square footage of each building.
- The existing and intended use of each structure or part of structure.
- The number of dwelling units the building is designed to accommodate, if applicable.
- The height and number of stories of the structure.
- The location and design of any off-street parking and/or loading.
- The location and dimensions of driveways. Driveway approval procedures as required by the North Carolina Department of Transportation shall be initiated.
- Date of plan preparation.
- Location and descriptions of landscaping, buffering, and signs.
- Such other information as may be necessary for determining whether the provisions of this ordinance are being met.

In addition to the above information required, any use which involves the grouping of more than one (1) principal building or use on the same lot shall include the following information:

- A vicinity map showing the relationship of the proposed development to the surrounding area.
- North arrow and declination.
- Detailed layouts for all utilities, right-of-way, and roads and other improvements
- Railroads, bridges, culverts, storm drains, wooded areas, marshes, swamps, rock outcrops, ponds or lakes, streams or stream beds, and any other similar features affecting the site.
- A copy of any proposed deed restrictions or similar covenants.
- For projects over an acre in size, or if otherwise required by the Zoning Administrator, a topographic map showing vertical contours every two (2) feet.
- The names, addresses, and telephone numbers of owners, mortgagees, registered surveyors, land planners, architects, landscape architects, and professional engineers responsible for the development.

Special Use Permit Application Addendum

Application Overview:

Wallbrook is a proposed mixed-use development project along US 401 Business/S. Main Street, between Burlington Mills Road and Hampton Lake Drive/Jonesville Road. This special use permit involves the residential and commercial portions of Wallbrook south of Main Street (the “Site”). Portions of Wallbrook to the north and west of Main Street are planned to involve a separate entitlement process.

Per the Stantec Traffic Impact Analysis dated August 11, 2020 (the “TIA”), the Site is anticipated to be developed with a mix of uses and to be built in several phases, as follows:

East Site - Residential

The residential portion of the East Site consists of +/- 22.3 acres on the east side of Main Street, east of the proposed Burlington Mills Road extension and south of the proposed Wall Creek Drive, as shown on the attached Special Use Map, Exhibit A). This site is planned to contain up to 155 townhomes. This portion of the East Site is anticipated to be the first phase of development.

East Site – Commercial

The commercial portion of the East Site consists of +/- 13.7 acres on the east side of Main Street, between Main Street and the proposed Burlington Mills Road extension, and between the proposed Virginia Water Drive and the Expert Auto Services site. This site is shown on Exhibit A. This portion will have a maximum of 20,000 square feet of office use and maximum of 18,000 square feet of retail. It is expected to be completed in 2025.

South Site

The South Site is located east of Main Street, north of Jonesville Road, and south of the East Site. It is +/- 17.6 acres, and may have a mix of commercial uses up to 72,000 square feet. That commercial use is expected to consist of 50,000 square feet of supermarket, 7,500 square feet of sit-down restaurant space, and up to 4,000 square feet for bank use.

Approval Factors:

- 1. The proposed development and/or use will not materially endanger public health or safety.**

The Site is bordered by the single-family Wall Creek subdivision to the east, and the Carlton Pointe single-family subdivision to the south. Non-residential development is proposed to the west and north of the Site, between the site and Main Street, a three-lane road. The Site is part of a larger project (the “Project”), which is predominantly non-residential, with the Site being the only residential component on the east side of Main Street. The Site will have access to three public streets, Virginia Water Drive, Burlington Mills Road, and Wall Creek Drive. The developer will extend Wall Creek Drive to Main Street prior to seeking the first certificate of occupancy, with Wall Creek Drive serving as the Site access point during the construction of LAPP Grant improvements including the realignment of Burlington Mills Rd. During the construction of the LAPP Grant improvements, developer will construct the extensions of Virginia Water Drive and Burlington Mills Road through the Project, providing generous vehicular and pedestrian

connectivity in and around the Site. The townhouse use will not endanger public health or safety because it will have adequate access to public streets, and will be a public benefit by providing residential density in the vicinity of proposed commercial development within the larger Project.

2. The proposed development and/or use will not substantially injure the value of adjoining property.

The development of the Site will not substantially injure the value of adjoining property because it will provide a transition between the higher intensity commercial use and existing single-family. The plan also includes riparian buffers between the Project and all existing residential uses. The majority of the new townhomes will be set back from the east and south property lines by at least 100 feet, including stormwater ponds, streets, and retaining walls. The commercial uses will add additional services, convenience items, and walkable access to food that does not exist in meaningful or walkable way on this site of Main Street. Having these amenities closer to the neighborhood would not substantially injure value.

3. The proposed development and/or use will be in harmony with the scale, bulk, coverage, density, and character of the surrounding area.

The proposed uses will be in harmony with the surrounding area and will serve as an appropriate transition between existing single family residences to the east and south, and proposed commercial uses to the north and west. The plan orients the commercial uses toward Main Street, and places the residential portion further back and adjacent to single family residential, which allows for a transition in scale and intensity from the busy highway back to the existing residential use.

4. The proposed development and/or use will generally conform to Rolesville's Comprehensive Plan and other adopted plans.

The proposed townhouse use is consistent with the Future Land Use Map. The subject property is designated as a Mixed Use Neighborhood on the Future Land Use Map. This category contemplates neighborhoods with a mix of uses that offer residents the ability to live, shop, work and play in one community. (Comprehensive Plan p. 37) The subject property is zoned CO-SUD and a variety of commercial uses are already permitted that fulfill the "shop, work, and play" elements of the community. The East Site-R will add the "live" element of the Mixed Use Neighborhood designation by adding residential townhouse uses to the already permitted commercial uses.

The proposed development and requested special use permit fulfill the following additional goals of the comprehensive plan:

Major Recommendation: *Create a Diversity of New Houses, but Ensure High Quality and Limited Locations for Multi-Family Units.* The Comprehensive Plan calls for more dense residential uses in limited, appropriate locations including locations closer to Main Street and areas closer to downtown. The Site is part of the larger mixed use Project that has frontage along Main Street. It is located an easy walking distance from the many services and business currently located along Main Street and is an appropriate location for the proposed townhouse use.

Major Recommendation: *Celebrate Downtown.* The Comprehensive Plan seeks mixed use development, including diverse housing options, in the vicinity of downtown to activate the downtown core. The requested special use permit would allow for townhouse uses in the vicinity of the downtown core, and in a location walkable to new commercial development within the larger Project. The proposed townhouse use will diversify housing options in the downtown core and on a site where other mixed uses are already permitted.

5. The proposed development and /or use is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection, and similar facilities.

The Site is located on Main Street near downtown and is appropriately located with respect to transportation facilities, water and sewer supply, fire and police protection. In connection with the townhome development in Phase 1 and per recommendations of the NCDOT, applicant will construct a 100 foot northbound right turn lane and a 100' southbound left turn lane at the site driveway, which will sufficiently mitigate the impacts of increased traffic due to the townhome use. The non-residential uses in the remainder of the East Site and the South Site will be developed in later phases adjacent to Main Street, and the transportation improvements are staged with those phases. Per the conditions, the applicant will also make improvements to coordinate with Town improvements subject to a LAPP Grant.

6. The proposed development will not cause undue traffic congestion or create a traffic hazard.

In accordance with the “Wallbrook Development TIA Addendum – Residential-Only Phase” dated February 13, 2020, applicant has committed to a 100' northbound right turn lane and a 100' southbound left turn lane at the intersection of Wall Creek Drive (as extended) and Main Street. As set forth in the accompanying Traffic Impact Analysis and relevant supplements, the proposed transportation improvements adequately mitigate and offset the impacts of the proposed use. According to an October 2020 memo from NCDOT, the recommended improvements.

7. The proposed development and/or use comply with all applicable requirements of the Unified Development Ordinance.

The proposed townhouse use is permitted as a special use in the CO district. The remaining uses (commercial and office) are permitted by right on the East and South Sites. The applicant will work with town staff during the site plan process to ensure that the proposed use complies with all applicable requirements of the Unified Development Ordinance.

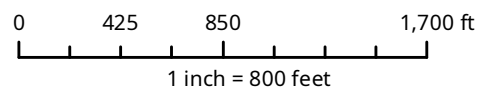
Wallbrook SUP Conditions

1. Uses and maximum densities are limited to those shown on each site on the Concept Plan. Any residential units not designated on the Residential - Townhomes tract may be used on any of the tracts labeled for Non-Residential use.
2. Prior to the issuance of the first Certificate of Occupancy for the first residential unit in the East Site as shown on the Concept Plan, Developer will complete the extension of Wall Creek Drive to Main Street.
3. Prior to the issuance of the first Certificate of Occupancy of the first residential unit in the East Site and in accordance with the "Wallbrook Development TIA Addendum – Residential-Only Phase" dated February 13, 2020, Developer will construct a 100' northbound right turn lane and a 100' southbound left turn lane at the intersection of Wall Creek Drive (as extended) and Main Street.
4. No later than six months following the completion of the LAPP Grant project improvements, Developer will complete both 1) the extension of Virginia Water Drive to Main Street and 2) the extension of Burlington Mills Road (as realigned) from Main Street to Virginia Water Drive.
5. Final acreage of sites are subject to change at site plan and construction plan based on final surveys and site plan review and approval.



0 S. Main Street

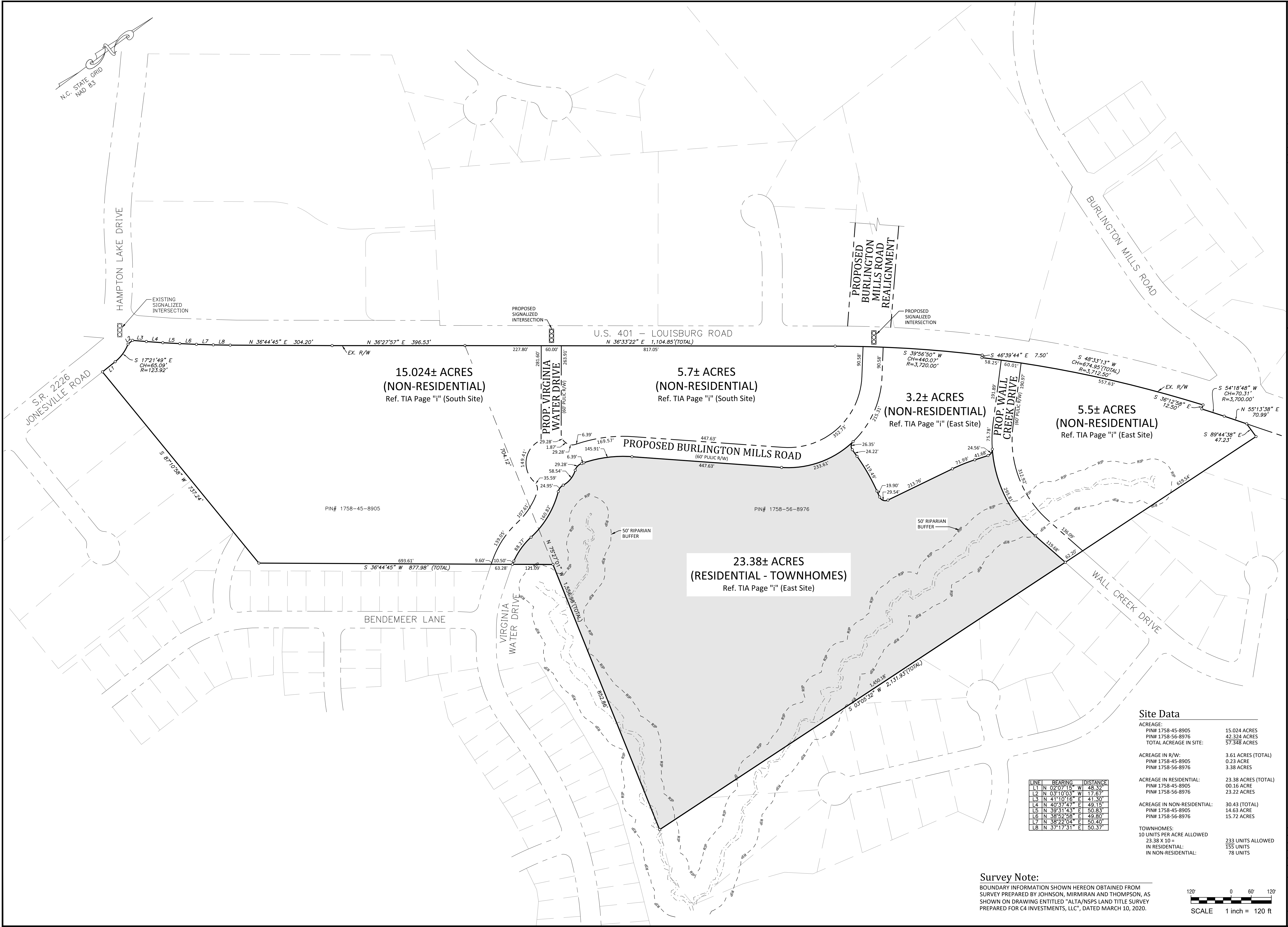
PIN Map



Disclaimer

*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.*

N.C. STATE GRID
MAD 85



15.024± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

5.7± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

3.2± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

5.5± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

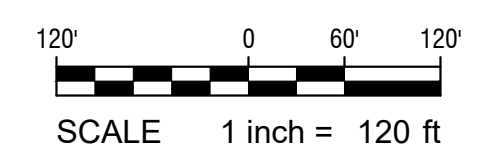
23.38± ACRES
(RESIDENTIAL - TOWNHOMES)
Ref. TIA Page "i" (East Site)

LINE	BEARING	DISTANCE
L1	N 02°07'15" W	48.32'
L2	N 03°10'03" W	17.67'
L3	N 41°10'16" E	41.30'
L4	N 40°37'47" E	49.15'
L5	N 39°31'43" E	50.83'
L6	N 38°52'58" E	49.80'
L7	N 38°22'04" E	50.40'
L8	N 37°17'31" E	50.37'

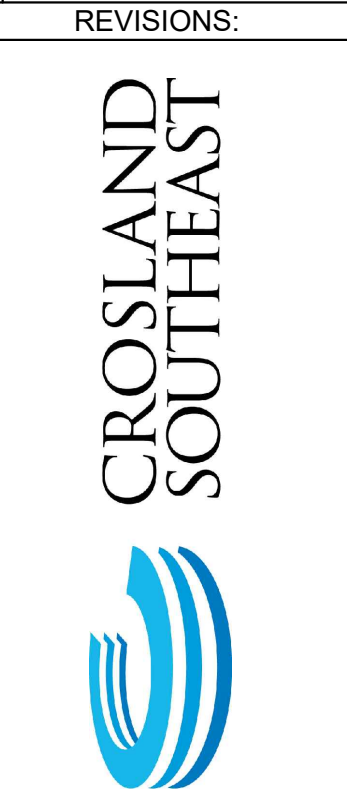
Site Data

ACREAGE:	
PIN# 1758-45-8905	15.024 ACRES
PIN# 1758-56-8976	42.324 ACRES
TOTAL ACREAGE IN SITE:	57.348 ACRES
ACREAGE IN R/W:	
PIN# 1758-45-8905	3.61 ACRES (TOTAL)
PIN# 1758-56-8976	0.23 ACRES
ACREAGE IN RESIDENTIAL:	
PIN# 1758-45-8905	23.38 ACRES (TOTAL)
PIN# 1758-56-8976	0.16 ACRES
ACREAGE IN NON-RESIDENTIAL:	
PIN# 1758-45-8905	14.63 ACRES
PIN# 1758-56-8976	15.72 ACRES
TOWNHOMES:	
10 UNITS PER ACRE ALLOWED	233 UNITS ALLOWED
23.38 X 10 =	
IN RESIDENTIAL:	155 UNITS
IN NON-RESIDENTIAL:	78 UNITS

Survey Note:
BOUNDARY INFORMATION SHOWN HEREON OBTAINED FROM SURVEY PREPARED BY JOHNSON, MIRMIRAN AND THOMPSON, AS SHOWN ON DRAWING ENTITLED "ALTA/NPS LAND TITLE SURVEY PREPARED FOR C4 INVESTMENTS, LLC", DATED MARCH 10, 2020.



COMMENTS
| DATE
Preliminary Drawings Issued For Review Purposes Only



SPECIAL USE MAP
WALLBROOK
U.S. 401 - Louisburg Road and Virginia Water Drive
Town of Rolesville, Wake County, North Carolina

PRELIMINARY
Do Not Use for Construction

ARK CONSULTING GROUP PLLC
ENGINEERS & PLANNERS
2755-B Charles Blvd.
Greenville, NC 27858
(252) 558-0888
www.arkconsultinggroup.com

Project Manager: BCF
Drawn By: EW
Checked By: STA
Project Number: 18022
Drawing Number: D-1227



Wallbrook Development Traffic Impact Analysis

February 13, 2020

Prepared for:

Crosland Southeast
4700 Six Forks Rd #150
Raleigh, NC 27609

Prepared by:

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606

File: 171002232

Sign-off Sheet


This document entitled Wallbrook Development Traffic Impact Analysis was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Crosland Southeast (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.



Prepared by _____

(signature)

Maggie Rogers



Reviewed by _____

(signature)

Jeff A. Weller, PE



Approved by _____

(signature)

Matt Peach, PE, PTOE



2/13/2020

Table of Contents

EXECUTIVE SUMMARY	I
RECOMMENDATIONS	V
US 401 Business at Access A	v
US 401 Business at Access B	v
US 401 Business at Access C	v
US 401 Business at Access D	v
Virginia Waters Drive at Access E	v
Virginia Waters Drive at Access F	v
Virginia Waters Drive at Access G	v
Virginia Waters Drive at Access H	vi
Burlington Mills Realigned at Access I	vi
Construct an exclusive westbound right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.	vi
Old Burlington Mills Road at Barrington Hall/Access J	vi
US 401 Business at Burlington Mills Realigned	vi
US 401 Business at Hampton Lake Drive/Jonesville Road	vi
 1.0 INTRODUCTION	 1
 2.0 INVENTORY OF TRAFFIC CONDITIONS	 4
2.1 STUDY AREA	4
2.2 EXISTING ROADWAY CONDITIONS	4
2.3 FUTURE NO-BUILD ROADWAY CONDITIONS	5
Burlington Mills Road at Old Burlington Mills Road	5
US 401 Business at Burlington Mills Road Realigned	5
US 401 Business at Old Burlington Mills Road	5
 3.0 TRIP GENERATION	 8
3.1 NORTH SITE	9
3.2 EAST SITE	10
3.3 SOUTH SITE	11
 4.0 TRAFFIC DISTRIBUTION	 12
4.1 SITE TRIP DISTRIBUTION	12
4.2 PASS-BY TRIPS	12
 5.0 TRAFFIC VOLUMES	 13
5.1 VOLUME BALANCING	13
5.2 FUTURE TRAFFIC GROWTH	13
5.3 APPROVED DEVELOPMENT TRAFFIC	13
5.4 NO-BUILD TRAFFIC VOLUMES	14
5.5 TOTAL BUILD TRAFFIC WITH PROPOSED DEVELOPMENT	14
 6.0 TRAFFIC ANALYSIS	 20

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

6.1 2019 EXISTING CAPACITY ANALYSIS.....22

6.2 2025 NO-BUILD CAPACITY ANALYSIS23

6.3 2025 BUILD CAPACITY ANALYSIS24

6.4 2025 BUILD WITH IMPROVEMENTS CAPACITY ANALYSIS26

8.0 RECOMMENDATIONS30

 US 401 Business at Access A30

 US 401 Business at Access B30

 US 401 Business at Access C30

 US 401 Business at Access D30

 Virginia Waters Drive at Access E30

 Virginia Waters Drive at Access F30

 Virginia Waters Drive at Access G30

 Virginia Waters Drive at Access H31

 Burlington Mills Road at Access I31

 Old Burlington Mills Road at Barrington Hall/Access J31

 US 401 Business at Burlington Mills Road Realigned31

 US 401 Business at Hampton Lake Drive/Jonesville Road31

9.0 CONCLUSIONS.....35

10.0 REFERENCES.....36

APPENDIX36

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

LIST OF TABLES_Toc32416199

Table ES-1: Level of Service & Delay Summary iv
Table 1: Existing Conditions 5
Table 2: North Site ITE Trip Generation 9
Table 3: East Site ITE Trip Generation 10
Table 4: South Site ITE Trip Generation 11
Table 5: Level of Service Criteria 20
Table 6: Level of Service and Delay for 2019 Existing Conditions 22
Table 7: Level of Service and Delay for 2025 No-Build Conditions 23
Table 8: Level of Service and Delay for 2025 Build Conditions 25
Table 9: Level of Service and Delay for 2025 Build with Improvements Conditions 27
Table 10: Maximum Queue Length Summary for Unsignalized 28
Table 11: Maximum Queue Length Summary for Signalized 29

LIST OF FIGURES

Figure ES-1: Site Plan iii
Figure ES-2: Recommended Improvements vii
Figure 1: Site Location and Study Area Map 2
Figure 2: Proposed Site Plan 3
Figure 3: 2019 Existing Lane Configurations and Traffic Control 6
Figure 4: 2025 No-Build Lane Configurations and Traffic Control 7
Figure 5: Existing (2019) Traffic Volumes 15
Figure 6: 2025 Historic Growth Traffic Volumes 16
Figure 7: 2025 No-Build Traffic Volumes 17
Figure 8: 2025 Build Traffic Volumes 18
Figure 9: Build Recommended Lane Configurations 32
Figure 10: Approved Development Trips 37
Figure 11: East Trip Distribution 38
Figure 12: East Site Trip Assignment 40
Figure 13: North Site Trip Distribution 42
Figure 14: North Site Trip Assignment 44
Figure 15: South Site Trip Distribution 46
Figure 16: South Site Trip Assignment 48
Figure 17: Pass-By Trips 50

Executive Summary

Wallbrook is a proposed mixed-use development project located along US 401 Business (S. Main Street) in Rolesville, NC. In general, the site encompasses areas along both sides of US 401 Business, between Burlington Mills Road and Hampton Lake Drive/Jonesville Road. It is anticipated that the residential homes to the east of US 401 Business will be the first to develop. The remainder of the site, expected to be completed in 2025, consists of the North Site (West of US 401 Business), the East Site (east of US 401 Business across from Burlington Mills Road), and the South Site (east of 401 Business and north of Jonesville Road). The residential parcel of the East Site is anticipated to be completed in 2021. The sites will provide a mix of uses as follows:

East Site

- 155 townhomes;
- 20,000 square feet of office; and
- 20,000 square feet of retail.

North Site

- 60,000 square feet of medical office;
- 8,000 square feet of retail; and
- 6,000 square feet of fast-food restaurant.

South Site

- 10,000 square feet of day care center;
- 34,000 square feet of retail;
- 50,000 square feet of grocery;
- 4,000 square feet of bank;
- 7,000 square feet of restaurant;
- 4,000 square feet of fast-food restaurant; and,
- 16 fuel position gas station.

At full build out, the development project is anticipated to generate 22,252 new trips per average weekday. In the AM and PM peak hours, the combined redevelopment will generate approximately 1,467 AM peak hour trips (846 entering and 621 exiting) and 2,053 PM peak hour trips (963 entering and 1,090 exiting).

Ten access points are proposed for the development. Access points A, B, C, and D will connect to US 401 Business, access points E, F, G, H and I will be connected to the extended Virginia Waters Drive / realigned Burlington Mills Road. The last access point J will be connected to the original Burlington Mills Road. These access points are shown on the site plan in Figure ES-1.

The purpose of this report is to evaluate development in terms of projected vehicular traffic conditions, evaluate the ability of the adjacent roadways and multimodal facilities to accommodate the additional traffic and to recommend transportation improvements needed to mitigate congestion that may result from additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for improvements needed to meet anticipated traffic demands. This report examines the following scenarios for the AM and PM peak hours:

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

- 2019 Existing
- 2025 No-Build
- 2025 Build
- 2025 Build with Improvements

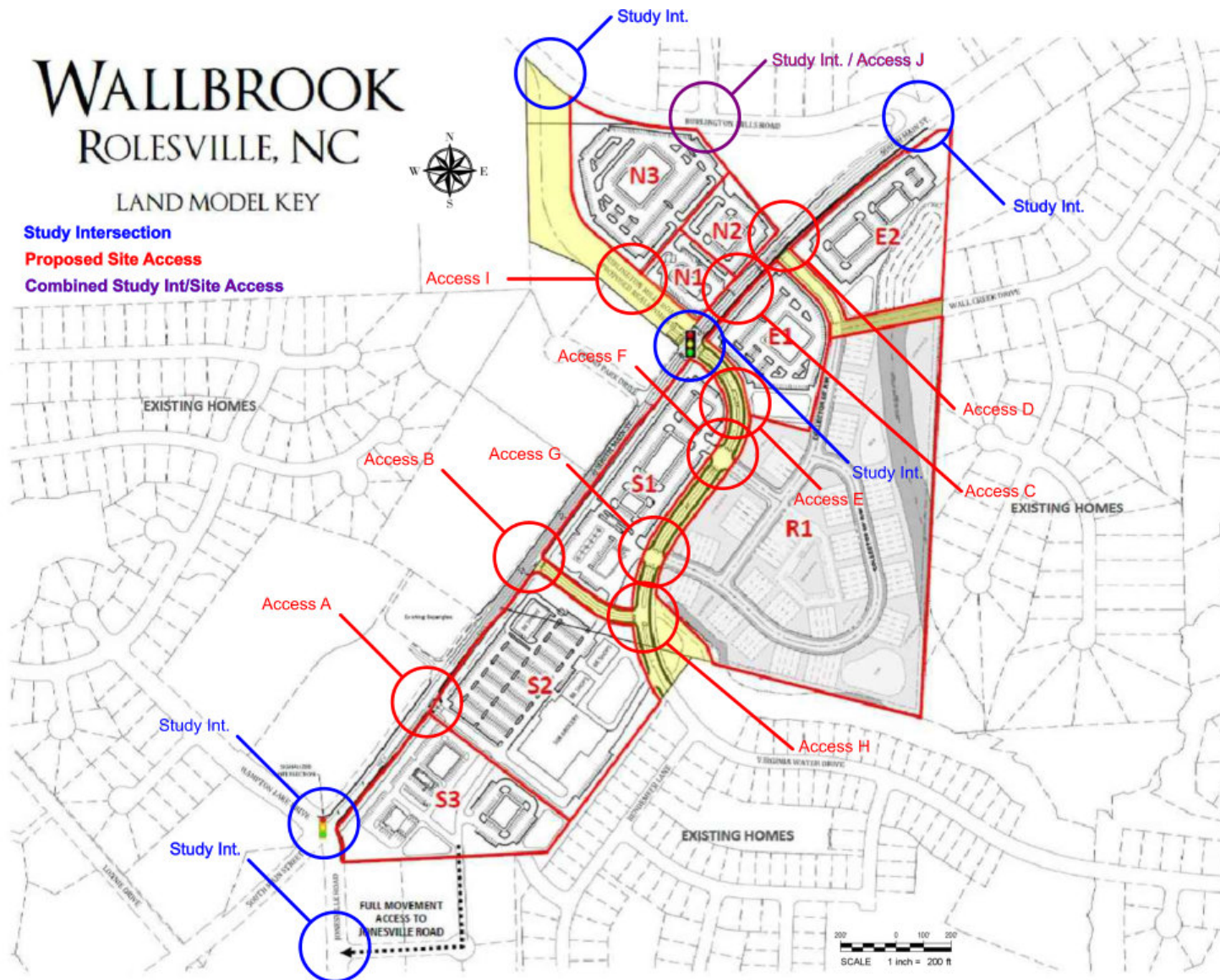
Capacity analyses for the AM and PM peak hours in each scenario were performed for the following intersections:

- US 401 Business at US 401;
- US 401 Business at Hampton Lake Drive / Jonesville Road;
- US 401 Business at Burlington Mills Realigned / Virginia Waters Drive;
- US 401 Business at (Old) Burlington Mills Road;
- US 401 Business at Rogers Road / Redford Place;
- Burlington Mills Road at Old Burlington Mills Road;
- Burlington Mills Road at Barrington Hall/Access J;
- Jonesville Road at Vineyard Pine Lane;
- US 401 Business at Access A;
- US 401 Business at Access B;
- US 401 Business at Access C;
- US 401 Business at Access D;
- Virginia Waters Drive at Access E;
- Virginia Waters Drive at Access F;
- Virginia Waters Drive at Access G;
- Virginia Waters Drive at Access H; and
- Burlington Mills Realigned at Access I.

Table ES-1 shows a summary of the delays and levels of service for the study area intersections.

The study shows that the traffic generated by both phases of the Wallbrook Development project will have an impact on surrounding roadways and intersections. With the recommended improvements, the signalized intersections operate at an overall level of service (LOS) of D or better during both peak hours in the build improved scenario. Sidestreet approaches to these intersections are shown to operate at LOS D or better during both peak hours across all scenarios. The eastbound approach of Old Burlington Mills Road and US 401 Business operates at LOS E in the AM Build with Improvements scenario but has minor traffic volumes compared to those on US 401 Business.

Figure ES-1: Site Plan



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Table ES-1: Level of Service & Delay Summary

Intersection	Peak Hour	Existing (2019)	No-Build (2025)	Build (2025)	Build Imp (2025)
US 401 Business at US 401 (Signalized)	AM Overall	C (22.1)	C (21.4)	D (40.7)	D (42.5)
	PM Overall	C (20.2)	B (16.3)	B (17.6)	B (18.9)
US 401 Business at Hampton Lake Drive / Jonesville Road (Signalized)	AM Overall	C (33.1)	D (41.4)	F (138.0)	C (28.5)
	PM Overall	C (27.4)	C (27.3)	F (99.8)	C (23.7)
US 401 Business at Burlington Mills Realigned / VA Waters Dr (Signalized)	AM Overall	-	C (23.4)	E (69.9)	D (44.8)
	PM Overall	-	B (13.5)	C (32.9)	C (30.8)
US 401 Business at (Old for Build) Burlington Mills Road (Signalized to Unsignalized)	AM EBR	C (26.3) Overall	C (19.4)	E (38.8)	E (38.8)
	PM EBR	C (26.2) Overall	B (13.2)	C (17.4)	C (17.4)
US 401 Business at Rogers Road / Redford Place (Signalized)	AM Overall	D (36.9)	D (41.8)	D (45.0)	D (49.0)
	PM Overall	C (33.7)	D (36.9)	D (54.8)	D (46.0)
Burlington Mills Road at Old Burlington Mills Road (Unsignalized)	AM WBL	-	C (18.6)	C (20.9)	C (20.9)
	PM WBL	-	B (11.2)	B (11.7)	B (11.7)
Old Burlington Mills Road at Barrington Hall Drive/Access J (Unsignalized)	AM NBL	C (16.1)	B (12.5)	B (13.4)	B (13.4)
	PM NBL	A (9.7)	A (9.4)	B (10.7)	B (10.7)
Jonesville Road at Vineyard Pine Lane (Unsignalized)	AM SBL	B (10.4)	B (10.8)	B (11.3)	B (11.3)
	PM SBL	A (9.6)	A (9.8)	B (10.8)	B (10.8)
US 401 Business at Access A (Unsignalized)	AM WBL	-	-	C (23.3)	C (21.2)
	PM WBL	-	-	C (22.3)	C (19.2)
	AM Overall	-	-	F (##) WBL	B (15.6)

Intersection	Peak Hour	Existing (2019)	No-Build (2025)	Build (2025)	Build Imp (2025)
US 401 Business at Access B (Signalized)	PM Overall	-	-	F (##) WBL	B (19.2)
US 401 Business at Access C (Unsignalized)	AM EBL	-	-	C (19.5)	C (18.9)
	PM EBL	-	-	C (16.5)	C (16.1)
US 401 Business at Access D (Unsignalized)	AM WBL	-	-	C (18.1)	C (17.8)
	PM WBL	-	-	C (24.2)	C (23.4)
Virginia Waters Dr at Access E (Unsignalized)	AM WBL	-	-	B (10.0)	B (10.0)
	PM WBL	-	-	B (10.5)	B (10.5)
Virginia Water Dr at Access F (Unsignalized)	AM EBL	-	-	B (10.9)	B (10.9)
	PM EBL	-	-	B (11.4)	B (11.4)
Virginia Waters Dr at Access G (Unsignalized)	AM EBL	-	-	B (11.8)	B (11.8)
	PM EBL	-	-	B (12.6)	B (12.6)
Virginia Waters Dr at Access H (Unsignalized)	AM EBL	-	-	B (10.4)	B (10.4)
	PM EBL	-	-	B (10.5)	B (10.5)
Burlington Mills Road at Access I (Unsignalized)	AM SBL	-	-	C (16.4)	B (14.7)
	PM SBL	-	-	B (13.9)	B (13.0)

LOS is reported as the letter grade with the seconds of delay per vehicle shown in parentheses.

indicates delay longer than 300 seconds.

- Approach or movement does not exist in this scenario

Based on the findings of this study, specific improvements have been identified and are recommended to be completed as part of the proposed development. These improvements are listed below.

RECOMMENDATIONS

Except where noted, all intersections are recommended to operate under two-way stop control (TWSC), with the site accesses serving as the minor movement(s).

US 401 Business at Access A

Construct Access A as a limited-movement intersection onto US 401 Business restricting southbound and westbound lefts. Construct a northbound right-turn lane with 100 feet of full-width storage.

US 401 Business at Access B

Construct Access B as a full-movement signalized intersection onto US 401 Business with an exclusive northbound right-turn lane with 100 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper on US 401 Business. Construct westbound egress with an exclusive left-turn lane with full storage and an exclusive right-turn lane with 150 feet of full-width storage.

US 401 Business at Access C

Construct Access C as a limited-movement intersection on to US 401 Business restricting northbound and eastbound left-turns. Construct an exclusive southbound right-turn lane with 100 feet of full-width storage and appropriate taper on US 401 Business.

US 401 Business at Access D

Construct Access D as a limited-movement intersection on to US 401 Business allowing all movements but a westbound left. Construct an exclusive northbound right-turn lane and southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

Virginia Waters Drive at Access E

Construct Access E as a full-movement intersection on Virginia Water Drive.

Virginia Waters Drive at Access F

Construct Access F as a full-movement intersection on Virginia Water Drive.

Virginia Waters Drive at Access G

Construct Access G as a full-movement intersection on Virginia Water Drive.

Virginia Waters Drive at Access H

Construct Access H as a full-movement intersection on Virginia Water Drive.

Burlington Mills Realigned at Access I

Construct Access I as a full-movement intersection on Burlington Mills Road. Construct an exclusive westbound right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.

Old Burlington Mills Road at Barrington Hall/Access J

Construct Access J as a full-movement intersection on Old Burlington Mills Road.

US 401 Business at Burlington Mills Realigned

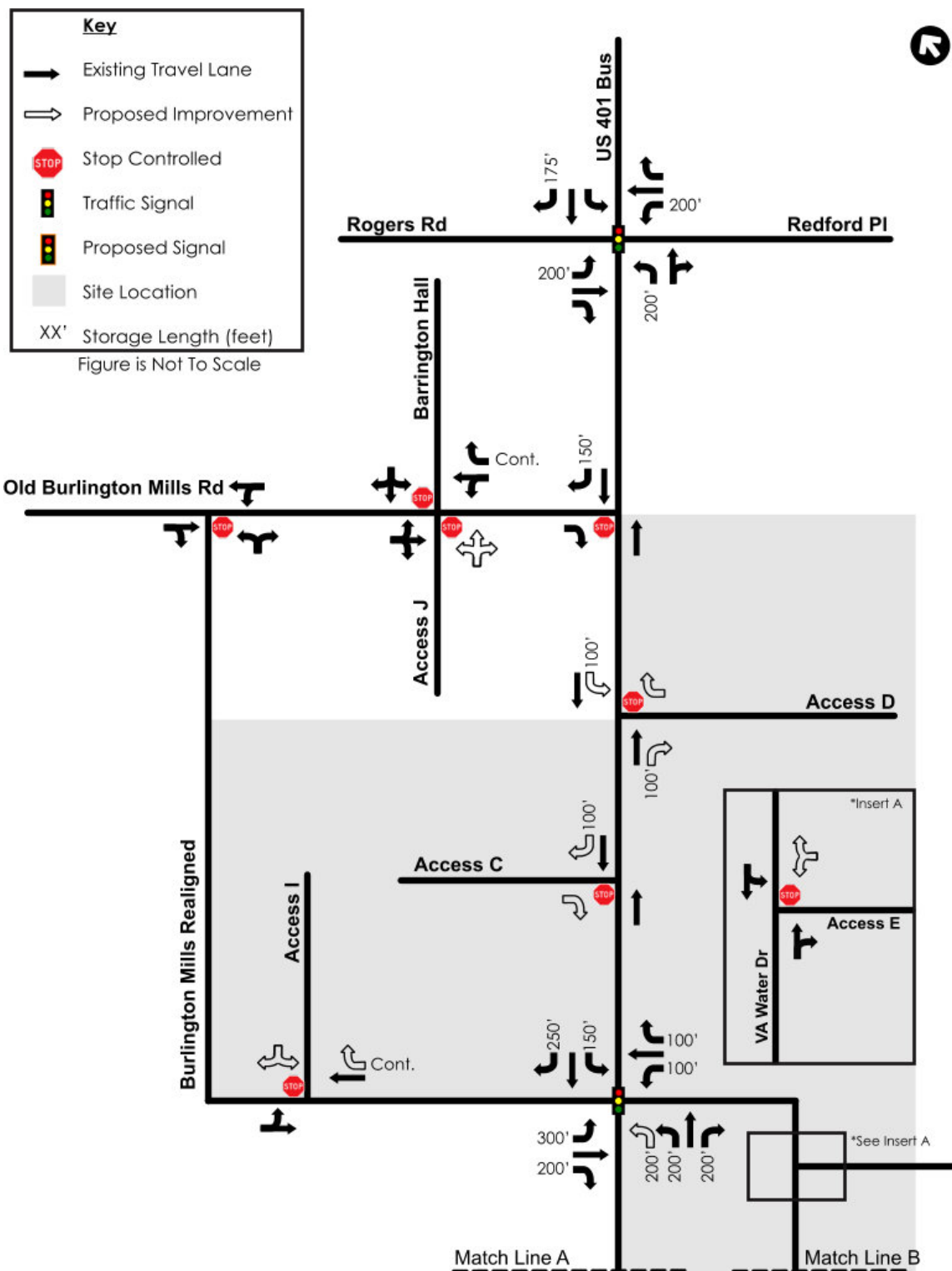
Construct a second northbound left-turn lane with 250 feet of full-width storage and appropriate taper.

US 401 Business at Hampton Lake Drive/Jonesville Road

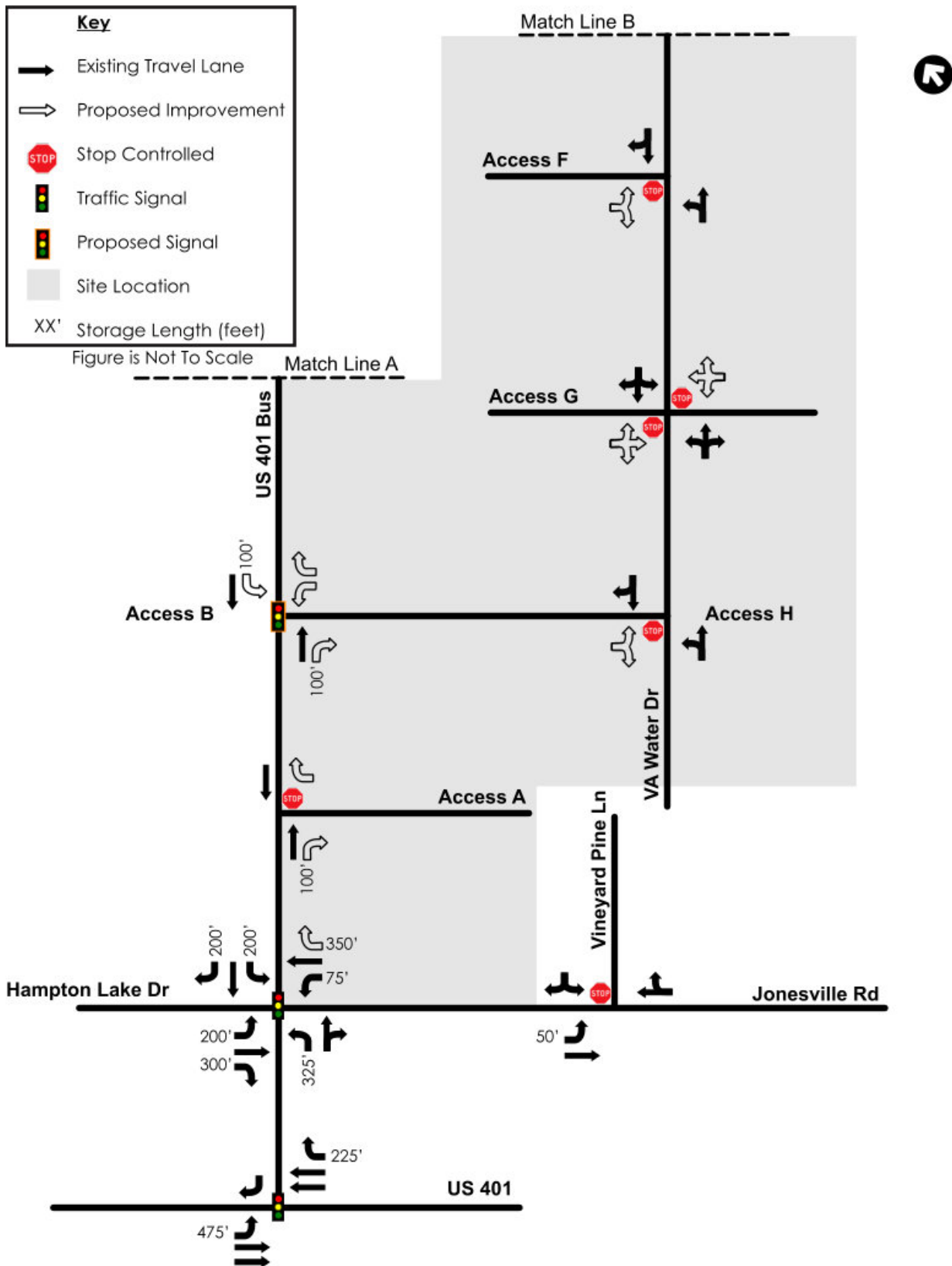
Construct a westbound right-turn lane with 350 feet of full-width storage and appropriate taper. Allow permitted + protected signal phasing.

These recommendations are illustrated on Figure ES-2.

Figure ES-2: Recommended Improvements



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
February 13, 2020

1.0 INTRODUCTION

The purpose of this report is to evaluate the traffic impacts of the proposed Wallbrook Development located in Rolesville, NC. This development is located along US 401 Business between Burlington Mills Road and Hampton Lake Drive / Jonesville Road. The development's location is shown in Figure 1.

This site is bounded by Burlington Mills Road and Hampton Lake Drive / Jonesville Road. Currently, the 68.54-acre site consists of undeveloped forested land. Construction of the site is anticipated to be completed in 2025; therefore, the analysis year will be 2025. At full build-out the site is envisioned to provide the following land uses and densities:

- 155 townhomes;
- 17,000 square feet of restaurant;
- 10,000 square feet of day care center;
- 4,000 square feet of bank;
- 16 fuel position gas station;
- 112,000 square feet of retail; and
- 80,000 square feet of office.

The proposed development is to be bisected by public roadways (US 401 Business, Burlington Mills Road Realigned, Virginia Waters Drive Extension) resulting in North, East, and South sites comprising the full site.

The North site consists of 60,000 square feet of medical-dental office, 8,000 square feet of retail, and 6,000 of restaurant West of US 401 Business between Old Burlington Mills Road and Realigned Burlington Mills Road. The East site consists of 155 townhomes, 20,000 square feet of office, and 20,000 square feet of retail in the area bounded by US 401 Business and Virginia Waters Drive Extension. The South site consists of 10,000 square feet of daycare space, 34,000 square feet of retail, 50,000 square feet of grocery store, 4,000 square feet of a bank, 7,000 square feet of restaurant, 4,000 square feet of fast-food restaurant, and 16 fuel positions at a gas station bordered by US 401 Business to the west and Virginia Waters Drive Extension to the north and east.

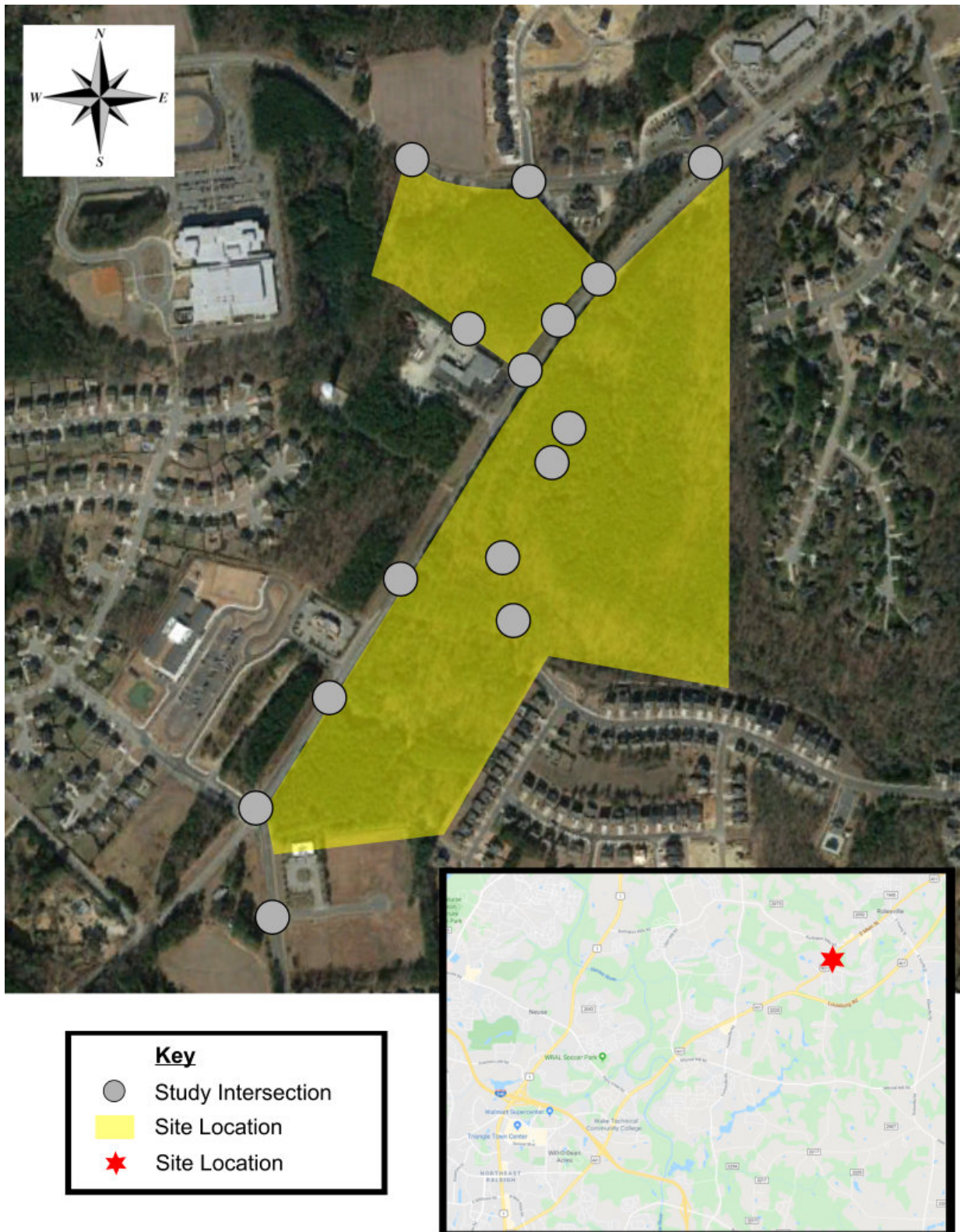
Figure 2 shows the conceptual site plan prepared by ARK Consulting, with 10 access points shown. The North site has accesses C, I and J to be constructed off US 401 Business, Burlington Mills Road Realigned, and Old Burlington Mills Road, respectively. The East site utilizes access D from US 401 Business and accesses E and G from Virginia Waters Drive. The South site has accesses F, G, and H connecting to Virginia Waters Drive and accesses A and B connecting to US 401 Business.

The purpose of this report is to evaluate the development in terms of projected vehicular traffic conditions, evaluate the ability of the adjacent roadways to accommodate the additional traffic and to recommend transportation improvements needed to mitigate congestion that may result from additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for improvements needed to meet anticipated traffic demands. The analysis examines the AM and PM peak hours for the 2019 Existing, 2025 No-Build, 2025 Build and 2025 Build with Improvements.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
February 13, 2020

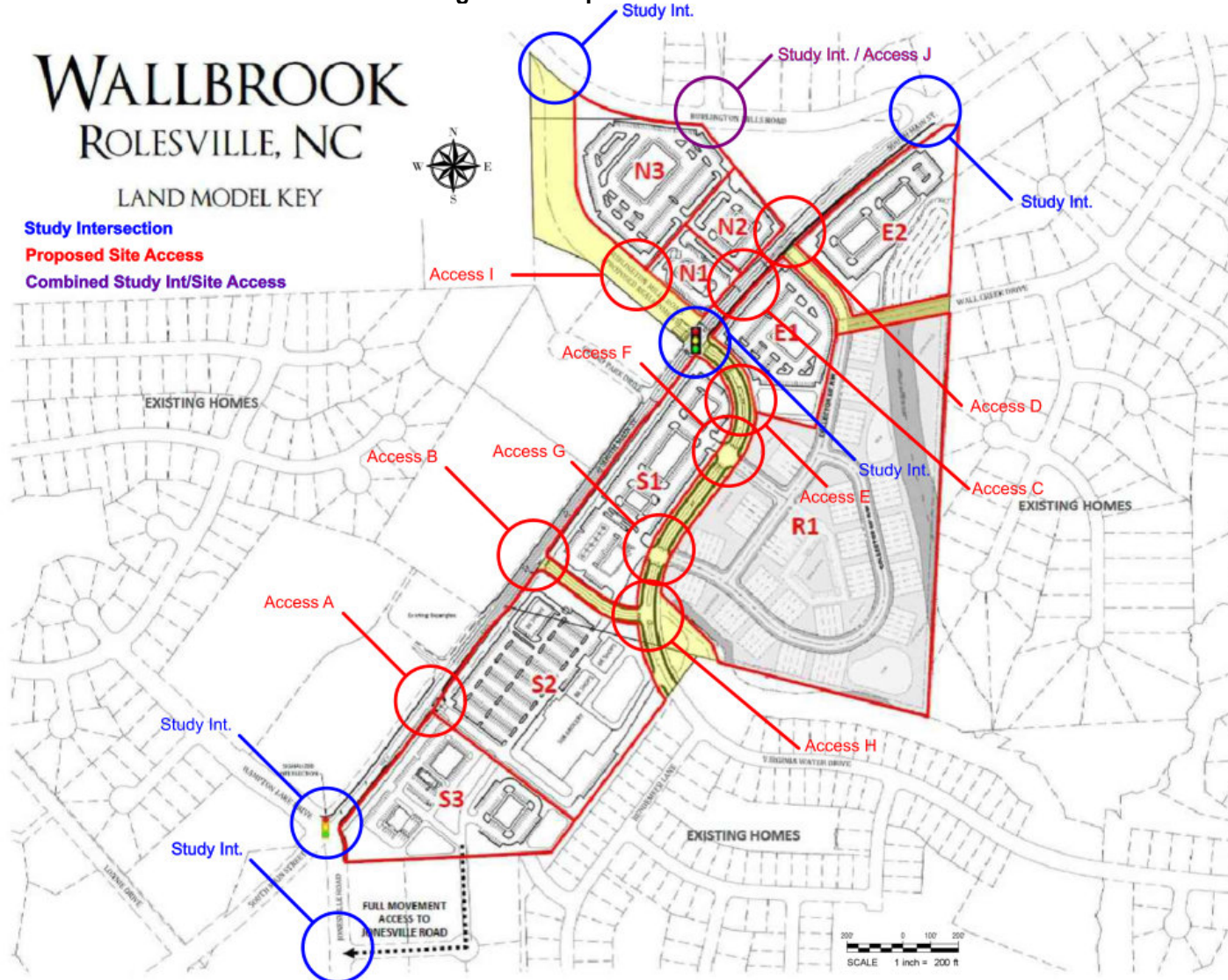
Figure 1: Site Location and Study Area Map



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
February 13, 2020

Figure 2: Proposed Site Plan



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
February 13, 2020

2.0 INVENTORY OF TRAFFIC CONDITIONS

2.1 STUDY AREA

Stantec coordinated with the Town of Rolesville and the North Carolina Department of Transportation (NCDOT) Division 5, District 1 to determine the appropriate study area and assumptions for this study. The final scoping document is included in the Appendix. The following intersections were agreed upon to be analyzed to determine the associated impacts from the proposed development.

- | | |
|---|--|
| • US 401 Business at US 401 | <i>existing signalized intersection</i> |
| • US 401 Business at Hampton Lake Drive / Jonesville Road | <i>existing signalized intersection</i> |
| • US 401 Business at Burlington Mills Road | <i>existing signalized intersection</i> |
| • US 401 Business at Rogers Road / Redford Place | <i>existing signalized intersection</i> |
| • Jonesville Road at Vineyard Pine Lane | <i>existing two-way stop-controlled intersection</i> |
| • Burlington Mills Road at Barrington Hall/Access J | <i>existing two-way stop-controlled intersection</i> |

As part of the Locally Administered Projects Program (LAPP) Burlington Mills Road will be realigned south of its current location and connect with an extended Virginia Waters Drive. It is proposed to be constructed in 2021 and a signal installed; Old Burlington Mills Road and US 401 Business will remain and become stop controlled.

The proposed development is envisioned to construct the following intersections and driveways:

- | | |
|--|--|
| • US 401 Business at Access A | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access B | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access C | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access D | <i>proposed two-way stop-controlled driveway</i> |
| • Virginia Waters Drive at Access E | <i>proposed two-way stop-controlled driveway</i> |
| • Virginia Waters Drive at Access F | <i>proposed two-way stop-controlled driveway</i> |
| • Virginia Waters Drive at Access G | <i>proposed two-way stop-controlled driveway</i> |
| • Virginia Waters Drive at Access H | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Realigned at Access I | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Road at Old Burlington Mills Road | <i>proposed two-way stop-controlled driveway</i> |

Figure 3 shows a diagram of the existing lane configurations, geometry, and traffic control features in the study area.

2.2 EXISTING ROADWAY CONDITIONS

Table 1 provides a detailed description of the existing study area roadway network. All functional classification and average annual daily traffic (AADT) information, where available, was obtained from NCDOT via the NCDOT.gov website.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
February 13, 2020

Table 1: Existing Conditions

Road Name	Road Number	Primary Cross-Section	Functional Classification ¹	2018 AADT ² (vpd)	Speed Limit (mph)	Maintenance Agency
Louisburg Road / S. Main Street	US 401 Business	3-Lane Section	Other Principal Arterial	12,000	35	NCDOT
Rolesville Bypass	US 401	4-Lane Divided	Other Principal Arterial	21,250	55	NCDOT
Hampton Lake Drive	N/A	2-Lane Undivided	Local Road	None Provided	25	Private
Jonesville Road	SR 2226	2-Lane Undivided	Local Road	3,100	35	NCDOT
Burlington Mills Road	SR 2051	2-Lane Undivided	Major Collector	3,700	35	NCDOT
Rogers Road	SR 2052	5-Lane Section	Local Road	None Provided	45	NCDOT
Redford Place	N/A	3-Lane Section	Local Road	None Provided	25	Town of Rolesville
Vineyard Pine Lane	N/A	2-Lane Undivided	Local Road	None Provided	25	Private
Barrington Hall Drive	N/A	2-Lane Undivided	Local Road	None Provided	25	Private

2.3 FUTURE NO-BUILD ROADWAY CONDITIONS

Burlington Mills Road at Old Burlington Mills Road

This intersection is planned to be constructed as part of the Burlington Mills Road realignment project. The westbound approach, Old Burlington Mills Road, is proposed to operate under stop control.

US 401 Business at Burlington Mills Road Realigned

As part of the Burlington Mills Road realignment project Burlington Mills Road will connect to US 401 Business south of where it currently intersects. The signal will also be relocated to this new intersection. The current plans include exclusive turn lanes for all approaches ranging from 100 to 250 feet of full-width storage and appropriate taper.

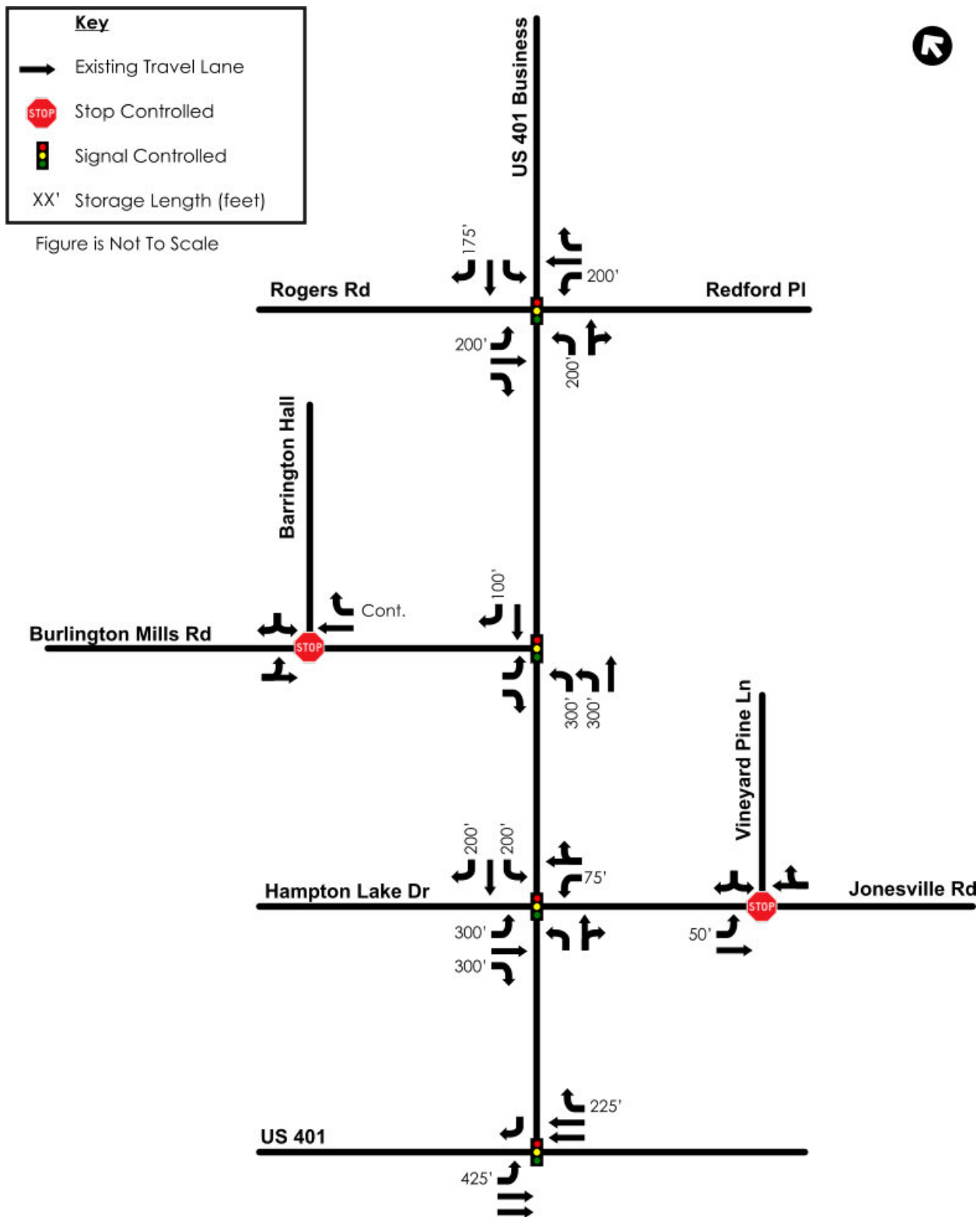
US 401 Business at Old Burlington Mills Road

This intersection is planned to be converted to a right-in/right-out (RIRO) intersection with full movement operations being relocated to the intersection of US 401 Business and Burlington Mills Road Realigned.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
 February 13, 2020

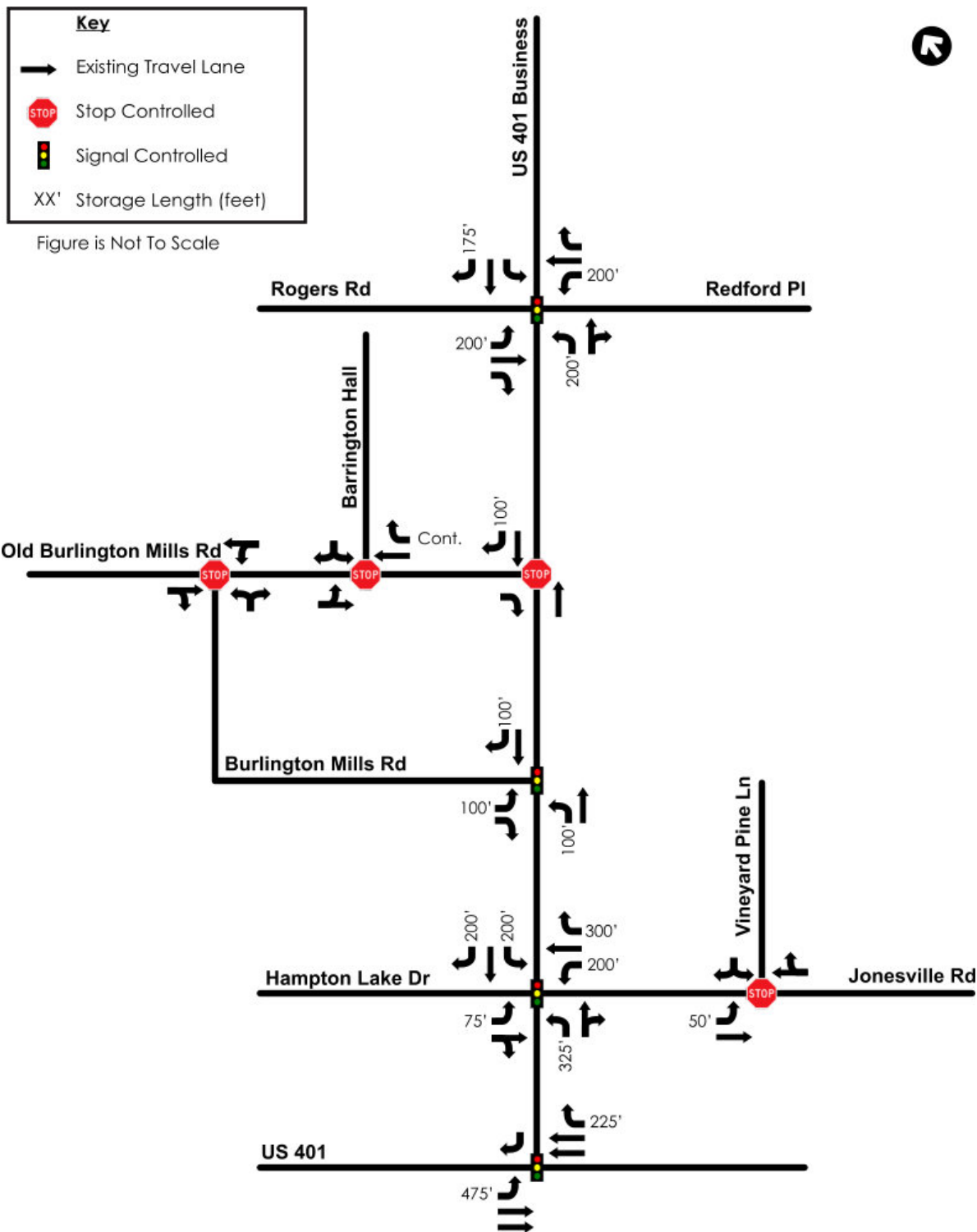
Figure 3: 2019 Existing Lane Configurations and Traffic Control



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
 February 13, 2020

Figure 4: 2025 No-Build Lane Configurations and Traffic Control



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
February 13, 2020

3.0 TRIP GENERATION

Trip generation for the proposed development was performed for the proposed development in three parts, with the North site, the East site, and the South site each being calculated separately. Trips were estimated using the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual³. The manual provides means for calculating trips across four setting-types. That is, city center core, dense multi-use urban, general urban/suburban, and rural. Internal capture was also performed independently for the North, East, and South sites using the National Cooperative Highway Research Program (NCHRP) Report 684 spreadsheet model⁴. This trip generation, submitted to the Town and NCDOT for review, and including internal capture and trip generation methodology is located in the appendix.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
February 13, 2020

3.1 NORTH SITE

The North site of the development is expected to consist of 60,000 square feet of medical-dental office, 8,000 square feet of retail, and 6,000 square feet of fast-food restaurant. Table 2 shows the number of anticipated trips that will be generated by the North site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 2: North Site ITE Trip Generation

North Site Trip Generation (N1, N2, N3)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1000 GFA	2088	1044	1044	167	130	37	208	58	150
Shopping Center	820	8	1000 GLA	1079	540	539	156	97	59	84	40	44
Fast-Food Rest. w/ Drive-Thru	934	6	1000 GFA	2826	1413	1413	241	123	118	196	102	94
				5993	2997	2996	564	350	214	488	200	288
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1000 GFA					-24	-33		-3	
Shopping Center	820	8	1000 GLA					-18	-13		-20	-14
Fast-Food Rest. w/ Drive-Thru	934	6	1000 GFA					-31	-26		-13	-23
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	8	1000 GLA								-7	-10
Fast-Food Rest. w/ Drive-Thru	934	6	1000 GFA					-45	-91		-44	-36
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1000 GFA	2088	1044	1044	167	106	4	208	55	150
Shopping Center	820	8	1000 GLA	1079	540	539	156	79	46	84	13	20
Fast-Food Rest. w/ Drive-Thru	934	6	1000 GFA	2826	1413	1413	241	47	1	196	45	35
Total Trips Generated				5993	2997	2996	564	232	51	488	113	205

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
February 13, 2020

3.2 EAST SITE

The East site of the development is expected to consist of 155 townhomes, 20,000 square feet of office, and 20,000 square feet of retail. Table 3 shows the number of anticipated trips that will be generated by the East site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 3: East Site ITE Trip Generation

East Site Trip Generation (E1, E2, R1)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	155	Units	843	422	421	53	14	39	67	41	26
General Office Building	710	20	1000 GFA	223	111	112	40	35	5	87	16	71
Shopping Center	820	20	1000 GLA	2012	1006	1006	162	100	62	165	79	86
				3078	1539	1539	255	149	106	319	136	183
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	155	Units						-1		-2	-2
General Office Building	710	20	1000 GFA					-2	-1		-2	-1
Shopping Center	820	20	1000 GLA					-2	-2		-2	-3
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	20	1000 GLA								-26	-28
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	155	Units	843	422	421	53	14	38	67	39	25
General Office Building	710	20	1000 GFA	223	111	112	40	33	4	87	14	70
Shopping Center	820	20	1000 GLA	2012	1006	1006	162	98	60	165	51	55
Total Trips Generated				3078	1539	1539	255	145	102	319	104	150

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
February 13, 2020

3.3 SOUTH SITE

The South site of the development is expected to consist of a 10,000 square foot day care center, 84,000 square feet of retail, a 4,000 square-foot bank, 7,000 square feet of restaurant, 4,000 square feet of fast-food restaurant, and a gas station with 16 fuel positions. Table 4 shows the number of anticipated trips that will be generated by the South site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 4: South Site ITE Trip Generation

South Site Trip Generation (S1, S2, S3)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Day Care Center	565	10	1000 GFA	476	238	238	110	58	52	111	52	59
Shopping Center	820	34	1000 GLA	2887	1443	1444	169	105	64	245	117	128
Supermarket	850	50	1000 GFA	5339	2670	2669	191	115	76	462	236	226
Drive-In Bank	912	4	1000 GFA	400	200	200	38	22	16	82	41	41
High-Turnover (Sit-Down) Rest.	932	7	1000 GFA	785	393	392	98	56	42	122	63	59
Fast-Food Rest. w/ Drive-Thru	934	4	1000 GFA	1884	942	942	161	82	79	131	68	63
Gas./ Serv. Station w/ Conv. Market	945	16	Fuel Pos.	3286	1643	1643	200	102	98	224	114	110
				15057	7529	7528	967	540	427	1377	691	686
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	34	1000 GLA					-8	-8		-17	-14
Supermarket	850	50	1000 GFA					-9	-10		-33	-25
High-Turnover (Sit-Down) Rest.	932	7	1000 GFA					-7	-6		-18	-24
Fast-Food Rest. w/ Drive-Thru	934	4	1000 GFA					-11	-11		-20	-26
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	34	1000 GLA								-34	-39
Supermarket	850	50	1000 GFA								-73	-72
Drive-In Bank	912	4	1000 GFA					-6	-5		-14	-14
High-Turnover (Sit-Down) Rest.	932	7	1000 GFA								-19	-15
Fast-Food Rest. w/ Drive-Thru	934	4	1000 GFA					-35	-33		-24	-18
Gas./ Serv. Station w/ Conv. Market	945	16	Fuel Pos.					-63	-61		-64	-62
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Day Care Center	565	10	1000 GFA	476	238	238	110	58	52	111	52	59
Shopping Center	820	34	1000 GLA	2887	1443	1444	169	97	56	245	66	75
Supermarket	850	50	1000 GFA	5339	2670	2669	191	106	66	462	130	129
Drive-In Bank	912	4	1000 GFA	400	200	200	38	16	11	82	27	27
High-Turnover (Sit-Down) Rest.	932	7	1000 GFA	785	393	392	98	49	36	122	26	20
Fast-Food Rest. w/ Drive-Thru	934	4	1000 GFA	1884	942	942	161	36	35	131	24	19
Gas./ Serv. Station w/ Conv. Market	945	16	Fuel Pos.	3286	1643	1643	200	39	37	224	50	48
Total Trips Generated				15057	7529	7528	967	401	293	1377	375	377

4.0 TRAFFIC DISTRIBUTION

4.1 SITE TRIP DISTRIBUTION

In order to accurately determine the effect of the proposed development on the surrounding roadway network, an estimate of the expected distribution of traffic entering and exiting the site is needed. The following percentages were used in the AM and PM peak hours for the proposed site.

These percentages were developed using a combination of existing traffic volume counts, historic AADTs provided by NCDOT, and engineering judgment. This trip distribution was submitted to the Town and NCDOT for review.

4.2 PASS-BY TRIPS

According to NCDOT standards, the retail shopping center (LUC 820), supermarket (LUC 850), bank (LUC 912), restaurant (LUC 934), and gas station (LUC 945) allow for the use of pass-by trips for this land use of 34% in the PM, 36% in the PM, 29% in the AM and 35% in the PM, 49% in the AM and 50% in the PM, and 62% in the AM and 56% in the PM peak hour, respectively. The calculated pass-by trips are greater than 10% of the peak hour traffic on US 401 Business (Main Street) for the intersection of Access B. With the southern section of the site including a grocery store, a gas station, a bank, food, and general retail, coupled with the moderate traffic volumes on Main Street, it is reasonable for the pass-by trips to exceed the 10% threshold.

Pass-by trip distribution is shown in Figure 17 in the appendix.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

5.0 TRAFFIC VOLUMES

Morning (7:00 – 9:00 am) and evening (4:00 – 6:00 pm) turning movement counts were collected on the days respectively listed at the intersections below:

- US 401 Business at US 401 (12/3/2019)
- US 401 Business at Hampton Lake Drive / Jonesville Road (12/13/2018)
- US 401 Business at Burlington Mills Road (12/13/2019)
- US 401 Business at Rogers Road / Redford Place (9/10/2019)
- Jonesville Road at Vineyard Pine Lane (11/12/2019)
- Burlington Mills Road at Barrington Hall (11/12/2019)

The count data is categorized by cars, heavy trucks, bicycles, and pedestrians. Raw count data for these locations as well as all traffic volume calculations are included in the appendix.

5.1 VOLUME BALANCING

Traffic volumes for the AM and PM peak hours were balanced between all study intersections with the exception of Redford Place Drive and Burlington Mills Road on US 401 Business due to the distance and numerous accesses between the two signalized intersections. To be conservative, volumes were only added to the network and not subtracted. The balanced existing (2019) volumes are shown in Figure 4.

5.2 FUTURE TRAFFIC GROWTH

Future traffic growth is the increase in traffic volumes due to usage increases and non-specific growth throughout the area. The 2019 Existing volumes were grown by a 2.5% annual rate to estimate the 2025 volumes. The growth in vehicles as a result of background growth in 2025 is shown in Figure 5.

5.3 APPROVED DEVELOPMENT TRAFFIC

There are two (2) approved development within the study area. Redford Place is a mixed-use development comprised of a single 19,500 square foot building located in the northeast quadrant of the US 401 Business intersection with Rogers Road and Redford Place. With the anticipated completion date for this development occurring in 2023, the associated site traffic for Redford Place was distributed and assigned to the study intersections included in all future-year analyses.

The other approved development is Jonesville Road Townhomes which is expected to consist of 53 townhomes. This development, located in the southeastern quadrant of Jonesville Road and Louisburg Road, is expected to be completed in 2021.

Trips associated with the Redford Place and Jonesville Road Townhome developments are shown in Figure 10 in the appendix.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

5.4 NO-BUILD TRAFFIC VOLUMES

The historical growth and approved development traffic volumes were added to the existing volumes to determine the No-Build traffic volumes. The 2025 No-Build traffic volumes are shown in Figure 6.

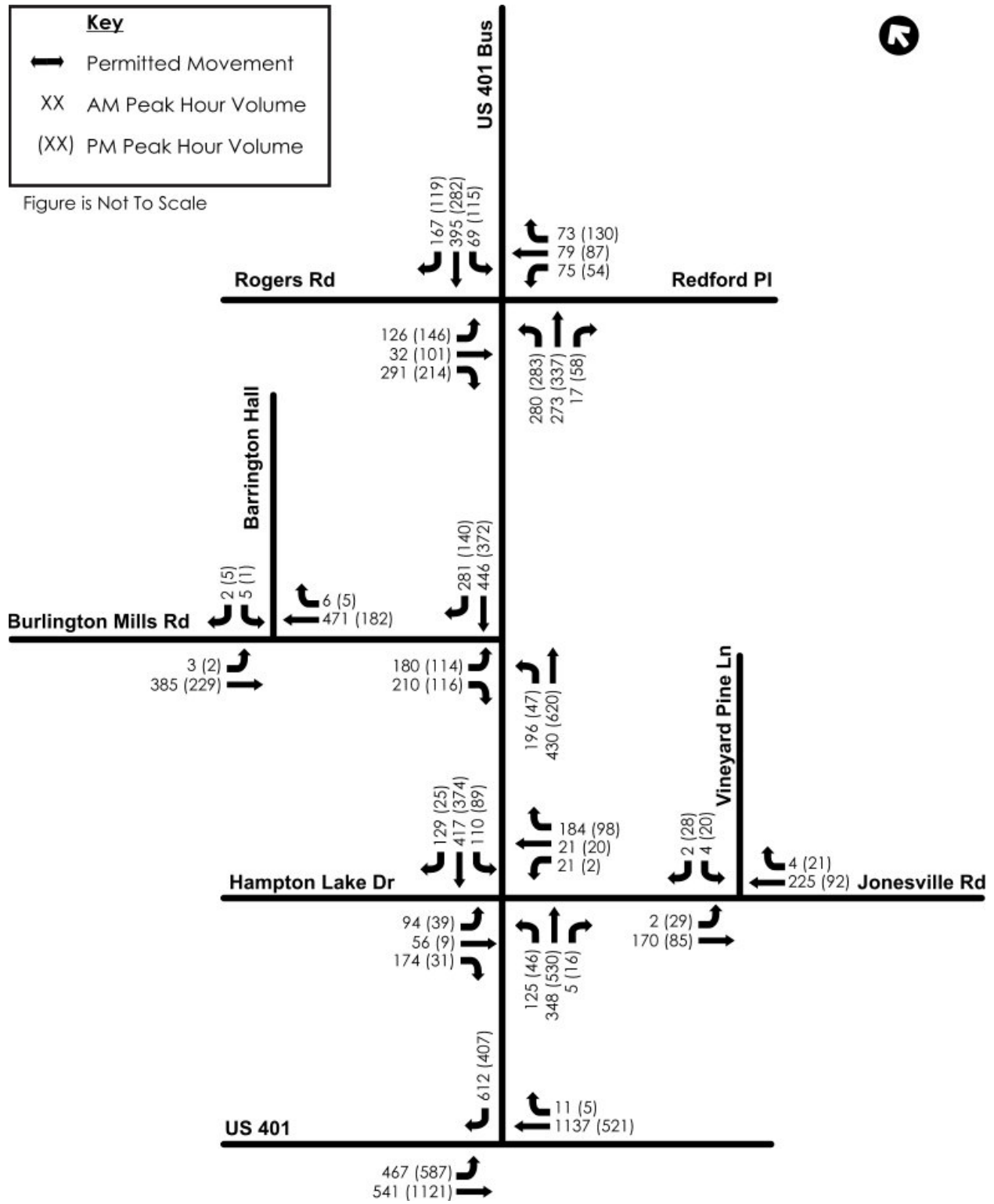
5.5 TOTAL BUILD TRAFFIC WITH PROPOSED DEVELOPMENT

To obtain the total 2025 Build traffic volumes, the distributed site traffic was added to the respective no-build traffic volumes. The total AM and PM peak hour turning movement volumes for the study intersections were then calculated and analyzed for the 2025 traffic scenarios. The 2025 Build-out traffic volumes are shown in Figure 7.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

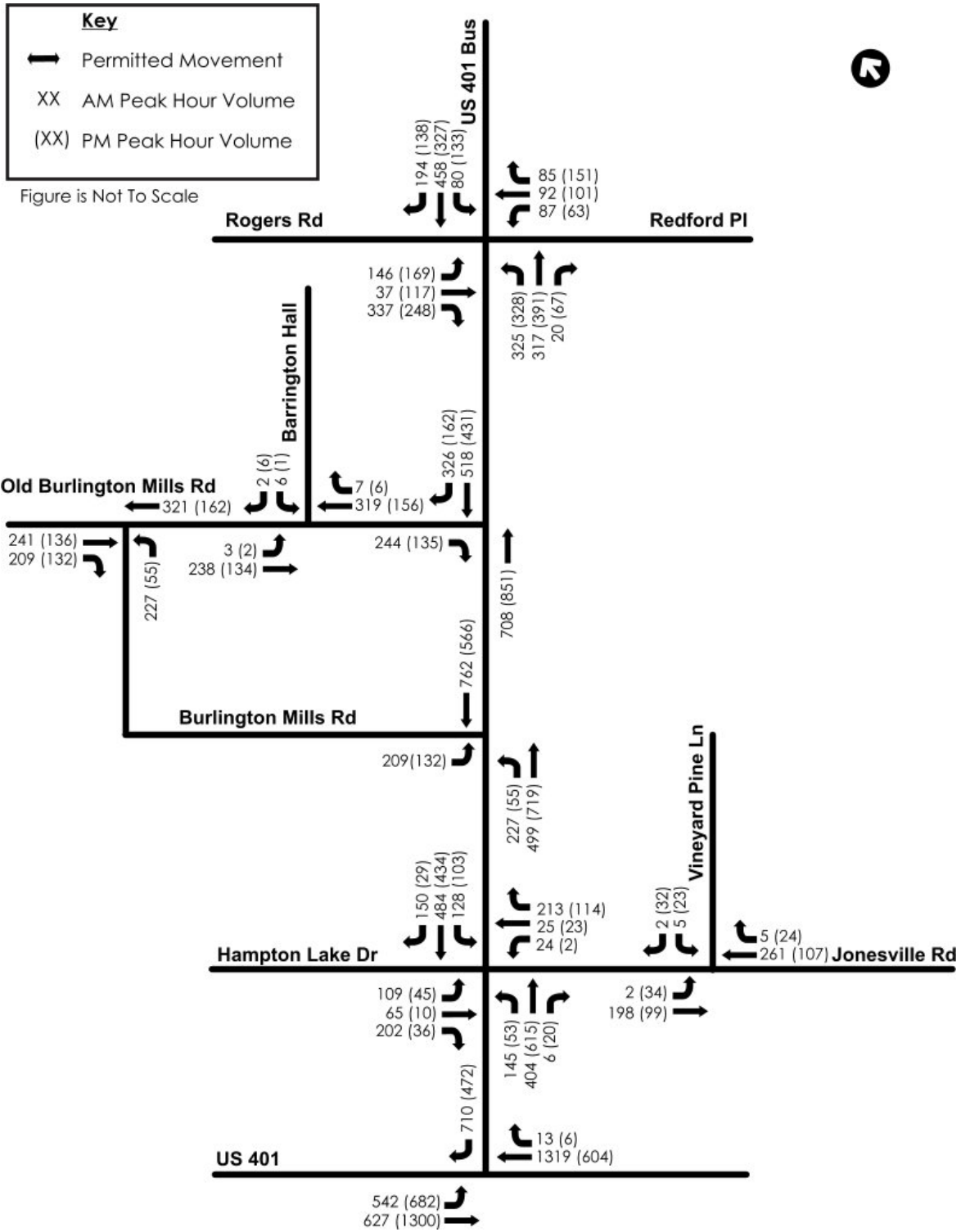
Figure 5: Existing (2019) Traffic Volumes



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

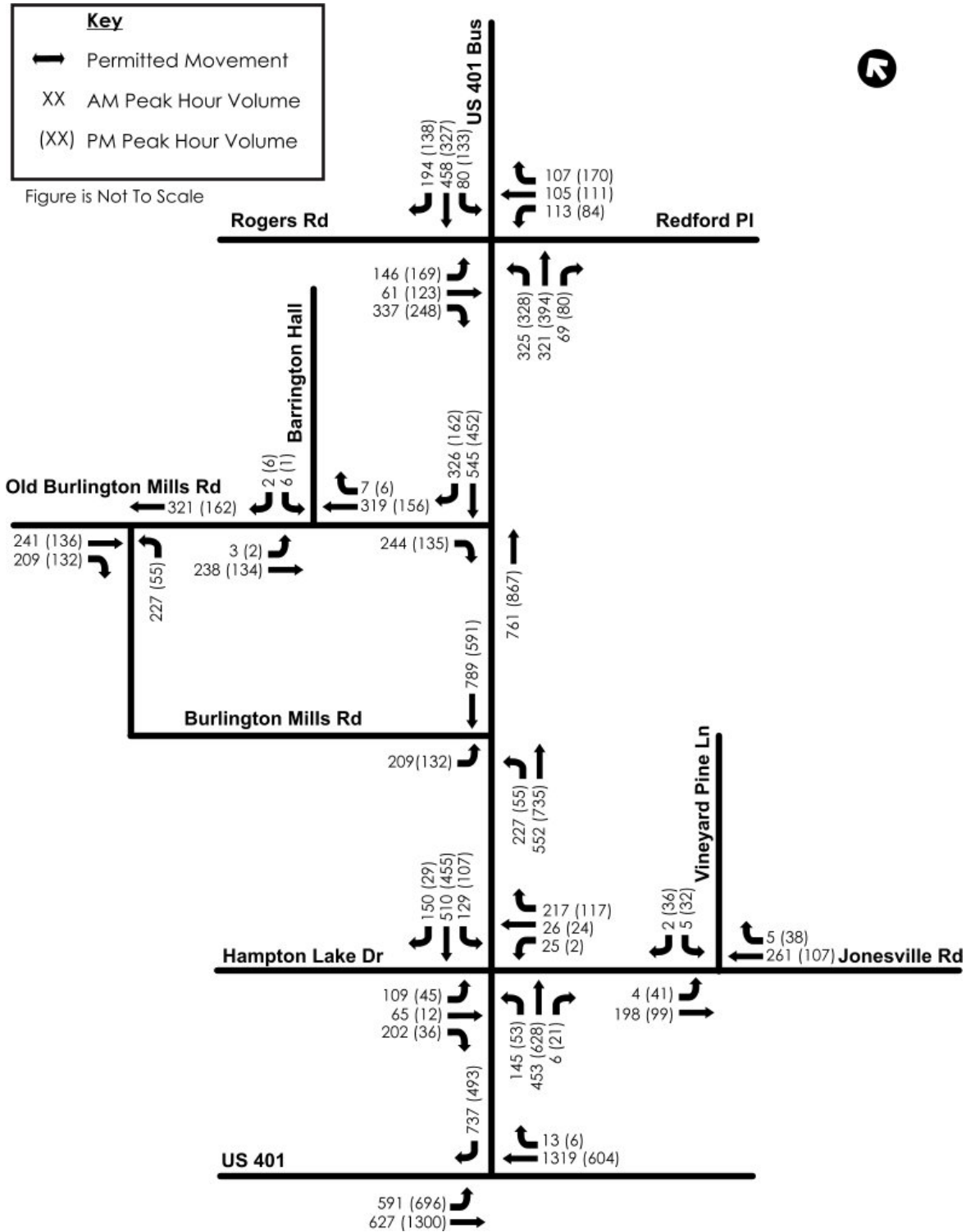
Figure 6: 2025 Historic Growth Traffic Volumes



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

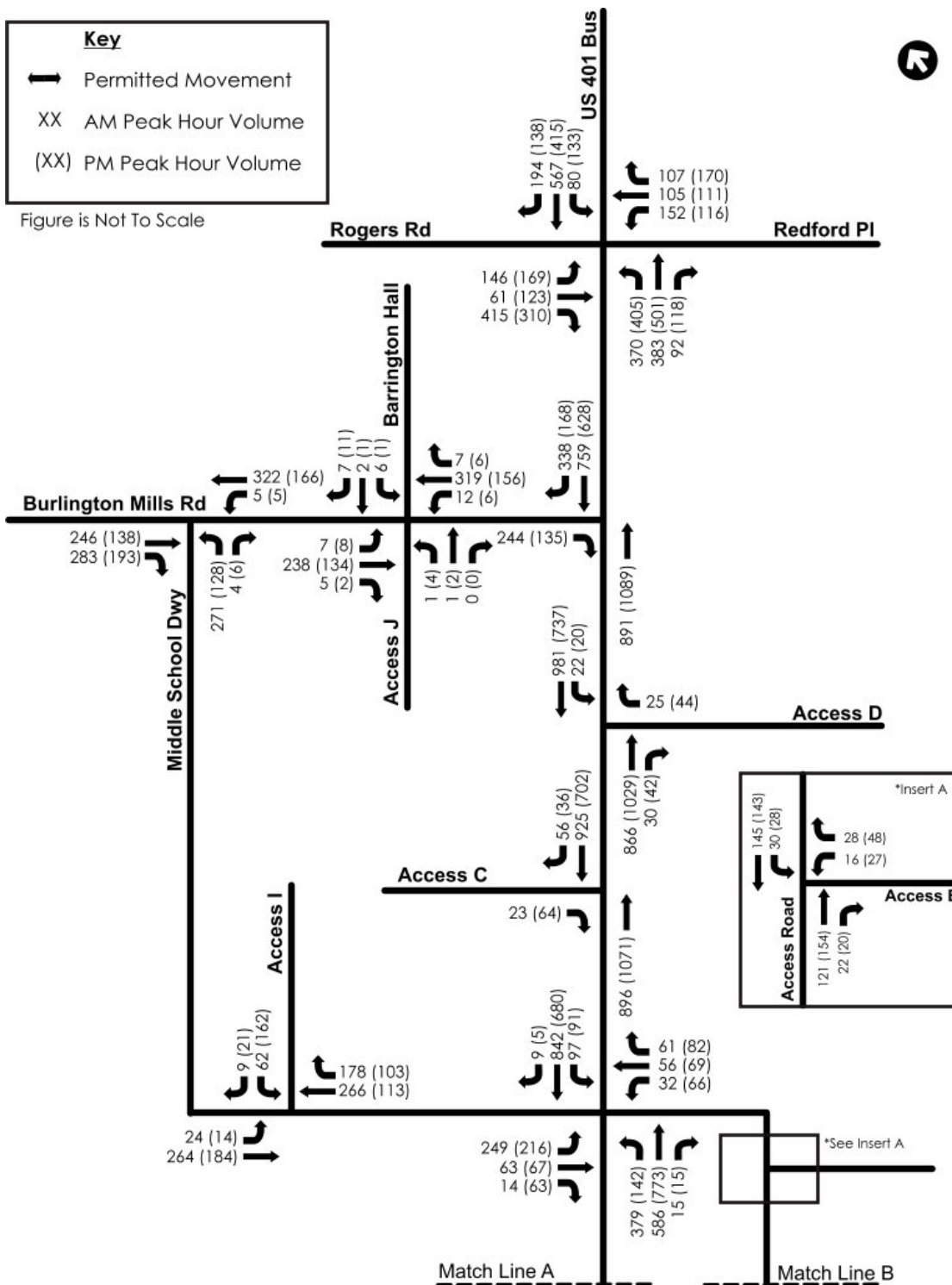
Figure 7: 2025 No-Build Traffic Volumes



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

Figure 8: 2025 Build Traffic Volumes



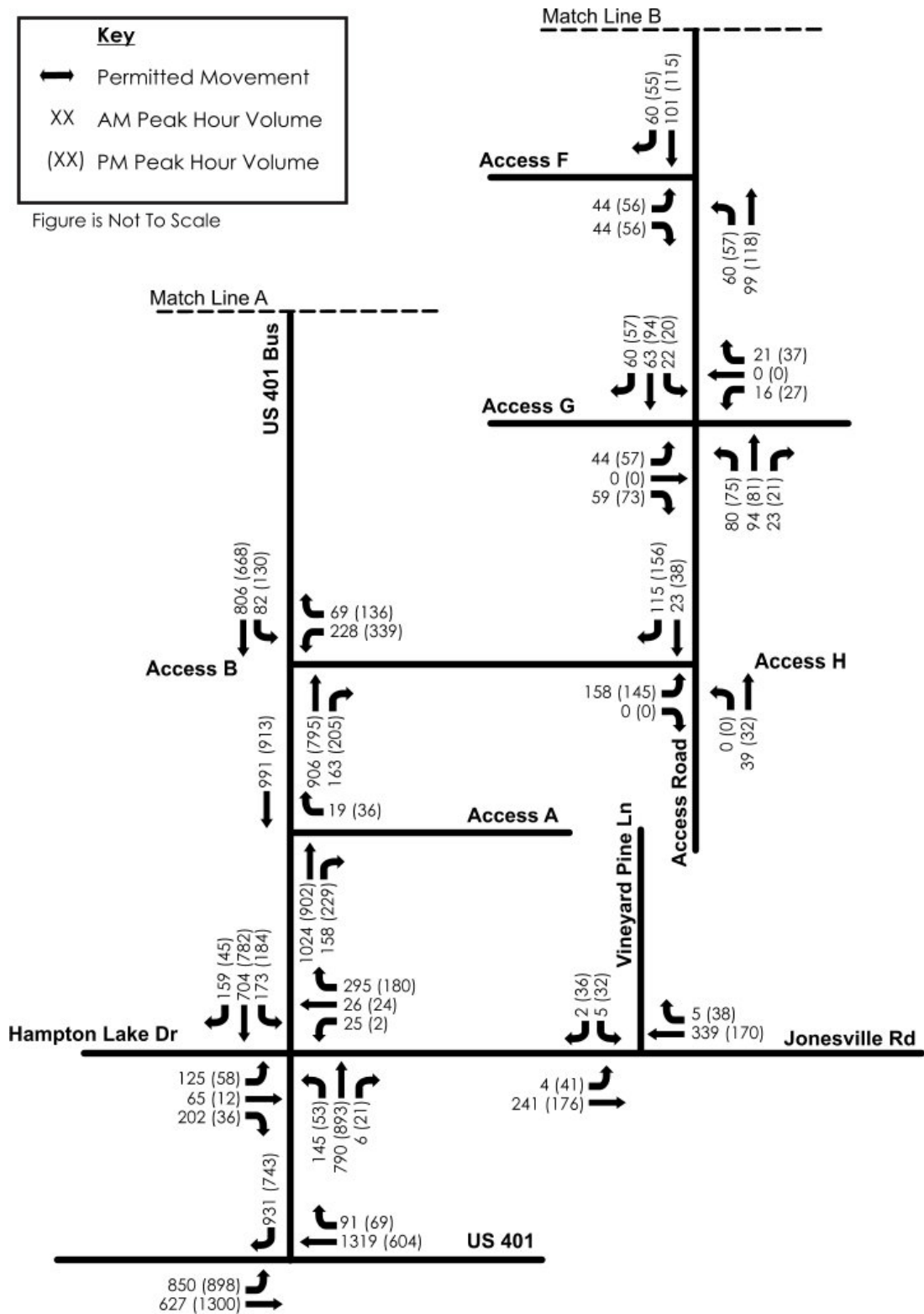
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
February 13, 2020

Key

- ➔ Permitted Movement
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

Figure is Not To Scale



6.0 TRAFFIC ANALYSIS

Capacity analyses were performed for the roadway network in the project study area. The traffic analysis program Synchro Version 10 was used to analyze all signalized and stop-controlled intersections according to methods put forth by the Transportation Research Board’s Highway Capacity Manual (HCM)⁵. The Highway Capacity Manual defines capacity as “the maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform section of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions, usually expressed as vehicles per lane per hour.”

Level of service (LOS) is a term used to describe different traffic conditions and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorists/ or passengers.” LOS varies from Level A, representing free flow, to Level F where traffic breakdown conditions are evident. At an unsignalized intersection, the primary traffic on the main roadway is virtually uninterrupted. Therefore, the overall delay for the intersection is usually less than what is calculated for the minor street movements. The overall intersection delay and the delay for the intersection’s minor movement(s) are reported in the summary tables of this report. Generally, LOS D is acceptable for signalized intersections in suburban areas during peak periods. The ITE Recommended Practice Manual, “*Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*”⁶ states, “Often in urban areas, thoroughfare capacity is a lower priority than other factors such as economic development or historical preservation, and higher levels of congestion are considered acceptable.” With the current method of reporting LOS for unsignalized intersections, it is not uncommon for some of the minor street movements to be operating at a LOS F during peak hour conditions and that is not necessarily indicative of an area that requires improvements.

Capacity analyses were completed in accordance with *NCDOT Congestion Management Capacity Analysis Guidelines*⁷. It should be noted that the 2025 Build with Improvements analyses includes permitted + protected signal phasing at the US 401 Business intersection with Hampton Lake Drive/Jonesville Road. This provided results more indicative of field conditions as the signal currently operates with a flashing yellow arrow. Table 5 presents the criteria of each LOS as indicated in the *HCM*⁵.

Table 5: Level of Service Criteria

Level of Service (LOS)	Signalized Intersection Control Delay (seconds / vehicle)	Unsignalized Intersection Control Delay (seconds / vehicle)
A	≤ 10	≤ 10
B	>10 and ≤ 20	>10 and ≤ 15
C	>20 and ≤ 35	>15 and ≤ 25
D	>35 and ≤ 55	>25 and ≤ 35
E	>55 and ≤ 80	>35 and ≤ 50
F	>80	>50

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

Capacity analyses were performed for the following conditions.

- Existing (2019)
- Future Year (2025) No-Build
- Future Year (2025) Build
- Future Year (2025) Build with Improvements

The following intersections were included in the capacity analysis for the above scenarios; where applicable:

- US 401 Business at US 401;
- US 401 Business at Hampton Lake Drive / Jonesville Road;
- US 401 Business at Burlington Mills Realigned / Virginia Waters Drive;
- US 401 Business at Burlington Mills Road;
- US 401 Business at Rogers Road / Redford Place;
- Jonesville Road at Vineyard Pine Lane;
- Burlington Mills Road at Old Burlington Mills:
- US 401 Business at Access A;
- US 401 Business at Access B;
- US 401 Business at Access C;
- US 401 Business at Access D;
- Virginia Waters Drive at Access E;
- Virginia Waters Drive at Access F;
- Virginia Waters Drive at Access G;
- Virginia Waters Drive at Access H;
- Burlington Mills Realigned at Access I; and
- Old Burlington Mills Road at Barrington Hall / Access J.

SimTraffic runs were completed for all scenarios to observe the predicted traffic operations throughout the study area during each of the peak hours. As is standard practice, ten (10) SimTraffic analysis runs were performed for each scenario. Detailed SimTraffic queuing and blocking reports can be found on the Appendix CD. Queues for the exclusive turn-lanes are summarized in tables for each study intersection. Queues are not reported for intersections that do not have exclusive turn-lanes. For simplicity, the greater of the 95th percentile queue as reported by Synchro or the maximum observed queue as reported by SimTraffic are shown in the tables.

All Synchro files and detailed printouts can be found in the appendix. A brief summary of the results of the analyses is provided in the following sub-sections.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

6.1 2019 EXISTING CAPACITY ANALYSIS

The 2019 Existing scenario results show that all intersections and approaches currently operate at LOS D or better in both peak periods with the exception of the westbound approach at US 401 Business and Hampton Lake Drive/Jonesville Road which can be attributed to school traffic. The level of service and delay for the existing traffic conditions is listed below in Table 6.

Table 6: Level of Service and Delay for 2019 Existing Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	C (22.1)	-	B (14.6)	D (37.3)	C (24.5)
	PM	C (20.2)	-	B (12.2)	C (26.3)	C (21.6)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (33.1)	C (31.3)	E (61.3)	C (25.8)	C (29.5)
	PM	C (27.4)	D (35.9)	E (66.8)	C (22.0)	C (22.9)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	D (36.9)	D (44.9)	D (40.0)	D (37.7)	C (29.4)
	PM	C (33.7)	D (38.5)	D (38.4)	C (33.2)	C (27.5)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	A (0.2)	A (7.8)	A (0.0)	-	B (10.4)
	PM	A (2.5)	A (7.5)	A (0.0)	-	A (9.6)
Burlington Mills Rd at Barrington Hall / Access J (Unsignalized)	AM	A (0.2)	A (8.5)	A (0.0)	-	C (16.1)
	PM	A (0.2)	A (7.6)	A (0.0)	-	A (9.7)
US 401 Business at Burlington Mills Rd (Signalized)	AM	B (16.7)	C (26.3)	-	A (7.1)	B (19.9)
	PM	B (11.4)	C (26.2)	-	A (7.3)	B (10.1)

Key: LOS (Delay (seconds/vehicle))

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

6.2 2025 NO-BUILD CAPACITY ANALYSIS

The 2025 No-Build scenario results show that all intersections and approaches will operate at LOS D or better in both peak periods with the exception of the westbound approach at US 401 Business and Hampton Lake Drive/Jonesville Road and the eastbound approach at US 401 Business and Burlington Mills Road realigned. There are no queuing issues throughout the network in the 2025 No-Build scenario. The no build level of service and delay is listed below in Table 7.

Table 7: Level of Service and Delay for 2025 No-Build Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	C (21.4)	-	C (24.6)	D (40.2)	A (1.1)
	PM	B (16.3)	-	C (20.7)	C (22.6)	A (1.4)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	D (41.4)	C (31.7)	E (63.3)	C (29.6)	D (47.3)
	PM	C (27.3)	D (36.3)	E (69.6)	B (19.5)	C (24.5)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	D (41.8)	D (53.4)	D (40.9)	D (41.9)	C (33.7)
	PM	D (36.9)	D (38.0)	D (39.0)	D (39.4)	C (31.6)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	A (0.2)	A (7.9)	A (0.0)	-	B (10.8)
	PM	A (2.5)	A (7.6)	A (0.0)	-	A (9.8)
Burlington Mills Rd at Barrington Hall / Access J (Unsignalized)	AM	A (0.2)	A (8.0)	A (0.0)	-	B (12.5)
	PM	A (0.3)	A (7.6)	A (0.0)	-	A (9.4)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	A (3.0)	C (19.4)	-	A (0.0)	A (0.0)
	PM	A (1.1)	B (13.2)	-	A (0.0)	A (0.0)
US 401 Business at Burlington Mills Rd Realigned (Signalized)	AM	C (23.4)	F (84.5)	D (54.9)	B (14.9)	B (13.8)
	PM	B (13.5)	D (44.6)	D (39.6)	B (11.0)	A (9.0)
Burlington Mills Rd at Old Burlington Mills (Unsignalized)	AM	A (7.8)	A (0.0)	C (18.6)	A (0.0)	-
	PM	A (4.3)	A (0.0)	B (11.2)	A (0.0)	-

Key: LOS (Delay (seconds/vehicle))

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

6.3 2025 BUILD CAPACITY ANALYSIS

As a result of the 2025 Build analysis, all intersections are expected to operate at LOS D or better in both peak periods, with a few exceptions. The intersection of US 401 Business and Hampton Lake Drive / Jonesville Road is expected to operate at LOS F in both peak hours. Also, the intersection of US 401 Business and Burlington Mills Road Realigned/Virginia Waters Drive is expected to operate at LOS E in the AM peak hour. Additionally, the westbound approach at access B operates at LOS F in both peak hours. The analyses show that the proposed development will have an impact on the surrounding roadway network in the vicinity of the site without any improvements.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

Table 8: Level of Service and Delay for 2025 Build Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	D (40.7)	E (67.3)	D (50.3)	-	A (2.0)
	PM	B (17.6)	C (26.5)	C (25.6)	-	A (1.4)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	F (138.0)	C (25.9)	E (69.8)	F (245.9)	F (105.1)
	PM	F (99.8)	C (27.7)	E (62.7)	F (173.4)	D (44.6)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	D (45.0)	D (51.6)	D (35.7)	C (34.2)	D (54.9)
	PM	D (54.8)	D (36.8)	C (33.0)	F (90.9)	C (29.1)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	-	A (8.1)	A (0.0)	-	B (11.3)
	PM	-	A (7.8)	A (0.0)	-	B (10.8)
Burlington Mills Rd at Barrington Hall / Access J (Unsignalized)	AM	-	A (8.0)	A (7.8)	B (13.4)	B (13.3)
	PM	-	A (7.6)	A (7.5)	B (10.7)	B (10.2)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	-	E (38.8)	-	A (0.0)	A (0.0)
	PM	-	C (17.4)	-	A (0.0)	A (0.0)
US 401 Business at Burlington Mills Realigned / Virginia Water Dr (Signalized)	AM	E (69.9)	F (98.5)	D (51.5)	D (53.7)	E (79.6)
	PM	C (32.9)	D (36.0)	C (26.4)	C (21.7)	D (46.7)
US 401 Business at Access A (Unsignalized)	AM	-	-	C (23.3)	A (0.0)	A (0.0)
	PM	-	-	C (22.3)	A (0.0)	A (0.0)
US 401 Business at Access B (Unsignalized)	AM	-	-	F (##)	A (0.0)	B (12.2)
	PM	-	-	F (##)	A (0.0)	B (12.4)
US 401 Business at Access C (Unsignalized)	AM	-	C (19.5)	-	A (0.0)	A (0.0)
	PM	-	C (16.5)	-	A (0.0)	A (0.0)
US 401 Business at Access D (Unsignalized)	AM	-	-	C (18.1)	A (0.0)	B (10.4)
	PM	-	-	C (24.2)	A (0.0)	B (11.4)
Virginia Water Dr at Access E (Unsignalized)	AM	-	-	B (10.0)	A (0.0)	A (7.6)
	PM	-	-	B (10.5)	A (0.0)	A (7.7)
Virginia Water Dr at Access F (Unsignalized)	AM	-	B (10.9)	-	A (7.7)	A (0.0)
	PM	-	B (11.4)	-	A (7.7)	A (0.0)
Virginia Water Dr at Access G (Unsignalized)	AM	-	B (11.8)	B (11.5)	A (7.7)	A (7.5)
	PM	-	B (12.6)	B (11.8)	A (7.7)	A (7.5)
Access Road at Access H (Unsignalized)	AM	-	B (10.4)	-	A (7.5)	A (0.0)
	PM	-	B (10.5)	-	A (7.7)	A (0.0)
Burlington Mills Realigned at Access I (Unsignalized)	AM	-	A (8.4)	A (0.0)	-	C (16.4)
	PM	-	A (7.7)	A (0.0)	-	B (13.9)
Burlington Mills Road at Old BMR (Unsignalized)	AM	-	A (0.0)	C (20.9)	A (0.0)	-
	PM	-	A (0.0)	B (11.7)	A (0.0)	-

Key: LOS (Delay (seconds/vehicle))

indicates delay longer than 300 seconds

Traffic Analysis
February 13, 2020

6.4 2025 BUILD WITH IMPROVEMENTS CAPACITY ANALYSIS

The 2025 Build with Improvements analysis shows that all intersections and approaches are expected to operate at LOS D or better in both peak periods, except for Old Burlington Mills Road at US 401 Business in the AM peak hour. Although the intersections are expected to operate at acceptable level of service, the intersection of Old Burlington Mills Road at US 401 Business experiences higher delay. It is not uncommon for minor approaches at unsignalized intersections to operate with high delay during peak hours.

Improvements:

US 401 Business at Hampton Lake Drive / Jonesville Road

- Construct a westbound exclusive right-turn lane with 350 feet of storage and appropriate taper.
- Allow permitted + protected signal phasing.

US 401 Business at Burlington Mills Road

- Construct a second northbound exclusive left-turn lane with 200 feet of storage and appropriate taper.

US 401 Business at Access B

- Install a signal
- Construct a northbound exclusive right-turn lane with 100 feet of storage and appropriate taper.
- Construct a southbound exclusive left-turn lane with 100 feet of storage and appropriate taper.

US 401 Business at Access C

- Construct a southbound exclusive right-turn lane with 100 feet of storage and appropriate taper.

US 401 Business at Access D

- Construct a northbound exclusive right-turn lane with 100 feet of and appropriate taper.
- Construct a southbound exclusive left-turn lane with 100 feet of storage and appropriate taper.

Burlington Mills Road at Access I

- Construct a westbound exclusive right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

Table 9: Level of Service and Delay for 2025 Build with Improvements Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	D (42.5)	E (63.5)	E (55.2)	-	A (4.2)
	PM	B (18.9)	C (26.5)	C (27.9)	-	A (3.3)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (28.5)	D (52.8)	D (48.9)	C (22.0)	B (18.4)
	PM	C (23.7)	D (54.6)	E (61.6)	C (20.6)	B (15.7)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	D (49.0)	E (62.5)	C (34.8)	D (53.0)	D (41.2)
	PM	D (46.0)	C (26.3)	C (28.6)	E (70.5)	D (37.0)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	-	A (8.1)	A (0.0)	-	B (11.3)
	PM	-	A (7.8)	A (0.0)	-	B (10.8)
Burlington Mills Rd at Barrington Hall / Access J (Unsignalized)	AM	-	A (8.0)	A (7.8)	B (13.4)	B (13.3)
	PM	-	A (7.6)	A (7.5)	B (10.7)	B (10.2)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	-	E (38.8)	-	A (0.0)	A (0.0)
	PM	-	C (17.4)	-	A (0.0)	A (0.0)
US 401 Business at Burlington Mills / Virginia Water Dr (Signalized)	AM	D (44.8)	E (65.3)	D (38.0)	C (33.4)	D (50.5)
	PM	C (30.8)	D (40.5)	C (29.8)	B (20.0)	D (39.9)
US 401 Business at Access A (Unsignalized)	AM	-	-	C (21.1)	A (0.0)	A (0.0)
	PM	-	-	C (19.2)	A (0.0)	A (0.0)
US 401 Business at Access B (Unsignalized)	AM	B (15.6)	-	D (54.3)	B (10.8)	A (8.3)
	PM	B (19.2)	-	D (40.1)	A (0.0)	B (15.2)
US 401 Business at Access C (Unsignalized)	AM	-	C (18.9)	-	A (0.0)	A (0.0)
	PM	-	C (16.1)	-	A (0.0)	A (0.0)
US 401 Business at Access D (Unsignalized)	AM	-	-	C (17.8)	A (0.0)	B (10.4)
	PM	-	-	C (23.4)	A (0.0)	B (11.4)
Virginia Water Dr at Access E (Unsignalized)	AM	-	-	B (10.0)	A (0.0)	A (0.0)
	PM	-	-	B (10.5)	A (0.0)	A (0.0)
Virginia Water Dr at Access F (Unsignalized)	AM	-	B (10.9)	-	A (7.7)	A (0.0)
	PM	-	B (11.4)	-	A (7.7)	A (0.0)
Virginia Water Dr at Access G (Unsignalized)	AM	-	B (11.8)	B (11.5)	A (7.7)	A (7.5)
	PM	-	B (12.6)	B (11.8)	A (7.7)	A (7.5)
Virginia Water Dr at Access H (Unsignalized)	AM	-	B (10.4)	-	A (7.5)	A (0.0)
	PM	-	B (10.5)	-	A (7.7)	A (0.0)
Burlington Mills Realigned at Access I (Unsignalized)	AM	-	A (8.4)	A (0.0)	-	B (14.7)
	PM	-	A (7.7)	A (0.0)	-	B (13.0)
Burlington Mills Road at Old BMR (Unsignalized)	AM	-	A (0.0)	C (20.9)	A (0.0)	-
	PM	-	A (0.0)	B (11.7)	A (0.0)	-

Key: LOS (Delay (seconds/vehicle))

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

7.0 SIMTRAFFIC OPERATIONS

SimTraffic runs were completed for all analysis scenarios to observe the predicted traffic operations throughout the study area during each of the peak hours. As is standard practice, ten (10) SimTraffic analysis runs were performed for each scenario to get an average. Detailed SimTraffic Queuing and Blocking reports can be found in the appendix. The maximum queue for all northbound movements at US 401 Business and Hampton Lake Drive in the AM and PM are extensive but clear in a signal cycle. The eastbound left at US 401 and US 401 Business also clears in one cycle. A summary of the maximum queue lengths observed during the simulation is provided in Table 10 and Table 11.

Table 10: Maximum Queue Length Summary for Unsignalized

Intersection	Directional Movement	2019 Existing		2025 No Build		2025 Build		2025 Build w/ Imp	
		AM	PM	AM	PM	AM	PM	AM	PM
Burlington Mills Road @ Old Burlington Mills Road	EBTR	-	-	0	3	407	493	0	288
	WBLT	-	-	178	92	325	139	161	188
	NBLR	-	-	117	38	223	174	189	194
Old Burlington Mills Rd @ Barrington Hall / Access J	EBLTR	34	3	16	0	322	223	31	214
	WBLT	-	-	0	0	346	185	42	280
	WBR	0	0	0	0	267	72	2	220
	NBLTR	-	-	-	-	71	75	32	90
	SBLTR	23	23	24	24	81	76	24	109
Jonesville Rd @ Vineyard Pine Ln	EBL	15	33	18	36	39	56	9	48
	EBT	0	0	0	0	34	51	0	0
	WBTR	0	0	0	0	448	126	10	0
	SBLR	30	59	30	57	182	176	33	61
US 401 Business @ Access A	WBR	-	-	-	-	295	146	41	47
	NBT	-	-	-	-	0	0	114	0
	NBR	-	-	-	-	550	362	40	0
	SBT	-	-	-	-	276	34	6	6
US 401 Business @ Access C	EBR	-	-	-	-	228	266	211	251
	NBTR	-	-	-	-	56	35	0	25
	SBT	-	-	-	-	336	335	349	344
	SBR	-	-	-	-	336	335	200	62
US 401 Business @ Access D	WBR	-	-	-	-	49	70	58	88
	NBR	-	-	-	-	-	-	4	42
	NBTR	-	-	-	-	183	83	0	56
	SBL	-	-	-	-	595	613	184	199
	SBT	-	-	-	-	-	-	465	608
Virginia Water Drive @ Access E	WBLR	-	-	-	-	73	145	56	69
	NBTR	-	-	-	-	2	40	0	0
	SBLTR	-	-	-	-	54	70	64	67
Virginia Water Dr @ Access F	EBLR	-	-	-	-	118	211	82	80
	NBLT	-	-	-	-	64	60	49	60
	SBTR	-	-	-	-	65	165	8	2
Virginia Water Dr @ Access G	EBLTR	-	-	-	-	215	211	84	81
	WBLTR	-	-	-	-	237	291	57	71
	NBLTR	-	-	-	-	220	257	61	53
	SBLTR	-	-	-	-	262	355	51	47
Virginia Water Drive @ Access B/H	EBLR	-	-	-	-	243	303	80	68
	NBLT	-	-	-	-	220	276	16	12
	SBTR	-	-	-	-	253	267	0	2
Burlington Mills Road @ Access I	EBLT	-	-	-	-	188	121	88	57
	WBT	-	-	-	-	-	-	14	132
	WBR	-	-	-	-	34	79	21	56
	SBLR	-	-	-	-	174	176	68	123

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
February 13, 2020

Table 11: Maximum Queue Length Summary for Signalized

Intersection	Directional Movement	2019 Existing		2025 No Build		2025 Build		2025 Build w/ Imp	
		AM	PM	AM	PM	AM	PM	AM	PM
US 401 @ US 401 Business	EBL	136	125	318	303	375	374	375	361
	EBT	525	575	107	87	873	825	1030	683
	EBT	481	540	45	0	804	691	963	391
	WBT	245	148	408	217	1038	423	942	226
	WBT	232	113	395	184	1029	409	933	203
	WBR	5	0	32	0	325	125	325	57
	SBT	0	0	134	124	152	152	154	155
US 401 Business @ Hampton Lake Dr / Jonesville Rd	EBL	152	97	146	86	255	162	216	125
	EBT	87	37	110	43	291	200	189	54
	EBR	228	84	245	96	254	148	257	87
	WBL	136	7	104	17	175	47	146	23
	WBT	-	-	-	-	-	-	324	67
	WBTR	230	179	273	180	471	312	200	217
	NBL	115	61	145	132	425	389	399	424
	NBTR	292	378	363	410	891	885	695	691
US 401 Business @ Burlington Mills Road / Virginia Water Dr	SBL	287	186	299	180	300	284	273	298
	SBT	404	258	498	301	594	459	470	390
	SBR	289	38	287	126	300	246	300	141
	EBL	-	-	193	135	200	198	371	306
	EBT	-	-	-	-	588	527	356	209
	EBR	-	-	116	74	54	180	47	103
	WBL	-	-	-	-	102	184	96	115
	WBT	-	-	-	-	130	270	133	141
	WBR	-	-	-	-	128	117	110	121
	NBL	-	-	-	-	-	-	249	105
	NBT	-	-	197	128	200	190	300	224
US 401 Business @ Old Burlington Mills Road (Signalized to Unsignalized)	NBT	-	-	405	261	892	703	816	468
	NBR	-	-	-	-	144	103	103	133
	SBL	-	-	-	-	145	144	144	143
	SBT	-	-	283	201	233	236	241	242
	SBR	-	-	25	37	93	77	67	130
	EBL	147	130	-	-	-	-	-	-
	EBR	163	122	152	78	717	746	308	553
	NBL	114	54	-	-	-	-	-	-
	NBT	61	244	0	0	0	50	0	196
	SBT	370	214	0	0	989	1921	12	1521
US 401 Business @ Rogers Road / Redford Pl Dr	SBR	200	148	0	0	100	224	0	175
	EBL	187	200	226	213	253	232	226	234
	EBT	97	166	140	198	333	252	292	289
	EBR	312	223	321	268	488	366	446	290
	WBL	142	124	142	116	215	211	196	161
	WBT	155	159	169	173	199	262	174	179
	WBR	101	155	100	189	150	164	122	194
	NBL	283	300	300	300	299	300	300	300
	NBTR	332	498	563	616	466	1870	738	2248
	SBL	217	203	275	256	275	261	275	275
	SBT	392	289	450	379	530	453	511	488
US 401 Business @ Access B/H (Unsignalized in Build)	SBR	155	126	259	170	510	249	502	354
	WBL	-	-	-	-	-	-	200	216
	WBLR	-	-	-	-	318	301	124	143
	NBT	-	-	-	-	-	-	532	403
	NBR	-	-	-	-	786	744	200	200
	SBL	-	-	-	-	888	988	194	199
SBT	-	-	-	-	-	-	531	410	

Legend

- No movement
- XX Maximum queue length (feet)

Recommendations
February 13, 2020

8.0 RECOMMENDATIONS

Based on the findings of this study, specific improvements have been identified and should be completed as part of the proposed development. Except where noted, all intersections are recommended to operate under two-way stop control (TWSC), with the site accesses serving as the minor movement(s). These improvements are shown in Figure 9 and listed below:

US 401 Business at Access A

Construct Access A as a limited-movement intersection onto US 401 Business restricting southbound and westbound lefts. Construct a northbound right-turn lane with 100 feet of full-width storage.

US 401 Business at Access B

Construct Access B as a full-movement signalized intersection onto US 401 Business with an exclusive northbound right-turn lane with 100 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper on US 401 Business. Construct westbound egress with an exclusive left-turn lane with full storage and an exclusive right-turn lane with 150 feet of full-width storage.

US 401 Business at Access C

Construct Access C as a limited-movement intersection on to US 401 Business restricting northbound and eastbound left-turns. Construct an exclusive southbound right-turn lane with 100 feet of full-width storage and appropriate taper on US 401 Business.

US 401 Business at Access D

Construct Access D as a limited-movement intersection on to US 401 Business allowing all movements but a westbound left. Construct an exclusive northbound right-turn lane and southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

Virginia Waters Drive at Access E

Construct Access E as a full-movement intersection on Virginia Water Drive.

Virginia Waters Drive at Access F

Construct Access F as a full-movement intersection on Virginia Water Drive.

Virginia Waters Drive at Access G

Construct Access G as a full-movement intersection on Virginia Water Drive.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Recommendations
February 13, 2020

Virginia Waters Drive at Access H

Construct Access H as a full-movement intersection on Virginia Water Drive.

Burlington Mills Road at Access I

Construct Access I as a full-movement intersection on Burlington Mills Road. Construct a westbound exclusive right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.

Old Burlington Mills Road at Barrington Hall/Access J

Construct Access J as a full-movement intersection on Old Burlington Mills Road.

US 401 Business at Burlington Mills Road Realigned

Construct a second northbound left-turn lane with 250 feet of full-width storage and appropriate taper.

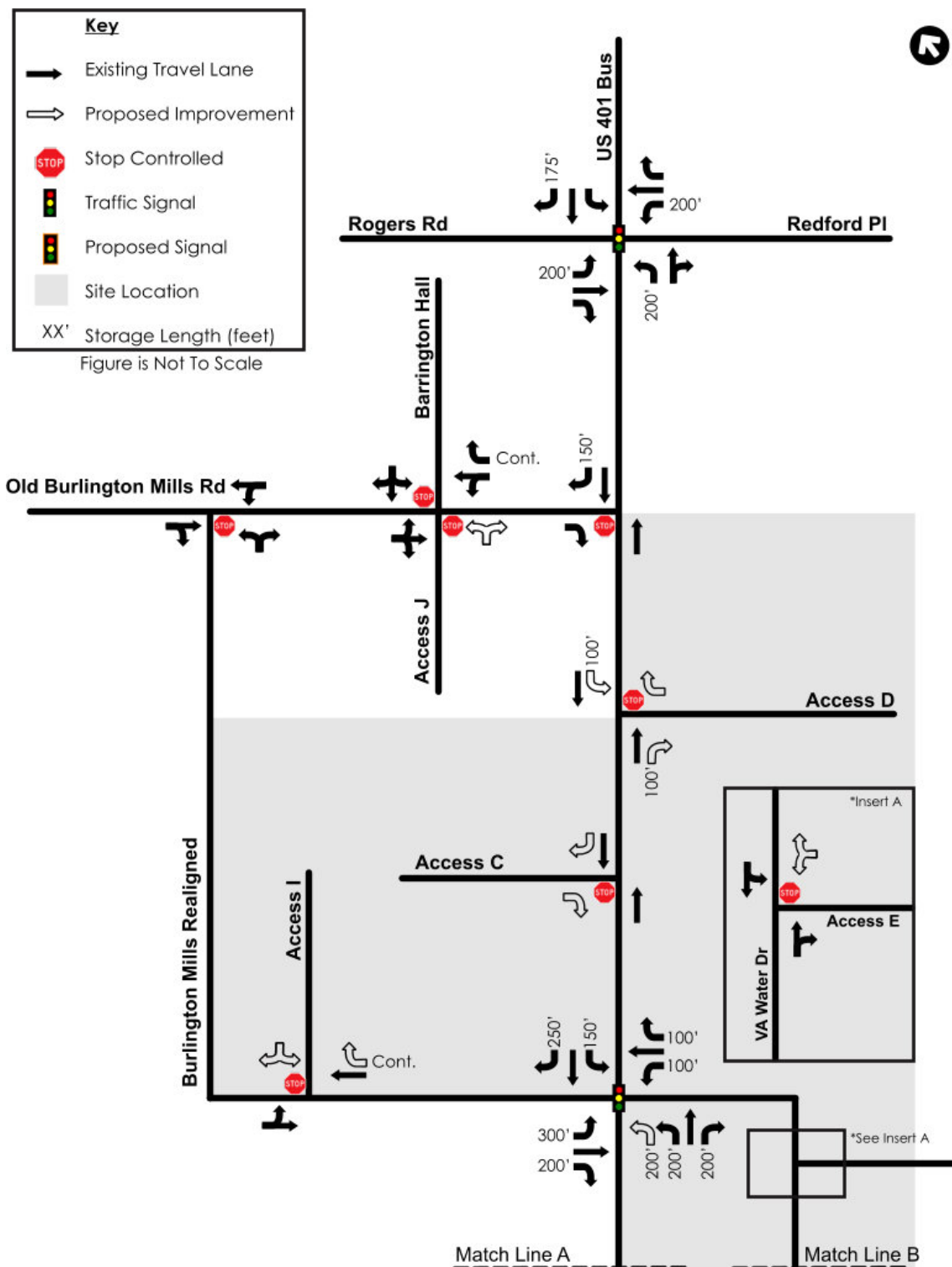
US 401 Business at Hampton Lake Drive/Jonesville Road

Construct a westbound right-turn lane with 350 feet of full-width storage and appropriate taper. Allow permitted + protected signal phasing.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

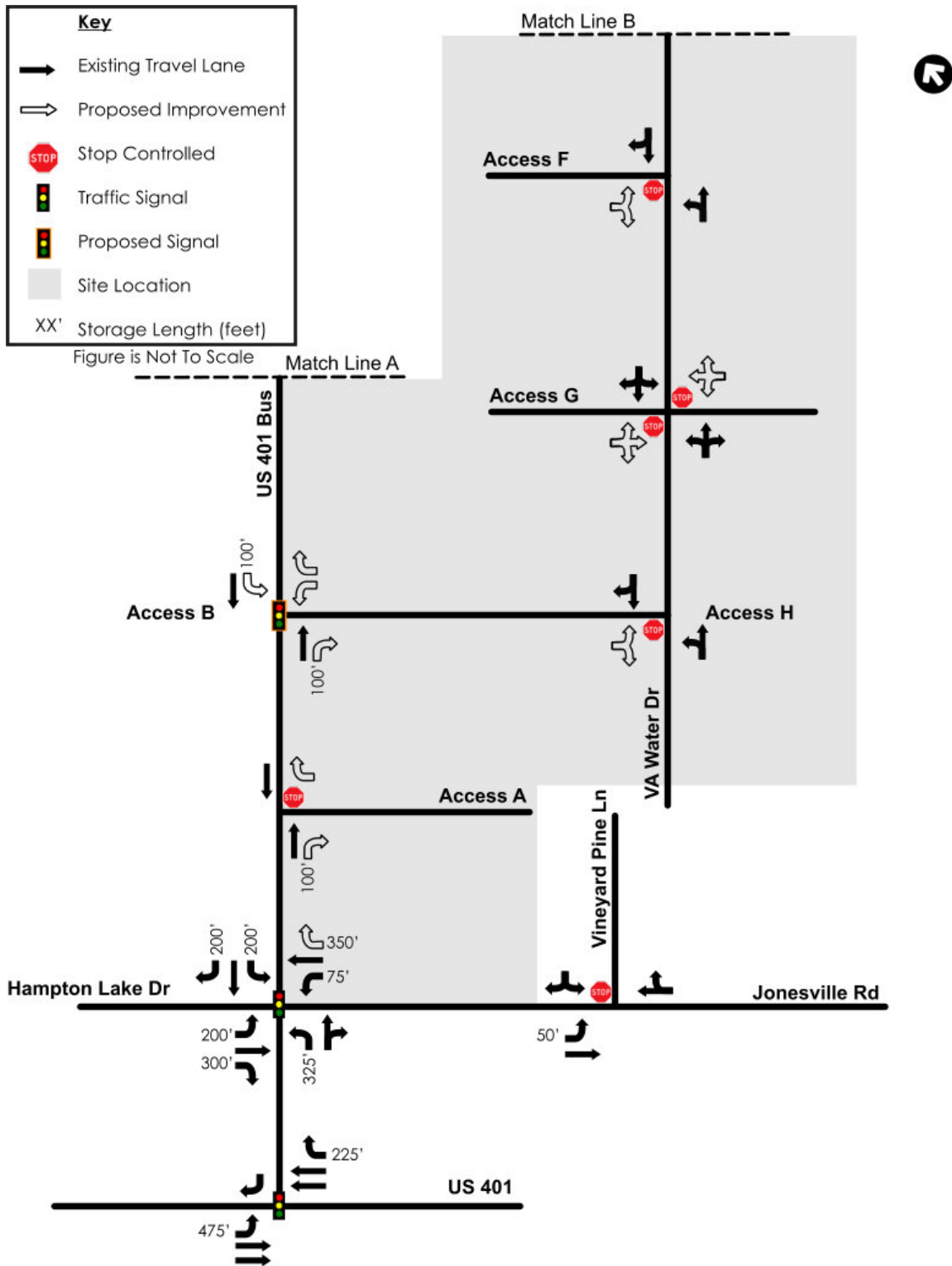
Recommendations
February 13, 2020

Figure 9: Build Recommended Lane Configurations



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Recommendations
February 13, 2020



9.0 CONCLUSIONS

The study shows that the traffic generated by the proposed Wallbrook Development will have a minimal impact on surrounding roadways and intersections with the recommended improvements included to mitigate the site traffic. The signalized intersections operate at an overall LOS of D or better during both peak hours across all scenarios. Sidestreet approaches to these intersections are shown to operate at LOS E or better during both peak hours across all scenarios. Approaches for the unsignalized intersection operate at LOS C or better except for the AM peak hour eastbound left-turn at US 401 Business and Old Burlington Mills Road.

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

10.0 REFERENCES

¹ ***NCDOT Functional Classification Map,***

<http://ncdot.maps.arcgis.com/home/webmap/viewer.html?layers=029a9a9fe26e43d687d30cd3c08b1792>

² ***2017 NCDOT Average Daily Traffic Volumes,***

<https://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=b7a26d6d8abd419f8c27f58a607b25a1>

³ ***Trip Generation (10th Edition),*** Institute of Transportation Engineers (ITE), September 2017.

⁴ ***NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments.*** Washington, D.C.: Transportation Research board, 20151.

⁵ ***HCM 2010: Highway Capacity Manual.*** Washington D.C.: Transportation Research Board, 2010.

⁶ ***Designing Walkable Urban Thoroughfares: A Context Sensitive Approach.*** Institute of Transportation Engineers (ITE), 2010.

⁷ ***NCDOT Congestion Management Capacity Analysis Guidelines.*** North Carolina Department of Transportation (NCDOT), July 2015,

<https://connect.ncdot.gov/resources/safety/Congestion%20Mngmt%20and%20Signing/Congestion%20Management/Capacity%20Analysis%20Guidelines.pdf>

APPENDIX

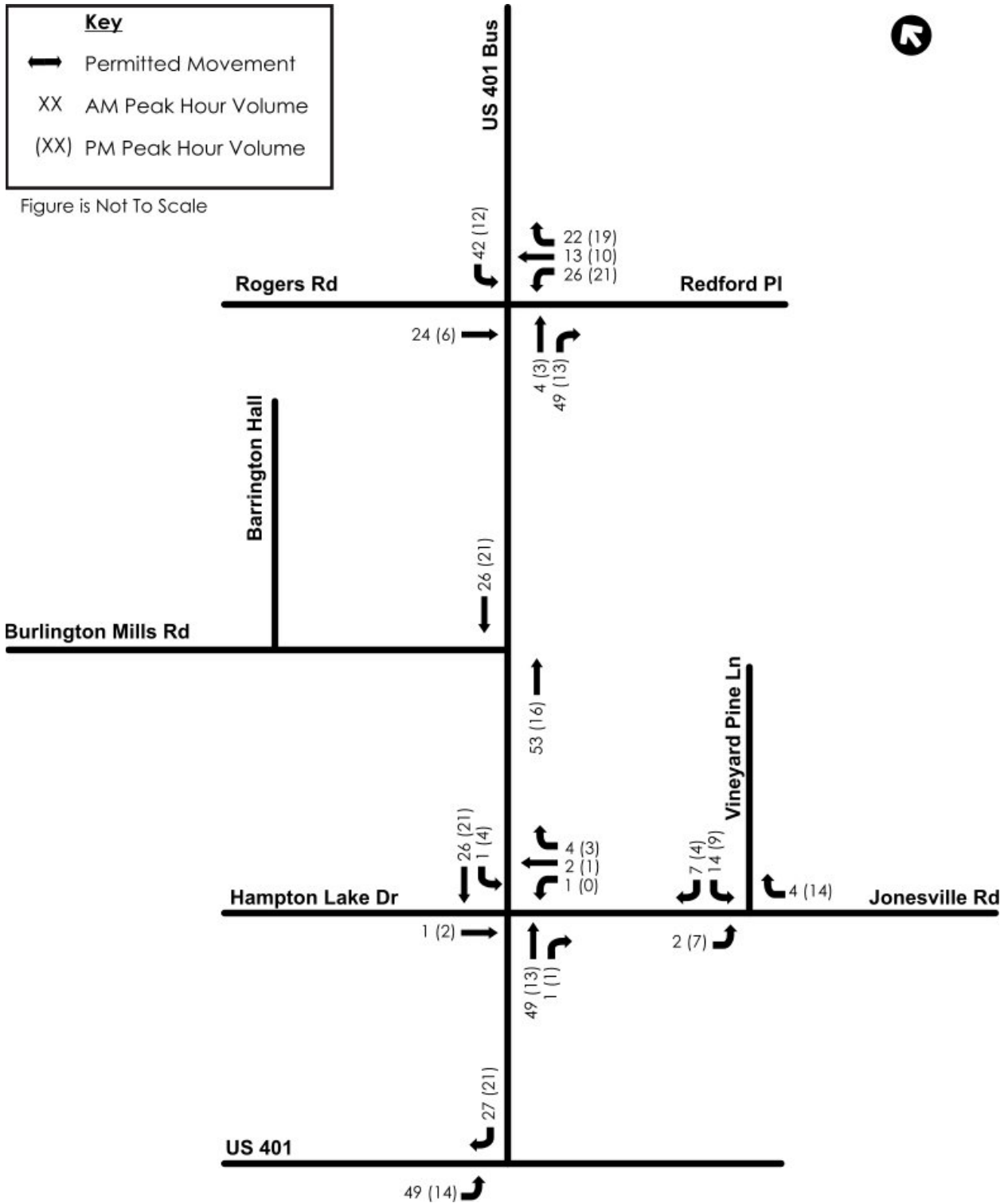
A link containing all relevant files is electronically sent with this report:

- Traffic Signal Plans
- Site Plan
- NCDOT Scoping Checklist
- Raw Traffic Count Data
- Synchro Files
- SimTraffic Reports
- Approved Development Traffic Information

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

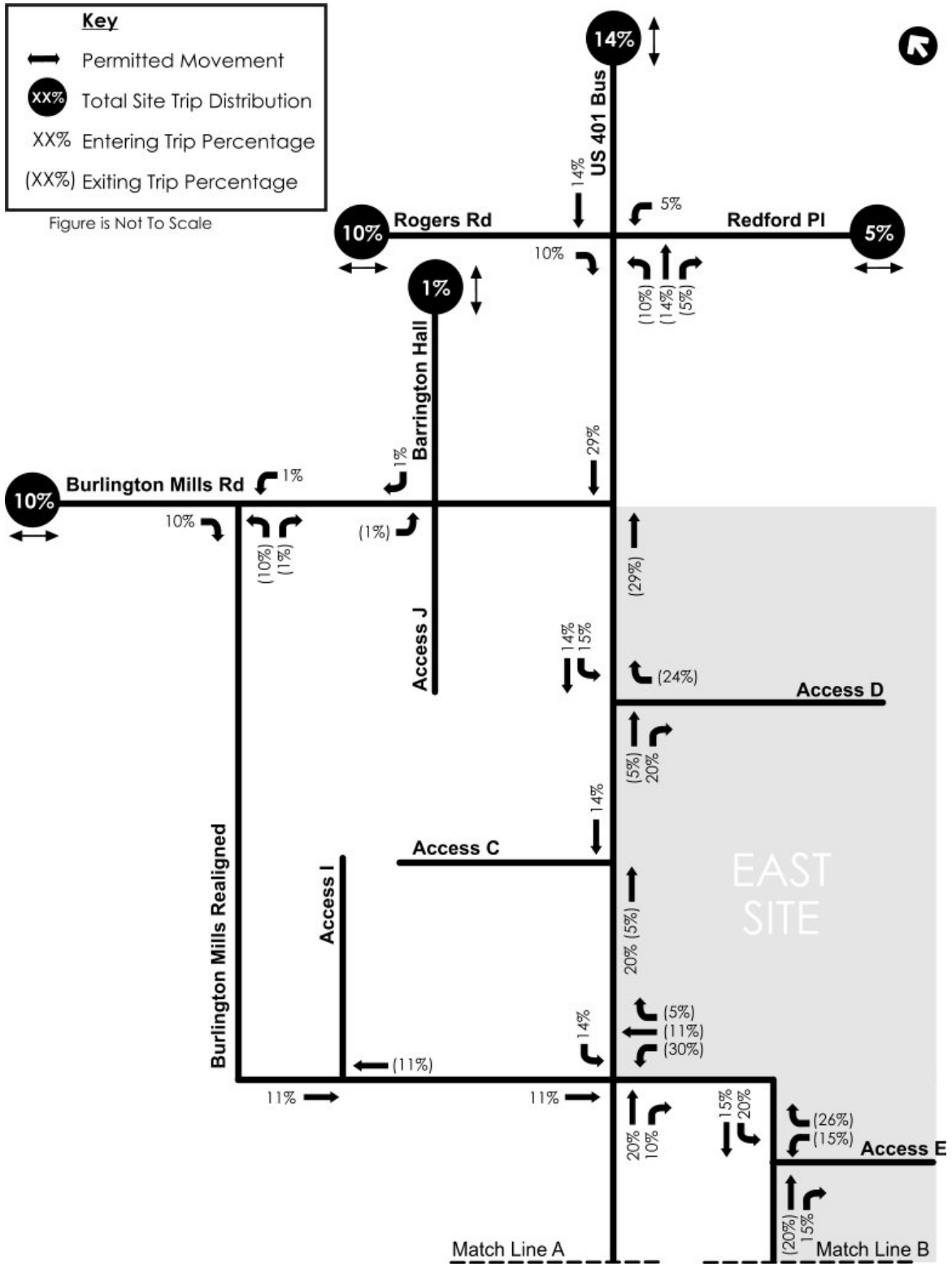
Figure 10: Approved Development Trips



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Figure 11: East Trip Distribution



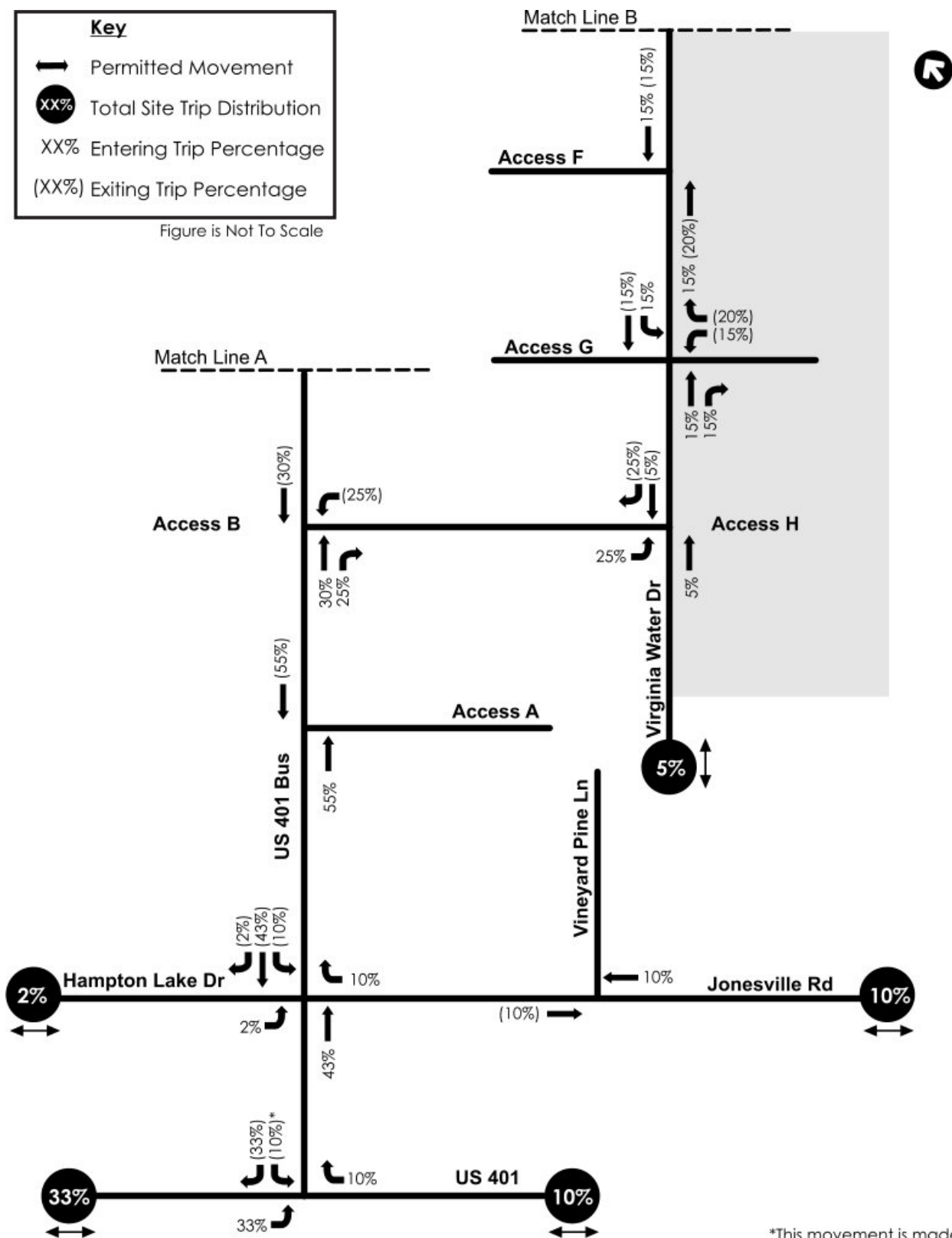
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

Key

- ↔ Permitted Movement
- XX% Total Site Trip Distribution
- XX% Entering Trip Percentage
- (XX%) Exiting Trip Percentage

Figure is Not To Scale

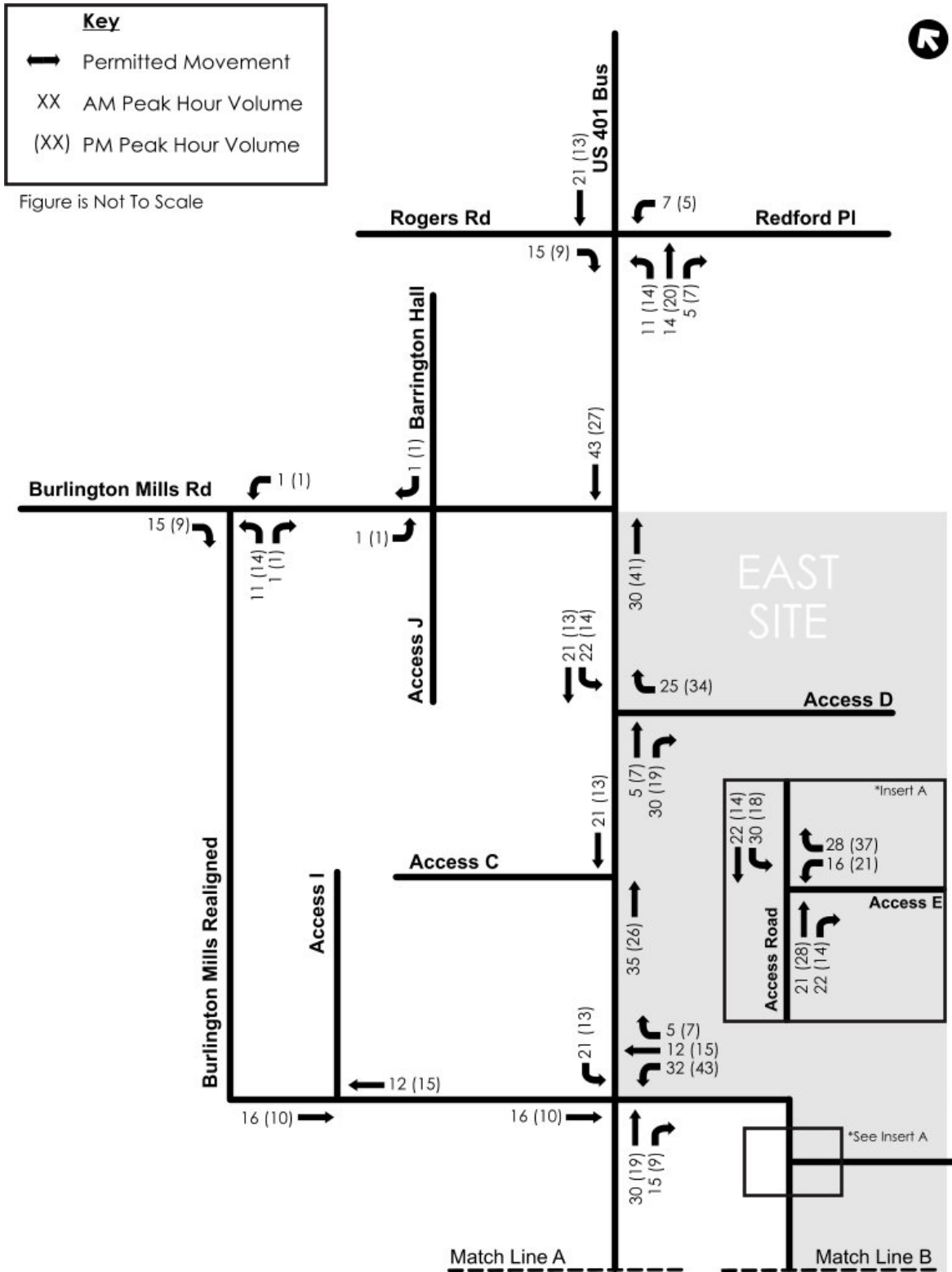


*This movement is made at the RCI U-turn bulb

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Figure 12: East Site Trip Assignment



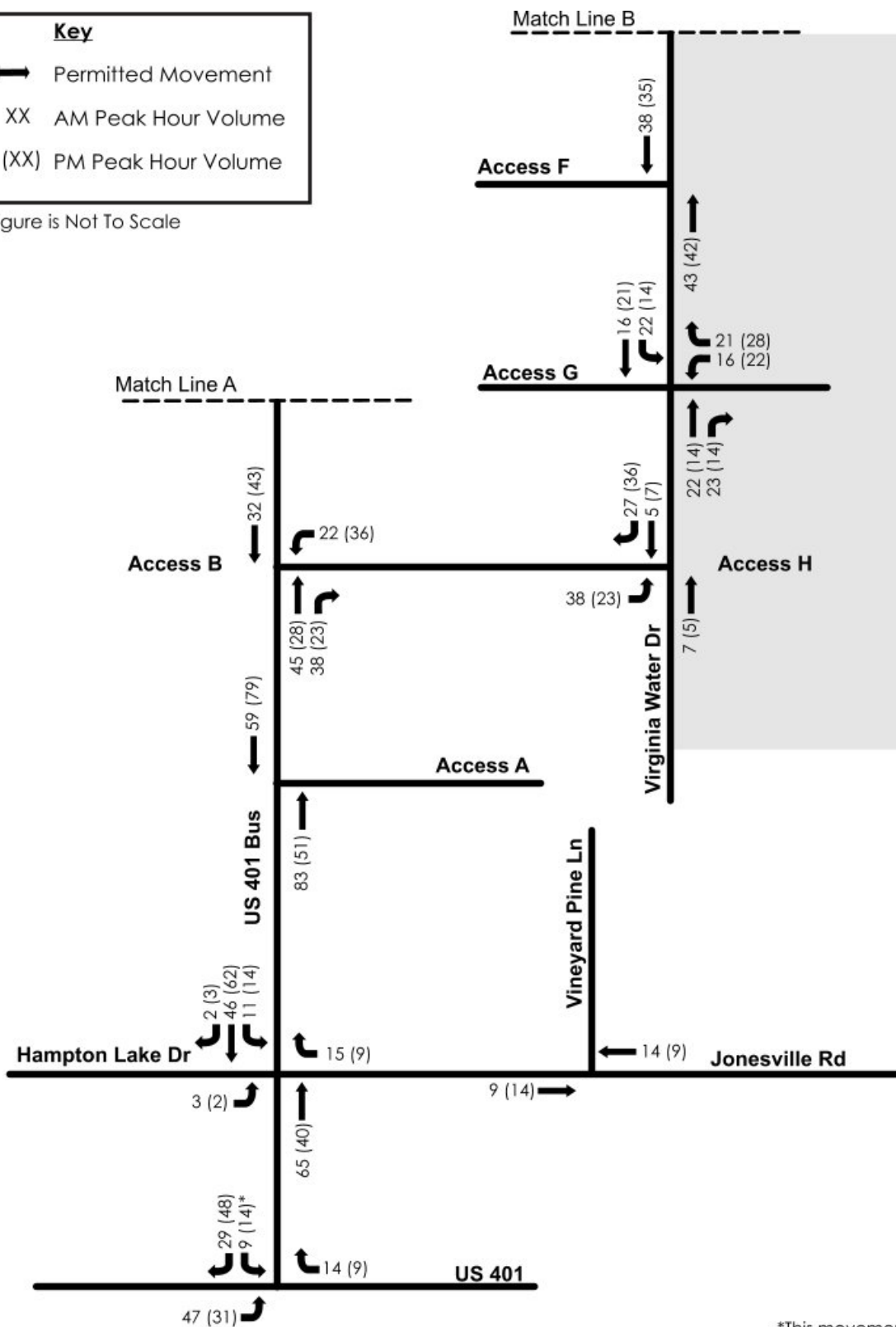
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

Key

- ➡ Permitted Movement
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

Figure is Not To Scale



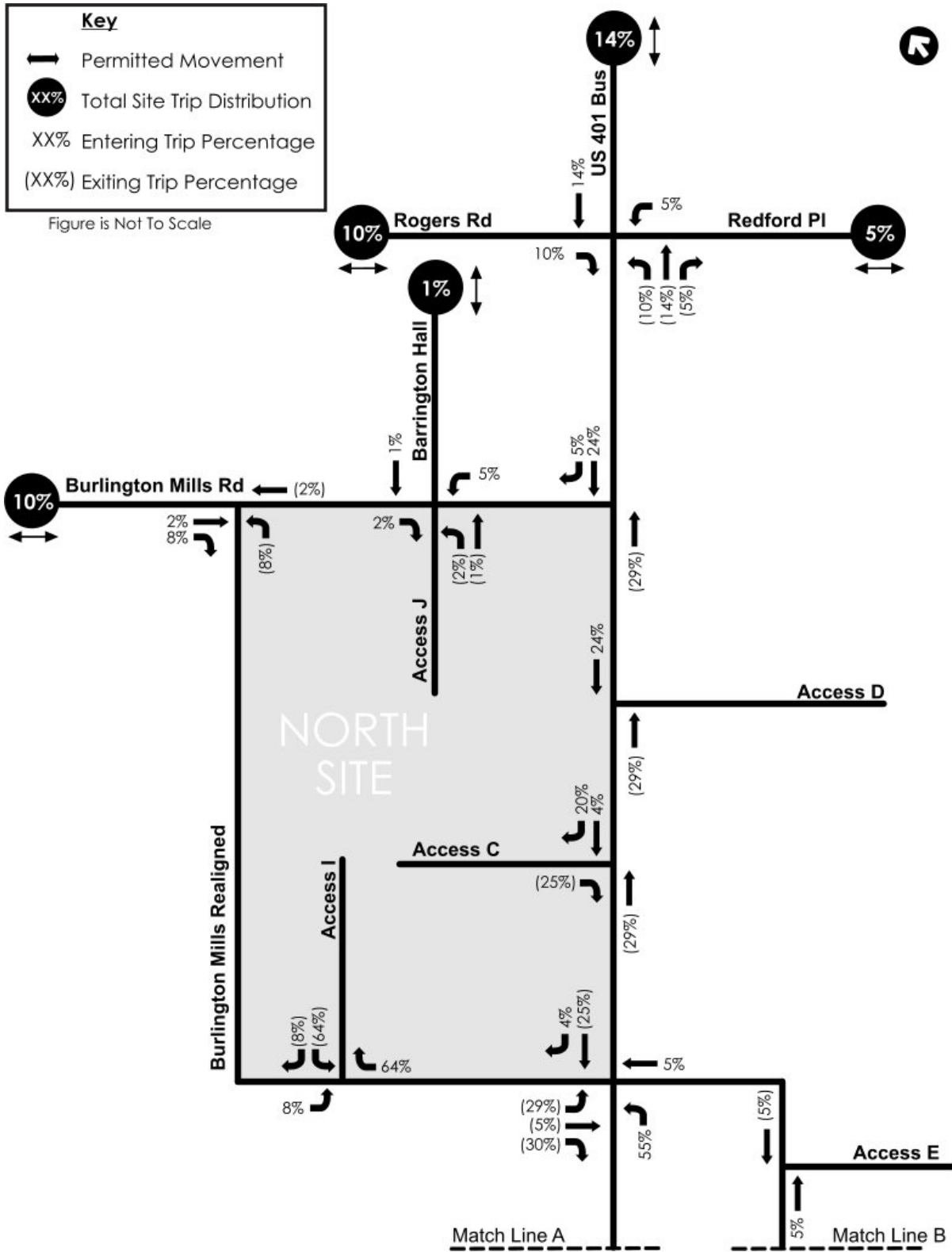
*This movement is made at the RCI U-turn bulb



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

Figure 13: North Site Trip Distribution



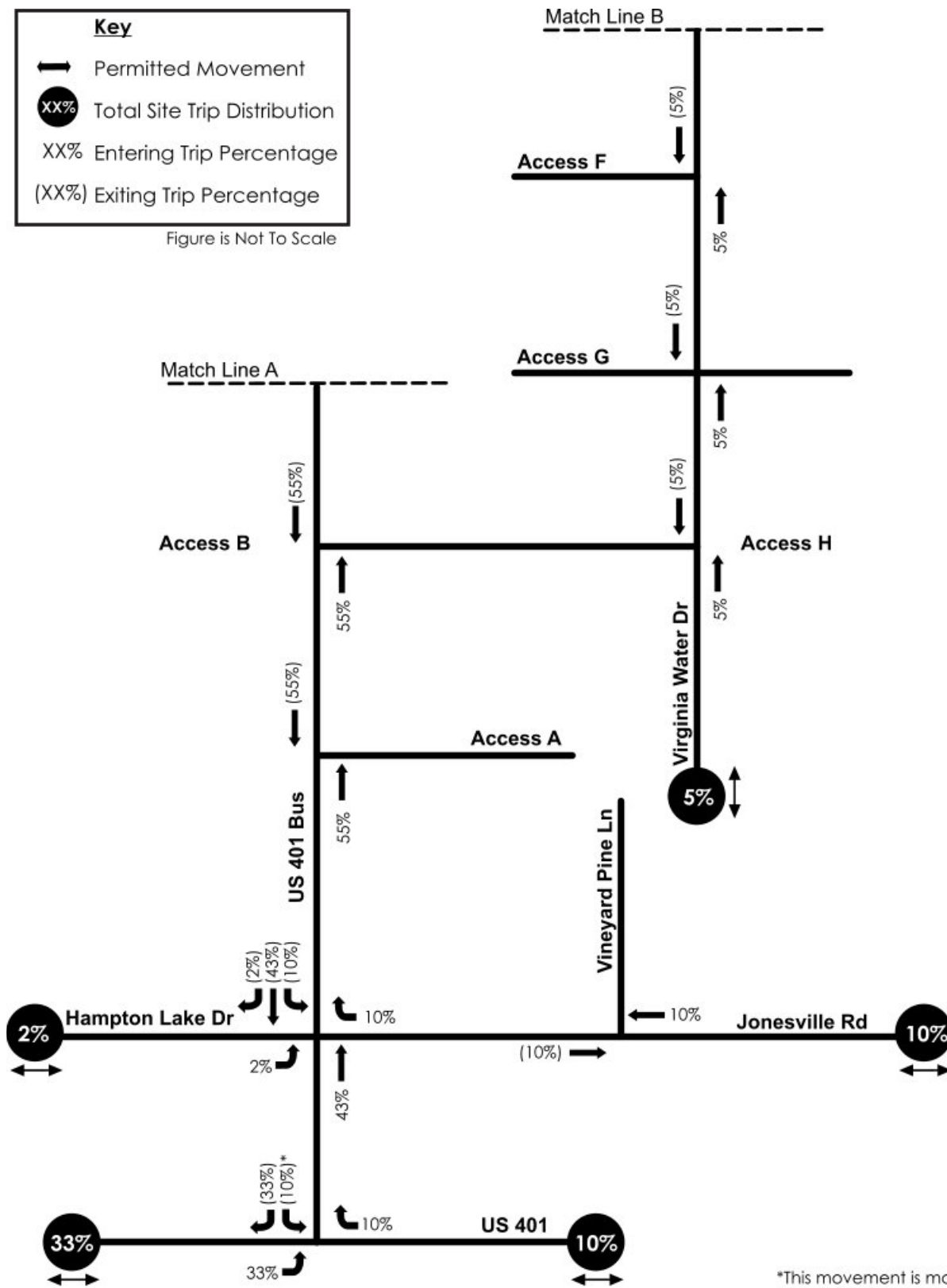
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

Key

- ↔ Permitted Movement
- XX% Total Site Trip Distribution
- XX% Entering Trip Percentage
- (XX%) Exiting Trip Percentage

Figure is Not To Scale

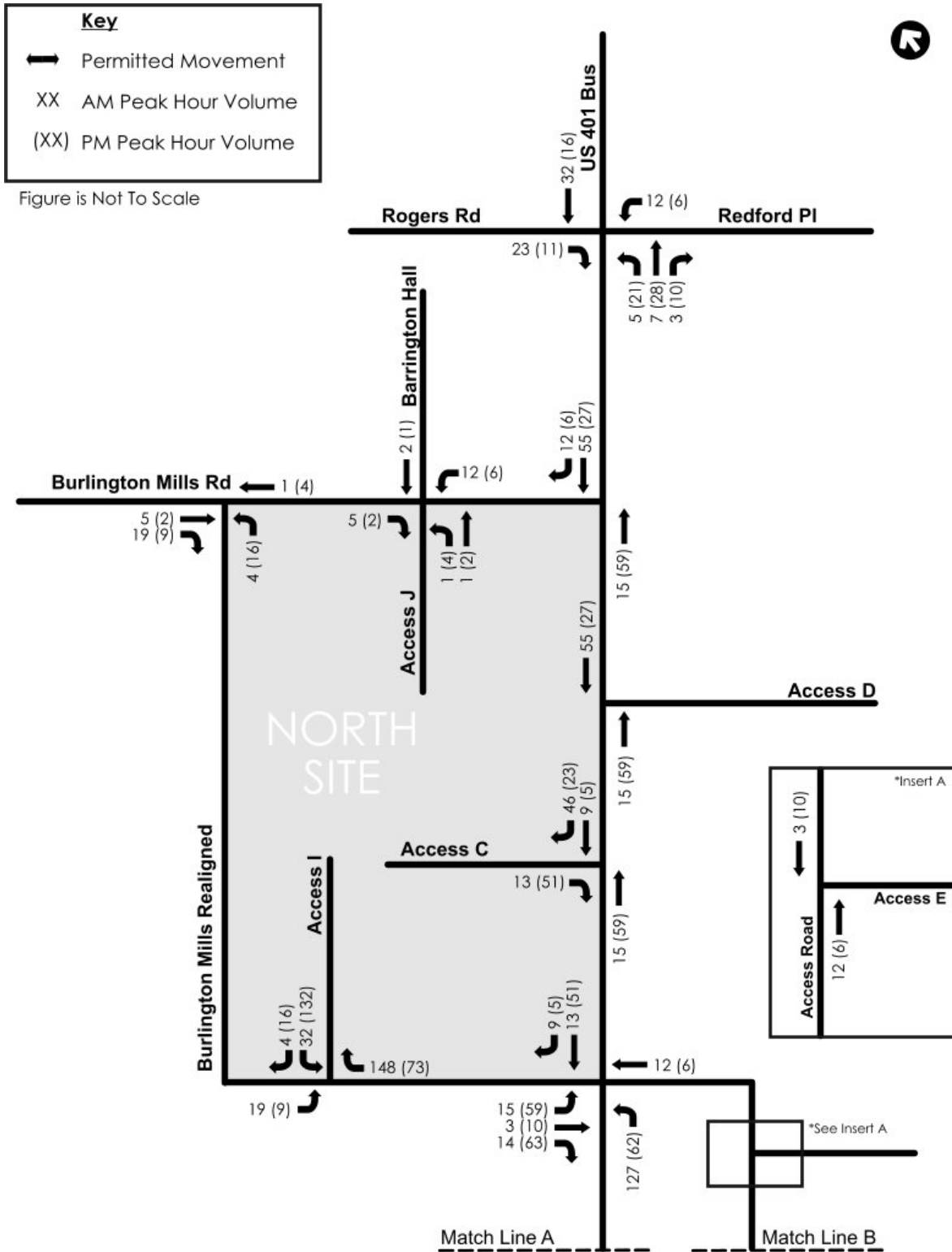


*This movement is made at the RCI U-turn bulb

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

Figure 14: North Site Trip Assignment



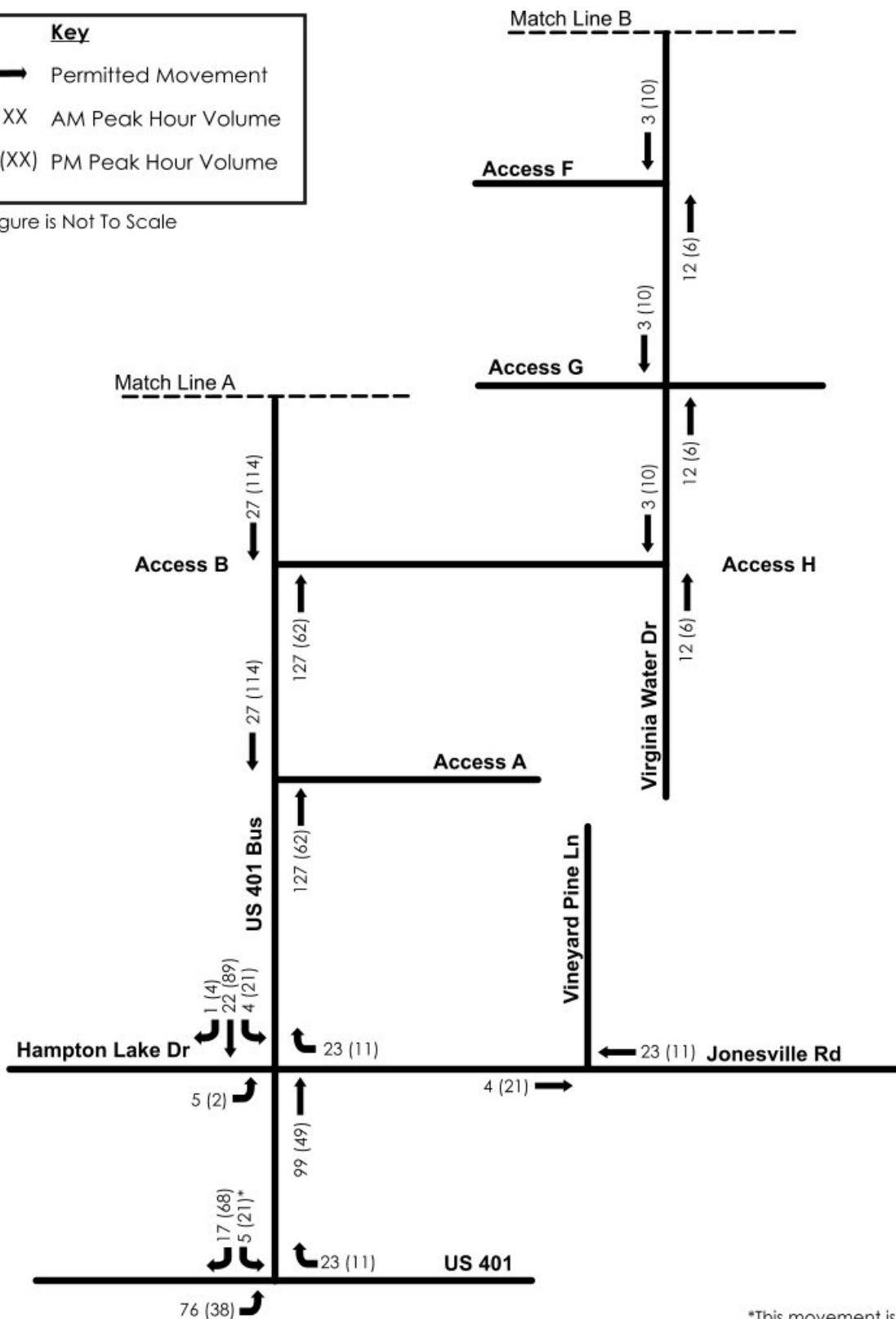
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Key

- ➔ Permitted Movement
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

Figure is Not To Scale



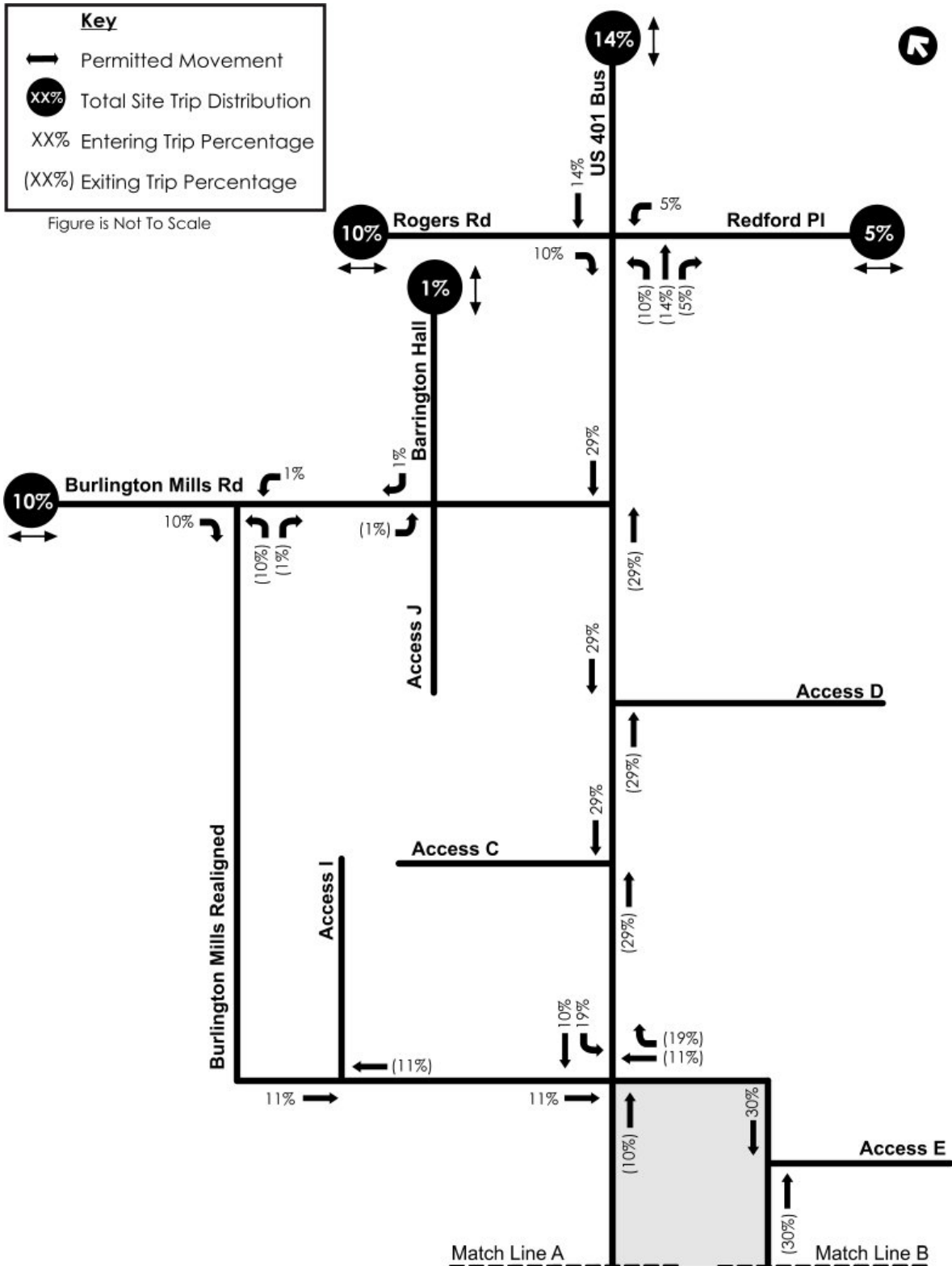
*This movement is made of the RCI U-turn bulb



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Figure 15: South Site Trip Distribution



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
February 13, 2020

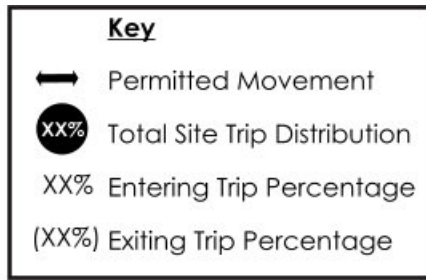
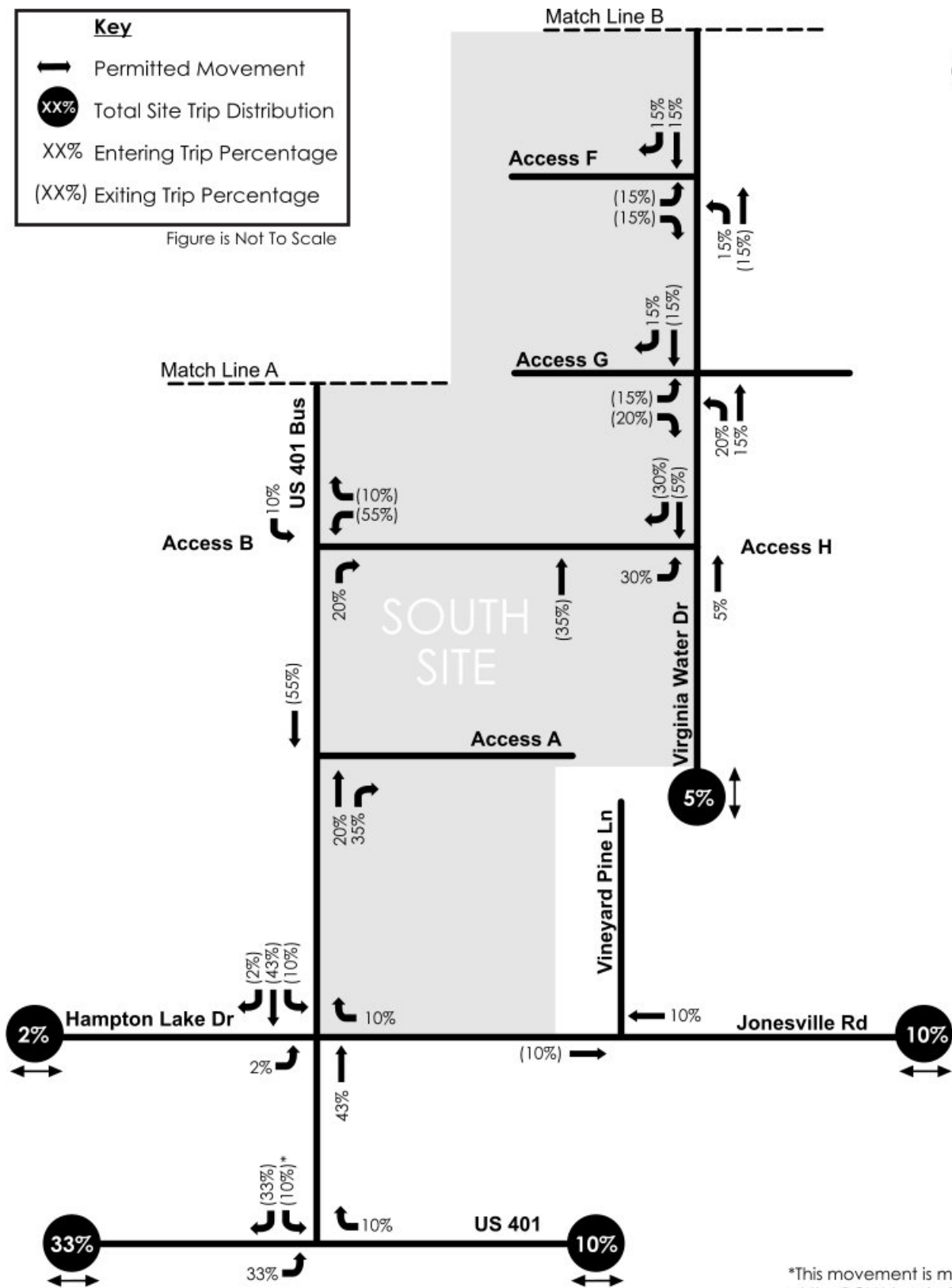


Figure is Not To Scale

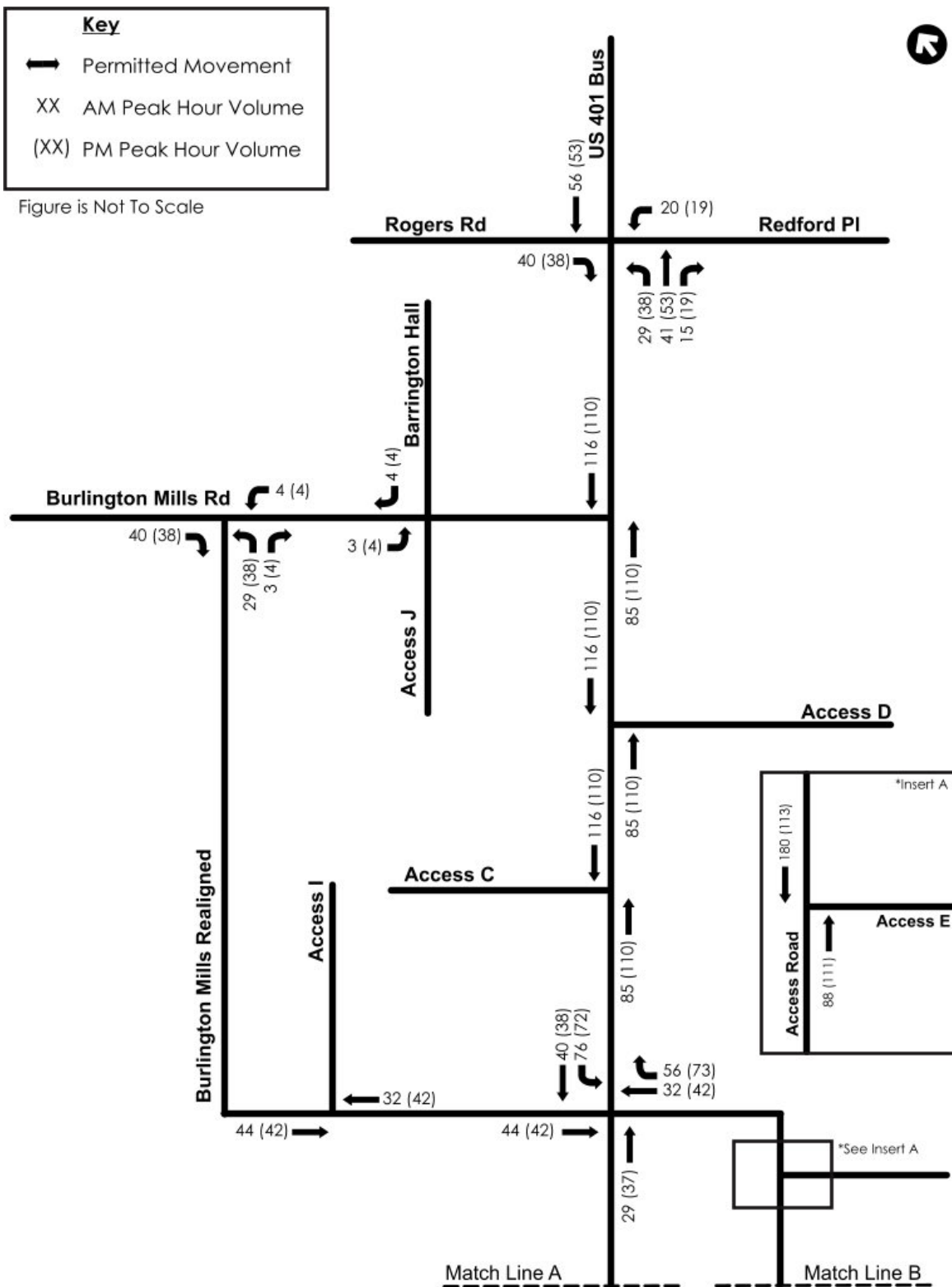


*This movement is made at the RCI U-turn bulb

WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Figure 16: South Site Trip Assignment



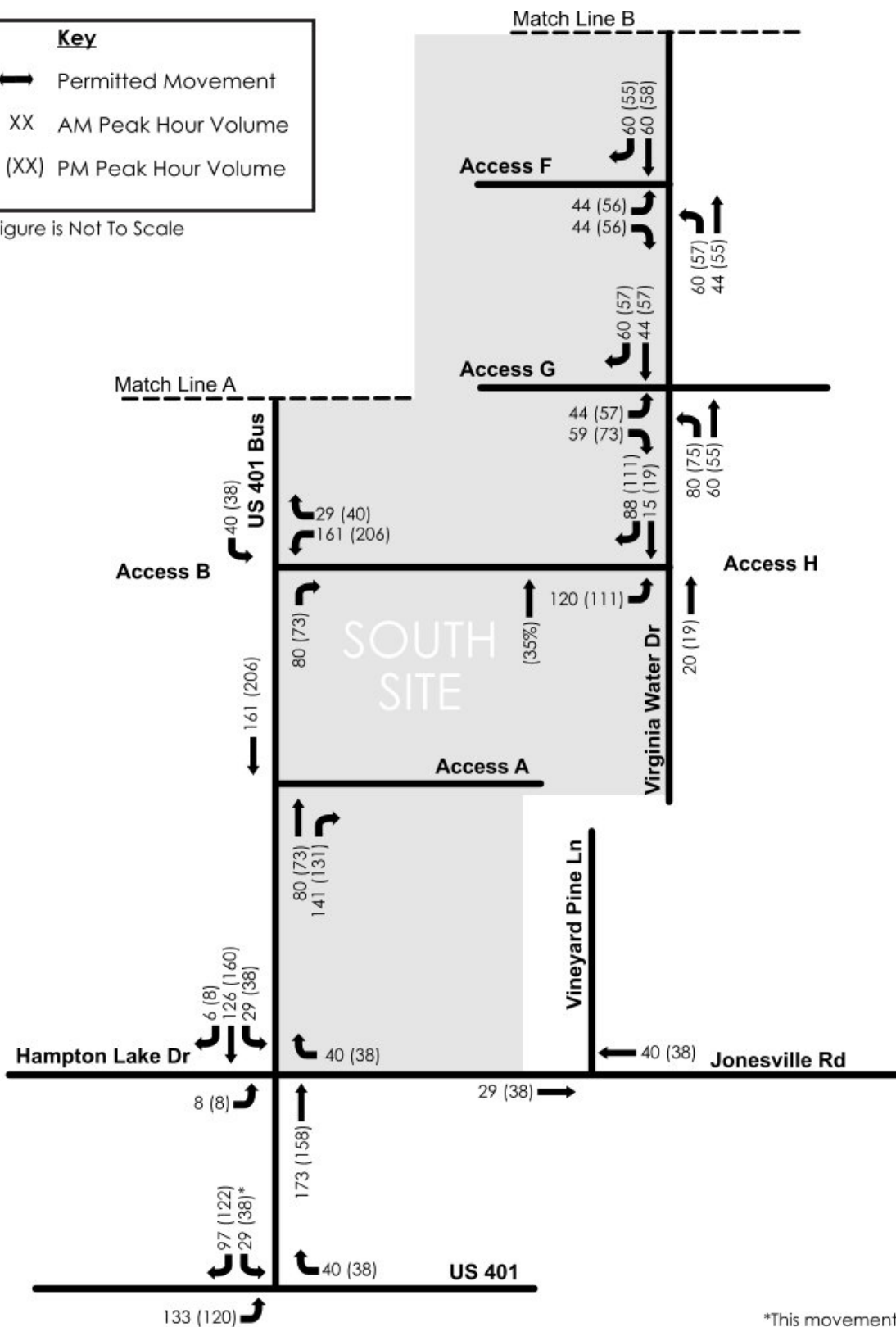
WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Key

- ➔ Permitted Movement
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

Figure is Not To Scale



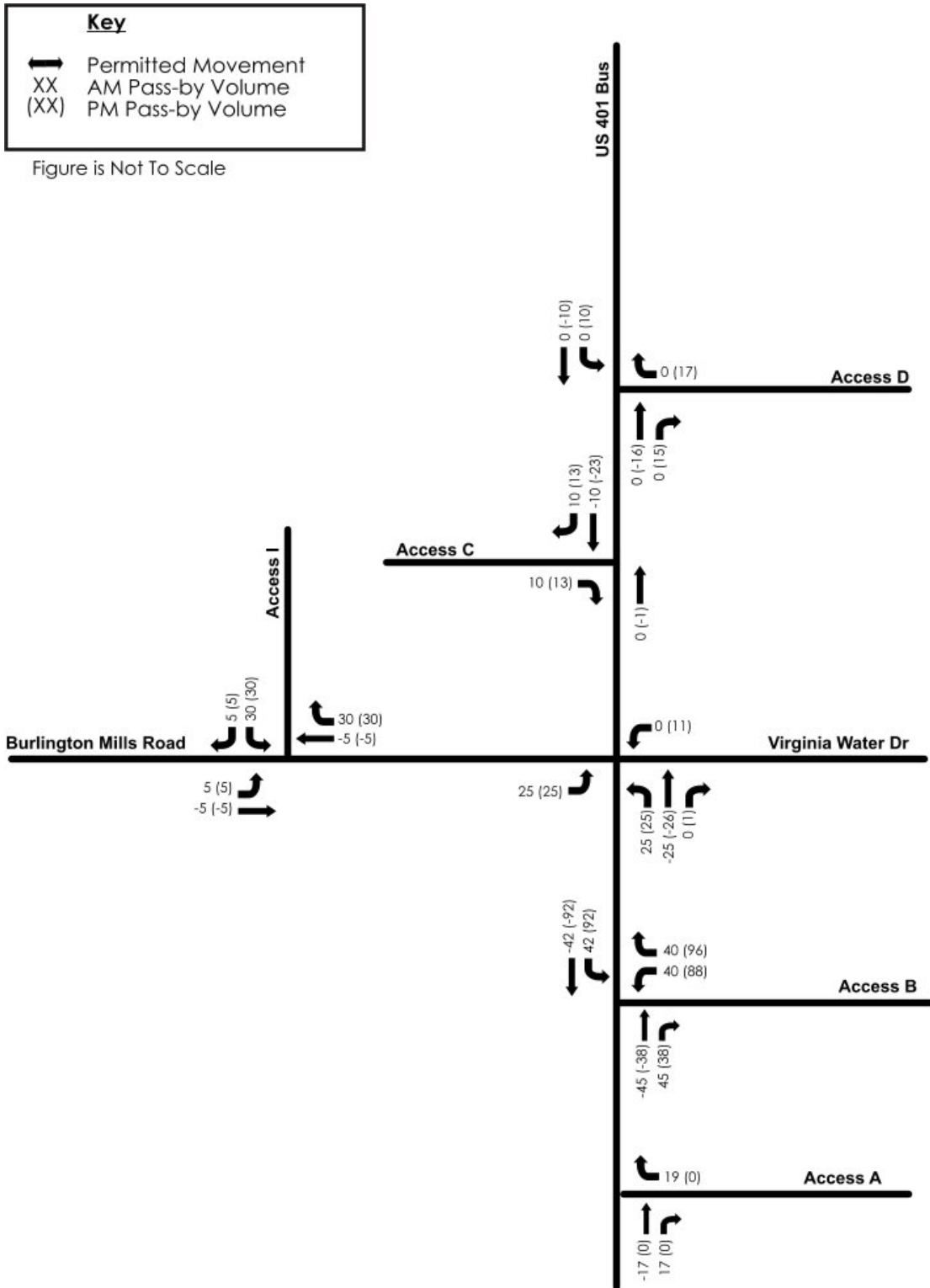
*This movement is made at the RCI U-turn bulb



WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 February 13, 2020

Figure 17: Pass-By Trips





**Revised Wallbrook
Development Traffic Impact
Analysis**

August 11, 2020

Prepared for:

Crosland Southeast
4700 Six Forks Rd #150
Raleigh, NC 27609

Prepared by:

Stantec Consulting Services Inc.
801 Jones Franklin Road, Suite 300
Raleigh, NC

File: 171002232

Sign-off Sheet

This document entitled Revised Wallbrook Development Traffic Impact Analysis was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Crosland Southeast (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule, and other limitations stated in the document and the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify the information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such a third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by Pierre Tong

(signature)

Pierre Tong, PE

Reviewed by Jeff A Weller

(signature)

Jeff A. Weller, PE

Approved by Matt Peach

(signature)

Matt Peach, PE, PTOE



8/11/2020

Table of Contents

EXECUTIVE SUMMARY	I
RECOMMENDATIONS.....	V
1.0 INTRODUCTION.....	1
2.0 INVENTORY OF TRAFFIC CONDITIONS	4
2.1 STUDY AREA	4
2.2 EXISTING ROADWAY CONDITIONS	4
2.3 FUTURE NO-BUILD ROADWAY CONDITIONS	5
3.0 TRIP GENERATION	8
3.1 NORTH SITE.....	9
3.2 SOUTH SITE.....	10
3.3 EAST SITE	11
3.4 WEST SITE.....	12
4.0 TRAFFIC DISTRIBUTION.....	13
4.1 SITE TRIP DISTRIBUTION	13
4.2 PASS-BY TRIPS	13
5.0 TRAFFIC VOLUMES	14
5.1 VOLUME BALANCING.....	14
5.2 FUTURE TRAFFIC GROWTH.....	14
5.3 APPROVED DEVELOPMENT TRAFFIC.....	14
5.4 NO-BUILD TRAFFIC VOLUMES.....	15
5.5 TOTAL BUILD TRAFFIC WITH PROPOSED DEVELOPMENT	15
6.0 TRAFFIC ANALYSIS	20
6.1 2019 EXISTING CAPACITY ANALYSIS.....	22
6.2 2025 NO-BUILD CAPACITY ANALYSIS	23
6.3 2025 BUILD CAPACITY ANALYSIS	24
6.4 2025 BUILD WITH IMPROVEMENTS CAPACITY ANALYSIS	26
8.0 RECOMMENDATIONS	31
9.0 CONCLUSIONS.....	35
10.0 REFERENCES.....	36
APPENDIX	36

LIST OF TABLES

Table ES-1: Level of Service & Delay Summary iv
Table 1: Existing Conditions..... 5
Table 2: North Site ITE Trip Generation 9
Table 3: South Site ITE Trip Generation.....10
Table 4: East Site ITE Trip Generation.....11
Table 5: West Site ITE Trip Generation.....12
Table 6: Level of Service Criteria20
Table 7: Level of Service and Delay for 2019 Existing Conditions22
Table 8: Level of Service and Delay for 2025 No-Build Conditions23
Table 9: Level of Service and Delay for 2025 Build Conditions25
Table 10: Level of Service and Delay for 2025 Build with Improvements Conditions27
Table 11: Maximum Queue Length Summary for Unsignalized29
Table 12: Maximum Queue Length Summary for Signalized30

LIST OF FIGURES

Figure ES-1: Site Plan..... iii
Figure ES-2: Recommended Improvements vii
Figure 1: Site Location and Study Area Map 2
Figure 2: Proposed Site Plan 3
Figure 3: 2019 Existing Lane Configurations and Traffic Control 6
Figure 4: 2025 No-Build Lane Configurations and Traffic Control 7
Figure 5: Existing (2019) Traffic Volumes.....16
Figure 6: 2025 No-Build Traffic Volumes.....17
Figure 7: 2025 Build Traffic Volumes18
Figure 8: Build Recommended Lane Configurations33
Figure 9: Approved Development Trips37
Figure 10: East Trip Distribution38
Figure 11: East Site Trip Assignment40
Figure 12: North Site Trip Distribution42
Figure 13: North Site Trip Assignment44
Figure 14: South Site Trip Distribution.....46
Figure 15: South Site Trip Assignment.....48
Figure 16: West Site Trip Distribution.....49
Figure 17: West Site Trip Assignment52
Figure 18: Pass-By Trips.....54

Executive Summary

Wallbrook is a proposed mixed-use development project located along US 401 Business (S. Main Street) in Rolesville, NC. In general, the site encompasses areas along both sides of US 401 Business, between Burlington Mills Road and Hampton Lake Drive/Jonesville Road. This report is a revision of the previous *Wallbrook Development Traffic Impact Analysis* report submitted in February 2020. Some of the land uses and densities from the previous study have been moved onto a new parcel known in this report as the West Site.

It is anticipated that the residential homes to the east of US 401 Business will be the first to develop. The remainder of the site, expected to be completed in 2025, consists of the North Site (West of US 401 Business), the East Site (east of US 401 Business across from Burlington Mills Road), the South Site (east of 401 Business and north of Jonesville Road), and the West Site (west of US 401 Business north of Hampton Lake Dr / Jonesville Rd). The residential parcel of the East Site is anticipated to be completed in 2021. The sites will provide a mix of uses as follows:

North Site

- Medical-Dental Office Building – 60,000 square feet
- Fast-Food Restaurant – 4,500 square feet

South Site

- Shopping Center – 71,400 square feet
- Supermarket – 50,000 square feet
- High-Turnover, Sit-Down Restaurant – 7,500 square feet
- Bank – 4,000 square feet

East Site

- Townhomes – 170 units
- Office Building – 20,000 square feet
- Retail – 18,000 square feet

West Site

- Office Building – 27,000 square feet
- Fast-Food Restaurant – 5,000 square feet
- Gas Station – 16 fuel positions

At full build-out, the development project is anticipated to generate 23,434 new trips per average weekday. In the AM and PM peak hours, the combined redevelopment will generate approximately 885 AM peak hour trips (566 entering and 319 exiting) and 1,161 PM peak hour trips (501 entering and 660 exiting).

Thirteen (13) access points are proposed for the development. Access points A, B, C, D, K, L, and M will connect to US 401 Business, access points E, F, G, H, and I will be connected to realigned Burlington Mills Road, and access point J will be connected Old Burlington Mills Rd. These access points are shown on the site plan in Figure ES-1.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

As previously mentioned, this study investigates and evaluates the revised build and build with improvements in terms of projected vehicular traffic conditions, evaluate the ability of the adjacent roadways and multimodal facilities to accommodate the additional traffic, and to recommend transportation improvements needed to mitigate congestion that may result from additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for improvements needed to meet anticipated traffic demands. This report examines the following scenarios for the AM and PM peak hours:

- Existing (2019)
- Future Year (2025) No-Build
- Future Year (2025) Build
- Future Year (2025) Build with Improvements

Capacity analyses for the AM and PM peak hours in each scenario were performed for the following intersections:

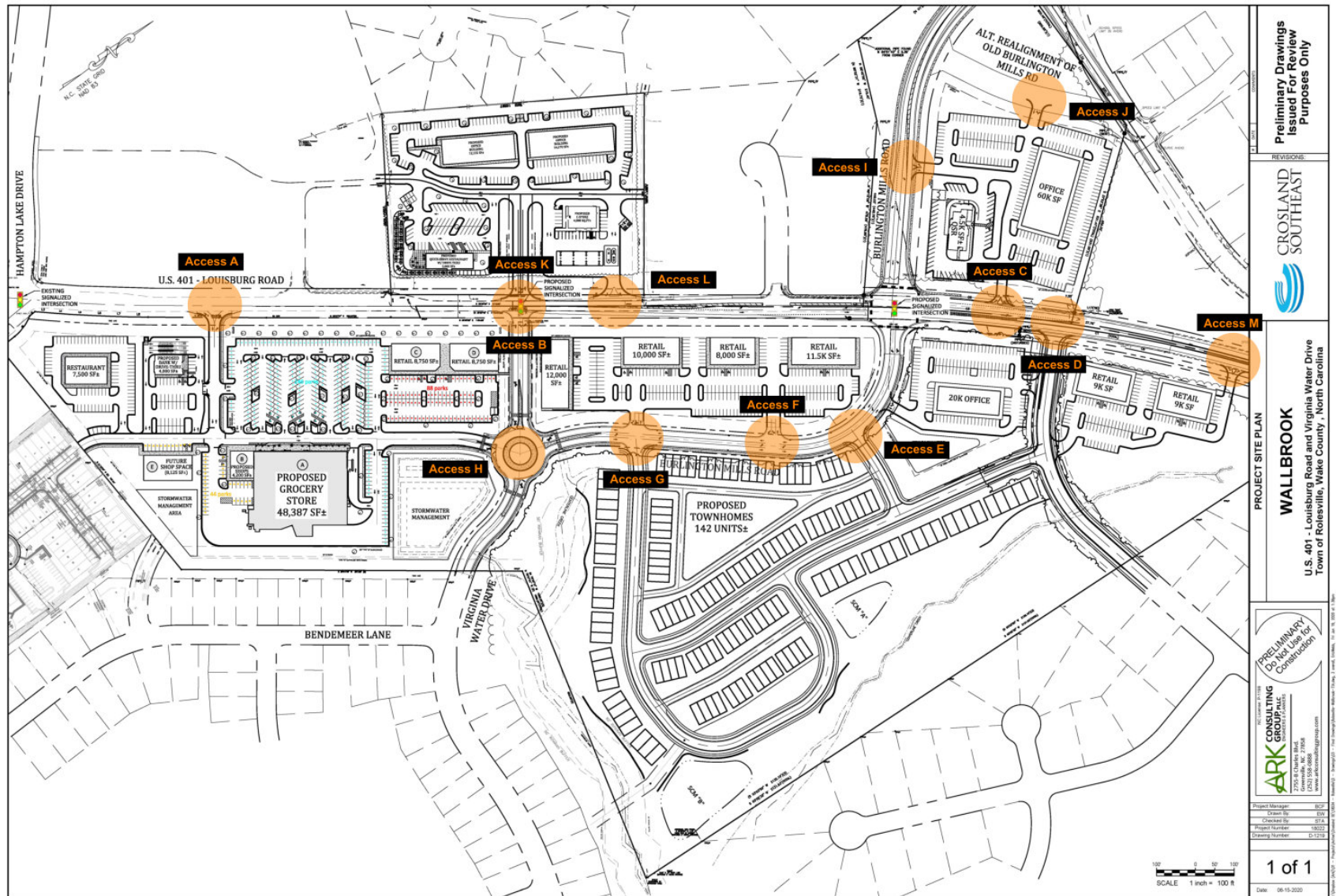
- US 401 Business at US 401
- US 401 Business at Hampton Lake Drive / Jonesville Road
- US 401 Business at Burlington Mills Road Realigned
- US 401 Business at Burlington Mills Road
- US 401 Business at Rogers Road / Redford Place
- Jonesville Road at Vineyard Pine Lane
- Burlington Mills Road at Old Burlington Mills Road
- US 401 Business at Access A
- US 401 Business at Access B / Access K
- US 401 Business at Access L
- US 401 Business at Access C
- US 401 Business at Access D
- US 401 Business at Access M
- Burlington Mills Road at Access E
- Burlington Mills Road at Access F
- Burlington Mills Road at Access G
- Burlington Mills Road / Virginia Water Drive at Access H
- Burlington Mills Road Realigned at Access I
- Old Burlington Mills Road at Barrington Hall
- Old Burlington Mills Road at Access J

Table ES-1 shows a summary of the delays and levels of service for the study area intersections.

The study shows that the traffic generated by the proposed Wallbrook Development will have a minimal impact on surrounding roadways and intersections with the recommended improvements included to mitigate the site traffic. The signalized intersections operate at an overall LOS of D or better during both peak hours. Approaches for the unsignalized intersections operate at LOS D or better except for the eastbound approach at US 401 Business and Old Burlington Mills Road which operates at LOS E in the AM peak hour.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Figure ES-1: Site Plan



Preliminary Drawings Issued For Review Purposes Only
 REVISIONS:
 CROSLAND SOUTHEAST
 PROJECT SITE PLAN
WALLBROOK
 U.S. 401 - Louisburg Road and Virginia Water Drive
 Town of Louisville, Wake County, North Carolina
 PRELIMINARY Do Not Use for Construction
 ARK CONSULTING GROUP, INC.
 2705 H. Thomas Blvd., Suite 100
 Cary, NC 27513
 (919) 236-8888
 www.arkconsulting.com
 Project Manager: GCP
 Drawn By: JSA
 Checked By: JSA
 Project Number: 18022
 Drawing Number: 01-012A
 SCALE 1 inch = 100 ft
 Date: 06-15-2020
 1 of 1

Table ES-1: Level of Service & Delay Summary

Intersection	Intersection Control	Peak Hour	2019 Existing	2025 No-Build	2025 Build	2025 Build Improved
US 401 Business at US 401	Signalized	AM	B (12.7)	C (24.6)	D (37.2)	D (37.2)
		PM	B (12.7)	B (14.3)	B (16.3)	B (16.0)
US 401 Business at Hampton Lake Dr / Jonesville Rd	Signalized	AM	C (25.7)	C (20.5)	C (34.3)	C (34.2)
		PM	C (21.6)	C (25.7)	C (32.3)	C (33.0)
Jonesville Rd at Vineyard Pine Ln	Unsignalized	AM	B (10.2)	B (11.0)	B (11.5)	B (11.5)
		PM	A (9.6)	B (10.2)	B (10.8)	B (10.8)
US 401 Business at Access A	Unsignalized	AM	-	-	D (27.3)	D (27.0)
		PM	-	-	E (45.7)	D (28.0)
US 401 Business at Access B / Access K	Signalized	AM	-	-	C (21.2)	B (20.0)
		PM	-	-	D (53.7)	D (47.1)
Virginia Water Dr at Access H	Unsignalized	AM	-	-	A (8.2)	A (4.0)
		PM	-	-	B (10.2)	A (5.1)
US 401 Business at Access L	Unsignalized	AM	-	-	B (10.2)	B (10.2)
		PM	-	-	B (10.0)	B (10.0)
Burlington Mills Rd at Access G	Unsignalized	AM	-	-	B (10.2)	B (10.2)
		PM	-	-	B (10.6)	B (10.6)
Burlington Mills Rd at Access F	Unsignalized	AM	-	-	A (9.5)	A (9.5)
		PM	-	-	A (9.9)	A (9.9)
Burlington Mills Rd at Access E	Unsignalized	AM	-	-	A (9.5)	A (9.5)
		PM	-	-	A (9.9)	A (9.9)
US 401 Business at Burlington Mills Rd Realigned	Signalized	AM	-	D (38.0)	E (65.4)	D (47.8)
		PM	-	B (18.5)	C (30.9)	C (27.9)
Burlington Mills Rd Realigned at Access I	Unsignalized	AM	-	-	B (10.3)	A (9.1)
		PM	-	-	A (9.3)	A (8.7)
US 401 Business at Access C	Unsignalized	AM	-	-	C (20.1)	B (13.0)
		PM	-	-	C (18.5)	B (12.5)
US 401 Business at Access D	Unsignalized	AM	-	-	C (15.0)	C (15.0)
		PM	-	-	D (27.6)	D (27.6)
US 401 Business at Access M	Unsignalized	AM	-	-	C (15.5)	C (15.5)
		PM	-	-	D (27.4)	D (27.4)
US 401 Business at Burlington Mills Rd (Existing) / Old Burlington Mills Rd (No-Build / Build)	Signalized (Existing), TWSC (No-Build/Build)	AM	B (13.7)	C (20.6)	E (40.4)	E (40.4)
		PM	B (10.5)	B (13.6)	C (20.1)	C (20.1)
Burlington Mills Rd at Barrington Hall Dr	Unsignalized	AM	C (15.2)	B (12.1)	B (12.0)	B (12.0)
		PM	B (10.3)	A (9.7)	A (9.8)	A (9.8)
Old Burlington Mills Rd at Access J	Unsignalized	AM	-	-	C (20.1)	B (13.5)
		PM	-	-	C (18.5)	B (11.4)
Burlington Mills Rd at Old Burlington Mills Rd	Unsignalized	AM	-	B (14.0)	D (32.8)	C (15.7)
		PM	-	A (9.6)	C (15.8)	B (12.3)
US 401 Business at Rogers Rd / Redford Pl	Signalized	AM	C (25.1)	C (30.1)	C (34.6)	C (34.8)
		PM	C (23.4)	C (26.0)	C (32.8)	C (32.4)

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Based on the findings of this study, specific improvements have been identified and are recommended to be completed as part of the proposed development. These improvements are listed below.

RECOMMENDATIONS

Except where noted, all intersections are recommended to operate under two-way stop control (TWSC), with the site accesses serving as the minor movement(s).

US 401 Business at Access A

Construct Access A as a limited-movement intersection onto US 401 Business restricting southbound and westbound lefts. Construct a northbound right-turn lane with 100 feet of full-width storage.

US 401 Business at Access B/Access K

Construct Access B and Access K as a full-movement signalized intersection onto US 401 Business with an exclusive northbound left-turn lane with 175 feet of storage and appropriate taper, and a northbound right-turn lane with 125 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 350 feet of full-width storage and appropriate taper on US 401 Business. Construct eastbound egress with an exclusive left-turn lane with 225 feet of storage and appropriate taper. Construct westbound egress with an exclusive left-turn lane with full storage and an exclusive shared through & right-turn lane with 100 feet of full-width storage.

US 401 Business at Access L

Construct Access L as a limited-movement intersection onto US 401 Business restricting northbound and eastbound lefts.

US 401 Business at Access C

Construct Access C as a limited-movement intersection on to US 401 Business restricting northbound and eastbound left-turns.

US 401 Business at Access D

Construct Access D as a limited-movement intersection on to US 401 Business allowing all movements but a westbound left. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

US 401 Business at Access M

Construct Access M as a limited-movement intersection on to US 401 Business restricting southbound and westbound left-turns.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Burlington Mills Road at Access E

Construct Access E as a full-movement intersection on Burlington Mills Road.

Burlington Mills Road at Access F

Construct Access F as a full-movement intersection on Burlington Mills Road.

Burlington Mills Road at Access G

Construct Access G as a full-movement intersection on Burlington Mills Road.

Burlington Mills Road / Virginia Water Drive at Access H

Construct Access H as single-lane roundabout on Virginia Water Drive.

Burlington Mills Road at Access I

Construct Access I as a limited-movement intersection on to Burlington Mills Road restricting eastbound and southbound left-turns. Construct a westbound exclusive right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.

Old Burlington Mills Road at Access J

Construct Access J as a full-movement intersection on Old Burlington Mills Road.

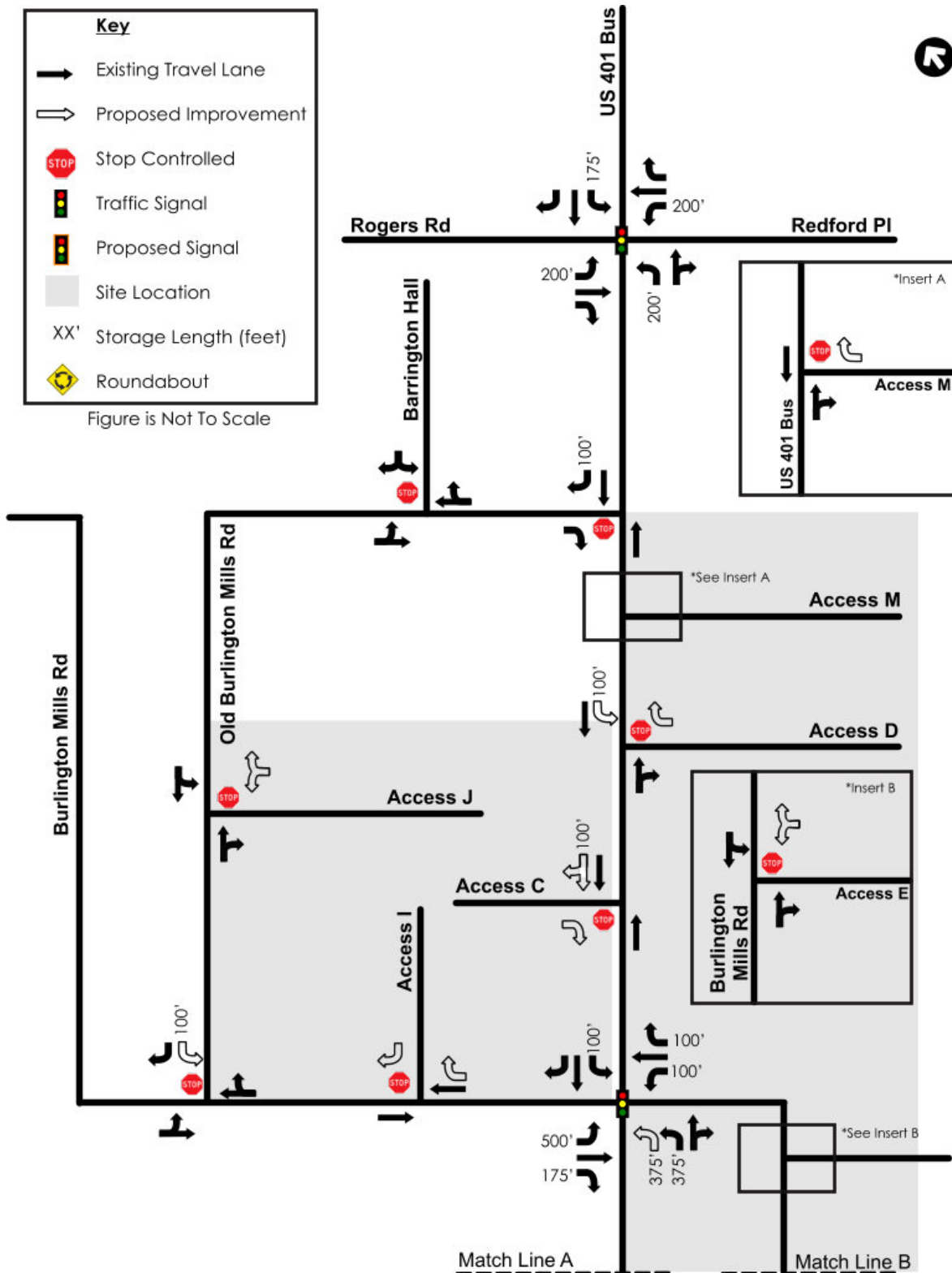
Burlington Mills Road at Old Burlington Mills Road

Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

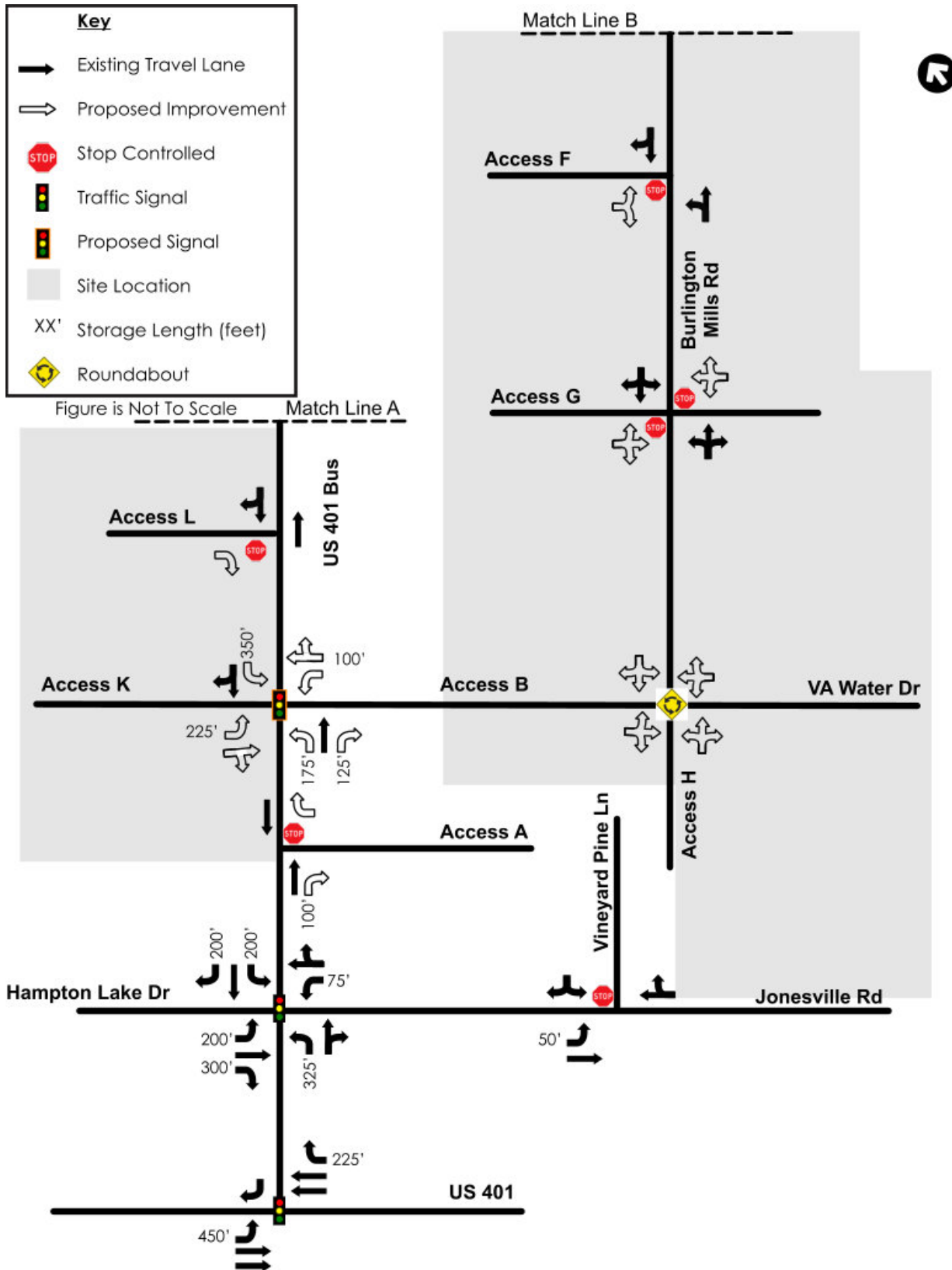
US 401 Business at Burlington Mills Road Realigned

Construct dual northbound exclusive left-turn lanes with 375 feet of full-width storage and appropriate taper. Construct an exclusive westbound left-turn lane and an exclusive westbound right-turn lane, both with 100 feet of full-width storage and appropriate taper. Construct an exclusive eastbound left-turn lane with 500 feet of full-width storage and appropriate taper and an exclusive eastbound right-turn lane with 175 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper and an exclusive southbound right-turn lane with at least 250 feet of full-width storage and appropriate taper. The southbound right-turn lane should start at least 100 feet prior to the US 401 Business at Access C intersection.

Figure ES-2: Recommended Improvements



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
August 11, 2020

1.0 INTRODUCTION

The purpose of this report is to evaluate the traffic impacts of the proposed Wallbrook Development located in Rolesville, NC. This development is located along US 401 Business between Burlington Mills Road and Hampton Lake Drive / Jonesville Road. The development's location is shown in Figure 1. This report is a revision of the previous *Wallbrook Development Traffic Impact Analysis* report submitted in February 2020. Some of the land uses and densities from the previous study have been moved onto a new parcel known in this report as the West Site.

This site is bounded by Burlington Mills Road and Hampton Lake Drive / Jonesville Road. Currently, the 68.54-acre site consists of undeveloped forested land. Construction of the site is anticipated to be completed in 2025; therefore, the analysis year will be 2025. At full build-out the site is envisioned to provide the following land uses and densities:

- 170 townhomes.
- 60,000 square feet of medical-dental offices.
- 50,000 square feet of grocery store.
- 17,000 square feet of restaurants.
- 4,000 square feet of a bank.
- 16 fuel position gas station.
- 89,400 square feet of retail.
- 47,000 square feet of office.

The proposed development is to be bisected by public roadways (US 401 Business, Burlington Mills Road) resulting in North, South, East, and West sites comprising the full site.

The North site consists of 60,000 square feet of medical-dental office, and a 4,500 square foot restaurant located west of US 401 Business between Old Burlington Mills Road and Realigned Burlington Mills Road. The South site consists of 71,400 square feet of retail space, a 50,000 square foot grocery store, a 4,000 square foot bank, and a 7,500-foot restaurant, bordered by US 401 Business to the west and Burlington Mills Road to the north and east. The East site consists of 170 townhomes, 20,000 square feet of office space, and 18,000 square feet of retail space in the area bounded by US 401 Business and Burlington Mills Road. The West site consists of 27,000 square feet of office space, a 5,000 square foot fast food restaurant, and a 16-fuel position gas station.

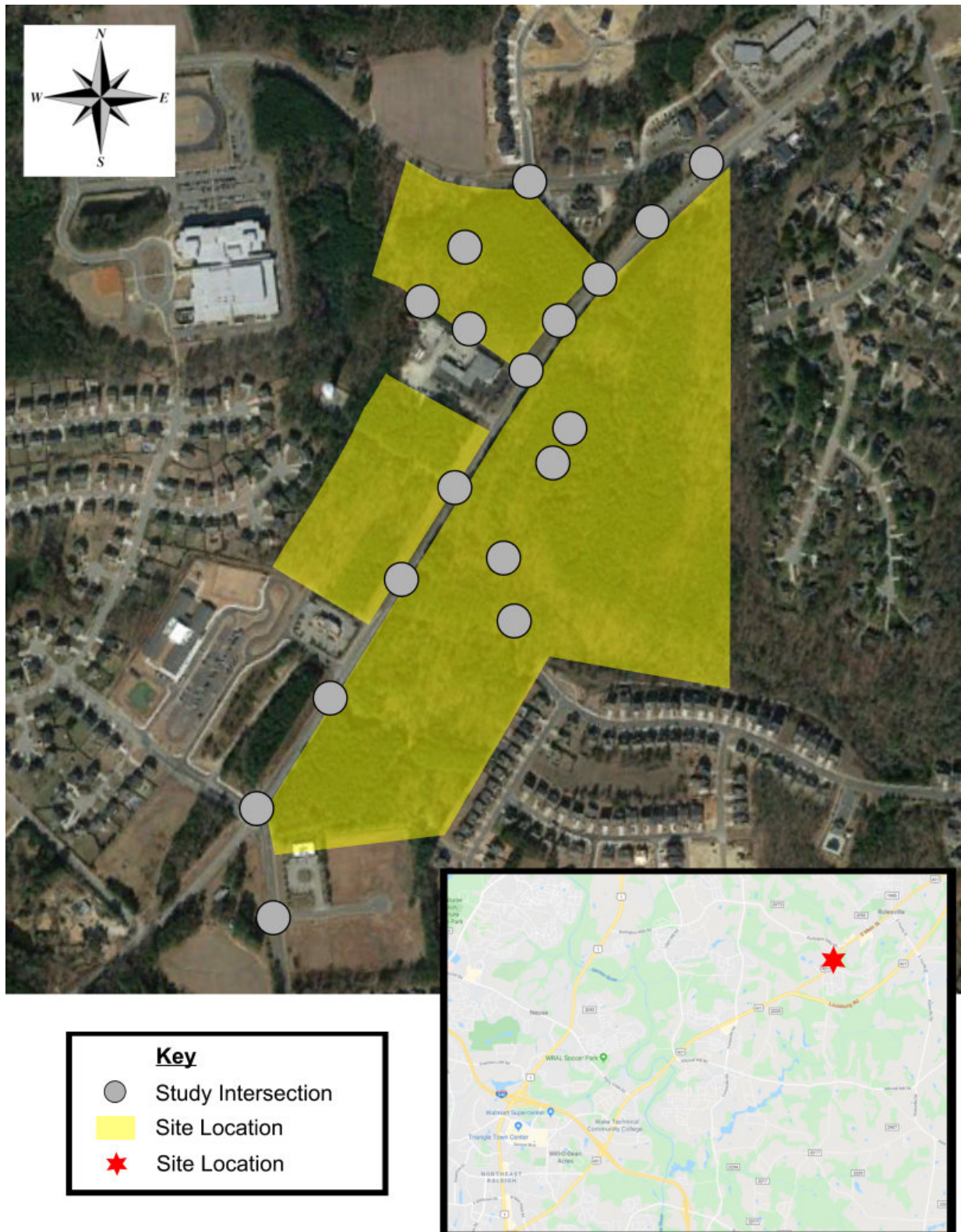
Figure 2 shows the conceptual site plan prepared by ARK Consulting, with 13 access points shown.

The purpose of this report is to evaluate the development in terms of projected vehicular traffic conditions, evaluate the ability of the adjacent roadways to accommodate the additional traffic, and to recommend transportation improvements needed to mitigate congestion that may result from additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for improvements needed to meet anticipated traffic demands. The analysis examines the AM and PM peak hours for the 2019 Existing, 2025 No-Build, 2025 Build, and 2025 Build with Improvements.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
August 11, 2020

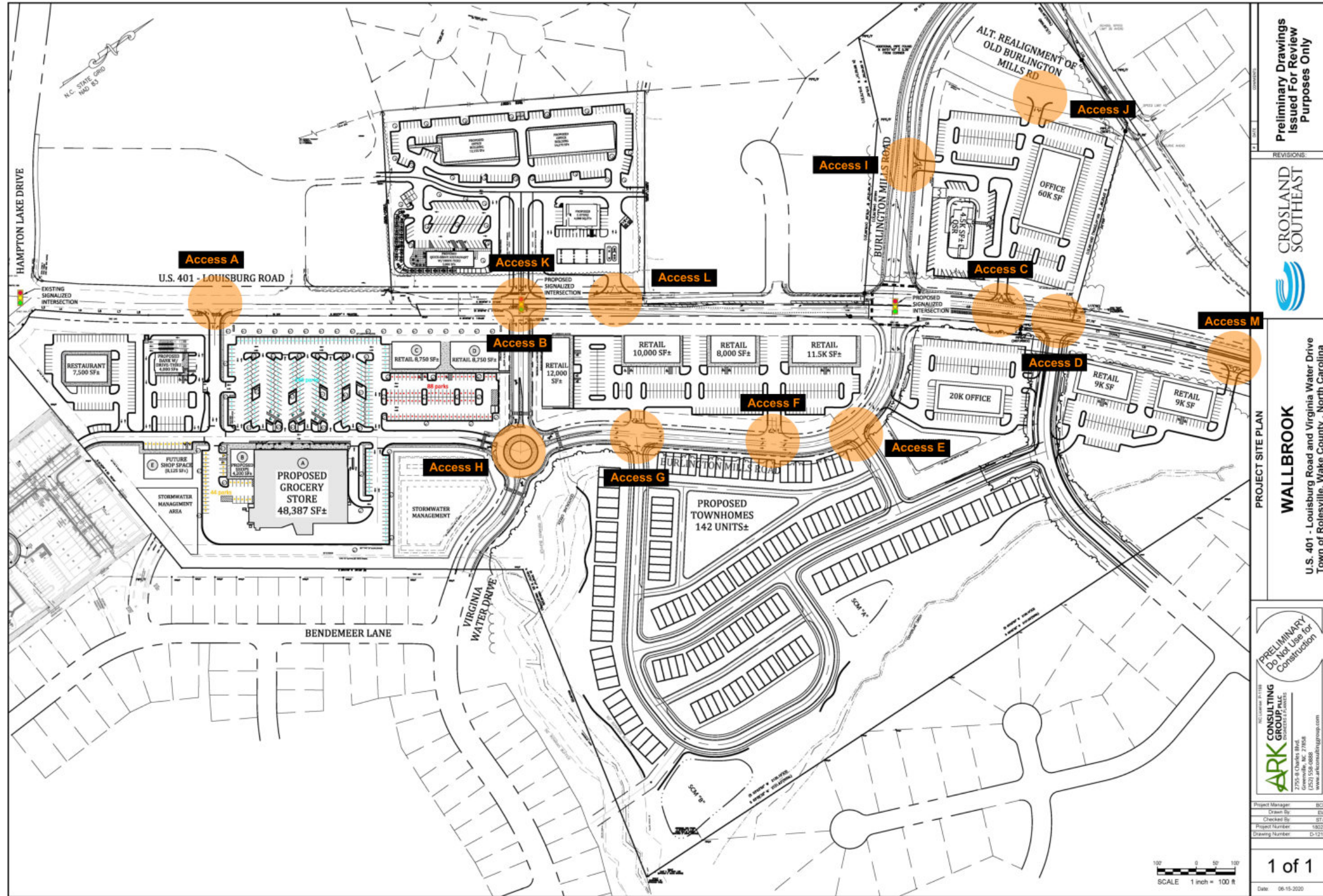
Figure 1: Site Location and Study Area Map



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Introduction
August 11, 2020

Figure 2: Proposed Site Plan



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 11, 2020

2.0 INVENTORY OF TRAFFIC CONDITIONS

2.1 STUDY AREA

Stantec coordinated with the Town of Rolesville and the North Carolina Department of Transportation (NCDOT) Division 5, District 1 to determine the appropriate study area and assumptions for this study. The final scoping document is included in the Appendix. The following intersections were agreed upon to be analyzed to determine the associated impacts of the proposed development.

- | | |
|---|--|
| • US 401 Business at US 401 | <i>existing signalized intersection</i> |
| • US 401 Business at Hampton Lake Drive / Jonesville Road | <i>existing signalized intersection</i> |
| • US 401 Business at Burlington Mills Road | <i>existing signalized intersection</i> |
| • US 401 Business at Rogers Road / Redford Place | <i>existing signalized intersection</i> |
| • Jonesville Road at Vineyard Pine Lane | <i>existing two-way stop-controlled intersection</i> |
| • Burlington Mills Road at Barrington Hall | <i>existing two-way stop-controlled intersection</i> |

As part of the Locally Administered Projects Program (LAPP), Burlington Mills Road will be realigned south of its current location and connect with an extended Virginia Water Drive. It is proposed to be constructed in 2021 and a signal installed; Old Burlington Mills Road and US 401 Business will remain and become stop controlled.

The proposed development is envisioned to construct the following intersections and driveways:

- | | |
|--|--|
| • US 401 Business at Access A | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access B/Access K | <i>proposed signalized intersection</i> |
| • US 401 Business at Access C | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access D | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access L | <i>proposed two-way stop-controlled driveway</i> |
| • US 401 Business at Access M | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Road at Access E | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Road at Access F | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Road at Access G | <i>proposed two-way stop-controlled driveway</i> |
| • BMR/Virginia Water Drive at Access H | <i>proposed all-way stop-controlled driveway</i> |
| • Burlington Mills Realigned at Access I | <i>proposed two-way stop-controlled driveway</i> |
| • Burlington Mills Road at Old Burlington Mills Road | <i>proposed two-way stop-controlled driveway</i> |
| • Old Burlington Mills Road at Access J | <i>proposed two-way stop-controlled driveway</i> |

Figure 3 shows a diagram of the existing lane configurations, geometry, and traffic control features in the study area.

2.2 EXISTING ROADWAY CONDITIONS

Table 1 provides a detailed description of the existing study area roadway network. All functional classification and average annual daily traffic (AADT) information, where available, was obtained from NCDOT via the NCDOT.gov website.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
August 11, 2020

Table 1: Existing Conditions

Road Name	Road Number	Primary Cross-Section	Functional Classification ¹	2018 AADT ² (vpd)	Speed Limit (mph)	Maintenance Agency
Louisburg Road / S. Main Street	US 401 Business	3-Lane Section	Other Principal Arterial	12,000	35	NCDOT
Rolesville Bypass	US 401	4-Lane Divided	Other Principal Arterial	21,250	55	NCDOT
Hampton Lake Drive	N/A	2-Lane Undivided	Local Road	None Provided	25	Private
Jonesville Road	SR 2226	2-Lane Undivided	Local Road	3,100	35	NCDOT
Burlington Mills Road	SR 2051	2-Lane Undivided	Major Collector	3,700	35	NCDOT
Rogers Road	SR 2052	5-Lane Section	Local Road	None Provided	45	NCDOT
Redford Place	N/A	3-Lane Section	Local Road	None Provided	25	Town of Rolesville
Vineyard Pine Lane	N/A	2-Lane Undivided	Local Road	None Provided	25	Private
Barrington Hall Drive	N/A	2-Lane Undivided	Local Road	None Provided	25	Private

2.3 FUTURE NO-BUILD ROADWAY CONDITIONS

Burlington Mills Road at Old Burlington Mills Road

This intersection is planned to be constructed as part of the Burlington Mills Road realignment project. The westbound approach, Old Burlington Mills Road, is proposed to operate under stop control.

US 401 Business at Burlington Mills Road Realigned

As part of the Burlington Mills Road realignment project, Burlington Mills Road will connect to US 401 Business south of where it currently intersects. The signal will also be relocated to this new intersection. The current plans include exclusive turn lanes for all approaches ranging from 100 to 375 feet of full-width storage and appropriate taper.

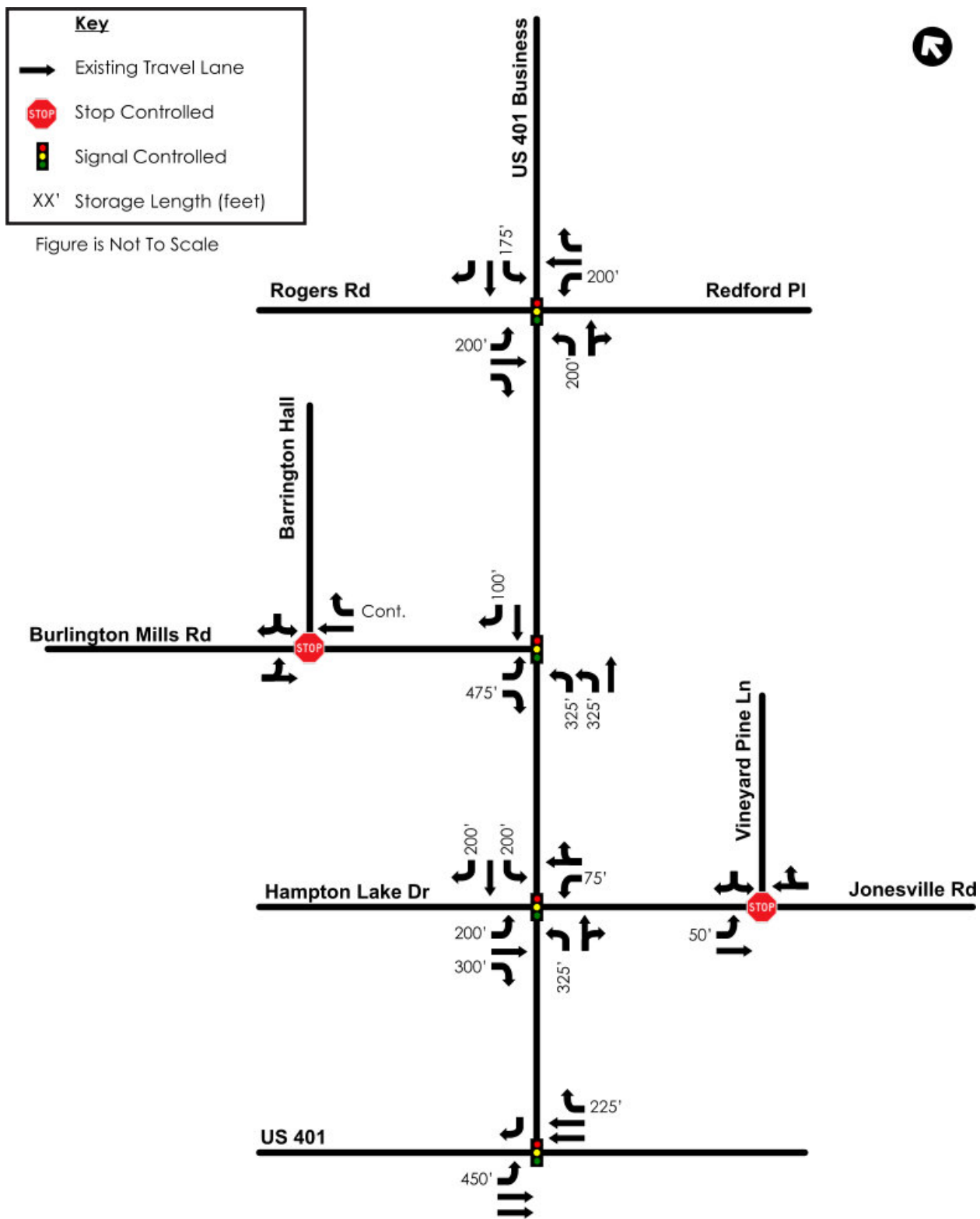
US 401 Business at Old Burlington Mills Road

This intersection is planned to be converted to a right-in/right-out (RIRO) intersection with full movement operations being relocated to the intersection of US 401 Business and Burlington Mills Road Realigned.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
 August 11, 2020

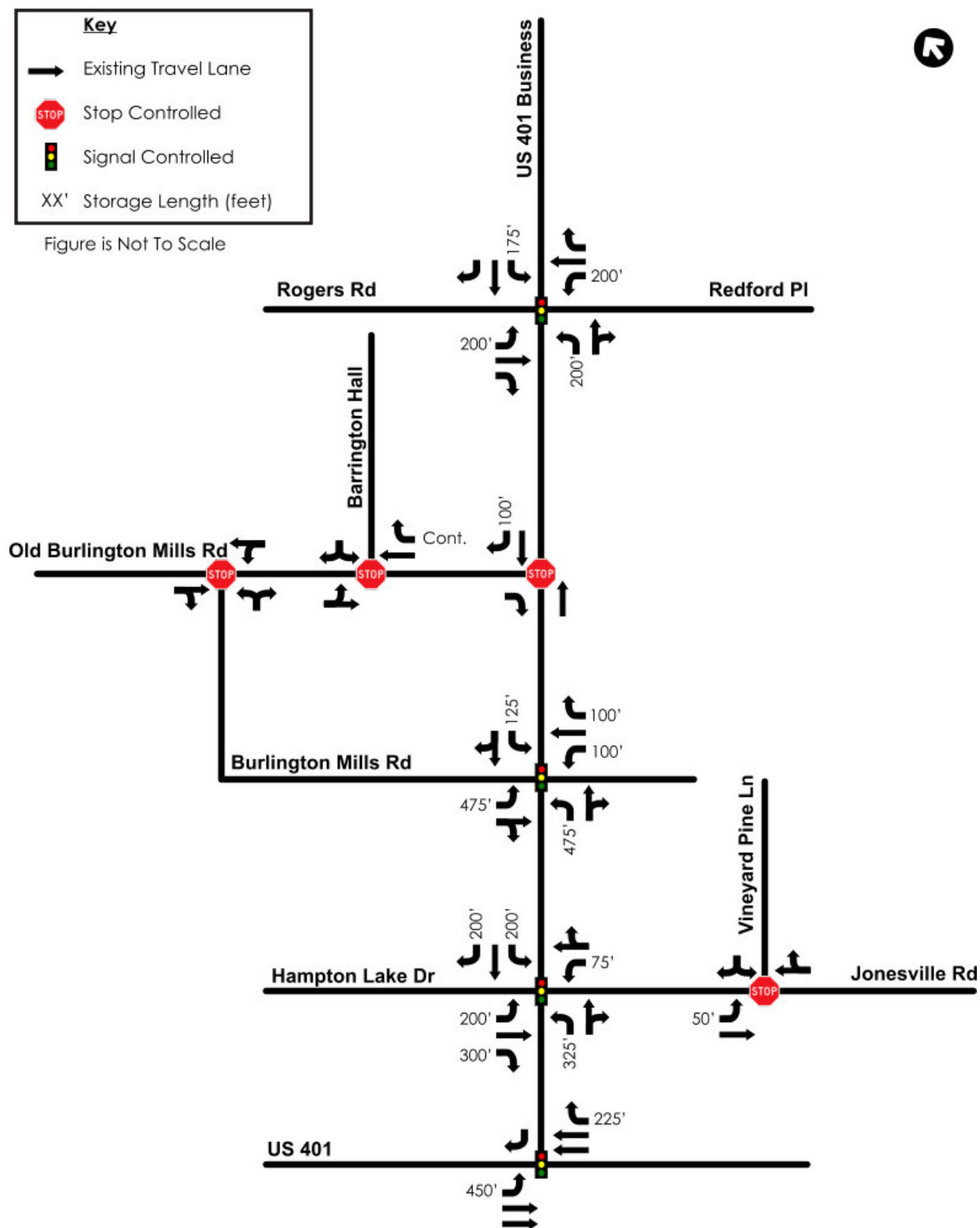
Figure 3: 2019 Existing Lane Configurations and Traffic Control



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Inventory of Traffic Conditions
 August 11, 2020

Figure 4: 2025 No-Build Lane Configurations and Traffic Control



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
August 11, 2020

3.0 TRIP GENERATION

Trip generation for the proposed development was performed for the proposed development in three parts, with the North site, the East site, and the South site each being calculated separately. Trips were estimated using the 10th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual³. The manual provides means for calculating trips across four setting-types. That is, city center core, dense multi-use urban, general urban/suburban, and rural. Internal capture was also performed independently for the North, East, and South sites using the National Cooperative Highway Research Program (NCHRP) Report 684 spreadsheet model⁴. This trip generation, submitted to the Town and NCDOT for review, and including internal capture and trip generation methodology is located in the appendix.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
August 11, 2020

3.1 NORTH SITE

The North site of the development is expected to consist of 60,000 square feet of medical-dental office space, 8,000 square feet of retail, and 6,000 square feet of a fast-food restaurant. Table 2 shows the number of anticipated trips that will be generated by the North site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 2: North Site ITE Trip Generation

North Site Trip Generation (N1, N2, N3)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1,000 GFA	2,088	1,044	1,044	167	130	37	208	58	150
Fast-Food Rest. w/ Drive-Thru	934	4.5	1,000 GFA	2,120	1,060	1,060	181	92	89	147	76	71
				4,208	2,104	2,104	348	222	126	355	134	221
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1,000 GFA				-39	-18	-21	-2	-2	
Fast-Food Rest. w/ Drive-Thru	934	4.5	1,000 GFA				-39	-21	-18	-2		-2
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Fast-Food Rest. w/ Drive-Thru	934	4.5	1,000 GFA				-70	-35	-35	-72	-38	-34
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Medical-Dental Office Bldg.	720	60	1,000 GFA	2,088	1,044	1,044	128	112	16	206	56	150
Fast-Food Rest. w/ Drive-Thru	934	4.5	1,000 GFA	2,120	1,060	1,060	72	36	36	73	38	35
Total Trips Generated				4,208	2,104	2,104	200	148	52	279	94	185

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
August 11, 2020

3.2 SOUTH SITE

The South site of the development is expected to consist of a 71,400 square feet of retail space, a 50,000 square foot grocery store, a 4,000 square foot bank, and a 7,500 square foot restaurant. Table 3 shows the number of anticipated trips that will be generated by the South site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 3: South Site ITE Trip Generation

South Site Trip Generation (S1, S2, S3)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	71.4	1,000 GLA	4,780	2,390	2,390	187	116	71	423	203	220
Supermarket	850	50	1,000 GFA	5,340	2,670	2,670	191	115	76	462	236	226
Drive-In Bank	912	4	1,000 GFA	400	200	200	38	22	16	82	41	41
High-Turnover (Sit-Down) Rest.	932	7.5	1,000 GFA	840	420	420	105	60	45	131	68	63
				11,360	5,680	5,680	521	313	208	1,098	548	550
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	71.4	1,000 GLA					-12	-3	-9	-22	-12
Supermarket	850	50	1,000 GFA					-13	-3	-10	-23	-13
High-Turnover (Sit-Down) Rest.	932	7.5	1,000 GFA					-25	-19	-6	-46	-20
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	71.4	1,000 GLA							-136	-65	-71
Supermarket	850	50	1,000 GFA							-158	-80	-78
Drive-In Bank	912	4	1,000 GFA				-11	-6	-5	-28	-14	-14
High-Turnover (Sit-Down) Rest.	932	7.5	1,000 GFA							-37	-21	-16
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	71.4	1,000 GLA	4,780	2,390	2,390	175	113	62	265	126	139
Supermarket	850	50	1,000 GFA	5,340	2,670	2,670	178	112	66	281	143	138
Drive-In Bank	912	4	1,000 GFA	400	200	200	27	16	11	54	27	27
High-Turnover (Sit-Down) Rest.	932	7.5	1,000 GFA	840	420	420	80	41	39	48	27	21
Total Trips Generated				11,360	5,680	5,680	460	282	178	648	323	325

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
August 11, 2020

3.3 EAST SITE

The East site of the development is expected to consist of 170 townhomes, 20,000 square feet of office space, and 18,000 square feet of retail space. Table 4 shows the number of anticipated trips that will be generated by the East site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 4: East Site ITE Trip Generation

East Site Trip Generation (E1, E2, R1)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	170	Units	926	463	463	58	15	43	74	45	29
General Office Building	710	20	1,000 GFA	222	111	111	40	35	5	87	16	71
Shopping Center	820	18	1,000 GLA	1874	937	937	161	100	61	153	73	80
				3,022	1,511	1,511	259	150	109	314	134	180
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	170	Units				-1		-1	-3	-1	-2
General Office Building	710	20	1,000 GFA				-3	-2	-1	-3	-2	-1
Shopping Center	820	18	1,000 GLA				-4	-2	-2	-6	-2	-4
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Shopping Center	820	18	1,000 GLA							-50	-24	-26
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	170	Units	926	463	463	57	15	42	71	44	27
General Office Building	710	20	1,000 GFA	222	111	111	37	33	4	84	14	70
Shopping Center	820	18	1,000 GLA	1,874	937	937	157	98	59	97	47	50
Total Trips Generated				3,022	1,511	1,511	251	146	105	252	105	147

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Trip Generation
August 11, 2020

3.4 WEST SITE

The West site of the development is expected to consist of 27,000 square feet of office space, and a 5,000 square foot fast-food restaurant. Table 5 shows the number of anticipated trips that will be generated by the West site of the proposed development (Daily, AM Peak, and PM Peak entering and exiting).

Table 5: West Site ITE Trip Generation

West Site Trip Generation (W1)												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
General Office Building	710	27	1,000 GFA	298	149	149	52	46	6	95	17	78
Fast-Food Rest. w/ Drive-Thru	934	5	1,000 GFA	2356	1178	1178	201	102	99	163	85	78
Gas./Serv. Station w/ Conv. Market	945	16	Fuel Pos.	3286	1643	1643	200	102	98	224	114	110
				5940	2970	2970	453	250	203	482	216	266
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
General Office Building	710	27	1,000 GFA				-9	-6	-3	-2	-2	
Fast-Food Rest. w/ Drive-Thru	934	5	1,000 GFA				-10	-4	-6	-3		-3
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Fast-Food Rest. w/ Drive-Thru	934	5	1,000 GFA				-94	-48	-46	-80	-42	-38
Gas./Serv. Station w/ Conv. Market	945	16	Fuel Pos.				-124	-63	-61	-126	-64	-62
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
General Office Building	710	27	1,000 GFA	298	149	149	43	40	3	93	15	78
Fast-Food Rest. w/ Drive-Thru	934	5	1,000 GFA	2,356	1,178	1,178	97	50	47	80	43	37
Gas./Serv. Station w/ Conv. Market	945	16	Fuel Pos.	3,286	1,643	1,643	76	39	37	98	50	48
Total Trips Generated				5,940	2,970	2,970	216	129	87	271	108	163

Traffic Distribution
August 11, 2020

4.0 TRAFFIC DISTRIBUTION

4.1 SITE TRIP DISTRIBUTION

To accurately determine the effect of the proposed development on the surrounding roadway network, an estimate of the expected distribution of traffic entering and exiting the site is needed. The following percentages were used in the AM and PM peak hours for the proposed site.

These percentages were developed using a combination of existing traffic volume counts, historic AADTs provided by NCDOT, and engineering judgment. This trip distribution was submitted to the Town and NCDOT for review.

4.2 PASS-BY TRIPS

According to NCDOT standards, the retail shopping center (LUC 820), supermarket (LUC 850), bank (LUC 912), sit-down restaurant (LUC 932), fast-food restaurant (LUC 934), and gas station (LUC 945) allow for the use of pass-by trips for this land use of 34% in the AM, 36% in the PM, 29% in the AM and 35% in the PM, 43% in the PM, 49% in the AM and 50% in the PM, and 62% in the AM and 56% in the PM peak hour, respectively. The calculated pass-by trips are greater than 10% of the peak hour traffic on US 401 Business (Main Street) for the intersection of Access B. With the southern section of the site including a grocery store, a gas station, a bank, food, and general retail, coupled with the moderate traffic volumes on Main Street, it is reasonable for the pass-by trips to exceed the 10% threshold.

Pass-by trip distribution is shown in Figure 17 in the appendix.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

5.0 TRAFFIC VOLUMES

Morning (7:00 – 9:00 am) and evening (4:00 – 6:00 pm) turning movement counts were collected on the days respectively listed at the intersections below:

- US 401 Business at US 401 (12/3/2019)
- US 401 Business at Hampton Lake Drive / Jonesville Road (12/13/2018)
- US 401 Business at Burlington Mills Road (12/13/2019)
- US 401 Business at Rogers Road / Redford Place (9/10/2019)
- Jonesville Road at Vineyard Pine Lane (11/12/2019)
- Burlington Mills Road at Barrington Hall (11/12/2019)

The count data is categorized by cars, heavy trucks, bicycles, and pedestrians. Raw count data for these locations as well as all traffic volume calculations are included in the appendix.

5.1 VOLUME BALANCING

Traffic volumes for the AM and PM peak hours were balanced between all study intersections except Redford Place Drive and Burlington Mills Road on US 401 Business due to the distance and numerous accesses between the two signalized intersections. To be conservative, volumes were only added to the network and not subtracted. The balanced existing (2019) volumes are shown in Figure 5.

5.2 FUTURE TRAFFIC GROWTH

Future traffic growth is the increase in traffic volumes due to usage increases and non-specific growth throughout the area. The 2019 Existing volumes were grown by a 2.5% annual rate to estimate the 2025 volumes.

5.3 APPROVED DEVELOPMENT TRAFFIC

There are two (2) approved development within the study area. Redford Place is a mixed-use development comprised of a single 19,500 square foot building located in the northeast quadrant of the US 401 Business intersection with Rogers Road and Redford Place. With the anticipated completion date for this development occurring in 2023, the associated site traffic for Redford Place was distributed and assigned to the study intersections included in all future-year analyses.

The other approved development is Jonesville Road Townhomes which is expected to consist of 53 townhomes. This development, located in the southeastern quadrant of Jonesville Road and Louisburg Road, is expected to be completed in 2021.

Trips associated with the Redford Place and Jonesville Road Townhome developments are shown in Figure 10 in the appendix.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

5.4 NO-BUILD TRAFFIC VOLUMES

The historical growth and approved development traffic volumes were added to the existing volumes to determine the No-Build traffic volumes. The 2025 No-Build traffic volumes are shown in Figure 6.

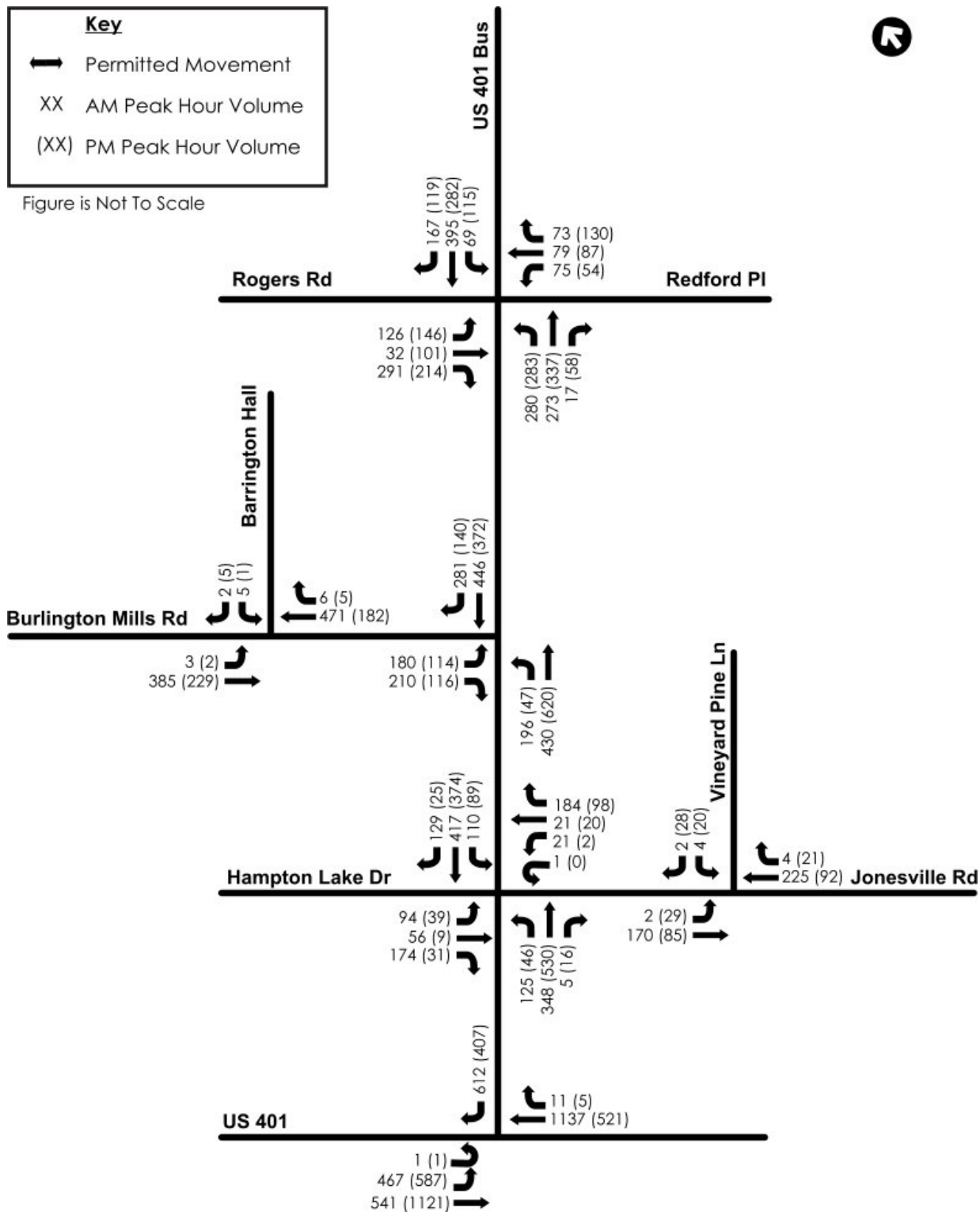
5.5 TOTAL BUILD TRAFFIC WITH PROPOSED DEVELOPMENT

To obtain the total 2025 Build traffic volumes, the distributed site traffic was added to the respective no-build traffic volumes. The total AM and PM peak hour turning movement volumes for the study intersections were then calculated and analyzed for the 2025 traffic scenarios. The 2025 Build-out traffic volumes are shown in Figure 7.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

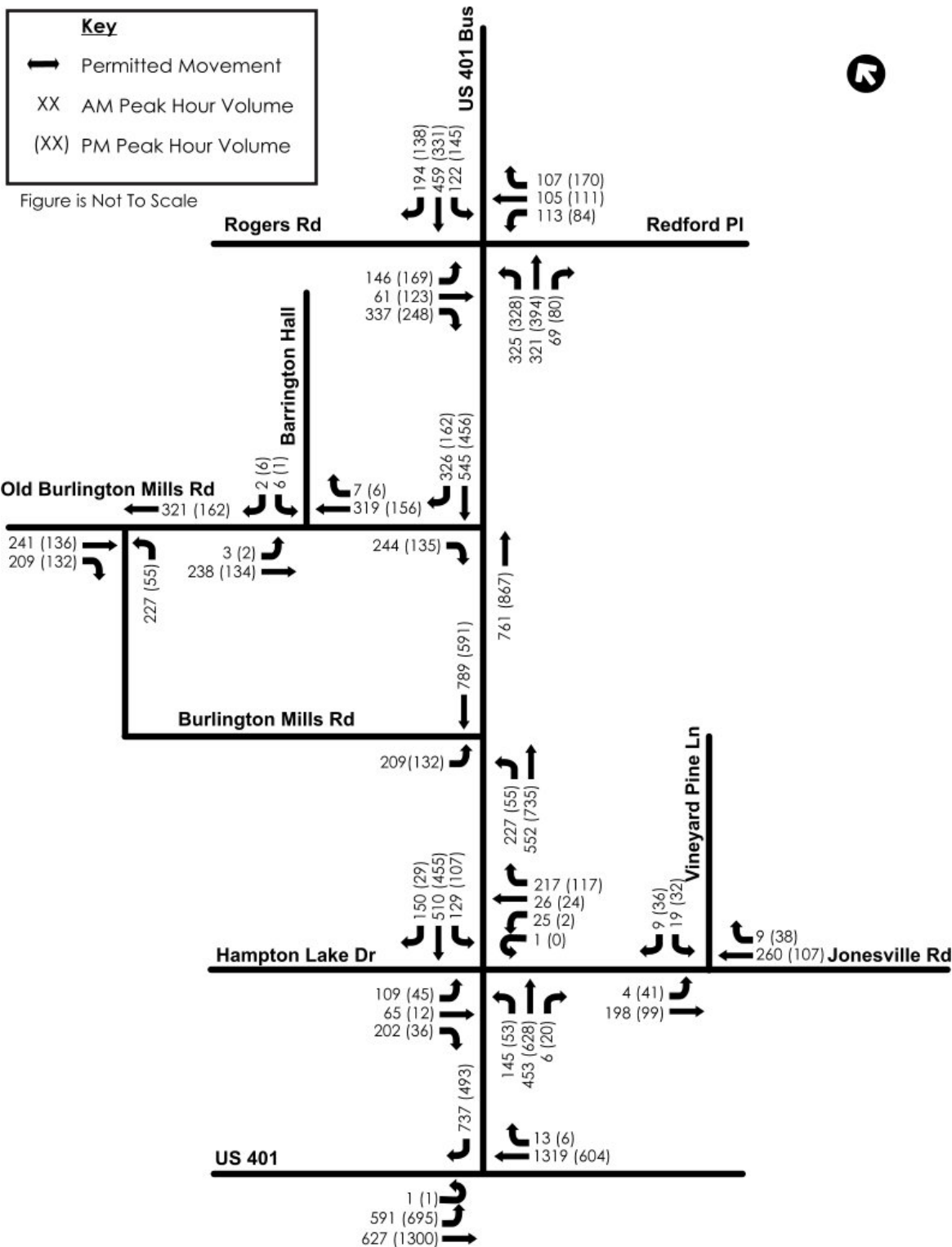
Figure 5: Existing (2019) Traffic Volumes



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

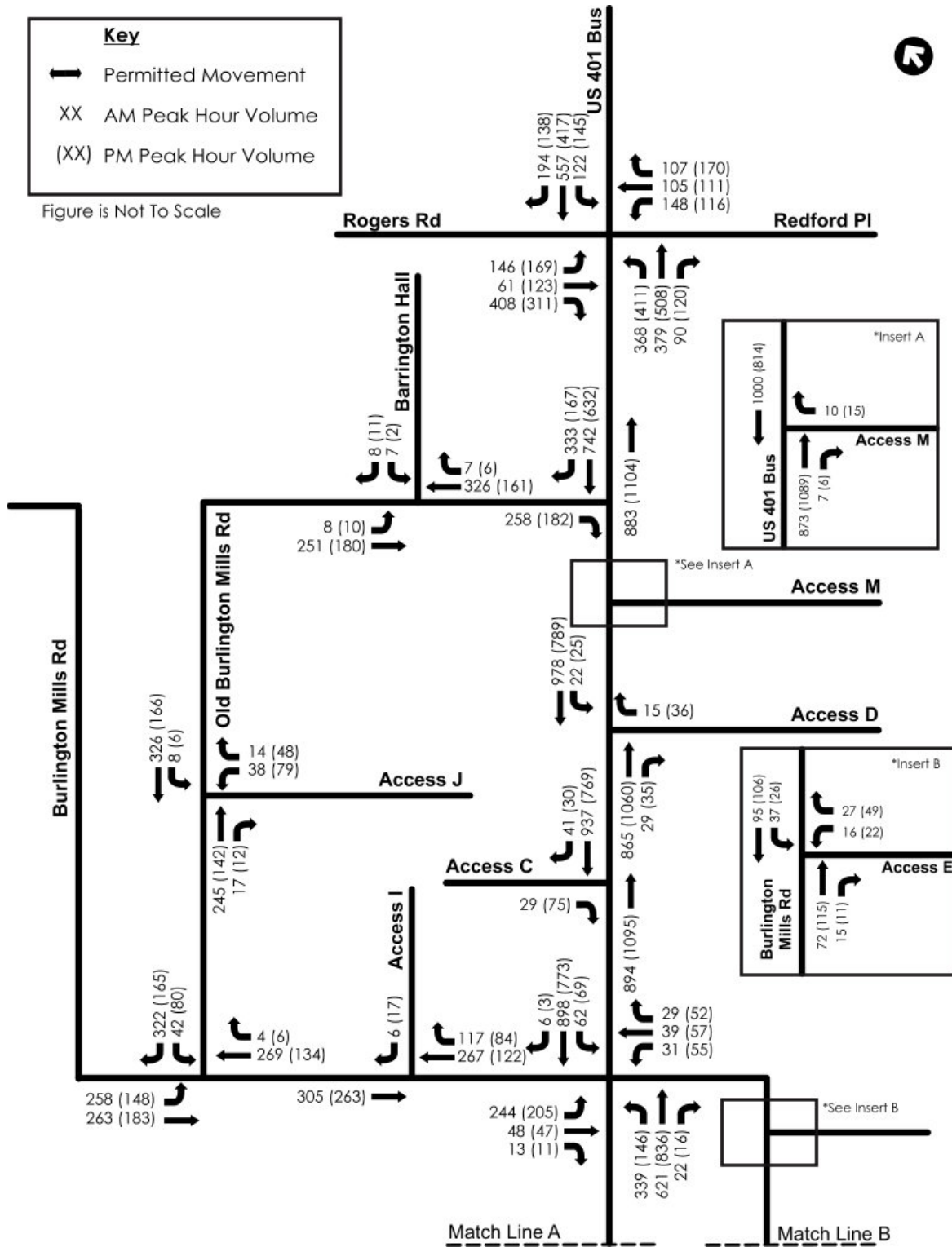
Figure 6: 2025 No-Build Traffic Volumes



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

Figure 7: 2025 Build Traffic Volumes



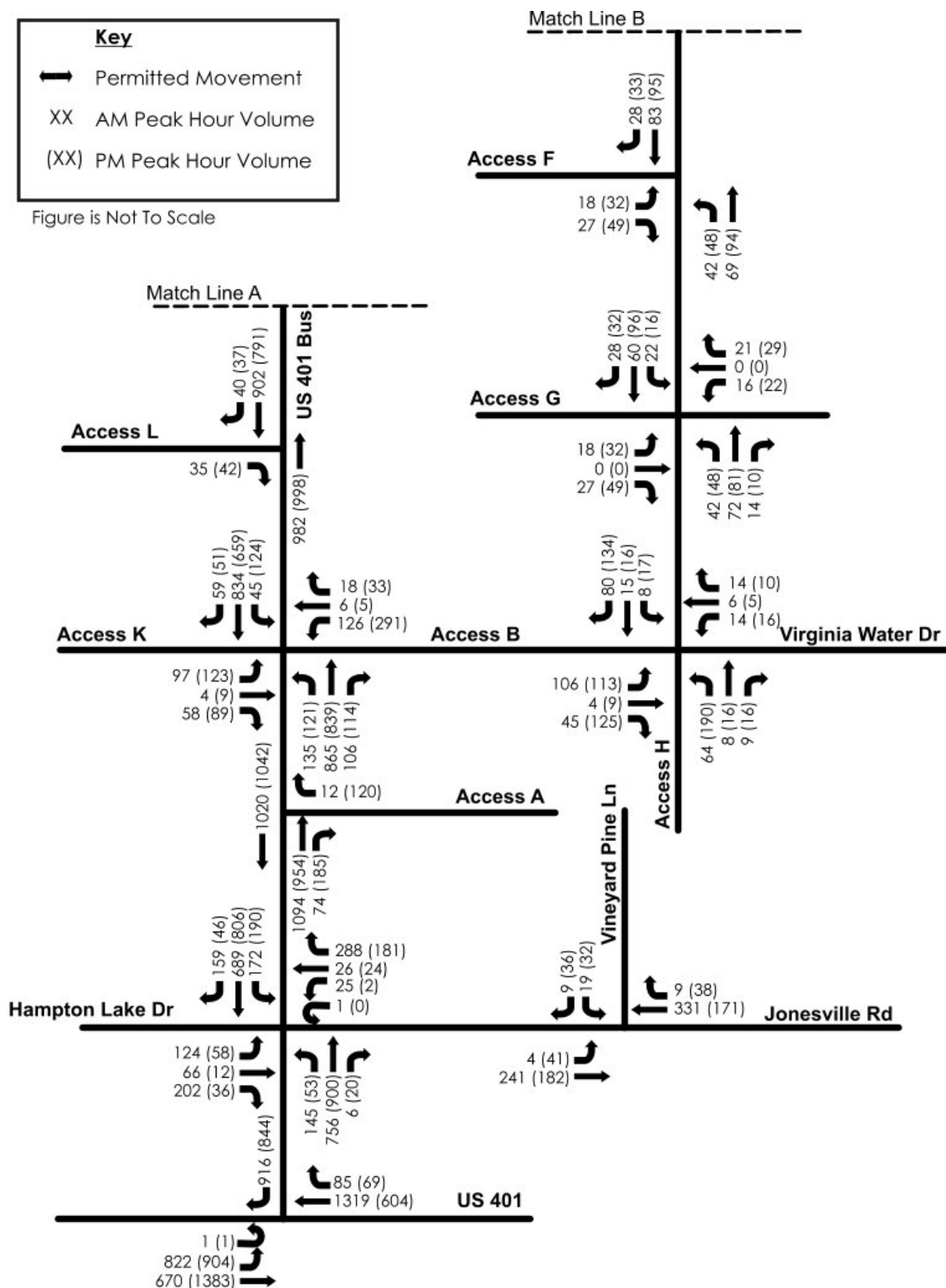
REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Volumes
August 11, 2020

Key

- ➔ Permitted Movement
- XX AM Peak Hour Volume
- (XX) PM Peak Hour Volume

Figure is Not To Scale



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

6.0 TRAFFIC ANALYSIS

Capacity analyses were performed for the roadway network in the project study area. The traffic analysis program Synchro Version 10 was used to analyze all signalized and stop-controlled intersections according to methods put forth by the Transportation Research Board's Highway Capacity Manual (HCM)⁵. The Highway Capacity Manual defines capacity as "the maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform section of a lane or roadway during a specified period under the prevailing roadway, traffic, and control conditions, usually expressed as vehicles per lane per hour."

Level of service (LOS) is a term used to describe different traffic conditions and is defined as a "qualitative measure describing operational conditions within a traffic stream, and their perception by motorists/ or passengers." LOS varies from Level A, representing free flow, to Level F where traffic breakdown conditions are evident. At an unsignalized intersection, the primary traffic on the main roadway is virtually uninterrupted. Therefore, the overall delay for the intersection is usually less than what is calculated for the minor street movements. The overall intersection delay and the delay for the intersection's minor movement(s) are reported in the summary tables of this report. Generally, LOS D is acceptable for signalized intersections in suburban areas during peak periods. The ITE Recommended Practice Manual, "*Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*"⁶ states, "Often in urban areas, thoroughfare capacity is a lower priority than other factors such as economic development or historical preservation, and higher levels of congestion are considered acceptable." With the current method of reporting LOS for unsignalized intersections, it is not uncommon for some of the minor street movements to be operating at a LOS F during peak hour conditions and that is not necessarily indicative of an area that requires improvements.

Capacity analyses were completed following *NCDOT Congestion Management Capacity Analysis Guidelines*⁷. It should be noted that the analyses include permitted + protected signal phasing at the US 401 Business intersections with Hampton Lake Drive/Jonesville Road and Rogers Road/Redford Place Drive. This provided results more indicative of field conditions as the signal currently operates with a flashing yellow arrow. Table 6 presents the criteria of each LOS as indicated in the *HCM*⁵.

Table 6: Level of Service Criteria

Level of Service (LOS)	Signalized Intersection Control Delay (seconds / vehicle)	Unsignalized Intersection Control Delay (seconds / vehicle)
A	≤ 10	≤ 10
B	>10 and ≤ 20	>10 and ≤ 15
C	>20 and ≤ 35	>15 and ≤ 25
D	>35 and ≤ 55	>25 and ≤ 35
E	>55 and ≤ 80	>35 and ≤ 50
F	>80	>50

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

Capacity analyses were performed for the following conditions.

- Existing (2019)
- Future Year (2025) No-Build
- Future Year (2025) Build
- Future Year (2025) Build with Improvements

The following intersections were included in the capacity analysis for the above scenarios; where applicable:

- US 401 Business at US 401
- US 401 Business at Hampton Lake Drive / Jonesville Road
- US 401 Business at Burlington Mills Realigned
- US 401 Business at Burlington Mills Road
- US 401 Business at Rogers Road / Redford Place
- Jonesville Road at Vineyard Pine Lane
- Burlington Mills Road at Old Burlington Mills Road
- US 401 Business at Access A
- US 401 Business at Access B/Access K
- US 401 Business at Access L
- US 401 Business at Access C
- US 401 Business at Access D
- US 401 Business at Access M
- Burlington Mills Road at Access E
- Burlington Mills Road at Access F
- Burlington Mills Road at Access G
- Burlington Mills Road at Access H
- Burlington Mills Realigned at Access I
- Old Burlington Mills Road at Barrington Hall
- Old Burlington Mills Road at Access J

SimTraffic runs were completed for all scenarios to observe the predicted traffic operations throughout the study area during each of the peak hours. As is standard practice, ten (10) SimTraffic analysis runs were performed for each scenario. Detailed SimTraffic queuing and blocking reports can be found in the Appendix. Queues for the exclusive turn-lanes are summarized in tables for each study intersection. Queues are not reported for intersections that do not have exclusive turn-lanes. For simplicity, the greater of the 95th percentile queue as reported by Synchro or the maximum observed queue as reported by SimTraffic are shown in the tables.

All Synchro files and detailed printouts can be found in the appendix. A summary of the results of the analyses is provided in the following sub-sections.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

6.1 2019 EXISTING CAPACITY ANALYSIS

The 2019 Existing scenario results show that all intersections and approaches currently operate at LOS D or better in both peak periods except the westbound approach at US 401 Business and Hampton Lake Drive/Jonesville Road which can be attributed to school traffic. The level of service and delay for the existing traffic conditions are listed below in Table 7.

Table 7: Level of Service and Delay for 2019 Existing Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	B (12.7)	-	B (13.5)	C (25.7)	A (1.3)
	PM	B (12.7)	-	B (13.5)	C (20.1)	A (0.9)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (25.7)	C (23.9)	E (57.2)	B (14.2)	C (24.0)
	PM	C (21.6)	C (30.3)	E (61.2)	B (14.1)	B (19.6)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	- (0.3)	- (0.2)	- (0.0)	-	B (10.2)
	PM	- (2.5)	- (1.9)	- (0.0)	-	A (9.6)
US 401 Business at Burlington Mills Rd (Signalized)	AM	B (13.7)	D (49.5)	-	A (2.1)	A (4.4)
	PM	B (10.5)	D (46.9)	-	A (2.7)	A (4.3)
Burlington Mills Rd at Barrington Hall Dr / Access J (Unsignalized)	AM	- (0.2)	- (0.1)	- (0.0)	-	C (15.2)
	PM	- (0.3)	- (0.1)	- (0.0)	-	B (10.3)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	C (25.1)	D (43.0)	D (45.8)	B (10.4)	B (18.1)
	PM	C (23.4)	D (46.5)	D (45.4)	A (8.5)	B (10.8)

Key: LOS (Delay (seconds/vehicle))

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

6.2 2025 NO-BUILD CAPACITY ANALYSIS

The 2025 No-Build scenario results show that all intersections and approaches will operate at LOS D or better in both peak periods except the westbound approach at US 401 Business and Hampton Lake Drive/Jonesville Road and the eastbound approach at US 401 Business and Burlington Mills Road Realigned. There are no queuing issues throughout the network in the 2025 No-Build scenario. The no-build level of service and delay are listed below in Table 8.

Table 8: Level of Service and Delay for 2025 No-Build Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	C (24.6)	-	C (26.7)	D (47.4)	A (2.2)
	PM	B (14.3)	-	B (17.3)	C (21.2)	A (0.7)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (20.5)	C (24.0)	E (59.1)	A (5.2)	B (17.3)
	PM	C (25.7)	C (27.1)	E (63.3)	B (17.9)	C (25.5)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	- (0.7)	- (0.2)	- (0.0)	-	B (11.0)
	PM	- (2.8)	- (2.2)	- (0.0)	-	B (10.2)
US 401 Business at Burlington Mills Rd Realigned (Signalized)	AM	D (38.0)	F (84.5)	D (40.4)	C (28.7)	C (34.6)
	PM	B (18.5)	E (58.9)	D (39.2)	B (10.9)	B (18.8)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	- (2.7)	C (20.6)	-	- (0.0)	- (0.0)
	PM	- (1.1)	B (13.6)	-	- (0.0)	- (0.0)
Burlington Mills Rd at Barrington Hall Dr / Access J (Unsignalized)	AM	- (0.3)	- (0.1)	- (0.0)	-	B (12.1)
	PM	- (0.4)	- (0.2)	- (0.0)	-	A (9.7)
Burlington Mills Rd at Old Burlington Mills (Unsignalized)	AM	- (6.5)	-	B (14.0)	- (0.0)	- (4.5)
	PM	- (5.4)	-	A (9.6)	- (0.0)	- (3.9)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	C (30.1)	D (54.0)	D (44.4)	B (14.4)	C (21.8)
	PM	C (26.0)	D (50.7)	D (46.3)	A (9.6)	B (13.6)

Key: LOS (Delay (seconds/vehicle))

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

6.3 2025 BUILD CAPACITY ANALYSIS

As a result of the 2025 Build analysis, all intersections are expected to operate at LOS D or better in both peak periods, with a few exceptions. The intersection of US 401 Business and Burlington Mills Road Realigned is expected to operate at LOS E in the AM peak hour. Additionally, the following approaches operate at LOS E or F during the peak hours:

- US 401 Business at US 401 (NB - AM Peak)
- US 401 Business at Hampton Lake Dr / Jonesville Rd (WB - AM & PM Peak)
- US 401 Business at Access A (WB - PM Peak)
- US 401 Business at Access B/Access K (EB - AM Peak, WB - AM & PM Peak, NB - PM Peak)
- US 401 Business at Burlington Mills Rd Realigned (EB – AM & PM Peak, SB – AM Peak)
- US 401 Business at Old Burlington Mills Rd (EB – AM Peak)
- US 401 Business at Rogers Rd/Redford PI (EB – PM Peak, WB – AM & PM Peak)

The analyses show that the proposed development will have an impact on the surrounding roadway network in the vicinity of the site without any improvements.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

Table 9: Level of Service and Delay for 2025 Build Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	D (37.2)	-	D (46.8)	E (58.6)	A (3.3)
	PM	B (16.3)	-	C (24.5)	C (22.1)	A (3.5)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (34.3)	C (34.7)	F (87.4)	C (26.7)	C (23.1)
	PM	C (32.3)	D (42.8)	F (102.1)	C (29.6)	B (19.8)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	- (0.6)	- (0.1)	- (0.0)	-	B (11.5)
	PM	- (2.1)	- (1.4)	- (0.0)	-	B (10.8)
US 401 Business at Access A (Unsignalized)	AM	- (0.1)	-	D (27.3)	- (0.0)	- (0.0)
	PM	- (2.4)	-	E (45.7)	- (0.0)	- (0.0)
US 401 Business at Access B/Access K (Signalized)	AM	C (21.2)	E (65.6)	F (81.9)	B (13.6)	B (12.9)
	PM	D (53.7)	D (46.5)	F (110.4)	E (58.2)	C (27.5)
Virginia Water Dr at Access H (Unsignalized)	AM	A (8.2)	- (8.6)	- (7.7)	- (8.3)	- (7.7)
	PM	B (10.2)	- (10.6)	- (8.6)	- (10.8)	- (9.0)
US 401 Business at Access L (Unsignalized)	AM	- (0.2)	B (10.2)	-	- (0.0)	- (0.0)
	PM	- (0.2)	B (10.0)	-	- (0.0)	- (0.0)
Burlington Mills Rd at Access G (Unsignalized)	AM	- (4.2)	B (10.0)	B (10.2)	- (2.5)	- (1.5)
	PM	- (4.6)	B (10.5)	B (10.6)	- (2.6)	- (0.8)
Burlington Mills Rd at Access F (Unsignalized)	AM	- (2.8)	A (9.5)	-	- (2.8)	- (0.0)
	PM	- (3.3)	A (9.9)	-	- (2.6)	- (0.0)
Burlington Mills Rd at Access E (Unsignalized)	AM	- (2.6)	-	A (9.5)	- (0.0)	- (2.1)
	PM	- (2.7)	-	A (9.9)	- (0.0)	- (1.5)
US 401 Business at Burlington Mills Realigned (Signalized)	AM	E (65.4)	F (126.4)	D (50.2)	D (47.7)	E (65.9)
	PM	C (30.9)	E (74.5)	D (47.4)	B (19.1)	C (28.2)
Burlington Mills Realigned at Access I (Unsignalized)	AM	- (0.1)	- (0.0)	- (0.0)	-	B (10.3)
	PM	- (0.3)	- (0.0)	- (0.0)	-	A (9.3)
Burlington Mills Rd at Old Burlington Mills Rd (Unsignalized)	AM	- (12.2)	- (4.3)	- (0.0)	-	D (32.8)
	PM	- (7.0)	- (3.5)	- (0.0)	-	C (15.8)
Old Burlington Mills Rd at Access J (Unsignalized)	AM	- (1.2)	- (0.0)	- (0.2)	B (13.5)	-
	PM	- (3.3)	- (0.0)	- (0.3)	B (11.4)	-
US 401 Business at Access C (Unsignalized)	AM	- (0.3)	C (20.1)	-	- (0.0)	- (0.0)
	PM	- (0.7)	C (18.5)	-	- (0.0)	- (0.0)
Old Burlington Mills Rd at Barrington Hall Dr (Unsignalized)	AM	- (0.4)	- (0.2)	- (0.0)	-	B (12.0)
	PM	- (0.6)	- (0.4)	- (0.0)	-	A (9.8)
US 401 Business at Access D (Unsignalized)	AM	- (0.3)	-	C (15.0)	- (0.0)	- (0.3)
	PM	- (0.8)	-	D (27.6)	- (0.0)	- (0.6)
US 401 Business at Access M (Unsignalized)	AM	- (0.1)	-	C (15.5)	- (0.0)	- (0.0)
	PM	- (0.2)	-	D (27.4)	- (0.0)	- (0.0)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	- (4.7)	E (40.4)	-	- (0.0)	- (0.0)
	PM	- (1.8)	C (20.1)	-	- (0.0)	- (0.0)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	C (34.6)	D (49.9)	E (57.9)	B (16.3)	C (31.7)
	PM	C (32.8)	E (60.5)	E (59.5)	B (15.3)	B (19.8)

Key: LOS (Delay (seconds/vehicle))

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

6.4 2025 BUILD WITH IMPROVEMENTS CAPACITY ANALYSIS

The 2025 Build with Improvements analysis shows that all intersections and approaches are expected to operate at LOS D or better in both peak periods, except for Old Burlington Mills Road at US 401 Business in the AM peak hour. Although the intersections are expected to operate at an acceptable level of service, the intersection of Old Burlington Mills Road at US 401 Business experiences a higher delay.

Improvements:

US 401 Business & Access A

- Construct a northbound exclusive right-turn lane with 100 feet of storage and appropriate taper

US 401 Business at Access B/Access K

- Install a signal
- Construct a northbound exclusive left-turn lane with 175 feet of storage and appropriate taper
- Construct a northbound exclusive right-turn lane with 125 feet of storage and appropriate taper
- Construct a southbound exclusive left-turn lane with 350 feet of storage and appropriate taper
- Construct an eastbound exclusive left-turn lane with 225 feet of storage and appropriate taper
- Construct a westbound shared through-right-turn lane with 100 feet of storage and appropriate taper

Virginia Water Drive at Access B/Access H

- Construct single-lane roundabout

US 401 Business at Burlington Mills Road

- Construct dual northbound exclusive left-turn lanes with 375 feet of storage and appropriate taper
- Construct a westbound exclusive left-turn lane with 100 feet of storage and appropriate taper
- Construct a westbound exclusive right-turn lane with 100 feet of storage and appropriate taper
- Construct an eastbound exclusive left-turn lane with 500 feet of storage and appropriate taper
- Construct an eastbound exclusive right-turn lane with 175 feet of storage and appropriate taper
- Construct a southbound exclusive left-turn lane with 100 feet of storage and appropriate taper
- Construct a southbound exclusive right-turn lane with at least 250 feet of storage and appropriate taper (beginning at least 100 feet north of the Access C driveway)

US 401 Business at Access D

- Construct a southbound exclusive left-turn lane with 100 feet of storage and appropriate taper

Burlington Mills Road at Access I

- Construct a westbound exclusive right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road

Burlington Mills Road at Old Burlington Mills Road

- Construct a southbound exclusive left-turn lane with 100 feet of storage and appropriate taper

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

Table 10: Level of Service and Delay for 2025 Build with Improvements Conditions

Intersection/Approach	Peak Hour	Overall (LOS)	Eastbound	Westbound	Northbound	Southbound
US 401 Business at US 401 (Signalized)	AM	D (37.2)	-	D (46.8)	E (58.6)	A (3.4)
	PM	B (16.0)	-	C (24.5)	C (22.1)	A (2.7)
US 401 Business at Hampton Lake Dr / Jonesville Rd (Signalized)	AM	C (34.2)	C (34.7)	F (87.4)	C (25.3)	C (23.9)
	PM	C (33.0)	D (41.9)	F (94.7)	C (32.1)	C (20.6)
Jonesville Rd at Vineyard Pine Lane (Unsignalized)	AM	- (0.6)	- (0.1)	- (0.0)	-	B (11.5)
	PM	- (2.1)	- (1.4)	- (0.0)	-	B (10.8)
US 401 Business at Access A (Unsignalized)	AM	- (0.1)	-	D (27.0)	- (0.0)	- (0.0)
	PM	- (1.5)	-	D (28.0)	- (0.0)	- (0.0)
US 401 Business at Access B/Access K (Signalized)	AM	B (20.0)	E (65.6)	F (81.9)	B (11.0)	B (12.9)
	PM	D (47.1)	D (36.2)	E (59.9)	D (48.5)	D (43.1)
Virginia Water Dr at Access H (Roundabout)	AM	A (4.0)	A (3.9)	A (3.9)	A (4.0)	A (4.1)
	PM	A (5.1)	A (4.6)	A (4.5)	A (5.5)	A (5.6)
US 401 Business at Access L (Unsignalized)	AM	- (0.2)	B (10.2)	-	- (0.0)	- (0.0)
	PM	- (0.2)	B (10.0)	-	- (0.0)	- (0.0)
Burlington Mills Rd at Access G (Unsignalized)	AM	- (4.2)	B (10.0)	B (10.2)	- (2.5)	- (1.5)
	PM	- (4.6)	B (10.5)	B (10.6)	- (2.6)	- (0.8)
Burlington Mills Rd at Access F (Unsignalized)	AM	- (2.8)	A (9.5)	-	- (2.8)	- (0.0)
	PM	- (3.3)	A (9.9)	-	- (2.6)	- (0.0)
Burlington Mills Rd at Access E (Unsignalized)	AM	- (2.6)	-	A (9.5)	- (0.0)	- (2.1)
	PM	- (2.7)	-	A (9.9)	- (0.0)	- (1.5)
US 401 Business at Burlington Mills Realigned (Signalized)	AM	D (47.8)	F (81.0)	D (44.8)	C (30.3)	E (55.4)
	PM	C (27.9)	E (70.0)	D (46.0)	B (18.8)	C (22.0)
Burlington Mills Realigned at Access I (Unsignalized)	AM	- (0.1)	- (0.0)	- (0.0)	-	A (9.1)
	PM	- (0.3)	- (0.0)	- (0.0)	-	A (8.7)
Burlington Mills Rd at Old Burlington Mills Rd (Unsignalized)	AM	- (6.9)	- (4.3)	- (0.0)	-	C (15.7)
	PM	- (5.8)	- (3.5)	- (0.0)	-	B (12.3)
Old Burlington Mills Rd at Access J (Unsignalized)	AM	- (1.2)	- (0.0)	- (0.2)	B (13.5)	-
	PM	- (3.3)	- (0.0)	- (0.3)	B (11.4)	-
US 401 Business at Access C (Unsignalized)	AM	- (0.2)	B (13.0)	-	- (0.0)	- (0.0)
	PM	- (0.5)	B (12.5)	-	- (0.0)	- (0.0)
Old Burlington Mills Rd at Barrington Hall Dr (Unsignalized)	AM	- (0.4)	- (0.2)	- (0.0)	-	B (12.0)
	PM	- (0.6)	- (0.4)	- (0.0)	-	A (9.8)
US 401 Business at Access D (Unsignalized)	AM	- (0.3)	-	C (15.0)	- (0.0)	- (0.3)
	PM	- (0.8)	-	D (27.6)	- (0.0)	- (0.6)
US 401 Business at Access M (Unsignalized)	AM	- (0.1)	-	C (15.5)	- (0.0)	- (0.0)
	PM	- (0.2)	-	D (27.4)	- (0.0)	- (0.0)
US 401 Business at Old Burlington Mills Rd (Unsignalized)	AM	- (4.7)	E (40.4)	-	- (0.0)	- (0.0)
	PM	- (1.8)	C (20.1)	-	- (0.0)	- (0.0)
US 401 Business at Rogers Rd / Redford Place (Signalized)	AM	C (34.8)	D (50.3)	E (57.8)	B (16.7)	C (31.7)
	PM	C (32.4)	E (60.4)	E (59.3)	B (14.4)	B (19.9)

Key: LOS (Delay (seconds/vehicle))

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

7.0 SIMTRAFFIC OPERATIONS

SimTraffic runs were completed for all analysis scenarios to observe the predicted traffic operations throughout the study area during each of the peak hours. As is standard practice, ten (10) SimTraffic analysis runs were performed for each scenario to get an average. Detailed SimTraffic Queuing and Blocking reports can be found in the appendix.

In the Build AM peak hour, there is extensive queuing along southbound US 401 Business at the realigned Burlington Mills Road, extending sometimes as far back as Rogers Rd/Redford Pl. This queuing also blocks vehicles from turning right onto southbound US 401 Business from Old Burlington Mills Road causing additional queuing on Old Burlington Mills Road. The addition of the second northbound left turn lane at this intersection in the Build Improved scenario significantly improves the queuing for this approach and Old Burlington Mills Road.

It was observed in the AM peak hour that there are queues exceeding 1000 feet for the eastbound left turn from US 401 to US 401 Business. However, the signal operates at an acceptable level of service. It is expected that with the transformation of the downtown Main Street corridor, future throughput vehicles might continue on eastbound US 401 and access other destinations in Rolesville via Young Street, reducing the observed queuing issues. It should be noted that the intersection was modeled with the eastbound left turn having only a protected phase, as was done in the original study per Congestion Management Guidelines⁷. The signal in the field utilizes permitted and protected phasing for the eastbound left turn movement so there is additional capacity that is not shown in the model. Testing the model with this movement as permitted and protected reduces the maximum observed queue to less than 300 feet in both peak hours.

In the Build PM peak hour, there is significant queuing along northbound US 401 Business at the Hampton Lake Rd/Jonesville Rd and Access B/Access K intersections. The vehicles clear the intersection quickly and the queues are a result of the reduced cross-section and complete street elements as detailed in the Rolesville Main Street Vision Plan⁸.

In both peak hours, it is observed that the westbound approach of the US 401 Business & Access B/Access K intersection queues back into the proposed roundabout at Virginia Water Dr & Access H intersection. According to SimTraffic, this queuing is temporary and only occurs approximately 12% of the peak hour.

A summary of the maximum queue lengths observed during the simulation is provided in Table 11 and Table 12.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

Table 11: Maximum Queue Length Summary for Unsignalized

Intersection	Directional Movement	2019 Existing		2025 No Build		2025 Build		2025 Build w/ Imp	
		AM	PM	AM	PM	AM	PM	AM	PM
Jonesville Rd @ Vineyard Pine Ln	EBL	14	33	8	53	19	56	25	47
	WBTR	0	2	16	0	83	58	194	2
	SBLR	30	54	34	59	60	136	70	58
US 401 Business @ Access A	WBR	-	-	-	-	55	398	31	403
	NBR	-	-	-	-	-	-	0	200
Virginia Water Drive @ Access B/H	EBLTR	-	-	-	-	85	131	19	34
	WBLTR	-	-	-	-	42	55	5	5
	NBLTR	-	-	-	-	95	352	11	35
	SBLTR	-	-	-	-	95	361	14	29
US 401 Business @ Access L	EBR	-	-	-	-	60	250	80	243
Virginia Water Dr @ Access G	EBLTR	-	-	-	-	74	138	68	94
	WBLTR	-	-	-	-	52	100	46	58
	NBLTR	-	-	-	-	36	107	46	65
	SBLTR	-	-	-	-	28	107	33	31
Virginia Water Dr @ Access F	EBLR	-	-	-	-	64	71	54	68
	NBLT	-	-	-	-	46	48	37	54
	SBTR	-	-	-	-	2	2	5	0
Virginia Water Drive @ Access E	WBLR	-	-	-	-	58	80	61	59
	NBTR	-	-	-	-	2	33	0	0
	SBLTR	-	-	-	-	48	62	49	41
Burlington Mills Road @ Access I	WBTR	-	-	-	-	0	0	0	0
	SBR	-	-	-	-	31	44	28	33
Burlington Mills Road @ Old Burlington Mills Road	EBLT	-	-	-	-	840	99	182	81
	WBLR	-	-	155	71	-	-	-	-
	WBTR	-	-	-	-	108	11	12	2
	SBLR	-	-	-	-	1296	148	-	-
	SBLT	-	-	160	59	-	-	-	-
	SBL	-	-	-	-	-	-	75	72
	SBR	-	-	-	-	-	-	164	67
Old Burlington Mills Rd @ Access J	NBTR	-	-	6	0	-	-	-	-
	EBTR	-	-	-	-	162	0	0	0
	WBLT	-	-	-	-	968	44	33	18
US 401 Business @ Access C	NBLR	-	-	-	-	144	100	65	93
	EBR	-	-	-	-	213	204	255	141
Old Burlington Mills Rd @ Barrington Hall	EBLT	34	21	22	18	137	26	60	16
	WBTR	-	-	-	-	728	65	0	0
	WBR	0	0	0	0	-	-	-	-
	SBLR	23	23	24	23	143	36	32	32
US 401 Business @ Access D	WBR	-	-	-	-	41	58	44	66
	SBL	-	-	-	-	-	-	156	49
US 401 Business @ Access M	WBR	-	-	-	-	30	44	36	37
US 401 Business @ Old Burlington Mills Rd	EBR	-	-	149	86	626	124	442	119
	SBR	-	-	0	0	156	99	17	0

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Traffic Analysis
August 11, 2020

Table 12: Maximum Queue Length Summary for Signalized

Intersection	Directional Movement	2019 Existing		2025 No Build		2025 Build		2025 Build w/ Imp	
		AM	PM	AM	PM	AM	PM	AM	PM
US 401 @ US 401 Business	EBL	338	474	598	526	1095	596	1095	596
	WBT	253	150	606	203	1022	243	1059	234
	WBR	0	0	30	0	325	61	325	56
	SBT	8	14	28	4	25	40	33	9
US 401 Business @ Hampton Lake Dr / Jonesville Rd	EBL	153	87	179	101	193	122	215	108
	EBT	117	40	111	42	154	52	143	52
	EBR	213	81	210	83	244	66	208	79
	WBL	116	13	162	18	166	86	164	72
	WBTR	262	170	352	198	524	451	515	386
	NBL	155	67	296	105	425	425	425	425
	NBTR	353	372	494	439	1351	1713	824	2610
	SBL	263	147	299	299	299	300	300	285
US 401 Business @ Access B/H	SBT	380	243	661	459	675	1174	669	499
	SBR	181	46	300	206	270	300	300	205
	EBL	-	-	-	-	234	186	172	216
	EBTR	-	-	-	-	340	172	137	180
	WBL	-	-	-	-	298	518	271	356
	WBTR	-	-	-	-	690	200	199	200
	NBL	-	-	-	-	275	275	258	275
	NBT	-	-	-	-	690	1300	415	1302
US 401 Business @ Burlington Mills Road / Virginia Water Dr	NBR	-	-	-	-	-	-	224	225
	SBL	-	-	-	-	103	382	108	339
	SBTR	-	-	-	-	129	509	195	1023
	EBL	-	-	329	226	612	424	500	340
	EBT	-	-	82	40	152	117	100	95
	EBR	-	-	-	-	-	-	50	41
	WBL	-	-	34	32	77	115	72	118
	WBT	-	-	32	35	91	142	90	110
	WBR	-	-	31	37	83	129	84	103
US 401 Business @ Old Burlington Mills Road	NBL	-	-	398	124	568	236	373	167
	NBT	-	-	337	423	915	318	490	230
	SBL	-	-	150	24	145	145	144	144
	SBT	-	-	873	380	2839	857	1219	810
	SBR	-	-	-	-	-	-	24	22
	EBL	231	152	-	-	-	-	-	-
	EBR	249	147	-	-	-	-	-	-
	NBL	106	60	-	-	-	-	-	-
US 401 Business @ Rogers Road / Redford Pl Dr	NBT	194	196	-	-	-	-	-	-
	SBT	307	197	-	-	-	-	-	-
	SBR	198	97	-	-	-	-	-	-
	EBL	185	181	200	229	210	236	213	248
	EBT	70	157	152	200	276	214	195	223
	EBR	347	238	366	227	495	322	397	318
	WBL	135	122	182	144	260	185	250	210
	WBT	144	155	199	180	370	199	227	214
	WBR	135	192	185	218	228	220	205	213
NBL	224	236	265	297	296	300	300	300	
US 401 Business @ Rogers Road / Redford Pl Dr	NBTR	227	299	339	374	511	604	634	659
	SBL	187	128	274	243	275	274	275	265
	SBT	371	246	453	390	620	490	620	490
	SBR	159	101	217	104	416	185	446	141

Legend

- No movement
- XX Maximum queue length (feet)

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Recommendations
August 11, 2020

8.0 RECOMMENDATIONS

Based on the findings of this study, specific improvements have been identified and should be completed as part of the proposed development. Except where noted, all intersections are recommended to operate under two-way stop control (TWSC), with the site accesses serving as the minor movement(s). These improvements are shown in Figure 8 and listed below:

US 401 Business at Access A

Construct Access A as a limited-movement intersection onto US 401 Business restricting southbound and westbound lefts. Construct a northbound right-turn lane with 100 feet of full-width storage.

US 401 Business at Access B/Access K

Construct Access B and Access K as a full-movement signalized intersection onto US 401 Business with an exclusive northbound left-turn lane with 175 feet of storage and appropriate taper, and a northbound right-turn lane with 125 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 350 feet of full-width storage and appropriate taper on US 401 Business. Construct eastbound egress with an exclusive left-turn lane with 225 feet of storage and appropriate taper. Construct westbound egress with an exclusive left-turn lane with full storage and an exclusive shared through & right-turn lane with 100 feet of full-width storage.

US 401 Business at Access L

Construct Access L as a limited-movement intersection onto US 401 Business restricting northbound and eastbound lefts.

US 401 Business at Access C

Construct Access C as a limited-movement intersection on to US 401 Business restricting northbound and eastbound left-turns.

US 401 Business at Access D

Construct Access D as a limited-movement intersection on to US 401 Business allowing all movements but a westbound left. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

US 401 Business at Access M

Construct Access M as a limited-movement intersection on to US 401 Business restricting southbound and westbound left-turns.

Burlington Mills Road at Access E

Construct Access E as a full-movement intersection on Burlington Mills Road.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Recommendations
August 11, 2020

Burlington Mills Road at Access F

Construct Access F as a full-movement intersection on Burlington Mills Road.

Burlington Mills Road at Access G

Construct Access G as a full-movement intersection on Burlington Mills Road.

Burlington Mills Road at Access H

Construct Access H as single-lane roundabout on Burlington Mills Road.

Burlington Mills Road at Access I

Construct Access I as a limited-movement intersection on to Burlington Mills Road restricting eastbound and southbound left-turns. Construct a westbound exclusive right-turn lane that is continuous from receiving the second northbound left-turn lane at US 401 Business and Burlington Mills Road.

Old Burlington Mills Road at Access J

Construct Access J as a full-movement intersection on Old Burlington Mills Road.

Burlington Mills Road at Old Burlington Mills Road

Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper.

US 401 Business at Burlington Mills Road Realigned

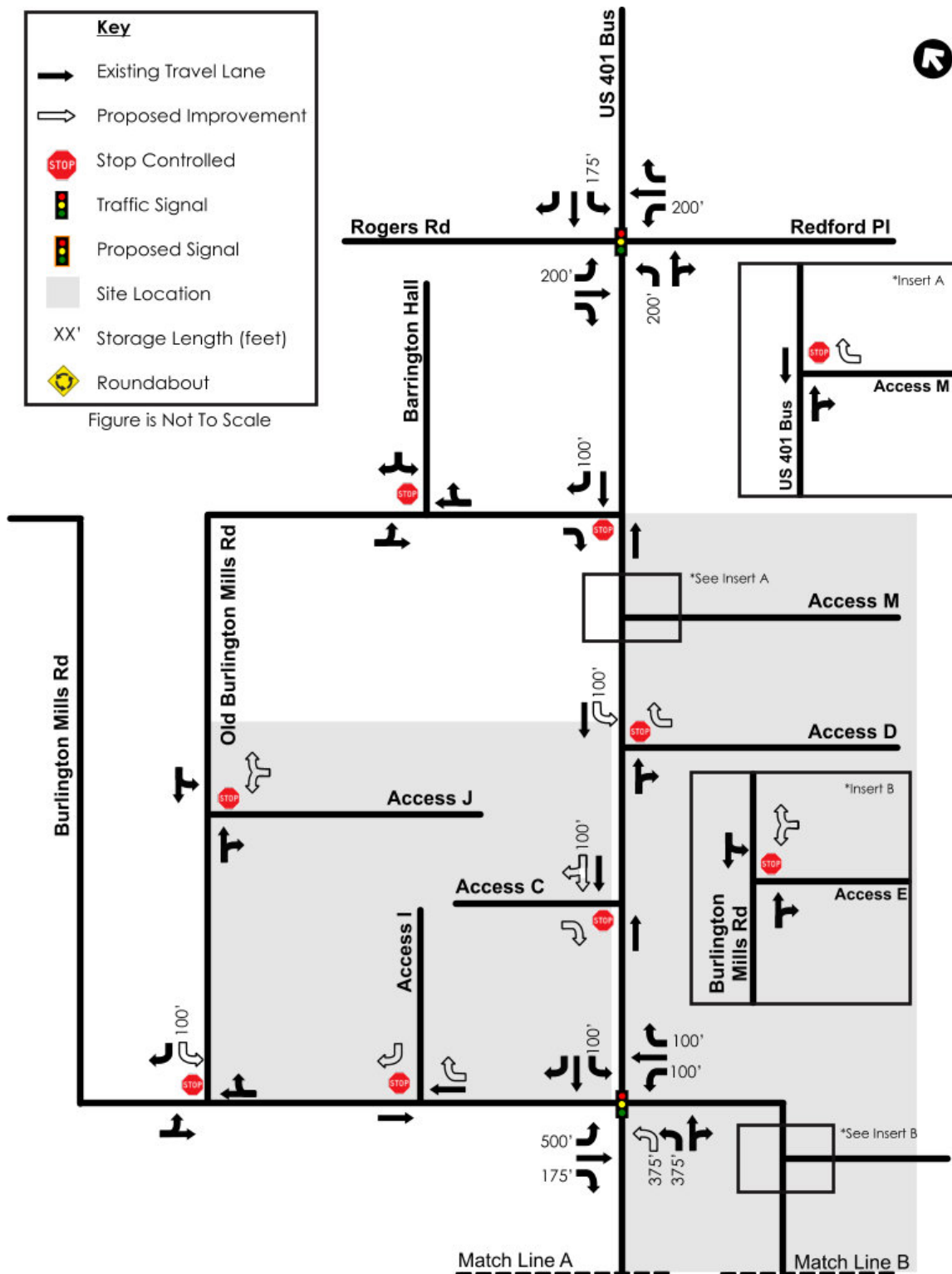
Construct dual northbound exclusive left-turn lanes with 375 feet of full-width storage and appropriate taper.

Construct an exclusive westbound left-turn lane and an exclusive westbound right-turn lane, both with 100 feet of full-width storage and appropriate taper. Construct an exclusive eastbound left-turn lane with 500 feet of full-width storage and appropriate taper and an exclusive eastbound right-turn lane with 175 feet of full-width storage and appropriate taper. Construct an exclusive southbound left-turn lane with 100 feet of full-width storage and appropriate taper and an exclusive southbound right-turn lane with at least 250 feet of full-width storage and appropriate taper. The southbound right-turn lane should start at least 100 feet prior to the US 401 Business at Access C intersection.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

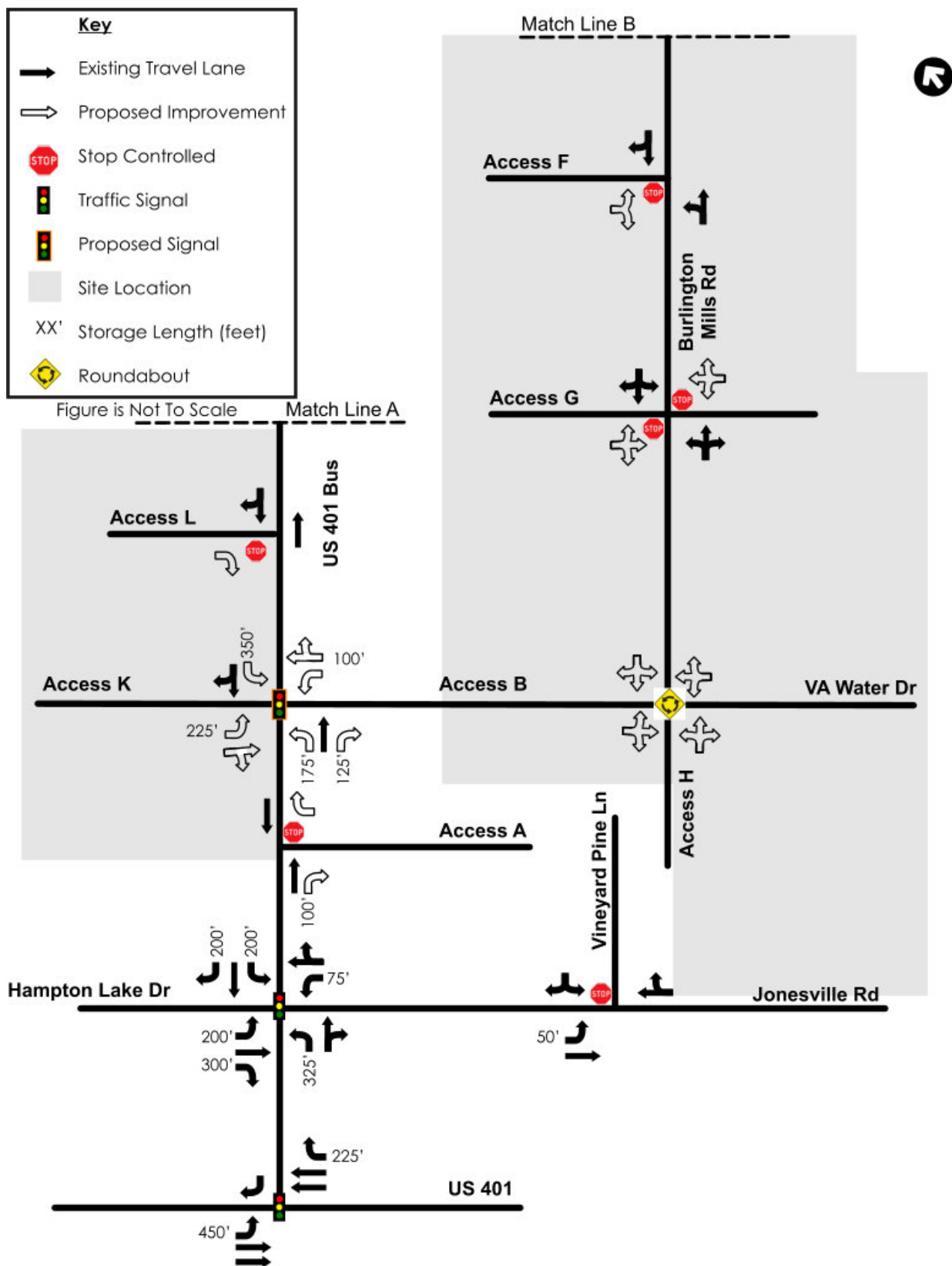
Recommendations
August 11, 2020

Figure 8: Build Recommended Lane Configurations



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Recommendations
 August 11, 2020



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

Conclusions
August 11, 2020

9.0 CONCLUSIONS

The study shows that the traffic generated by the proposed Wallbrook Development will have a minimal impact on surrounding roadways and intersections with the recommended improvements included to mitigate the site traffic. The signalized intersections operate at an overall LOS of D or better during both peak hours. Approaches for the unsignalized intersections operate at LOS D or better except for the eastbound approach at US 401 Business and Old Burlington Mills Road which operates at LOS E in the AM peak hour.

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
August 11, 2020

10.0 REFERENCES

¹ **NCDOT Functional Classification Map,**

<https://ncdot.maps.arcgis.com/home/webmap/viewer.html?layers=029a9a9fe26e43d687d30cd3c08b1792>

² **2017 NCDOT Average Daily Traffic Volumes,**

<https://ncdot.maps.arcgis.com/home/webmap/viewer.html?webmap=b7a26d6d8abd419f8c27f58a607b25a1>

³ **Trip Generation (10th Edition),** Institute of Transportation Engineers (ITE), September 2017.

⁴ **NCHRP Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments.** Washington, D.C.: Transportation Research Board, 2015.

⁵ **HCM 2010: Highway Capacity Manual.** Washington D.C.: Transportation Research Board, 2010.

⁶ **Designing Walkable Urban Thoroughfares: A Context Sensitive Approach.** Institute of Transportation Engineers (ITE), 2010.

⁷ **NCDOT Congestion Management Capacity Analysis Guidelines.** North Carolina Department of Transportation (NCDOT), July 2015,

<https://connect.ncdot.gov/resources/safety/Congestion%20Mngmt%20and%20Signing/Congestion%20Management/Capacity%20Analysis%20Guidelines.pdf>

⁸ **Rolesville Main Street Vision Plan.** Town of Rolesville et al.,

<https://www.rolesvillenc.gov/sites/default/files/uploads/planning/mainstreetvisionplan.pdf>

APPENDIX

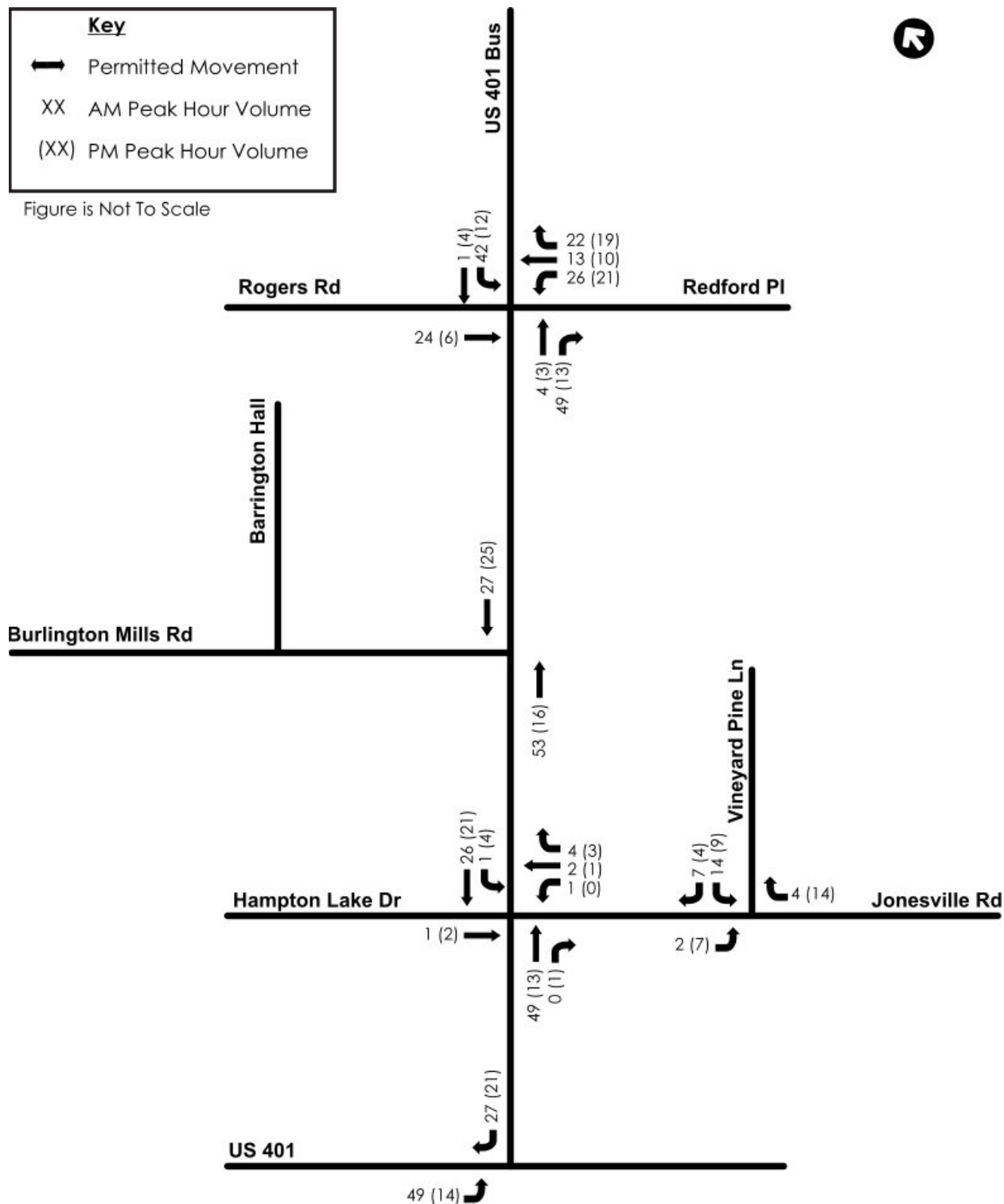
A link containing all relevant files is electronically sent with this report:

- Traffic Signal Plans
- Site Plan
- NCDOT Scoping Checklist
- Raw Traffic Count Data
- Synchro Files
- SimTraffic Reports
- Approved Development Traffic Information

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

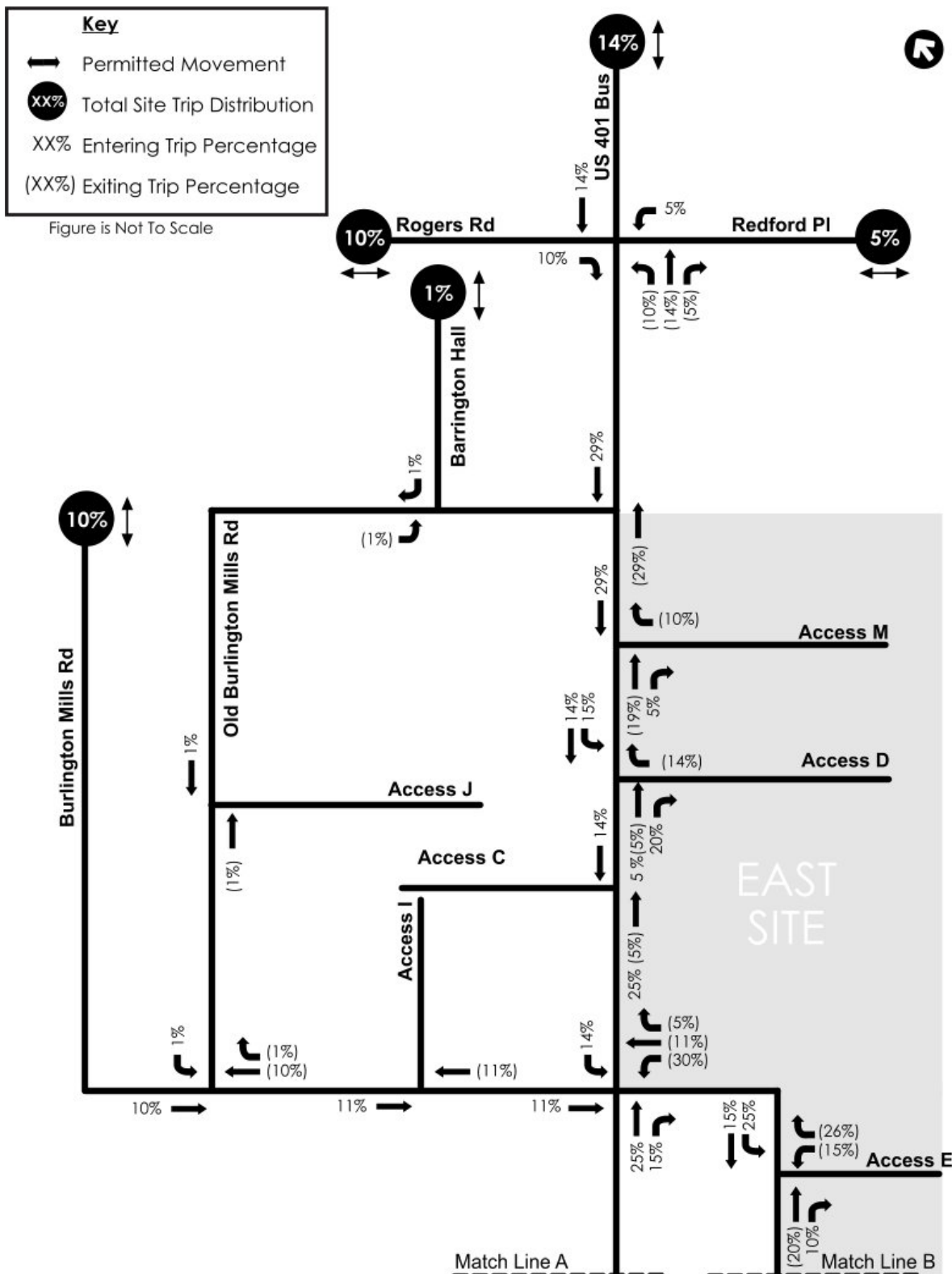
Figure 9: Approved Development Trips



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

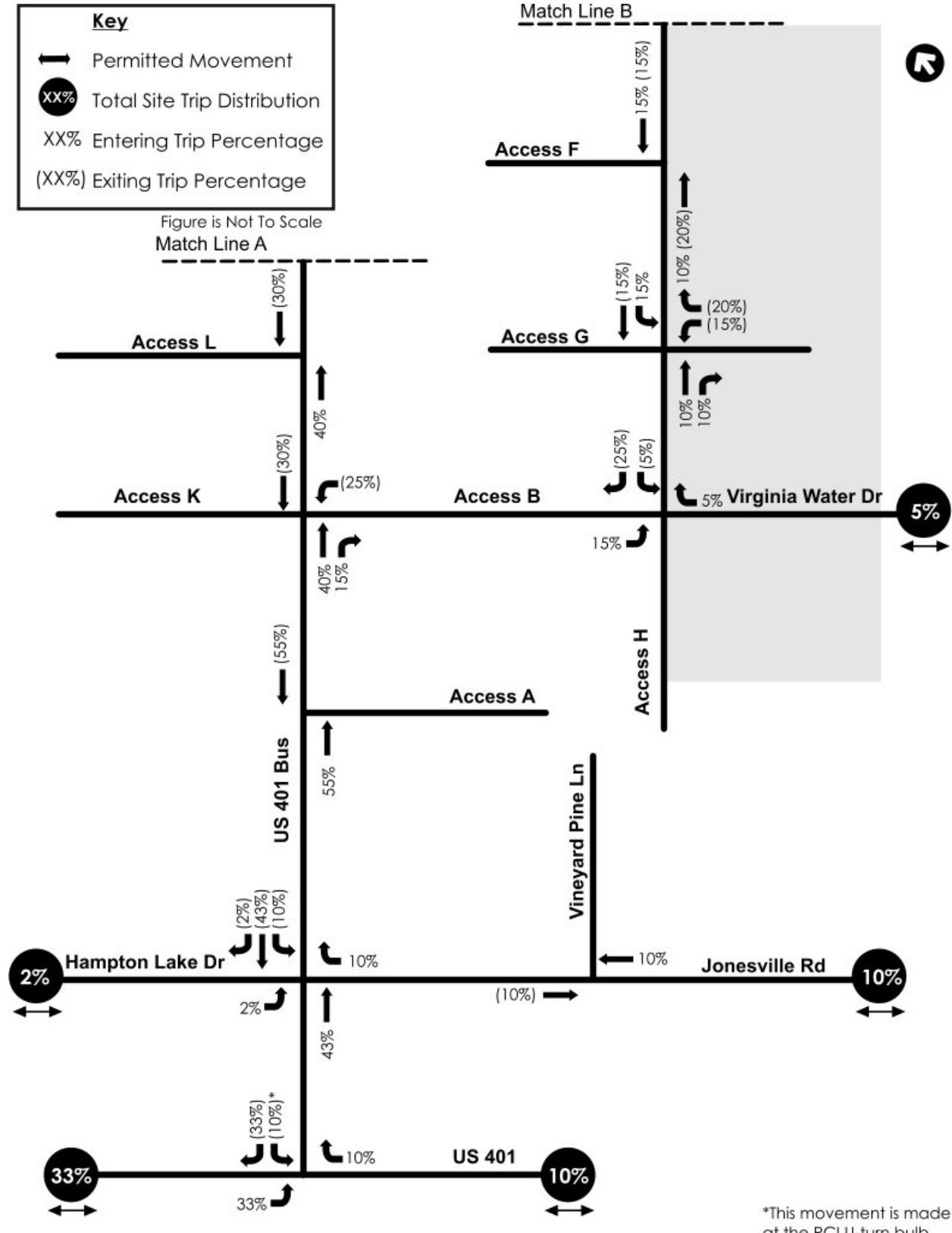
References / Appendix
 August 11, 2020

Figure 10: East Trip Distribution



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

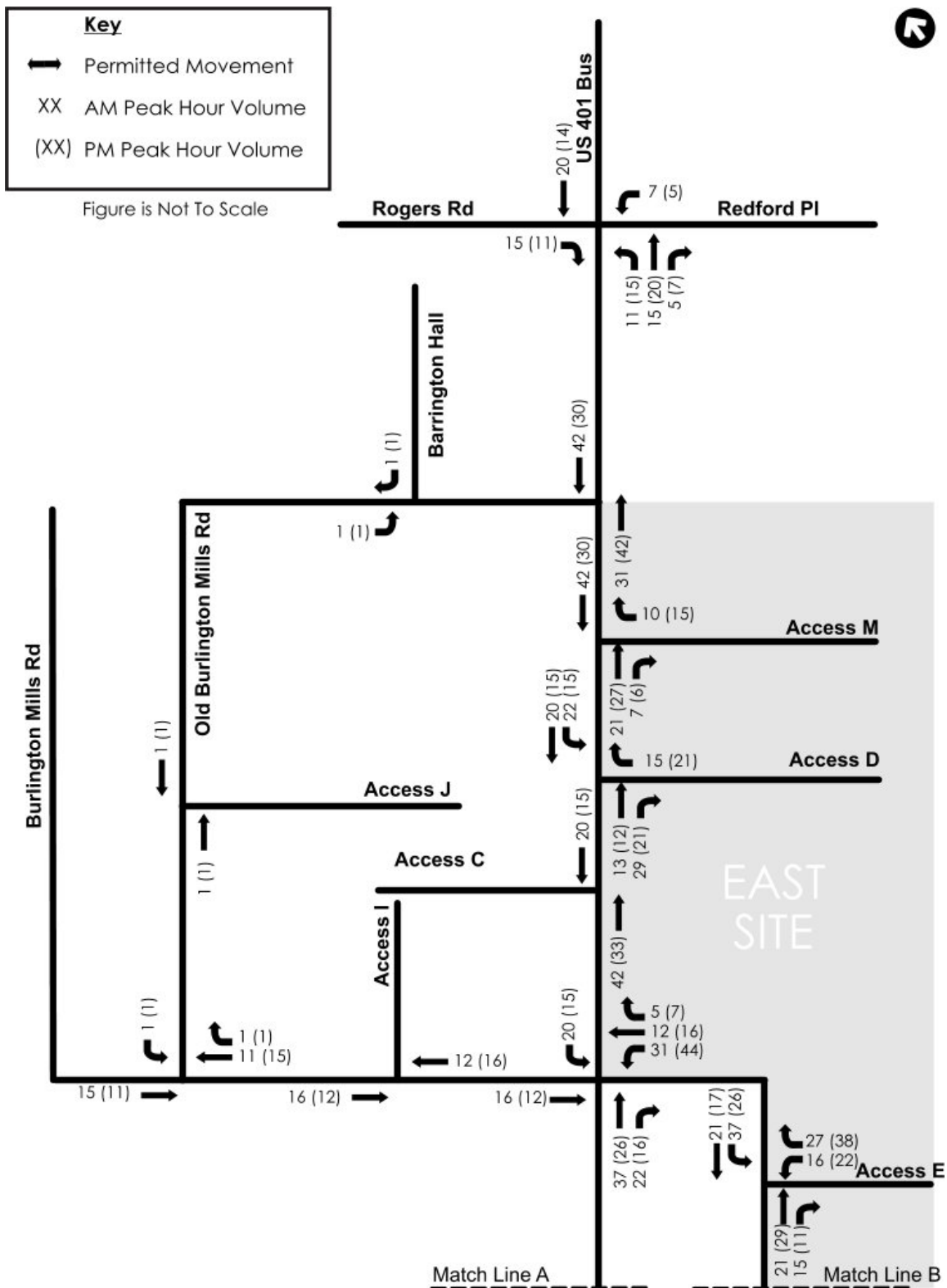
References / Appendix
 August 11, 2020



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

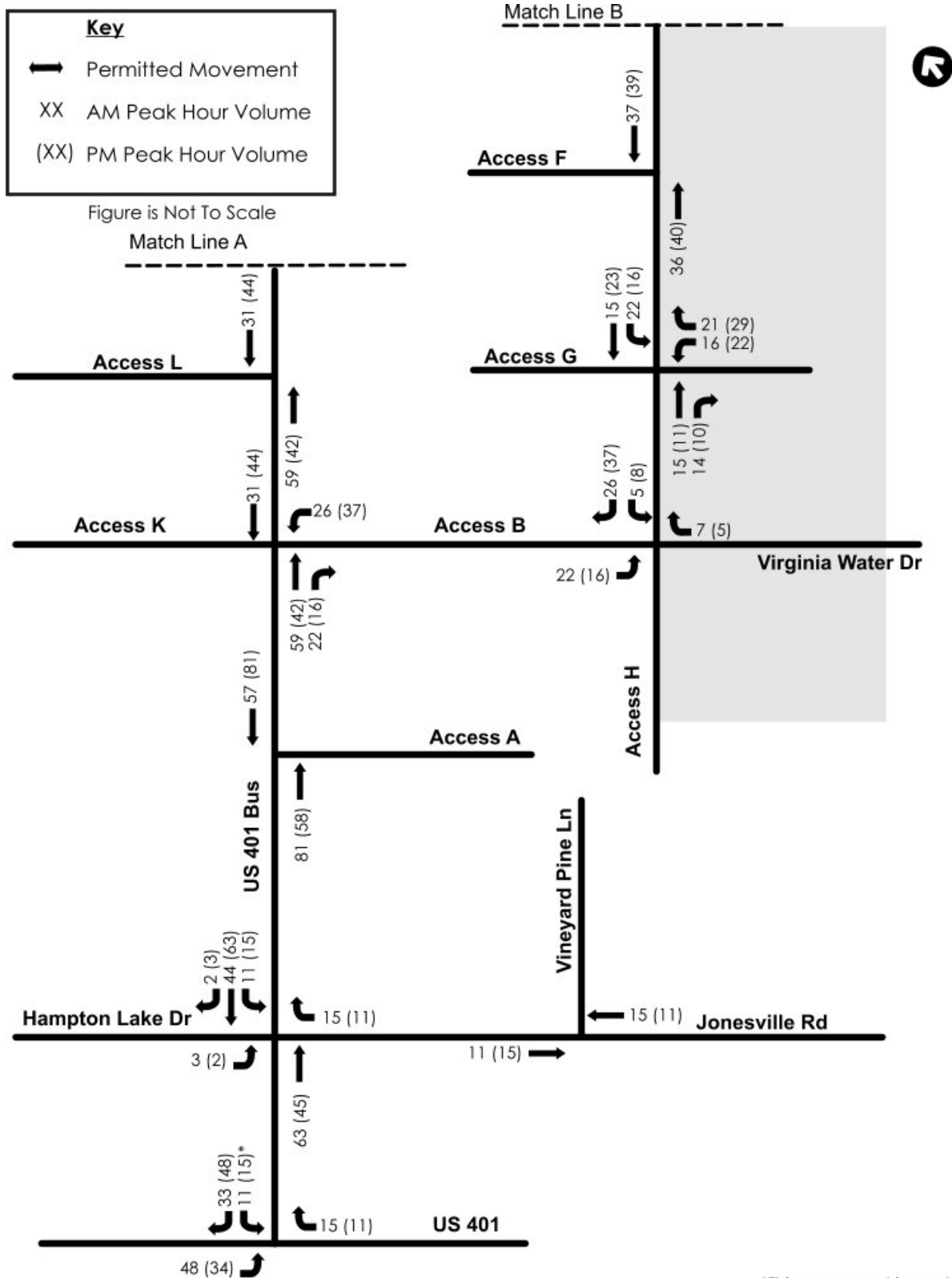
References / Appendix
 August 11, 2020

Figure 11: East Site Trip Assignment



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

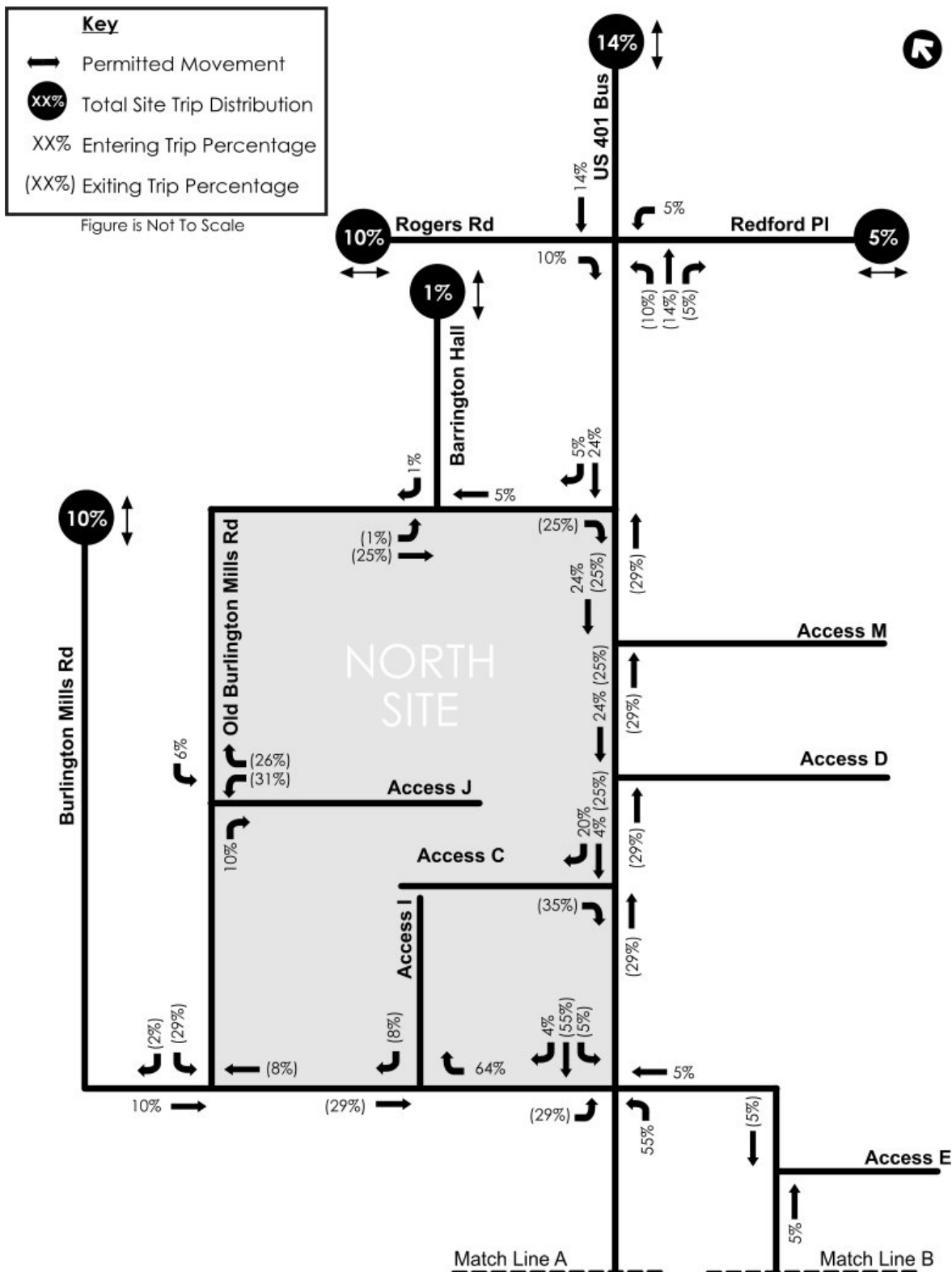


*This movement is made at the RCI U-turn bulb

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

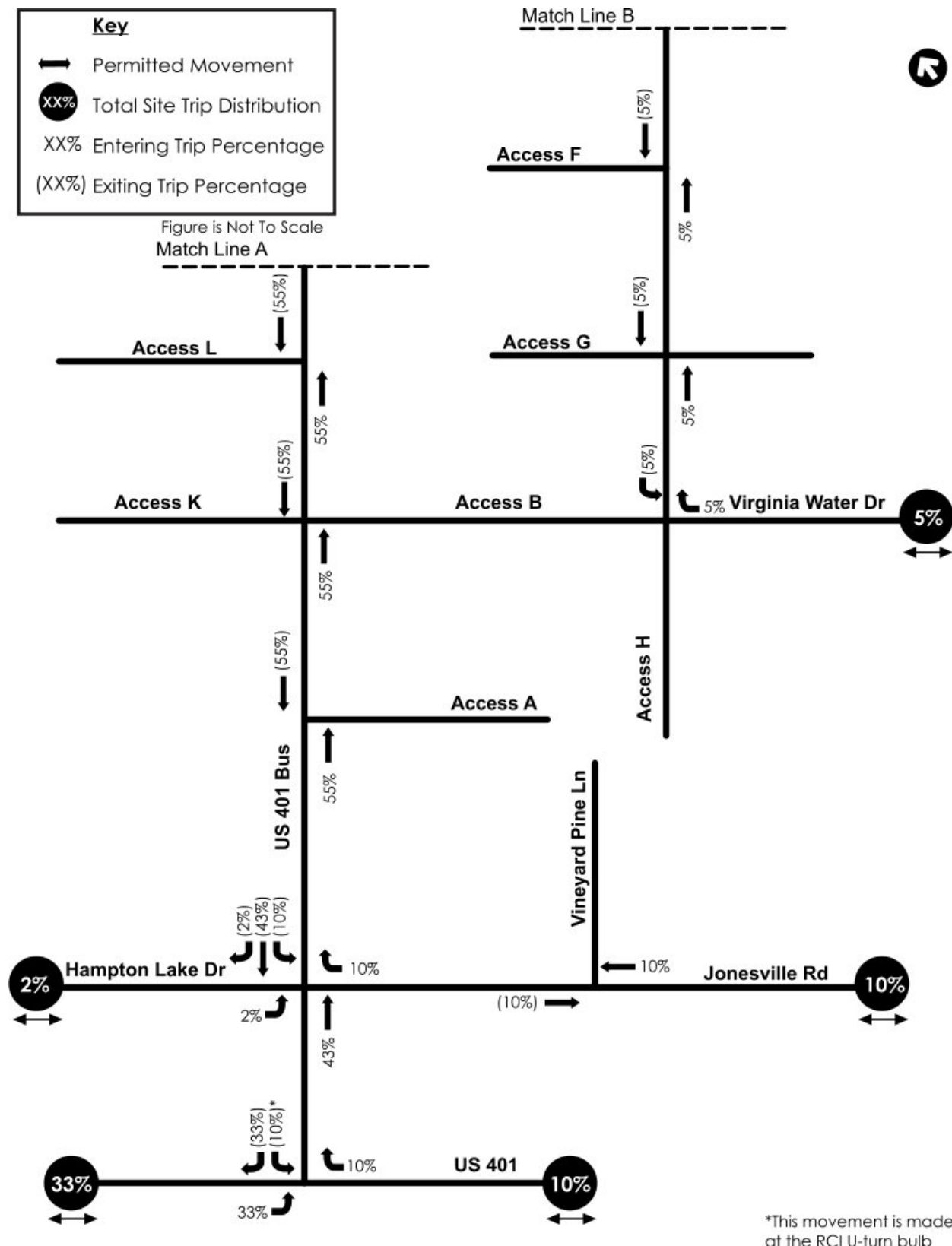
References / Appendix
 August 11, 2020

Figure 12: North Site Trip Distribution



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

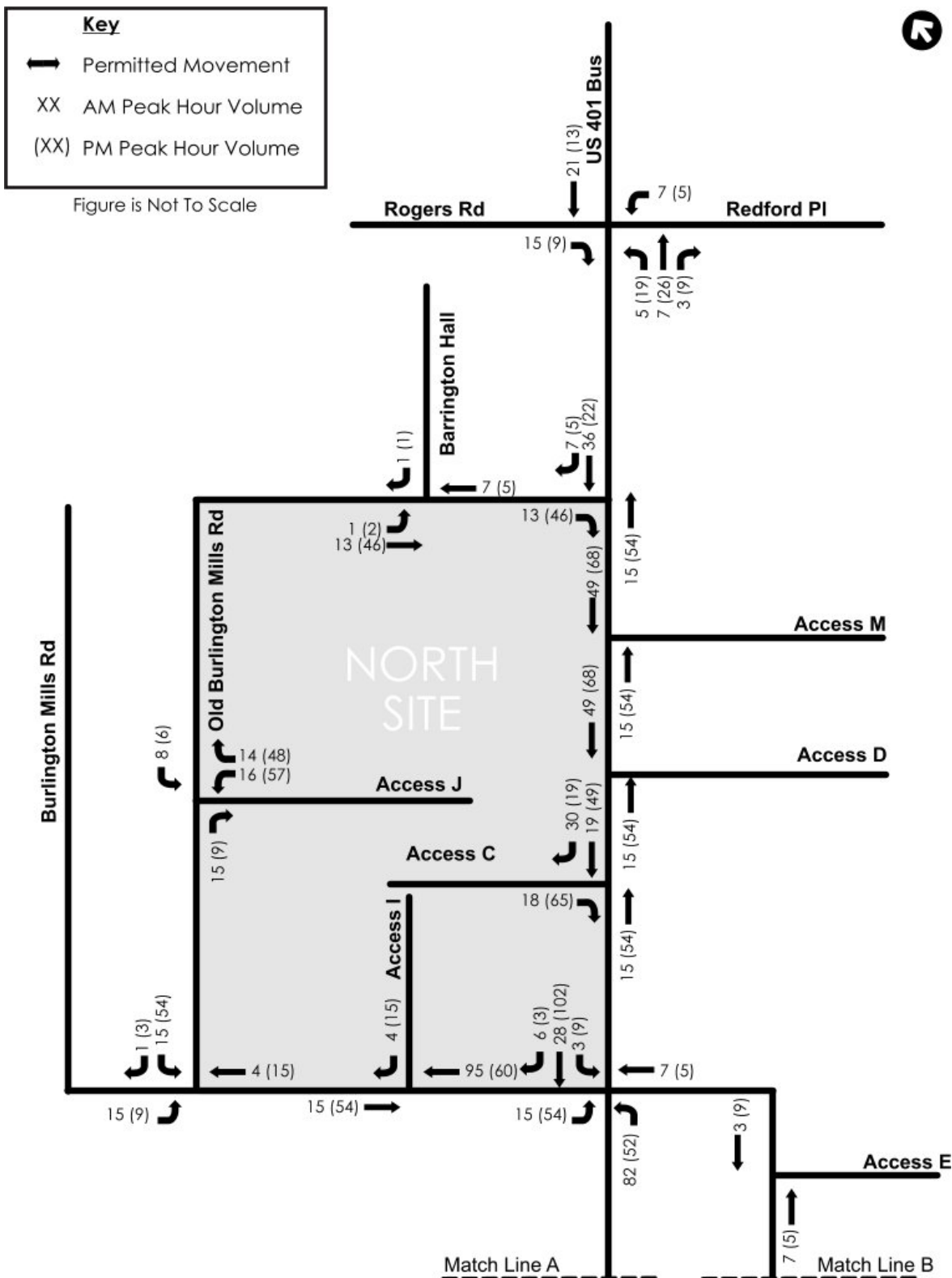
References / Appendix
 August 11, 2020



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

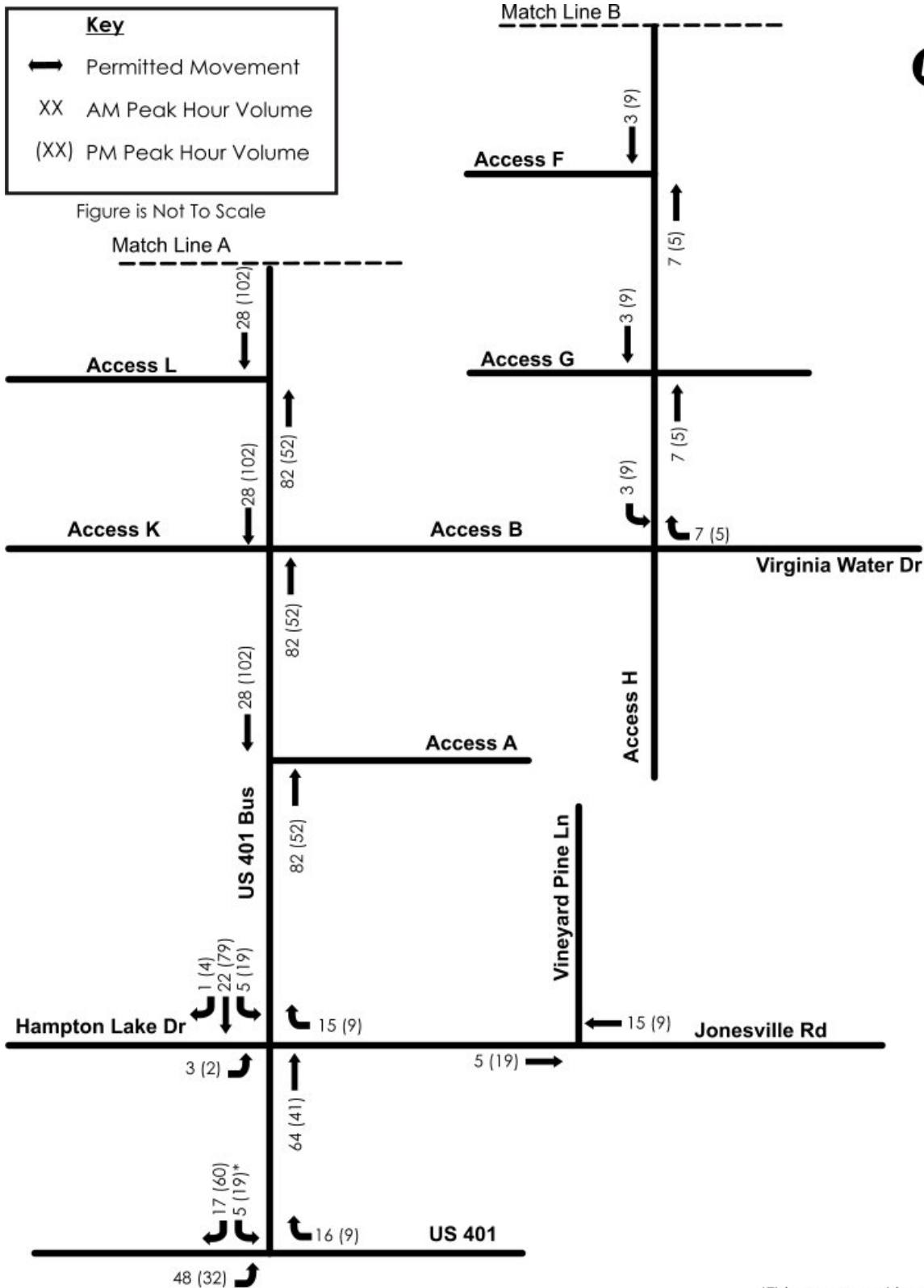
References / Appendix
 August 11, 2020

Figure 13: North Site Trip Assignment



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

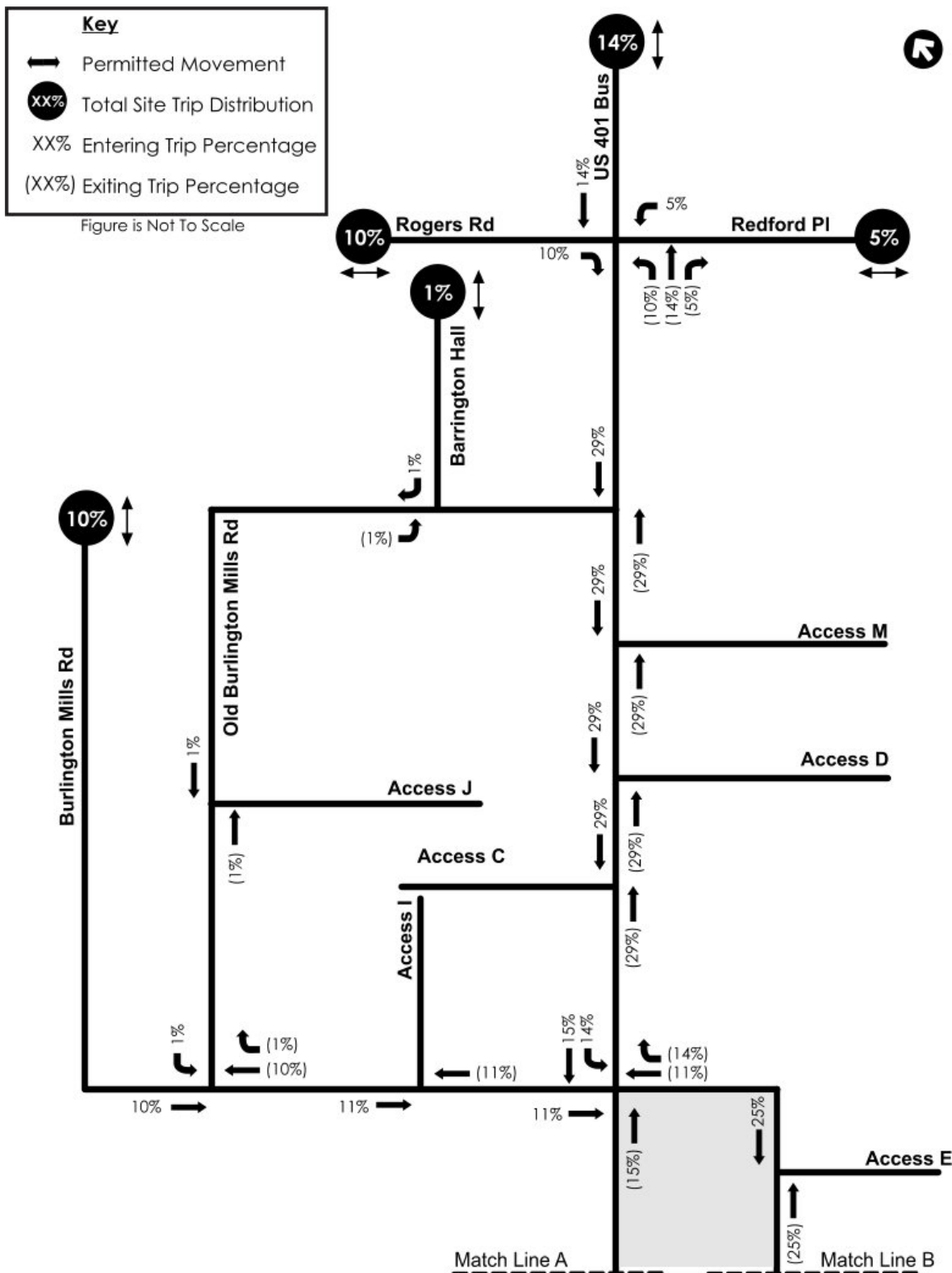


*This movement is made at the RCI U-turn bulb

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

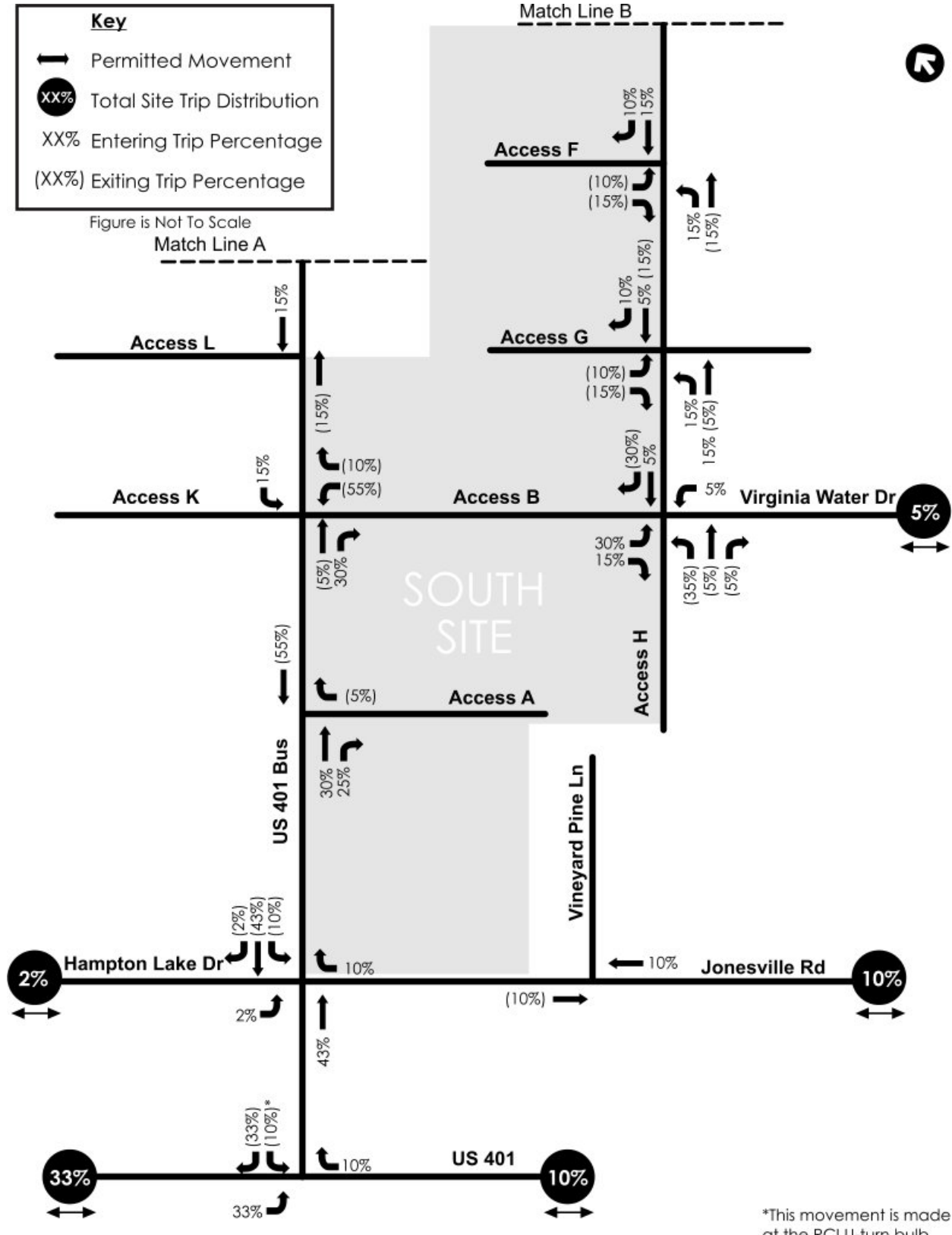
References / Appendix
 August 11, 2020

Figure 14: South Site Trip Distribution



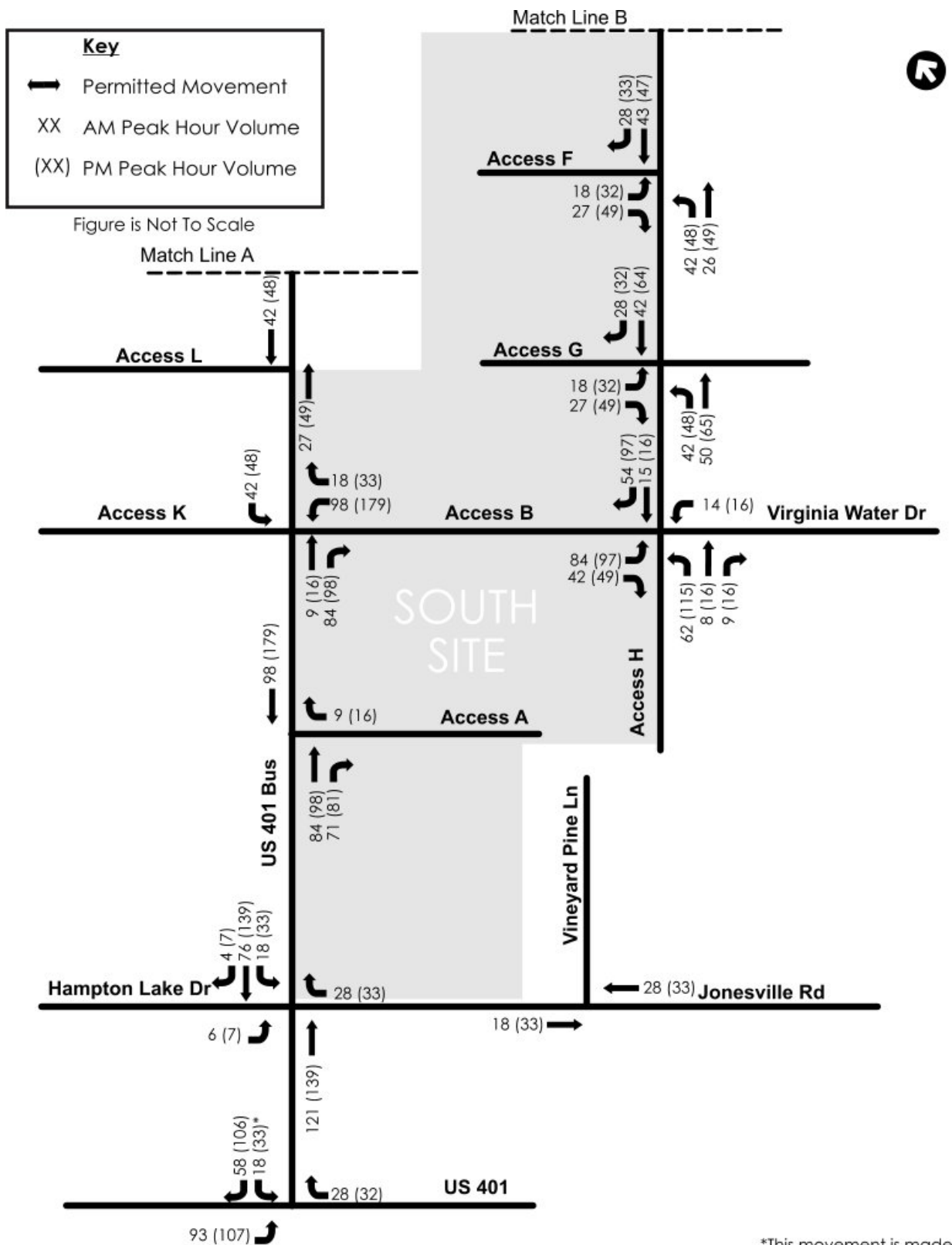
REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020



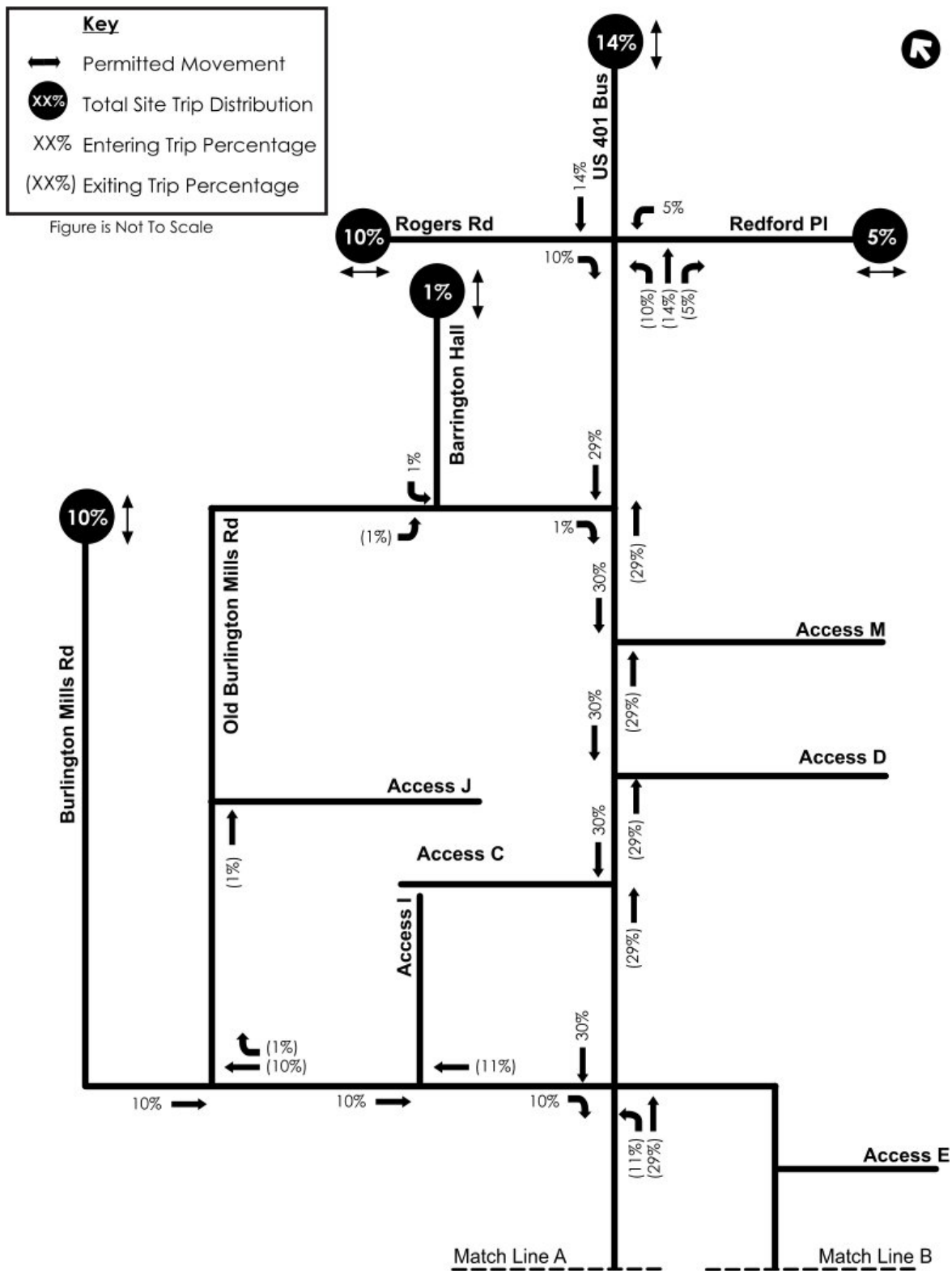
*This movement is made at the RCI U-turn bulb



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

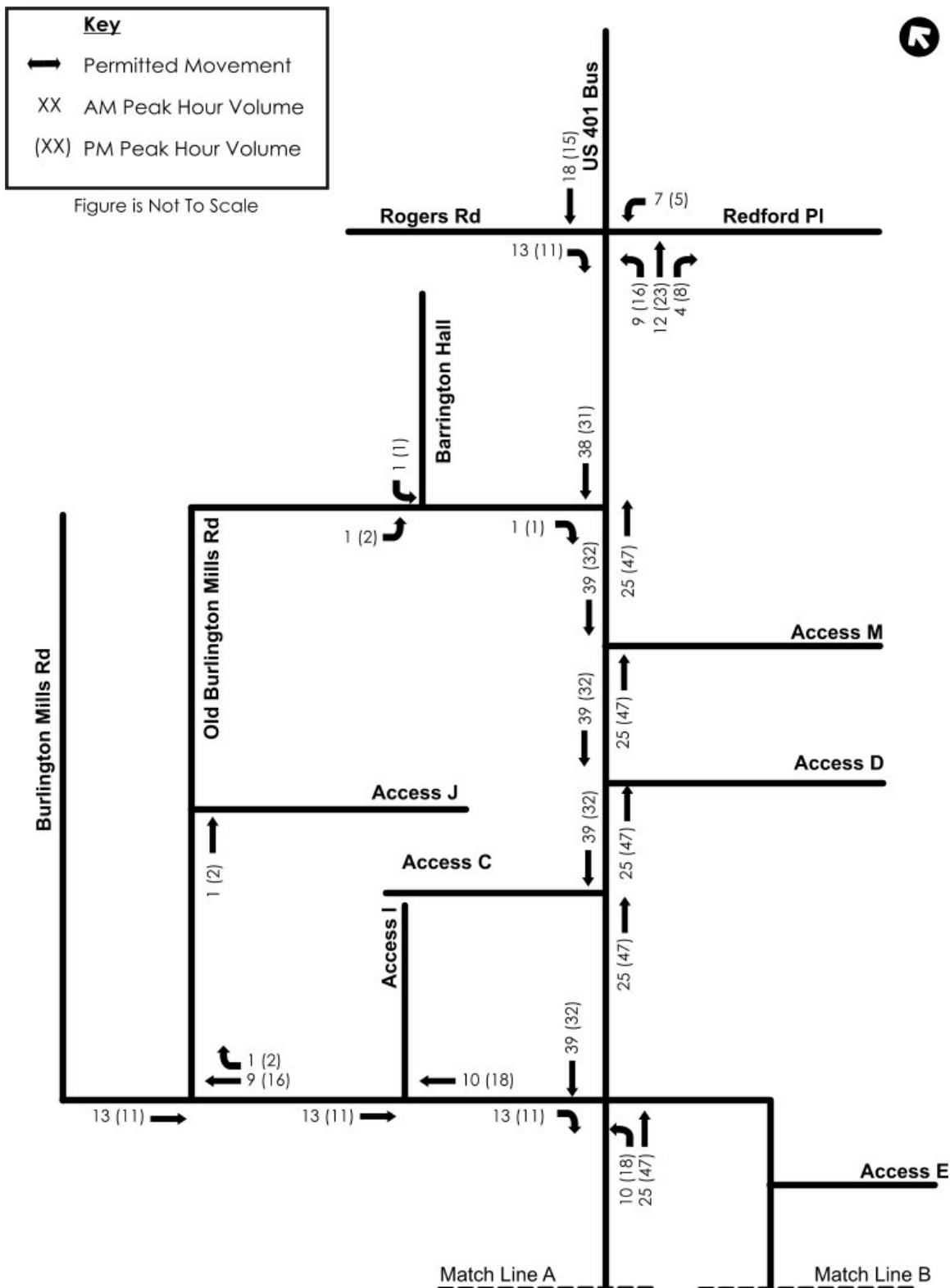
Figure 16: West Site Trip Distribution



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

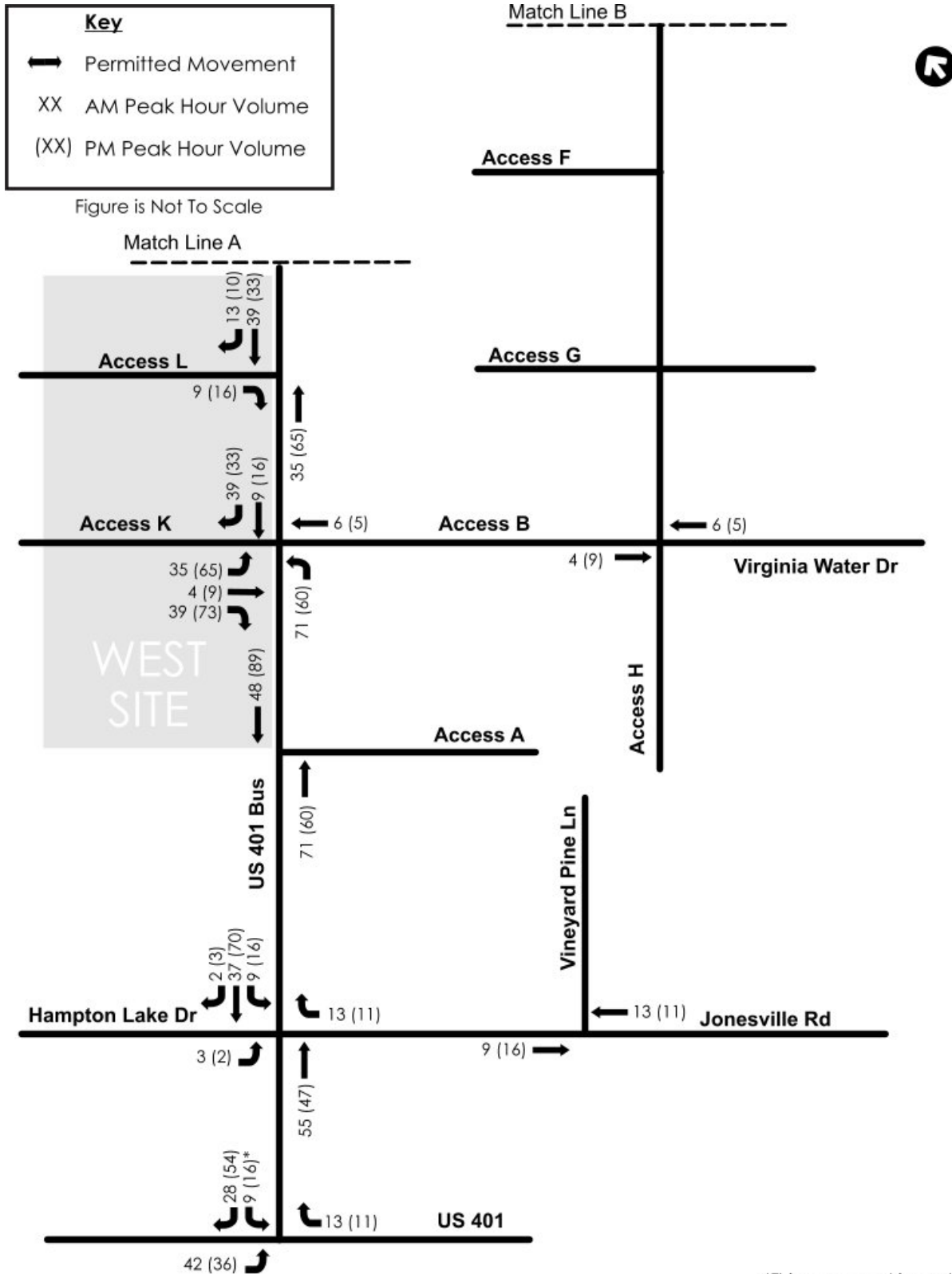
References / Appendix
 August 11, 2020

Figure 17: West Site Trip Assignment



REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

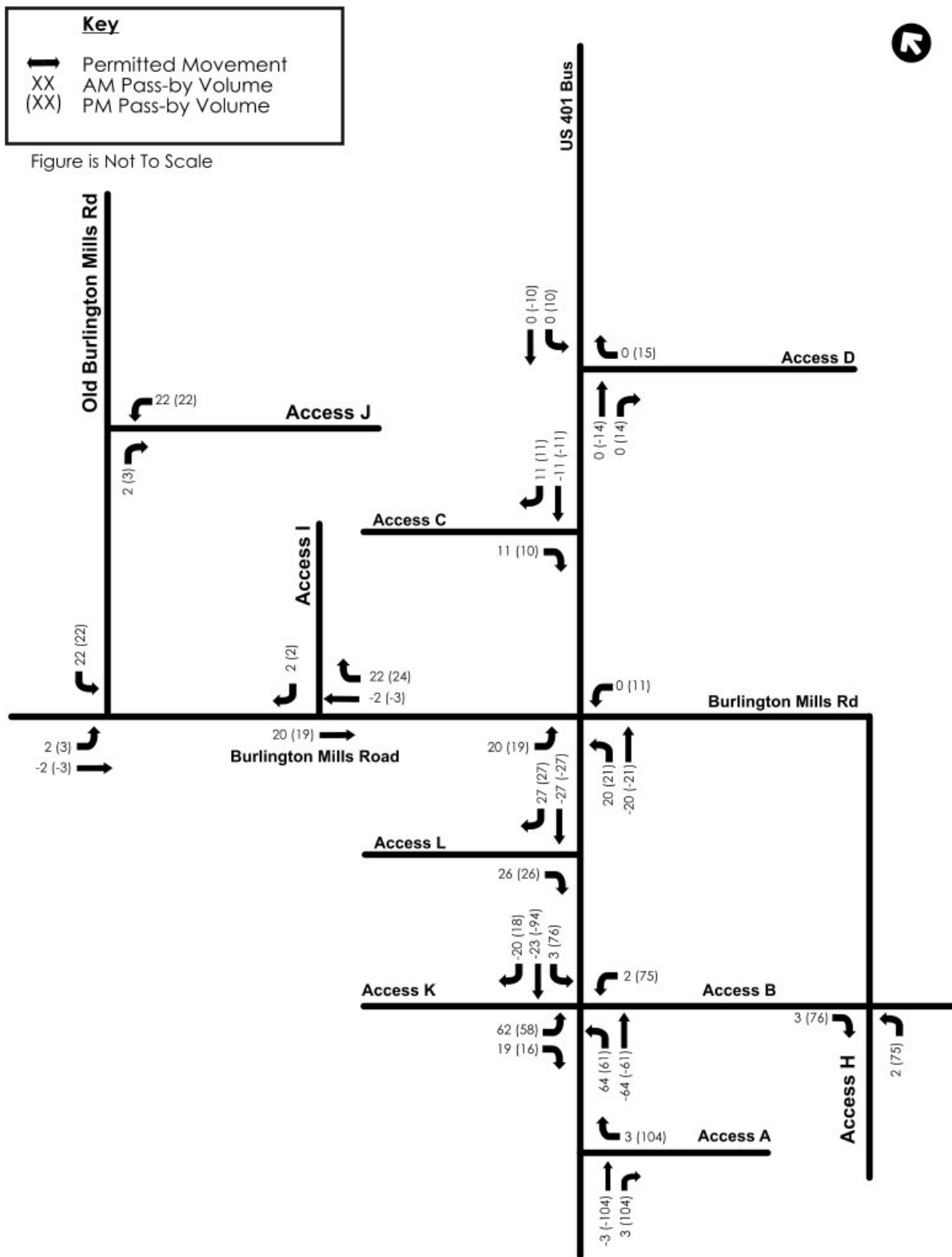


*This movement is made at the RCI U-turn bulb

REVISED WALLBROOK DEVELOPMENT TRAFFIC IMPACT ANALYSIS

References / Appendix
 August 11, 2020

Figure 168: Pass-By Trips



To:	M. Scott Wheeler NCDOT – Division 5, District Engineer	From:	Jeff A. Weller, PE Raleigh – Jones Franklin Road
File:	171002232	Date:	February 13, 2020

Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

In conjunction with the Transportation Impact Analysis (TIA) effort for the full build-out of the Wallbrook Development, it was the request of the North Carolina Department of Transportation (NCDOT) that a standalone analysis be provided for the residential-only component of the proposed development. The 68.54-acre Wallbrook Development is expected to be completed in 2025 and is likely contingent on the proposed Town of Rolesville project to realign Burlington Mills Road, and its connection with US 401 Business, to the south of the current location. However, part of the eastern portion of the Wallbrook Development, which is the residential component, is expected to be completed in 2021 independent of the Burlington Mills Road realignment project. This residential component is expected to consist of 155 townhomes. The analysis included herein addresses the impact of the proposed residential portion on the existing network.

It was agreed upon, that for this supplemental analysis, the only intersections to be included are the existing signalized intersection of US 401 Business with Burlington Mills Road and the unsignalized intersection of US 401 Business with the driveway for the residential portion of the Wallbrook Development, referred to as Access D.

Volume Development and Distribution

The volumes for the intersection of US 401 Business and Burlington Mills Road included in the full TIA were used for the 2019 Existing conditions analysis. For the 2021 No-Build scenario, the Wallbrook Development TIA methodology was used, and the rates were grown at 2.5% compounded annually. The approved developments included in the TIA, Jonesville Road Townhomes and Redford Place, are also included in this analysis. While both are not expected to be completed by the time the residential component of the Wallbrook Development is constructed, their inclusion provides a conservative estimate for the background demand on the network. The volumes for the 2021 No-Build scenario are shown in Figure 1.

Table 1 shows the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition estimates for Daily, AM Peak, and PM Peak trip generation for the Wallbrook Development townhomes.

Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Table 1: Trip Generation

Wallbrook-Residential Trip Generation												
Land Use	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221	155	Units	843	422	421	53	14	39	67	41	26
				843	422	421	53	14	39	67	41	26
Internal Capture	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221		Units									
Pass-Bys	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221		Units									
Adjusted Trip Generation	ITE LUC	Size		Daily			AM Peak			PM Peak		
				Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Multifamily Housing (Mid-Rise)	221		Units	843	422	421	53	14	39	67	41	26
Total Trips Generated				843	422	421	53	14	39	67	41	26

The distribution of site traffic is in line with the full Wallbrook Development TIA. Figure 2 shows a consolidated distribution pattern for this reduced study area and Figure 3 shows the site trips distributed in the network.

The distributed site trips were then added to the 2021 No-Build volumes. Figure 4, below, shows the 2021 AM and PM Build analysis volumes.

Analysis

The 2019 Existing analysis shows that the intersection of US 401 Business at Burlington Mills Road currently operates at LOS B in both peak hours. The 2021 No-Build analysis also shows that this intersection is expected to operate at LOS B in both peak hours with similar calculated delays.

The following recommendations for the intersection of US 401 Business and Access D are included in the 2021 Build analyses:

- **Add a northbound right-turn lane with 100 feet of appropriate storage and taper**
- **Add a southbound left-turn lane with 100 feet of appropriate storage and taper.**

The analysis of the 2021 Build shows that the signalized intersection of US 401 Business and Burlington Mills Road is expected to operate at LOS B in both peak periods, with the overall delay similar to the 2021 No-Build analysis results. The worst approach for the intersection of US 401 Business and Access D is expected to operate at LOS D in both peak hours. It is not uncommon for minor street approaches to unsignalized intersections to operate with a higher delay, especially in peak hour conditions. Based on simulation observations, the queues are expected to clear quickly. Table 2 provides a comparison of the operations for the study intersections for the analysis scenarios and Table 3 shows the maximum queues generated from the analysis simulations.

Figure 5 shows the recommended laneage for the Residential-Only phase of the Wallbrook Development.

Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Table 2: Residential Parcel Level of Service & Delay

Intersection	Peak Hour	Overall / Approach / Movement	Existing (2019)	No-Build (2021)	Build (2021)
US 401 Business at Burlington Mills Road (Signalized)	AM	Overall	B (16.7)	B (17.5)	B (19.4)
		EB Approach	C (26.3)	C (27.0)	D (43.3)
		NB Approach	A (7.1)	A (8.9)	A (8.8)
		SB Approach	B (19.9)	C (20.2)	B (16.8)
	PM	Overall	B (11.4)	B (12.4)	B (12.5)
		EB Approach	C (26.2)	C (26.4)	C (26.2)
		NB Approach	A (7.3)	A (8.0)	A (8.2)
		SB Approach	B (10.1)	B (11.9)	B (12.2)
US 401 Business at Access D (Unsignalized)	AM	WB Approach	-	-	D (32.8)
		NB Approach	-	-	A (0.0)
		SB Approach	-	-	A (0.1)
	PM	WB Approach	-	-	D (25.2)
		NB Approach	-	-	A (0.0)
		SB Approach	-	-	A (0.2)

Table 3: Maximum Queue Table

Intersection	Peak Hour	Movement	Existing (2019)	No-Build (2021)	Build (2021)
US 401 Business at Burlington Mills Road (Signalized)	AM	EBR	163	197	247
		NBL	114	110	133
		NBL	61	90	96
		SBR	200	200	245
	PM	EBR	122	132	118
		NBL	54	62	62
		NBL	19	30	31
		SBR	148	112	110
US 401 Business at Access D (Unsignalized)	AM	WBLTR	-	-	61
		SBLT	-	-	27
	PM	WBLTR	-	-	54
		SBLT	-	-	37

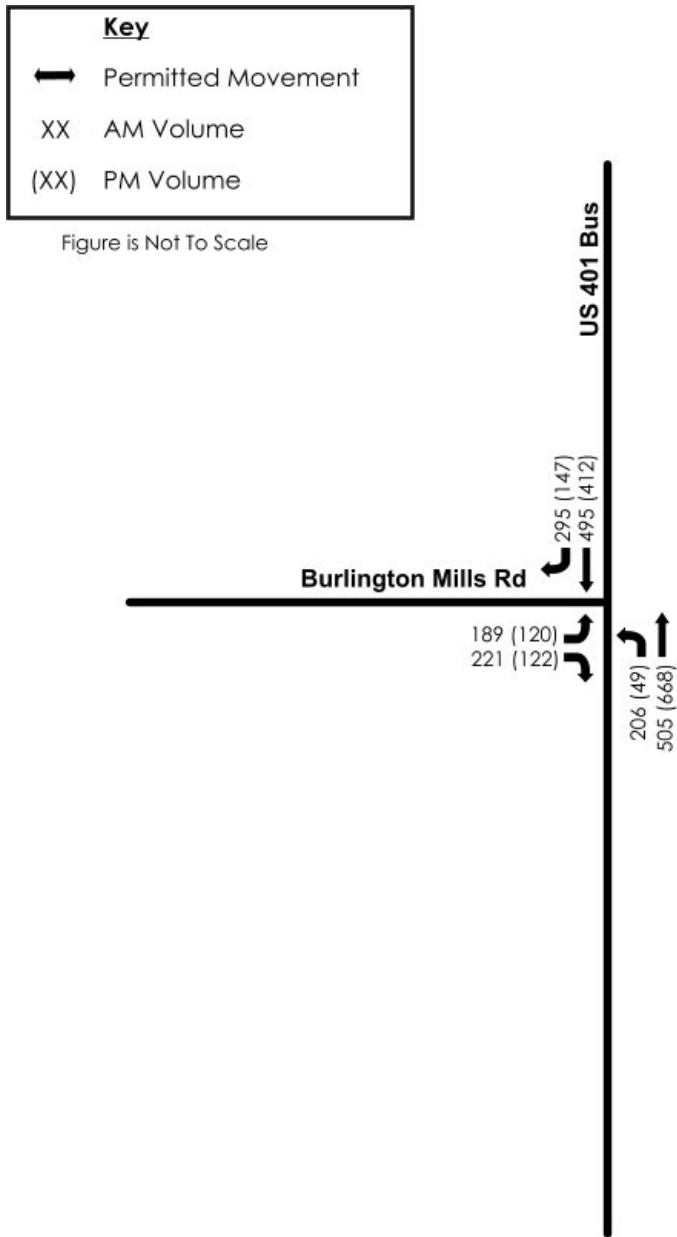
February 13, 2020

M. Scott Wheeler

Page 4 of 9

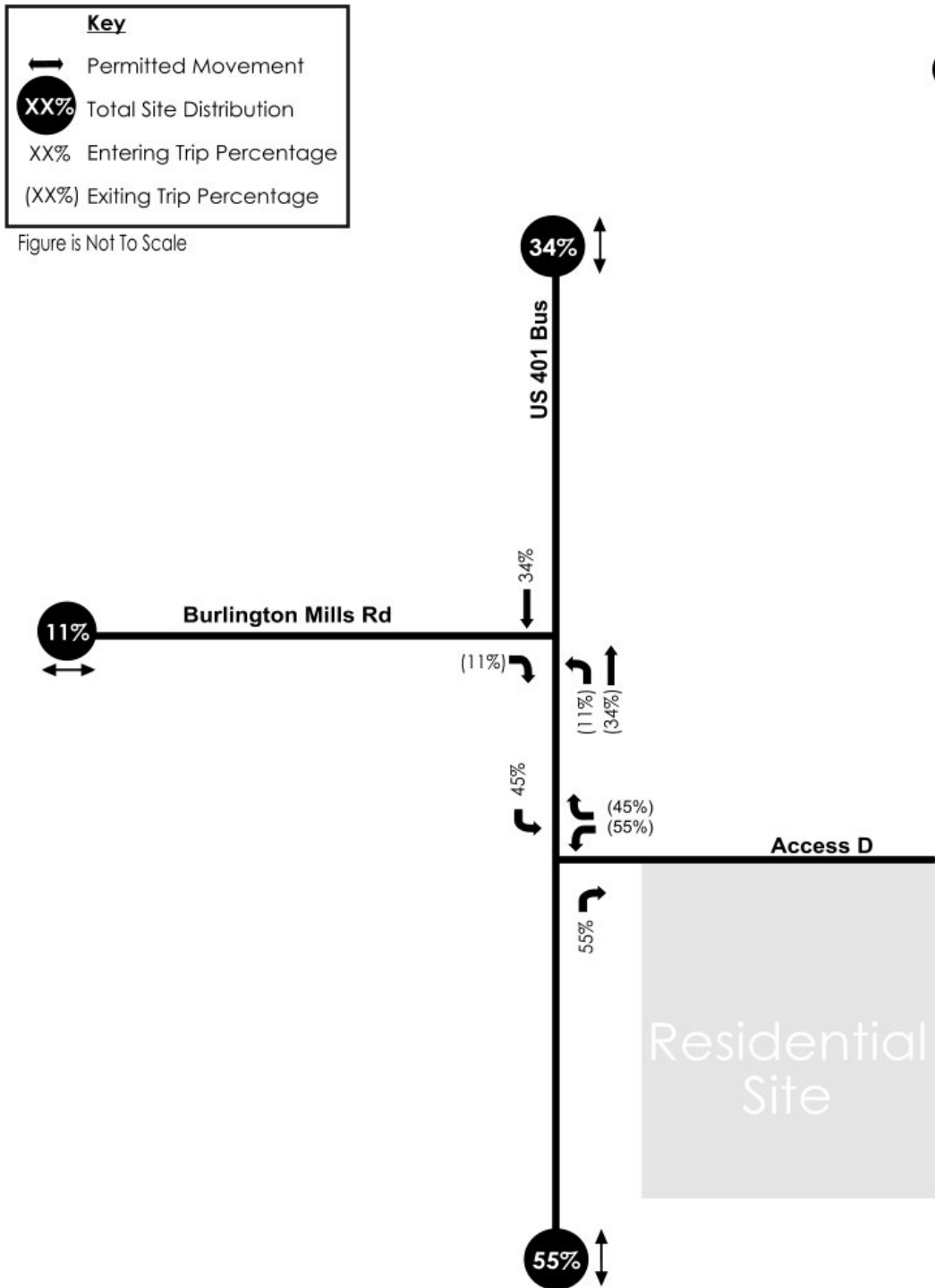
Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Figure 1: 2021 No-Build Volumes



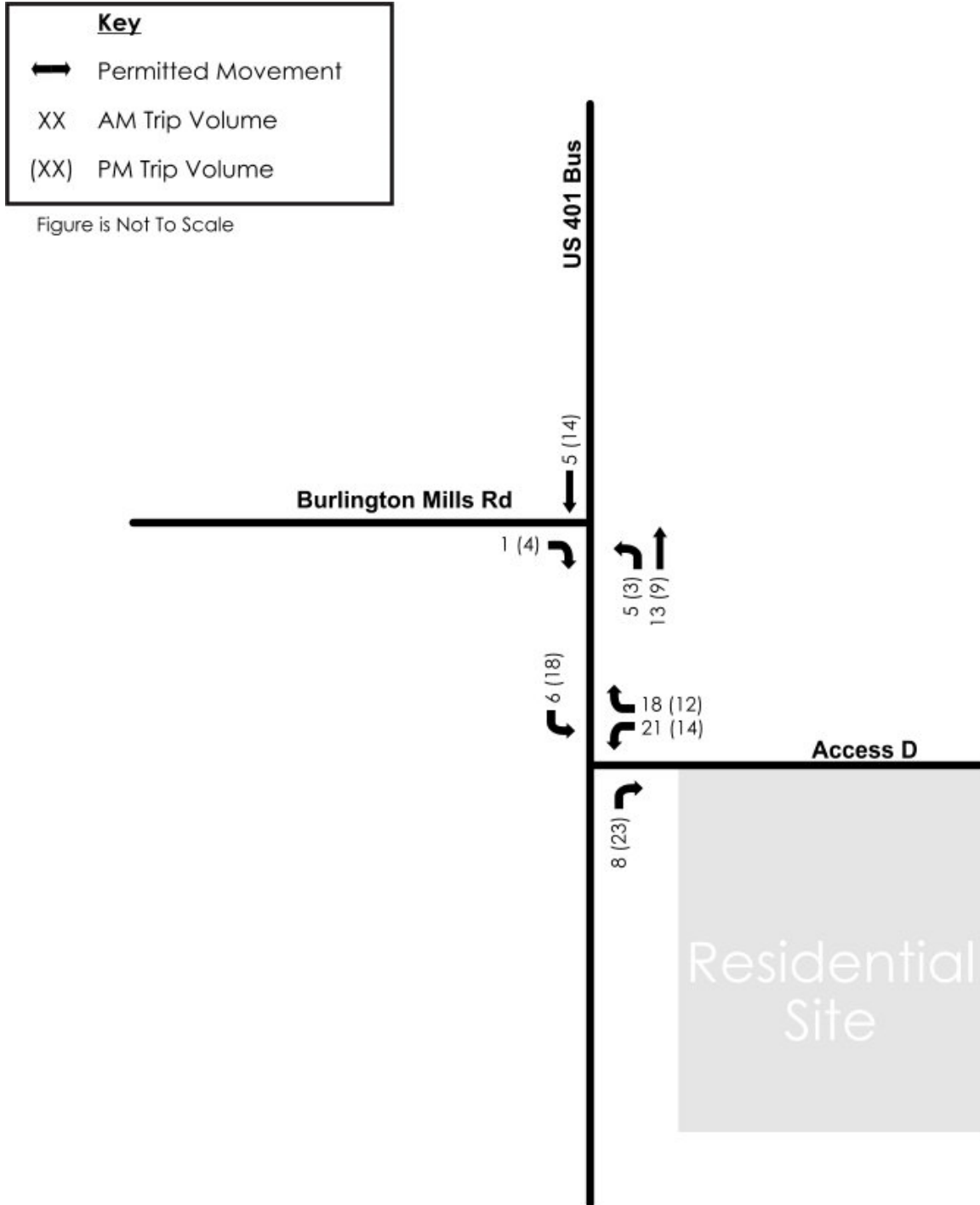
Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Figure 2: Residential Trips Distribution



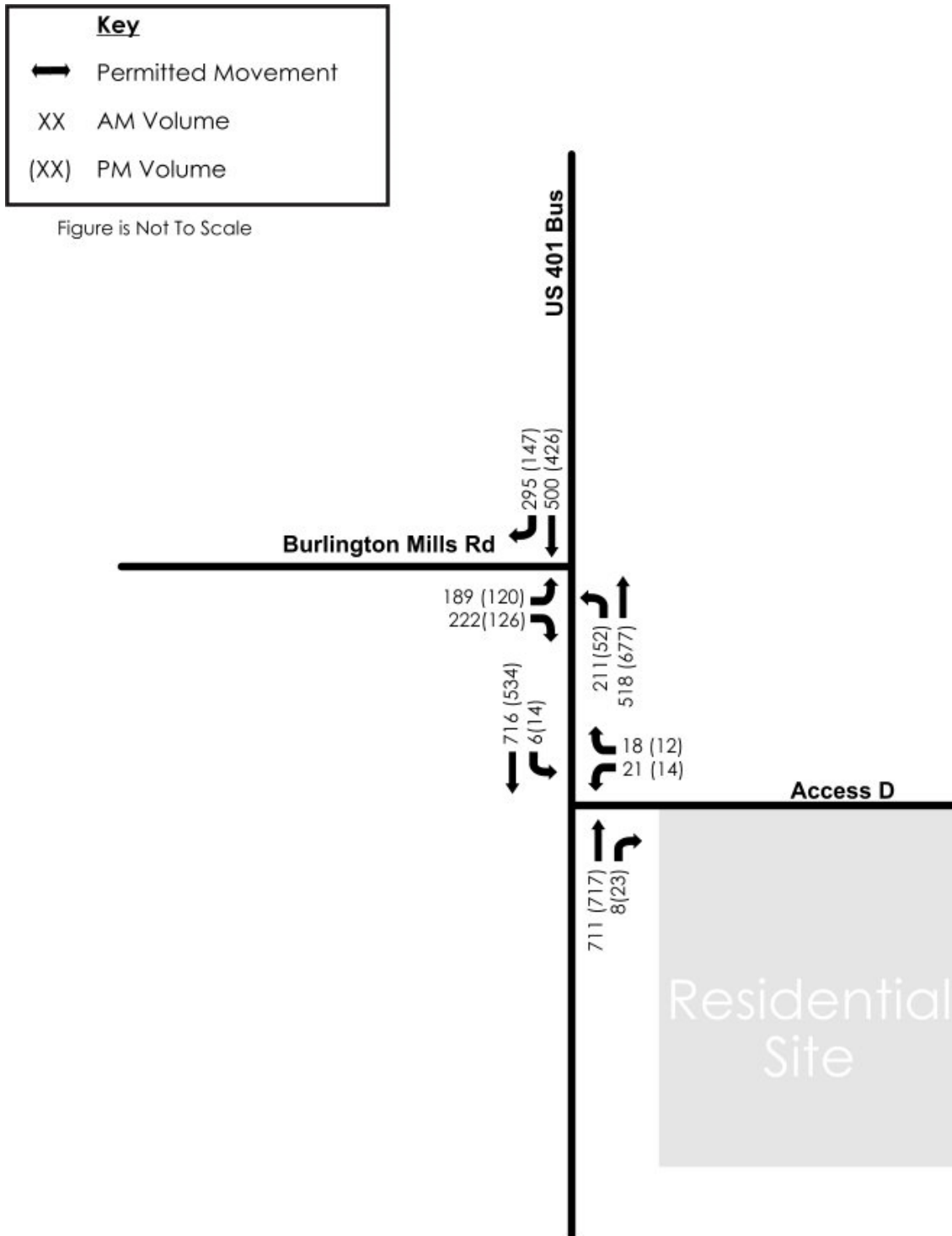
Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Figure 3: Residential Site Trips



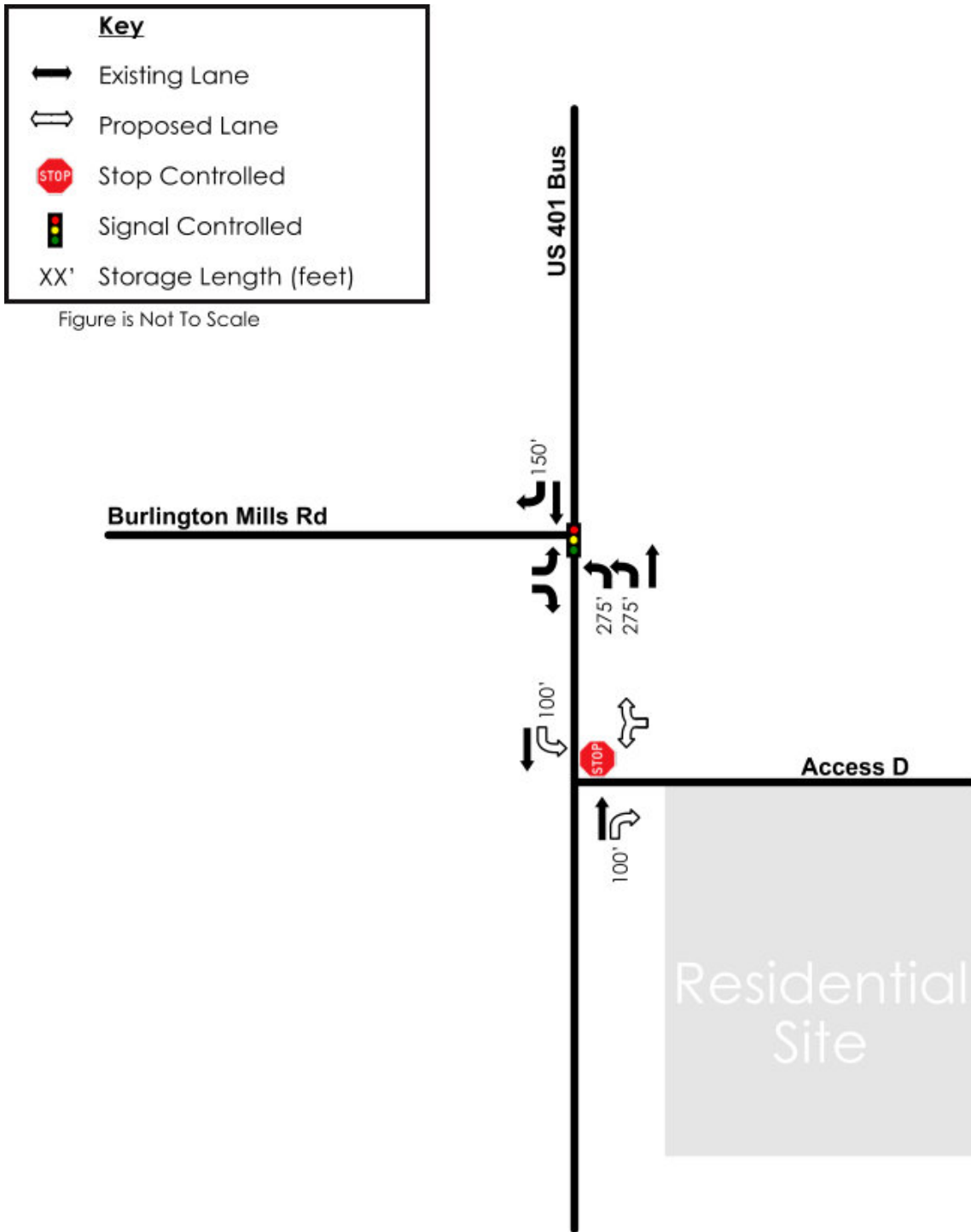
Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Figure 4: 2021 Build-Residential Volumes



Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Figure 5: 2021 Build-Residential Geometry



February 13, 2020

M. Scott Wheeler

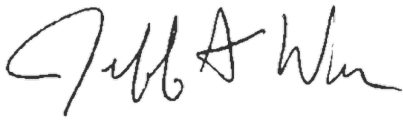
Page 9 of 9

Reference: Wallbrook Development TIA Addendum – Residential-Only Phase

Based on the analysis, the inclusion of a 100' northbound right turn lane and a 100' southbound left turn lane at the site driveway is expected to mitigate the impact of the residential site traffic on the study area network operations. The estimated queuing of the two intersections is not expected to have an impact on the roadway geometry and the ability to provide adequate storage and appropriate tapers for the left turns at the adjacent intersections.

Please contact me should you have any questions or need anything further.

Stantec Consulting Services Inc.



Jeff A. Weller

Phone: 919.865.7564

Email: Jeff.Weller@Stantec.com

- c. Danny Johnson – Town of Rolesville
- Doumit Ishak – NCDOT Congestion Management
- Austin Williams – Crosland Southeast



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

August 25, 2020

Wallbrook Development
Traffic Impact Analysis Review Report
Congestion Management Section

TIA Project: SC-2020-043R1
Division: 5
County: Wake



Doumit Y. Ishak, Regional Engineer
Clarence B. Bunting, IV, P.E. Project Engineer
Braden M. Walker, P.E. Project Design Engineer

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION MOBILITY & SAFETY DIVISION
1561 MAIL SERVICE CENTER
RALEIGH, NC 27699-1561

Telephone: (919) 814-5000
Fax: (919) 771-2745
Customer Service: 1-877-368-4968

Location:
750 N. GREENFIELD PARKWAY
GARNER, NC 27529

Website: www.ncdot.gov

Wallbrook Development

SC-2020-043R1

Rolesville

Wake County

Per your request, the Congestion Management Section (CMS) of the Transportation Mobility and Safety Division has completed a review of the subject site. The comments and recommendations contained in this review are based on data for background conditions presented in the Traffic Impact Analysis (TIA) and are subject to the approval of the local District Engineer's Office and appropriate local authorities.

Date Initially Received by CMS	08/11/20	Date of Site Plan	06/15/20
Date of Complete Information	08/11/20	Date of Sealed TIA	08/11/20

Proposed Development

The TIA assumes the development is to be completed by 2025 and consist of the following:

Land Use	Land Use Code	Size
Multifamily Housing (Mid-Rise)	221	170 d.u.
Day Care Center	565	10,000 s.f.
General Office Building	710	47,000 s.f.
Medical Office Building	720	60,000 s.f.
Shopping Center	820	89,400 s.f.
Supermarket	850	50,000 s.f.
Drive-In Bank	912	4,000 s.f.
High-Turnover (Sit-Down) Restaurant	932	7,500 s.f.
Fast-Food Restaurant w/ Drive-Thru	934	9,500 s.f.
Gas Station w/ Convenience Market	945	16 fuel positions

Trip Generation - Unadjusted Volumes During a Typical Weekday

	IN	OUT	TOTAL
AM Peak Hour	935	646	1,581
PM Peak Hour	1,032	1,217	2,249
Daily Trips			24,530

General Reference

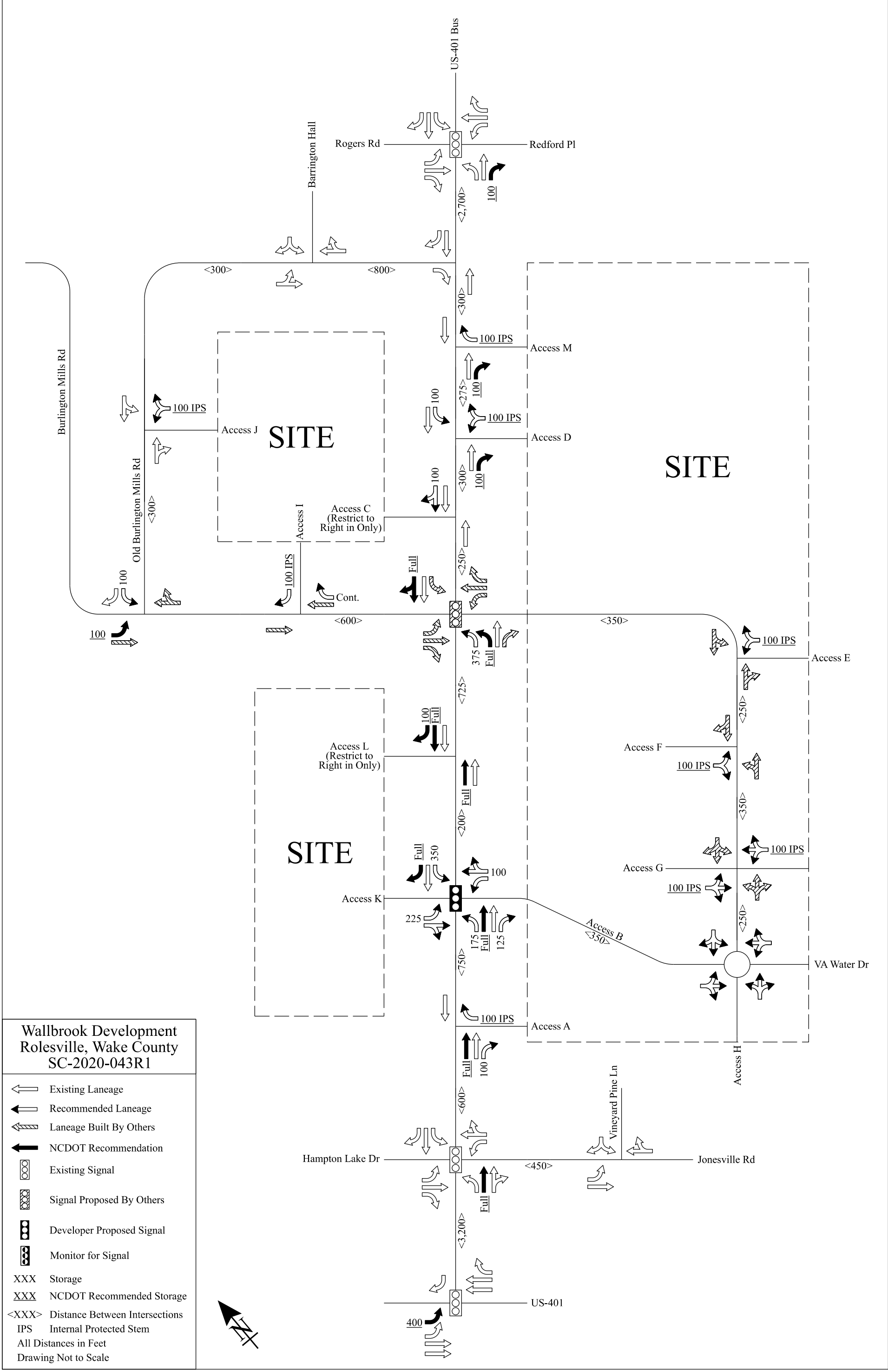
For reference to various documents applicable to this review please reference the following link: <http://www.ncdot.org/doh/preconstruct/traffic/tepp/Topics/C-37/C-37.html> Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact the Congestion Management Section.

Signalization

We defer to the District Engineer, the Division Traffic Engineer, and the Regional Traffic Engineer for final decisions regarding signalization.

Burlington Mills Road

The TIA states that Burlington Mills Road Will be realigned south of its current location and a signal installed by the Town of Rolesville as part of the Locally Administered Projects Program (LAPP). If these improvements are not in place at the time of construction, the site should provide these improvements or analysis demonstrating mitigation is not necessary.



**Wallbrook Development
Rolesville, Wake County
SC-2020-043R1**

- Existing Laneage
- Recommended Laneage
- Laneage Built By Others
- NCDOT Recommendation
- Existing Signal
- Signal Proposed By Others
- Developer Proposed Signal
- Monitor for Signal
- XXX Storage
- XXX NCDOT Recommended Storage
- <XXX> Distance Between Intersections
- IPS Internal Protected Stem
- All Distances in Feet
- Drawing Not to Scale



January 29, 2021

Re: Notice of Neighborhood Meeting

Dear Property Owner:

By way of this letter, the Town of Rolesville wants to officially notify you of a proposed Special Use Permit for development adjacent to your property. The applicant will hold a neighborhood meeting on February 8, 2021 at 6:00PM to explain their proposal. **Due to the current circumstances of COVID-19, the applicant will be hosting a virtual neighborhood meeting via Zoom (see instruction sheet for details).** Any questions or comments on the proposed project prior to the meeting are welcome.

This case involves a request to allow for a mixed-use of residential and commercial development on two parcels of land located on S Main Street (PINs 1758568976 and 1758458905). Enclosed for your reference are: (1) an aerial map outlining the location of the subject parcels; and (2) the proposed Special Use Permit plan.

The Town of Rolesville encourages you to attend these meetings and submit your input. The more involved citizens are in our government, the more trusted, transparent, and efficient the municipality will be.

During the meeting, the applicant will describe the nature of this Special Use Permit request and receive any comments from the public. After the neighborhood meeting is conducted by the applicant, a public hearing will be held by the Town Board of Commissioners on a future date. The Town Board of Commissioners is the elected body that will make the final determination and decision on this proposal. You will receive another similar notification about the date, time, and location of this public hearing. These hearings may be administrative, legislative, or quasi-judicial (depending upon the North Carolina State Statute requirements), but you will still have the opportunity to be heard once again.

If you should have any questions, you may contact Austin Williams at (704) 621-6430 or by email at awilliams@csere.com.

Sincerely,

Austin Williams
Applicant

VIRTUAL NEIGHBORHOOD MEETING -- ZOOM INSTRUCTIONS

January 29, 2021

RE: Virtual Neighborhood Meeting – Zoom Instructions

Dear Property Owner,

Due to the current circumstances of COVID-19, we will be hosting a virtual neighborhood meeting via Zoom. The meeting will be held on February 8, 2021 and begin at 6:00PM Eastern Time.

The meeting will be held virtually. You can participate online via Zoom or by telephone. To participate in the Zoom online meeting:

Visit:	https://zoom.us/join
Enter the following meeting ID:	862 6511 0656
Enter the following password:	050247

To participate by telephone:

Dial:	1 929 436 2866
Enter the following meeting ID:	862 6511 0656 #
Enter the Participant ID:	#
Enter the Meeting password:	050247 #

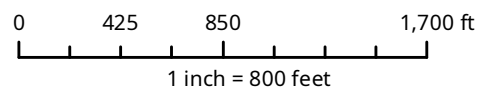
Sincerely,

Austin Williams



0 S. Main Street

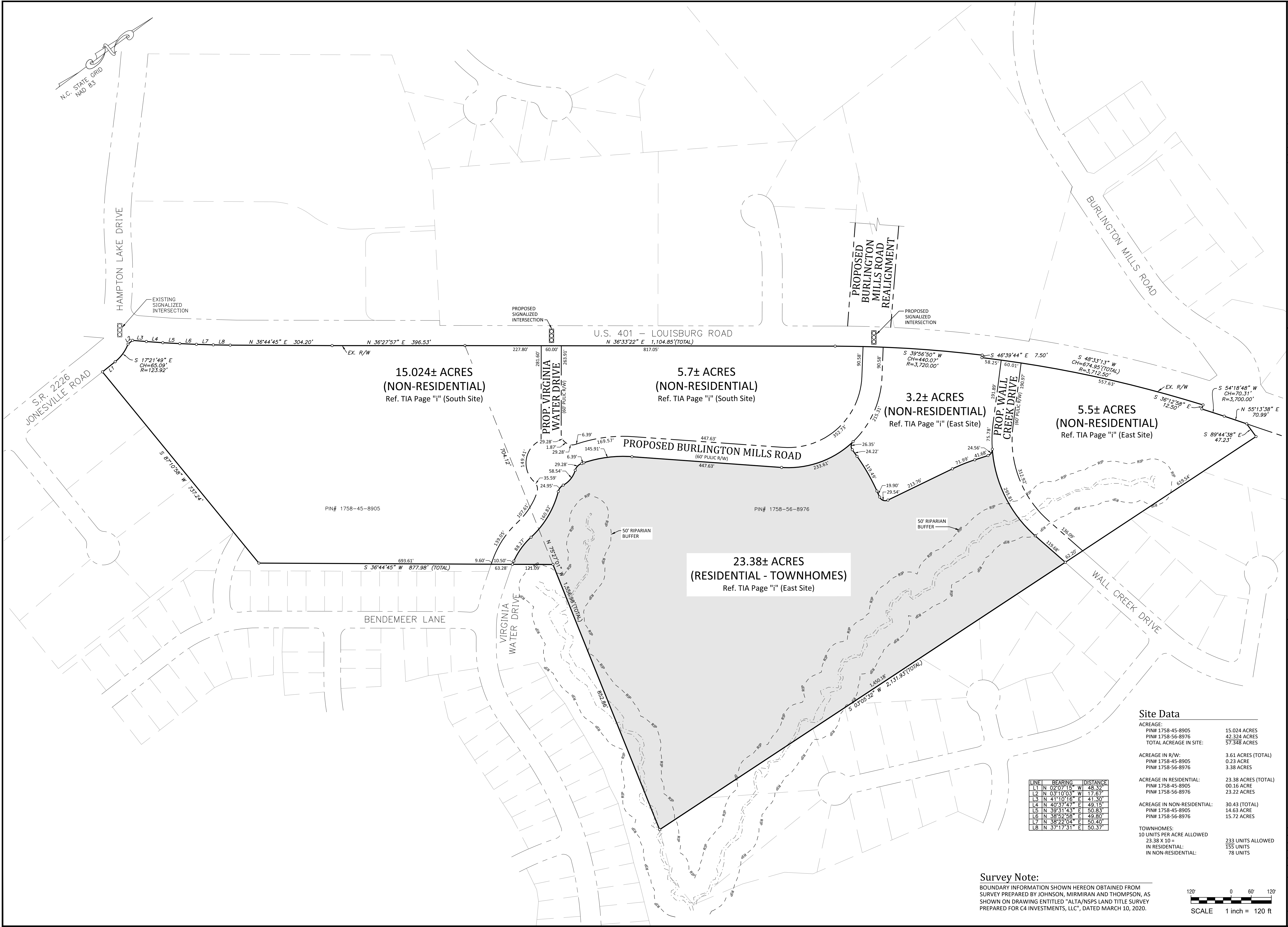
PIN Map



Disclaimer

*iMaps makes every effort to produce and publish the most current and accurate information possible. However, the maps are produced for information purposes, and are **NOT** surveys. No warranties, expressed or implied, are provided for the data therein, its use, or its interpretation.*

N.C. STATE GRID
MAD 85



15.024± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

5.7± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

3.2± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

5.5± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

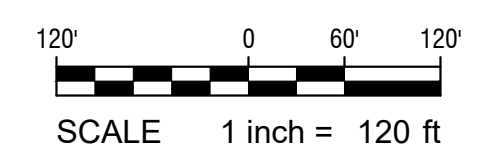
23.38± ACRES
(RESIDENTIAL - TOWNHOMES)
Ref. TIA Page "i" (East Site)

LINE	BEARING	DISTANCE
L1	N 02°07'15" W	48.32'
L2	N 03°10'03" W	17.67'
L3	N 41°10'16" E	41.30'
L4	N 40°37'47" E	49.15'
L5	N 39°31'43" E	50.83'
L6	N 38°52'58" E	49.80'
L7	N 38°22'04" E	50.40'
L8	N 37°17'31" E	50.37'

Site Data

ACREAGE:	
PIN# 1758-45-8905	15.024 ACRES
PIN# 1758-56-8976	42.324 ACRES
TOTAL ACREAGE IN SITE:	57.348 ACRES
ACREAGE IN R/W:	
PIN# 1758-45-8905	3.61 ACRES (TOTAL)
PIN# 1758-56-8976	0.23 ACRES
ACREAGE IN RESIDENTIAL:	
PIN# 1758-45-8905	23.38 ACRES (TOTAL)
PIN# 1758-56-8976	0.16 ACRES
ACREAGE IN NON-RESIDENTIAL:	
PIN# 1758-45-8905	14.63 ACRES
PIN# 1758-56-8976	15.72 ACRES
TOWNHOMES:	
10 UNITS PER ACRE ALLOWED	233 UNITS ALLOWED
23.38 X 10 =	
IN RESIDENTIAL:	155 UNITS
IN NON-RESIDENTIAL:	78 UNITS

Survey Note:
BOUNDARY INFORMATION SHOWN HEREON OBTAINED FROM SURVEY PREPARED BY JOHNSON, MIRMIRAN AND THOMPSON, AS SHOWN ON DRAWING ENTITLED "ALTA/NPS LAND TITLE SURVEY PREPARED FOR C4 INVESTMENTS, LLC", DATED MARCH 10, 2020.



COMMENTS

REVISIONS:

CROSLAND SOUTHEAST

WALLBROOK
U.S. 401 - Louisburg Road and Virginia Water Drive
Town of Rolesville, Wake County, North Carolina

SPECIAL USE MAP

PRELIMINARY
Do Not Use for Construction

ARK CONSULTING GROUP PLLC
ENGINEERS & PLANNERS
2755-B Charles Blvd.
Greenville, NC 27858
(252) 558-0888
www.arkconsultinggroup.com

Project Manager: BCF
Drawn By: EW
Checked By: STA
Project Number: 18022
Drawing Number: D-1227

1 of 1

Date: 11-10-2020

NC License # 1109
Ark Consulting Group, PLLC
2755-B Charles Blvd.
Greenville, NC 27858
(252) 558-0888
www.arkconsultinggroup.com

Preliminary Drawings
Issued For Review
Purposes Only

© 2020 Ark Consulting Group, PLLC. All rights reserved. This drawing is the property of Ark Consulting Group, PLLC. No part of this drawing may be reproduced without the written permission of Ark Consulting Group, PLLC.

Wallbrook SUP -- Neighboring Property Owner List (200ft)

Owner	Mail Address 1	Mail Address 2	Mail Address 3
ADAMS, JAMES EDWARD III COLLINS, SANDRA	209 VIRGINIA WATER DR	ROLESVILLE NC 27571-9241	
ALSTON, VINCENT C	125 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
BEAUDREAU, MARCEL	122 WALL CREEK DR	ROLESVILLE NC 27571-9440	
BLACKWELL, RODERICK BLACKWELL, CHRISTINE	302 STAPLES DR	ROLESVILLE NC 27571-9464	
BONO, JOHN DANIEL III BONO, SABRINA MICHELE	601 CRESSTAR DR	ROLESVILLE NC 27571-9497	
BROWN, WILLIAM DEWEY JR	222 BENDEMEER LN	ROLESVILLE NC 27571-9729	
BULLARD, BRENDA C BULLARD, JOHN V	121 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
CARLTON GROUP OF NC LLC	5856 FARINGDON PL STE 200	RALEIGH NC 27609-4585	
CATTARUZZA, ANTONIO G CATTARUZZA, SHELIA B	123 WALL CREEK DR	ROLESVILLE NC 27571-9475	
CRABTREE, JASON P	210 BENDEMEER LN	ROLESVILLE NC 27571-9729	
CRUZ, NORA	100 VIRGINIA WATER DR	ROLESVILLE NC 27571-9239	
CULBERTSON, CHARLES CULBERTSON, TERESA	124 WALL CREEK DR	ROLESVILLE NC 27571-9440	
DRAUGHON, RICKY R DRAUGHON, IVONNE	213 BENDEMEER LN	ROLESVILLE NC 27571-9730	
DVM SERVICES REALTY LLC	4935 RALEIGH ROAD PKWY W	WILSON NC 27896-9701	
EMATA, LEONAMER B	226 BENDEMEER LN	ROLESVILLE NC 27571-9729	
ESHELMAN, LARRY J MYINT, YI YI	117 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
GAMBLE, KATHRYN G MCFARLAND, DONALD P	418 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
GOTTENBORG, MARK GOTTENBORG, LISA	213 VIRGINIA WATER DR	ROLESVILLE NC 27571-9241	
GRAND PARK PROPERTIES LLC	2636 WAIT AVE	WAKE FOREST NC 27587-6808	
GRIFFIN, MEGAN	105 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
HADDER, MICHAEL A HADDER, JENNIFER H	602 CRESSTAR DR	ROLESVILLE NC 27571-9496	
HALL, JEFFREY LEE HALL, MICHELLE MARIE	408 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
HAMPTON POINTE ASSOCIATES LLC	1207 ROSENEATH RD STE 200	RICHMOND VA 23230-4638	
HODGE, MICHAEL HODGE, AMY R	133 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
JACKSON, JANICE B	109 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
JOHNSON, CHARLES C JOHNSON, LYNN BROWN	120 WALL CREEK DR	ROLESVILLE NC 27571-9440	
KEELEY, JOSEPH L III KEELEY, SARAH E	414 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
KERSTINE, DAVID KERSTINE, SUZANNE M	202 BENDEMEER LN	ROLESVILLE NC 27571-9729	
KHALIL, EHAB GEORGE	PO BOX 40486	RALEIGH NC 27629-0486	
LINDSEY, ABDUAL RAYMOND LINDSEY, JYIA ANGELIC	201 VIRGINIA WATER DR	ROLESVILLE NC 27571-9241	
MARINE, KEITH MARINE, HEATHER	237 BENDEMEER LN	ROLESVILLE NC 27571-9730	
MARKS, DESMOND MARKS, SARAH O	209 BENDEMEER LN	ROLESVILLE NC 27571-9730	
MATARAZA, TAMMY M	245 BENDEMEER LN	ROLESVILLE NC 27571-9730	
MAY, BEATRICE S.	113 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
MCENANEY, PHILIP B MCENANEY, ELIZABETH J	552 KNOLLWOOD RD	SEVERNA PARK MD 21146-2641	
MICHELLE H GAY REVOCABLE TRUST THE	C/O RHYMES & REASONS INC	PO BOX 568	ROLESVILLE NC 27571-0568
MONTESINO, ROSALYN CAMACHO	2809 SPRING FOREST RD STE 101	RALEIGH NC 27616-1898	
MURAGURI, JAMES	230 BENDEMEER LN	ROLESVILLE NC 27571-9729	
MURDOCK & GANNON CONSTRUCTION INC	PO BOX 61370	RALEIGH NC 27661-1370	
O'CONNOR, DANIEL O'CONNOR, STEPHANIE	205 VIRGINIA WATER DR	ROLESVILLE NC 27571-9241	
PASIECKI-REEVES, KELLY PASIECKI-REEVES, VALARIE	412 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
PATRICK, JONATHAN C FIESER, NICOLE M	403 SHORT HILLS LN	ROLESVILLE NC 27571-9528	
PATTERSON, RONALD G PATTERSON, LAURA A	600 CRESSTAR DR	ROLESVILLE NC 27571-9496	
PERLMAN, EDWARD PERLMAN, JULIE	214 BENDEMEER LN	ROLESVILLE NC 27571-9729	
QUINTO, MARITES U QUINTO, JOVITA C	121 WALL CREEK DR	ROLESVILLE NC 27571-9475	
RALEIGH CITY OF	PO BOX 590	RALEIGH NC 27602-0590	
RAYGON, CHRISTIAN B RAYGON, MARIA DEBORAH	301 MARSHCROFT WAY	ROLESVILLE NC 27571-9674	
ROLESVILLE TOWN OF	PO BOX 250	ROLESVILLE NC 27571-0250	
SCARBORO, EDWARD W JR SCARBORO, SPENCER P	4325 JONESVILLE RD	WAKE FOREST NC 27587-8190	
SEALS, ELISSE	603 CRESSTAR DR	ROLESVILLE NC 27571-9497	
SIMMONS, JASON LEE	129 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
SINGLETON, CODY SINGLETON, MARQUITA	218 BENDEMEER LN	ROLESVILLE NC 27571-9729	
SMEDLEY, WAYLAND DION SMEDLEY, ANGELA M	242 BENDEMEER LN	ROLESVILLE NC 27571-9729	
SOFFE, JAMES F JR SOFFE, ABBY	410 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
STREET, SOPHIE	238 BENDEMEER LN	ROLESVILLE NC 27571-9729	
STREITHORST, KIP J STREITHORST, MARCIA J	234 BENDEMEER LN	ROLESVILLE NC 27571-9729	
TRI ARC FOOD SYSTEMS INC	4905 WATERS EDGE DR	RALEIGH NC 27606-2405	
VISTAS PROPERTIES LLC	51500 NORWICH DR	GRANGER IN 46530-8424	
WAKE COUNTY BOARD OF ALCOHOLIC CONTROL	1212 WICKER DR	RALEIGH NC 27604-1428	
WALLBROOK LANDCO LLC	CROSLAND SOUTHEAST	4700 SIX FORKS RD STE 150	RALEIGH NC 27609-5288
WALLBROOK LANDCO LLC	121 W TRADE ST STE 2550	CHARLOTTE NC 28202-2898	
WALLBROOK LANDCO LLC	HARBOUR RETAIL PARTNERS	3 KEEL ST STE 2	WRIGHTSVILLE BEACH NC 284
WATKINS, BOBBY W WATKINS, KAREN T	301 STAPLES DR	ROLESVILLE NC 27571-9464	
WHITAKER, TRACY L WHITAKER, THOMAS C	141 VIRGINIA WATER DR	ROLESVILLE NC 27571-9238	
WILKS, JERALD K WILKS, DANIELLE	253 BENDEMEER LN	ROLESVILLE NC 27571-9730	
WILLIAMS, MEKKA	246 BENDEMEER LN	ROLESVILLE NC 27571-9729	
WILLIAMS, MICHELLE R WILLIAMS, STEVEN A	300 STAPLES DR	ROLESVILLE NC 27571-9464	
WILSON, RYAN M WILSON, NICOLE L	419 GREEN TURRET DR	ROLESVILLE NC 27571-9488	
WOODARD, JAMES A WOODARD, PHYLLIS A	420 GREEN TURRET DR	ROLESVILLE NC 27571-9487	
WOOLARD, THOMAS BRENT WOOLARD, STEPHANIE BELCHER	250 BENDEMEER LN	ROLESVILLE NC 27571-9729	

Crosland Southeast—Wallbrook Special Use Permit
Neighborhood Meeting

A virtual neighborhood meeting was held on Monday, February 8th, to discuss the Special Use Permit Application submitted by Crosland Southeast for the Wallbrook residential development. There were approximately 15 neighbors in attendance.

Name	Address	Email	Phone #
Larry Eshelman	117 Virginia Water Dr.	Larry.eshelman@gmail.com	
Mekka Williams	246 Bendemeer Ln	Mekwil74@gmail.com	
Ed Perlman	214 Bendemeer Ln		919-324-4270
Steven Williams	300 Staples Dr		
Stephen Gannon	206 Bendemeer Ln	Stephengannon2003@yahoo.com	919-649-5549
Brent Woolard	250 Bendemeer Ln		919-608-9540
Janine Johnson	427 Bendemeer Ln		
Nicole Fieser	403 Short Hills Ln	Fieser.nicole@gmail.com	
Sabrina Bono	601 Cresstar Dr	jsmcbono@aol.com	
Jonathan Patrick	403 Short Hills Ln	Jonpatrick145@gmail.com	
Allen Hadder			
Charles Johnson			
Kay Gamble			
Julie			
Kip			

Summary of Issues: The development team presented the project to the group of neighbors, followed by a Q&A portion of the meeting. The main concerns discussed at the meeting include:

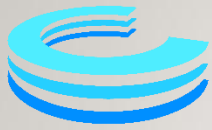
- How will the area east of the stream located along the Wall Creek neighborhood be effected?
 - *Response: Following a lengthy discussion about this area, including stormwater runoff and traffic impacting Wall Creek Dr, Austin Williams of Crosland Southeast committed to providing a condition that no development would occur east of the stream.*
- What is the timeline for the rezoning and construction?
 - *Response: Most likely starting construction starting early next year pending approval.*
- What is the price point of the townhomes?
 - *Response: Not certain yet, but likely upper 200K to upper 300K.*
- Location of water retention ponds posing danger to children.

- *Response: The ponds are a code requirement, but the exact locations are not certain.*
- Traffic concerns over the extension of Wall Creek Drive to Main Street.
 - *Response: This connection is anticipated to increase connectivity and provide the necessary connections for fire and emergency services. Traffic study was completed using pre-pandemic numbers and incorporated the future commercial development. The intention is that it will be more efficient for the new residential development to utilize Main Street, rather than cut through Wall Creek Drive. Developer also committing to improvements along Main Street, which should discourage cut throughs along Wall Creek Drive.*
- Major concern over buffer, if any, behind Bendemeer Lane and the future commercial development there. Neighbors had expected a buffer from previous developer but there was never any condition for this. Neighbors want reassurance that trees will be planted, and question whether a sound barrier is possible.
 - *Response: This area is not part of this SUP application, but concerns will be taken into consideration when that phase of development begins. Developer to reach out to Nicole Fieser in particular with details on minimum requirements for this buffer. A sewer easement running along this area makes plantings difficult to install. Developer will explore sound barrier idea.*
- Concern over vacant retail and commercial buildings.
 - *Response: Developer has completed market studies for the area, which provide that tenants will be attracted to the right type of format, which is what is going to be proposed at that stage of the development.*
- Concern about blasting having an impact on current foundations.
 - *Response: Developer does not expect to conduct much blasting, but regulations will be followed if blasting is required.*

WALLBROOK SPECIAL USE PERMIT

Neighborhood Meeting

February 8, 2021



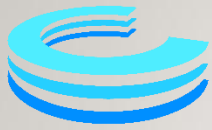
CROSLAND
SOUTHEAST

REPRESENTATIVE PROJECTS

WAVERLY – CHARLOTTE, NC

Transformational fully integrated mixed-use community, anchored by best-in-class retail





CROSLAND
SOUTHEAST

REPRESENTATIVE PROJECTS

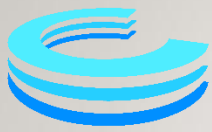
ONE BELLEVUE PLACE – NASHVILLE, TN

IM SF mall redevelopment into vibrant mixed-use project serving as catalyst for underserved submarket



Creating projects that become meaningful gathering places for local communities





CROSLAND
SOUTHEAST

REPRESENTATIVE PROJECTS

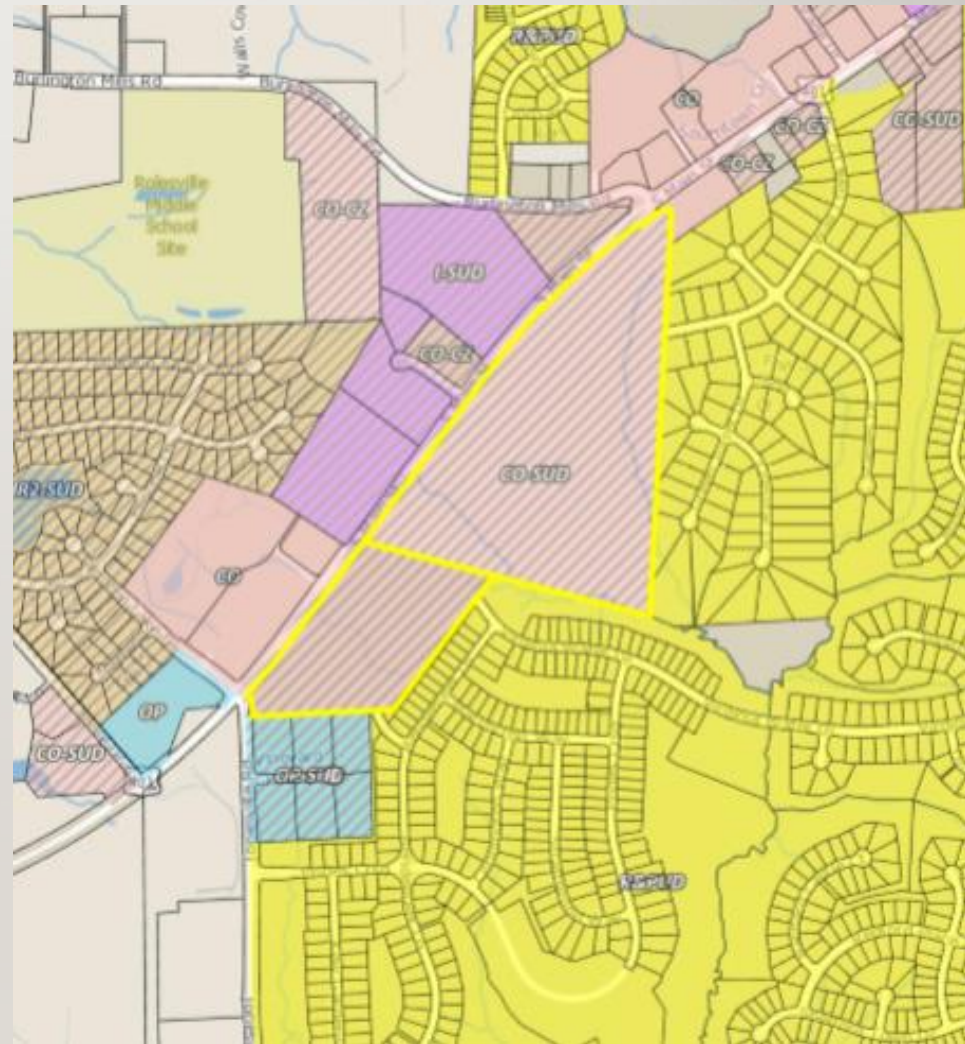
VARIOUS CROSLAND PLACEMAKING IMAGERY

Creating projects that become meaningful gathering places for local communities



SUP APPLICATION OVERVIEW

- Current Zoning: CO-SUD
 - Accommodates Applicant's intended commercial uses
- Purpose of the Special Use Permit (SUP):
 - Designate the TYPE and LOCATION of Residential pod(s) within the mixed-use project
- Applicant can select:
 - Single Family (6 units/acre)
 - Townhouse (10 units/acre)
 - Multi-family (16 units/acre)



SUP APPLICATION OVERVIEW

- Applicant is selecting Townhouse Residential
 - Medium density option
 - 10 units/acre allowable by code = 234 units
- Applicant is placing additional limitations on the density
 - 170 units per the Traffic Impact Analysis



SPECIAL USE PERMIT PROCESS OVERVIEW

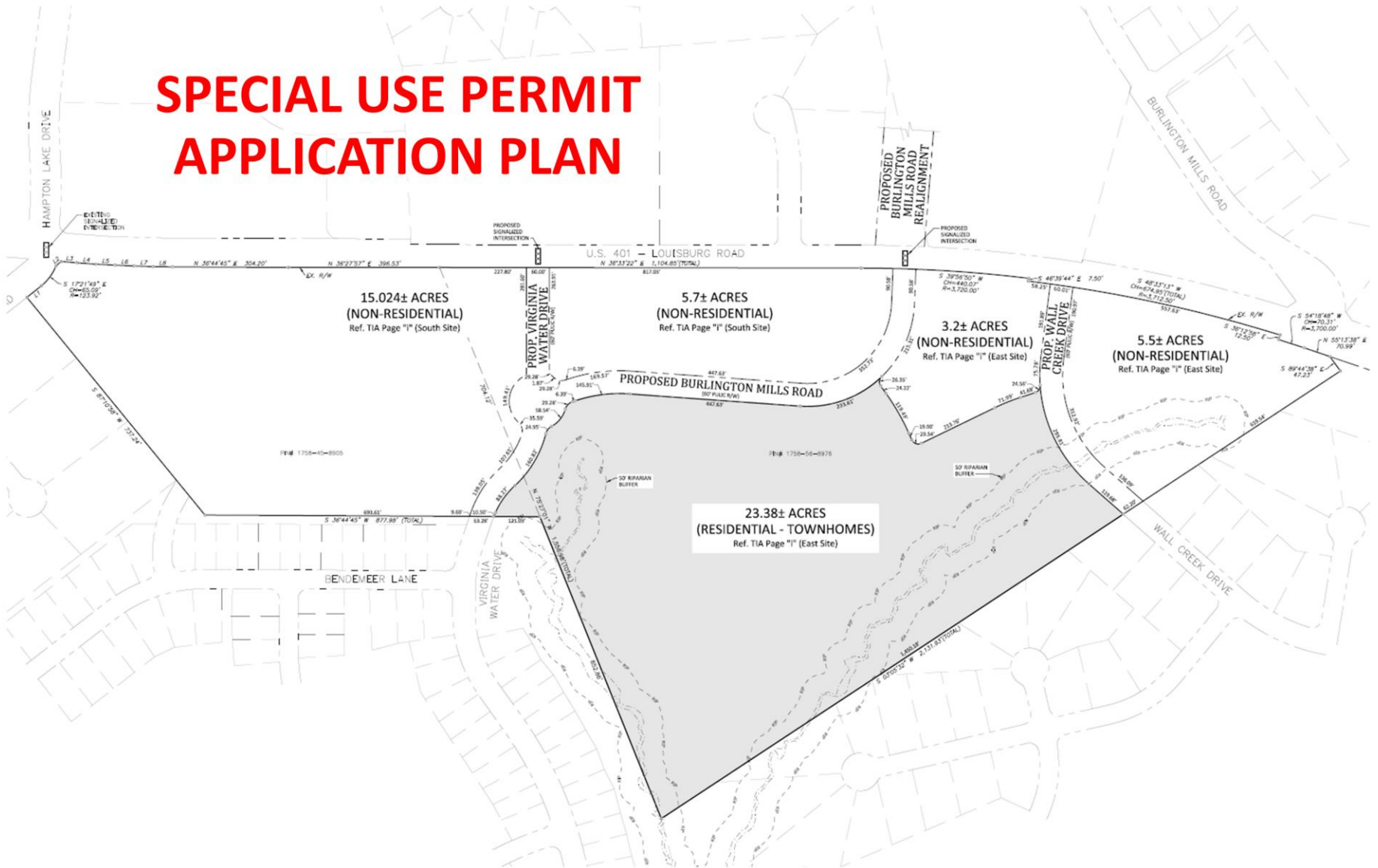
- November 10, 2020: Preapplication Review Meeting w/ Staff
- November 12, 2020: Application Submittal
- **Current Status: Under Staff Review**
- **February 8, 2021: Neighborhood Meeting**
- March 2, 2021: Public Hearing: Board of Commissioners

Special Use Conditions

- Uses and maximum densities are limited to those shown on each site of the Concept Plan.
- Developer will complete the extension of Wall Creek Drive to Main Street.
- Developer will construct a 100' northbound right turn lane and a 100' southbound left turn lane at the intersection of Wall Creek Drive (as extended) and Main Street.
- Developer will complete both 1) the extension of Virginia Water Drive to Main Street and 2) the extension of Burlington Mills Road (as realigned) from Main Street to Virginia Water Drive.
- Final acreage of sites are subject to change at site plan and construction plan based on final surveys and site plan review and approval.

WALLBROOK – SUP

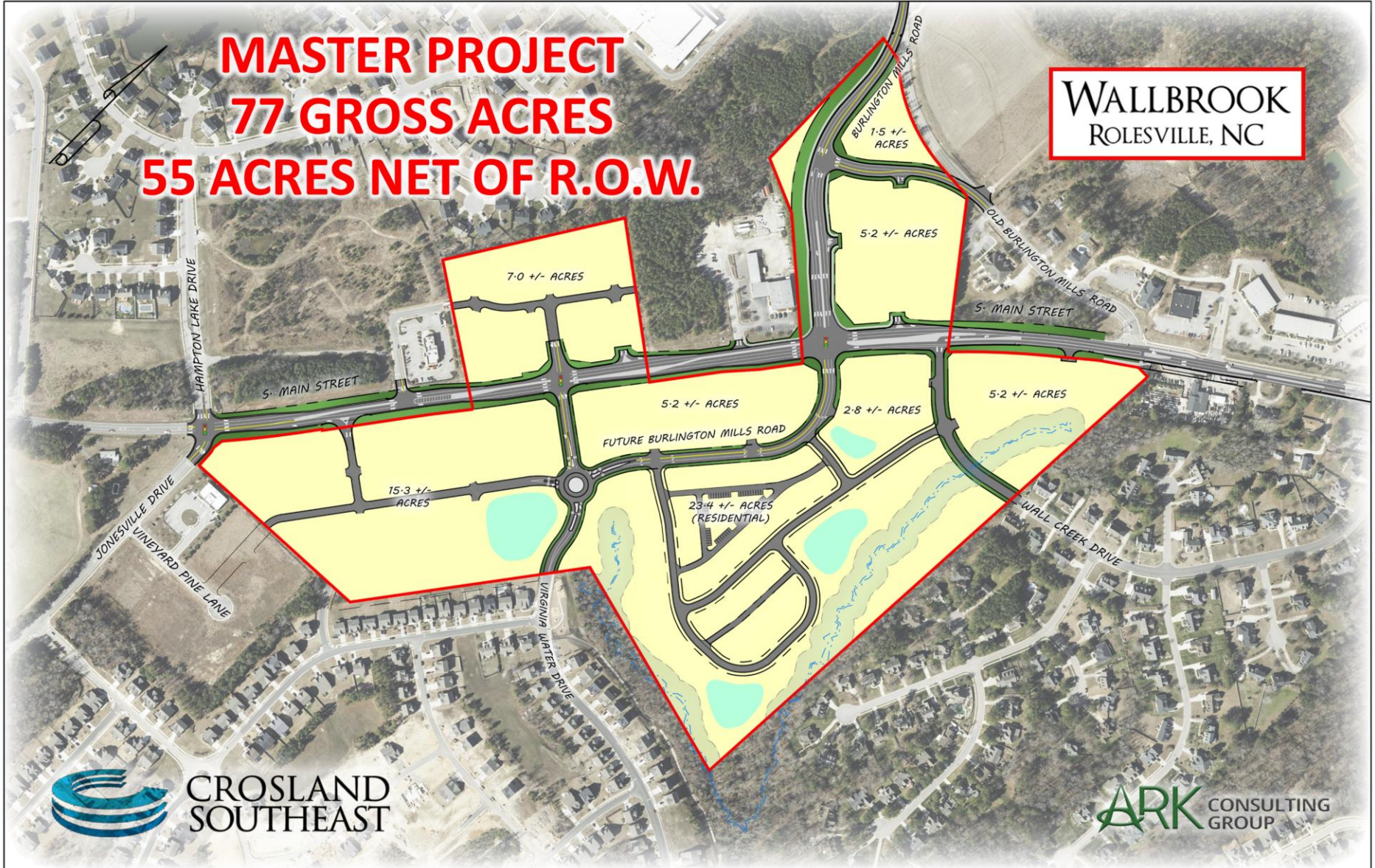
SPECIAL USE PERMIT APPLICATION PLAN



WALLBROOK – SUP

MASTER PROJECT
77 GROSS ACRES
55 ACRES NET OF R.O.W.

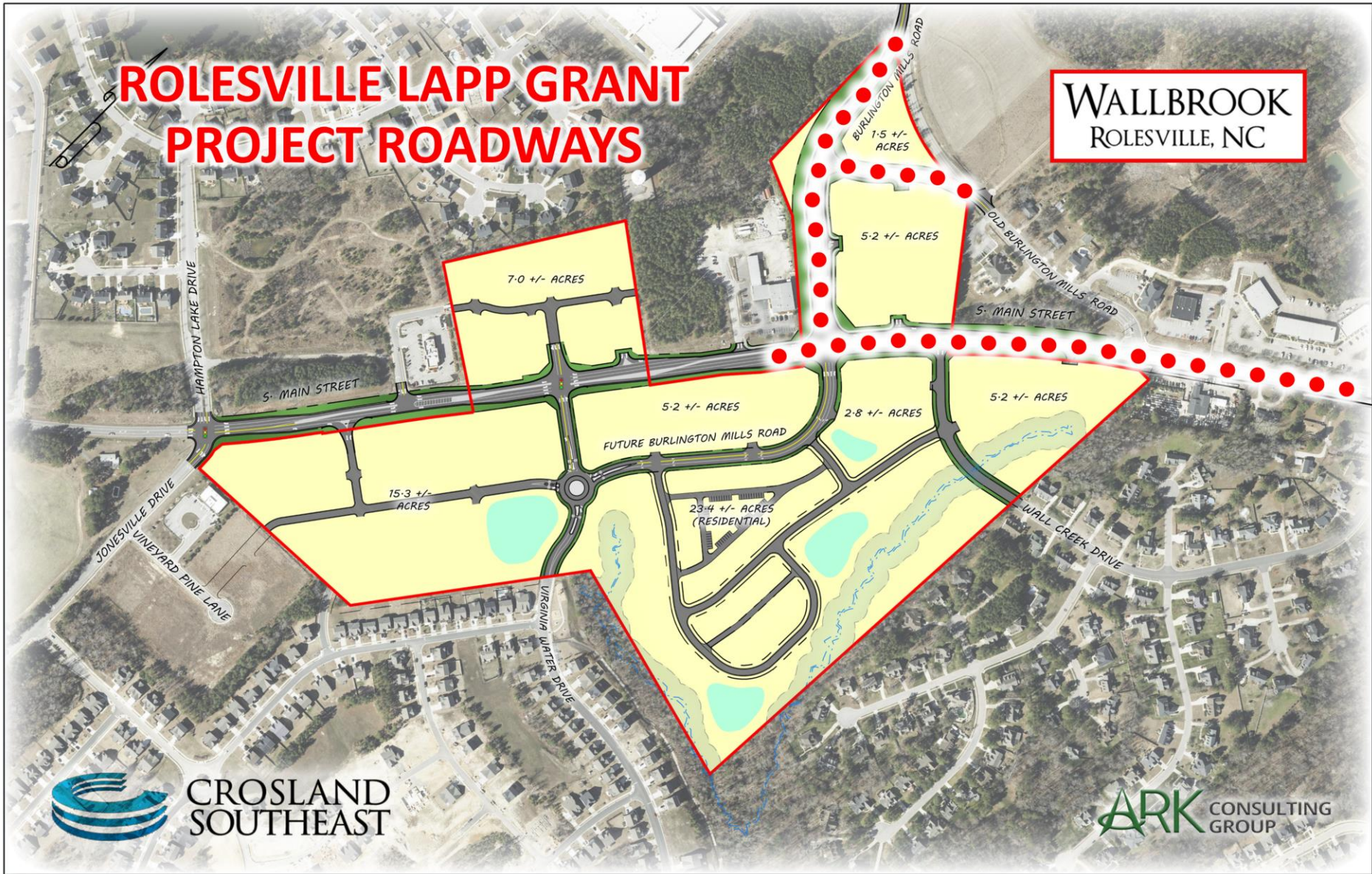
WALLBROOK
ROLESVILLE, NC



WALLBROOK – SUP

ROLESVILLE LAPP GRANT PROJECT ROADWAYS

WALLBROOK
ROLESVILLE, NC



WALLBROOK – SUP

WALLBROOK PUBLIC ROADWAYS

WALLBROOK
ROLESVILLE, NC

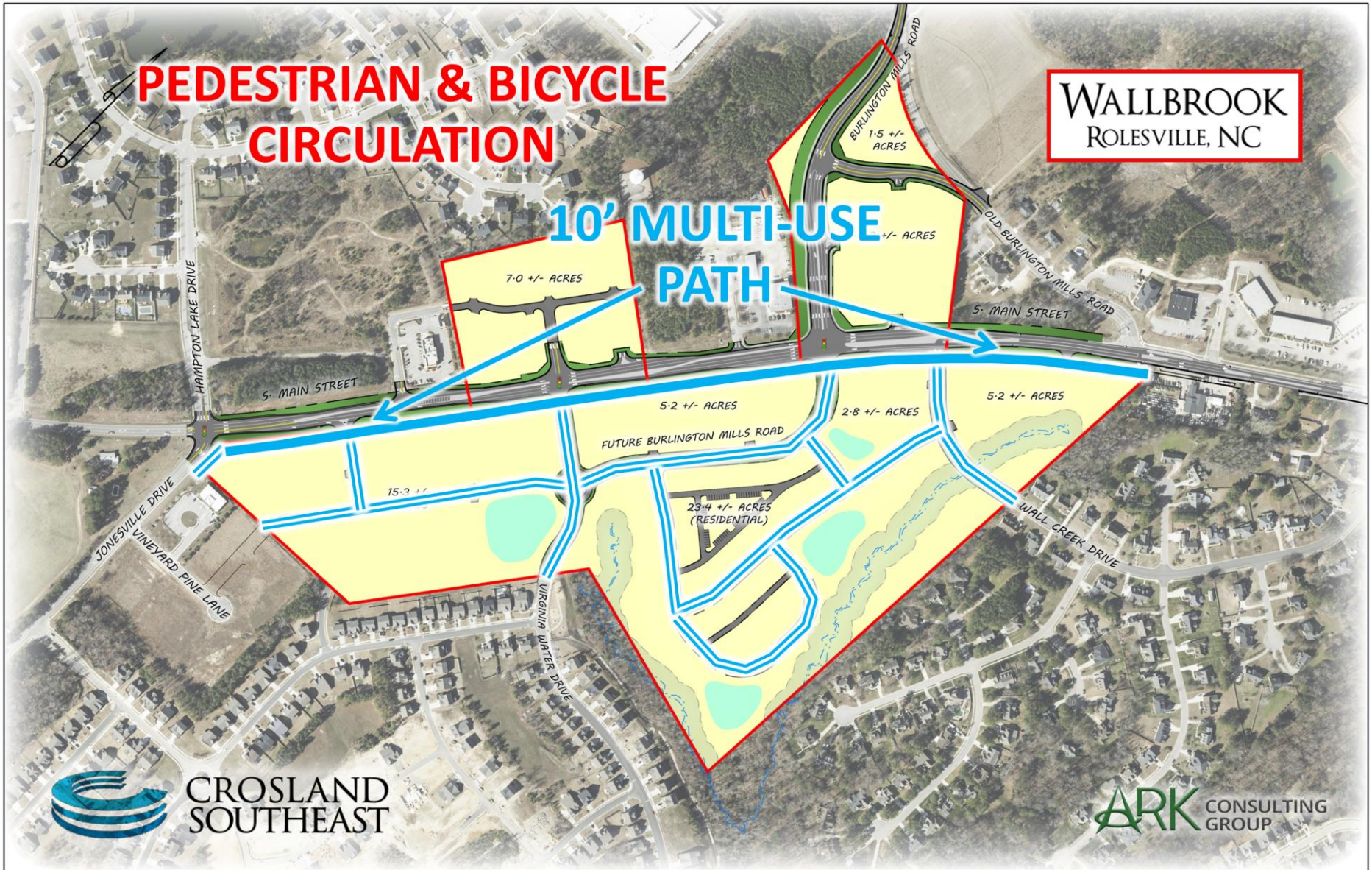


WALLBROOK – SUP

PEDESTRIAN & BICYCLE CIRCULATION

WALLBROOK
ROLESVILLE, NC

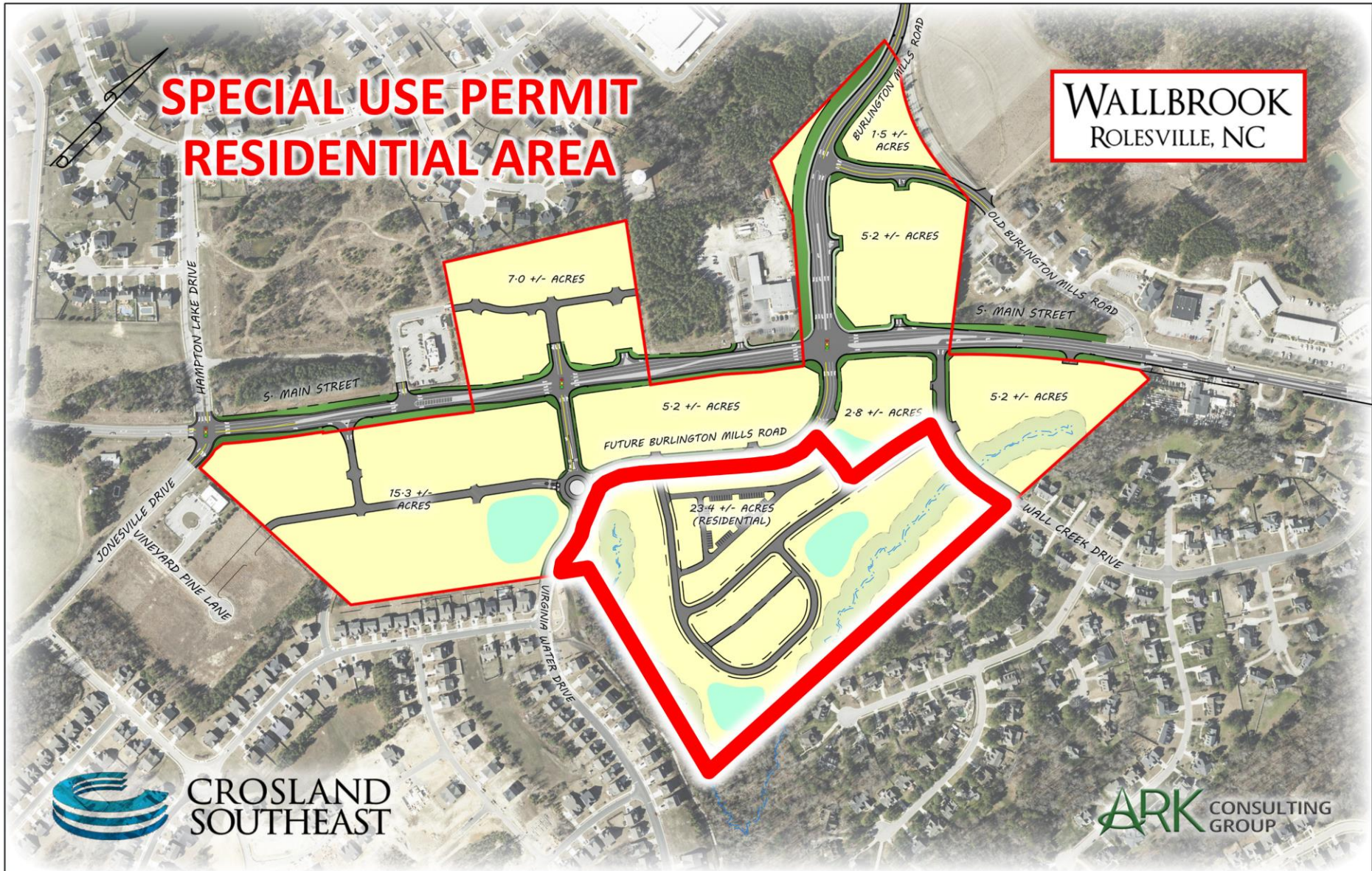
10' MULTI-USE PATH



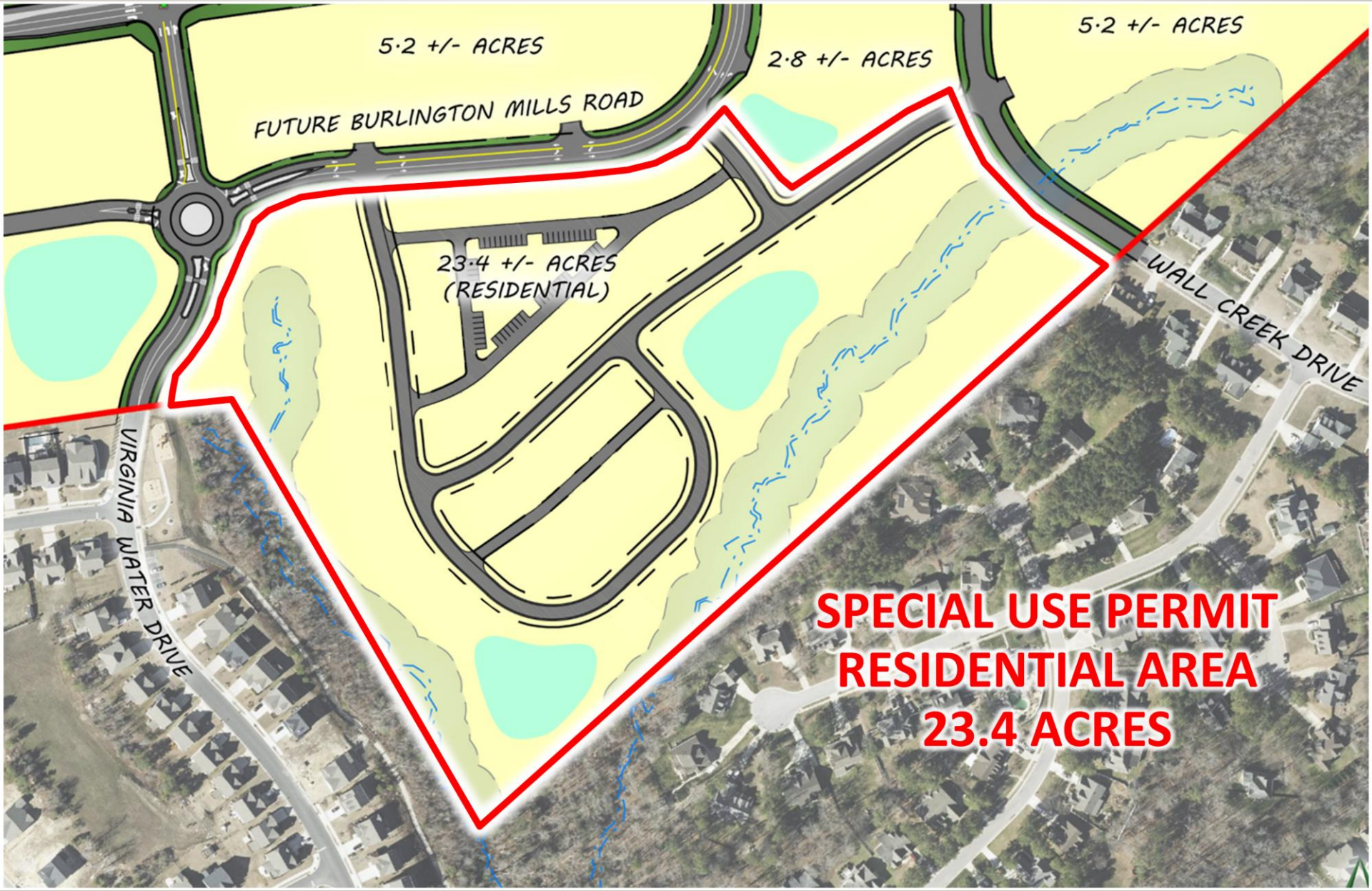
WALLBROOK – SUP

**SPECIAL USE PERMIT
RESIDENTIAL AREA**

WALLBROOK
ROLESVILLE, NC



WALLBROOK – SUP



WALLBROOK – SUP

STREETSCAPE CONCEPT SKETCH

WALLBROOK
ROLESVILLE, NC



WALLBROOK ENTRY CONCEPT

- **Elements of the Plan**
 - 10' wide Multi-use path along 401/S. Main Street
 - Inviting Pedestrian Scale Entry
 - Neighborhood commercial buildings with local boutique and national tenants
 - Inviting Plazas for outdoor seating and social gathering



QUESTIONS?



Jamie S. Schwedler

Partner

t: 919.835.4529

f: 919.835.4618

jamieschwedler@parkerpoe.com

Atlanta, GA
Charleston, SC
Charlotte, NC
Columbia, SC
Greenville, SC
Raleigh, NC
Spartanburg, SC
Washington, DC

February 19, 2021

Via Email (Julie.Spriggs@rolesville.nc.gov)

Julie Spriggs
Planner II
Planning Department
Town of Rolesville
502 Southtown Circle
Rolesville, NC 27251

Re: Wallbrook SUP Application updates

Dear Julie:

In advance of the anticipated March 2 hearing, enclosed please find updated conditions Crosland Southeast is offering in connection with its pending Special Use Permit application. We are also enclosing a Traffic Impact Analysis Memorandum dated October 13, 2020, referenced in the conditions, and an updated concept map to reflect the updated conditions. These materials are in addition to those submitted with our original application, including the February 2020 Traffic Impact Analysis and August 2020 Traffic Impact Analysis, which should be on file with the Town of Rolesville. Please contact me should you require any additional information and/or would like to discuss.

Thank you for your assistance in this matter.

Sincerely,

A handwritten signature in blue ink that reads 'Jamie S. Schwedler'.

Jamie S. Schwedler

JSS:lh
Attachments

PPAB 6123783v1.docx

Rolesville Wallbrook TIA and LAPP projects discussion

171002202/ 171002232

Date/Time: October 13, 2020 / 4:00 PM

Place: Virtual Teams Meeting

Attendees: Kelly Arnold, Town of Rolesville
Sean Brennan, NCDOT Division 5, District 1
Clarence Bunting, NCDOT Congestion Management
Thomas Hoppe, Stantec
Danny Johnson, Town of Rolesville
Mike Lindgren, Stantec
Mical McFarland, Town of Rolesville
Amy Neidringhaus, NCDOT Division 5, District 1
Matt Peach, Stantec
Betsy Watson, Stantec
Jeff Weller, Stantec
Austin Williams, Crosland Southeast

Distribution: Attendees plus:
Raymond Hayes, NCDOT Division 5
Doumit Ishak, NCDOT Congestion Management
Tracy Parrot, NCDOT Division 5
Scott Wheeler, NCDOT Division 5, District 3

The goal of this meeting was to discuss the Traffic Impact Analysis (TIA) Review Report for the Wallbrook Development, released by the NCDOT Congestion Management Section dated August 25, 2020, and come to a consensus on the required improvements.

Matt Peach provided the background that Stantec originally performed the TIA in the Spring of 2020, and more recently updated it to include the Paris Tract as part of the proposed development. Matt noted that a portion of the proposed improvements are adjacent to, and/or overlapping with improvements proposed under LAPP project U-6241 currently in design. It is therefore the desire of both the developer and the Town to include appropriate improvements in the LAPP project such that the road is improved only once. Betsy Watson stated that to maintain our LAPP schedule, we are scheduled to submit preliminary roadway plans on December 11 2020, with final PS&E for all disciplines in June 2021. To meet these dates, we must have direction on the scope of improvements as soon as possible.

Jeff Weller summarized the improvements recommended in the TIA Review Report. He stated that we would in particular like to discuss with the group the recommendation of an additional NB through lane on Main Street from the US 401 Bypass to realigned Burlington Mills Road, as well as the additional SB through lane on Main Street from Access C to Access B/K.

After some discussion among the group, Sean Brennan stated that he would be agreeable to removing the requirement for the aforementioned additional through lanes. The main reason for this conclusion is the substantial right-of-way impacts that these additional through lanes would create. Clarence Bunting stated that he was agreeable to that decision in light of the District's position, but noted that removing the additional lanes could create more queueing and delay.

October 13, 2020

Rolesville Wallbrook TIA and LAPP projects discussion

Page 2 of 2

The group therefore agreed to a two-lane divided section with turn lanes for Main Street. Other improvements may be fine-tuned throughout the design process, but specific exceptions to the TIA Review Report agreed upon in the meeting are as follows:

- No second left-turn lane from NB US 401 Bypass onto Main St. However, Congestion Management asked that the queue for left turns from NB US 401 be accommodated. Stantec will perform further analysis and make a recommendation whether this left-turn lane needs to be extended and will continue this discussion with the affected parties.
- No additional NB through lane along Main St. from US 401 Bypass to realigned Burlington Mills Road.
- No additional SB through lane along Main St. from Access C to Access B/K.
- Second WB through lane on realigned Burlington Mills Road (necessary to receive the additional left-turn lane from Main St.) will be extended to drop at Old Burlington Mills Road instead of dropping into the development.

In the meeting and in a subsequent email discussion clarifying the Town's position, Kelly Arnold noted that "the Town has not taken an official position and will not until the developer goes through approval processes. Based upon current information provided, it will be Town staff's position that if the TIA and proposed improvements meet the spirit of the Main Street Plan/LAPP grant and incorporate improvements that alleviate most congestion that will result from development, then modifications will be recommended. It will be staff's position to have all approvals go through our Technical Review Committee which included NCDOT. For these approval processes we will expand that review process to NCDOT staff that are overseeing the LAPP project also."

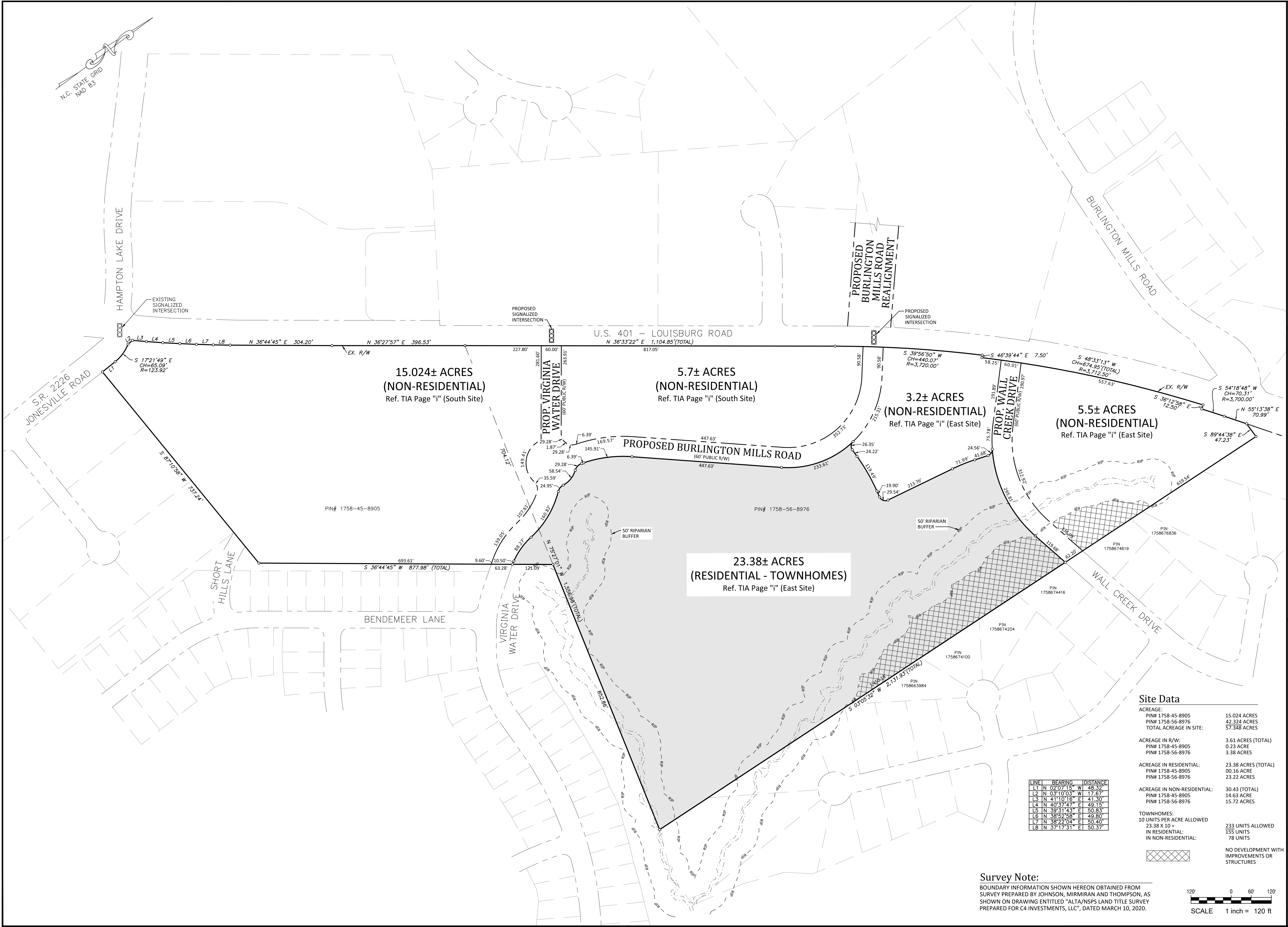
The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact me immediately. Stantec appreciates the time and partnership of all stakeholders on the call.

Stantec Consulting Services Inc.

Betsy L. Watson, PE

Phone: 919-413-1460
betsy.watson@stantec.com

N.C. STATE GRID
MAD 85



EXISTING SIGNALIZED INTERSECTION

PROPOSED SIGNALIZED INTERSECTION

PROPOSED SIGNALIZED INTERSECTION

U.S. 401 - LOUISBURG ROAD
N 36°33'22" E 1,104.85'(TOTAL)

15.024± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

5.7± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (South Site)

3.2± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

5.5± ACRES
(NON-RESIDENTIAL)
Ref. TIA Page "i" (East Site)

23.38± ACRES
(RESIDENTIAL - TOWNHOMES)
Ref. TIA Page "i" (East Site)

PROPOSED BURLINGTON MILLS ROAD
(60' PUBLIC R/W)

PROP. WALL CREEK DRIVE
(60' PUBLIC R/W)

PROP. VIRGINIA WATER DRIVE
(60' PUBLIC R/W)

JONESVILLE ROAD
S.R. 2226

HAMPTON LAKE DRIVE

BURLINGTON MILLS ROAD

SHORT HILLS LANE

BENDEMEER LANE

VIRGINIA WATER DRIVE

WALL CREEK DRIVE

50' RIPARIAN BUFFER

50' RIPARIAN BUFFER

LINE	BEARING	DISTANCE
L1	N 02°07'15" W	48.32'
L2	N 03°10'03" W	17.67'
L3	N 41°10'16" E	41.30'
L4	N 40°37'47" E	49.15'
L5	N 39°31'43" E	50.83'
L6	N 38°52'58" E	49.80'
L7	N 38°22'04" E	50.40'
L8	N 37°17'31" E	50.37'

Site Data

ACREAGE:	15.024 ACRES
PIN# 1758-45-8905	42.324 ACRES
PIN# 1758-56-8976	57.348 ACRES
TOTAL ACREAGE IN SITE:	
ACREAGE IN R/W:	3.61 ACRES (TOTAL)
PIN# 1758-45-8905	0.23 ACRES
PIN# 1758-56-8976	3.38 ACRES
ACREAGE IN RESIDENTIAL:	23.38 ACRES (TOTAL)
PIN# 1758-45-8905	00.16 ACRES
PIN# 1758-56-8976	23.22 ACRES
ACREAGE IN NON-RESIDENTIAL:	30.43 (TOTAL)
PIN# 1758-45-8905	14.63 ACRES
PIN# 1758-56-8976	15.72 ACRES
TOWNHOMES:	
23.38 X 10 =	233 UNITS ALLOWED
IN RESIDENTIAL:	155 UNITS
IN NON-RESIDENTIAL:	78 UNITS
NO DEVELOPMENT WITH IMPROVEMENTS OR STRUCTURES	

Survey Note:

BOUNDARY INFORMATION SHOWN HEREON OBTAINED FROM SURVEY PREPARED BY JOHNSON, MIRMIRAN AND THOMPSON, AS SHOWN ON DRAWING ENTITLED "ALTA/NPS LAND TITLE SURVEY PREPARED FOR C4 INVESTMENTS, LLC", DATED MARCH 10, 2020.



#	DATE	COMMENTS
1	7/26/2021	REVISED TO INCLUDE RESIDENTIAL AREA NOT TO BE DEVELOPED WITH STRUCTURES OR IMPROVEMENTS

REVISIONS:

CROSLAND SOUTHEAST

SPECIAL USE MAP

WALLBROOK

U.S. 401 - Louisburg Road and Virginia Water Drive
Town of Rolesville, Wake County, North Carolina

PRELIMINARY
Do Not Use for
Construction

ARK CONSULTING GROUP
ENGINEERS & PLANNERS

2755-B Charles Blvd.
Greenville, NC 27858
(252) 558-0888
www.arkconsultinggroup.com

Project Manager:	BCF
Drawn By:	EW
Checked By:	STA
Project Number:	18022
Drawing Number:	D-1227

Wallbrook SUP Conditions

1. Uses and maximum densities are limited to those shown on each site on the Concept Plan. Any residential units not designated on the Residential - Townhomes tract may be used on any of the tracts labeled for Non-Residential use.
2. Prior to the issuance of the first Certificate of Occupancy for the first residential unit in the East Site as shown on the Concept Plan, Developer will complete the extension of Wall Creek Drive to Main Street.
3. If applicant seeks a Certificate of Occupancy prior to the commencement of work on the LAPP Grant project improvements, then prior to the issuance of the first Certificate of Occupancy of the first residential unit in the East Site and in accordance with the “Wallbrook Development TIA Addendum – Residential-Only Phase” dated February 13, 2020, Developer will construct a 100’ northbound right turn lane and a 100’ southbound left turn lane at the intersection of Wall Creek Drive (as extended) and Main Street. If work on the LAPP Grant project improvements is commenced before the first Certificate of Occupancy is requested, Developer is not required to construct the aforementioned improvements.
4. No later than six months following the completion of the LAPP Grant project improvements, Developer will complete both 1) the extension of Virginia Water Drive to Main Street and 2) the extension of Burlington Mills Road (as realigned) from Main Street to Virginia Water Drive.
5. Developer will complete traffic improvements as set forth in October 13, 2020 memo by Stantec.
6. Final acreage of sites are subject to change at site plan and construction plan based on final surveys and site plan review and approval.
7. As shown on the concept plan, areas of the site east of the riparian stream and adjacent to Wake County PINs 1758676836, 1758674619, 1758674416, 1758674204, 1758674100, and 1758663984 shall not be developed with structures or improvements.