TOWN OF
READING
MASSACHUSETTS

Walkers Brook Drive Redesign

# PROJECT DESIGN REPORT

*January 2026*

Kimley»Horn

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# Introduction

The Walkers Brook Drive corridor serves as a vital link between Reading's downtown, residential neighborhoods, commercial zones, recreational destinations, and the regional highway. The study corridor is between John Street and the I-95 interchanges (Reading/Wakefield Town Line), as shown in ***Figure 1.*** The overarching goal of the redesign is to transform this busy urban arterial, 4-lane undivided roadway, into a safer, more comfortable, and accessible route for people of all ages and abilities—whether walking, biking, or using transit. By encouraging these alternative modes of travel for everyday commuting and short local trips, the project aims to enhance community connectivity and reduce reliance on single-occupancy vehicles. Cars are so dominant in the United States as shown by 87 percent (87%) of daily trips take place in a private vehicle.[1]


***Figure 1. Study Corridor***

The initial phase of this Project, completed in 2024, produced three (3) options for Walkers Brook Drive between John Street and the I-95 interchanges (Town Line), each offering different multimodal features. An overview of the alternatives is as follows:

- ***Alternative 1:*** On-road buffered bicycle lanes, 5-foot bike lanes and 3-foot buffer, with 6-foot sidewalks on both sides
- ***Alternative 2:*** Off-road shared use path, 10-foot, on the south side with a landscape buffer of five (5) feet and an 8.50-foot sidewalk on the north side
- ***Alternative 3***: Off-road two-way cycle track, 10-foot, on the south side with a landscape buffer of five (5) feet, and 6-foot sidewalks on both sides

[1] https://usa.streetsblog.org/2025/11/17/transportation-politics-is-inherently-radical

Additionally, the intersection of Walkers Brook Drive at General Way/Salem Five Bank Driveway included four (4) alternatives with full movement access out of General Way (permitting northbound left-turn-out movements).

- Signalized Intersection with full access (inclusion of northbound left-turn movements)
- Signalized Intersection with Lakeview Avenue (Consolidate access for John Street and Salem Five Bank Driveway to Lakeview Avenue)
- Single Lane Roundabout
- Single Lane Roundabout with a Bypass Lane from Walkers Brook Drive to Village Street

The foundation for a community-driven vision for the corridor has been evolving since 2018, beginning with discussions during the Eaton Lakeview Apartment peer review process and continuing through the development of the three (3) alternative concepts in 2023 and 2024. The preferred solution is expected to expand mobility options, improve pedestrian and bicycle infrastructure, and enhance access to key destinations, including restaurants, retail centers, employment hubs, and Lake Quannapowitt. It should be noted that Walkers Brook Drive serves the future redevelopment area in Reading, referred to as the *Eastern Gateway*.

This phase of the Project was centered on completing the outreach program, building consensus around a preferred plan for the multimodal feature and the intersection treatment of Walkers Brook Drive at General Way, securing an eligibility funding letter from MassDOT, and advancing preliminary design efforts.

This *Project Design Report* includes a description of current conditions, traffic capacity analysis, crash analysis, presents alternatives, and documents the evaluation of the improvement options.

# Existing Conditions

## Roadway Networks

The existing conditions observed in the study area include an inventory of the roadways, speed limits, intersection geometry, and traffic control devices. Key roadways in the study area include Yankee Division Highway (Interstate 95), Walkers Brook Drive, New Crossing Road, General Way, Lakeview Avenue, and John Street. For orientation purposes, Walkers Brook Drive runs in an east-west direction, while the intersecting roads are oriented north-south.

***Yankee Division Highway (Interstate 95)*** is a north/south six-lane divided highway and has a posted speed limit of 55 miles per hour (MPH). I-95 is classified by the Massachusetts Department of Transportation (MassDOT) as an Interstate and is under the jurisdiction of MassDOT. Additionally, I-95 is under the National Highway System (NHS), designated as an NHS-Interstate. Exit 57 provides access to Walkers Brook Drive (Town of Reading)/North Avenue (Town of Wakefield).

***Walkers Brook Drive*** is an east/west four-lane undivided roadway (2 lanes in each direction) from I-95 to New Crossing Road, a three-lane undivided roadway (2 lanes in the EB and 1 lane in the WB) from New Crossing Road to General Way, and a two-lane undivided roadway from New Crossing Road to John Street. Walkers Brook Drive has a posted speed limit of 35 MPH and is classified by MassDOT as an Urban Minor Arterial. Walkers Brook Drive/Village Street near John Street is then a 25 MPH posted speed limit. The study limits between John Street to Access Road is under the jurisdiction of the Town of Reading and between Access Road to the Town Line falls under the jurisdiction of MassDOT, which is approximately 350 feet.

***New Crossing Road*** is a north/south two-lane undivided roadway and has a posted speed limit of 30 MPH. New Crossing Road is classified by MassDOT as a Local roadway and is under the jurisdiction of the Town of Reading. New Crossing Road provides access to the Stop & Shop, the Tufts Medical Center Orthopedics, other offices, and the Town's Department of Public Works (DPW).

***General Way*** is a north/south two-lane undivided roadway and does not have a speed limit posted. General Way is classified by MassDOT as a Local roadway and is not under the jurisdiction of the Town of Reading since it is unaccepted by the Town, Private Roadway. General Way provides access to the Market Basket and other retail businesses.

***Lakeview Avenue*** is a north/south two-lane undivided roadway and does not have a speed limit posted. Lakeview Avenue is classified by MassDOT as a Local roadway and is not under the jurisdiction of the Town of Reading since it is unaccepted by the Town, Private Roadway. Note that Lakeview Avenue is set to be adopted by the Town of Reading at the completion of the Eaton Lakeview 40B project.

***John Street*** is a north/south two-lane undivided roadway and has a posted speed limit of 20 MPH. John Street is classified by MassDOT as a Local roadway and is under the jurisdiction of the Town of Reading.

# Description of Study Intersections

***Walkers Brook Drive at Home Depot/Jordans Driveway*** is a three-legged signalized intersection. The westbound approach provided by Walkers Brook Drive permits through and right-turn movements via two (2) dedicated through lanes and one (1) dedicated right-turn lane, and the eastbound approach permits left-turn and through movements via one (1) shared left-turn/through lane and one (1) dedicated through lane. The southbound approach provided by the Home Depot/Jordans Driveway permits left-turn and right-turn movements via two (2) dedicated left-turn lanes and one (1) dedicated right-turn lane. Standard crosswalk markings are provided on the west leg of the intersection, and pedestrian push buttons are provided.

***Walkers Brook Drive at New Crossing Road/Plaza Driveway*** is a four-legged signalized intersection. The westbound and eastbound approaches provided by Walkers Brook Drive permit all movements via one (1) shared left-turn/through lane and one (1) shared through/right-turn lane. The northbound approach provided by New Crossing Road permits all movement via one (1) shared left-turn/through lane and one (1) dedicated right-turn lane. The southbound approach provided by the Plaza Driveway permits all movements via one (1) left-turn lane and one (1) through/right-turn lane. Ladder crosswalk markings are provided on the north leg, and standard crosswalk markings are provided on the east and south legs of the intersection. Pedestrian push buttons are provided. On the west leg, there are no crosswalk markings.


***Walkers Brook Drive at General Way/Salem Bank Driveway*** is a four-legged signalized intersection. The westbound approach provided by Walkers Brook Drive permits through and left turn movements via one (1) dedicated left-turn lane and one (1) dedicated through lane, and the eastbound approach permits through and right-turn movement via one (1) shared through/right-turn lane. The northbound approach provided by General Way permits a right-turn movement only via one (1) dedicated right-turn lane. The southbound approach provided by the Salem Bank Driveway permits all movements via one (1) shared left-turn/through/right-turn lane and is exit only. Standard crosswalk markings are provided on the west, north, and south legs of the intersection. Pedestrian push buttons are provided. On the east leg, there are no crosswalk markings.

***Walkers Brook Drive at Lakeview Avenue*** is a three-legged unsignalized intersection. The westbound approach provided by Walkers Brook Drive permits through and right-turn movement via one (1) shared through/right-turn lane, and the eastbound approach permits left-turn and through movements via one (1) shared left-turn/through lane. The southbound approach provided by Lakeview Avenue is STOP controlled and permits left-turn and right-turn movements via one (1) shared left-turn/right-turn lane. Standard crosswalk markings are provided on the north leg of the intersection with no pedestrian push buttons.

***Walkers Brook Drive at John Street*** is a three-legged unsignalized intersection. The westbound approach provided by Walkers Brook Drive permits through and right-turn movements via one (1) shared through/right-turn lane, and the eastbound approach permits left-turn and through movements via one (1) shared left-turn/through lane. The southbound approach provided by John Street is STOP controlled and permits left-turn and right-turn movements via one (1) shared left-turn/right-turn lane. Standard crosswalk markings are provided on the west and north legs of the intersection with no pedestrian push buttons.

The project area and study intersections are shown in ***Figure 2*****.**


**Figure 2**
**Project Area and Study Intersections**
**Walkers Brook Drive Redesign**
**Reading, MA**

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# Pedestrian, Bicycle, and Transit Facilities

Sidewalk facilities are available on both sides of Walkers Brook Drive between John Street and Home Depot Drive, as well as on the south side of Walkers Brook Drive from Home Depot Drive to the Town of Wakefield line. Sidewalk facilities are not provided on the north side of Walkers Brook Drive from Home Depot Drive to the Town of Wakefield line. The sidewalk facilities are generally in average to good condition, featuring minor cracks and curb ramps with detectable warning panels.

Bicycle facilities are not provided within the study area. The current shoulders on Walkers Brook Drive in the project area vary between two (2) and four (4) feet in width. At this width, combined with the current traffic volumes and speeds result in what could be classified as a "high stress[2]" bicycle travel facility.

Just east of the Project limits is Lake Quannapowitt in the Town of Wakefield. Lake Quannapowitt is 3.6 miles in circumference and serves as a local hub for year-round Town of Wakefield events, such as farmer's markets, parades, races, and sporting events. It is a center of recreation and leisure activity in the Region.

Public transportation service along the study corridor is provided by the Massachusetts Bay Transportation Authority (MBTA), Bus Route 137 runs along Walkers Brook Drive, with a designated stop by Walkers Brook Drive at New Crossing Road. A transit shelter with a trash receptacle is present. Service is provided during the weekdays, Monday to Friday, from 5:29 am to 10:39 PM; on Saturday, from 6:02 AM to 8:42 PM; and on Sunday, from 8:09 AM to 6:45 PM. Typical weekday headways are 45 minutes, typical Saturday headways are 60 minutes, and typical Sunday headways are 90 minutes. A map of the route is shown in ***Figure 3***.

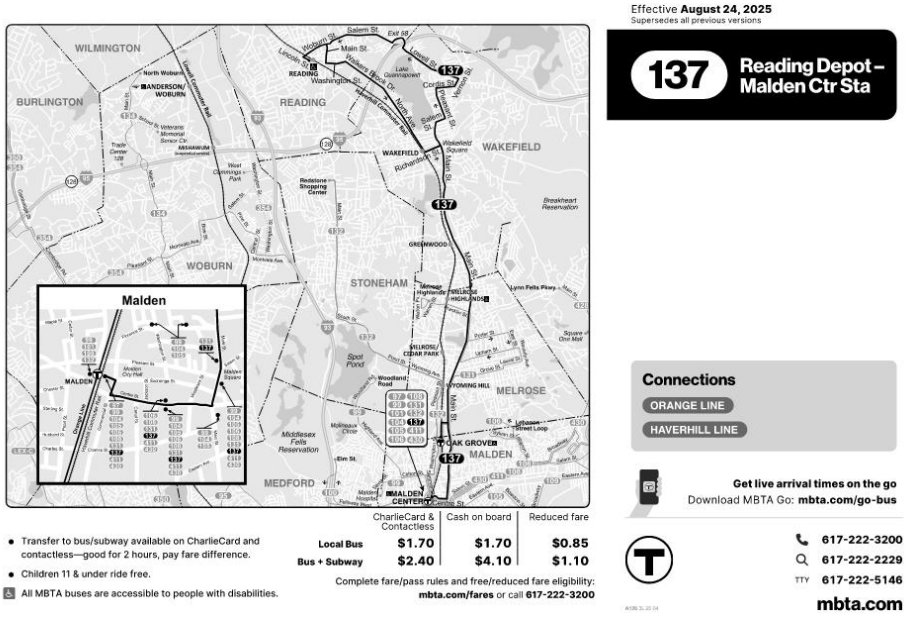


***Figure 3. Bus Route 137 Map***

[2] *High Stress accounts for the number of traffic lanes, speed limit or prevailing speed, presence of bikeway facility*

# Traffic Data Collection

Automatic traffic recorders (ATRs) were conducted for 72 hours from Tuesday, September 15, 2025, to Thursday, September 17, 2025, at the following three (3) study locations to collect daily flow data. The ATR counts provide information on hourly volume variation, volume by vehicle type, and traffic speeds, and are included in ***Appendix A***.

- Walkers Brook Drive, just east of John Street
- Walkers Brook Drive, west of Home Depot/Jordans Driveway
- Walkers Brook Drive, east of Home Depot/Jordans Driveway

Walker Brook Drive is experiencing speeds equal to or slightly above the posted speed limit, based on 85th percentile speeds. Generally, traffic volumes along Walkers Brook Drive in both eastbound and westbound directions are similar during the AM and PM peak hours. The summary of the traffic volume data is shown in ***Table 1***.

***Table 1. Summary of Traffic Volume Data***

| Location | Posted Speed Limit (MPH) | 85th Percentile Speed (MPH) | Average Weekday Volume[1] | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Time | Veh. Vol. | Dir. Dist. | Time | Veh. Vol. | Dir. Dist. |
| Walkers Brook Drive (just east of John Street) | 35 | 30 EB / 34 WB | 7,000 | 7:45 – 8:45 | 996 | 45% EB / 55% WB | 5:00 – 6:00 | 1,071 | 57% EB / 43% WB |
| Walkers Brook Drive (west of Home Depot/Jordans Driveway) | 35 | 35 EB / 37 WB | 11,000 | 8:00 – 9:00 | 1,298 | 36% EB / 64% WB | 4:30 – 5:30 | 1,458 | 55% EB / 45% WB |
| Walkers Brook Drive (east of Home Depot/Jordan's Driveway) | 35 | 36 EB / 35 WB | 14,000 | 8:00 – 9:00 | 1,109 | 53% EB 47% WB | 4:45 – 5:45 | 1,731 | 53% EB / 47% WB |

[1] Weekday volumes are rounded to the nearest thousand.

The average weekday volume on Walkers Brook Drive, just east of John Street, is approximately 7,000 vehicles per day (VPD). The average hourly volume variation is shown in ***Figure 4***. The AM peak hour starts at 7:45, and the PM peak hour starts at 5:00. The distribution between the eastbound and westbound directions in the AM and the PM differs, as the westbound direction accounts for 55 percent (55%) of the volume in the AM, and the eastbound direction accounts for 57 percent (57%) of the volume in the PM. The 85th percentile speeds are 30 MPH for eastbound traffic and 34 MPH for westbound traffic, both slightly below the posted speed limit of 35 MPH, indicating that vehicles are generally traveling at or just under the speed limit in both directions at this location.

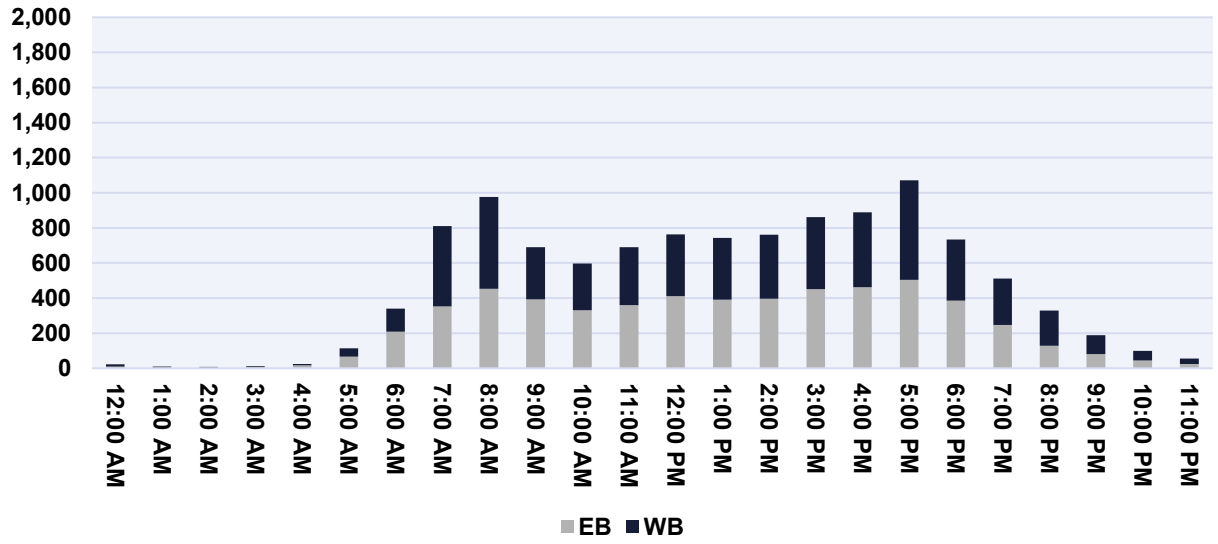


***Figure 4. Hourly Volume Variation – Walkers Brook Drive, just east of John Street***

The average weekday volume on Walkers Brook Drive, west of Home Depot/Jordan's Driveway, is approximately 11,000 VPD. The average hourly volume variation is shown in ***Figure 5***. The AM peak hour starts at 8:00 and the PM peak hour starts at 4:30. The distribution between the eastbound and westbound directions in the AM and the PM differs, as the westbound direction accounts for 64 percent (64%) of the volume in the AM, and the eastbound direction accounts for 55 percent (55%) of the volume in the PM. The 85$^{th}$ percentile speed is 35 MPH for eastbound traffic and 37 MPH for westbound traffic, both slightly above the posted speed limit of 35 MPH, indicating that vehicles are generally traveling at or just above the speed limit in both directions at this location.

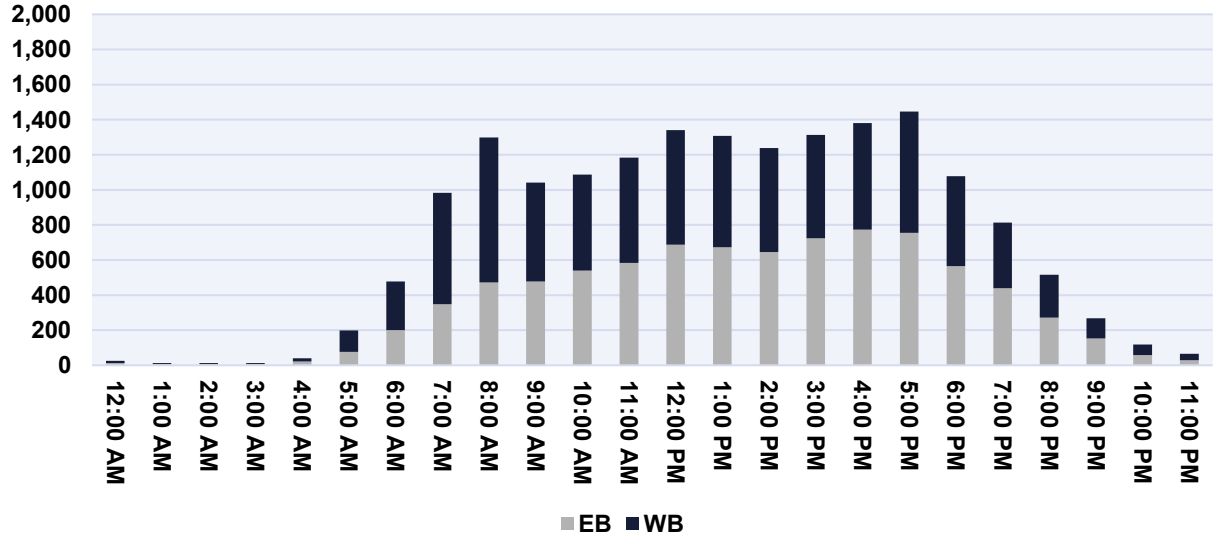


***Figure 5. Hourly Volume Variation – Walkers Brook Drive, west of Home Depot/Jordans Driveway***

Walkers Brook Drive, east of Home Depot/Jordans Driveway, average weekday volume is approximately 14,000 VPD. The average hourly volume variation is shown in ***Figure 6***. The AM peak hour starts at 8:00 and the PM peak hour starts at 4:45. The distribution between the eastbound and westbound directions in the AM and the PM is the same in both peak hours, with the eastbound direction accounting for 53 percent (53%) and the westbound direction accounting for 47 percent (47%) of the volume. The 85$^{th}$ percentile speed is 36 MPH for eastbound traffic and 35 MPH for westbound traffic. These observed speeds are both slightly above the posted speed limit of 35 MPH, indicating that vehicles are generally traveling slightly above the speed limit in both directions at this location.

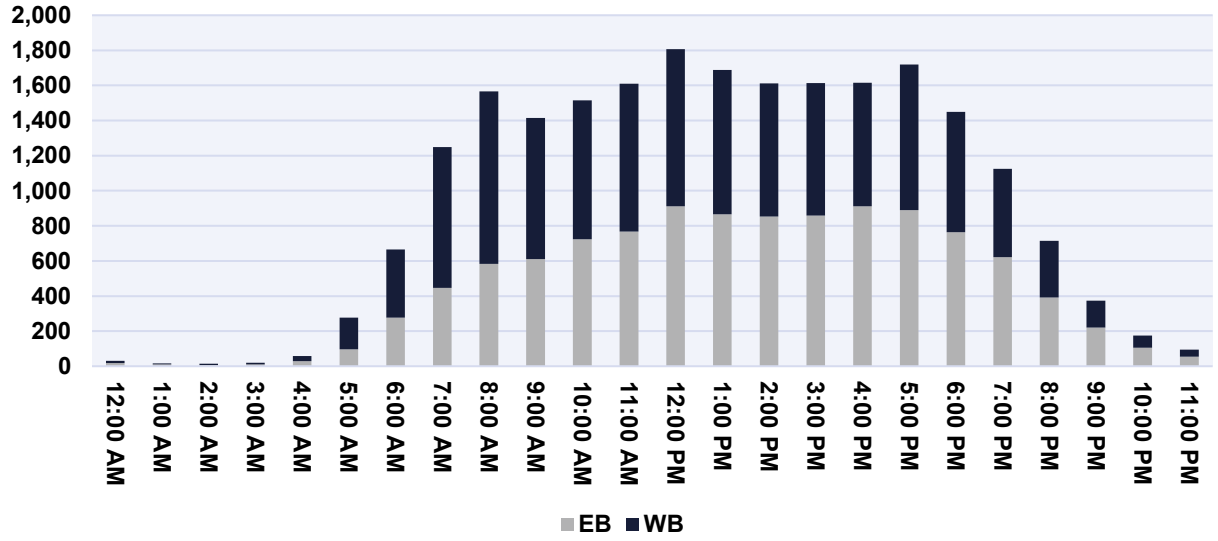


***Figure 6. Hourly Volume Variation – Walkers Brook Drive, east of Home Depot/Jordans Driveway***

Existing traffic volumes for analysis were based upon turning movement counts (TMCs) collected on Thursday, September 17, 2025, at the five (5) study intersections as part of this analysis. Peak Period TMCs were conducted at the following intersections during the weekday AM peak period (6:00 AM – 9:00 AM), weekday midday peak period (11:00 AM – 2:00 PM), and weekday PM peak period (3:00 PM – 6:00 PM).

- Walkers Brook Drive at Home Depot/Jordans Driveway (signalized)
- Walkers Brook Drive at New Crossing Road (signalized)
- Walkers Brook Drive at General Way/Salem Five (signalized)
- Walkers Brook Drive at Lakeview Avenue (one-way STOP controlled)
- Walkers Brook Drive at John Street (one-way STOP controlled)

The data revealed the following:

- ***Walkers Brook Drive at Home Depot/Jordans Driveway*** peak hours occur at 7:45 – 8:45 AM, 12:45 – 1:45 PM, and 3:30 – 4:30 PM. In particular, there is heavy eastbound and westbound traffic, with the primary turning movement into Home Depot/Jordan's Driveway and eastbound towards I-95.

- ***Walkers Brook Drive at New Crossing Road*** peak hours occur at 7:45 – 8:45 AM, 12:00 – 1:00 PM, and 4:30 – 5:30 PM. There is heavy vehicular flow along Walkers Brook Drive, with the most significant turning movement being onto New Crossing Road towards the retail establishments.
- ***Walkers Brook Drive at General Way/Salem Five Bank Driveway*** peak hours occur at 7:45 – 8:45 AM, 12:00 – 1:00 PM, and 4:30 – 5:30 PM. There is heavy vehicular flow along Walkers Brook Drive in both directions, with the most significant turning movement being in and out of General Way towards and from the Market Basket Plaza.
- ***Walkers Brook Drive at Lakeview Avenue*** peak hours occur at 7:45 – 8:45 AM, 11:45 AM – 12:45 PM, and 4:30 – 5:30 PM. The majority of the volume at this study intersection is along Walkers Brook Drive and there is very little turning movement to and from Lakeview Avenue towards a residential neighborhood.
- ***Walkers Brook Drive at John Street*** peak hours occur at 7:45 – 8:45 AM, 12:00 – 1:00 PM, and 4:30 – 5:30 PM. Vehicular movement is primarily on Walkers Brook Drive, but approximately 125 vehicles on average travel to and from the study corridor via John Street, which connects the roadway to downtown Reading.

Based on the 2024 MassDOT weekday seasonal and axle correction factors for a roadway such as Walkers Brook Drive, the September traffic volumes along study roadways represent average condition; therefore, a seasonal adjustment factor was not applied to the existing traffic volumes. The 2024 MassDOT weekday seasonal and axle correction factors can be found in ***Appendix B*****.**

The existing (2025) traffic volumes in the weekday AM peak hour, midday peak hour, and PM peak hour are shown in ***Figure 7, Figure 8,*** and ***Figure 9***, respectively.

Pedestrian and bicyclist counts were also taken along with the traffic volumes. Pedestrian activity during the weekday midday and PM peak hours was utilized, with most using marked crosswalks and a few crossings at other locations. However, the bicyclist activity was observed to be low throughout the three (3) peak hours. This may be due to the lack of perceived “safe” accommodations. The pedestrian volumes and bicyclist volumes are shown in ***Figure 10*** and ***Figure 11***, respectively.

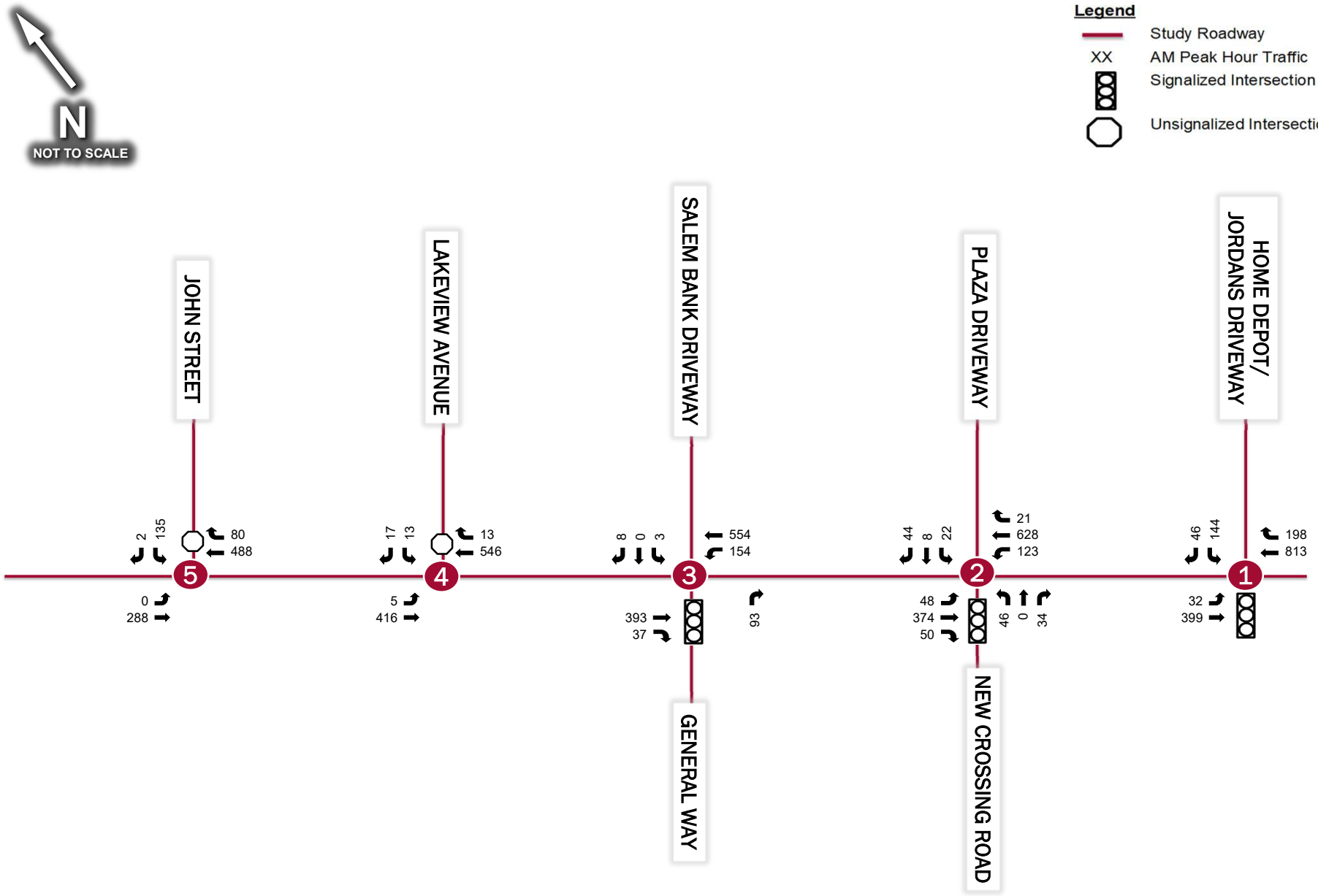


**Figure 7**
**2025 Existing Volumes AM Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

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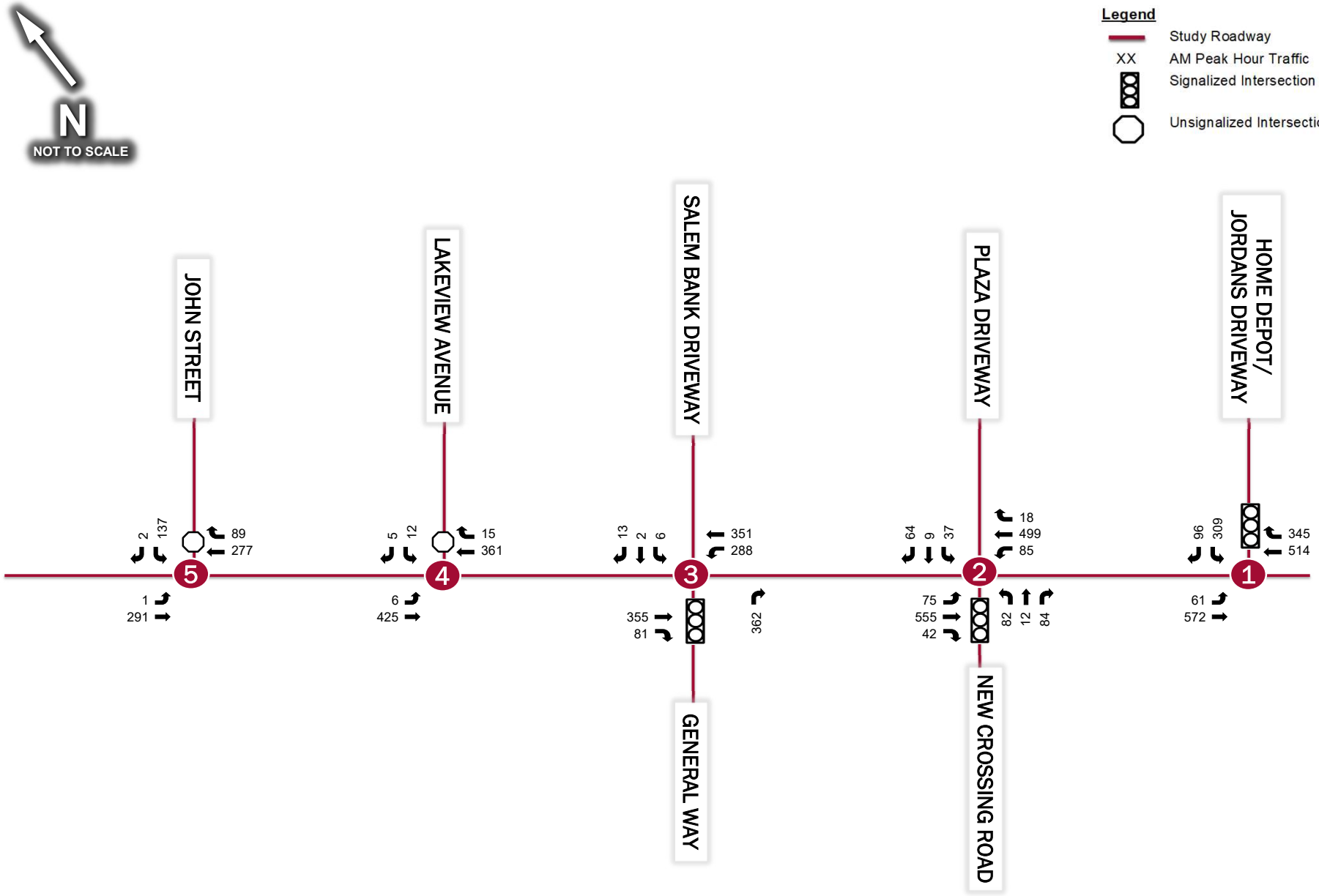


**Figure 8**
**2025 Existing Volumes MD Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

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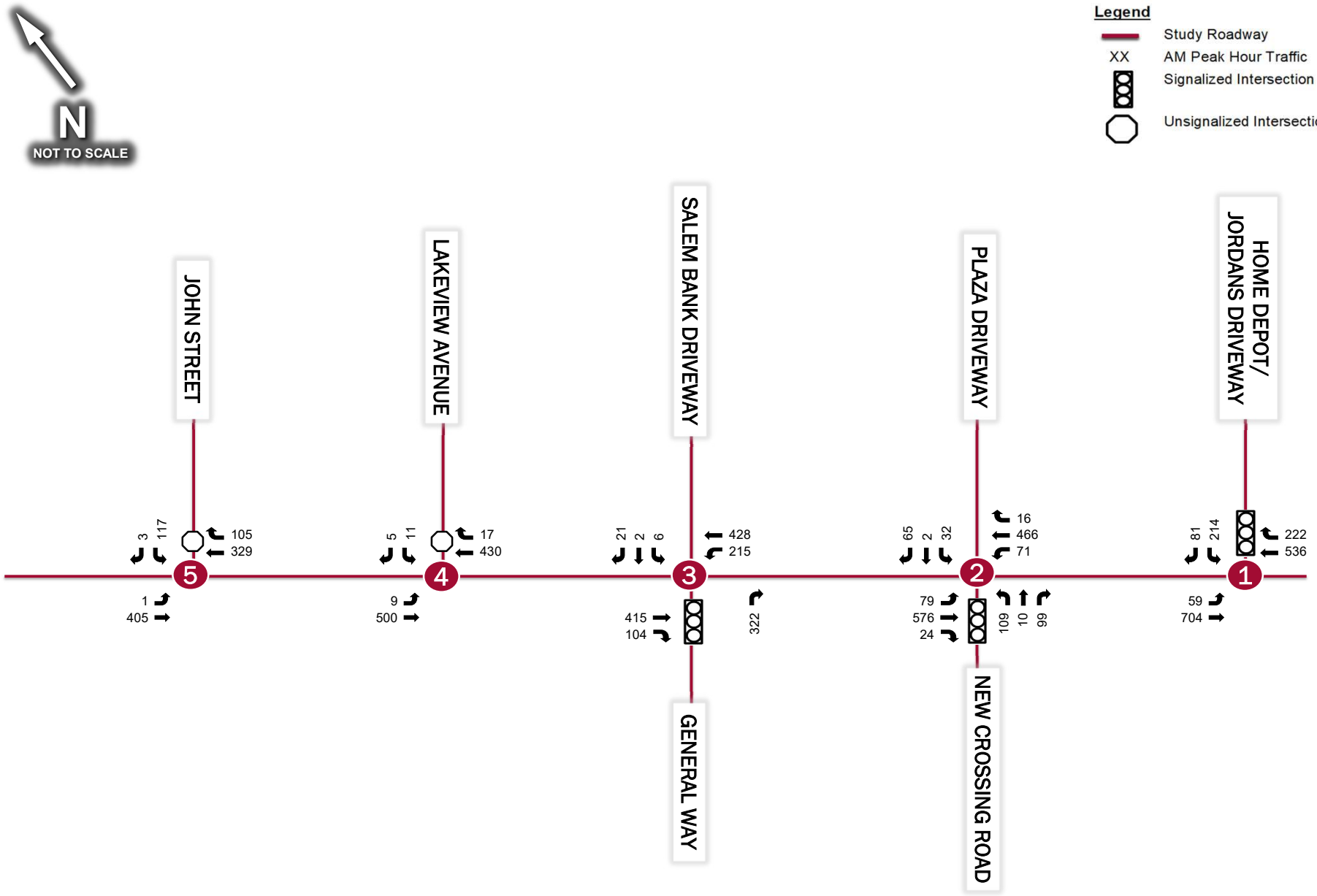


**Figure 9**
**2025 Existing Volumes PM Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

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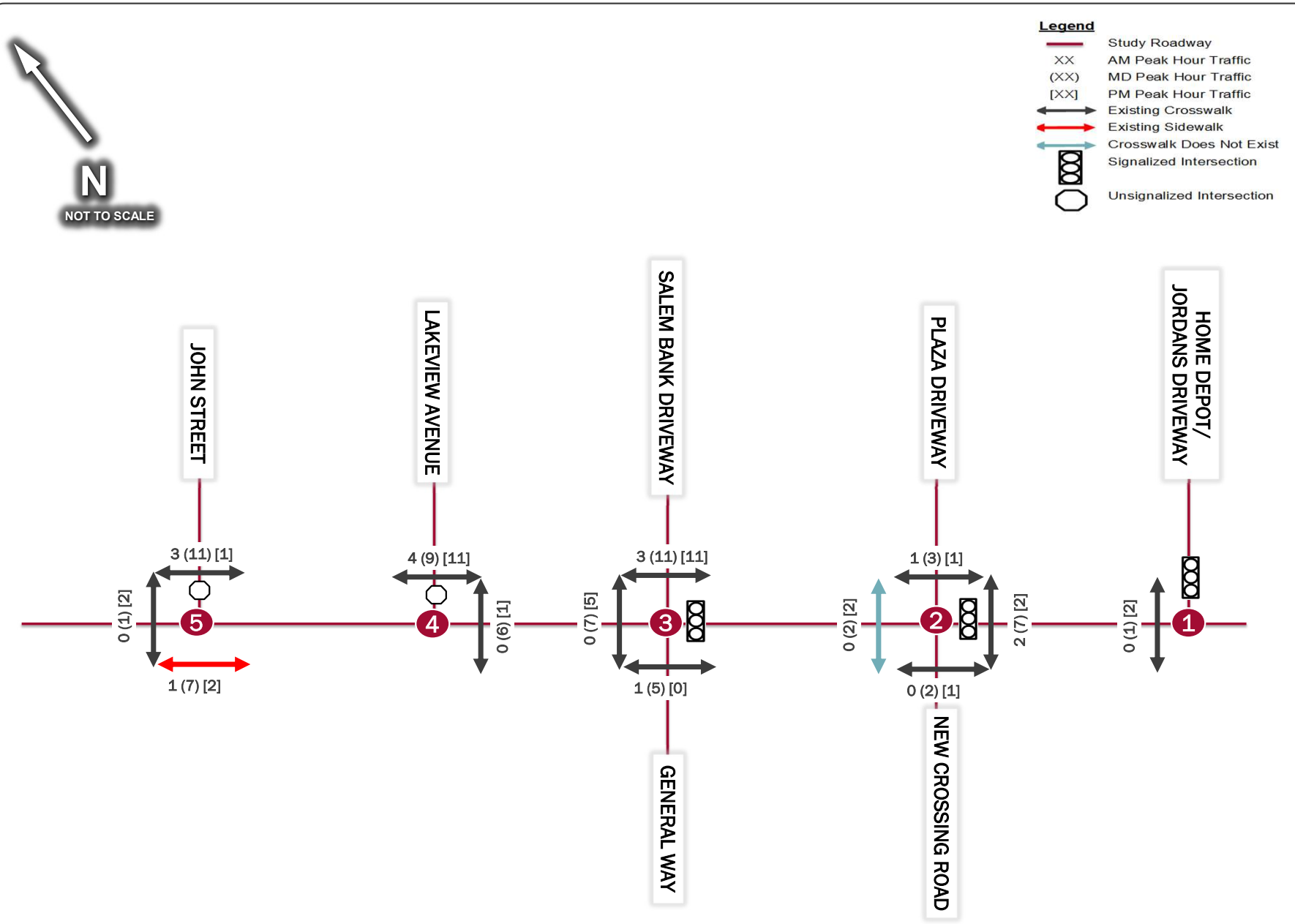


**Figure 10**
**2025 Existing Pedestrian Volumes**
**Walkers Brook Drive**
**Reading, MA**

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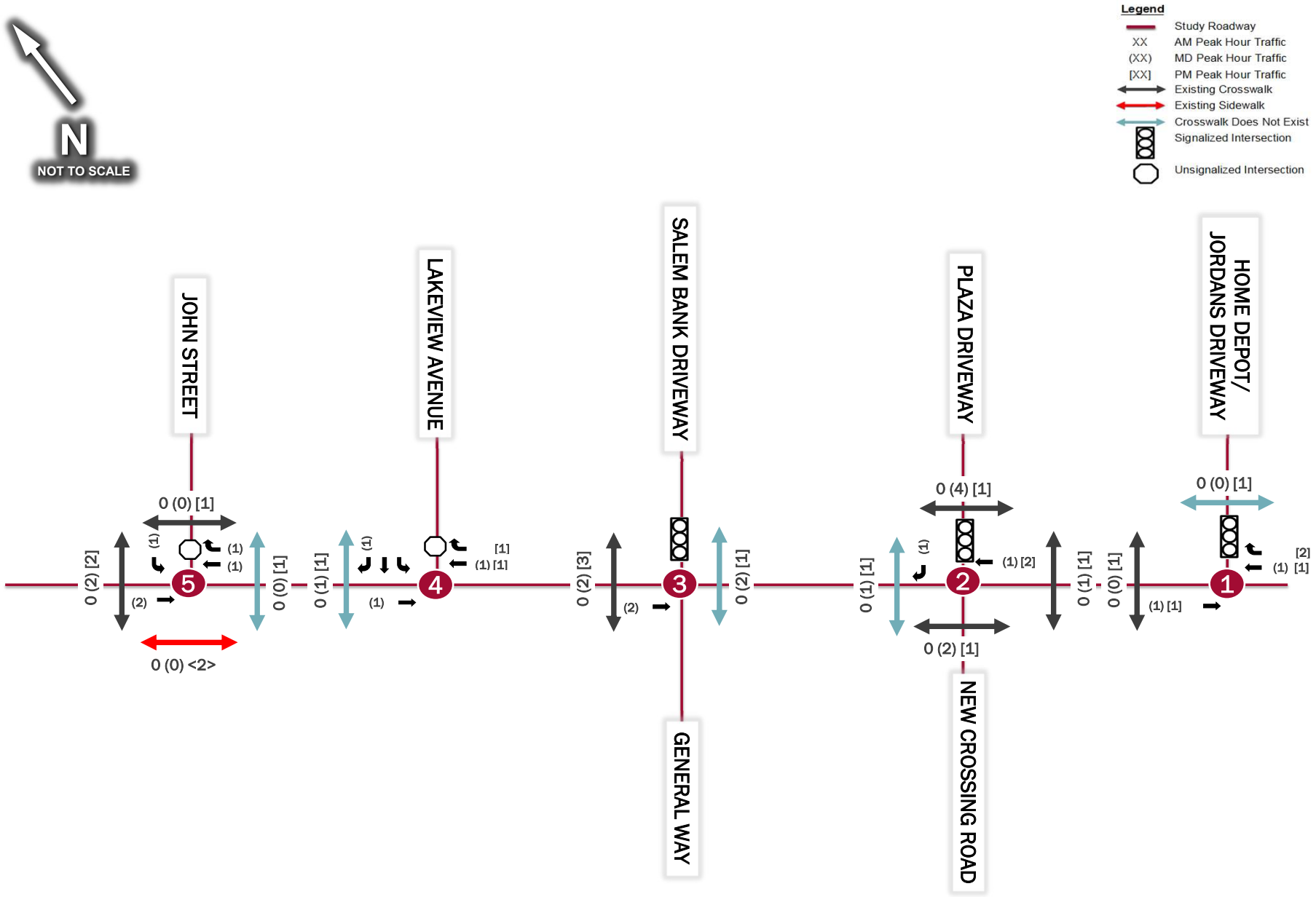


**Figure 11**
**2025 Bicycle (on roadway & crosswalks) Volumes**
**Walkers Brook Drive**
**Reading, MA**

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# Crash History

Crash data along the corridor and at the study intersections was obtained from MassDOT's Crash Data Portal from January 1, 2019, to December 31, 2024.[3] There was a total of 93 crashes along the corridor and 55 crashes occurring near the I-95 ramps. There were two (2) reported serious injury crashes along North Avenue near the I-95 northbound on/off-ramps and at the signalized intersection of North Avenue at Quannapowitt Parkway in Wakefield. Both crashes occurred outside of the defined project area. The reported crashes along the corridor did not indicate any collisions with pedestrians or bicyclists.

A crash density map along the corridor, including the I-95 ramps, depicts crash clusters at New Crossing Road and Home Depot/Jordan's Driveway, as shown in ***Figure 12***. Other crash clusters are shown by General Way and along the segment near Route 128 Honda/Shell Gas Station.

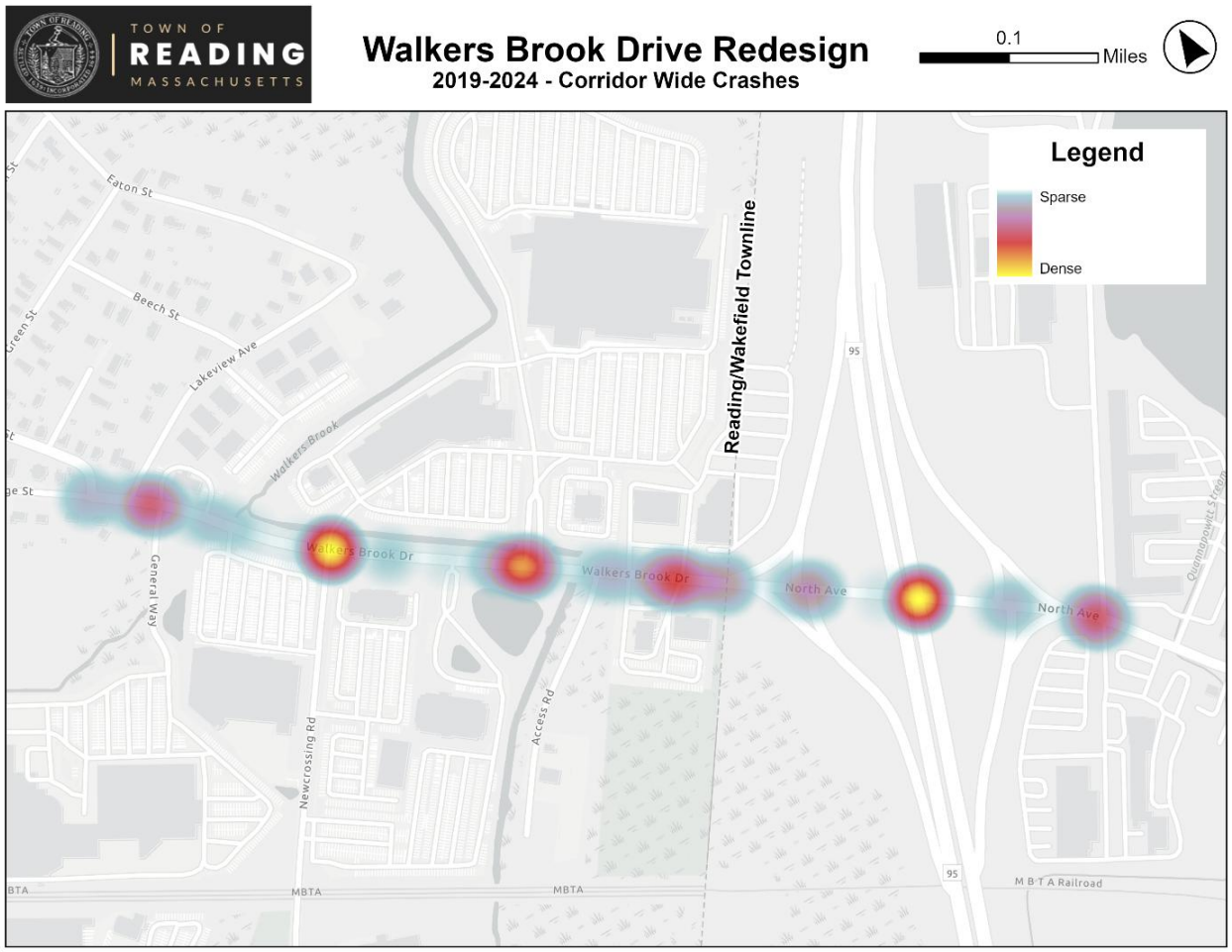


***Figure 12. Corridor Crash Density (2019-2024) Map***

*[3] As noted in the MassDOT's Crash Data Portal, crash data for the years after 2022 are subject to change and are not considered up-to-date or complete.*

The crash density of angled crashes within the study limits (John Street to the I-95 interchanges/Reading/Wakefield Town Line) is illustrated in ***Figure 13***. There were a total of 56 angled crashes within the study limits, with the majority taking place at the signalized intersection of Walkers Brook Drive at New Crossing Road. There were no reported serious injuries or fatalities resulting from these angled crashes.

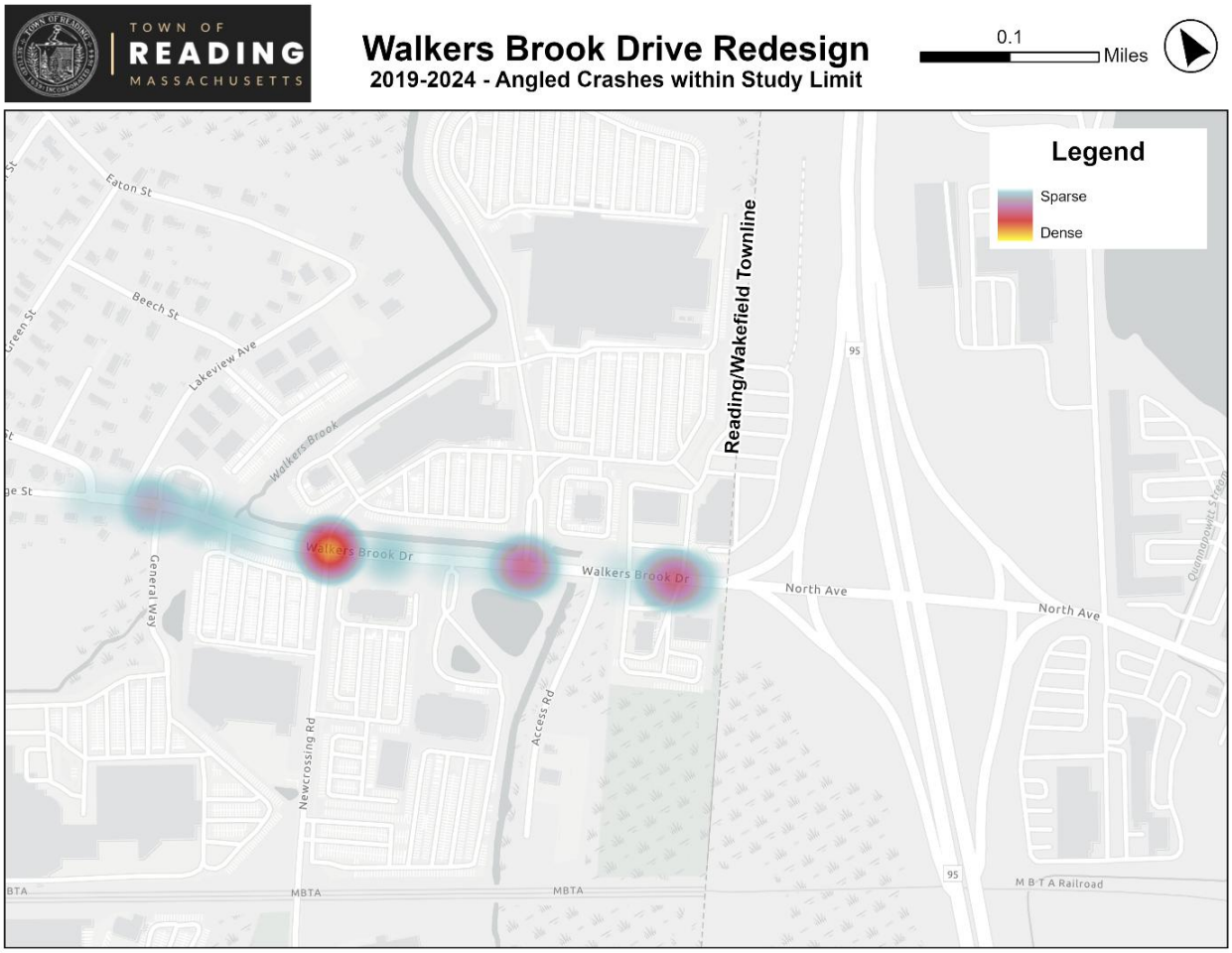


***Figure 13. Angled Crash Density (2019-2024) Map***

Crash data from 2020 at the study intersections was excluded due to substantial reductions in traffic volumes during the pandemic year. The following presents a summary of key findings from five years of crash data, specifically from 2019 and 2021 to 2024. ***Table 2*** shows the crash summary for the five (5) years.

The following summarizes the key aspects:

- There were 61 reported crashes at the five (5) study intersections, with 67% of the crashes located at the intersections of Walkers Brook Drive at Home Depot/Jordan's Driveway and Walkers Brook Drive at New Crossing Road.
- There were no fatal or serious injury crashes reported. However, 12 injury crashes were reported, and the majority were property-damage-only.
- The majority of the crashes were angled or rear-end collisions, and no reported crashes involved pedestrians and cyclists.
- Most crashes occurred during clear and daylight conditions.
- The intersection crash rates are lower than the District 4 and the Statewide average crash rate. However, at the intersections along Walkers Brook Drive with Home Depot/Jordan's Driveway and New Crossing Road are approaching the District 4 average crash rate.

The crash data worksheets for each study intersection are in ***Appendix C***.

***Table 2. Crash Summary (2019, 2021-2024)***

| | Walkers Brook Drive at Home Depot/ Jordans Driveway | Walkers Brook Drive at New Crossing Road | Walkers Brook Drive at General Way | Walkers Brook Drive at Lakeview Avenue | Walkers Brook Drive at John Street |
|---|---|---|---|---|---|
| **Total Number of Crashes** | **20** | **21** | **12** | **2** | **6** |
| Property Damage | 16 | 16 | 9 | 2 | 5 |
| Injury | 3 | 5 | 3 | 0 | 1 |
| Fatality | 0 | 0 | 0 | 0 | 0 |
| Not Reported | 1 | 0 | 0 | 0 | 0 |
| **Manner of Collision** | | | | | |
| Rear End | 5 | 1 | 6 | 1 | 1 |
| Angle | 10 | 17 | 5 | 0 | 1 |
| Sideswipe | 4 | 2 | 1 | 1 | 3 |
| Head On | 0 | 1 | 0 | 0 | 0 |
| Single Vehicle | 1 | 0 | 0 | 0 | 1 |
| Collision with Ped | 0 | 0 | 0 | 0 | 0 |
| Collision with Bike | 0 | 0 | 0 | 0 | 0 |
| Unknown | 0 | 0 | 0 | 0 | 0 |

| | Walkers Brook Drive at Home Depot/ Jordans Driveway | Walkers Brook Drive at New Crossing Road | Walkers Brook Drive at General Way | Walkers Brook Drive at Lakeview Avenue | Walkers Brook Drive at John Street |
|---|---|---|---|---|---|
| **Time of Day** | | | | | |
| 6:01 AM – 10:00 AM | 5 | 2 | 2 | 0 | 2 |
| 10:01 AM – 4:00 PM | 9 | 13 | 7 | 0 | 1 |
| 4:01 PM – 7:00 PM | 5 | 3 | 2 | 1 | 1 |
| 7:01 PM – 6:00 AM | 1 | 3 | 1 | 1 | 2 |
| **Year** | | | | | |
| 2019 | 9 | 7 | 1 | 1 | 0 |
| 2021 | 1 | 4 | 3 | 0 | 2 |
| 2022 | 4 | 3 | 2 | 0 | 1 |
| 2023 | 2 | 0 | 2 | 1 | 1 |
| 2024 | 4 | 4 | 4 | 0 | 2 |
| **Weather Conditions** | | | | | |
| Clear | 16 | 17 | 7 | 1 | 5 |
| Cloudy | 2 | 2 | 3 | 0 | 0 |
| Wet | 1 | 2 | 2 | 1 | 1 |
| Snow | 1 | 0 | 0 | 0 | 0 |
| Other/Unknown | 0 | 0 | 0 | 0 | 0 |
| **Light Conditions** | | | | | |
| Daylight | 16 | 16 | 11 | 0 | 4 |
| Dawn/Dusk | 1 | 0 | 1 | 0 | 0 |
| Dark (Unlit) | 0 | 0 | 0 | 0 | 0 |
| Dark (Lit) | 3 | 5 | 0 | 2 | 2 |
| Unknown | 0 | 0 | 0 | 0 | 0 |
| **Annual Average Crashes** | 4.00 | 4.20 | 2.40 | 0.40 | 1.20 |
| **Intersection Crash Rate** | 0.65 | 0.65 | 0.41 | 0.11 | 0.33 |
| **MassDOT District 4 Average Crash Rate** | 0.73 | 0.73 | 0.73 | 0.57 | 0.57 |
| **Statewide Average Crash Rate** | 0.78 | 0.78 | 0.78 | 0.57 | 0.57 |
| **Intersection Control** | Signalized | Signalized | Signalized | Unsignalized | Unsignalized |

# MassDOT Top Crash Locations and Maps

Along the project corridor, there were no Highway Safety Improvement Program (HSIP) top crash cluster locations from 2019 to 2021 indicated in the MassDOT database.

# Site Visit

A site visit was conducted on Wednesday, October 1, 2025, in the afternoon, to observe conditions at the study intersections and along the study corridor. The site visit team observed and photographed existing conditions, including roadway geometry, pedestrian and bicycle accommodations, sight distance, and driver behavior. Key items that were noted are listed below.

- Sidewalk facilities and pedestrian conditions are in average condition at the signalized intersections with some ramps missing detectable warning panels, particularly located on Walkers Brook Drive at General Way.
- Crosswalks have standard or ladder markings throughout the study corridor, and there are no accessible pedestrian signal (APS) push buttons at each signalized intersection
- No significant queueing or delay was observed at the study intersections.
- Pedestrians and bicyclists were observed along the study corridor.
- Westbound left-turns onto General Way were difficult due to the lack of gaps in traffic.
- The crossing marking on the west side of Walkers Brook Drive near John Street is located right near a curvature of the road and is in close proximity to other intersections.
- Walkers Brook follows most of the corridor's north side, bordered by a wood rail and concrete wall.
- MBTA stop for Bus Route 137 is located on Walkers Brook Drive west of New Crossing Road with the outbound stop having a shelter. The bus currently would stop in the right hand travel lane to discharge or pick up passengers.

***Walkers Brook that runs along the study corridor.***

***Bus Route 137 bus stop located west of New Crossings Road.***


***Westbound left-turn onto General Way.***

***Pedestrians observed using the crosswalk at John Street.***

# Intersection Capacity Analysis

## METHODOLOGY

Intersection capacity analyses were performed for Existing traffic volumes for the study area intersections. The analyses were performed using the Synchro Software Package (Version 12) and SIDRA (for the roundabout) which utilizes methodologies contained in the *Highway Capacity Manual 7th Edition)* for signalized and unsignalized intersections. For intersections with timing configurations that are incompatible with *HCM 7th Edition*, HCM 2000 analysis methodology is used. According to the *HCM 7th Edition*, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The grading condition is described by Level of Service (LOS) to indicate the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream and relates to the level of delay experienced. The *HCM 7th Edition* defines six (6) levels of service, LOS A through LOS F, with A being the best and F being the worst. Typically, a LOS "D" or better at signalized and unsignalized intersections is preferred, although lower levels are tolerated during peak travel hours, particularly in urbanized locations.

The ranges of delays for each level of service are shown in ***Table 3***.

***Table 3. Level of Service Range of Delay***

| Level of Service (LOS) | Delay of Vehicle (seconds per vehicle) | |
|---|---|---|
| | Signalized Intersections | Unsignalized Intersections |
| A | ≤ 10 | ≤ 10 |
| B | 10 -20 | 10 -15 |
| C | 20 – 35 | 15 – 25 |
| D | 35 – 55 | 25 – 35 |
| E | 55 – 80 | 35 – 50 |
| F | ≥ 80 | ≥ 50 |

# EXISTING YEAR (2025) WITH EXISTING GEOMETRY

- The signalized intersections will operate at an overall LOS C or better, with some movements operating at LOS D during the study peak periods. The volume-to-capacity ratio (v/c) is less than one (1.0) for all signalized intersections.
    - Walkers Brook Drive at General Way/Salem Five Bank Driveway: the 95th percentile queue for the westbound left-turn extends past the storage length during the Midday peak hour, but the 50th percentile queue is within the storage length.
- Minor street approaches of the unsignalized intersections will experience some delays (movements entering Walkers Brook Drive), which will operate at LOS C or better for all peak hours, except at John Street southbound movements during the AM peak hour, which will operate at LOS D.
- Evaluating Walkers Brook at General Way in the Existing (2025) traffic conditions for the single lane roundabout and single lane roundabout with a bypass lane was prepared. The overall LOS operates at LOS A in both options. However, the westbound approach in the single lane roundabout experiences more delay, and the 95th percentile queue is greater than the single roundabout with a bypass lane. For example, in the weekday PM peak hour, the 95th percentile queue is 112 feet in the single lane roundabout and 36 feet in the single lane roundabout with a bypass lane.

The intersection capacity analysis for the Existing 2025 Conditions is shown in ***Table 4***, and the Existing (2025) traffic conditions with the roundabout alternatives, single lane and single lane with bypass lane, are shown in

***Table* 5**. The intersection capacity analysis reports are included in ***Appendix K***, and the 95th percentile queue diagrams are included in ***Appendix M***. The intersection signal timings are contained in ***Appendix J***.

### *Table 4. Existing Year (2025) with Existing Geometry Intersection Capacity Analysis*

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| **Walkers Brook Drive at Home Depot Driveway (signalized)** | EBT/L | - | A | 4.2 | 0.31 | 26 | 40 | A | 5.7 | 0.41 | 38 | 78 | A | 3.1 | 0.32 | 55 | 88 |
| | WBT | - | A | 8.6 | 0.53 | 43 | 137 | B | 11.2 | 0.47 | 51 | 95 | A | 6.2 | 0.24 | 64 | 98 |
| | WBR | 130 | A | 1.7 | 0.13 | 0 | 25 | A | 2.7 | 0.22 | 0 | 25 | A | 1.4 | 0.15 | 0 | 25 |
| | SBL | 150 | B | 16.1 | 0.30 | 25 | 44 | B | 14 | 0.47 | 37 | 73 | D | 41.1 | 0.60 | 69 | 103 |
| | SBR | - | B | 10.3 | 0.03 | 0 | 25 | A | 6.8 | 0.07 | 0 | 25 | C | 29.0 | 0.06 | 0 | 35 |
| | SB Approach | - | B | 14.7 | - | - | - | B | 12.3 | - | - | - | D | 37.8 | - | - | - |
| | WB Approach | - | A | 7.3 | - | | | A | 7.8 | - | - | - | A | 4.8 | - | - | - |
| | **Intersection** | | **A** | **7.2** | **0.48** | **26** | **40** | **A** | **8.1** | **0.50** | | | **A** | **9.6** | **0.38** | | |
| **Walkers Brook Drive at New Crossing Road/Plaza Driveway (signalized)** | EBL/T/R | - | A | 3.7 | 0.28 | 25 | 51 | A | 7.8 | 0.44 | 45 | 211 | A | 5.2 | 0.41 | 70 | 115 |
| | WBL/T/R | - | A | 4.7 | 0.46 | 47 | 96 | A | 7.5 | 0.4 | 37 | 180 | A | 4.6 | 0.31 | 45 | 90 |
| | NBL/T | - | C | 20.6 | 0.43 | 25 | 34 | C | 29.9 | 0.65 | 30 | 87 | D | 36.1 | 0.65 | 63 | 104 |
| | NBR | 100 | B | 18.8 | 0.03 | 0 | 25 | C | 22.1 | 0.06 | 0 | 30 | C | 27.8 | 0.07 | 0 | 35 |
| | SBL | 55 | B | 19.4 | 0.20 | 25 | 25 | C | 22.9 | 0.25 | 25 | 42 | C | 28.5 | 0.20 | 25 | 35 |
| | SBT/R | - | B | 19.1 | 0.11 | 25 | 25 | C | 22.2 | 0.09 | 25 | 35 | C | 27.7 | 0.06 | 25 | 26 |
| | NB Approach | - | B | 19.8 | - | - | - | C | 26.2 | - | - | - | C | 32.3 | - | - | - |
| | SB Approach | - | B | 19.2 | - | - | - | C | 22.4 | - | - | - | C | 28.0 | - | - | - |
| | **Intersection** | | **A** | **6.4** | **0.50** | | | **B** | **11.1** | **0.45** | | | **B** | **10.3** | **0.48** | | |

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| Walkers Brook Drive at General Way/Salem Five Bank Driveway (signalized) | EBL/T/R | - | B | 18.5 | 0.73 | 155 | 239 | C | 23.4 | 0.76 | 91 | 326 | B | 18.2 | 0.65 | 151 | #406 |
| | WBL | - | A | 7.5 | 0.39 | 27 | 51 | C | 21.6 | 0.80 | 25 | #225 | A | 7.7 | 0.46 | 25 | 69 |
| | WBT | - | A | 8.5 | 0.59 | 144 | 232 | A | 9.6 | 0.39 | 35 | 193 | A | 6.2 | 0.36 | 47 | 159 |
| | NBR | - | C | 24.1 | 0.07 | 0 | 0 | C | 26.4 | 0.25 | 0 | 0 | D | 35.2 | 0.25 | 0 | 0 |
| | SBL/T/R | - | C | 25.4 | 0.02 | 0 | 0 | C | 31.5 | 0.27 | 25 | 25 | D | 38.2 | 0.18 | 25 | 30 |
| | WB Approach | - | A | 8.3 | - | - | - | B | 15.0 | - | - | - | A | 6.7 | - | - | - |
| | **Intersection** | | **B** | **13.5** | **0.62** | | | **C** | **20.8** | **0.67** | | | **B** | **17.9** | **0.58** | | |
| Walkers Brook Drive at Lakeview Avenue (one-way STOP controlled) | EBL/T | - | A | 8.7 | 0.01 | * | 0 | A | 8.4 | 0 | * | 0 | A | 8.4 | 0.01 | * | 0 |
| | SBL/R | - | C | 17.3 | 0.11 | | 25 | C | 15.6 | 0.06 | | 25 | C | 19.0 | 0.10 | | 25 |
| Washington Street/Walkers Brook Drive at John Street (one-way STOP controlled) | EBL/T | - | A | 0 | - | * | 0 | A | 8.2 | 0.00 | * | 0 | A | 8.3 | 0.00 | * | 0 |
| | SBL/R | - | D | 29.2 | 0.56 | | 80 | C | 19.8 | 0.40 | | 45 | C | 23.7 | 0.42 | | 50 |

*50th percentile queues are not supported by the HCM methodology.

***Table 5. Existing Traffic Conditions with General Way Roundabout Intersection Capacity Analysis***

| Intersection Option | Movement | AM Peak Hour | | | | Midday Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay (s) | V/C | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 95th% Queue Length (ft) |
| Single Lane Roundabout | NB Approach | A | 5.7 | 0.13 | 25 | A | 9.7 | 0.46 | 73 | C | 24.1 | 0.80 | 296 |
| | WB Approach | A | 5.6 | 0.57 | 137 | A | 5.2 | 0.49 | 102 | C | 16.4 | 0.76 | 373 |
| | EB Approach | A | 7.6 | 0.44 | 70 | A | 9.4 | 0.49 | 82 | B | 14.7 | 0.71 | 284 |
| | Overall | A | 6.3 | - | - | A | 7.7 | - | - | C | 18.0 | - | - |
| Single Lane Roundabout with Bypass Lane | NB Approach | A | 5.8 | 0.13 | 25 | A | 9.9 | 0.44 | 66 | C | 11.6 | 0.80 | 296 |
| | WB Approach | A | 4.4 | 0.43 | 72 | A | 3.9 | 0.32 | 45 | A | 7.5 | 0.48 | 73 |
| | EB Approach | A | 7.7 | 0.44 | 71 | A | 9.6 | 0.53 | 93 | B | 11.4 | 0.71 | 288 |
| | Overall | A | 5.7 | - | - | A | 7.3 | - | - | B | 14.7 | - | - |

# Future Base Conditions

Future traffic volumes used in the analysis are the sum of existing traffic, reroute of left-turn outs at General Way, traffic from nearby development, planned projects such as the Eastern Gateway District, and additional traffic generated by overall growth in the study area. For the purpose of this study, the year 2025 was selected as the design year. The following paragraphs summarize the development of the future (2035) traffic volume conditions for the corridor.

## Background Growth Rate

The traffic growth rate that reflects the expected general growth in the region outside the project corridor was determined based upon historic growth trends at a nearby MassDOT traffic count station from the years 2020 and 2024, and growth rates from previous traffic studies in the area, including Town of Wakefield projects.

The MassDOT count station(s) referenced in the analysis is:

- MassDOT count station no. 4848 located on Main Street, north of Minot Street

The historical growth rate analysis based on the MassDOT count station is negative 1.9 percent (-1.9%) over the five (5) year period.

Growth rates for the following completed traffic impact studies were reviewed:

- ***252, 258 & 262 Main Street & 10 Pinevale Avenue, Reading*** – Proposed mixed-use development consisting of 30 multifamily units, 6,150 square feet of commercial space, and 2,000 square feet sit-down restaurant.
    - Based on a review of the historic traffic counts, it was determined that the traffic volumes are increasing in the area by approximately 0.81 percent (0.81%) per year on average. Therefore, a 1.0 percent (1.0%) per year annual background traffic growth rate was used.
- ***572-590 North Avenue, Wakefield*** – Proposed 38-unit residential development
    - Based on a review of the historic traffic counts, it was determined that the traffic volumes are fluctuating in the area with an average increase of approximately 0.85 percent (0.85%) per year. Therefore, a 1.0 percent per (1.0%) year annual background traffic growth rate was used

Both of these traffic impact studies used an assumed growth rate of 1.0 percent (1.0%) to calculate the future traffic volumes. Note that these traffic impact studies were not included in the vicinity development for this Project, as the trips associated with them can be included in the background growth rate and are not close enough to the study corridor to affect traffic volume.

To provide a conservative analysis, an annual growth of 1.0 percent (1.0%) was applied annually to the existing (2025) traffic volumes to develop the future (2035) Base conditions.

The historical growth rate and referenced traffic impact studies are located in ***Appendix E*****.**

The existing traffic volumes grown to the year 2035 with the annual background growth rate of 1.0 percent (1.0%) can be found in ***Figure 14, Figure 15,*** and ***Figure 16*** for the weekday AM peak hour, midday peak hour, and PM peak hour, respectively.

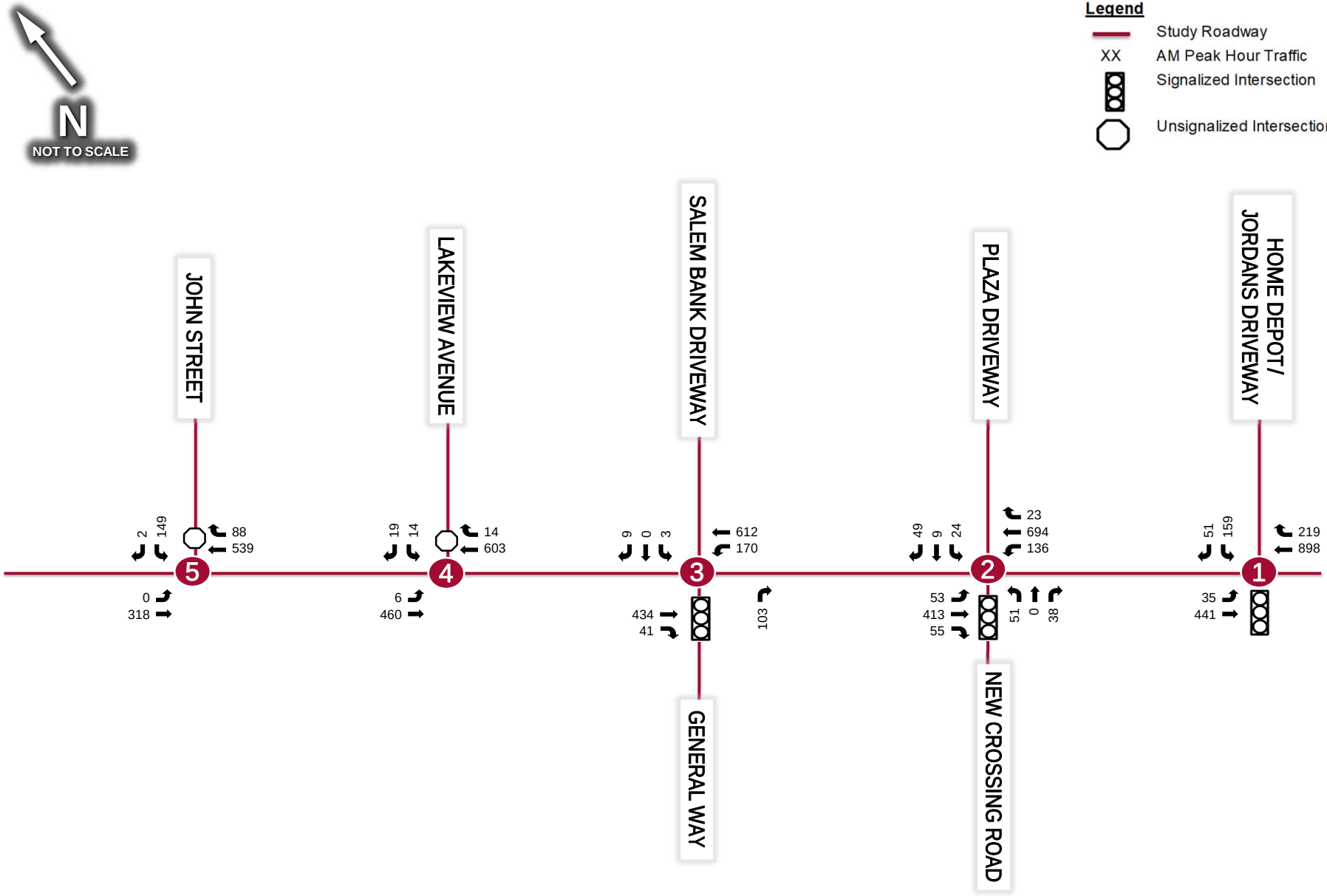


**Figure 14**
**Grown 2035 AM Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

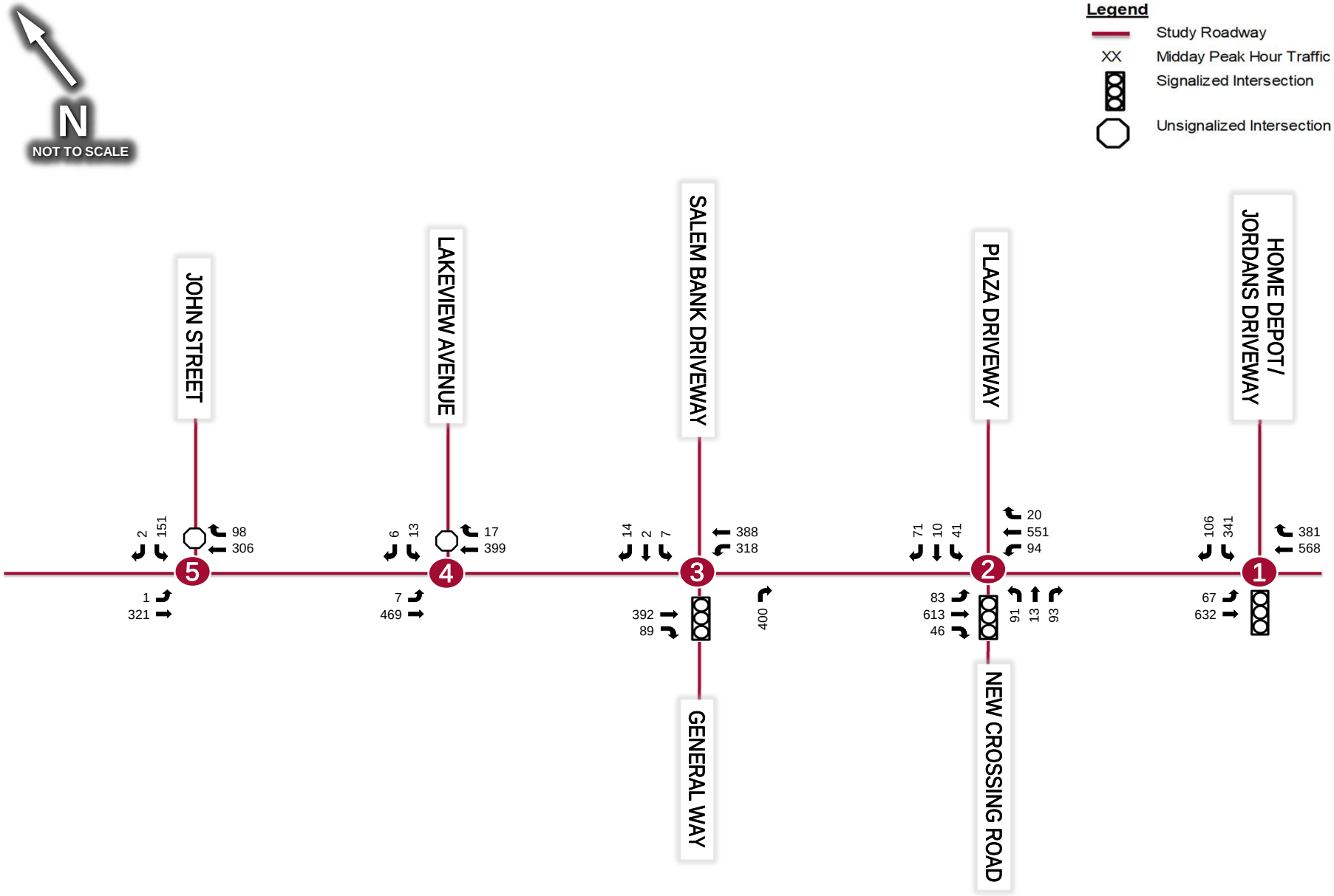


**Figure 15**
**Grown 2035 Midday Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

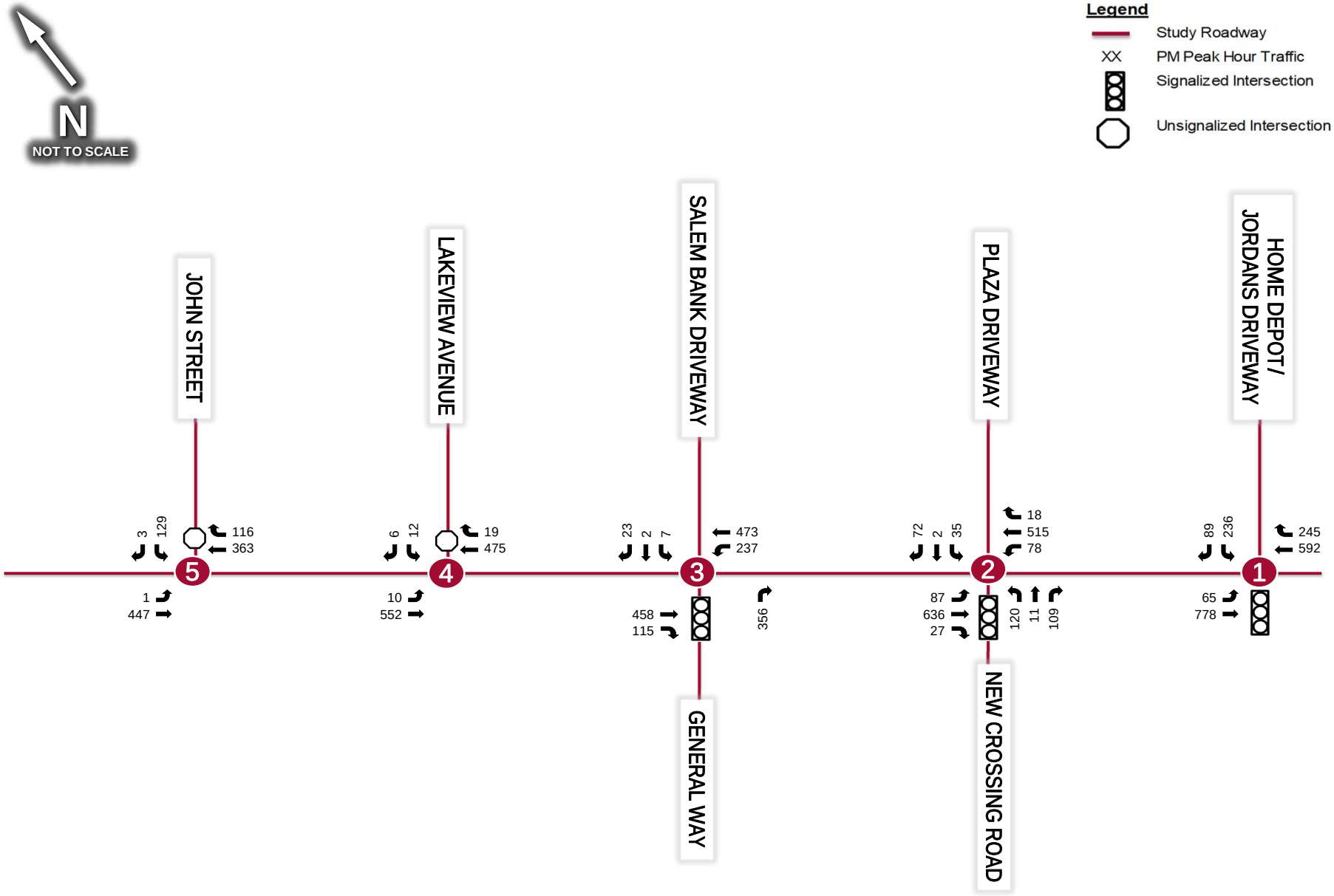


**Figure 16**
**Grown 2035 PM Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

# Site Specific Developments

The Planning Board websites for the Town of Reading and the Town of Wakefield were reviewed to identify any upcoming or planned development along or near the corridor. In addition to the traffic impact studies identified in the Background Growth Rate section, the following two (2) projects were included in the development of the Future Base Traffic Volumes.

- ***Eaton Lakeview Apartments in the Town of Reading,*** a residential development of 86 dwelling units, is proposed along Lakeview Avenue. This development is partially completed, with 12 ownerships units being occupied and 74 rental units remaining to be constructed. The weekday AM and PM trips generated from this site have been incorporated into the Future Conditions Volume.
- ***200 Quannapowitt in the Town of Wakefield***, a mixed-use development of 440 dwelling units and 3,600 square feet of restaurant space, is under construction, located east of Walkers Brook Drive. This development was partially opened in the Summer of 2025, with any resulting traffic volumes accounted for in the current traffic counts. The weekday AM and PM trips generated from this site have been incorporated into the Future Conditions Volume.

The traffic studies for these two vicinity developments are shown in ***Appendix F,*** and the trips generated from the site specific developments are shown in ***Figure 17***.

In addition to the above, the Town is working to define a major redevelopment area encompassing Walkers Brook Drive, known as the *Eastern Gateway*. This zone, build-out assumptions, and traffic forecasts are described in the next section.

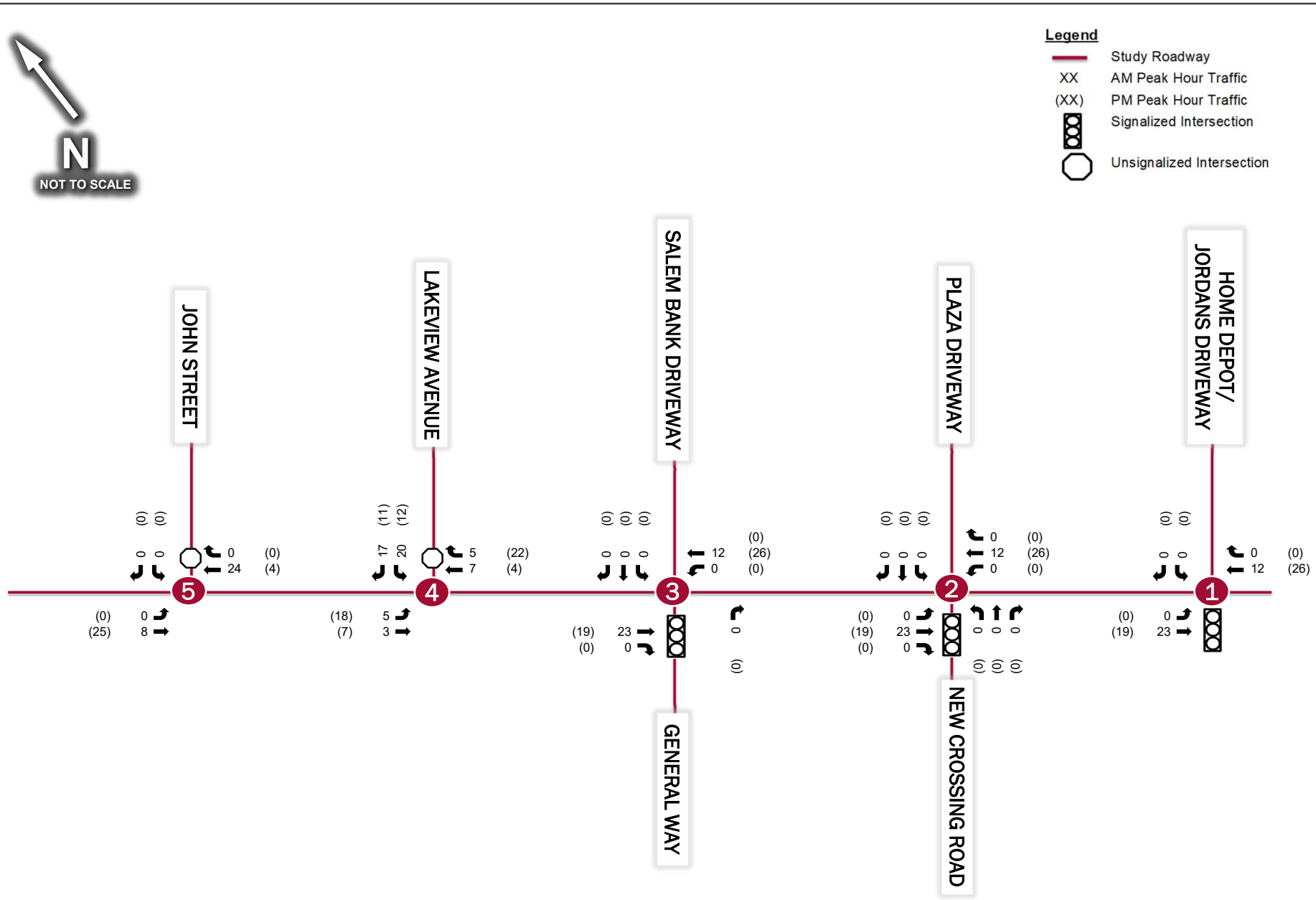


**Figure 17**
**Site Specific Development Volumes**
**Walkers Brook Drive**
**Reading, MA**

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# Eastern Gateway Initiatives

In 2019, the Town of Reading conducted an *Eastern Gateway District Redevelopment Study*, aiming to develop an urban design concept plan for the Ash Street/Reading Municipal Light Department area, as shown in ***Figure 18***. This geography was identified in the Reading 2020 Vision as a priority for economic development. Below is a summary of the key themes and perspectives expressed during a community forum.

***Community Identity and Mixed-Use Development:*** Participants strongly supported transforming the Eastern Gateway into a vibrant, mixed-use area that feels connected to Reading's town center. Ideas included integrating shops, restaurants, and outdoor seating to create a lively destination for both residents and visitors.

***Walkability, Connectivity, and Mobility:*** Enhancing pedestrian and bicycle connectivity was a high priority. Residents envisioned safe bike paths, improved sidewalks, and pedestrian crossings, including a trail or pathway linking both sides of the commuter rail tracks.

***Open Space and Sustainability:*** Attendees highlighted the need for green spaces, such as parks and shaded gathering areas, integrated with commercial and residential uses.

***Housing and Zoning:*** Community feedback reflected a desire for housing that meets diverse needs, such as affordable options and "missing middle" housing, while limiting redundancy with Reading's existing stock.

***Economic Growth and Tax Base:*** Participants underscored the need for economic opportunities through light industrial or makerspaces and vibrant commercial areas.

***Architectural Character and Design Guidelines:*** Residents expressed a preference for architectural designs that harmonize with Reading's small-town charm.

A clear vision for the Eastern Gateway District as a dynamic, pedestrian-friendly hub that balances commerce, community spaces, and sustainable living was developed in the planning study. It also raised important concerns, including managing density and traffic, and preserving the district's unique identity. The feedback collected provides a foundation for the Town of Reading to develop plans that reflect the community's values, address potential challenges, and foster thoughtful, inclusive growth.

Under the Future Base Conditions, it is assumed that Eastern Gateway currently contains 537,155 square feet of commercial space, with approximately 50,000 square feet vacant at this time. Additionally, projections show that the Eastern Gateway area could feasibly maintain hundreds of residential units, along with new commercial and mixed-use, given its scale. To avoid double-counting existing commercial space, trip generation was calculated solely for the unoccupied 50,000 square feet and up to 500 housing units.

Background details are included in ***Appendix G***.

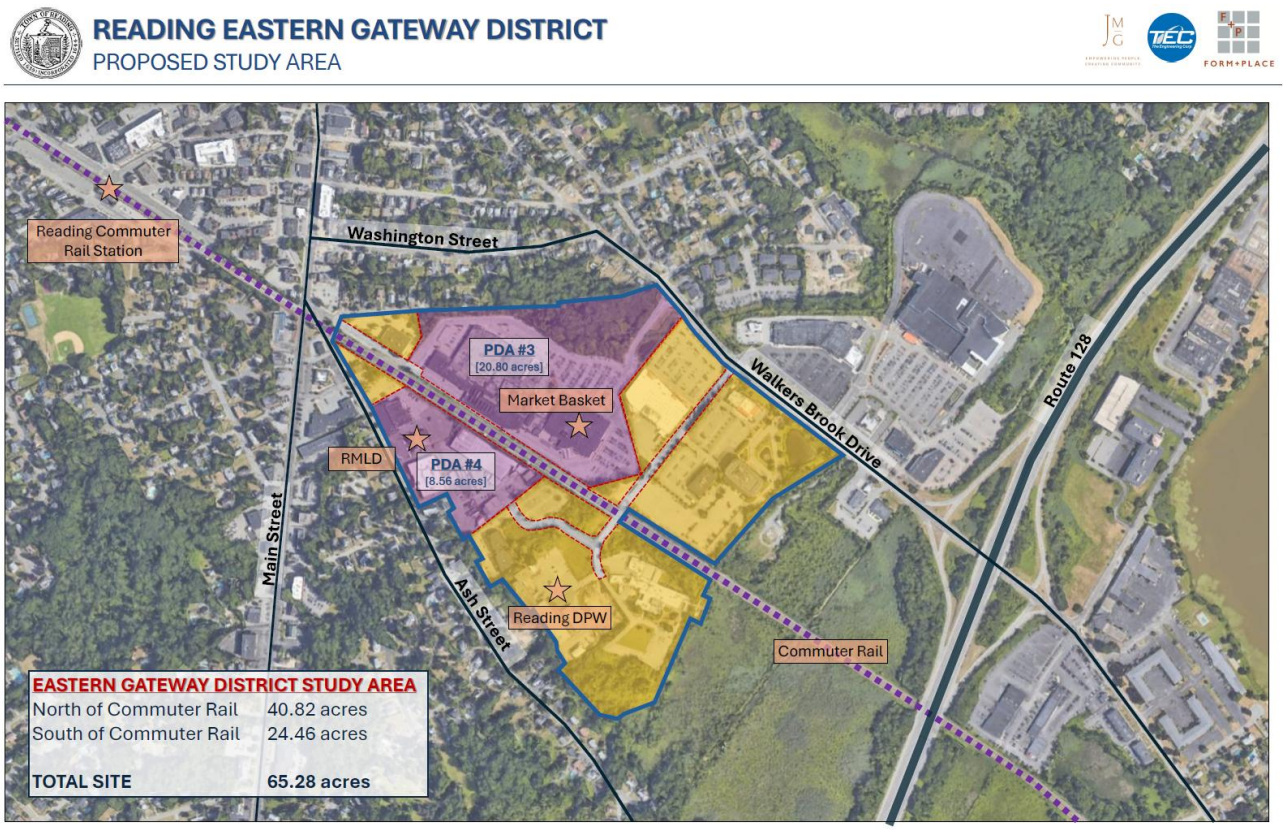



*Figure 18. Eastern Gateway District – The Yard*

# TRIP GENERATION

Trip generation calculations for the Eastern Gateway District were performed using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 12th Edition. The trip generation for was determined using ITE Land Use Code (LUC) 220 (Multifamily Housing (Low-Rise)) and LUC 820 (Shopping Center (>150k)). Project trips were estimated for the weekday daily, weekday AM peak hour, and weekday PM peak hours.

As shown in ***Table 4***, the Eastern Gateway new development is expected to generate 3,846 daily new weekday trips. During the weekday AM peak hour, the multifamily housing is expected to generate 188 trips (45 entering and 143 exiting), and the shopping center is expected to generate 31 trips (19 entering and 12 exiting). During the weekday PM peak hour, the multifamily housing is expected to generate 247 trips (153 entering and 94 exiting), and the shopping center is expected to generate 100 trips (49 entering and 51 exiting). The total trips generated for the AM peak hour is 219 (64 entering and 155 exiting) and 357 (202 entering and 145 exiting) for the PM peak hour. All trip generation calculations and background information are shown in ***Appendix H.*** Additionally, the ins and outs within the Eastern Gateway District for the Existing (2025) traffic conditions is shown in ***Figure 7***, ***Figure 8***, and ***Figure 9,*** for the weekday AM peak hour, midday peak hour, and PM peak hour, respectively.

***Table 6. Eastern Gateway District Trip Generation***

| | | | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|---|
| **Land Use (ITE Code)** | **Scale** | **Daily Weekday** | **Total Peak Hour Trips** | **Entering Trips** | **Exiting Trips** | **Total Peak Hour Trips** | **Entering Trips** | **Exiting Trips** |
| Multifamily Housing (Low-Rise) (220) | 500 DU | 2,936 | 188 | 45 | 143 | 247 | 153 | 94 |
| Shopping Center (>150k) (820) | 50,000 SF | 910 | 31 | 19 | 12 | 100 | 49 | 51 |
| **Net New Vehicle Trips** | | **3,846** | **219** | **64** | **155** | **347** | **202** | **145** |

## TRIP DISTRIBUTION AND ASSIGNMENT

The anticipated distribution of project traffic was forecast for the trips expected to be generated by the development of Eastern Gateway. The distribution was estimated for all vehicles that may access the site. For the development, the trip distribution estimate was based on existing traffic patterns.

- 30% to/from the East (Walkers Brook Drive)
- 30% to/from the West (Walkers Brook Drive)
- 18% to/from the South (General Way)
- 10% to/from the North (John Street)
- 2% to/from the North (Lakeview Avenue)

The remaining 10% will be within the Eastern Gateway District – The Yard.

***Figure 19*** presents the trip distribution and trip assignment for the peak hours. The trips to and from General Way account for the ability to connect to Main Street (Route 28) via the site**.** ***Figure 20*** represents the net new trips.

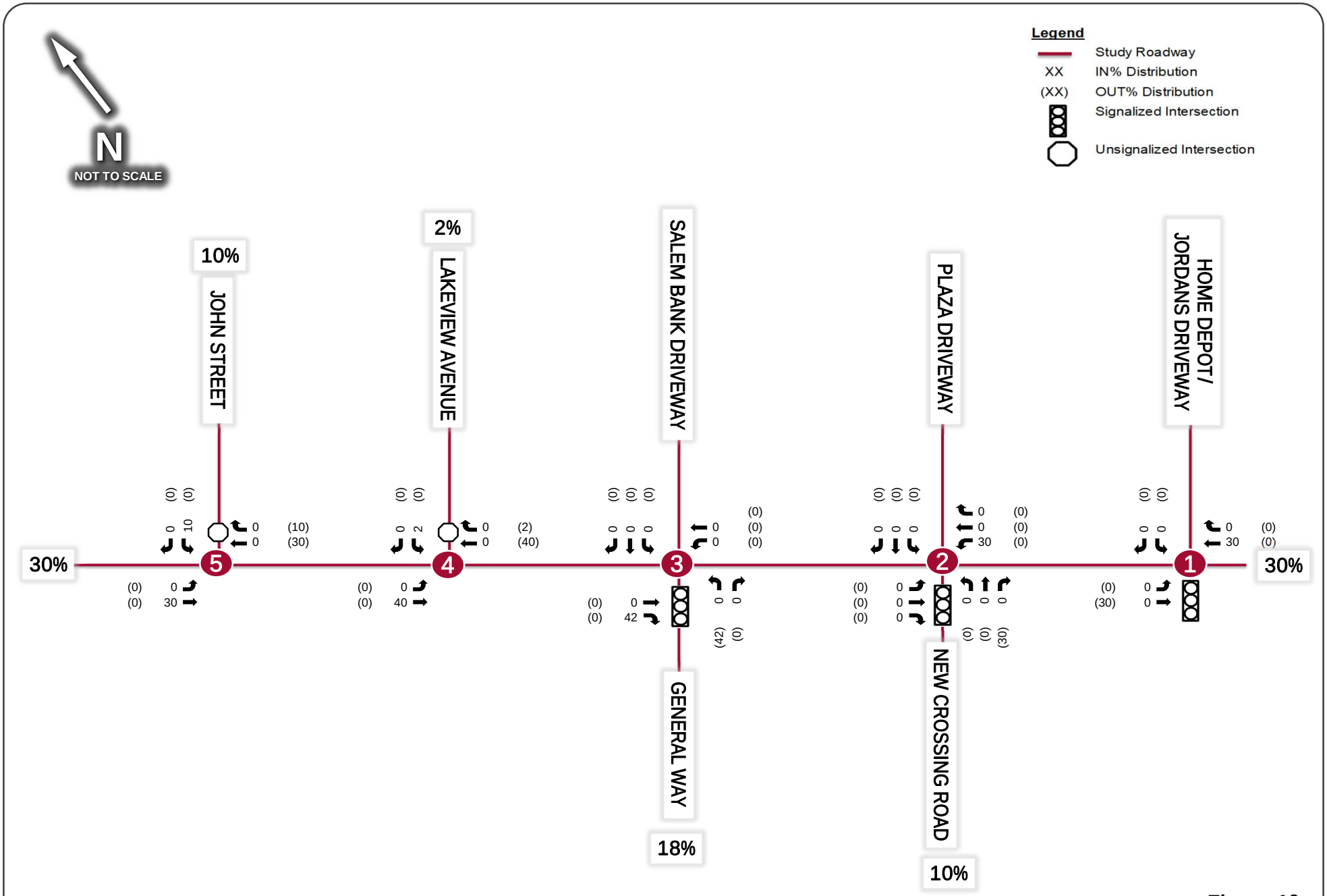



**Figure 19**
**Trip Distribution**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

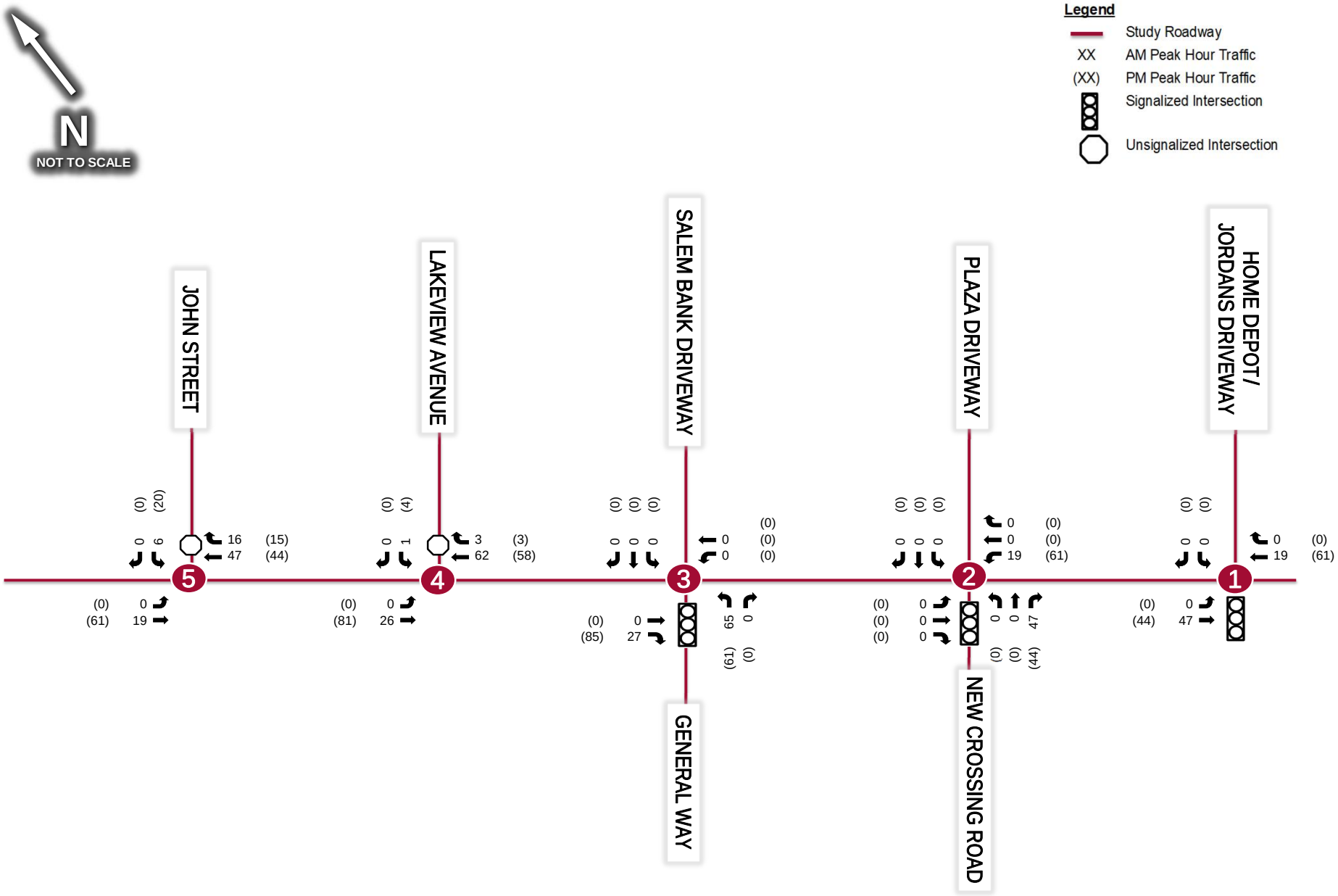



**Figure 20**
**Eastern Gateway Trip Generation**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

# Rerouted Left-Turn Outs at General Way

Currently, at the signalized intersection of Walkers Brook Drive at General Way/Salem Bank Driveway, the northbound left-turn movement is restricted. In order for motor vehicles to travel westbound on Walkers Brook Drive/Village Street, they go through the rear of the Market Basket Plaza onto Bolton Street. A manual count was taken along Bolton Street by Walgreens during the afternoon site visit conducted on Wednesday, October 1, 2025, and showed that 40 vehicles used this route to exit Market Basket Plaza.

In addition, trip generation calculations for Market Basket were performed using the ITE *Trip Generation Manual, 12th Edition*, using ITE Land Use Code (LUC) 850 (Supermarket). Project trips were estimated for weekday AM peak hour and PM peak hour periods and compared to the Existing (2025) turning movement counts at Walkers Brook Drive and General Way. The comparison showed that about 30% of vehicles exiting General Way, would make a northbound left-turn movement.

While the AM peak hour trip generation and existing counts were similar, the existing PM peak hour counts were higher than those predicted by ITE, likely due to nearby land uses. For a conservative analysis, it was assumed that 40 vehicles would make a northbound left-turn movement from General Way during the AM and Midday peak hours, while 160 vehicles would make a left-turn during the PM peak hour.

As part of the Future Base Conditions, the signalized intersection of Walkers Brook Drive at General Way/Salem Bank Driveway will allow all movements, including northbound left turns. Therefore, the rerouted left-turn outs at General Way were included and shown in ***Figure 21, Figure 22*** and ***Figure 23*** for the weekday AM peak hour, midday peak hour, and PM peak hour, respectively.

***Figure 24***, ***Figure 25***, and ***Figure 26*** present the future traffic conditions at the study intersections during the weekday AM, midday, and PM peak hours. Volume development worksheets for the study intersections are included in ***Appendix I***.

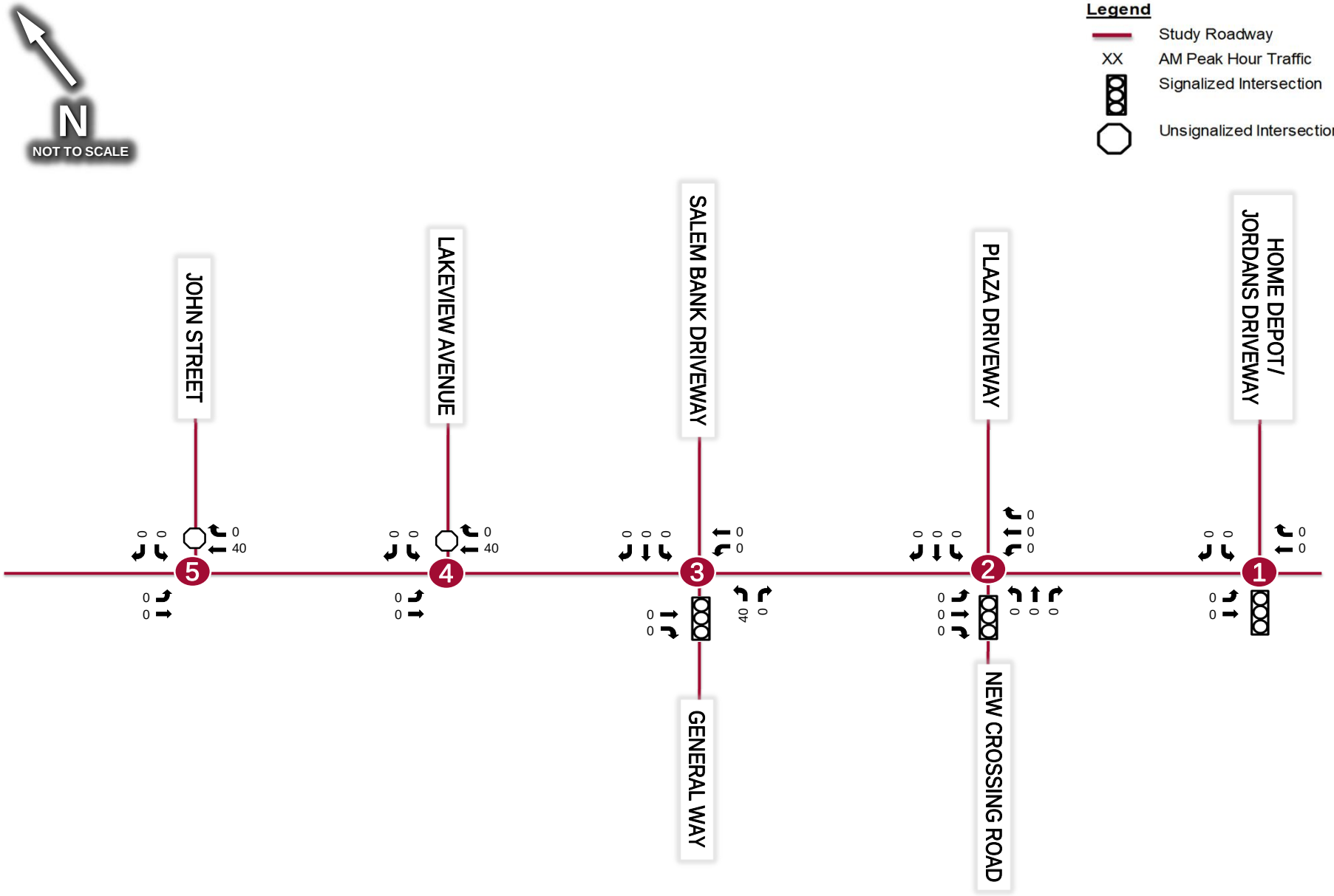



**Figure 21**
**Reroute of General Way AM Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

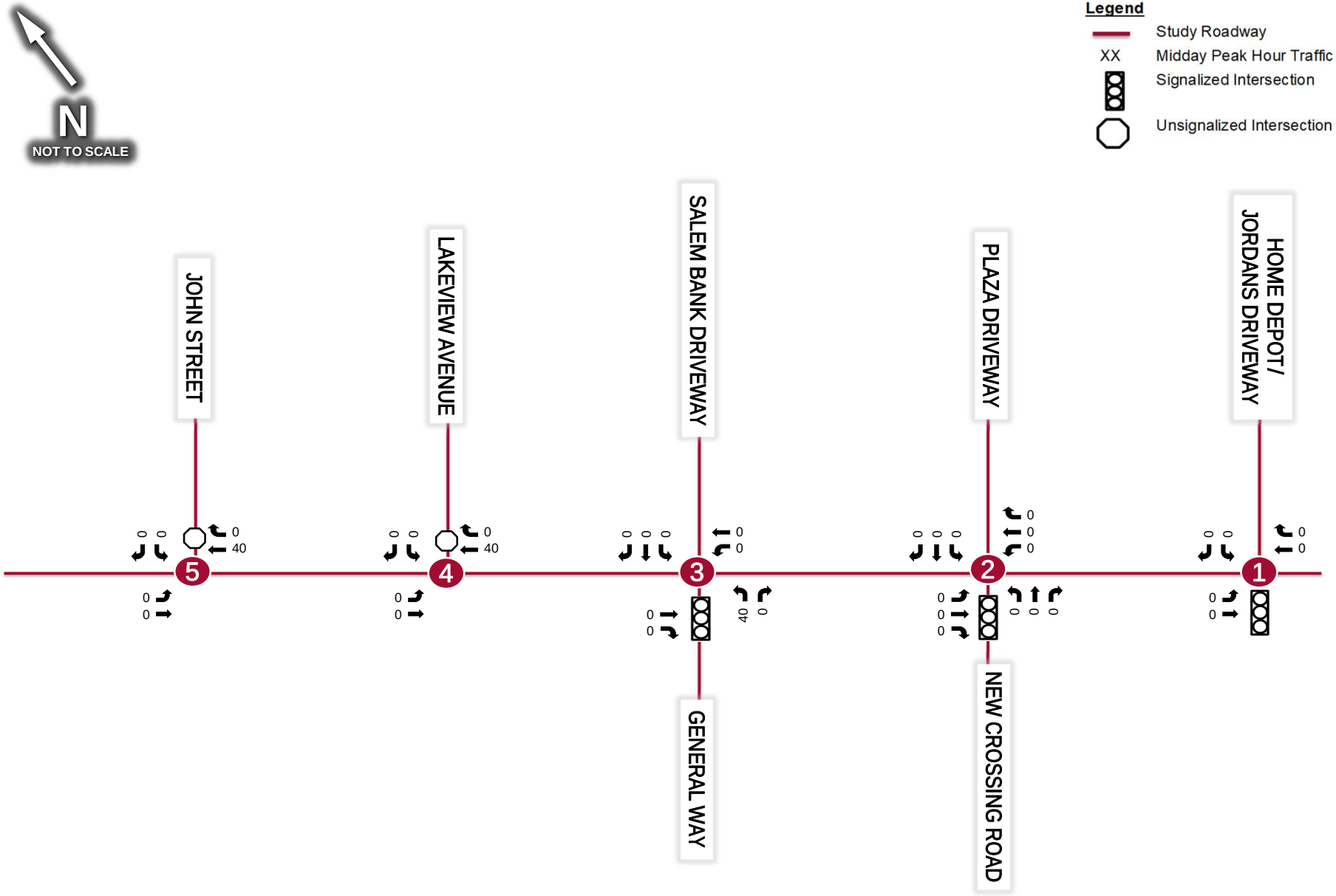



**Figure 22**
**Reroute of General Way Midday Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

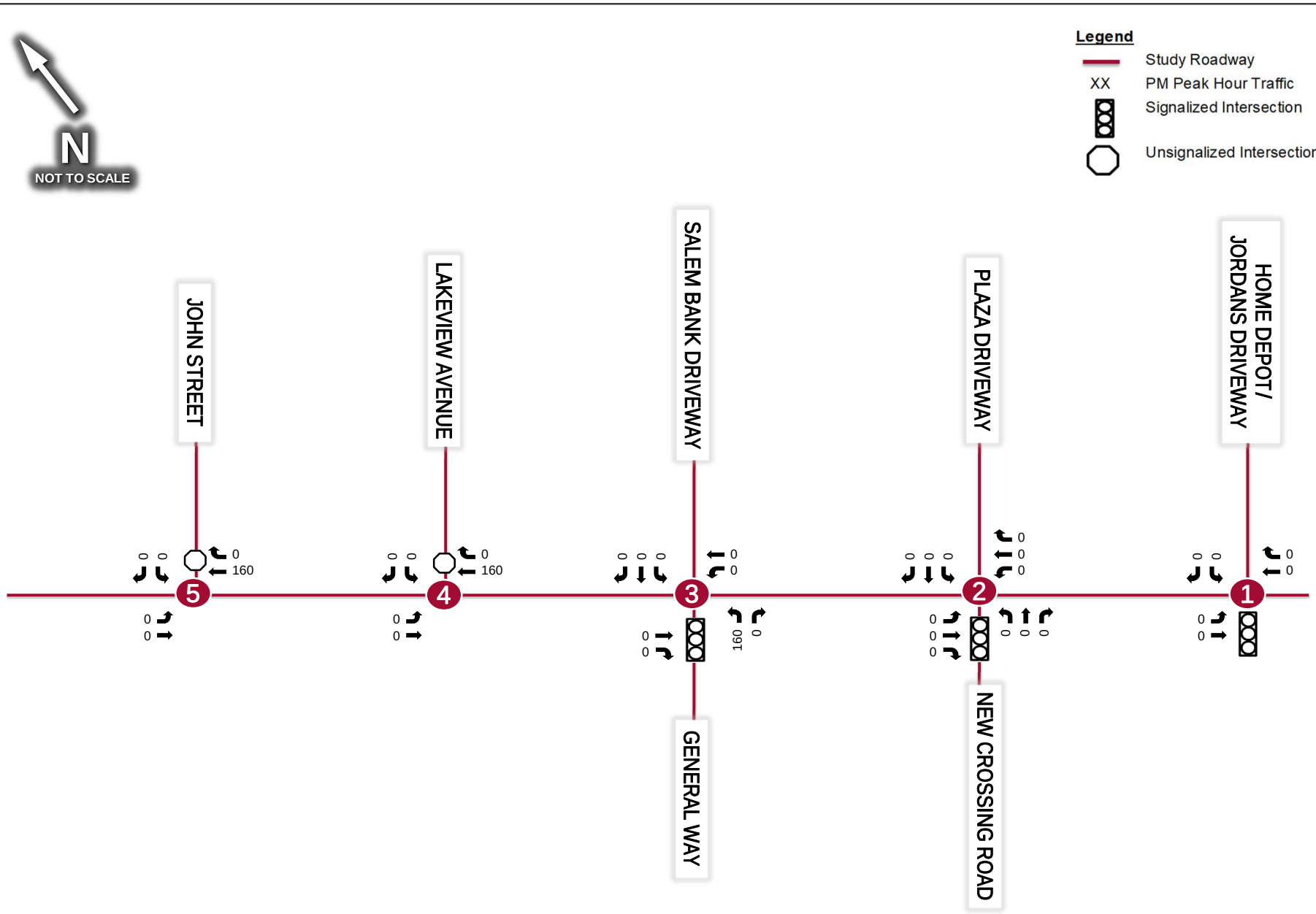



**Figure 23**
**Reroute of General Way PM Peak Hour**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

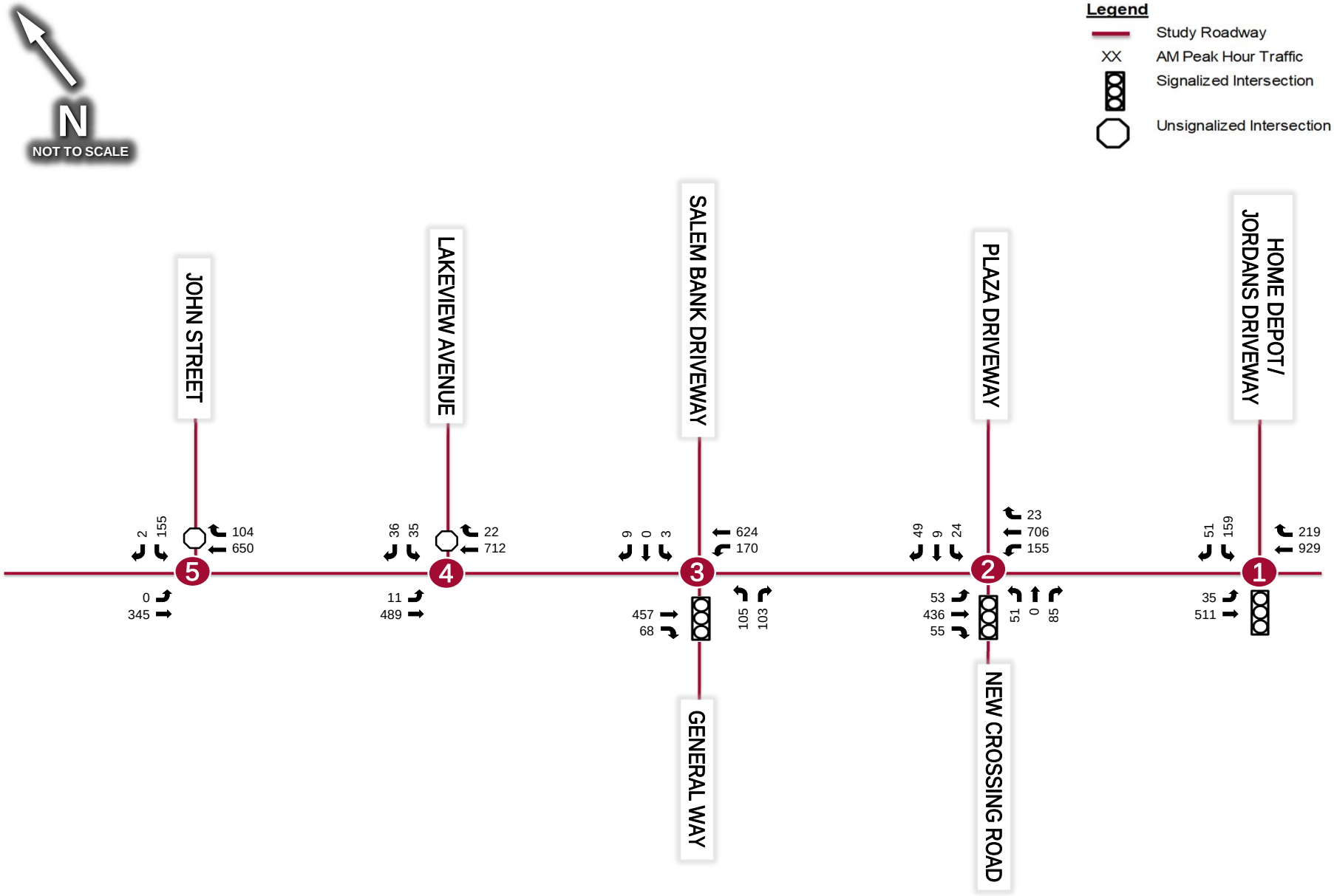



**Figure 24**
**Build 2035 AM Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

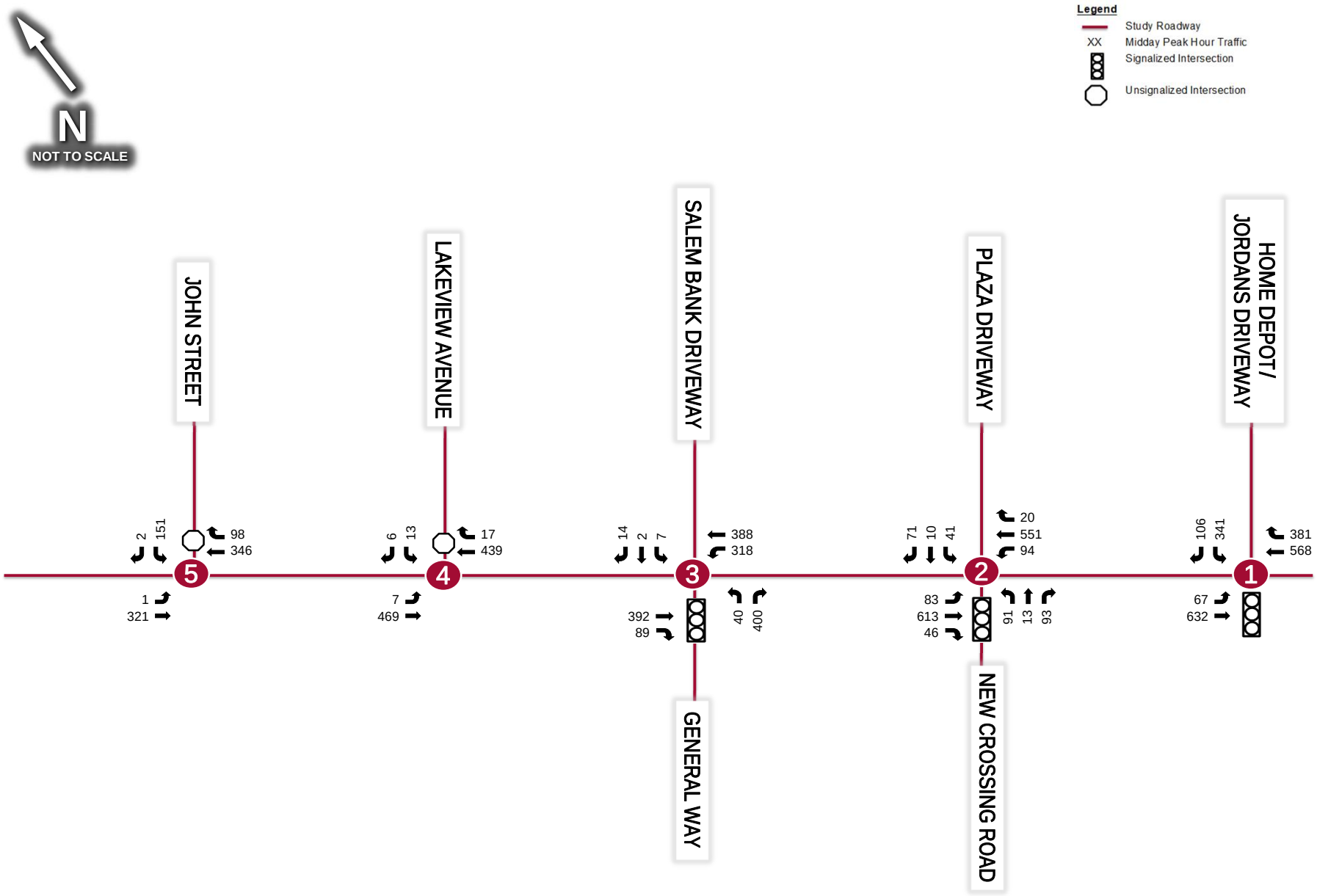



**Figure 25**
**Build 2035 Midday Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

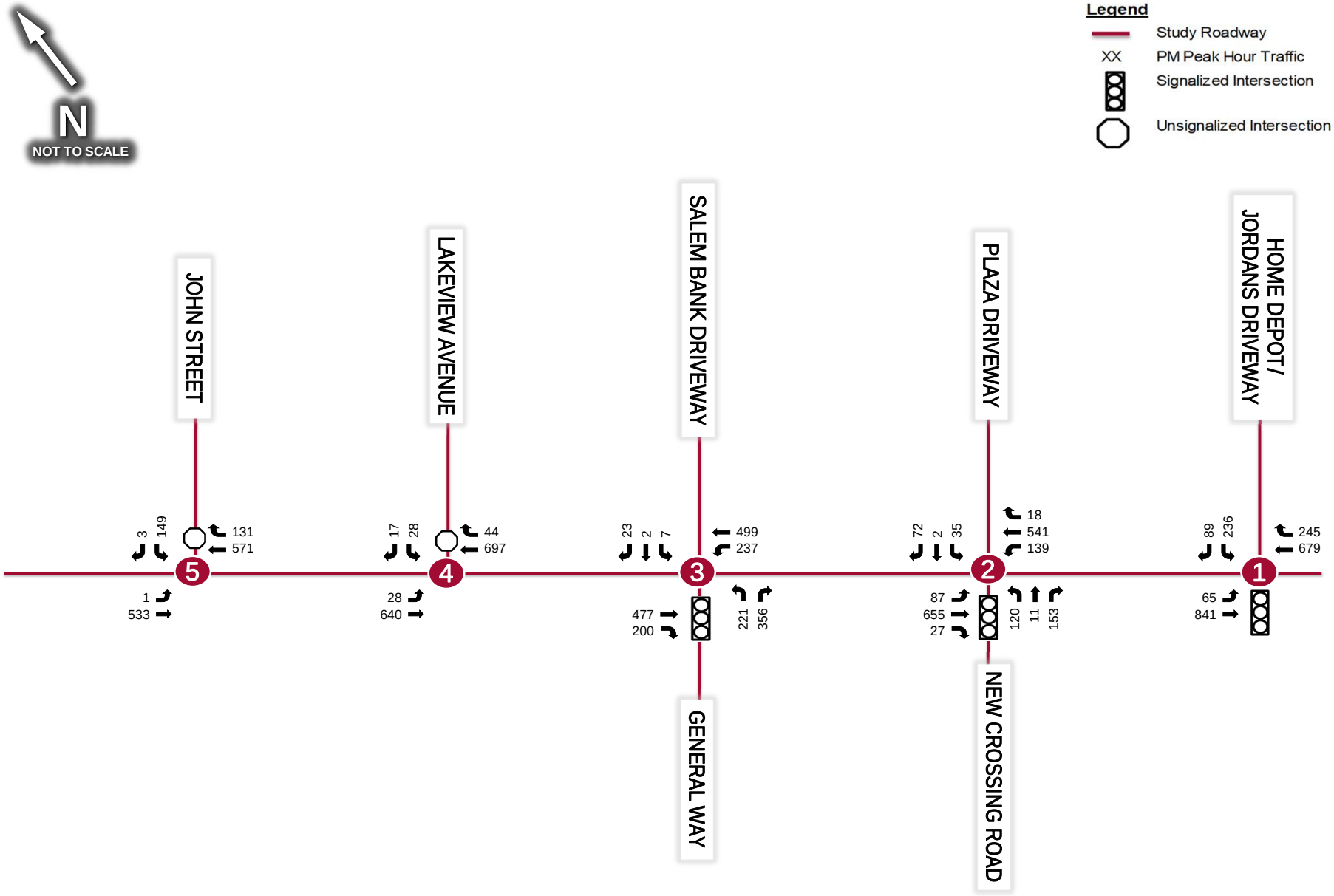



**Figure 26**
**Build 2035 PM Peak Hour Volumes**
**Walkers Brook Drive**
**Reading, MA**

Kimley»Horn

# Planned Roadway/Intersection Improvements

The MassDOT Highway Project Database was reviewed, but there were no planned roadway/intersection improvement projects that are close to the study corridor or would impact the future traffic volumes/lane configuration.

# Other Planning Studies

Other recent or ongoing planning projects and studies by the Town of Reading beyond those previously discussed were reviewed for relevancy and to identify potential plans to improve roadway conditions or affects in the area and nearby.

## MUNICIPAL VULNERABILITY PREPAREDNESS (MVP) 2.0 PROGRAM

The Town of Reading was selected to participate in the Municipal Vulnerability Preparedness (MVP) 2.0 Program that aims to enhance resilience efforts with a focus on equity and project implementation. MVP 2.0 focuses on Diversity, Equity, and Inclusion approach to address sustainability and resilience in the Reading community that focuses on Climate change adaptation. The Town currently has a core team that focuses on improving communication strategies and increasing resident participation.

## WATERSHED FLOOD MITIGATION STUDY

In addition to the MVP 2.0, the Town of Reading is part of the watershed consortium examining resiliency and flood-mitigation improvements in the region. This includes Walker Brook Drive and, in particular, the area where the brook abuts and crosses Walkers Brook Drive. Although in its early study phases, some areas along the roadway corridor have been identified as potential stormwater or flood control basins. This information will be considered as the roadway design project advances.

# Signal Warrant Analysis

The purpose of the signal warrant analysis was to confirm that the current signalized intersection was warranted based on the traffic signal warrants per the *Manual on Uniform Traffic Control Devices* (MUTCD) using existing volumes. The three (3) signalized study Walkers Brook Drive intersections with Home Depot/Jordans Driveway, New Crossing Road/Plaza Driveway, and General Way/Salem Bank Driveway were evaluated based on Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume). The 70% reduction factor for Warrant 2 was not applied for any of the intersections, as the major roadway does not exceed a speed limit of 40 MPH, and the population of Reading is greater than 10,000. In addition to the existing volume conditions, the projected 2025 volume conditions were also tested. The following summarizes the results.

## Existing Year (2025) Traffic Conditions

Walkers Brook Drive at the Home Depot/Jordans Driveway intersection satisfies both Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume). Specifically, the intersection meets Warrant 1 for eight (8) hours under condition B, which pertains to the interruption of continuous traffic; this occurs when heavy traffic on the major roadway results in considerable delays for vehicles entering from a minor intersecting street. Additionally, the intersection meets Warrant 2 for seven (7) hours.

Walkers Brook Drive at New Crossing Road/Plaza Driveway does not meet Warrant 1 (Eight-Hour Vehicular Volume) but does meet Warrant 2 (Four-Hour Vehicular Volume). The intersection meets Warrant 2 for six (6) hours.

Walkers Brook Drive at General Way/Salem Bank Driveway does not meet Warrant 1 (Eight-Hour Vehicular Volume) but does meet Warrant 2 (Four-Hour Vehicular Volume). The intersection meets Warrant 2 for six (6) hours.

## Future Year (2035) Traffic Conditions

An additional analysis was conducted using projected traffic volumes for 2035 at the intersections of Walkers Brook Drive with New Crossings Road/Plaza Driveway and Walkers Brook Drive with General Way/Salem Bank Driveway, since those intersections did not meet Warrant 1 (Eight-Hour Vehicular Volume). The methodology for traffic volumes in 2035 is described under the Future Base Conditions.

Both intersections fulfill the criteria for Warrant 1 (Eight-Hour Vehicular Volume) and Warrant 2 (Four-Hour Vehicular Volume). Specifically, General Way meets the requirements for Warrant 1 under both Condition A and Condition B for 10 hours. Condition A pertains to locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The intersection with New Crossing Road satisfies Warrant 1 under Condition B for 10 hours, which relates to interruptions in continuous traffic flow; this typically occurs when substantial traffic on the major roadway causes significant delays for vehicles entering from a minor intersecting street.

# Signal Warrant Analysis Summary

- Under Existing (2025) traffic volumes, Walkers Brook Drive at Home Depot/Jordan's Driveway is the only intersection that meets Warrant 1 (Eight-Hour Vehicular Volume). However, all of the intersections meet Warrant 2 (Four-Hour Vehicular Volume).
- Under Future (2035) traffic volumes, Walkers Brook Drive at New Crossing Road/Plaza Driveway and Walkers Brook Drive at General Way/Salem Bank Driveway meet Warrant 1 (Eight-Hour Vehicular Volume).

***Table 7*** summarizes the signal warrant analysis results completed for the Existing (2025) and Future (2035) traffic conditions. The signal warrant analysis is in ***Appendix D*.**

***Table 7. Signal Warrant Analysis – Existing & Future Traffic Volumes***

| Existing (2025) Traffic Volumes | | |
|---|---|---|
| **Intersection** | **Warrant** | **Warrant Satisfied?** |
| Walkers Brook Drive at Home Depot/Jordan's Driveway | Warrant 1: Eight-Hour Vehicle Volume | Yes |
| | Warrant 2: Four-Hour Vehicle Volume | Yes |
| Walkers Brook Drive at New Crossing Road/Plaza Driveway | Warrant 1: Eight-Hour Vehicle Volume | No |
| | Warrant 2: Four-Hour Vehicle Volume | Yes |
| Walkers Brook Drive at General Way/Salem Bank Driveway | Warrant 1: Eight-Hour Vehicle Volume | No |
| | Warrant 2: Four-Hour Vehicle Volume | Yes |
| **Future (2035) Traffic Volumes** | | |
| Walkers Brook Drive at New Crossing Road/Plaza Driveway | Warrant 1: Eight-Hour Vehicle Volume | Yes |
| | Warrant 2: Four-Hour Vehicle Volume | Yes |
| Walkers Brook Drive at General Way/Salem Bank Driveway | Warrant 1: Eight-Hour Vehicle Volume | Yes |
| | Warrant 2: Four-Hour Vehicle Volume | Yes |

# Potential Improvement Actions

As part of the Walkers Brook Drive Redesign goal, the goal is to transform the busy urban arterial, 4-lane undivided roadway, into a safer, more comfortable, and accessible route for people of all ages and abilities—whether walking, biking, or using transit. The corridor includes two (2) lanes in each direction, with varying shoulder widths ranging between 2.50 feet and 4.00 feet. Additionally, sidewalk facilities are available on both sides of Walkers Brook Drive between John Street and Home Depot Drive and on the south side between Home Depot Drive and the Town of Wakefield Line. Sidewalk facilities are not provided on the north side between Home Depot Drive and the Town of Wakefield Line, and the trail along Lake Quannapowitt is on the north side of North Avenue. The typical section depicting the existing lane configuration near Chili's Grill & Bar is shown in ***Figure 27***.

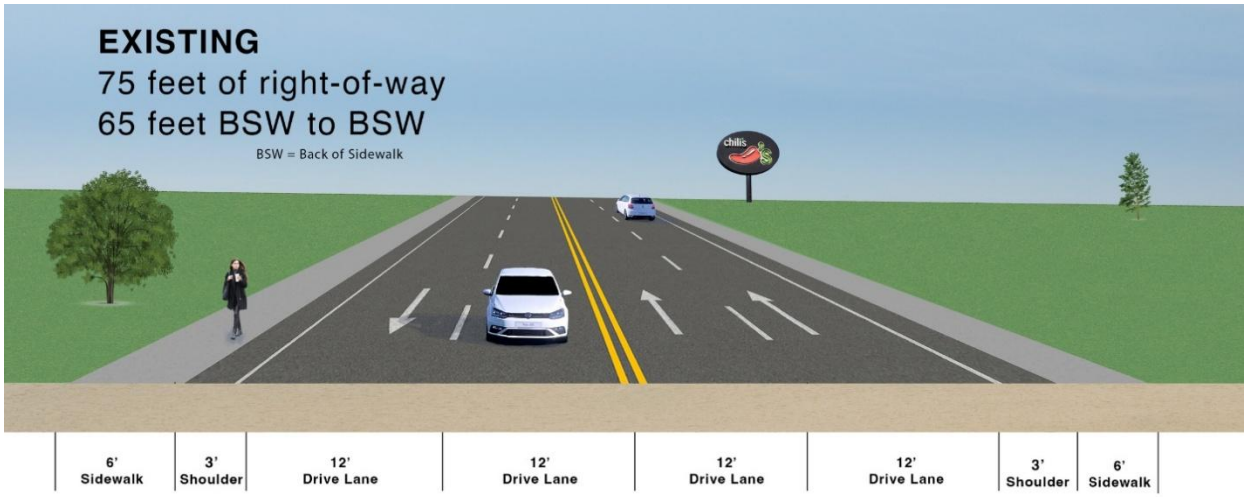



***Figure 27. Existing Conditions – Typical Section***

The potential improvements include three (3) different multimodal features along the corridor. These multimodal features accommodate different comfort levels and attract a diverse range of users. The typical sections are included in ***Appendix N***.

- ***Alternative 1:*** On-road buffered bicycle lanes, 5-foot bike lanes and 3-foot buffer, with 6-foot sidewalks on both sides
- ***Alternative 2:*** Off-road shared use path, 10-foot, on the south side with a landscape buffer of five (5) feet and an 8.50-foot sidewalk on the north side
- ***Alternative 3:*** Off-road two-way cycle track, 10-foot, on the south side with a landscape buffer of five (5) feet, and 6-foot sidewalks on both sides

In addition, intersection alternatives were evaluated at the study intersections, with the majority adding left-turn lanes along Walkers Brook Drive to enter the side streets, and four (4) alternatives at Walkers Brook Drive at General Way/Salem Five Bank Driveway. The four (4) alternatives permit northbound left-turn out movements.

- Signalized Intersection with full access, including northbound left-turn movements

- Signalized Intersection with Lakeview Avenue (Consolidate access for John Street and Salem Five Bank Driveway to Lakeview Avenue)
- Single Lane Roundabout
- Single Lane Roundabout with a Bypass Lane from Walkers Brook Drive to Village Street

# Multimodal Alternatives for Corridor

## ALTERNATIVE 1 (ON-ROAD BUFFERED BICYCLE LANES)

The on-road buffered bicycle lanes are created by painting a flush buffer zone between a bicycle lane and the adjacent travel lane. The buffers are between the bicycle lanes and motor vehicle travel lanes to increase bicyclists' comfort. The width of the buffer is three (3) feet with a bicycle lane of five (5) feet, which is provided in both directions, as shown in ***Figure 29*** and ***Figure 29***. In addition to the on-road buffer bicycle lanes, the sidewalk facilities on both sides will remain and complete a missing segment on the north side between Home Depot Drive and the Town of Wakefield Line. Bicycle boxes will be included at intersections, providing bicyclists a head start through the intersection, aiding them in making difficult turning movements and improving safety and comfort due to the difference in acceleration rates between bicyclists and motor vehicles.

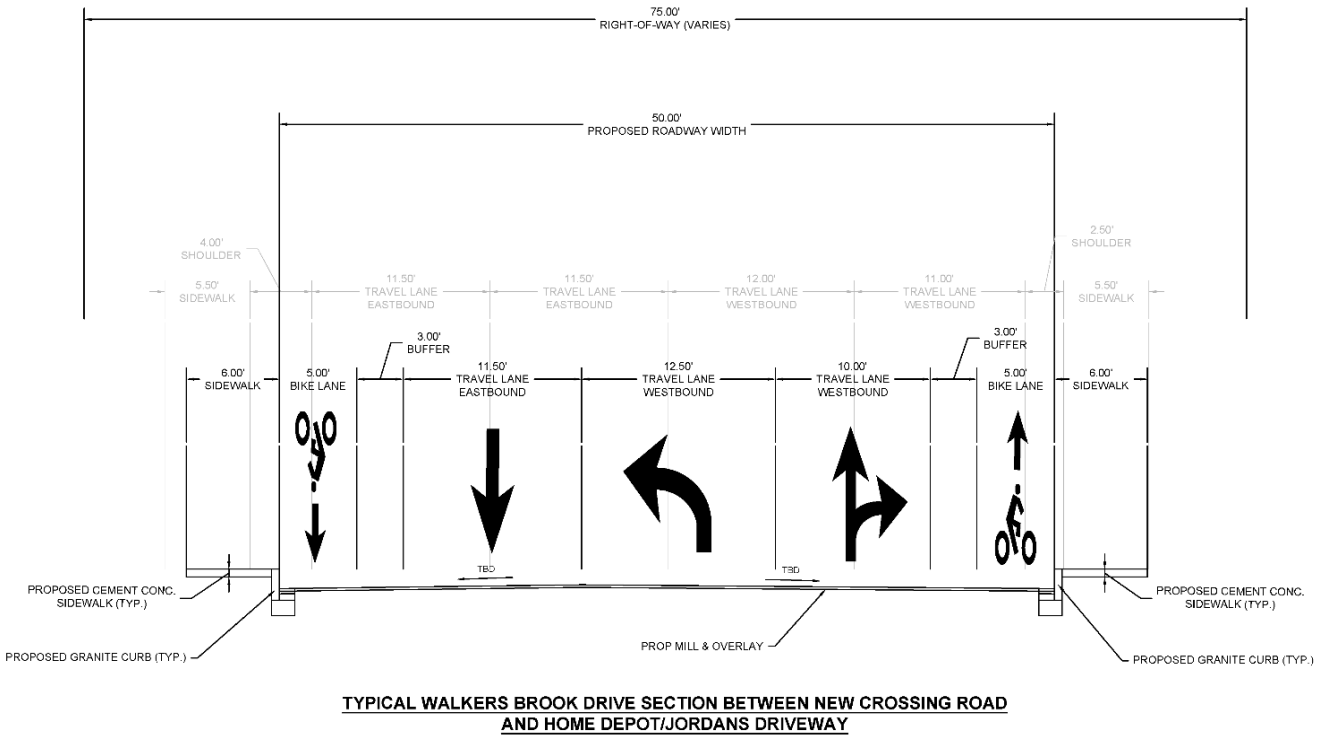
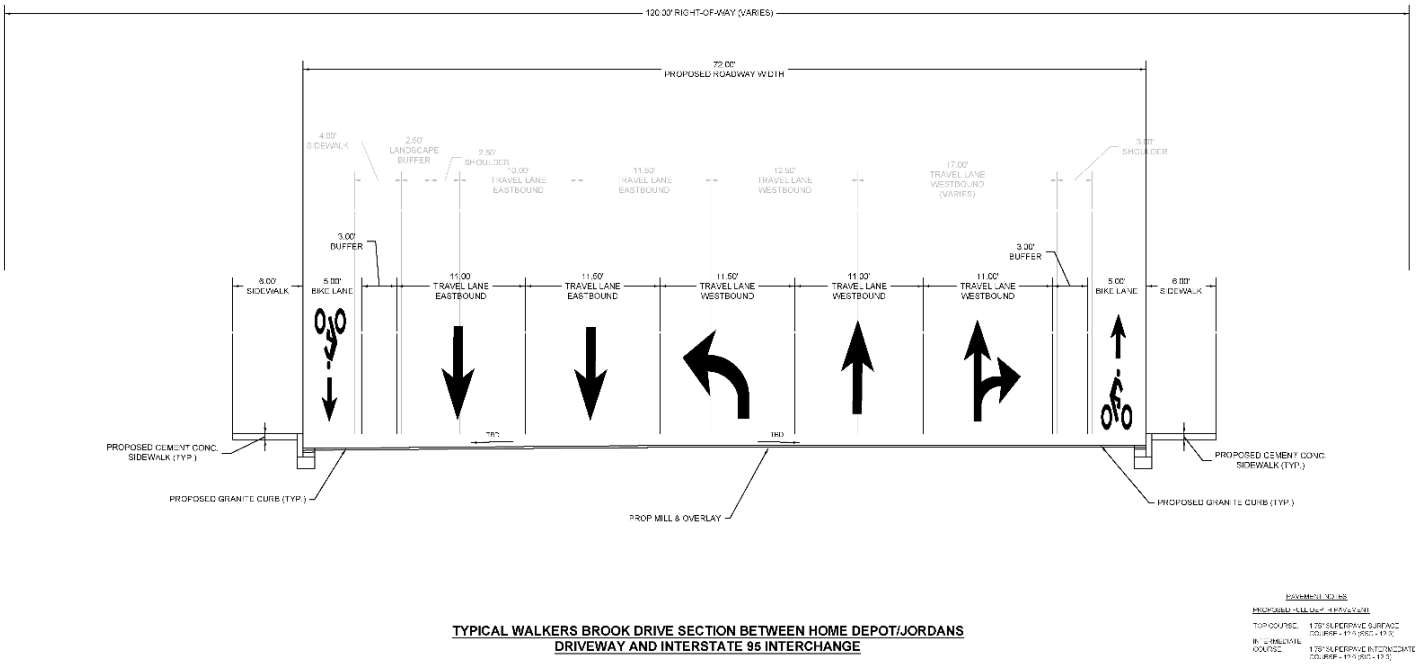



***Figure 28. Alternative 1 (on-road buffered bicycle lanes) – Typical Section 1***

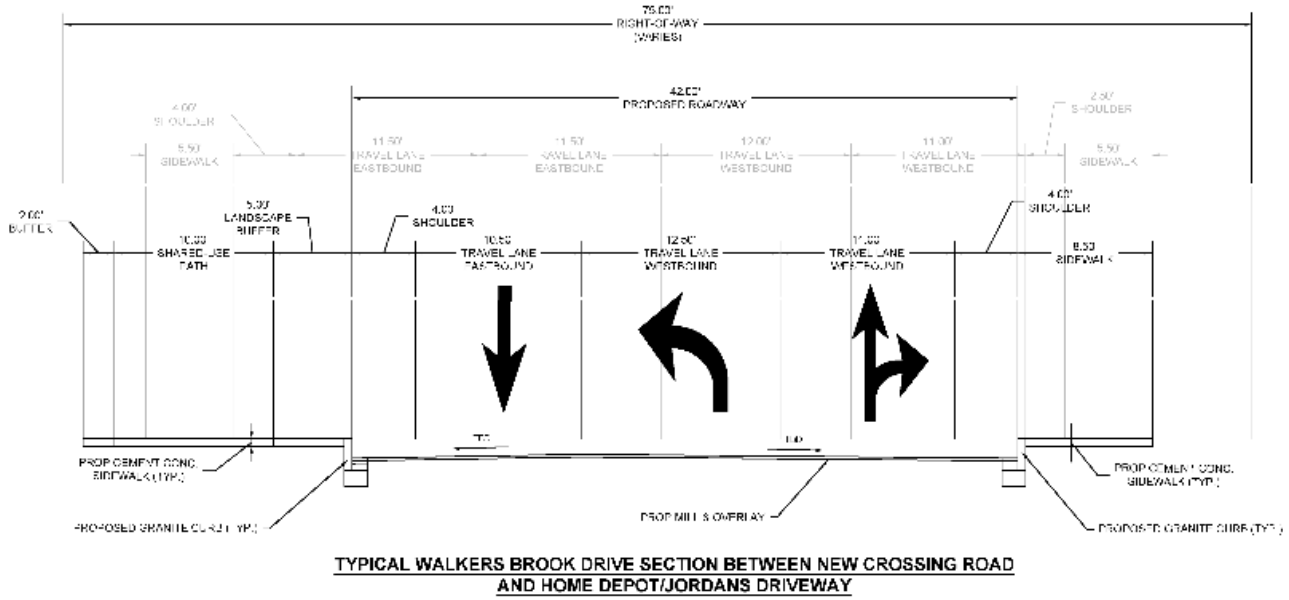



**TYPICAL WALKERS BROOK DRIVE SECTION BETWEEN HOME DEPOT/JORDANS DRIVEWAY AND INTERSTATE 95 INTERCHANGE**

*Figure 29. Alternative 1 (on-road buffered bicycle lanes) – Typical Section 2*

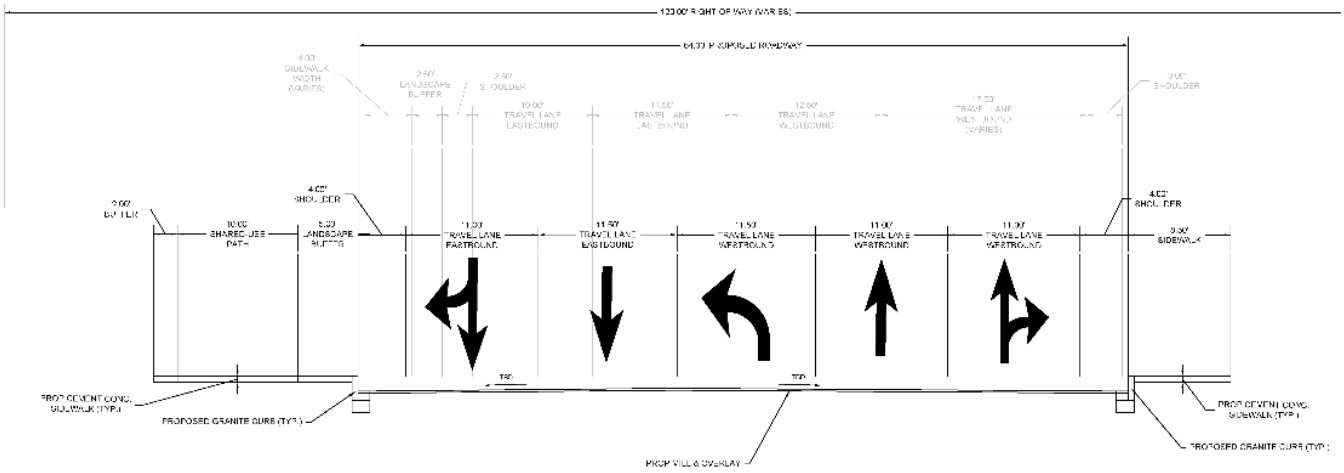
# ALTERNATIVE 2 (OFF-ROAD SHARED USE PATH)

The off-road shared use path on the south side of Walkers Brook Drive is designed to accommodate a variety of users, including walkers, bicyclists, joggers, people with disabilities, skaters, and pets. Basically, the shared use path can accommodate various users on one or more treadways. The shared use path is physically separated from motorized vehicle traffic, as shown in ***Figure 30*** and ***Figure 31***. The width of the shared use path is ten (10) feet with a five (5) foot furnishing zone between the travel lane and shared use path, and a two (2) foot wide graded shoulder behind the shared use path. Sidewalk facilities will be provided on the north side, approximately 8.50 feet in width and four (4) foot shoulders on both sides. Providing shoulders on both sides of the roadway will allow bicyclists to travel within the roadway without the need for marked bicycle lanes.




**TYPICAL WALKERS BROOK DRIVE SECTION BETWEEN NEW CROSSING ROAD AND HOME DEPOT/JORDANS DRIVEWAY**

*Figure 30. Alternative 2 (off-road shared use path) – Typical Section 1*



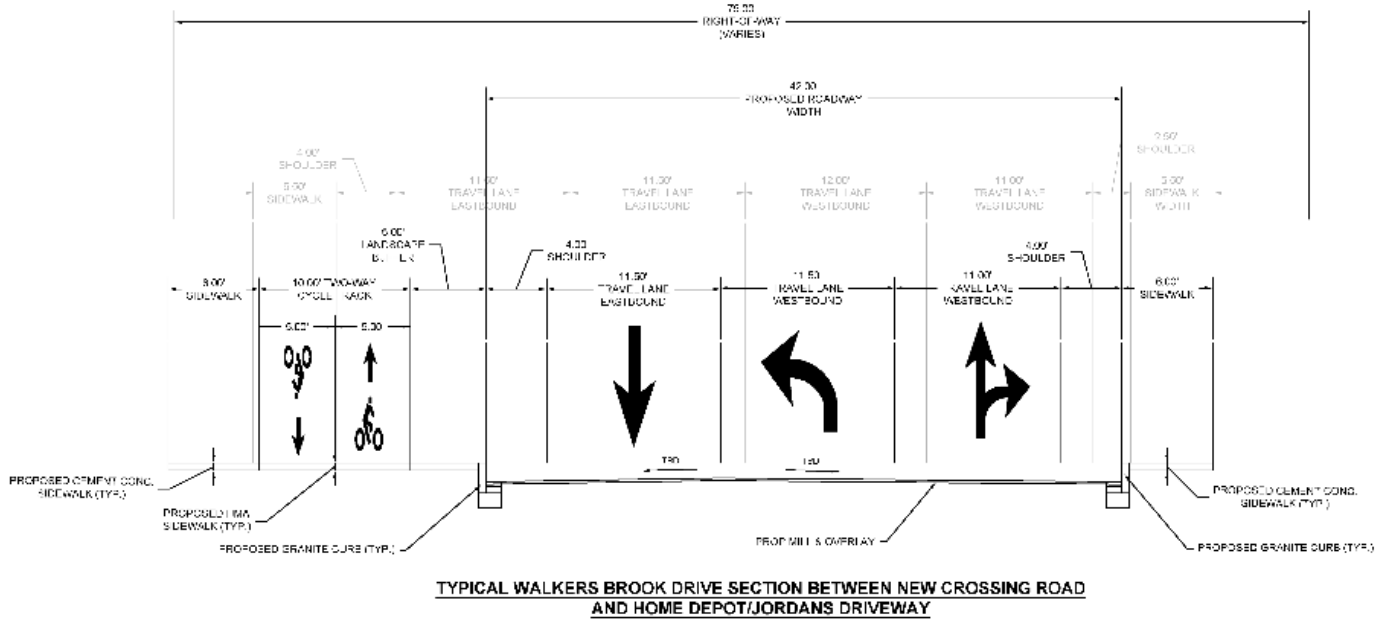

**TYPICAL WALKERS BROOK DRIVE SECTION BETWEEN HOME DEPOT/JORDANS DRIVEWAY AND INTERSTATE 95 INTERCHANGE**

*Figure 31. Alternative 2 (off-road shared use path) – Typical Section 2*

# ALTERNATIVE 3 (OFF-ROAD TWO-WAY CYCLE TRACK)

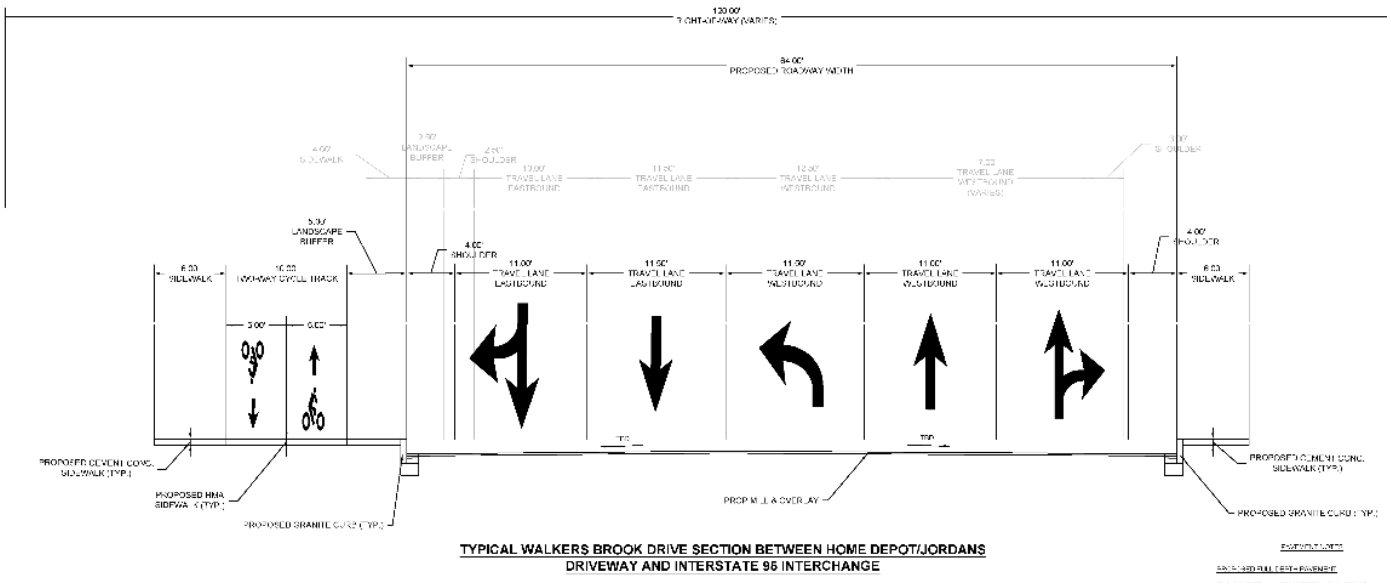
The off-road two-way cycle track on the south side of Walkers Brook Drive is physically separated from adjacent travel lanes and designed at the same level as the sidewalk, separate from pedestrian travel. The two-way cycle tracks are exclusively for bicyclists and provide added separation, enhancing the bicycling experience, as shown in ***Figure 32*** and ***Figure 33***. The width of the two-way cycle tracks is ten (10) feet, five (5) feet in each direction, with a five (5) foot furnishing zone between the travel lane and two-way cycle track. Sidewalk facilities will be provided on both sides, approximately six (6) feet in width and four (4) foot shoulders on both

sides. Providing shoulders on both sides of the roadway will allow bicyclists to travel within the roadway without the need for marked bicycle lanes.




**TYPICAL WALKERS BROOK DRIVE SECTION BETWEEN NEW CROSSING ROAD AND HOME DEPOT/JORDANS DRIVEWAY**

***Figure 32. Alternative 3 (off-road two-way cycle track) – Typical Section 1***




**TYPICAL WALKERS BROOK DRIVE SECTION BETWEEN HOME DEPOT/JORDANS DRIVEWAY AND INTERSTATE 95 INTERCHANGE**

***Figure 33. Alternative 3 (off-road two-way cycle track) – Typical Section 2***

# Intersection Alternatives

An Intersection Control Evaluation (ICE) was conducted at the study intersections and is a consistent and objective procedure to screen intersection control strategies. The aim is to ensure safety, improve operational efficiency, and maximize cost-effectiveness, all while meeting the project's objectives, considering roadway classification, and ensuring long-term

value. The ICE Applicability Form and the Stage 1 Forms for the study intersections are available in ***Appendix L***.

- Walkers Brook Drive at Home Depot/Jordans Driveway
- Walkers Brook Drive at New Crossing Road
- Walkers Brook Drive at General Way

## WALKERS BROOK DRIVE AT HOME DEPOT/JORDAN'S DRIVEWAY

This will remain as a signalized intersection. In the existing configuration, the westbound approach includes two (2) dedicated through lanes and one (1) dedicated right-turn lane, and the eastbound approach includes one (1) shared left-turn/through lane and one (1) dedicated through lane. In the intersection alternatives, the westbound approach will include one (1) through lane and one (1) right-turn lane, and the eastbound approach will include one (1) through lane and one (1) left-turn lane. The left-turn movements along Walkers Brook Drive will be a protected phase. It is not anticipated that there will be any changes in the Home Depot/Jordan's Driveway approach.

## WALKERS BROOK DRIVE AT NEW CROSSING ROAD

This will remain as a signalized intersection. In the existing configuration, the westbound and eastbound approaches include one (1) shared left-turn/through lane and one (1) shared through/right-turn lane. In the intersection alternatives, the westbound approach includes one (1) dedicated left-turn lane and one (1) shared through/right-turn lane and the eastbound approach includes one (1) left-turn lane, and one (1) shared through/right-turn lane. The left-turn movements along Walkers Brook Drive will be a protected phase. It is not anticipated that there will be any changes in the New Crossing Road and Plaza Driveway approaches.

## WALKERS BROOK DRIVE AT GENERAL WAY

In the existing configuration, northbound left-turn movements are prohibited. In the intersection alternatives, northbound left-turn movements will be permitted, and the intersection will be converted to provide full access movements. There are four (4) alternatives being considered. Note that in both of the roundabout options, the configuration may impact the Salem Five Bank Driveway, specifically the eastbound left-turn movements and exiting movements.

- Signalized Intersection with full access (inclusion of northbound left-turn movements)
- Signalized Intersection with Lakeview Avenue (connect John Street to Lakeview Avenue and Salem Five Bank Driveway access)
- Single Lane Roundabout
- Single Lane Roundabout with a Bypass Lane from Walkers Brook Drive to Village Street

# Future Year Intersection Capacity Analysis

As part of the future year intersection capacity analysis, two (2) scenarios were analyzed.

- Future Year (2035) Conditions with Existing Geometry
- Future Year (2035) Conditions with Future Geometry

The intersection signal timings and intersection analysis worksheets are contained in ***Appendix J*** and ***Appendix K***, respectively. The 95th percentile queue diagrams are included in ***Appendix M***.

## Future Year (2035) with Existing Geometry

- The signalized intersections will operate at an overall LOS C or better, with some movements operating at LOS D during the study peak periods. The V/C is less than one (1.0) for all signalized intersections.
- Between the Existing (2025) and Future (2035), some of the LOS degraded, specifically the southbound approach along John Street during the weekday PM peak hour. The John Street approach will operate at LOS F in both the AM and PM peak hours, but operate at LOS C during the Midday peak hour.
- The average (50th percentile) and worst-case (95th percentile) queue lengths increase in the future year (2035).

The intersection capacity analysis for the Future 2035 with Existing Geometry Conditions is shown in ***Table 8***.

## Future Year (2035) with Future Geometry

With the potential improvement actions along the corridor, the lane configuration at the study intersections are generally similar under each multimodal alternative. The intersection of Walkers Brook Drive at General Way was further evaluated with four (4) different alternatives. The results of the analysis showed the following:

- The signalized intersections will operate at an overall LOS D or better, with some movements operating at LOS E or better during the study peak periods. The V/C is less than one (1.0) for all signalized intersections.
    - Walkers Brook Drive at General Way/Salem Five Bank Driveway: the movements during the PM peak hour will operate at LOS E, such as the eastbound approach, northbound left-turn movements, and southbound approach. Additionally, it is anticipated that the 95th percentile queue in the eastbound approach at General Way/Salem Five Bank Driveway will extend past Village Street, and the westbound left-turn lane extends past the storage length during the Midday and PM peak hours.
    - Walkers Brook Drive at New Crossing Road/Plaza Driveway: the 95th percentile queue for the eastbound approach may extend to General Way and the left-turn storage length during the Midday and PM peak hours.
- Minor street approaches of the unsignalized intersections will experience some delays (movements entering Walkers Brook Drive), such as the John Street approach, which will operate at LOS F in both the AM and PM peak hours but operate at LOS C during the Midday peak hour.

- Along the corridor, the through movements in the eastbound and westbound directions will experience increased queuing during the study peak periods as the improvements have single 'through' lanes proposed along the corridor.
- The alternative option of the signalized intersection with Lakeview Avenue, which will connect John Street and Salem Five Bank Driveway to Lakeview Avenue, will operate at an overall LOS C for the study peak periods. Some movements will operate at LOS F, such as the eastbound left-turn movement during the AM and Midday peak hours. However, southbound movements exiting Lakeview Avenue onto Walkers Brook Drive will operate at LOS D. The eastbound and westbound approaches will experience increased queuing during the study peak periods.
- The single lane roundabout and single lane roundabout with a bypass lane operate at an overall LOS B for the study peak periods. The General Way approach will operate at LOS C during the PM peak hour. There will be an increase in the 95$^{th}$ percentile queue in the single lane roundabout in comparison with the single lane roundabout with a bypass lane.

The intersection capacity analysis for the Future 2035 Conditions is shown in ***Table 9,*** and the Future (2035) traffic conditions with the roundabout alternatives are shown in ***Table 10***.

### *Table 8. Future Year (2035) with Existing Geometry Intersection Capacity Analysis*

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| **Walkers Brook Drive at Home Depot Driveway (signalized)** | EBT/L | - | A | 4.3 | 0.38 | 37 | 55 | A | 6.1 | 0.45 | 47 | 94 | A | 3.6 | 0.40 | 72 | 114 |
| | WBT | - | A | 9.6 | 0.59 | 104 | 167 | B | 11.5 | 0.51 | 61 | 113 | A | 6.9 | 0.30 | 88 | 132 |
| | WBR | 130 | A | 1.9 | 0.15 | 0 | 25 | A | 2.7 | 0.24 | 0 | 25 | A | 1.4 | 0.16 | 0 | 25 |
| | SBL | 150 | B | 17.6 | 0.34 | 25 | 56 | B | 14.5 | 0.50 | 44 | 84 | D | 41.3 | 0.63 | 78 | 114 |
| | SBR | - | B | 10.9 | 0.04 | 0 | 25 | A | 7.1 | 0.08 | 0 | 25 | C | 28.5 | 0.06 | 0 | 38 |
| | SB Approach | - | B | 16 | - | - | - | B | 12.8 | | - | - | D | 37.8 | | - | - |
| | WB Approach | - | A | 8.2 | - | - | - | A | 8.0 | | - | - | A | 5.4 | | - | - |
| | **Intersection** | | **A** | **7.7** | **0.54** | **-** | **-** | **A** | **8.4** | **0.55** | | | **A** | **9.7** | **0.45** | | |
| **Walkers Brook Drive at New Crossing Road/Plaza Driveway (signalized)** | EBL/T/R | - | A | 4.0 | 0.34 | 32 | 64 | A | 8.6 | 0.51 | 56 | 257 | A | 6.4 | 0.49 | 92 | 155 |
| | WBL/T/R | - | A | 5.7 | 0.56 | 63 | 131 | A | 8.3 | 0.47 | 46 | 218 | A | 6.5 | 0.48 | 73 | 151 |
| | NBL/T | - | C | 20.6 | 0.46 | 25 | 37 | C | 31.7 | 0.68 | 35 | 101 | D | 35.7 | 0.67 | 69 | 111 |
| | NBR | 100 | B | 18.9 | 0.07 | 0 | 25 | C | 21.7 | 0.07 | 0 | 31 | C | 27.1 | 0.11 | 0 | 41 |
| | SBL | 55 | B | 19.4 | 0.22 | 25 | 25 | C | 22.5 | 0.26 | 25 | 46 | C | 27.7 | 0.21 | 25 | 36 |
| | SBT/R | - | B | 19.0 | 0.12 | 25 | 25 | C | 21.8 | 0.1 | 25 | 37 | C | 26.8 | 0.07 | 25 | 26 |
| | NB Approach | - | B | 19.5 | - | - | - | C | 27.0 | - | - | - | C | 31.1 | - | - | - |
| | SB Approach | - | B | 19.1 | - | - | - | C | 22.0 | - | - | - | C | 27.1 | - | - | - |
| | **Intersection** | | **A** | **7.4** | **0.6** | | | **B** | **11.8** | **0.51** | | | **B** | **11.5** | **0.56** | | |

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| **Walkers Brook Drive at General Way/Salem Five Bank Driveway (signalized)** | EBL/T/R | - | B | 15.3 | 0.69 | 214 | 321 | C | 23.5 | 0.77 | 107 | 383 | D | 36.4 | 0.92 | 364 | #636 |
| | WBL | - | A | 7.6 | 0.44 | 31 | 56 | D | 40.6 | 0.92 | 26 | #286 | C | 23.9 | 0.71 | 68 | 144 |
| | WBT | - | A | 7.7 | 0.59 | 180 | 286 | A | 9.5 | 0.41 | 41 | 223 | A | 7.4 | 0.43 | 123 | 196 |
| | NBR | - | C | 30.2 | 0.08 | 0 | 0 | C | 28.2 | 0.27 | 0 | 0 | D | 35.4 | 0.27 | 0 | 0 |
| | SBL/T/R | - | C | 31.3 | 0.02 | 0 | 0 | C | 33.3 | 0.32 | 25 | 25 | D | 36.8 | 0.14 | 25 | 32 |
| | WB Approach | - | A | 7.6 | - | - | - | C | 23.5 | - | - | - | B | 12.7 | - | - | - |
| | **Intersection** | | **B** | **12.7** | **0.61** | | | **C** | **24.9** | **0.78** | | | **C** | **27.0** | **0.79** | | |
| **Walkers Brook Drive at Lakeview Avenue (one-way STOP controlled)** | EBL/T | - | A | 9.5 | 0.02 | * | 0 | A | 8.7 | 0.01 | * | 0 | A | 9.1 | 0.01 | * | 25 |
| | SBL/R | - | D | 31.6 | 0.39 | | 45 | C | 17.7 | 0.07 | | 25 | E | 40.0 | 0.44 | | 50 |
| **Washington Street/Walkers Brook Drive at John Street (one-way STOP controlled)** | EBL/T | - | A | 0.0 | - | * | 0 | A | 8.4 | 0.00 | * | 0 | A | 8.7 | 0.00 | * | 0 |
| | SBL/R | - | F | 79.7 | 0.90 | | 190 | C | 25.6 | 0.50 | | 70 | F | 63.8 | 0.79 | | 145 |

*50th percentile queues are not supported by the HCM methodology.

### *Table 9. Future Year (2035) with Future Geometry Intersection Capacity Analysis*

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| Walkers Brook Drive at Home Depot Driveway (signalized) | EBL | 130 | C | 27.9 | 0.39 | 25 | 39 | C | 23.7 | 0.48 | 25 | 66 | D | 43.3 | 0.51 | 39 | 79 |
| | EBT | - | A | 3.9 | 0.43 | 66 | 131 | A | 7.3 | 0.61 | 112 | 243 | A | 6.4 | 0.60 | 175 | 316 |
| | WBT | - | C | 25.7 | 0.93 | 322 | #615 | B | 17.0 | 0.76 | 158 | 306 | B | 11.9 | 0.60 | 233 | 423 |
| | WBR | 130 | A | 1.7 | 0.15 | 0 | 25 | A | 2.5 | 0.25 | 25 | 16 | A | 1.8 | 0.16 | 0 | 14 |
| | SBL | 150 | C | 23.9 | 0.41 | 31 | 58 | B | 18.6 | 0.52 | 57 | 106 | D | 41.3 | 0.63 | 78 | 114 |
| | SBR | - | B | 15.9 | 0.04 | 25 | 25 | B | 10.1 | 0.07 | 0 | 27 | C | 26.9 | 0.06 | 0 | 35 |
| | SB Approach | - | C | 22.0 | | - | - | B | 16.6 | | - | - | D | 37.4 | | - | - |
| | EB Approach | - | A | 5.4 | | - | - | A | 8.9 | | - | - | A | 9.0 | | - | - |
| | WB Approach | - | C | 21.1 | | - | - | B | 11.2 | | - | - | A | 9.2 | | - | - |
| | **Intersection** | | **B** | **16.6** | **0.83** | | | **B** | **11.6** | **0.71** | | | **B** | **13.5** | **0.64** | | |
| Walkers Brook Drive at New Crossing Road/Plaza Driveway (signalized) | EBL | 60 | C | 27.3 | 0.41 | 25 | 45 | C | 33.6 | 0.58 | 29 | #98 | C | 32.2 | 0.4 | 43 | 84 |
| | EBT/R | - | B | 12.6 | 0.58 | 125 | 222 | C | 24.8 | 0.84 | 191 | #622 | C | 25.7 | 0.82 | 307 | #571 |
| | WBL | 280 | C | 27.8 | 0.63 | 54 | #120 | D | 39.3 | 0.67 | 33 | #120 | C | 30.1 | 0.49 | 68 | 121 |
| | WBT/R | - | B | 13.6 | 0.74 | 220 | #464 | B | 18.4 | 0.7 | 145 | #487 | B | 15.5 | 0.61 | 200 | 341 |
| | NBL/T | - | C | 27 | 0.51 | 25 | 47 | D | 53.5 | 0.8 | 39 | #164 | D | 43.3 | 0.73 | 65 | #135 |
| | NBR | 100 | C | 24.8 | 0.06 | 0 | 25 | C | 25.6 | 0.06 | 0 | 17 | C | 28.8 | 0.1 | 0 | 49 |
| | SBL | 55 | C | 25.3 | 0.20 | 25 | 27 | C | 26.8 | 0.32 | 25 | 54 | C | 29.4 | 0.21 | 25 | 42 |
| | SBT/R | - | C | 24.9 | 0.11 | 25 | 32 | C | 25.8 | 0.11 | 25 | 46 | C | 28.5 | 0.06 | 25 | 36 |
| | NB Approach | - | C | 25.6 | | - | - | D | 40.3 | | - | - | D | 35.5 | | - | - |
| | SB Approach | - | C | 25.0 | | - | - | C | 26.1 | | - | - | C | 28.8 | | - | - |
| | EB Approach | - | B | 14.1 | | - | - | C | 25.8 | | - | - | C | 26.4 | | - | - |
| | WB Approach | | B | 16.1 | | - | - | C | 21.3 | | - | - | B | 18.4 | | - | - |
| | **Intersection** | | **B** | **16.7** | **0.81** | | | **C** | **25.8** | **0.76** | | | **C** | **25.0** | **0.78** | | |

| Intersection | Movement | Storage (ft) | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| Walkers Brook Drive at General Way/Salem Five Bank Driveway (signalized) | EBL/T/R | - | C | 30.2 | 0.86 | 179 | 380 | D | 39.0 | 0.86 | 192 | #544 | E | 58.5 | 0.95 | 590 | #899 |
| | WBL | 280 | C | 28.8 | 0.61 | 62 | #210 | D | 41.1 | 0.80 | 141 | #393 | D | 51.8 | 0.69 | 204 | 292 |
| | WBT | - | A | 8.0 | 0.59 | 94 | 283 | A | 7.5 | 0.35 | 42 | 211 | B | 10.3 | 0.42 | 192 | 262 |
| | NBL | | C | 32.5 | 0.59 | 40 | #153 | D | 38.2 | 0.31 | 25 | 63 | E | 74.2 | 0.85 | 202 | #383 |
| | NBR | 75 | B | 14.8 | 0.07 | 0 | 37 | C | 22.7 | 0.28 | 0 | 53 | C | 27.4 | 0.37 | 79 | 168 |
| | SBL/T/R | - | C | 33.5 | 0.01 | 0 | 0 | D | 43.4 | 0.30 | 25 | 34 | E | 62.1 | 0.2 | 25 | 43 |
| | NB Approach | - | C | 23.7 | | - | - | C | 24.1 | | - | - | D | 45.3 | | - | - |
| | SB Approach | - | C | 33.5 | | - | - | D | 43.4 | | - | - | E | 62.1 | | - | - |
| | WB Approach | - | B | 12.4 | | - | - | C | 22.6 | | - | - | C | 23.7 | | - | - |
| | **Intersection** | | **C** | **20.2** | **0.81** | | | **C** | **28.2** | **0.71** | | | **D** | **42.1** | **0.85** | | |
| Walkers Brook Drive at Lakeview Avenue (one-way STOP controlled) | EBL/T | - | A | 9.4 | 0.01 | * | 0 | A | 8.7 | 0.01 | * | 0 | A | 9.6 | 0.04 | * | 0 |
| | SBL/R | - | D | 27.9 | 0.33 | | 35 | C | 17.4 | 0.07 | | 25 | E | 36.7 | 0.30 | | 30 |
| Washington Street/Walkers Brook Drive at John Street (one-way STOP controlled) | EBL/T | - | A | 0 | - | * | 0 | A | 8.4 | 0.00 | * | 0 | A | 9.1 | 0.00 | * | 0 |
| | SBL/R | - | F | 53.5 | 0.73 | | 125 | C | 23.9 | 0.48 | | 60 | F | 83.5 | 0.86 | | 160 |

*50th percentile queues are not supported by the HCM methodology.

***Table 10. Future Year (2035) – General Way Alternatives Intersection Capacity Analysis***

| Intersection Option | Movement | AM Peak Hour | | | | | Midday Peak Hour | | | | | PM Peak Hour | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) | LOS | Delay (s) | V/C | 50th% Queue Length (ft) | 95th% Queue Length (ft) |
| Signal with Lakeview Avenue (connect John Street to Lakeview Avenue and Salem Five Bank Driveway access) | EBL | F | 81.0 | 0.60 | 25 | 25 | F | 82.7 | 0.56 | 25 | 25 | D | 48.3 | 0.36 | 25 | 48 |
| | EBT | C | 24.3 | 0.72 | 222 | 337 | C | 31.5 | 0.73 | 200 | #429 | D | 50.8 | 0.89 | 316 | #630 |
| | EBR | B | 15.6 | 0.05 | 0 | 0 | C | 21.5 | 0.06 | 0 | 0 | C | 25.3 | 0.14 | 0 | 46 |
| | WBL | D | 39.2 | 0.71 | 84 | #198 | D | 50.6 | 0.86 | 153 | #357 | D | 38.1 | 0.65 | 151 | 227 |
| | WBT | B | 17.1 | 0.72 | 202 | 435 | B | 13.3 | 0.42 | 87 | 271 | C | 21.6 | 0.60 | 255 | 436 |
| | WBR | A | 9.7 | 0.08 | 0 | 25 | B | 10.7 | 0.07 | 0 | 25 | B | 14.5 | 0.13 | 25 | 50 |
| | NBL | D | 40.5 | 0.64 | 52 | #141 | D | 40.0 | 0.32 | 25 | 63 | D | 48.0 | 0.76 | 147 | 214 |
| | NBR | B | 19.4 | 0.07 | 0 | 36 | C | 25.2 | 0.33 | 25 | 64 | B | 17.2 | 0.24 | 25 | 42 |
| | SBL/T/R | D | 35.1 | 0.34 | 25 | #117 | D | 39.5 | 0.12 | 0 | 59 | D | 45.2 | 0.22 | 25 | #109 |
| | NB Approach | C | 30.0 | - | - | - | C | 26.6 | - | - | - | D | 29.0 | - | - | - |
| | WB Approach | C | 20.1 | - | - | - | C | 27.3 | - | - | - | C | 24.5 | - | - | - |
| | EB Approach | C | 24.3 | - | - | - | C | 30.5 | - | - | - | D | 43.5 | - | - | - |
| | **Overall** | **C** | **24.3** | **0.73** | | | **C** | **29.2** | **0.62** | | | **C** | **33.1** | **0.76** | | |
| Single Lane Roundabout | NB Approach | A | 7.6 | 0.28 | | 32 | B | 12.3 | 0.57 | | 122 | C | 15.6 | 0.64 | | 153 |
| | WB Approach | B | 12.8 | 0.72 | | 202 | A | 8.4 | 0.57 | | 130 | B | 11.3 | 0.66 | | 166 |
| | EB Approach | A | 8.9 | 0.51 | | 89 | B | 10.8 | 0.55 | | 118 | B | 14.7 | 0.71 | | 287 |
| | **Overall** | **B** | **10.7** | **-** | | | **B** | **10.2** | **-** | | | **B** | **13.6** | **-** | | |
| Single Lane Roundabout with Bypass Lane | NB Approach | A | 7.6 | 0.28 | | 32 | B | 12.3 | 0.55 | | 122 | C | 15.6 | 0.64 | | 153 |
| | WB Approach | A | 7.6 | 0.54 | | 98 | A | 4.9 | 0.30 | | 40 | A | 6.2 | 0.43 | | 66 |
| | EB Approach | A | 8.9 | 0.51 | | 89 | B | 10.8 | 0.55 | | 118 | B | 14.7 | 0.71 | | 289 |
| | **Overall** | **A** | **8.0** | **-** | | | **A** | **8.7** | **-** | | | **A** | **11.6** | **-** | | |

# Evaluation of Alternatives

A comprehensive evaluation was completed to compare the alternatives – both for the corridor as a whole and the intersections of Walkers Brook Drive with General Way. The primary purpose of the evaluation matrix prepared along the corridor and at the intersection of General Way is to systematically assess the factors and criteria affecting the project's development and outcomes. This provides a structured approach for objective decision-making by comparing different design and implementation options based on criteria such as multimodal benefit, traffic operations, future traffic performance, right-of-way impacts, environmental (wetland) impacts, public support, and preliminary estimated project cost for the corridor and the intersection evaluation includes the criteria as the corridor but also includes maintenance and accommodation for emergency vehicles.

The evaluation matrix for the three (3) alternatives along the corridor and the different options at General Way was prepared and shown in ***Table 11*** and ***Table 12***, respectively. Alternative 1 presents the lowest cost and minimal disturbance to right-of-way and wetlands. However, its on-road bike lanes do not fully separate cyclists from vehicular traffic and received limited public support. In contrast, Alternative 3 entails the highest expenses and greatest impacts on right-of-way and wetlands. Ultimately, Alternative 2 was selected for its significant multimodal advantages, including complete separation of bicyclists and pedestrians from vehicles, as well as due consideration of environmental impacts, public endorsement, and financial feasibility.

At the intersection of Walkers Brook Drive and General Way, the alternatives of a single-lane roundabout or a single-lane roundabout with a bypass lane were considered. While these options offer enhanced traffic flow and facilitate routine maintenance, they would entail the highest costs and result in significant right-of-way and wetlands impacts, as well as limited public support. Ultimately, modifying the signal to allow for full movement was recommended based on its multimodal advantages, reduced right-of-way and wetlands impacts, overall cost-effectiveness, and favorable public approval.

Listed below are the results of the favorable alternatives for the multimodal options and at General Way.

- ***Alternative 2:*** Off-road shared use path, 10-foot, on the south side with a landscape buffer of 5 feet and sidewalk on the north side, results in the best option out of the other Alternatives. This Alternative provides multimodal accommodations separate from motor vehicles, with less right-of-way impacts and comparable cost.
- ***Walkers Brook Drive at General Way Traffic Signal (Full Movement):*** results in the best option since the roundabout (single lane and single lane with a bypass lane) will impact Salem Five Bank ingress and egress movements, right-of-way impacts, environmental, and the level of acceptance from the community. Note that the traffic signal will need regular technical maintenance, but that is currently in place, and the only difference is allowing full movement, including a northbound left-turn.

### *Table 11. Corridor Evaluation Matrix*

| # | Alternative | Multimodal Benefit | Traffic Operations | Future Traffic Performance | Right-of-Way Impacts | Environmental (Wetland) Impacts | Public Support | Preliminary Estimated Project Cost (2024) |
|---|---|---|---|---|---|---|---|---|
| | | **Accommodates various transportation modes** | **Prioritize various traffic management strategies** | **Future (2035) traffic conditions, level of service (LOS)** | **Effects of the Project Corridor will have on existing land, properties, and public/private spaces** | **Effects of the Project Corridor may have on wetland areas** | **Level of acceptance from the community** | **Initial Project cost, subject to change on current Project phase** |
| 1 | On-Road Buffered Bike Lanes | Designated on-road bike lanes to help separate bicyclists from motor vehicle traffic | Designated left-turn movements with permissive movements and full access movements at General Way | The overall LOS at the signalized intersections operates at LOS C or better. Some movements operate at LOS D. The southbound movement exiting at John Street will experience delays. | 17,202 SF General Way (southern leg), Private Driveways | 202 SF (on the east side of the corridor and south side of Walkers Brook Drive) | Least Preferred Alternative (23%) & Promoting Walking/ Bike Safety (38%) | $4,599,816 |
| 2 | Shared Use Path on the south side | Completely separate from motor vehicle traffic and paths for both bicyclists and pedestrians, creating a safer and more pleasant experience | Designated left-turn movements with permissive movements and full access movements at General Way | The overall LOS at the signalized intersections operates at LOS C or better. Some movements operate at LOS D. The southbound movement exiting at John Street will experience delays. | 19,217 SF General Way (southern leg), Private Driveways, sections of the shared-use path | 742 SF (on the east side of the corridor and south side of Walkers Brook Drive) | Second Preferred Alternative (30%) & Promoting Walking/ Bike Safety (45%) | $4,734,335 |

| # | Alternative | Multimodal Benefit | Traffic Operations | Future Traffic Performance | Right-of-Way Impacts | Environmental (Wetland) Impacts | Public Support | Preliminary Estimated Project Cost (2024) |
|---|---|---|---|---|---|---|---|---|
| | | **Accommodates various transportation modes** | **Prioritize various traffic management strategies** | **Future (2035) traffic conditions, level of service (LOS)** | **Effects of the Project Corridor will have on existing land, properties, and public/private spaces** | **Effects of the Project Corridor may have on wetland areas** | **Level of acceptance from the community** | **Initial Project cost, subject to change on current Project phase** |
| 3 | Off-Road Two-Way Cycle Track on the south side | Completely separate from motor vehicle traffic, bicyclists can travel at their own pace | Designated left-turn movements with permissive movements and full access movements at General Way | The overall LOS at the signalized intersections operates at LOS C or better. Some movements operate at LOS D. The southbound movement exiting at John Street will experience delays. | 23,541 SF General Way (southern leg), Private Driveways, sections of the sidewalk, and cycle track | 996 SF (on the east side of the corridor and south side of Walkers Brook Drive) | Most Preferred Alternative (47%) & Promoting Walking/ Bike Safety (53%) | $4,838,069 |

***Legend***

| Icons | Description |
|---|---|
| ● | Highly Favorable |
| ◕ | Moderately Favorable |
| ◑ | Minimally Favorable |

### *Table 12. Intersection (Walkers Brook Drive at General Way) Evaluation Matrix*

| # | Alternative | Multimodal Benefit | Traffic Operations | Future Traffic Performance | Right-of-Way Impacts | Environmental (Wetland) Impacts | Public Support | Preliminary Estimated Project Cost* | Maintenance | Accommodation for Emergency Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **Accommodates various transportation modes** | **Prioritize various traffic management strategies** | **Future (2035) traffic conditions, level of service (LOS)** | **Effects of the Project Corridor will have on existing land, properties, and public/private spaces** | **Effects of the Project Corridor may have on wetland areas** | **Level of acceptance from the community** | **Initial Project cost, subject to change on current Project phase** | **Routine maintenance & frequency** | **Accommodation for emergency vehicles (ambulance, fire trucks)** |
| 1 | Traffic Signal (Full Movement) |  |  |  |  |  |  |  |  |  |
| | | Pedestrian crossing on all approaches | Full access movements | Overall LOS operates at LOS C or better. Some movements operate at LOS D in different peak periods. | 7,357 SF Portions of the southern leg | Potentially working within the 100-foot wetland buffer | Type of signal control does not change and the inclusion of a left-turn out | $1,685,478 | Regular technical maintenance and emergency repairs can be more frequent | Yes, traffic signal will include emergency vehicle preemption |
| 2 | Traffic Signal with Lakeview Avenue (connect John Street to Lakeview Avenue and Salem Five Bank Driveway access) |  |  |  | |  | | |  |  |
| | | Pedestrian crossing on all approaches | Full access movements | Overall LOS operates at LOS C or better. Some movements operate at LOS F in different peak periods. | TBD | Potentially working within the 100-foot wetland buffer | TBD | TBD | Regular technical maintenance and emergency repairs can be more frequent | Yes, traffic signal will include emergency vehicle preemption |

| # | Alternative | Multimodal Benefit | Traffic Operations | Future Traffic Performance | Right-of-Way Impacts | Environmental (Wetland) Impacts | Public Support | Preliminary Estimated Project Cost* | Maintenance | Accommodation for Emergency Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **Accommodates various transportation modes** | **Prioritize various traffic management strategies** | **Future (2035) traffic conditions, level of service (LOS)** | **Effects of the Project Corridor will have on existing land, properties, and public/private spaces** | **Effects of the Project Corridor may have on wetland areas** | **Level of acceptance from the community** | **Initial Project cost, subject to change on current Project phase** | **Routine maintenance & frequency** | **Accommodation for emergency vehicles (ambulance, fire trucks)** |
| 3 | Single Lane Roundabout | Pedestrian crossing provided in the SB & EB approach | Full access movements but impacts of Salem Five Bank with eastbound left-turn movements and exiting movements | Overall intersection operates at LOS B, PM peak Hour, General Way approach operates at LOS C. The maximum 95% queue WB approach in the AM peak hour is 200 feet. | 11,424 SF 1/3 of the southern leg and north side | Potentially working within the 100-foot wetland buffer | Weary of | $2,123,416 | Primarily on maintaining road surfaces and clear visibility, lower operational costs in the long term | Yes, inclusion of a truck apron |
| 4 | Single Lane Roundabout with a Bypass Lane | Pedestrian crossing provided in the SB & EB approach | Full access movements but impacts of Salem Five Bank with eastbound left-turn movements and exiting movements | Overall intersection operates at LOS B or better, PM peak Hour, General Way approach operates at LOS C. The maximum 95th %queue WB approach in the | 13,888 SF 1/3 of the southern leg and north side | Potentially working within the 100 feet wetland buffer | Weary of | $2,195,532 | Primarily on maintaining road surfaces and clear visibility, lower operational costs in the long term | Yes, inclusion of a truck apron |

| # | Alternative | Multimodal Benefit | Traffic Operations | Future Traffic Performance | Right-of-Way Impacts | Environmental (Wetland) Impacts | Public Support | Preliminary Estimated Project Cost* | Maintenance | Accommodation for Emergency Vehicle |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **Accommodates various transportation modes** | **Prioritize various traffic management strategies** | **Future (2035) traffic conditions, level of service (LOS)** | **Effects of the Project Corridor will have on existing land, properties, and public/private spaces** | **Effects of the Project Corridor may have on wetland areas** | **Level of acceptance from the community** | **Initial Project cost, subject to change on current Project phase** | **Routine maintenance & frequency** | **Accommodation for emergency vehicles (ambulance, fire trucks)** |
| | | | | AM peak hour is 100 feet. | | | | | | |

***Legend***

| Icons | Description |
|---|---|
| ● | Highly Favorable |
| ◕ | Moderately Favorable |
| ◑ | Minimally Favorable |

# Conclusions/Recommendations

The previous sections have described the analysis of the Walkers Brook Drive Redesign Project and the identification of potential improvements with the preferred alternative to expand mobility options, improve pedestrian and bicycle infrastructure, and enhance access to key destinations, including restaurants, retail centers, employment hubs, and Lake Quannapowitt. The analysis of traffic at the study intersections was completed following standard practice. The key findings of this Project Design Report are as follows:

- The number of travel lanes along Walkers Brook Drive changes within the study limit. It is currently a four-lane undivided roadway (2 lanes in each direction) from I-95 to New Crossing Road, a three-lane undivided roadway (2 lanes in the EB and 1 lane in the WB) from New Crossing Road to General Way, and a two-lane undivided roadway from New Crossing Road to John Street. The posted speed limit is 35 MPH, and closer to Village Street near John Street is 25 MPH. Generally, the 85$^{th}$ percentile speed closer to Home Depot and I-95 is higher than the posted speed limit.
- Based upon the traffic data collection, pedestrian activity is high during the weekday midday and PM peak hours, with most using marked crosswalks.
- There were 61 reported crashes at the five (5) study intersections, with 67% of the crashes located at the intersections of Walkers Brook Drive at Home Depot/Jordan's Driveway and Walkers Brook Drive at New Crossing Road. There were no fatal or serious injury crashes reported. The intersection crash rates are lower than the District 4 and the Statewide average crash rate. However, at the intersections along Walkers Brook Drive with Home Depot/Jordan's Driveway and New Crossing Road are approaching the District 4 average crash rate.
- Under Existing (2025) traffic volumes, Walkers Brook Drive at Home Depot/Jordan's Driveway is the only intersection that meets Warrant 1 (Eight-Hour Vehicular Volume). However, all of the intersections meet Warrant 2 (Four-Hour Vehicular Volume). Under Future (2035) traffic volumes, Walkers Brook Drive at New Crossing Road/Plaza Driveway and Walkers Brook Drive at General Way/Salem Bank Driveway meet Warrant 1 (Eight-Hour Vehicular Volume).
- As part of the Future Base Conditions, the Eastern Gateway Initiatives were taken into consideration along with other Vicinity Developments.
- Three (3) major cross-section options for Walkers Brook Drive between John Street and the I-95 interchanges (Town Line), each offering different multimodal features, have been considered. The alternatives are summarized below.
    - ***Alternative 1:*** On-road buffered bicycle lanes, 5-foot bike lanes and 3-foot buffer, with 6-foot sidewalks on both sides
    - ***Alternative 2:*** Off-road shared use path, 10-foot, on the south side with a landscape buffer of five (5) feet and an 8.50-foot sidewalk on the north side
    - ***Alternative 3***: Off-road two-way cycle track, 10-foot, on the south side with a landscape buffer of five (5) feet, and 6-foot sidewalks on both sides
- This Project would provide for an improved bicycle connection to Lake Quannapowitt in the Town of Wakefield.
- Existing (2025) and Future (2035) traffic conditions maintain acceptable operations at the study intersections. The signalized intersections will operate at an overall LOS D or better, with some movements operating at LOS F during the study peak periods. The V/C is less than one (1.0) for all signalized intersections. Minor street approaches at unsignalized intersections experience short delays, but these remain minimal even under future volumes, though queue lengths increase.

- In the Future (2035) traffic conditions, the single lane roundabout and single lane roundabout with a bypass lane operate at an overall LOS B for the study peak periods. The General Way approach will operate at LOS C during the PM peak hour. There will be an increase in the 95$^{th}$ percentile queue in the single lane roundabout in comparison with the single lane roundabout with a bypass lane.
- The proposed roundabout, either a single lane or a single lane with a bypass lane, is located well outside the public right-of-way on the north side near the Salem Five Bank and will have an impact on the ingress and egress movements.

# Recommended Action Plan

Ultimately, the Walkers Brook Drive Redesign will include the following.

- ***Alternative 2****:* Off-road shared use path, 10-foot, on the south side with a landscape buffer of five (5) feet and an 8.50-foot sidewalk on the north side.
- ***Walkers Brook Drive at Home Depot/Jordans Driveway***: the westbound approach will include one (1) through lane and one (1) right-turn lane, and the eastbound approach will include one (1) through lane and one (1) left-turn lane. The left-turn movements along Walkers Brook Drive will be a protected phase. It is not anticipated that there will be any changes in the Home Depot/Jordan's Driveway approach.
- ***Walkers Brook Drive at New Crossing Road:*** the westbound approach includes one (1) dedicated left-turn lane and one (1) shared through/right-turn lane and the eastbound approach includes one (1) left-turn lane, and one (1) shared through/right-turn lane. The left-turn movements along Walkers Brook Drive will be a protected phase. It is not anticipated that there will be any changes in the New Crossing Road and Plaza Driveway approaches.
- ***Walkers Brook Drive at General Way:*** as part of the recommended action, the intersection will be modified to provide full access, including northbound left-turn movements. Potential alternatives include signal control or a roundabout. However, a roundabout would impact Salem Five Bank ingress and egress, require additional right-of-way, and may result in environmental impacts. As the project advances through public engagement and the DOT review process, the preferred alternative for this intersection will be determined.