Transportation Plan for Main Avenue – Route 719

RT 123 (New Canaan Avenue) to
Norwalk/Wilton Town Line

Norwalk, CT

Final Report

Prepared for:
Western Connecticut Council of Governments

By
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1. Introduction

The development of the "Transportation Plan for Main Avenue – Route 719 in Norwalk, Connecticut" has been organized into two phases. The first phase was titled "Corridor Assessment and Concept Development Report" and was completed in 2012. The primary focus of that effort was on evaluating the corridor to identify existing deficiencies and develop concepts to address those deficiencies. The second phase of the project focused on developing the vision for CT 719 (Main Ave) following the completion of the interchange project at the Merritt/Route 7/Main Ave. This vision included evaluating potential changes to the cross-section of Main Ave (CT 719) from an operational and multimodal perspective. Additionally, the study will assist Norwalk in their future development decisions by evaluating/identifying potential access changes and in developing a "checklist" to be used in assessing potential development impacts.

A Traffic Analysis was completed in July 2018 with a meeting to discuss the results at Norwalk City Hall on September 25, 2018. The discussion at this meeting and ultimate decision on the Main Ave cross-section was used as a basis to develop Complete Streets and Access Management plan

2. Project Limits

Phase 1 study limits extended from Route 123 in Norwalk north to Route 106 in Wilton. The CTDOT route designation is 719 from that southern terminus northerly to the intersection with Route 7, then continuing as Route 7 into Wilton to the intersection with Route 106. The segment designated as Route 7 from Grist Mill Road to the Wilton Town Line was removed from this project as this segment has been relocated to CTDOT Project 102-305 Planning. See ***Figure 1*** for a map of the project area.

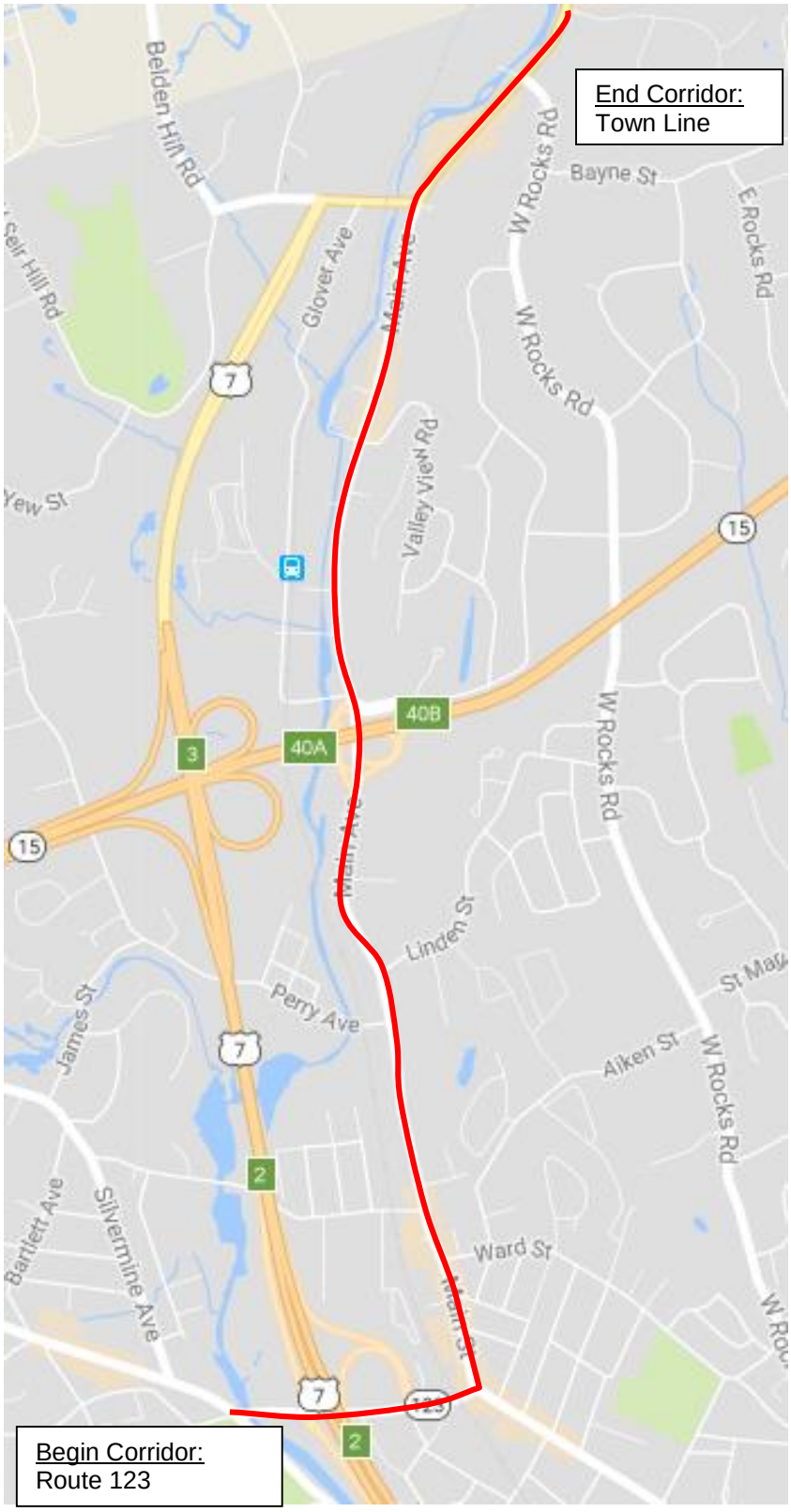


Figure 1: Map of the Project Area

3. Traffic Analysis

The entire Traffic Analysis Summary report is included in ***Appendix A***. Below is a summary of the report.

The primary objective of the traffic analysis study was to assess the potential for cross-section changes (e.g., road diet) along Main Ave (CT 719) as a result of the planned interchange improvements at Main Ave/US 7/Merritt Parkway.

In the project area, Main Ave. is a two-lanes per direction, urban minor arterial. Moving south to north, most intersections on Main Ave. are lacking left-turn pockets until the Merritt View/Stop & Shop intersection just south of the RT 15 interchange. From the Merritt View/Stop & Shop intersection until the Norwalk/Wilton Town Line most intersections have left-turn pockets on Main Ave., including multiple intersections providing access to the Merritt 7 Corporate Park.

New turning movement counts and travel time data were collected for the project area intersections in February 2017. The turning movement count data collected was compared to 2016 count data provided by Stantec that was collected as part of the US 7 and RT 15 project. Generally, the data from 2016 counts were higher throughout the corridor and therefore was used to provide a more conservative assessment.

The operational analysis was performed utilizing Synchro 9. The base Synchro model for each peak period is setup with proper input data including geometric information, signal phasing and timing, volume information, pedestrian timings, truck percentage and peak hour factors. The initial results provide output data including travel time, average delay per vehicle, and total network delay to facilitate the calibration process. Details on the Existing, No Build, and Build alternatives analysis can be viewed in the Traffic Analysis Summary report in ***Appendix A***.

The traffic analysis results show that the Road Diet operates well under the 2025 Build conditions where the US 7/RT 15 interchange is complete with all approaches operating at LOS D or better. In fact, the projected travel times would be comparable to existing conditions for both directions during both peak period with the exception of the Southbound PM peak hour where travel time would increase from 4.3 min to 5.6 min.

The 2045 results show that both the Build and No Build operated with LOS F conditions for the Southbound approaches at Broad Street, and LOS F for the 2045 No Build Southbound approach at Linden Street. It should be noted the delay and queuing are more extensive in 2045 for the No Build compared to the Build scenarios.

A meeting took place on September 28, 2018 at Norwalk City Hall discussing the traffic analysis findings. Following the meeting Norwalk decided to proceed with a four-lane cross section for the remainder of the study including the Complete Streets and Access Management and Additional Transportation Plan Items discussed below.

4. Complete Streets and Access Management

4.1. Background

Complete Streets is the street design philosophy that everyone regardless of their mode of transport or age or ability should be accommodated. This includes all modes: walking, bicycling, transit riders and vehicles, driving, and others. In recent history, streets have been developed to primarily accommodate the efficient movement of motor vehicles, and increasingly communities have seen the damage this has done to the livability of their communities. Walking has become less comfortable and safe along these corridors, and streets have become places to avoid rather than places to be. A complete streets philosophy aims to remediate these shortcomings by introducing design elements which allow safe passage of all users, regardless of age, ability or mode of travel.

In addition to recommendations to improve walking, bicycling, and transit accommodations along Main Avenue, this section includes access management recommendations with the goal of reducing conflicts and thereby improving safety for all users. During the identification of needs in this corridor, it was noted that the large number of driveway access points creates numerous conflict points; thus, recommendations throughout this section include the removal and/or consolidation of some driveways, implementing turning restrictions, and the reduction of driveway width. Generally speaking, the access management recommendations go hand-in-hand with the complete streets goals outlined here – by cleaning up the frontage zone and reducing the number of access points along the corridor, the pedestrian zone can be made safer and more comfortable.

4.2. General Approach in Project Area

The on-going 7/15 interchange project raises uncertainty to the future traffic volumes due to the anticipated completion of new ramps that could divert traffic from Main Avenue for certain movements between these two heavily traveled corridors. While the completion of these ramps, and thus the potential traffic reduction on Main Avenue, is included in the future build traffic estimates, a road diet was not advanced as a recommendation at the direction of the City of Norwalk. Since the completion of the full interchange could reduce traffic volumes on Main Avenue, the City should continue to monitor post-completion of the 7/15 interchange to reassess the feasibility of a road diet in the future.

If the implementation of a standard road diet on this corridor is someday deemed feasible, the City could elect to provide high quality bicycle amenities on this corridor, such as dedicated bicycle lanes. Currently, the CTDOT statewide bicycle map does not designate Main Avenue as a statewide bicycle route, with bicycle connections instead being provided by the nearby Norwalk River Valley Trail (NRVT) adjacent to the corridor; however, the lack of official designation was largely not considered in this corridor *based on existing traffic volumes*.

Although the option to provide a high-quality bicycle facility on Main Avenue was not recommended, efforts were taken to improve the pedestrian and transit environment in this corridor. Currently, the Norwalk Transit District provides frequent services throughout the corridor with services provided by Route 3, Route 4, the Main Avenue Shuttle, and the Merritt 7 – Glover Ave Commuter Shuttle. Combined, these services operate over 70

daily runs every weekday to the project area. Additionally, the corridor was recognized as a reasonably dense and compact neighborhood with further walkable development proposed with the future development called “The Village” just north of Broad Street. While the land use context to the north of Route 15 gets drastically more suburban, high density employment at the Merritt 7 complex shows that leisure walking at lunch still tends to be prevalent.

The recommendations provided in this report emphasize pedestrian connectivity and safety improvements that can improve the pedestrian environment throughout the corridor. While not explicitly a part of this study area, the project team recognizes the significance of the Route 15 and Main Avenue interchange as a potential future pinch point for pedestrians and bicyclists. The project team recommends that these users are appropriately accommodated in any future reconstruction of this interchange by the recommended facility type as determined in the forthcoming *Connecticut Bicycle Design Guide*. As discussed earlier in this section, an on-road bicycle facility is not currently recommended on Main Avenue either to the north or south of this interchange, *however*, the project team believes it is important that any substantial rebuild of this interchange *should not preclude* future implementation of a bicycle facility on this corridor if future traffic volumes reveal that a lane-reduction is feasible, and an appropriate bicycle facility on Main Avenue one day implemented.

The project team suggests that this bicycle facility not be marked at this time, but the cross-sectional width be reserved under the bridge to allow the future implementation of bicycle lanes through this interchange. For example, consultation of the forthcoming *Connecticut Bicycle Design Guide* may indicate that buffered bicycle lanes be constructed on a facility of this type with a preferred cross-sectional width of 8-feet. In this case, the design of Main Avenue through the extent of the 7/15 Interchange Project should include an 8-foot standard shoulder which could be transformed to a marked buffered bicycle lane in the future. A buffered bicycle lane is provided as an example, and the actual preferred bike facility should be determined once the *Connecticut Bicycle Design Guide* is made available.

Furthermore, the project team recommends that the 7/15 Interchange Project consider the design needs to safely turn northbound cyclists from Main Avenue left onto Glover Avenue. It is anticipated that any future bicyclist network constructed on Main Avenue due to a road diet may be restricted to Main Avenue south of Route 15. Thus, the logical connection for cyclists continuing north would be to Glover Avenue, and then onto an off-road facility past Grist Mill Road (the planned Norwalk River Valley Trail). Ensuring that the reconstructed interchange with Route 15 and Main Avenue is compatible with a safe intersection treatment to make the connection between Glover Avenue and Main Avenue will be a key component of any bicycle facility upgrade in the future. Possible treatments include Two-Stage Left Turn Box, or a quasi-protected interchange to allow bicyclists to turn left without needing to cross several lanes of traffic.

Sidewalks

Five-foot concrete sidewalks are recommended throughout the corridor. This is to match the existing design throughout most of the corridor, with concrete preferred due to differentiation in color from the roadway surface.

Figure 2: Newly installed concrete sidewalk ramp at Main and Perry Avenue (Google Maps)

It is recommended that the corridor to the south of Route 15 has a complete sidewalk network on both sides of Main Avenue. While this area generally has sidewalks on both sides, the recommendations include installing a sidewalk on the north side of the corridor in the vicinity of the Route 7 ramps between Riverside Avenue and Main Street as this is an important connection between two dense residential and commercial neighborhoods. Additionally, locations with missing sidewalks due to excessively large curb cuts or locations with no sidewalks due to parking lot barriers are proposed to be installed as indicated. Locations with sidewalks in poor condition or inadequate width (less than 5') are proposed to be upgraded.

Figure 3: Pedestrian connectivity issues between parcels on the Main Ave corridor (Google Maps)

To the north of Route 15, uniform sidewalk connectivity is recommended on one side of Main Avenue, with connectivity to the opposite side to establish safe pedestrian connectivity to adjacent uses on the western side of the corridor. This consistent sidewalk connectivity is proposed to be on the western side of the corridor between Route 15 and the southern access to the Merritt 7 complex, on both sides of the corridor between the southern and northern access points to the Merritt 7 complex, and then continuing on the eastern side of the corridor to the north of the northern access point to the Merritt 7 complex to the northern end of the study area. For this concept plan, improvements to existing sidewalks – such as new sidewalk aprons through driveways – are limited to the side designated for continuous connectivity.

Driveways

Throughout the corridor, driveways are proposed to be reconstructed to include a concrete sidewalk across the driveway. This is recommended in order to improve sidewalk visibility through the corridor and promote a safe environment for pedestrians walking along the corridor. These new driveway ramps shall meet CTDOT standards for ADA accessibility and not have a cross slope of greater than 2% with a cross slope of 1.5% being preferred (see CTDOT Standard Sheet No. HW-921_01). Locations with new driveway ramps proposed to be installed are indicated with the “proposed sidewalk symbology” shown through the driveway access.

Figure 4: Concrete sidewalk continues through minor driveway (TRB, 2010)

Access Management

Wherever possible, driveways are proposed to be narrowed, combined, closed, or considered for access restrictions. These access management steps would greatly improve the pedestrian environment along the corridor, as well as safety for all users on the corridor. Many of the recommendations are located in the vicinity of the West Rocks Road, where a group of isolated parcels to the south are recommended to include shared driveways and include access management techniques such as right-in and right-out only access. Miscellaneous access management recommendations are also included elsewhere in the corridor.

Unique to locations with truck-access considerations such as the Staples and Walmart and the Shell Gas Station just north of West Rocks Road (Map 1A), mountable access-restricted driveways are proposed to be installed. At the Staples and Walmart parcel, this access would include a right-out only access, with a mountable surface to allow for exiting truck traffic to exit left to continue southbound on Route 7. Similarly, the right-in access proposed for the Shell Gas Station could allow access for tanker access to the Shell Gas Station if needed.

Figure 5: A truck-mountable channelized right-turn island located in West Hartford, CT on New Park Avenue (Google Maps)

Pedestrian Signal Heads

Throughout the corridor, inconsistent pedestrian signaling methods cause confusion for pedestrians. Many of the pedestrian signals are standard traffic signal heads to alert the pedestrian when the concurrent phase has green. This technique is called side-street green and is out of date with CTDOT recommended practice. The lack of dedicated pedestrian signal equipment causes confusion for drivers and pedestrians alike on right-of-way rules through the intersection. All current side-street green signals are proposed to be removed and upgraded.

Figure 6: Standard traffic signal head located for pedestrian usage under a side-street green signaling technique (Google Maps)

In place of this old equipment, all pedestrian signal heads within this corridor are proposed to be upgraded to modern audible pedestrian signal (APS) equipment to include a standalone dedicated pedestrian signal head and to include a pedestrian count-down timer. Additionally, due to the level of pedestrian activity at some of the intersections, it may be appropriate to consider the use of an Exclusive Pedestrian Phase or Concurrent (Pedestrian) Phase. If appropriate, a Leading Pedestrian Interval (LPI) can be used with the Concurrent (Pedestrian) Phase. The benefits of using an Exclusive Pedestrian Phase versus a Concurrent (Pedestrian) Phase (with or without an LPI) should be evaluated against potential impacts to vehicular traffic

Figure 7: An APS signal with count-down timer in Hartford, CT (FHI)

Crosswalks

Crosswalks throughout the corridor are recommended to be painted in the continental style. Locations along the corridor across an unsignalized intersection, and all locations without a raised driveway apron discussed above, should receive a marked continental style crosswalk as well.

Figure 8: Continental crosswalks improve visibility of pedestrian crossing locations (FHWA)

Streetscape Amenities

It is recommended that the City of Norwalk consider further enhancement of streetscape amenities between the intersection of Broad Street and Linden Street to the north. This would dovetail with currently approved plans for a pedestrian-friendly commercial development at “The Village” and serve as a catalyst for other pedestrian friendly buildings in the area. The town should further consider incorporating zoning changes in this area to promote mixed-use walkable development in this center. Plans for enhanced streetscape are not shown in this diagram.

Bus Pullouts

This plan proposes four bus pullouts – one in each the northbound and southbound direction at Frontier Communications (Map 2B), and one in each the northbound direction near the Stop & Shop intersection (Map 3B). These pullouts could be constructed within the available right-of-way and could assist the Norwalk Transit District in bus operations, but further discussions with the transit district should occur regarding their operational issues. Furthermore, the pullouts at Frontier Communications could allow for the creation of enhanced bus facilities at the dense employment center at the Merritt 7 office complex. Limited right-of-way along the corridor to the south of Route 15 generally precludes the placement of bus pullouts at regular intervals.

Medians

Medians are recommended in a number of locations where there appears to be adequate curb-to-curb width to allow for such feature. Preferably, these locations should be raised, landscaped medians to provide optimal traffic calming and safety improvements. Where the proposed median island affects queue storage, traffic analysis should be completed to determine if there will be an adverse impact on traffic operations. In addition to vehicular operations, impacts to maintenance need to be evaluated.

The proposed median to the north of the intersection with West Rocks Road should include a slightly raised, mountable concrete median to allow delivery truck traffic to proceed southbound on Route 7.

Figure 9: Top- A flush, mountable, stamped and texturized pavement treatment at a roundabout in Salem, CT (Google Maps). Center- Colored concrete mountable median in Baxter, MN (MNDOT). Bottom – Raised, landscaped median installed on CT 195 in Tolland, CT (Google Maps)

Interchange with Route 15

Due to forthcoming work at the interchange between Route 15 and Main Avenue, no specific recommendations are suggested at this location at this time. However, it is recommended that future improvements at this location consider maintaining pedestrian connectivity along the west side of the corridor as well as incorporating connections to the NRVT which would encourage more multimodal use of Main Ave. Additionally, on the northern intersection of this interchange (Glover Avenue), it is recommended that current pedestrian signals be removed, as they are located behind the stop bar and are located in an unsafe location. In their place, it is recommended that a crosswalk and modern pedestrian signal equipment be installed at the northern side of this intersection with new curb ramps and sidewalk approaches installed as appropriate.

Other Recommendations

Review of historical aerial and street view imagery shows frequent blocking of sidewalk and buffer space at DeMassa Appliance Service (Map 4B). It is recommended that the City of Norwalk improve the pedestrian environment by clearing the right-of-way at this location.

Figure 10: Appliances line the sidewalk and buffer zone on Main Avenue (Google Maps)

Segment-Specific Recommendations

Provided in the map series below detail specific locations for each recommendation for this corridor. In addition to the corridor-wide recommendations described above, location specific recommendations that warrants further discussion is detailed below:

Map 1

- New raised median.
  - *This raised median is recommended to include landscaping and/or texturized materials to enhance aesthetics in the corridor.*
- New mountable median.
  - *This mountable median is intended to allow delivery trucks to access US 7 southbound while discouraging use from left-turning vehicles traveling southbound on US 7.*
- Formalize northern exit from Staples, Walmart plaza to be accessible only by exiting vehicles traveling northbound. Reduce driveway width and construct concrete driveway apron. Construct such that exiting trucks may proceed southbound on US 7.
  - *This restriction is already signed, however geometric changes are proposed to enforce this restriction.*
- Reduce driveway widths at Shell Gas Station and convert northern driveway to right-out only and the southern driveway to right-in only. Install concrete driveway aprons and sidewalks while repairing existing sidewalks.
  - *Full access to US 7 to be maintained via West Rocks Road.*
- Provide access management at the connected Subway, Mattress Firm, AT&T, and Town Fair Tire parcels.
  - *These three connected parcels include five poorly placed driveway access points. Recommendations include closing one of the five access points (at AT&T) while restricting access to three of the remaining four access points. Full access is proposed to be provided at the northern access point at the Town Fair Tire parcel as this is provides furthest separation from queuing vehicles at the West Rocks Road intersection. Furthermore, a sidewalk is proposed to be installed throughout these parcels.*
- Provide vehicle interconnection between Verizon Wireless, Dress Barn and Al's Warehouse.
  - *These two parcels are separated currently by a small planting strip, but are located at the same grade. Interconnection of these two parcels will allow for a continuous sidewalk to be constructed with less gaps with the closure of the southern driveway at Verizon Wireless, Dress Barn property.*
- Install crosswalks at the intersection of Main Avenue and Grist Mill Road and install new pedestrian heads and evaluate an exclusive pedestrian phase or LPI. Further study a pedestrian and bicycle connection across the Norwalk River at Grist Mill Road.
  - *Currently, pedestrian push buttons are present to allow pedestrians to cross US 7 by calling the green light for Grist Mill Road (side street green). However, high turning volumes and high vehicle speeds mean this is an ineffective means to allow pedestrians to cross. With a future connection to*

the Norwalk River Valley Trail (NRVT) proposed to located here, it is critical that a safe connection to the Main Avenue corridor is established at this intersection. Furthermore, pedestrian and bicycle access across Grist Mill Road has been a continuing concern of the Project Advisory Committee, the Norwalk Bike/Walk Commission, and the general public on the Route 7-15 Norwalk project. Therefore, it is recommended that a future pedestrian connection to NRVT and west towards Belden Hill Road via improvements to the existing bridge or through the construction of a new pedestrian bridge be considered as a future project.

Map 2

- Evaluate potential of sidewalk on west side of Main Avenue
    - *Preliminary review indicates that topography challenges may exist on the west side of Main Avenue and may preclude the construction of a cost-effective sidewalk. However, this recommendation remains to indicate that a sidewalk is desired in this location, especially in light of highly used transit stop just north of the Sunoco Gas Station (Map 1B). Further evaluation will be necessary.*
- Install additional warning for left-turn only lane from Main Avenue northbound to Grist Mill Road.
    - *Currently, the left-lane converts to a left-turn only lane at the Grist Mill Road intersection. However, a lack of lane control signage and proper striping (a 2' short white skip striping) means that drivers unfamiliar with this area may not position themselves properly to be prepared for this lane restriction at the signal.*
- Create shared driveway between FedEx Office Print & Ship and Palette Grill, In Thai.
    - *Currently, these two driveways are adjacent but only Palette Grill, In Thai plaza includes a signal phase. Creating a shared single driveway with access to both these parcels will simplify operations at this intersection.*
- Construct near-side bus pullovers near the Frontier Communications intersection.
    - *Construct bus pullovers to formalize bus stop in this location and create space to allow Norwalk Transit to dwell as necessary to meet scheduled times.*
- Install median near Even Hotels.
    - *Long left-turn pockets in this corridor give an opportunity to install raised landscaped medians, however left-turn queue lengths should be evaluated. Raised landscaped medians have the opportunity to improve corridor aesthetics while reducing vehicle speeds and potential conflicts. In the event that left-turn queue volumes are of concern, a mountable median can be installed to allow overflow queues off through lanes.*

Map 3

- Install raised median at intersection to Merritt River Apartments.
    - *A lack of left-turn pocket here gives the opportunity to create a raised landscaped median in this space. Furthermore, this should be designed to create a two-stage pedestrian crossing with a refuge at this location.*

- Future connection to Merritt 7 train station.
    - *Current pedestrian connection between the Merritt 7 complexes and the Main Avenue corridor are lacking. It is recommended that enhanced connections to this train station are evaluated.*
- Main Avenue and Merritt Parkway Interchange.
    - *No improvements were recommended as part of this study due to the on-going Route 7-15 Norwalk Project.*
- Construct near-side bus pullovers near the Stop & Shop intersection.
    - *Construct bus pullovers to formalize bus stop and allow buses to dwell as necessary. As a critical location between the southern and northern halves of the corridor, these bus pullovers can work to deliver needed space for buses to dwell before continuing on their route through the rest of the corridor in both the northbound and southbound direction.*

Map 4

- Construct enhanced "Streetscape" elements between north of Linden Street and south of Broad Street.
    - *Higher density uses and land usage adjacent to Main Avenue between Linden Street and Broad Avenue, coupled with an approved commercial development called the "Village" at 272-280 Main Avenue make this corridor the most receptive to enhanced streetscape design elements. Proposed "streetscape" elements would include enhanced materials (e.g. brick pavers), pedestrian scale lighting amenities, seating, street trees, enhanced crosswalks (texturized) etc. The City of Norwalk should be consulted for this recommendation, and any potential streetscape redesign should be paired with potential for re-zoning to allow for neighborhood scale urban environment.*
- Reconfigure Perry Plaza Access.
    - *Close the southern access to Perry Plaza while converting the central access at Perry Avenue signal to be full-access in and out. This requires moving a recently completed pedestrian head signal and widening the driveway at this location. Convert the northern access point to right-in/out only. Note – the traffic signal (including pedestrian signal heads), as well as sidewalk westward along Perry Avenue have been reconstructed and do not match most current aerial.*
- Reduce Broad Street intersection width.
    - *Reduce curb radii width at Broad Street to promote pedestrian access along Main Avenue across Broad Street and to reduce vehicular turning speeds.*

Map 5

- Consider access management at Main Avenue and Ward Street
    - *Currently, parking is provided adjacent to the southbound travel lanes at 227 and 229 Main Avenue (Beauty Salon, Hong Kong Kitchen). These parcels appear to have access to limited parking in the rear of these properties. These property owners should be engaged to understand what access management reconfiguration could occur at these parcels.*

- Reconfigure pedestrian crossings at Main Avenue and New Canaan Avenue
    - *Provide pedestrian crossings on all approaches to this intersection and re-align crossings to shorten crossings distances.*
- Provide enhanced treatments such as texturized crosswalks and pedestrian scale lighting and other amenities at Main Avenue and New Canaan Avenue
    - *Recognizing that this intersection is the gateway to a dense neighborhood for vehicles traveling off the highway, consideration should be given to further enhancement of this intersection with texturized crosswalks and other streetscape treatments*.
- Evaluate reduction of curb radii at the intersection to the on/off ramps to US 7 northbound.
    - *A proposed sidewalk along the north side of New Canaan Avenue would mean that pedestrians would have to cross the large intersection at this location. Potential to shorten this distance should be considered by reducing curb radii and installing a pedestrian refuge island.*

Map 6

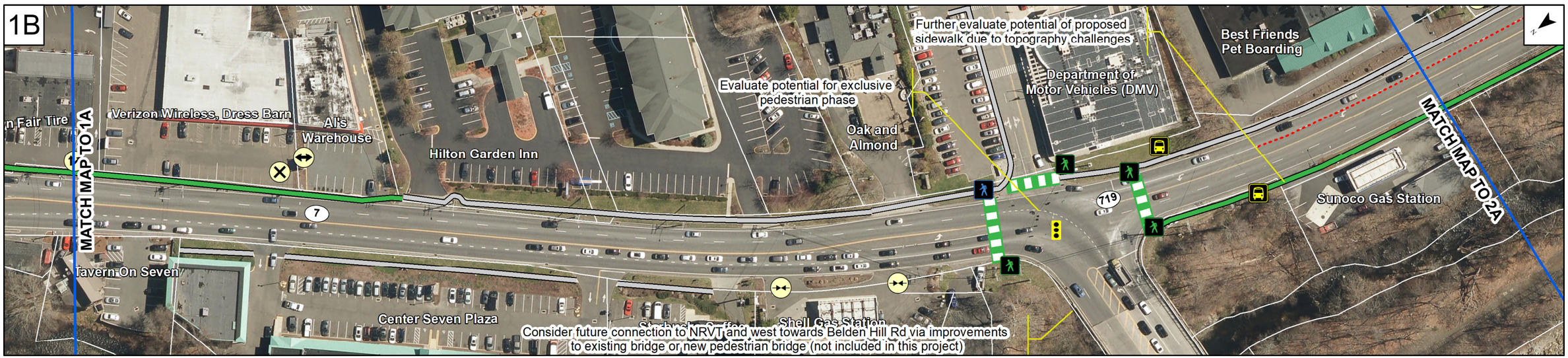
- Reduce on-ramp width from New Canaan Avenue to US 7 southbound.
    - *The current ramp width is excessively large and creates an unsafe crossing environment for pedestrians walking along New Canaan Avenue between these two dense neighborhoods.*
- Lane reconfiguration on New Canaan Avenue.
    - *Currently the eastbound approach to US 7 on New Canaan Avenue is striped back to the intersection of Riverside Avenue. By modifying this striping to include a shoulder, a small space for bicyclists can be created.*
- Median island on westbound approach to the intersection with Riverside Avenue.
    - *The installation of a median island can create traffic separation but also provide pedestrians a refuge crossing this current 75' crossing.*

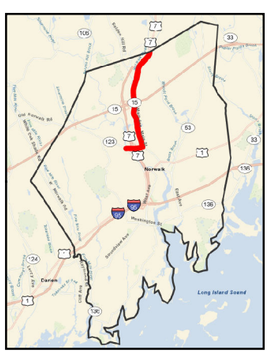
Map Legend and Description

Icon	Description
	Provide vehicular interconnection. Indicates that a vehicular interconnection is recommended to be created to allow for cross-property connection and to facility access management recommendations.
	Create shared driveway. Indicates that a shared driveway is recommended to be created between two parcels to reduce the number of curb-cuts along the corridor.
	Define entrance. Indicates that a driveway proposed to be narrowed and defined to enhance the pedestrian environment by reducing long curb-cuts.
	Relocate/realign access. Indicates that a driveway be relocated to another location on the property.
	Access Modification – Right-In Only. Indicates that access at the indicated driveway be modified to provide right-in access only without any outbound access towards the corridor.
	Access Modification – Right-Out Only. Indicates that access at the indicated driveway be modified to provide right-out access only without any inbound access towards the property.
	Close Redundant Driveway. Indicates that the indicated driveway is proposed to be closed.
	Bus Pullover Proposed. Indicates that a bus pullover is proposed.
	Bus Stop Existing. Indicates locations of existing bus stops by Norwalk Transit District.
	Traffic Signal Existing. Indicates locations of existing traffic signals.
	Ped Signal Proposed. Indicates locations of pedestrian signal heads. See text for description.
	Existing Ped Signal to be Upgraded. Indicates locations where existing pedestrian signal heads are proposed for upgrades.
	Existing Ped Signal to be Removed. Indicates locations where existing pedestrian signal heads are proposed for removal.
	Proposed Curb and Roadway Marking Work. Indicates proposed roadway geometry layout changes including proposed medians, proposed lane markings, and proposed curb changes.
	New Sidewalk Section. Indicates locations of proposed sidewalks.
	Upgraded Sidewalk Section. Indicates locations identified as inadequate sidewalk section proposed for upgrade.
	Existing Sidewalk. Indicates locations of existing sidewalk identified as adequate.
	Proposed Crosswalk. Indicates locations of proposed crosswalks
	Existing Crosswalk to Remain. Indicates locations of existing crosswalks proposed to remain.
	Existing Crosswalk to be Removed. Indicates locations of existing crosswalks proposed to be removed.
	Parcel Lines Approximate. Indicates locations of approximate parcel lines.

References

Transportation Research Board (TRB), NCHRP Report 659: Guide for the Geometric Design of Driveways, National Cooperative Highway Research Program (Washington, DC: TRB, 2010).





Main Avenue Complete Streets Improvement Plan
Norwalk, CT

September 2019

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- Access Modification - Right-Out Only
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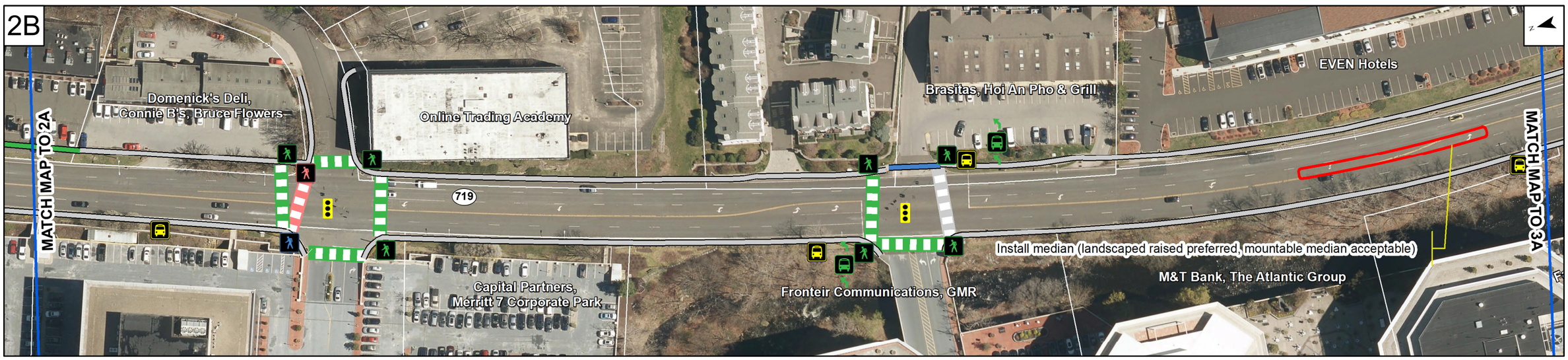

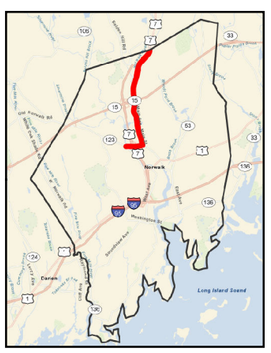

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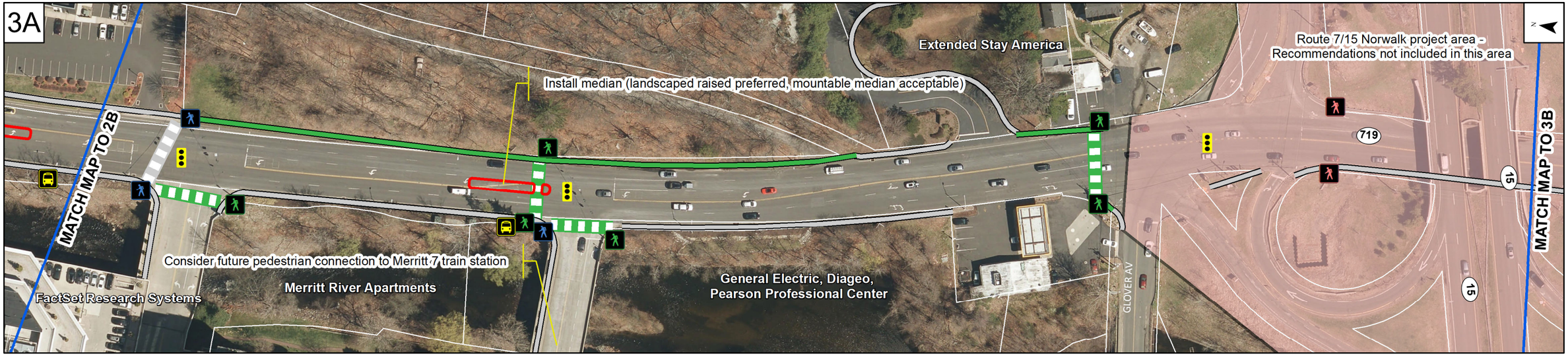

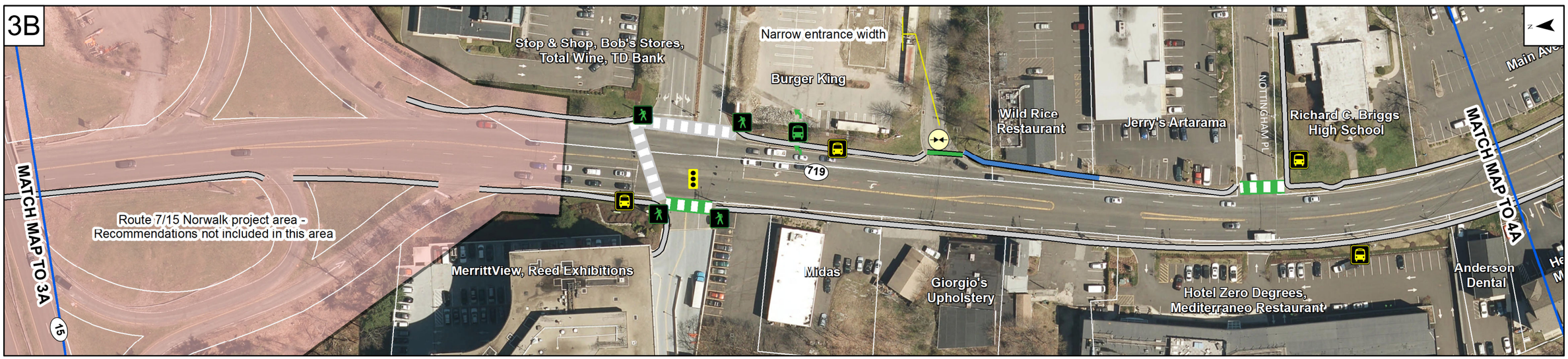

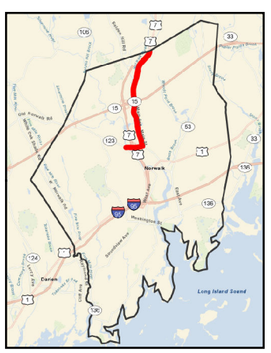

Main Avenue Complete Streets Improvement Plan

Norwalk, CT

September 2019

- Provide vehicular interconnection
- Create shared driveway
- Define entrance
- Relocate/realign access
- Access Modification - Right-In Only
- Access Modification - Right-Out Only
- Close Redundant Driveway
- Bus Pullover Proposed
- Bus Stop Existing
- Traffic Signal Existing
- Ped Signal Proposed
- Existing Ped Signal to be Upgraded
- Existing Ped Signal to Remain
- Existing Ped Signal to be Removed
- Proposed Curb, Driveway, and Roadway Marking Work
- New Sidewalk Section
- Upgraded Sidewalk Section
- Existing Sidewalk
- Proposed Crosswalk
- Existing Crosswalk to Remain
- Existing Crosswalk to be Removed
- Parcel Lines Approximate

URBAN ENGINEERS

WESTCOG

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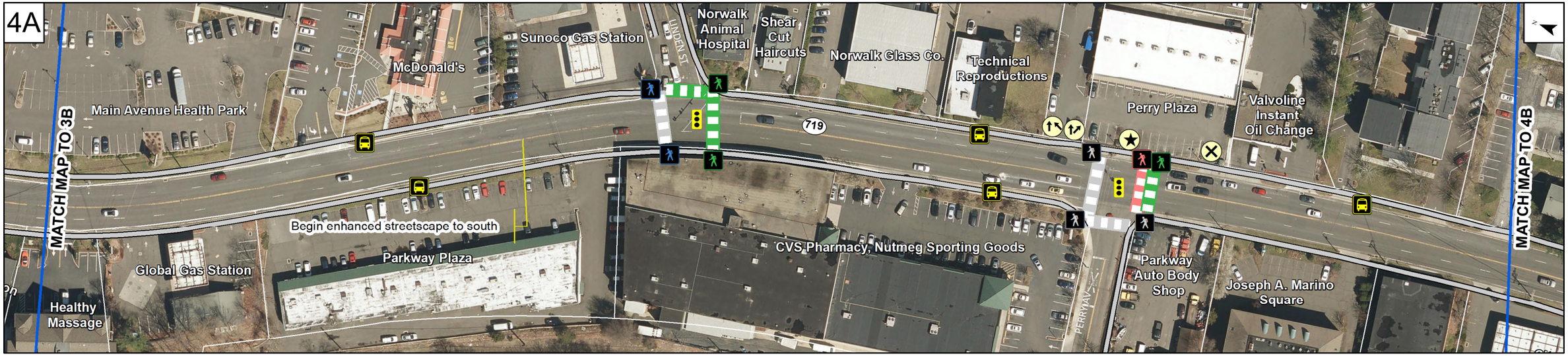
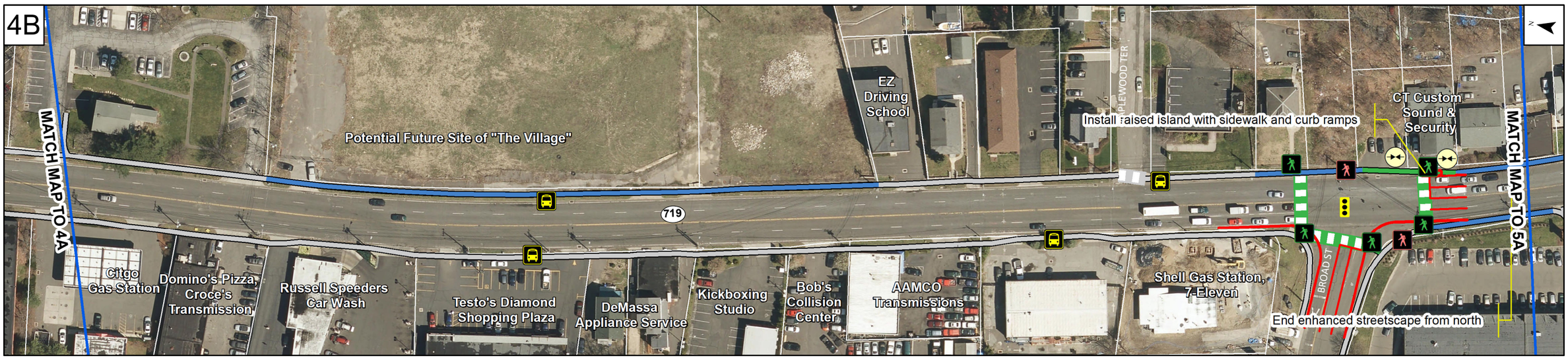
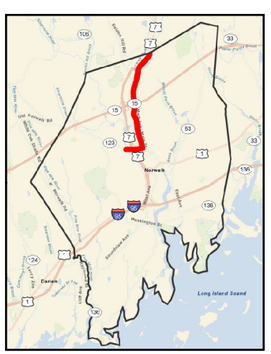
0 40 80 Feet







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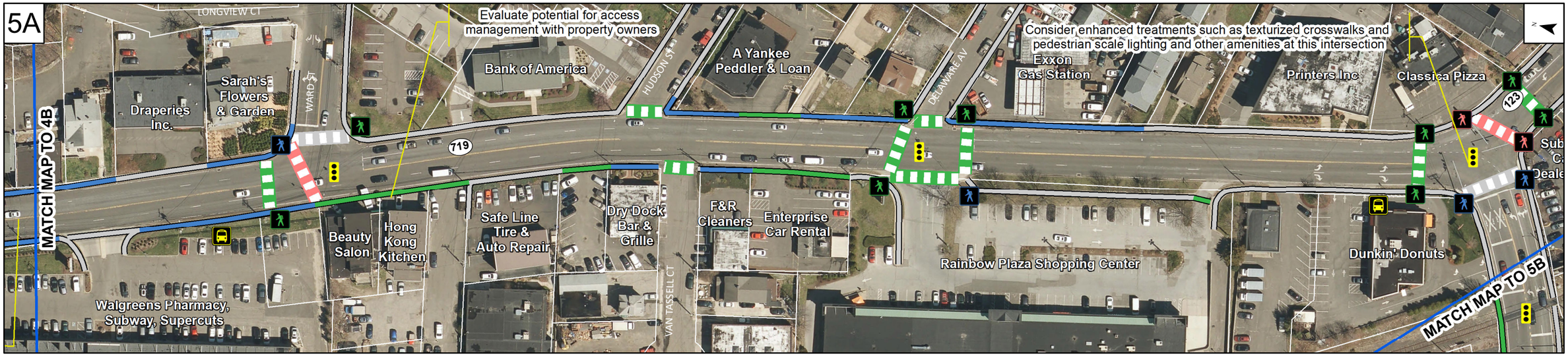

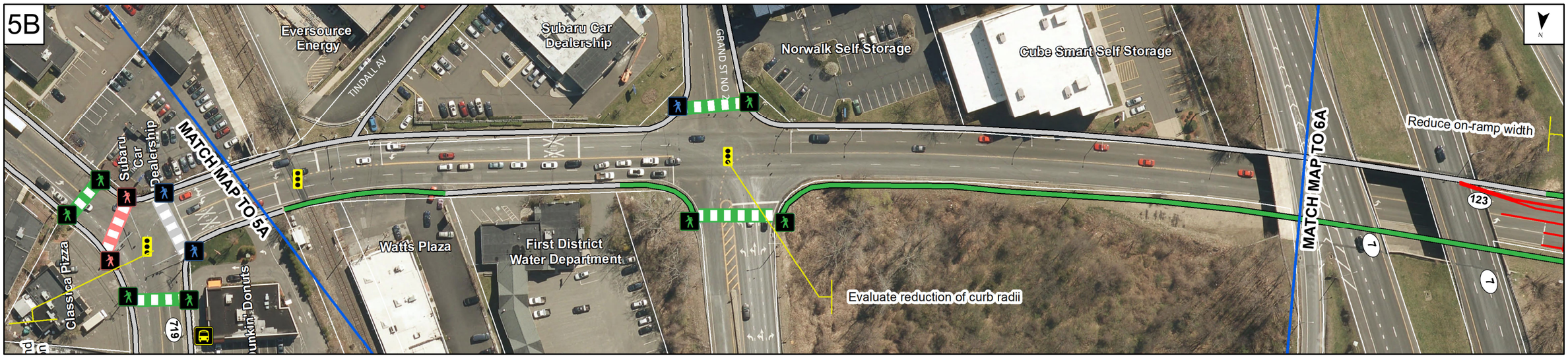

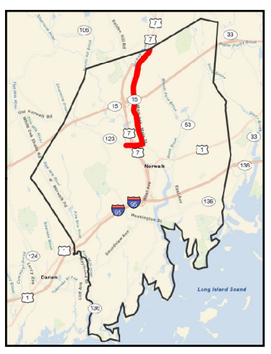

Main Avenue Complete Streets Improvement Plan

Norwalk, CT

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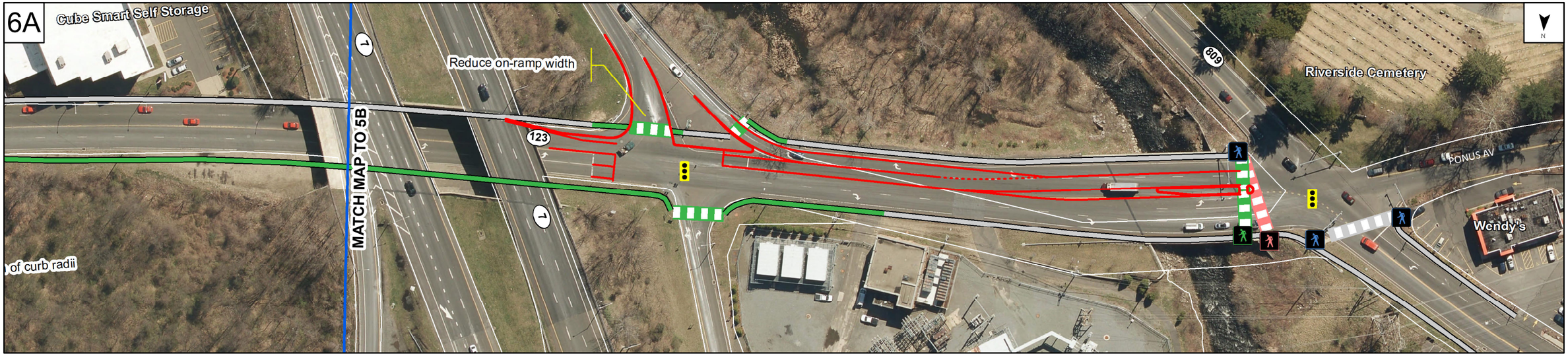

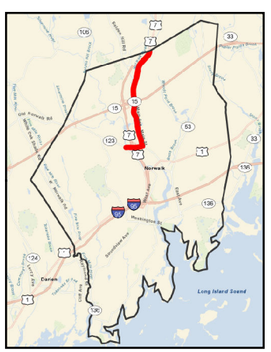

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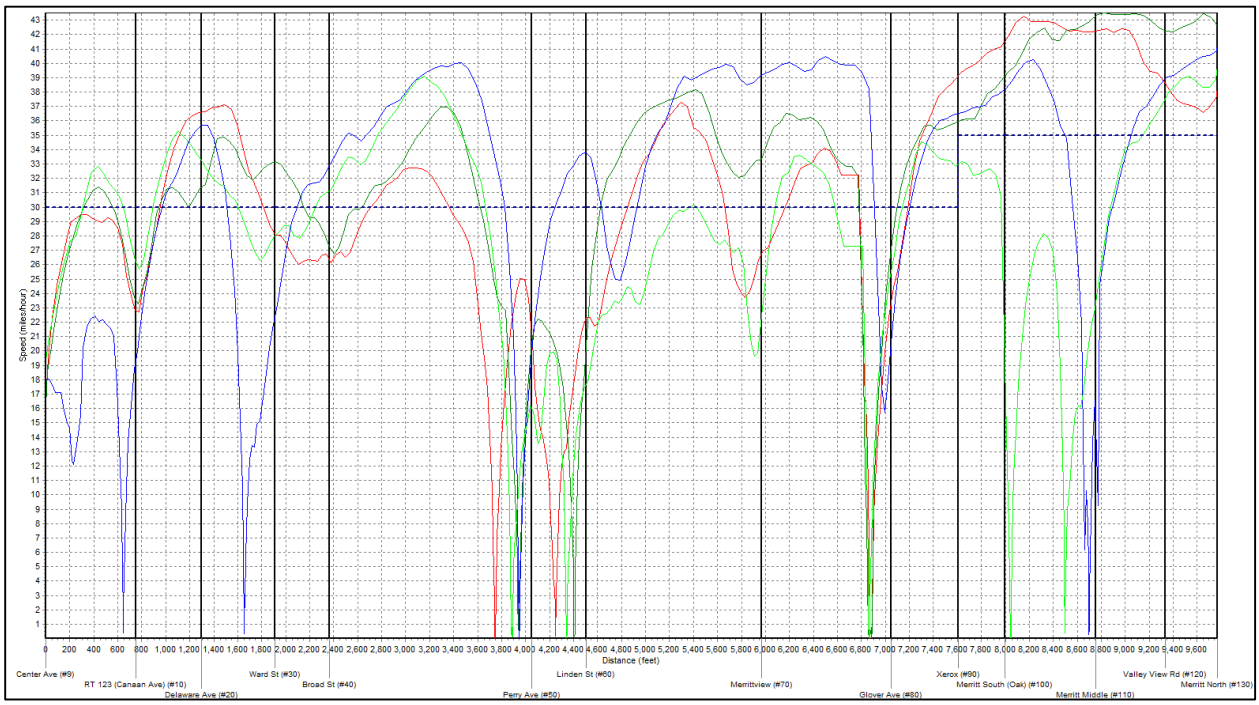
0 40 80 Feet

5. Additional Transportation Plan Items

5.1. Signal Upgrade Evaluation

A signal upgrade evaluation was completed as a qualitative assessment of potential upgrades to signal equipment in the corridor. The corridor currently operates as a coordinated system with reasonably good progression between the signals based on travel time data and field observations. As an example, the speed/distance plot below of field travel time runs collected for the northbound PM peak show minimal stops along the corridor, mostly occurring at Perry Ave/Linden Ave and Glover Avenue.



The signal plans provided show conduit connecting the signals on Main Ave with potentially interconnect fiber maintaining coordination between the signals. If the signals are determined to 'drift' and not maintain coordination throughout the day, GPS-clocks could be installed in each signalized intersection cabinet to maintain coordination. Traffic signal timings, including cycle length, phase splits and offsets should be evaluated for potential improvements to optimize to current traffic volumes and time-of-day patterns. Past history of signal timing optimization has shown expected travel time improvements of approximately 10 percent.

Intersections that have loop detection should be replaced with image/radar detection. Other signal equipment upgrades for safety improvements could include replacing span wire with mast arms, replacing 8" signal heads with 12", and adding signal head back plates and/or retroreflective borders to existing back plates where appropriate.

Pedestrian signal heads in the corridor are an inconsistent mix between countdown pedestrian heads and side-street green, which is a standard three-section vehicular signal head. All side-street green pedestrian accommodations should be upgraded to countdown pedestrian heads with audible pedestrian signal (APS) equipment.

At locations where pedestrian activity is high and/or a past history of pedestrian/vehicle crashes exist, the use of leading pedestrian interval (LPI) should be considered. FHWA states that implementing a LPI of 3-7 seconds provides pedestrians time to establish their presence in the crosswalk prior to vehicles turning, and can provide a reduction of 60% in pedestrian-vehicle crashes as intersections.

Lastly, the Main Avenue corridor could be a candidate for an Adaptive Signal Control Technology (ASCT) system due to proximity to RT 15 and US 7, and propensity for fluctuating traffic patterns. ASCT systems adjust the timing of green lights to accommodate changing traffic patterns and ease congestion. The main benefits of ASCT systems over conventional signal systems are that it can distribute green time equitably for all movements, improve travel time reliability, and prolong the effectiveness of traffic signal timing.

5.2. Roundabout Feasibility

A roundabout feasibility assessment was performed to identify any potential locations for roundabouts along the Main Ave corridor. A single-lane roundabout typically requires approximately 130 to 180 feet diameter to accommodate larger vehicles such as a WB-62 while a two lane roundabouts typically requires 165 to 220 feet.

At this diameter, most of the locations on the Main Ave corridor would have significant impacts to ROW and commercial access points. Two locations that might be potential locations based on the availability of space are the interchange/intersections of Main Ave and the Merritt Parkway (both north and south of the parkway). It should be noted that a number of design factors would need to evaluated including interchange/intersection configuration, design traffic volumes/analysis, and queuing. Analysis conducted as part of the 7/15 interchange project indicated roundabouts were not operationally feasible at the interchange (north or south) based on projected traffic volumes.

5.3. Transportation Review Checklist

A checklist was developed for the recommended practices/review items the City should consider including as part of proposed development. The list is included as ***Appendix B***.

5.4. Title VI, Limited English Proficiency and Environmental Justice

As part of this planning study, an analysis was completed to understand potential effects of the proposed improvements on any disadvantaged populations located within the study area. This analysis is required pursuant to Title VI of the Civil Rights Act of 1964 and the Environmental Justice requirements of Executive Order 12898.

Title VI & Limited English Proficiency:

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, and national origin and Executive Order 13166 (2000) mandates that persons with Limited English Proficiency (LEP) be provided meaningful access to federally funded programs and activities. Supplementing the 1964 Civil Rights Act is a 1974 landmark case whereby the United States Supreme Court determined that one specific type of national origin discrimination is that based on a person's inability to speak, read, write, or understand English.

The federal LEP definition refers to persons for whom English is not their primary language and who have a limited ability to read, write, speak, or understand English. This information reflects those who have reported to the U.S. Census that they speak English "less than very well, not well, or not at all".

A language falls under the LEP provision if the language group in a federally defined census tract reaches 5% of the population or 1,000 individuals, whichever is less, and speaks English as federally defined "less than very well". WestCOG completed a LEP analysis and identified Spanish and Spanish-Creole as LEP languages in Norwalk.

Environmental Justice:

The location of Environmental Justice areas in the vicinity of Main Avenue was based on the EJ Analysis conducted by the Western Connecticut Council of Governments (WestCOG). The findings of this analysis are documented in the 2016 Title VI Civil Rights and Public Participation Plan.

Executive Order No. 12898, issued on February 11, 1994, requires that each federal agency incorporate Environmental Justice (EJ) into its mission. This is achieved by following the three principles outlined by USDOT:

1. *Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.*
2. *Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.*
3. *Prevent the denial of, the reduction in, or the significant delay in, the receipt of benefits by minority and low-income populations.*

WestCOG completed an EJ analysis for the South Western Regional Metropolitan Planning Organization (SWRMPO). Characteristics of the area populations were evaluated against three criteria at the census tract level:

1. *Percent of minority population, defined as all persons except those identifying themselves as White, non-Hispanic. The threshold for measurement is the MPO area percent of minority population.*
2. *Per capita income. The threshold for measurement is the MPO area per capita income.*
3. *Percent of persons below the poverty level. The threshold for measurement to be the MPO area percent of person below the poverty level.*

Based on this evaluation, eight census tracts in Norwalk were identified as EJ areas; Figure 11 displays these locations in relation to the study area (corridor identified in red).

Results:

The recommendations developed in this plan include upgraded or new sidewalks, new crosswalks, bus pullovers (cutouts), access management, traffic signals upgrades, are smaller-scale projects. Together, these projects will create a transportation corridor that is more pedestrian-friendly, accessible, safe, and fosters multi-modal travel.

Construction-related impacts associated with these projects are likely to be minimal and affect all users of the transportation system equally. However, this plan recommends that specific, construction-related impacts to the EJ and LEP populations should be evaluated during the design of the project. To ensure meaningful engagement and maximum participation, public outreach should be tailored to Norwalk in compliance with Title VI and to identified LEP populations. Public participation materials should be made available in the LEP languages.

Once constructed, these projects will provide significant benefits for all populations by improving the transportation system.

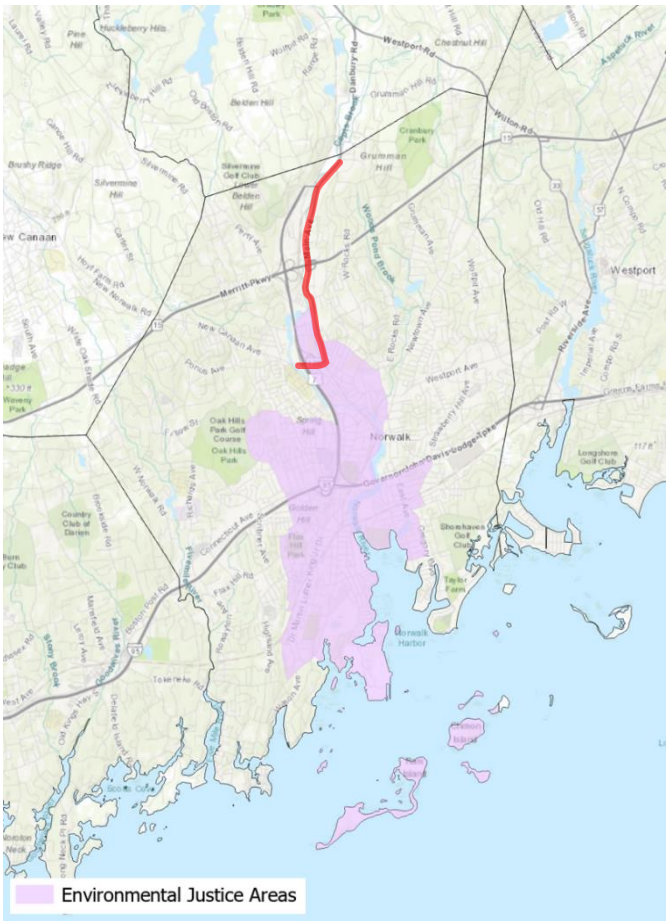


Figure 11. Environmental Justice Areas in Norwalk

5.5. Norwalk Zoning Map and POCD

Norwalk Zoning Map:

The project area includes parcels in several zones, with the majority of them being zoned as Business No. 2. The Business No. 2 Zone stretches from the town line on both sides of Main Avenue to the east side just past Grist Mill Road then back to both sides of the road south of the Merritt Parkway. Business No. 2 Zone permits offices, banks, hotels, retail stores, restaurants and taverns, theaters, schools, mixed use development, etc. with various other uses requiring a special permit including manufacturing, gas stations, etc. (Article 50, § 118-522)

A small area is zoned as Business No.1, located on the south side of New Canaan Avenue to the east of Route 7. This zone permits many of the same uses as Business No. 2, however one of the main differences is that a site plan review is required at 10,000 square feet while Business No. 2 is at 8,000 square feet (Article 50, § 118-521).

The last major zone in the project area is the Executive Office Zone located on the west side of Main Avenue just south of Grist Mill Road and ends north of the Merritt Parkway. It permits many of the same uses as Business No. 1 and No. 2 but focuses on major office buildings and their compatible uses. A site plan review is not required under 20,000 square feet (Article 50, § 118-503).

Norwalk Citywide Plan:2019-2029 - Plan of Conservation and Development(Draft):

The Norwalk Plan of Conservation and Development describes the current conditions of Main Avenue, the majority of the study area, as a "north-south connector comprised mostly of smaller stores and offices with poor pedestrian conditions characterized by narrow sidewalks and many curb cuts. The exception is north of the Merritt Parkway where large corporate office buildings exist (pg. 211)." This area of Norwalk was developed after the advent of the automobile which led to the separation of land uses and an auto-centric built environment.

Merritt 7 and the surrounding area has the largest job clustering in Norwalk. This accounts for over 11,000 jobs or 24% of all employment in the city (41). The POCD emphasizes that the continued success of the area depends on improving train service to the Merritt 7 train station and densifying the surrounding area. A specific recommendation to create a pedestrian bridge over the train tracks from Merritt 7 to Main Avenue is said to improve the accessibility of the area for workers and residents (175).

A major challenge recognized in the POCD is the current commercial zoning along Main Avenue. The current regulations are "insufficient to encourage high-quality, mixed-use redevelopment as property owners respond to the changing retail environment. A compelling vision that designates priority areas and clear design standards that promote walkability and vertical mixed-use are needed to help the City realize higher-value redevelopment when change happens in these single-use areas (214)."

The future land use envisioned in the POCD includes Main Avenue as a revitalized housing and economic opportunities corridor and the study area further north, surrounding the Merritt 7 train station, to be a mixed-use activity center (220). The following map shows the future land use of the project area:

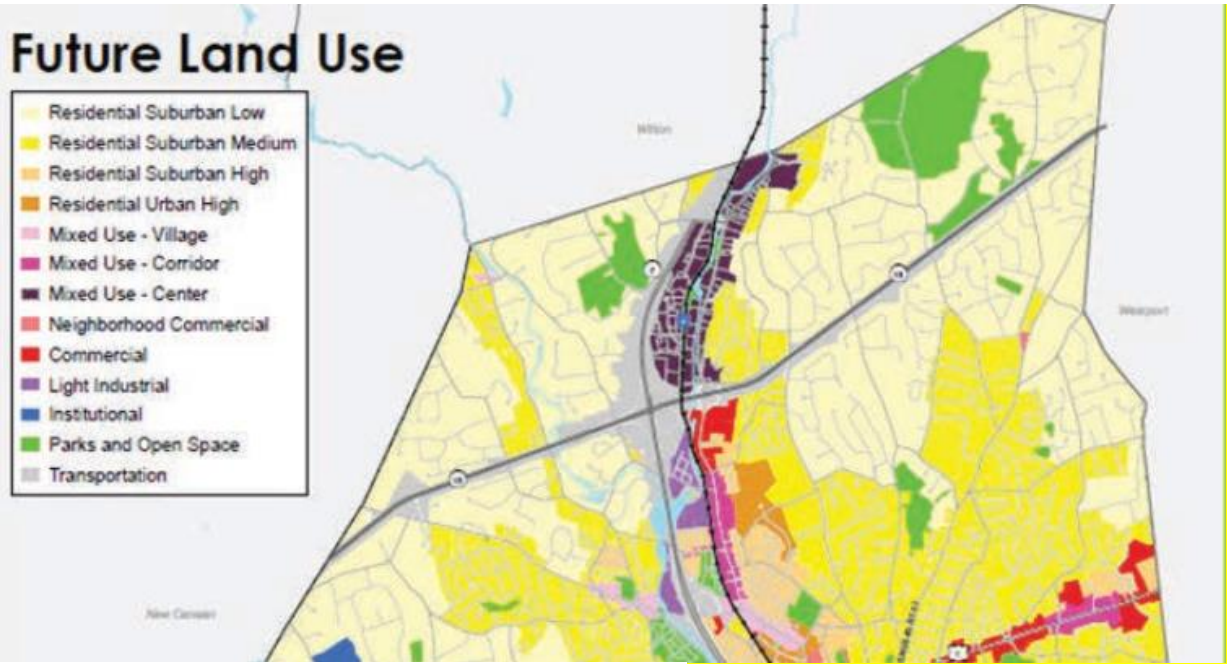


Figure 12. Future Land Use in Norwalk

The POCD describes the future uses of the area as follows (222):

- "Corridor mixed-use
  - Compact, walkable residential and commercial areas with transit-supportive densities and public amenities. Walkability improvements should be integral to all redevelopment proposals, including consolidating curb cuts, inter-parcel access and small block sizes.
  - Uses can be combined horizontally (side-by-side) or vertically (one above another) and include multifamily, retail and services, offices, hotels, townhouses, and live-work.
  - Redevelopment of single-use properties along major corridors (Main Ave, etc.)"
- "Mixed Use Center
  - Medium- to high-density office, residential, retail, hotel, and entertainment areas that create vibrant 18-hour, 7-day-a-week live-work-play-learn environments. Small-scale boutique manufacturing, clean tech, and artisan space are also allowed uses provided they meet performance and design standards.
  - Accessible by transit (bus and train) as well as by pedestrians and bicyclists. Walkability improvements should be integral to all development proposals."
- "General Commercial
  - Commercial areas serving a citywide or regional trade area, including larger retail, office, and entertainment centers that offer a range of establishments."

6. Conclusions and Recommendations

A Traffic Analysis study was completed in July 2018 which primary objective was to assess the potential for cross-section changes (e.g., road diet) along Main Ave (CT 719) as a result of the planned interchange improvements at Main Ave/US 7/Merritt Parkway. A meeting took place on September 28, 2018 at Norwalk City Hall discussing the traffic analysis findings. Following the meeting Norwalk decided to proceed with a four-lane cross section for the remainder of the study including the Complete Streets and Access Management and Additional Transportation Plan Items discussed below.

The Complete Streets and Access Management identified a number of improvements that could be made throughout the corridor to provide for a more enhanced multimodal experience. Complete Streets recommendations focused on improving pedestrian and transit environment, as a standard road diet on this corridor would diminish vehicle capacity to a level deemed unacceptable, and there are bicycle connections on the nearby Norwalk River Valley Trail. The Complete Streets recommendations included infrastructure, operational, access management, and segment specific improvements along Main Avenue.

Infrastructure improvements included the following: five-foot concrete sidewalks; reconstructed driveways to incorporate concrete sidewalks for visibility; dedicated pedestrian signal equipment; crosswalks painted in continental style; streetscape amenities to promote pedestrian friendly buildings and environments; bus pullouts for improved bus operations, and raised medians to provide traffic calming and safety measures.

Operational improvements included dedicated pedestrian signal equipment comprised of audible pedestrian signals (APS), standalone pedestrian countdown signal heads, and potentially leading pedestrian intervals (LPI).

Access management recommendations focused on reducing conflicts and improving safety for all users. During the identification of needs in this corridor, it was noted that the large number of driveway access points creates numerous conflict points; thus, recommendations throughout this section include the removal and/or consolidation of some driveways, implementing turning restrictions, and the reduction of driveway width.

To bring the above improvements together, segment specific recommendations were developed as a series of graphical maps providing detailed infrastructure, operational, and access improvements along the corridor.

In addition to the Complete Streets and Access Management evaluations, several other items were investigated including a Signal Upgrade Evaluation, Roundabout Feasibility, and a Transportation Review checklist. The Signal Upgrade Evaluation was a qualitative assessment of potential upgrades to signal equipment in the corridor and key recommendations included optimizing traffic signal timings, installing pedestrian signal heads, and adding back plates to signal heads. The Roundabout Feasibly assessment determined the Main Ave and Merritt Parkway interchange/intersections could potentially be options for roundabouts. The Transportation Review Checklist is a document that recommends practices/review items the City should consider including as part of proposed developments and is included as Appendix B.

Appendix A
Traffic Analysis Summary – Final Report

Transportation Plan for Main Avenue – Route 719

Traffic Analysis Summary

RT 123 (New Canaan Avenue) to
Norwalk/Wilton Town Line

Norwalk, CT

Final Report

Prepared for:
Western Connecticut Council of Governments

By
Urban Engineers

July, 2018

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1. Introduction

The development of the "Transportation Plan for Main Avenue – Route 719 in Norwalk, Connecticut" has been organized into two phases. The first phase was titled "Corridor Assessment and Concept Development Report" and was completed in 2012. The primary focus of that effort was on evaluating the corridor to identify existing deficiencies and develop concepts to address those deficiencies. The second phase of the project focuses on developing a vision for Main Ave. (RT 719) after the completion of the Merritt Parkway/US 7/Main Ave. interchange project.

In order to develop a vision for Main Ave., traffic analysis was completed to determine the viability of different cross-sections.

2. Study Objective

The primary objective of the traffic analysis study is to assess the potential for cross-section changes (e.g., road diet) along Main Ave (RT 719) as a result of the planned interchange improvements at Main Ave/US 7/Merritt Parkway.

3. Background

The project area (south to north) begins at RT 123 (New Canaan Ave) at the US 7 Expressway/CT 123 Interchange in Norwalk, CT. The project continues on RT 123 to the intersection with RT 719 (Main Ave.), and then extends north on RT 719 to the Norwalk/Wilton Town Line.

In the project area, Main Ave. is a two-lanes per direction, urban minor arterial. Moving south to north, most intersections on Main Ave. are lacking left-turn pockets until the Merritt View/Stop & Shop intersection just south of the RT 15 interchange. From the Merritt View/Stop & Shop intersection until the Norwalk/Wilton Town Line most intersections have left-turn pockets on Main Ave., including multiple intersections providing access to the Merritt 7 Corporate Park. A map of the study corridor is provided in **Figure 1**.

4. Data Collection

The following new data was collected:

- Turning movement counts (TMCs)
- Travel Time Data

The new data was supplemented by previous efforts including:

- Turning movement counts (TMCs)
- Automatic traffic recorders (ATRs)
- Field Inventory (including Red Line signal plans and timing directives)
- Field Observations

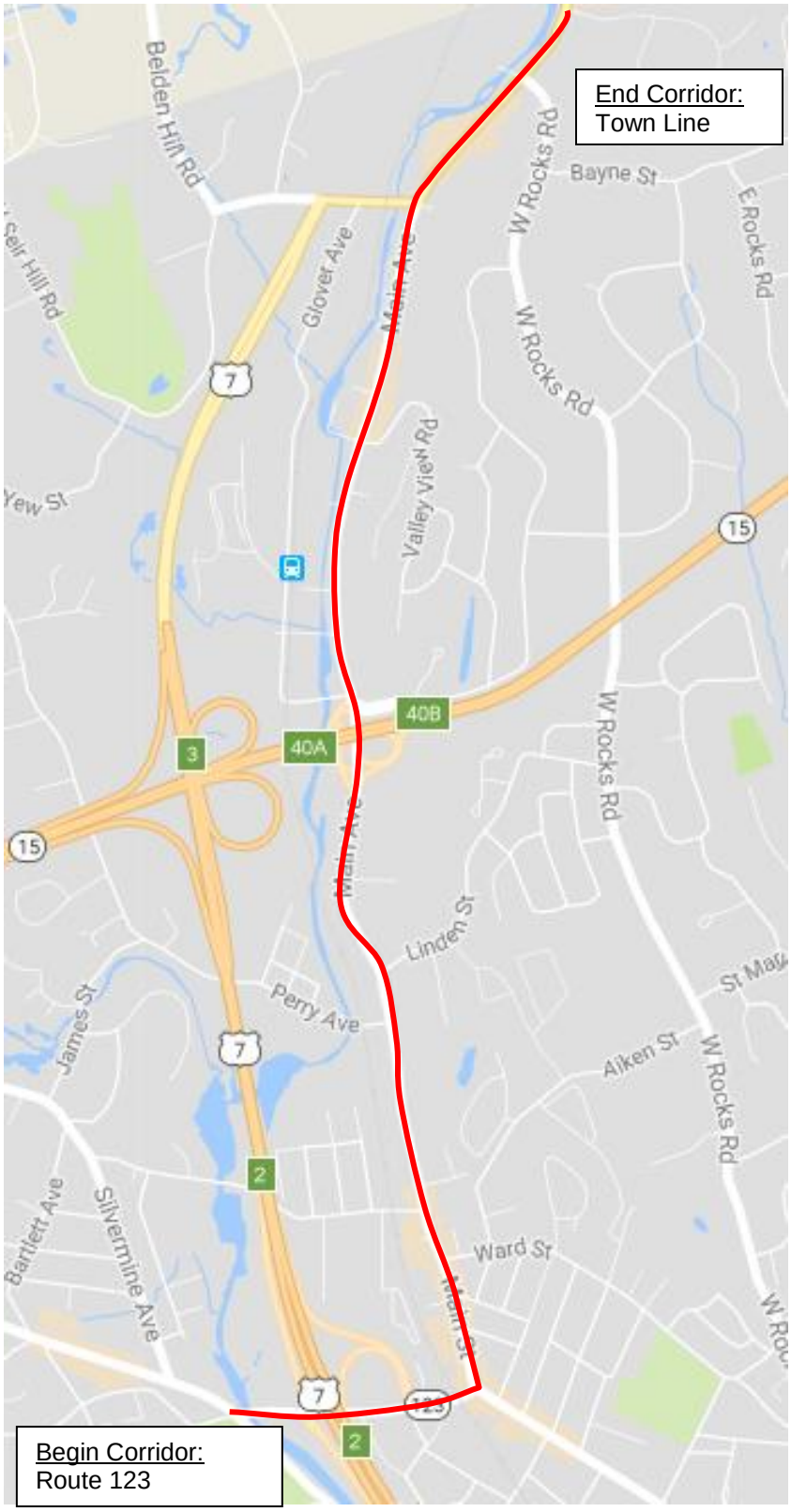


Figure 1: Map of the Project Area

4.1. Turning Movement Counts

Table 1 shows the 14 intersections that were counted by WestCOG for AM and PM peak periods in January and February 2017.

Table 1: TMC Weeday Data Collection Intersections

	Intersections
13	RT 123 at US 7 SB Ramps
12	RT 123 at US 7 NB Ramps
10	RT 123 at Main Ave. (RT 719)
20	Main Ave. at Delaware Ave.
30	Main Ave. at Ward Street
40	Main Ave. at Broad Street
50	Main Ave. at Perry Ave.
60	Main Ave. at Linden Street
70	Main Ave. at Stop & Shop/Merritt View
90	Main Ave. at Xerox 801 - 901 The Towers
100	Main Ave. at Merritt 601
110	Main Ave. at Merritt 401 - 501
120	Main Ave. at Merritt 201 - 301
130	Main Ave. at Merritt 101

Turning movement counts (TMCs) included heavy trucks, medium trucks, passenger cars, pedestrians, and other non-motorized vehicles, including bicyclists. The TMCs were conducted using Countcam Mini cameras at each intersection to collect video that could then be processed to generate count reports. Count periods included the following: AM peak (7:00 AM-9:00 AM) and PM (3:30-6:30 PM).

The data that was collected was compared to 2016 count data provided by Stantec that was collected as part of the US 7 and RT 15 project. Generally, the data from 2016 counts were higher throughout the corridor and therefore was used to provide a more conservative assessment.

Appendix A contains volume figures for the AM and PM peak periods and a comparison of the 2016 data to the 2017 counts.

4.2. Travel Time Data

Travel time data was collected through the processing of available travel time data collected by Google®. Urban has developed macro-enabled spreadsheets to process publically available travel time data associated with Google ® Maps Traffic layer. The travel time data is used during the Existing Conditions calibration process. The travel time data provides travel time and delay data between intersections.

The travel time data is provided ***Table 2*** and is divided by the Merritt Parkway (A more detailed travel time table is included in ***Appendix B***). The travel time results indicate that the PM peak period experiences higher travel times than the AM peak period in both directions.

Table 2: Travel Time Summary by Peak

Main Avenue Section	Direction	Distance (miles)	Travel Time (minutes)	
			AM	PM
Main Ave (RT 123 to Merritt View)	NB	1.0	3.0	3.5
	SB	1.0	3.9	4.3
Main Ave (Glover Ave/RT 15 Ramps to Merritt 101)	NB	0.6	2.3	2.4
	SB	0.8	3.4	3.8

5. Existing Conditions Analysis

5.1. Existing Conditions Model Development

The operational analysis was performed utilizing Synchro 9. The base Synchro model for each peak period is setup with proper input data including geometric information, signal phasing and timing, volume information, pedestrian timings, truck percentage and peak hour factors. The initial results provide output data including travel time, average delay per vehicle, and total network delay to facilitate the calibration process. Summary travel time and delay/LOS reports for each peak hour are included in ***Appendix C***.

5.2. Existing Conditions Results (AM Peak Hour)

Table 3 shows travel time results comparing AM peak hour travel time data and Synchro 9 output.

Table 3: Existing Conditions Travel Time Results (AM Peak Hour)

Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			Model	Field*	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	3.1	3.0	2%
	SB	1.0	4.3	3.9	9%
Main Ave (RT 15 Ramps to Merritt 101)	NB	0.6	2.1	2.3	-12%
	SB	0.8	3.1	3.4	-11%

* Values are based on travel time data from Google

Table 4 shows the Existing AM peak hour Level of Service (LOS) and delay results for signalized intersections along the corridor. The results show that almost all mainline approaches operates at LOS D or better during the AM peak hour, with the exception of the NB approach at Main Ave. & Glover Ave/ RT 15 Ramps.

Table 4: Existing Conditions LOS and Delay Results (AM Peak Hour)

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt 101	D (39)	A (6)	A (1)	A (5)	A (4)
Main Ave. & Merritt 201/301/Valley View Rd	C (24)	C (22)	A (6)	A (6)	A (7)
Main Ave. & Merritt 401/501	B (18)	C (27)	A (5)	A (6)	A (6)
Main Ave. & Merritt 601	A (7)		A (3)	A (4)	A (3)

Table 4: Existing Conditions LOS and Delay Results (AM Peak Hour)					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Xerox	C (20)		A (4)	A (3)	A (4)
Main Ave. & Glover Ave / RT 15 Ramps	D (51)	D (43)	E (72)	C (27)	D (54)
Main Ave. & Merritt View	C (26)	C (21)	A (8)	A (7)	A (9)
Main Ave. & Linden St.		C (31)	A (6)	A (5)	A (9)
Main Ave. & Perry Ave.	C (33)		A (8)	A (8)	B (10)
Main Ave. & Broad St.	B (17)		B (12)	A (8)	B (11)
Main Ave. & Ward St.		C (27)	B (12)	A (9)	B (16)
Main Ave. & Delaware Ave.	C (28)	A (5)	A (4)	A (8)	A (7)
Main Ave. & RT 123	A (2)		D (49)	B (19)	C (21)
*RT 123 (EB/WB) & RR Xing	C (22)	A (2)			A (9)
*RT 123 (EB/WB) & US 7 NB Ramps	B (14)	D (47)	D (39)	C (28)	D (36)
*RT 123 (EB/WB) & US 7 SB Ramps	C (25)	B (14)		C (23)	B (17)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

5.3. Existing Conditions Results (PM Peak Hour)

Table 5 shows travel time results comparing PM peak hour travel time data and Synchro 9 output.

Table 5: Existing Conditions Travel Time Results (PM Peak Hour)					
Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			Model	Field*	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	3.1	3.5	-14%
	SB	1.0	4.3	4.3	0%
Main Ave (RT 15 Ramps to Merritt 101)	NB	0.6	2.1	2.4	-16%
	SB	0.8	3.1	3.8	-25%

* Values are based on travel time data from Google

Table 6 shows the existing PM peak hour Level of Service (LOS) and delay results for the signalized intersections along the corridor. The results show that mainline approaches operates at LOS D or better. More detailed results are located in ***Appendix C***.

Table 6: Existing Conditions LOS and Delay Results (PM Peak Hour)					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt 101	D (42)	A (6)	A (2)	A (4)	A (4)
Main Ave. & Merritt 201/301/Valley View Rd	B (20)	B (17)	A (4)	A (5)	A (8)
Main Ave. & Merritt 401/501	C (22)	C (23)	A (7)	A (6)	B (11)
Main Ave. & Merritt 601	E (64)		A (6)	B (19)	C (27)
Main. Ave & Xerox	C (29)		A (6)	B (19)	B (17)
Main Ave.& Glover Ave / RT 15 Ramps	E (69)	D (46)	B (16)	D (50)	D (45)
Main Ave. & Merritt View	E (69)	C (25)	C (21)	B (14)	C (24)

Table 6: Existing Conditions LOS and Delay Results (PM Peak Hour)

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Linden St.		C (23)	A (7)	B (14)	B (12)
Main Ave. & Perry Ave.	C (34)		B (15)	B (13)	B (16)
Main Ave. & Broad St.	C (25)		B (18)	B (16)	B (17)
Main Ave. & Ward St.		B (19)	B (12)	C (25)	B (19)
Main Ave. & Delaware Ave.	C (31)	A (8)	A (4)	A (6)	A (6)
Main Ave. & RT 123	A (4)		C (25)	C (22)	B (15)
*RT 123 (EB/WB) & RR Xing	C (26)	A (1)			B (14)
*RT 123 (EB/WB) & US 7 NB Ramps	B (14)	D (36)	C (34)	D (36)	C (31)
*RT 123 (EB/WB) & US 7 SB Ramps	C (25)	B (18)		C (25)	C (21)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

6. The Road Diet Alternative

The Road Diet alternative, also referred to as Mitigation, begins south of the Main Ave/Merritt View intersection in the Nottingham Place area and extends south to the Main Ave intersection with New Canaan Ave (RT 123). Main Ave. north of the Merritt Parkway was evaluated for a potential road diet as well, but due to traffic volumes and intersection spacing it was likely not practical. Additionally, the "northern" section of Main Ave. does not have the same operational and safety challenges that exists in the "southern" section as Main Ave left turn pockets are provided at most of the intersections. Another challenge would be integrating the Road Diet section with the five-lane cross-section at the Main Ave & Glover Ave intersection.

See ***Figure 2*** for a graphical view of the Road Diet limits. For the bulk of the Road Diet section, the cross-section would be three lanes with one travel lane in each direction and a two-way left-turn lane (TWLTL). Due to capacity constraints and transitioning the Road Diet cross-section with existing cross-sections, the following locations deviate from the standard three-lane cross-section:

<u>Perry Ave</u>

During the PM peak there are high volumes on Perry Ave and the Northbound Left from Main Ave onto Perry Ave; therefore, a 150-foot Southbound right-turn pocket is proposed to help alleviate the operational congestion at this intersection.

<u>Broad Street</u>

For reasons similar to Perry Ave, a 150-foot Southbound right-turn pocket is proposed. In addition to this, Broad Street Eastbound right-turn is a heavy movement causing operational issues; therefore, in the model, the right-turn was converted to yield operation by constructing a concrete "pork-chop" island.

<u>Northbound between New Canaan Ave (RT 123) and Ward Street</u>

The New Canaan Ave Eastbound to Main Ave Northbound movement is a double left-turn. Due to the heavy peak hour volumes using this movement, it can't be reduced to a single left-turn movement. To accommodate this double left-turn movement two through

lanes were carried through the Delaware Ave intersection with one of the through lanes ending as a right-turn lane onto Ward Street. During the PM peak hour the Northbound right movement onto Ward Street is heavy (260 rights vs 630 throughs); therefore, this dedicated right-turn lane is proposed and will be well-utilized during the peak hours. Alternatively, it may be worth evaluating extending a second lane through the Ward Street intersection and tapering back shortly after the intersection.

Delaware Ave is only 450-feet north of New Canaan Ave which does not provide enough room to taper down to one lane prior to the intersection. It should be noted that the cross-section between Ward Street and New Canaan Ave is four-lanes, and the Northbound Main Ave approach at Delaware Ave has a Left, Through, Through-Right lane configuration. This section is not a conventional three-lane Road Diet, but the proposed configuration does still provide left-turn lanes at Delaware Ave and a TWLTL between Ward Street and just north of Delaware Ave. See ***Figure 3*** for a Synchro screen shot of the Road Diet area between Ward Street and New Canaan Ave.

Southbound Delaware Ave to New Canaan Ave (RT 123)

To accommodate the heavy Southbound Right and Through volume on Main Ave at New Canaan Ave, the Southbound Through lane opens up as a “turn pocket” just south of the Northbound Left-turn pocket at Delaware Ave. This means there is no TWLTL between Delaware Ave and New Canaan Ave. See ***Figure 3*** for a Synchro screen shot of this area.

Other Model Changes

In addition to the geometric changes for the Road Diet, the following changes were made:

- Linden Street and Perry Ave converted the pedestrian phase from Exclusive to Concurrent;
- Perry Ave Eastbound right-turn has an overlap phase that operates with the Northbound left-turn, and
- Ward Street Westbound right-turn has an overlap phase that operates with the Southbound left-turn.

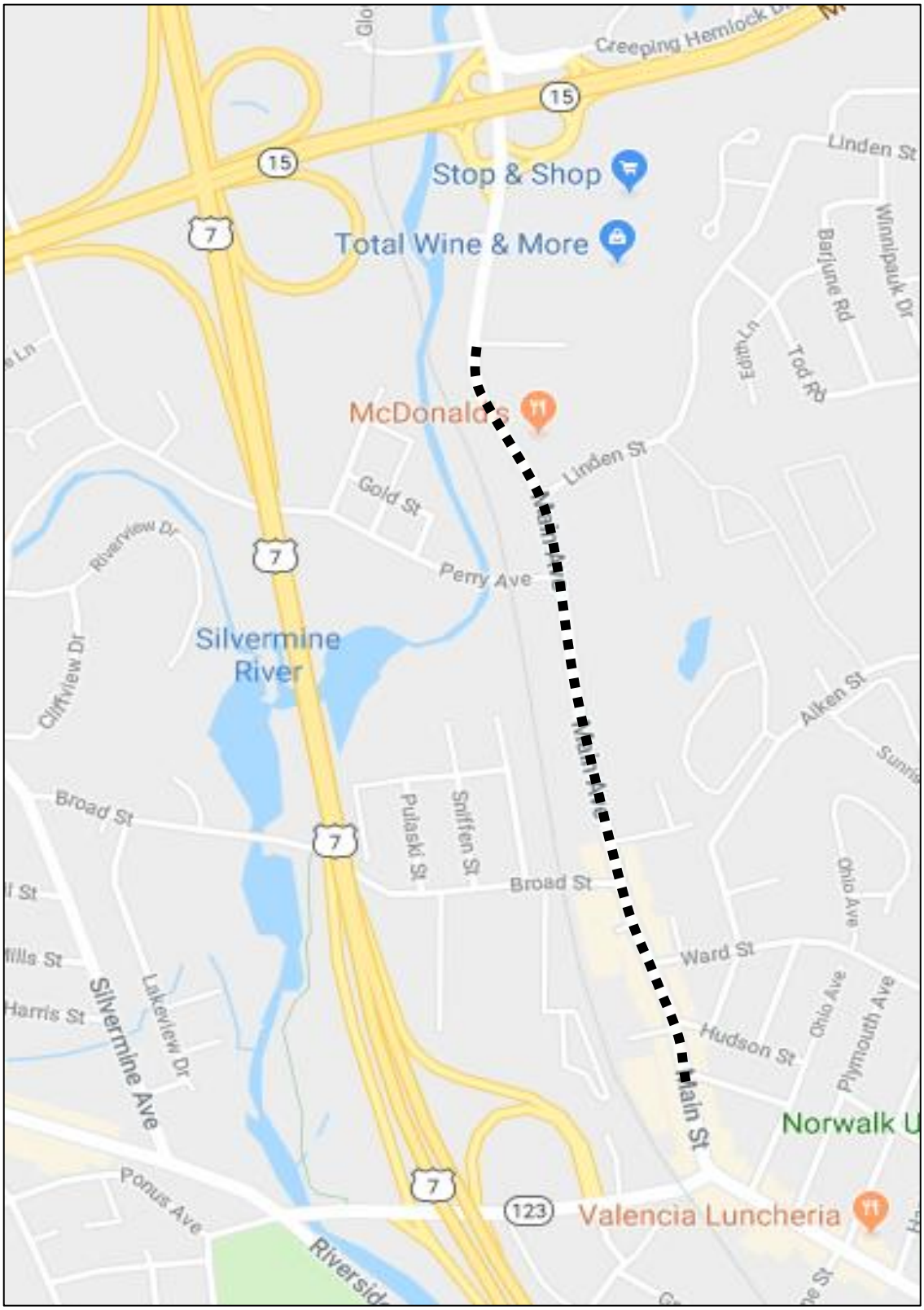


Figure 2: Road Diet Limits

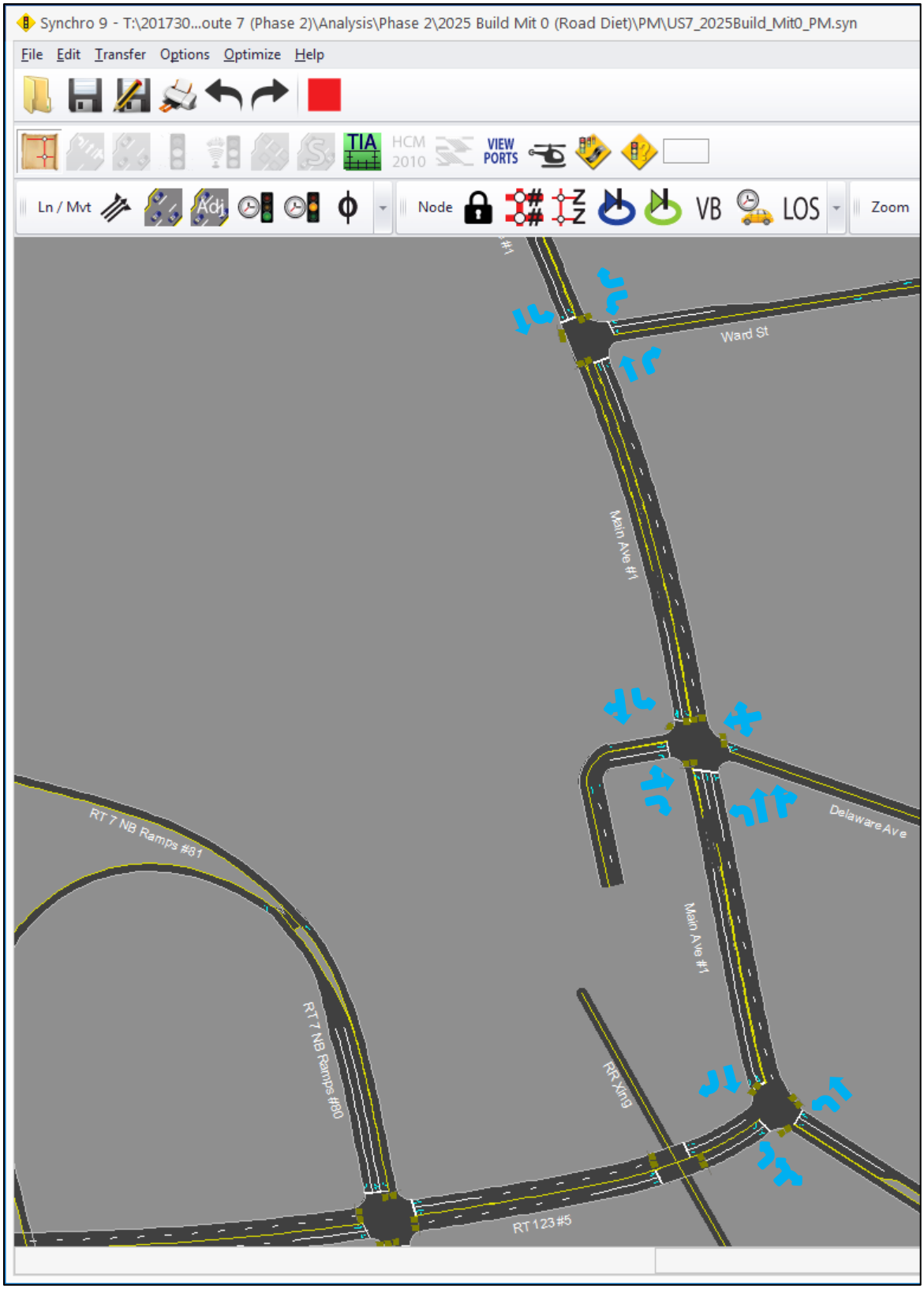


Figure 3: Synchro Screen Shot of New Canaan Ave to Ward Street Road Diet

7. Future Conditions Traffic Analysis

Traffic analysis was completed for the following scenarios:

- No Build
  - Future volumes with existing geometric configuration
- Build
  - Future volumes with US 7/RT 15 interchange complete
- Build-Mit
  - Future volumes with US 7/RT 15 interchange complete with a Road Diet on Main Ave as described in Section 6.
- No Build-Mit
  - Future volumes with US 7/RT 15 interchange not completed, and Road Diet on Main Ave as decribed in Section 6.

Future year 2025 and 2045 analysis was completed for all scenarios. Detailed SimTraffic results for the AM and PM peak hours are provided in ***Appendix D***.

7.1. 2025 No-Build Model

The 2025 no-build model includes background growth and known planned development. No infrastructure changes are included, but signal timing adjustments were possible to improve operations. ***Table 7*** provides a summary of the anticipated travel time impacts and ***Table 8*** provides the projected LOS for AM and PM peak hours. As can be seen from the results, traffic conditions, particularly in the PM peak hour are expected to significant deteriorate without changes (infrastructure/signal timing) to the existing system.

Table 7: 2025 No-Build Model Travel Time Results – AM (PM) Peak Hours

Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			Existing	No-Build	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	3.1 (3.1)	2.9 (4.0)	-6 (31)%
	SB	1.0	4.3 (4.3)	3.9 (6.4)	-10 (50)%

Table 8: 2025 No-Build Model LOS Results – AM (PM) Peak Hours

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (D)	C (C)	A (C)	A (B)	A (C)
Main Ave. & Linden St.		C (C)	B (B)	A (D)	B (C)
Main Ave. & Perry Ave.	C (D)		B (C)	A (B)	B (C)
Main Ave. & Broad St.	C (D)		B (C)	B (D)	B (D)
Main Ave. & Ward St.		C (C)	B (D)	C (C)	C (C)

Table 8: 2025 No-Build Model LOS Results – AM (PM) Peak Hours					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Delaware Ave.	C (C)	A (B)	A (A)	B (C)	A (B)
Main Ave. & RT 123	A (A)		F (D)	C (D)	C (C)
*RT 123 (EB/WB) & RR Xing	D (D)	A (A)			B (C)
*RT 123 (EB/WB) & US 7 NB Ramps	C (F)	C (E)	E (E)	D (E)	D (E)
*RT 123 (EB/WB) & US 7 SB Ramps	C (C)	B (D)		C (C)	C (C)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.2. 2045 No Build Model

The 2045 no-build model includes background growth and known planned development. No infrastructure changes are included, but signal timing adjustments were possible to improve operations. ***Table 9*** provides a summary of the anticipated travel time impacts and ***Table 10*** provides the projected LOS for AM and PM peak hours. As can be seen from the results, traffic conditions, particularly in the Southbound direction, are expected to significant deteriorate without changes (infrastructure/signal timing) to the existing system.

Table 9: 2045 No-Build Model Travel Time Results – AM (PM) Peak Hours					
Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			2025 No Build	2045 No-Build	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (4.0)	2.9 (3.8)	0 (-5)%
	SB	1.0	3.9 (6.4)	5.1 (9.6)	31 (50)%

Table 10: 2045 No-Build Model LOS Results – AM (PM) Peak Hours					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (E)	C (C)	A (C)	A (B)	A (C)
Main Ave. & Linden St.		C (C)	B (A)	B (E)	B (D)
Main Ave. & Perry Ave.	D (E)		B (C)	B (C)	B (C)
Main Ave. & Broad St.	C (E)		B (C)	D (F)	C (E)
Main Ave. & Ward St.		C (C)	C (C)	C (D)	C (D)
Main Ave. & Delaware Ave.	C (D)	A (A)	A (A)	C (E)	C (C)
Main Ave. & RT 123	A (A)		F (D)	C (D)	D (C)
*RT 123 (EB/WB) & RR Xing	D (E)	A (B)			B (D)
*RT 123 (EB/WB) & US 7 NB Ramps	C (F)	D (E)	F (F)	F (F)	E (F)
*RT 123 (EB/WB) & US 7 SB Ramps	D (D)	C (D)		B (D)	D (D)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.3. 2025 Build Model

The 2025 build model includes the completion of the proposed interchange of RT 15/US 7/Main Ave. As a result of the completion of the interchange, a portion of the traffic that uses Main Ave. is projected to shift to US 7 and RT 15. ***Table 11*** provides a summary of

the anticipated travel time impacts and ***Table 12*** provides the projected LOS for AM and PM peak hours. The results indicate that, as a result of traffic being shifted to the proposed interchange, travel times (and LOS) improve on the corridor when compared to the No-Build model with the noticeable improvements occurring during the PM peak hour.

Table 11: 2025 Build Model Travel Time Results – AM (PM) Peak Hours

Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			2025 No-Build	2025 Build	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (4.0)	2.8 (3.5)	-4 (-13)%
	SB	1.0	3.9 (6.4)	3.5 (4.3)	-10 (-34)%

Table 12: 2025 Build Model LOS Results – AM (PM) Peak Hours

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (D)	C (C)	A (C)	A (B)	A (C)
Main Ave. & Linden St.		B (C)	B (A)	A (B)	B (B)
Main Ave. & Perry Ave.	C (D)		A (C)	A (B)	B (B)
Main Ave. & Broad St.	B (C)		A (B)	A (B)	A (B)
Main Ave. & Ward St.		B (B)	B (C)	B (B)	B (C)
Main Ave. & Delaware Ave.	C (C)	A (A)	A (A)	A (A)	A (A)
Main Ave. & RT 123	A (A)		C (C)	B (C)	B (B)
*RT 123 (EB/WB) & RR Xing	D (D)	A (A)			A (C)
*RT 123 (EB/WB) & US 7 NB Ramps	B (D)	B (D)	D (D)	C (D)	C (D)
*RT 123 (EB/WB) & US 7 SB Ramps	C (D)	A (C)		C (C)	B (C)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.4. 2045 Build Model

The 2045 build model includes the completion of the proposed interchange of RT 15/US 7/Main Ave. As a result of the completion of the interchange, a portion of the traffic that uses Main Ave. is projected to shift to US 7 and RT 15. ***Table 13*** provides a summary of the anticipated travel time impacts and ***Table 14*** provides the projected LOS for AM and PM peak hours. The results indicate that, as a result of traffic being shifted to the proposed interchange, travel times (and LOS) improve on the corridor when compared to the No-Build model with the noticeable improvements occurring in the Southbound direction.

Table 13: 2045 Build Model Travel Time Results – AM (PM) Peak Hours

Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			2045 No-Build	2045 Build	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (3.8)	2.9 (3.6)	0 (-5)%
	SB	1.0	5.1 (9.6)	3.5 (5.0)	-31 (-48)%

Table 14: 2045 Build Model LOS Results – AM (PM) Peak Hours					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (D)	C (C)	A (C)	A (B)	A (C)
Main Ave. & Linden St.		C (C)	B (A)	B (C)	B (C)
Main Ave. & Perry Ave.	C (D)		A (C)	A (B)	B (C)
Main Ave. & Broad St.	B (C)		B (B)	A (B)	B (B)
Main Ave. & Ward St.		C (B)	B (C)	B (C)	C (C)
Main Ave. & Delaware Ave.	C (C)	A (A)	A (A)	A (B)	A (A)
Main Ave. & RT 123	A (A)		D (C)	B (D)	C (C)
*RT 123 (EB/WB) & RR Xing	C (E)	A (A)			B (C)
*RT 123 (EB/WB) & US 7 NB Ramps	B (F)	C (D)	E (E)	E (F)	D (F)
*RT 123 (EB/WB) & US 7 SB Ramps	D (D)	B (D)		C (C)	C (D)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.5. 2025 Build Mitigation (with Road Diet) Peak Hour Conditions

The 2025 Build-Mit model includes the completion of the proposed interchange of RT 15/US 7/Main Ave. along with the Road Diet as previously discussed in Section 6. ***Table 15*** provides a summary of the anticipated travel time impacts and ***Table 16*** provides the projected LOS for AM and PM peak hours. The results show a degradation in operations when compared to the Build condition, but all intersections operate at LOS D or better.

Table 15: 2025 Build-Mit Travel Time Results – AM (PM) peak hour					
Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			Build	Road Diet	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.8 (3.5)	2.8 (3.1)	1 (-11)%
	SB	1.0	3.5 (4.3)	3.5 (5.6)	0 (32)%

Table 16: 2025 Build-Mit (w/Road Diet) LOS Results – AM (PM) peak hour					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (D)	C (C)	A (C)	B (B)	B (C)
Main Ave. & Linden St.		C (C)	A (B)	A (D)	B (D)
Main Ave. & Perry Ave.	C (D)		A (B)	A (B)	A (B)
Main Ave. & Broad St.	B (C)		A (B)	A (D)	B (C)
Main Ave. & Ward St.		C (C)	B (B)	B (B)	B (B)
Main Ave. & Delaware Ave.	C (C)	A (A)	A (A)	A (A)	A (A)
Main Ave. & RT 123	A (A)		C (C)	B (C)	B (B)
*RT 123 (EB/WB) & RR Xing	C (D)	A (A)			B (C)
*RT 123 (EB/WB) & US 7 NB Ramps	B (C)	B (C)	D (D)	C (D)	C (D)
*RT 123 (EB/WB) & US 7 SB Ramps	D (D)	A (B)		C (C)	B (C)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.6. 2045 Build Mitigation (with Road Diet) Peak Hour Conditions

The 2045 Build-Mit model includes the completion of the proposed interchange of RT 15/US 7/Main Ave. along with the Road Diet as previously discussed in Section 6. ***Table 17*** provides a comparison of the travel time for 2045 Build and Build-Mit. As can be seen in ***Table 18*** travel times are not expected to noticeably increase during the AM peak hour in Build-Mit when compared to Build. However, a 36% increase in travel times is expected during the PM peak hour in the Southbound direction. ***Table 17*** provides the projected LOS for AM and PM peak hours with number of approaches reaching capacity (LOS E) or exceeding capacity (LOS F).

Table 17: 2045 Build-Mit Travel Time Results – AM (PM) peak hour

Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			2045 Build	2045 Build-Mit	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (3.6)	3.1 (3.7)	7 (3)%
	SB	1.0	3.5 (5.0)	3.6 (6.8)	3 (36)%

Table 18: 2045 Build-Mit (w/Road Diet) LOS Results – AM (PM) peak hour

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (E)	C (C)	A (C)	B (C)	B (C)
Main Ave. & Linden St.		C (D)	B (C)	B (E)	B (D)
Main Ave. & Perry Ave.	C (E)		B (C)	A (B)	B (C)
Main Ave. & Broad St.	B (C)		B (B)	B (F)	B (D)
Main Ave. & Ward St.		C (C)	C (B)	B (C)	C (C)
Main Ave. & Delaware Ave.	C (C)	A (A)	A (A)	A (A)	A (A)
Main Ave. & RT 123	A (A)		D (C)	B (C)	B (B)
*RT 123 (EB/WB) & RR Xing	D (E)	A (A)			B (C)
*RT 123 (EB/WB) & US 7 NB Ramps	B (F)	C (D)	E (D)	C (F)	C (E)
*RT 123 (EB/WB) & US 7 SB Ramps	D (E)	B (C)		C (D)	C (D)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.7. 2025 No-Build Mitigation (with Road Diet) Peak Hour Conditions

The 2025 No Build Mitigation model does not include the completion of the proposed interchange of RT 15/US 7/Main Ave., but does include the Road Diet as previously discussed in Section 6. This scenario was analyzed to see what the potential for doing a road diet regardless of whether the interchange project moves forward. ***Table 19*** provides a summary of the anticipated travel time impacts and ***Table 20*** provides the projected LOS for AM and PM peak hours. As can be seen in both the travel time and LOS results, significant impacts would be anticipated based on the projected 2025 no-build volumes.

Table 19: 2025 No-Build Mit Travel Time Results – AM (PM) peak hour					
Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			No-Build	No-Build Road Diet	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (4.0)	4.2 (4.3)	44 (7)%
	SB	1.0	3.9 (6.4)	5.5 (8.1)	38 (27)%

Table 20: 2025 No-Build Mit (w/Road Diet) LOS Results – AM (PM) peak hour					
Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	D (D)	C (C)	B (C)	C (D)	C (D)
Main Ave. & Linden St.		D (E)	C (C)	B (E)	C (E)
Main Ave. & Perry Ave.	C (D)		C (D)	B (C)	B (C)
Main Ave. & Broad St.	B (D)		B (B)	E (F)	C (D)
Main Ave. & Ward St.		C (C)	D (C)	B (C)	C (C)
Main Ave. & Delaware Ave.	C (C)	A (B)	B (A)	B (B)	B (B)
Main Ave. & RT 123	A (A)		D (C)	B (C)	B (B)
*RT 123 (EB/WB) & RR Xing	D (D)	A (A)			B (C)
*RT 123 (EB/WB) & US 7 NB Ramps	C (F)	C (D)	F (E)	D (E)	D (E)
*RT 123 (EB/WB) & US 7 SB Ramps	C (C)	C (C)		C (C)	C (C)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

7.8. 2045 No-Build Mitigation (with Road Diet) Peak Hour Conditions

Similar to the previous scenario, the 2045 No Build Mitigation model does not include the completion of the proposed interchange of RT 15/US 7/Main Ave, but does include the Road Diet as previously discussed in Section 6. ***Table 21*** provides a summary of the anticipated travel time impacts and ***Table 22*** provides the projected LOS for AM and PM peak hours. Not surprisingly the results show further degradation, when compared to the previous scenario, with travel time increases of 100% when compared to the 2045 No-Build conditions.

Table 21: 2045 No-Build Mit Travel Time Results – AM (PM) peak hour					
Description	Dir.	Dist. (mi)	Travel Time (minutes)		
			2045 No-Build	2045 No-Build Road Diet	Delta
Main Ave (RT 123 to Merritt View)	NB	1.0	2.9 (3.8)	4.8 (4.7)	66 (24)%
	SB	1.0	5.1 (9.6)	10.2 (9.6)	100 (0)%

Table 22: 2045 No-Build Mit (w/Road Diet) LOS Results – AM (PM) peak hour

Intersection	Sidestreet		Main Ave		
	EB	WB	NB	SB	ALL
Main Ave. & Merritt View	C (D)	C (C)	A (C)	B (D)	B (D)
Main Ave. & Linden St.		E (D)	B (C)	F (F)	D (E)
Main Ave. & Perry Ave.	C (D)		C (E)	C (C)	C (D)
Main Ave. & Broad St.	B (D)		B (B)	F (F)	E (E)
Main Ave. & Ward St.		D (D)	E (C)	C (C)	D (C)
Main Ave. & Delaware Ave.	D (C)	B (B)	C (A)	B (B)	C (A)
Main Ave. & RT 123	B (A)		E (C)	C (C)	C (B)
*RT 123 (EB/WB) & RR Xing	F (E)	A (A)			D (C)
*RT 123 (EB/WB) & US 7 NB Ramps	F (F)	D (D)	F (F)	F (F)	F (F)
*RT 123 (EB/WB) & US 7 SB Ramps	D (D)	D (D)		C (C)	D (D)

**Note: RT 123 (EB/WB) results are shown in the "Sidestreet" column.*

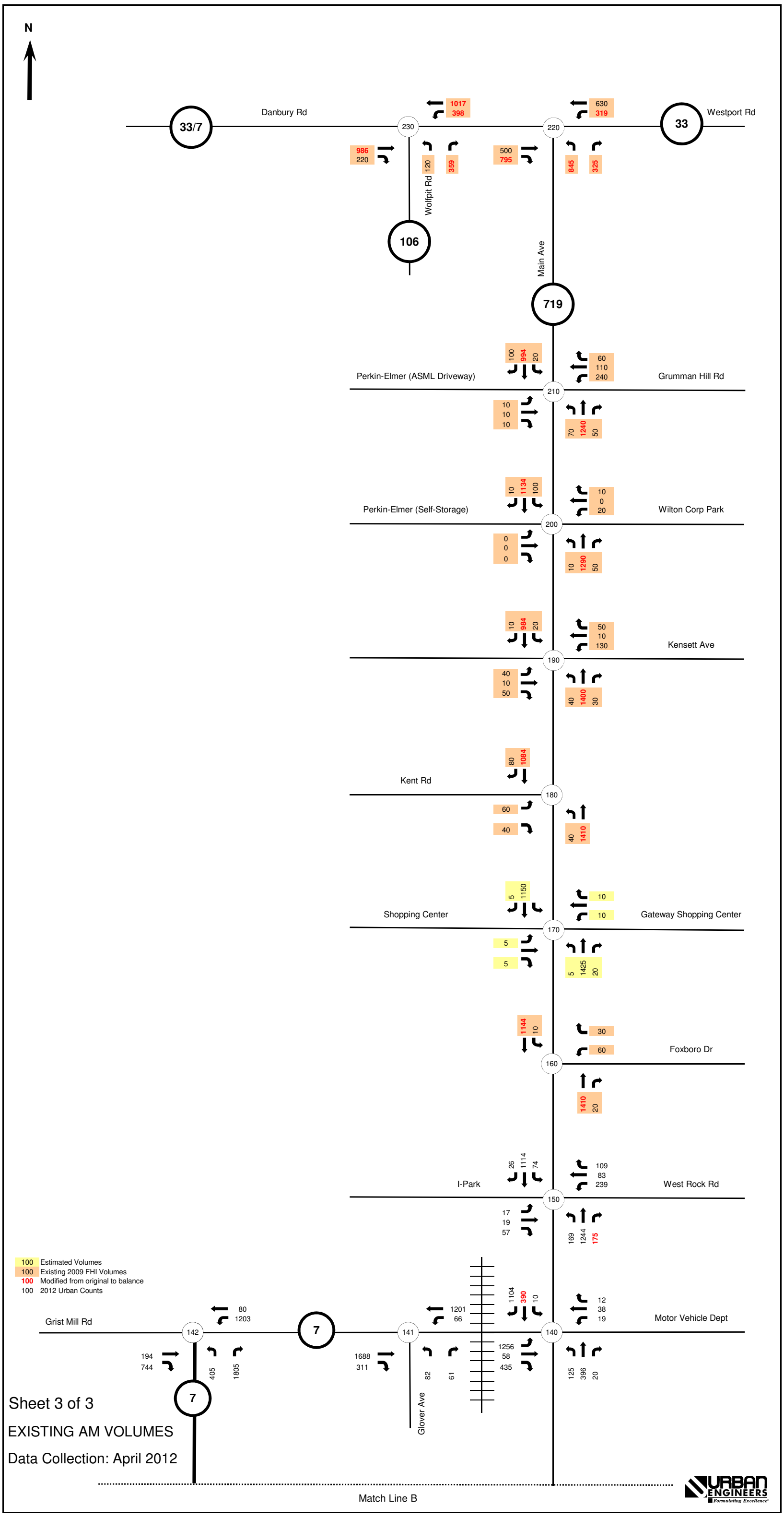
8. Conclusions

The results show that the Road Diet (Mit) operates extremely well under the 2025 Build conditions where the US 7/RT 15 interchange is complete with all approaches operating at LOS D or better. In fact, the projected travel times would be comparable to existing conditions for both directions during both peak period with the exception of the Southbound PM peak hour where travel time would increase from 4.3 min to 5.6 min.

The 2025 No Build-Mit conditions have congestion at Broad Street (LOS F) and Linden Street (LOS E) in the Southbound direction during the PM peak hour. The Southbound travel time in the Road Diet section increases from 5.6 to 8.1 minutes when comparing the Build-Mit and No Build-Mit scenarios.

The 2045 results show that both the Build-Mit and No Build-Mit operated with LOS F conditions for the Southbound approaches at Broad Street, and LOS F for the 2045 No Build-Mit Southbound approch at Linden Street. It should be noted the delay and queuing are more extensive in 2045 for the No Build-Mit compared to the Build-Mit scenarios.

Appendix A
Traffic Volume Figures



Sheet 3 of 3

EXISTING AM VOLUMES

Data Collection: April 2012

URBAN ENGINEERS
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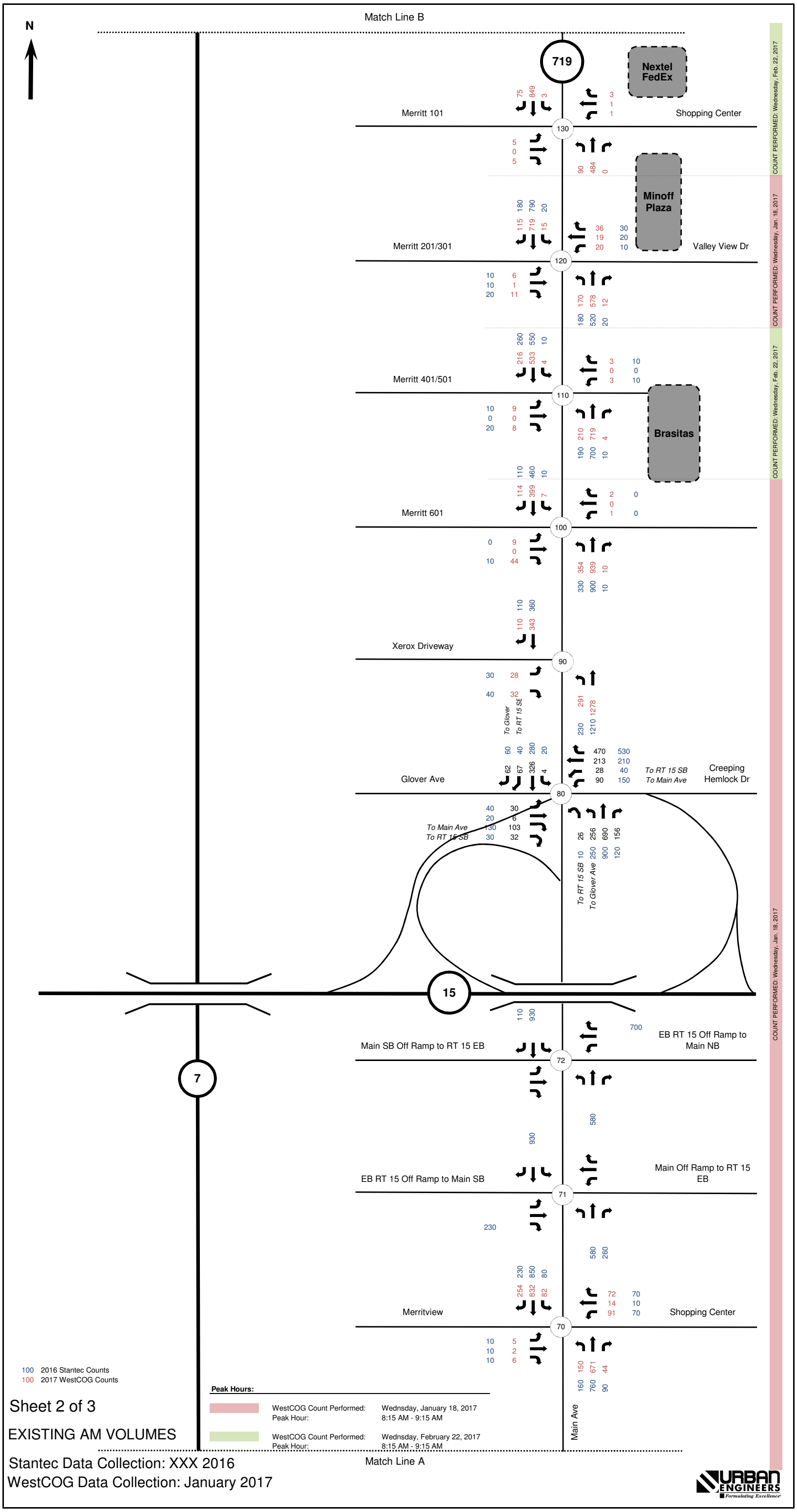

100 2016 Stantec Counts
100 2017 WestCOG Counts

Peak Hours:

	WestCOG Count Performed:	Wednsday, January 18, 2017
	Peak Hour:	8:15 AM - 9:15 AM
	WestCOG Count Performed:	Wednsday, February 22, 2017
	Peak Hour:	8:15 AM - 9:15 AM

Sheet 2 of 3

EXISTING AM VOLUMES

Stantec Data Collection: XXX 2016

WestCOG Data Collection: January 2017

URBAN ENGINEERS
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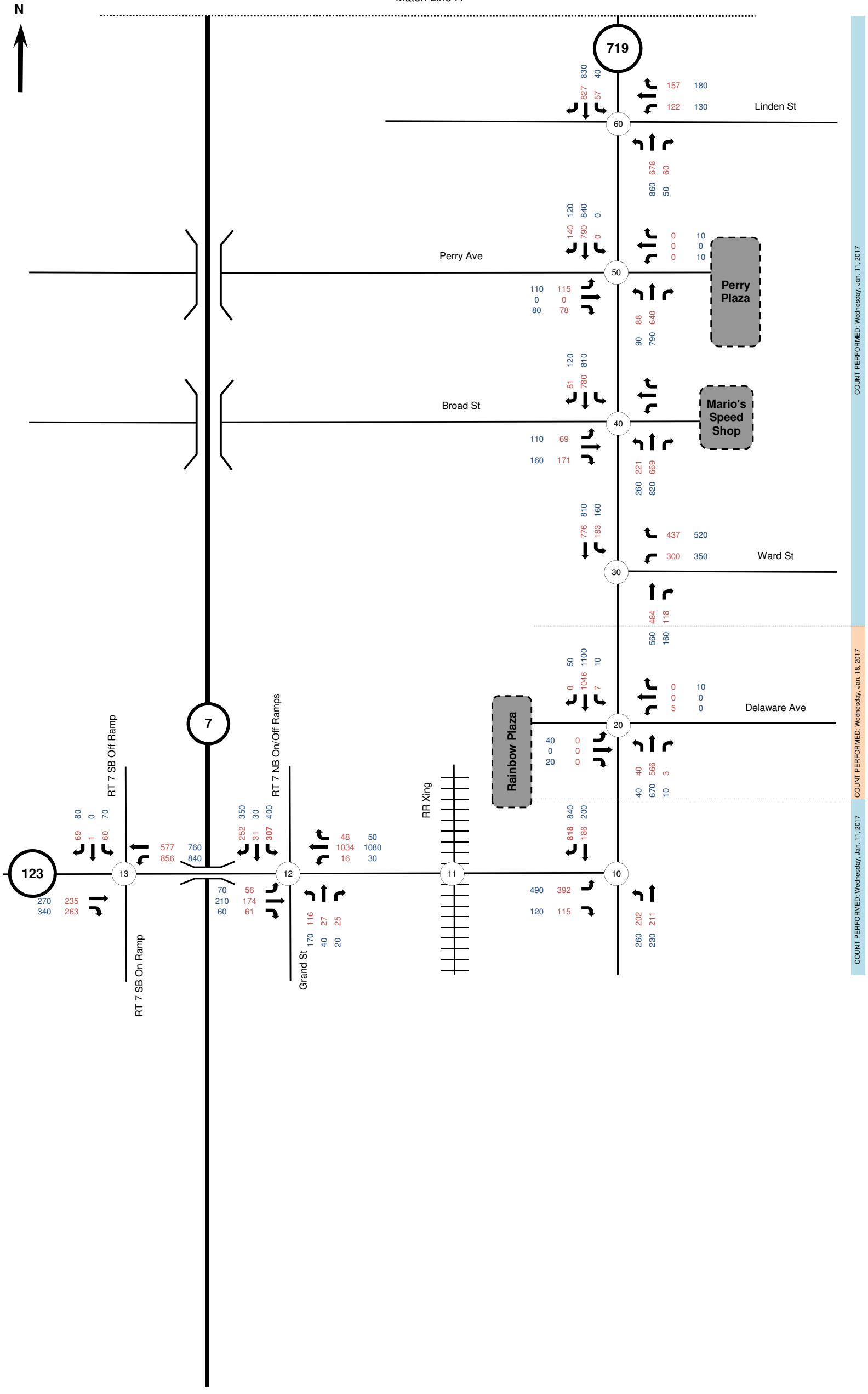

100 2016 Stantec Counts
100 2017 WestCOG Counts

Peak Hours:

	WestCOG Count Performed:	Wednsday, January 11, 2017
	Peak Hour:	7:45 AM - 8:45 AM
	WestCOG Count Performed:	Wednsday, January 18, 2017
	Peak Hour:	7:45 AM - 8:45 AM

Sheet 1 of 3

EXISTING AM VOLUMES

Stantec Data Collection: XXX 2016
WestCOG Data Collection: January 2017

URBAN ENGINEERS
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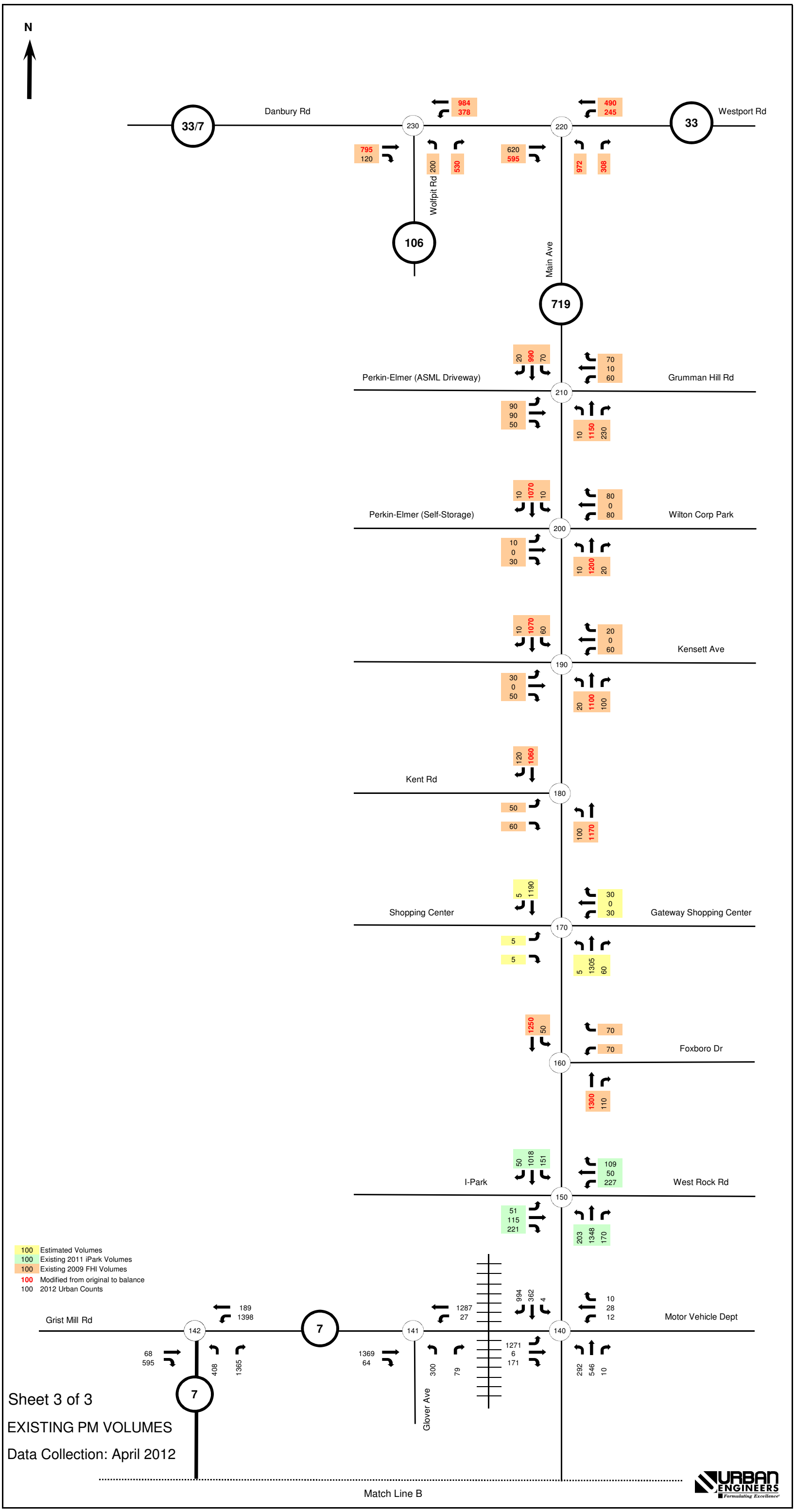
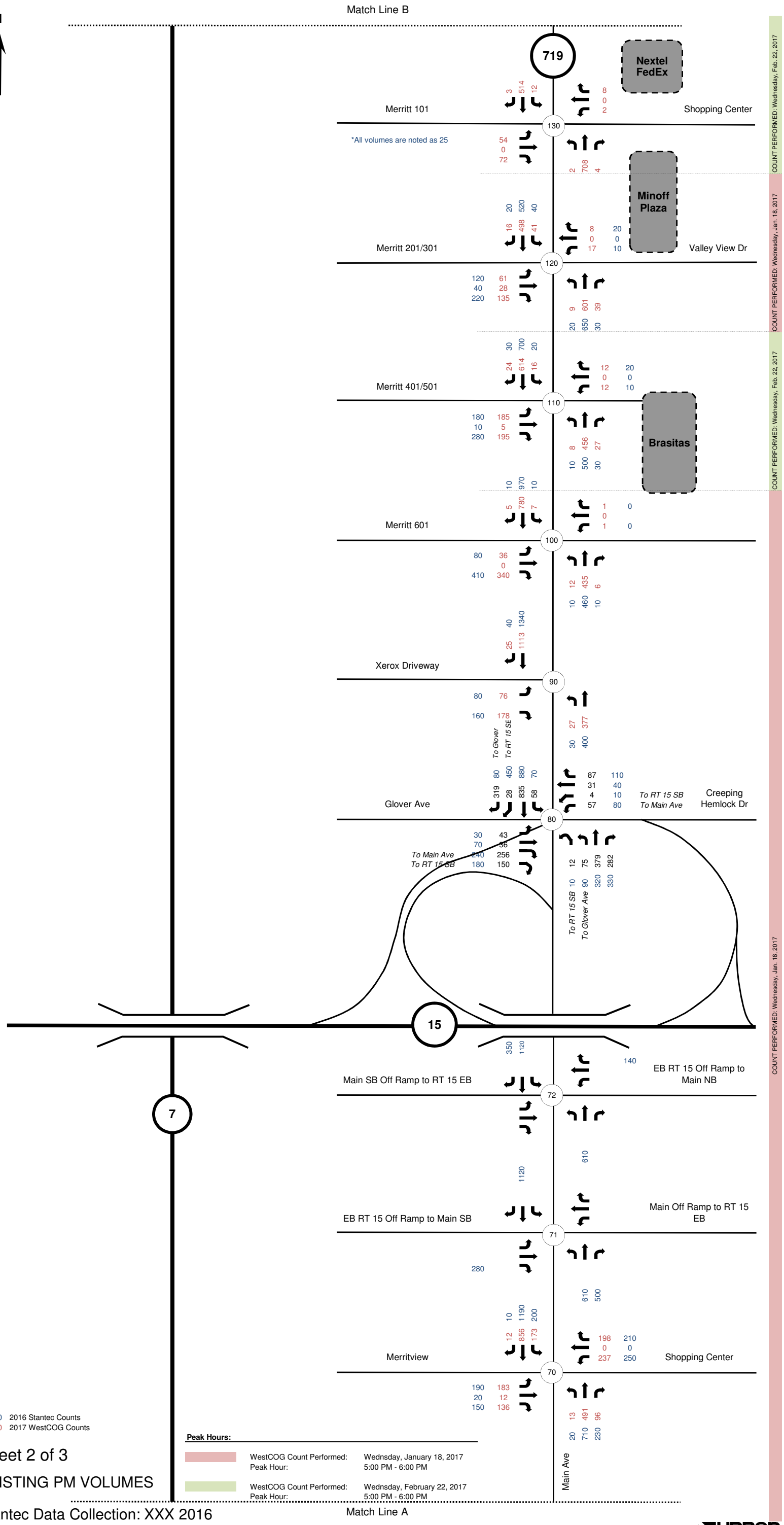

N
33/7
Danbury Rd
230
984
378
795
120
Wolfpit Rd
200
530
106
220
490
245
33
Westport Rd
620
595
972
308
Main Ave
719
Perkin-Elmer (ASML Driveway)
20
990
70
210
70
10
60
Grumman Hill Rd
90
90
50
10
1150
230
Perkin-Elmer (Self-Storage)
10
1070
10
200
80
0
80
Wilton Corp Park
10
0
30
10
1200
20
10
1070
60
190
20
0
60
Kensett Ave
30
0
50
20
1100
100
Kent Rd
120
1060
180
50
60
100
1170
Shopping Center
5
1190
170
30
0
30
Gateway Shopping Center
5
5
5
1305
60
1250
50
160
70
70
Foxboro Dr
1300
110
I-Park
50
1018
151
150
109
50
227
West Rock Rd
51
115
221
203
1348
170
100 Estimated Volumes
100 Existing 2011 iPark Volumes
100 Existing 2009 FHI Volumes
100 Modified from original to balance
100 2012 Urban Counts
Grist Mill Rd
142
189
1398
7
68
595
408
1365
7
141
1287
27
1369
64
300
79
Glover Ave
994
362
4
1271
6
171
140
10
28
12
Motor Vehicle Dept
292
546
10
Sheet 3 of 3
EXISTING PM VOLUMES
Data Collection: April 2012
Match Line B
URBAN ENGINEERS
Formulating Excellence



100 2016 Stantec Counts
100 2017 WestCOG Counts

Peak Hours:

	WestCOG Count Performed:	Wednsday, January 18, 2017
	Peak Hour:	5:00 PM - 6:00 PM
	WestCOG Count Performed:	Wednsday, February 22, 2017
	Peak Hour:	5:00 PM - 6:00 PM

Sheet 2 of 3

EXISTING PM VOLUMES

Stantec Data Collection: XXX 2016

WestCOG Data Collection: January 2017

URBAN ENGINEERS
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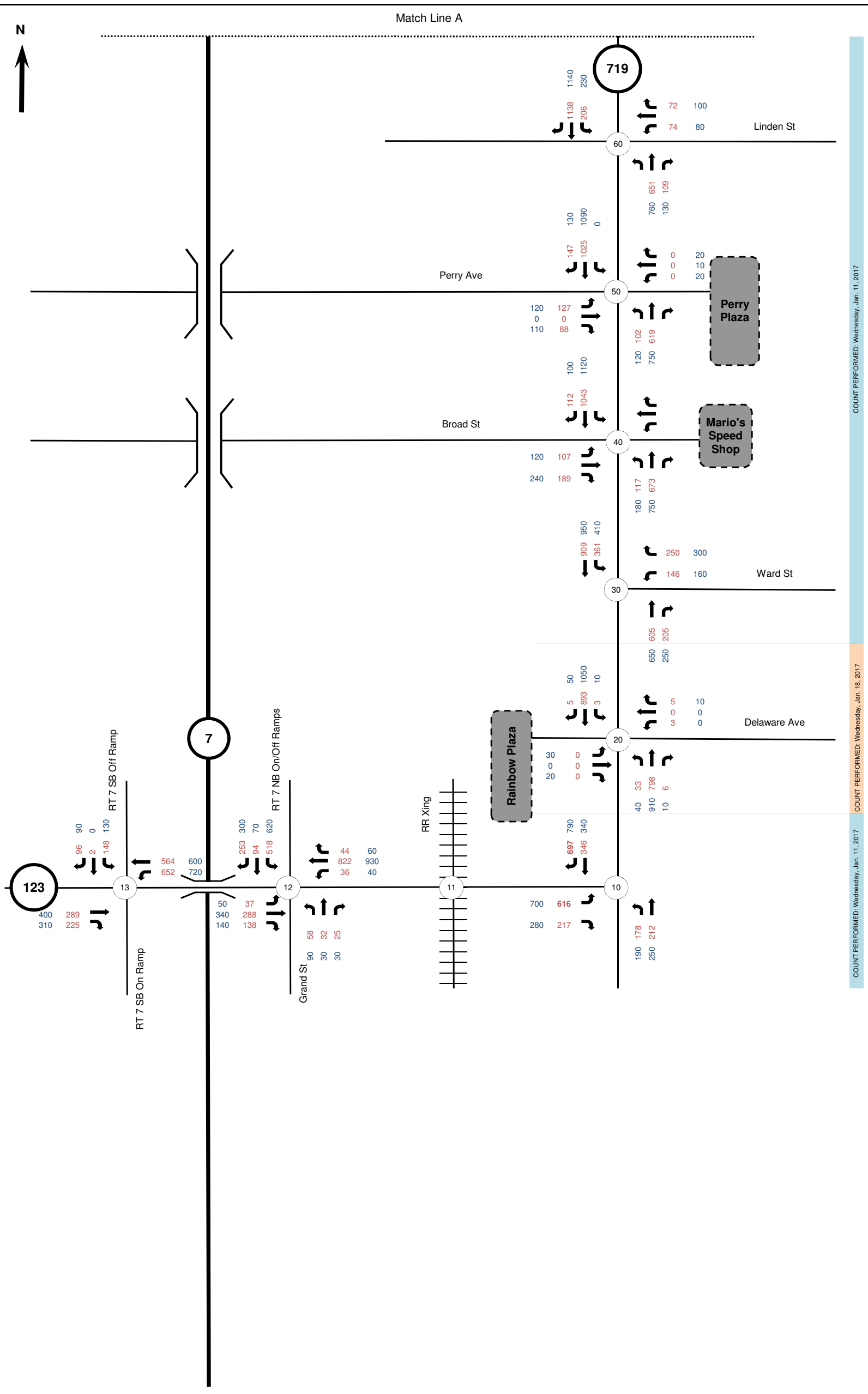

100 2016 Stantec Counts
100 2017 WestCOG Counts

Peak Hours:

	WestCOG Count Performed:	Wednsday, January 11, 2017
	Peak Hour:	5:15 PM - 6:15 PM
	WestCOG Count Performed:	Wednsday, January 18, 2017
	Peak Hour:	5:15 PM - 6:15 PM

Sheet 1 of 3

EXISTING PM VOLUMES

Stantec Data Collection: XXX 2016

WestCOG Data Collection: January 2017

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Appendix B
Travel Time Data

US Route 7 Corridor Assessment

2017 Travel Time Runs

Int ID	Intersection	TRAVEL TIME (SEC)			
		SOUTHBOUND		NORTHBOUND	
		AM	PM	AM	PM
130	Merritt 101	49	52	11	14
120	Merritt 201-301	45	**45**	16	17
110	Merritt 401-501	33	35	22	25
100	Merritt 601	21	26	11	11
90	Xerox	23	27	22	19
80	Glover Ave/RT 15 Ramps	35	45	56	57
70	Stop&Shop/Merritt View	41	42	55	62
60	Linden Street	80	87	15	22
50	Perry Avenue	16	20	47	53
40	Broad Street	55	69	20	22
30	Ward Street	17	19	22	27
20	Delaware Avenue	24	21	19	21
10	RT 123 (Canaan Ave)	-	-	-	-
Main Ave (South)	**RT 123 to Stop&Shop/Merritt View Total (seconds)**	**206**	**230**	**138**	**143**
	RT 123 to Stop&Shop/Merritt View Total (minutes)	**3.4**	**3.8**	**2.3**	**2.4**
Main Ave (North)	**Glover Ave/RT 15 Ramps to Merritt 101 Total (seconds)**	**233**	**258**	**178**	**207**
	Glover Ave/RT 15 Ramps to Merritt 101 Total (minutes)	**3.9**	**4.3**	**3.0**	**3.5**

Appendix C
SimTraffic Results – Existing Conditions

Main Ave Corridor Assessment

2016 Existing AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
130: Main Ave & Merritt 101	39.1	D	5.7	A	1.2	A	4.8	A	4.0	A
120: Main Ave & Merritt 201/301 / Valley View Rd	24.4	C	22.0	C	6.3	A	5.7	A	6.8	A
110: Main Ave & Merritt 401/501	18.0	B	27.3	C	4.8	A	6.6	A	6.1	A
100: Main Ave & Merritt 601	7.0	A		-	2.5	A	3.9	A	3.0	A
90: Main Ave & Xerox 801-901	20.1	C		-	3.8	A	2.9	A	4.2	A
80: Main Ave & Glover Ave / RT 15 Ramps	51.3	D	42.8	D	71.9	E	27.2	C	54.2	D
70: Main Ave & Merrit View/Stop & Shop	25.6	C	20.9	C	8.2	A	7.0	A	8.5	A
60: Main Ave & Linden St		-	30.8	C	5.8	A	5.1	A	9.0	A
50: Main Ave & Perry Ave	32.8	C		-	8.2	A	7.8	A	10.4	B
40: Main Ave & Broad St	17.4	B		-	12.4	B	7.5	A	11.0	B
30: Main Ave & Ward St		-	26.8	C	11.8	B	9.3	A	16.0	B
20: Main Ave & Delaware Ave	28.1	C	4.5	A	4.2	A	8.2	A	7.3	A
10: Main Ave & RT 123	2.4	A		-	48.6	D	18.5	B	20.6	C
11: RT 123 (EB/WB) & RR Xing	22.2	C	1.7	A		-		-	9.1	A
12: RT 123 (EB/WB) & US 7 NB Ramps	13.9	B	47.0	D	38.8	D	28.0	C	35.9	D
13: RT 123 (EB/WB) & US 7 SB Ramps	25.1	C	13.8	B		-	22.7	C	17.1	B

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Model	Field	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	3.0	2%
	SB	1.0	4.3	3.9	9%
Main Ave (RT 15 Ramps to Merritt 101)	**NB**	0.6	2.1	2.3	-12%
	SB	0.8	3.1	3.4	-11%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2016 Existing PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
130: Main Ave & Merritt 101	42.1	D	5.9	A	1.8	A	3.8	A	3.7	A
120: Main Ave & Merritt 201/301 / Valley View Rd	20.0	B	17.4	B	4.2	A	4.5	A	8.2	A
110: Main Ave & Merritt 401/501	22.2	C	23.0	C	7.0	A	6.4	A	11.1	B
100: Main Ave & Merritt 601	64.0	E		-	6.3	A	18.9	B	26.9	C
90: Main Ave & Xerox 801-901	28.8	C		-	6.0	A	18.7	B	17.2	B
80: Main Ave & Glover Ave / RT 15 Ramps	69.4	E	46.2	D	16.3	B	50.2	D	44.7	D
70: Main Ave & Merrit View/Stop & Shop	69.4	E	24.9	C	20.6	C	13.6	B	23.7	C
60: Main Ave & Linden St		-	23.4	C	7.2	A	14.0	B	12.3	B
50: Main Ave & Perry Ave	34.3	C		-	14.6	B	13.0	B	15.8	B
40: Main Ave & Broad St	25.2	C		-	17.6	B	15.0	B	17.4	B
30: Main Ave & Ward St		-	18.7	B	11.7	B	25.3	C	19.5	B
20: Main Ave & Delaware Ave	31.4	C	7.9	A	3.6	A	6.0	A	5.5	A
10: Main Ave & RT 123	3.8	A		-	25.0	C	22.1	C	15.4	B
11: RT 123 (EB/WB) & RR Xing	25.7	C	1.2	A		-		-	13.7	B
12: RT 123 (EB/WB) & US 7 NB Ramps	14.2	B	35.9	D	34.0	C	36.1	D	31.4	C
13: RT 123 (EB/WB) & US 7 SB Ramps	24.8	C	18.0	B		-	25.3	C	20.9	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Model	Field	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	3.5	-14%
	SB	1.0	4.3	4.3	0%
Main Ave (RT 15 Ramps to Merritt 101)	**NB**	0.6	2.1	2.4	-16%
	SB	0.8	3.1	3.8	-25%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Appendix D
SimTraffic Results – Future Conditions

Main Ave Corridor Assessment

2045 No Build (w/ Road Diet) AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	28.0	C	23.4	C	8.2	A	14.2	B	12.1	B
60: Main Ave & Linden St		-	67.4	E	19.9	B	82.4	F	52.3	D
50: Main Ave & Perry Ave	30.4	C		-	30.4	C	26.2	C	28.6	C
40: Main Ave & Broad St	16.5	B		-	16.0	B	139.4	F	63.5	E
30: Main Ave & Ward St		-	46.1	D	61.1	E	26.4	C	43.3	D
20: Main Ave & Delaware Ave	41.3	D	10.1	B	24.6	C	18.6	B	21.4	C
10: Main Ave & RT 123	16.1	B		-	58.7	E	24.1	C	30.8	C
11: RT 123 (EB/WB) & RR Xing	115.1	F	2.7	A		-		-	41.8	D
12: RT 123 (EB/WB) & US 7 NB Ramps	206.5	F	41.3	D	138.7	F	133.9	F	103.2	F
13: RT 123 (EB/WB) & US 7 SB Ramps	42.8	D	37.8	D		-	20.8	C	37.8	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			2025 Mit 0	2045 Mit 0	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	4.2	4.8	15%
	SB	1.0	5.5	10.2	85%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 No Build (w/ Road Diet) PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	40.4	D	29.6	C	21.0	C	47.6	D	35.2	D
60: Main Ave & Linden St		-	40.3	D	26.1	C	121.1	F	79.0	E
50: Main Ave & Perry Ave	46.3	D		-	74.2	E	21.8	C	46.4	D
40: Main Ave & Broad St	37.7	D		-	17.3	B	98.6	F	55.8	E
30: Main Ave & Ward St		-	36.1	D	25.9	C	24.3	C	27.1	C
20: Main Ave & Delaware Ave	33.8	C	10.1	B	4.3	A	13.3	B	9.5	A
10: Main Ave & RT 123	3.5	A		-	28.8	C	27.6	C	18.8	B
11: RT 123 (EB/WB) & RR Xing	59.3	E	4.4	A		-		-	31.5	C
12: RT 123 (EB/WB) & US 7 NB Ramps	136.0	F	48.6	D	109.4	F	119.0	F	95.3	F
13: RT 123 (EB/WB) & US 7 SB Ramps	50.6	D	39.8	D		-	29.9	C	42.3	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			2025 Mit 0	2045 NB RI	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	4.3	4.7	10%
	SB	1.0	8.1	9.6	18%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 No Build (w/ Road Diet) PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	40.7	D	31.8	C	28.7	C	48.2	D	38.6	D
60: Main Ave & Linden St		-	69.4	E	23.6	C	75.4	E	56.1	E
50: Main Ave & Perry Ave	41.2	D		-	36.7	D	20.7	C	29.4	C
40: Main Ave & Broad St	44.5	D		-	14.7	B	85.8	F	50.8	D
30: Main Ave & Ward St		-	27.6	C	28.1	C	24.6	C	26.4	C
20: Main Ave & Delaware Ave	35.8	D	11.6	B	4.8	A	17.7	B	11.9	B
10: Main Ave & RT 123	3.2	A		-	28.6	C	25.7	C	17.4	B
11: RT 123 (EB/WB) & RR Xing	52.8	D	3.3	A		-		-	28.7	C
12: RT 123 (EB/WB) & US 7 NB Ramps	105.9	F	48.3	D	57.0	E	70.1	E	69.0	E
13: RT 123 (EB/WB) & US 7 SB Ramps	27.0	C	31.3	C		-	28.8	C	29.7	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No-Build	NB w/ RD	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	4.0	4.3	7%
	SB	1.0	6.4	8.1	27%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 No Build (w/ Road Diet) AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	36.5	D	21.5	C	12.2	B	27.8	C	20.7	C
60: Main Ave & Linden St		-	35.2	D	21.1	C	14.2	B	20.2	C
50: Main Ave & Perry Ave	25.3	C		-	26.2	C	11.9	B	19.7	B
40: Main Ave & Broad St	16.3	B		-	14.8	B	58.3	E	32.0	C
30: Main Ave & Ward St		-	33.6	C	44.2	D	19.6	B	31.6	C
20: Main Ave & Delaware Ave	32.4	C	9.1	A	13.9	B	19.6	B	17.7	B
10: Main Ave & RT 123	2.7	A		-	37.8	D	14.9	B	16.7	B
11: RT 123 (EB/WB) & RR Xing	35.2	D	0.7	A		-		-	13.8	B
12: RT 123 (EB/WB) & US 7 NB Ramps	26.8	C	25.5	C	104.0	F	49.6	D	40.5	D
13: RT 123 (EB/WB) & US 7 SB Ramps	34.4	C	24.2	C		-	22.4	C	26.8	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No-Build	NB w/RD	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	2.9	4.2	44%
	SB	1.0	4.0	5.5	38%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 Build Mit 0 (w/ Road Diet) PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	56.3	E	27.2	C	25.0	C	21.1	C	27.1	C
60: Main Ave & Linden St		-	37.3	D	20.4	C	62.9	E	46.9	D
50: Main Ave & Perry Ave	55.3	E		-	29.2	C	15.0	B	25.2	C
40: Main Ave & Broad St	30.8	C		-	17.8	B	82.9	F	49.3	D
30: Main Ave & Ward St		-	28.0	C	19.0	B	23.0	C	22.6	C
20: Main Ave & Delaware Ave	32.3	C	8.3	A	2.5	A	6.5	A	5.3	A
10: Main Ave & RT 123	3.4	A		-	29.2	C	22.0	C	16.7	B
11: RT 123 (EB/WB) & RR Xing	60.7	E	3.0	A		-		-	31.0	C
12: RT 123 (EB/WB) & US 7 NB Ramps	130.6	F	43.3	D	54.5	D	81.2	F	76.3	E
13: RT 123 (EB/WB) & US 7 SB Ramps	55.3	E	25.3	C		-	36.4	D	36.2	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			2025 Mit 0	2045 Mit 0	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	3.7	19%
	SB	1.0	5.6	6.8	21%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 Build Mit 0 (w/ Road Diet) AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	27.8	C	22.9	C	9.7	A	10.6	B	11.2	B
60: Main Ave & Linden St		-	33.7	C	14.6	B	10.5	B	16.6	B
50: Main Ave & Perry Ave	27.0	C		-	11.7	B	5.5	A	10.9	B
40: Main Ave & Broad St	16.5	B		-	11.6	B	13.5	B	13.0	B
30: Main Ave & Ward St		-	32.2	C	20.2	C	17.2	B	24.1	C
20: Main Ave & Delaware Ave	28.5	C	5.4	A	4.6	A	6.8	A	6.6	A
10: Main Ave & RT 123	5.8	A		-	35.5	D	13.4	B	17.1	B
11: RT 123 (EB/WB) & RR Xing	41.6	D	0.7	A		-		-	16.5	B
12: RT 123 (EB/WB) & US 7 NB Ramps	15.7	B	25.4	C	57.4	E	35.0	C	30.0	C
13: RT 123 (EB/WB) & US 7 SB Ramps	46.2	D	13.7	B		-	25.1	C	24.0	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			2025 Mit 0	2045 Mit 0	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	2.8	3.1	12%
	SB	1.0	3.5	3.6	4%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 Build Mit 0 (w/ Road Diet) PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	43.9	D	31.0	C	20.8	C	20.0	B	24.5	C
60: Main Ave & Linden St		-	34.9	C	14.5	B	48.7	D	36.8	D
50: Main Ave & Perry Ave	50.2	D		-	14.9	B	12.8	B	17.6	B
40: Main Ave & Broad St	26.6	C		-	13.7	B	53.5	D	34.6	C
30: Main Ave & Ward St		-	25.6	C	12.7	B	19.3	B	18.2	B
20: Main Ave & Delaware Ave	34.8	C	7.0	A	2.5	A	6.5	A	5.4	A
10: Main Ave & RT 123	3.3	A		-	25.4	C	21.0	C	15.2	B
11: RT 123 (EB/WB) & RR Xing	40.5	D	1.8	A		-		-	21.2	C
12: RT 123 (EB/WB) & US 7 NB Ramps	31.5	C	30.9	C	41.5	D	42.1	D	35.5	D
13: RT 123 (EB/WB) & US 7 SB Ramps	34.1	C	15.5	B		-	24.9	C	22.6	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Build	Build Mit0	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.5	3.1	-11%
	SB	1.0	4.3	5.6	32%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 Build Mit 0 (w/ Road Diet) AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	31.3	C	21.7	C	9.1	A	10.3	B	10.8	B
60: Main Ave & Linden St		-	29.2	C	8.8	A	8.6	A	12.3	B
50: Main Ave & Perry Ave	28.9	C		-	8.9	A	4.8	A	9.4	A
40: Main Ave & Broad St	14.9	B		-	9.3	A	9.8	A	10.2	B
30: Main Ave & Ward St		-	21.5	C	14.6	B	13.4	B	16.9	B
20: Main Ave & Delaware Ave	29.7	C	4.8	A	3.8	A	4.8	A	5.2	A
10: Main Ave & RT 123	5.4	A		-	29.0	C	12.4	B	14.8	B
11: RT 123 (EB/WB) & RR Xing	27.5	C	0.5	A		-		-	11.0	B
12: RT 123 (EB/WB) & US 7 NB Ramps	11.3	B	18.5	B	35.1	D	29.3	C	22.2	C
13: RT 123 (EB/WB) & US 7 SB Ramps	36.2	D	8.8	A		-	22.8	C	17.9	B

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Build	Build Mit0	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	2.8	2.8	1%
	SB	1.0	3.5	3.5	0%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 Build PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	41.7	D	25.4	C	23.3	C	15.0	B	21.7	C
60: Main Ave & Linden St		-	22.9	C	9.8	A	26.1	C	20.5	C
50: Main Ave & Perry Ave	37.8	D		-	27.9	C	17.4	B	23.7	C
40: Main Ave & Broad St	23.9	C		-	19.1	B	14.7	B	17.8	B
30: Main Ave & Ward St		-	18.5	B	28.3	C	23.0	C	23.9	C
20: Main Ave & Delaware Ave	29.8	C	7.6	A	3.6	A	11.7	B	8.4	A
10: Main Ave & RT 123	3.5	A		-	25.1	C	36.6	D	22.4	C
11: RT 123 (EB/WB) & RR Xing	61.2	E	5.5	A		-		-	32.5	C
12: RT 123 (EB/WB) & US 7 NB Ramps	122.9	**F**	51.7	D	74.8	E	84.1	**F**	80.0	**F**
13: RT 123 (EB/WB) & US 7 SB Ramps	46.4	D	40.7	D		-	30.0	C	41.5	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No Build	Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	4.0	3.6	-11%
	SB	1.0	6.4	5.0	-23%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 Build AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	26.6	C	21.6	C	9.2	A	7.3	A	9.4	A
60: Main Ave & Linden St		-	20.6	C	12.3	B	10.1	B	13.0	B
50: Main Ave & Perry Ave	32.3	C		-	9.2	A	7.7	A	11.2	B
40: Main Ave & Broad St	18.2	B		-	10.8	B	9.4	A	11.3	B
30: Main Ave & Ward St		-	28.0	C	18.9	B	14.6	B	21.2	C
20: Main Ave & Delaware Ave	29.4	C	5.4	A	3.4	A	5.2	A	5.3	A
10: Main Ave & RT 123	2.4	A		-	48.2	D	14.4	B	20.3	C
11: RT 123 (EB/WB) & RR Xing	30.5	C	0.7	A		-		-	11.9	B
12: RT 123 (EB/WB) & US 7 NB Ramps	17.3	B	24.9	C	59.9	E	55.6	E	36.4	D
13: RT 123 (EB/WB) & US 7 SB Ramps	38.9	D	13.3	B		-	25.9	C	21.6	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No Build	Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	2.9	2.9	-1%
	SB	1.0	3.9	3.5	-9%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 Build PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	41.5	D	25.5	C	24.3	C	14.9	B	22.1	C
60: Main Ave & Linden St		-	23.6	C	9.2	A	17.7	B	15.4	B
50: Main Ave & Perry Ave	35.3	D		-	22.7	C	14.3	B	19.6	B
40: Main Ave & Broad St	21.4	C		-	14.9	B	11.9	B	14.4	B
30: Main Ave & Ward St		-	18.0	B	25.5	C	20.0	B	21.5	C
20: Main Ave & Delaware Ave	30.1	C	6.9	A	3.6	A	5.2	A	5.1	A
10: Main Ave & RT 123	3.2	A		-	24.4	C	23.6	C	16.1	B
11: RT 123 (EB/WB) & RR Xing	46.8	D	1.9	A		-		-	24.4	C
12: RT 123 (EB/WB) & US 7 NB Ramps	38.8	D	37.3	D	43.5	D	45.6	D	40.8	D
13: RT 123 (EB/WB) & US 7 SB Ramps	36.7	D	20.5	C		-	25.7	C	26.4	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No Build	Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	4.0	3.5	-13%
	SB	1.0	6.4	4.3	-34%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 Build AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	25.4	C	21.0	C	9.1	A	7.1	A	9.3	A
60: Main Ave & Linden St		-	19.6	B	11.2	B	9.0	A	11.9	B
50: Main Ave & Perry Ave	31.9	C		-	8.2	A	7.3	A	10.4	B
40: Main Ave & Broad St	19.0	B		-	8.2	A	8.8	A	9.9	A
30: Main Ave & Ward St		-	19.5	B	16.1	B	11.9	B	16.0	B
20: Main Ave & Delaware Ave	26.4	C	4.7	A	2.7	A	4.9	A	4.8	A
10: Main Ave & RT 123	2.3	A		-	30.0	C	12.8	B	14.2	B
11: RT 123 (EB/WB) & RR Xing	22.5	C	0.5	A		-		-	9.2	A
12: RT 123 (EB/WB) & US 7 NB Ramps	11.5	B	16.1	B	38.5	D	28.7	C	21.4	C
13: RT 123 (EB/WB) & US 7 SB Ramps	33.9	C	8.5	A		-	22.3	C	17.1	B

Description	Direction	Distance (miles)	Travel Time (minutes)		
			No Build	Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	2.9	2.8	-4%
	SB	1.0	3.9	3.5	-10%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 No Build PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	56.0	E	30.4	C	22.4	C	19.2	B	25.6	C
60: Main Ave & Linden St		-	30.4	C	9.8	A	55.7	E	37.1	D
50: Main Ave & Perry Ave	61.5	E		-	30.8	C	25.4	C	31.3	C
40: Main Ave & Broad St	76.1	E		-	24.3	C	116.0	F	73.3	E
30: Main Ave & Ward St		-	28.9	C	33.2	C	45.6	D	38.0	D
20: Main Ave & Delaware Ave	37.5	D	9.7	A	3.7	A	59.9	E	32.0	C
10: Main Ave & RT 123	3.2	A		-	43.3	D	54.9	D	32.1	C
11: RT 123 (EB/WB) & RR Xing	58.3	E	10.5	B		-		-	35.4	D
12: RT 123 (EB/WB) & US 7 NB Ramps	173.3	F	73.2	E	128.8	F	100.2	F	108.0	F
13: RT 123 (EB/WB) & US 7 SB Ramps	36.0	D	54.0	D		-	53.2	D	47.8	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Existing	No Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	3.8	23%
	SB	1.0	4.3	9.6	123%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2045 No Build AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	24.0	C	22.2	C	8.0	A	6.9	A	8.6	A
60: Main Ave & Linden St		-	21.8	C	11.7	B	14.0	B	14.2	B
50: Main Ave & Perry Ave	38.2	D		-	11.7	B	11.9	B	14.2	B
40: Main Ave & Broad St	21.0	C		-	14.2	B	42.8	D	26.7	C
30: Main Ave & Ward St		-	30.9	C	20.3	C	35.0	C	29.6	C
20: Main Ave & Delaware Ave	34.1	C	7.4	A	3.1	A	34.1	C	22.6	C
10: Main Ave & RT 123	2.8	A		-	137.9	F	33.4	C	48.5	D
11: RT 123 (EB/WB) & RR Xing	43.6	D	3.2	A		-		-	18.0	B
12: RT 123 (EB/WB) & US 7 NB Ramps	24.6	C	46.1	D	166.2	F	90.3	F	67.5	E
13: RT 123 (EB/WB) & US 7 SB Ramps	41.3	D	35.0	C		-	20.0	B	35.5	D

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Existing	No Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	2.9	-5%
	SB	1.0	4.3	5.1	20%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 No Build PM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	40.9	D	26.3	C	28.5	C	15.9	B	23.8	C
60: Main Ave & Linden St		-	23.7	C	10.1	B	37.2	D	27.0	C
50: Main Ave & Perry Ave	39.3	D		-	31.1	C	18.6	B	25.5	C
40: Main Ave & Broad St	38.7	D		-	22.0	C	54.2	D	39.5	D
30: Main Ave & Ward St		-	23.3	C	39.5	D	32.2	C	33.2	C
20: Main Ave & Delaware Ave	34.0	C	10.3	B	4.5	A	29.9	C	18.1	B
10: Main Ave & RT 123	3.2	A		-	37.9	D	39.8	D	25.3	C
11: RT 123 (EB/WB) & RR Xing	49.3	D	6.5	A		-		-	28.4	C
12: RT 123 (EB/WB) & US 7 NB Ramps	81.4	F	64.5	E	62.0	E	58.0	E	65.6	E
13: RT 123 (EB/WB) & US 7 SB Ramps	25.4	C	37.5	D		-	26.2	C	32.4	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Existing	No Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	4.0	31%
	SB	1.0	4.3	6.4	50%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Main Ave Corridor Assessment

2025 No Build AM Peak SimTraffic Results

SimTraffic Model Results and Travel Time Comparison

Intersection	Sidestreet				Main Ave/Route 719				ALL	
	EB		WB		NB		SB			
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
70: Main Ave & Merrit View/Stop & Shop	27.1	C	20.4	C	9.7	A	8.3	A	9.8	A
60: Main Ave & Linden St		-	20.8	C	10.6	B	9.8	A	11.8	B
50: Main Ave & Perry Ave	32.4	C		-	10.8	B	7.5	A	11.1	B
40: Main Ave & Broad St	20.7	C		-	13.1	B	11.6	B	13.4	B
30: Main Ave & Ward St		-	21.8	C	18.5	B	20.8	C	20.5	C
20: Main Ave & Delaware Ave	29.6	C	7.2	A	3.2	A	12.7	B	9.6	A
10: Main Ave & RT 123	2.6	A		-	85.7	F	21.8	C	30.3	C
11: RT 123 (EB/WB) & RR Xing	44.3	D	1.1	A		-		-	17.1	B
12: RT 123 (EB/WB) & US 7 NB Ramps	23.0	C	25.9	C	61.5	E	48.8	D	36.0	D
13: RT 123 (EB/WB) & US 7 SB Ramps	32.5	C	18.0	B		-	23.2	C	22.0	C

Description	Direction	Distance (miles)	Travel Time (minutes)		
			Existing	No Build	Delta
Main Ave (RT 123 to Merrit View/Stop & Shop)	**NB**	1.0	3.1	2.9	-6%
	SB	1.0	4.3	3.9	-10%

Legend:

= Approach does not exist

= Non-reportable approach due to assumed volumes

Appendix B
Transportation Review Checklist

City of Norwalk Transportation Review Checklist

Existing Conditions

- Classification
  - What is the traffic classification of each street within the development and which abuts any portion of the development?
    - Principal Arterial
    - Minor Arterial
    - Collector Arterial
    - Non-arterial
- Level of Service
  - Has the existing bicycle and pedestrian suitability or level of service on the current transportation facility been identified?
  - Have the existing volumes of pedestrian and/or bicyclist crossing activity at intersections including midblock and nighttime crossing been collected/provided?
- Known Issues
  - Is there a higher than normal incidence of bicyclist/pedestrian crashes within the study area?
  - Are there existing concerns within the study area, regarding motor vehicle safety, traffic volumes/congestion or access?
  - Are there any existing access or mobility considerations, including ADA compliance?
- Facilities
  - Have the bicycle and pedestrian conditions within the study area been identified? Mark all those that have been identified:
    - pedestrian infrastructure
    - bicycle infrastructure
    - current pedestrian volumes
    - current bicycle volumes
    - regional trails
    - existing pedestrian and bike amenities (lighting, benches, trash cans, wayfinding signage, and the like)
  - Has the applicant identified all major transit facilities within ½-mile and all transit facilities within ¼-mile of the subject site boundary?
  - Has the applicant identified all utilities, including tree grates, vault covers, manholes, junction boxes, signs, lights, poles, etc.?
  - Are there any schools, hospitals, senior care facilities, educational buildings, community centers, residences or businesses of persons with disabilities within or proximate to the study area?
  - Has the applicant identified the major sites, destinations, and trip generators within or proximate to the study area, including prominent landmarks, employment centers, recreation, commercial, cultural and civic institutions, and public spaces?
- Planning and Coordination

    - Are there any neighborhood, sub-area, municipal, county, or state planning documents that address bicyclist, pedestrian or transit user conditions within or proximate to the study area?
    - Has the applicant coordinated with the relevant state, county, and regional governments and transit agencies to identify pedestrian and bicycle needs on facilities abutting the property?

Development Proposal

- What is the maximum AASHTO design vehicle being accommodated by the design?
- Is the plan consistent with all neighborhood, sub-area, municipal, county, or state planning documents that address bicyclist, pedestrian or transit user conditions within or proximate to the study area?
- Is the site well connected to support bicyclist and pedestrians?
    - Are there appropriate *intra-site* connections within the development?
        - Are there shared driveways between on-site users?
        - Are there internal pedestrian paths that facilitate pedestrian and bicycle movements between major site elements, including primary uses, accessory uses, parking, recreational amenities, and the like.
        - Does proposal include cross-access easements to adjacent sites?
        - Are there bike lanes on the internal-street network?
    - Are there appropriate connections to the surrounding area?
        - Are sidewalks are provided?
            - Are sidewalks at least 5 feet wide and of appropriate width for the volume of pedestrian traffic?
            - Are new sidewalks connected with existing sidewalks?
        - Are there appropriate buffers between pedestrians and automotive traffic, including the use of verge, planting strip, street trees, and on-street parking to shelter pedestrians?
        - Are all sidewalks and intersections ADA compliant?
        - Does the pedestrian network support access to nearby transit facilities?
        - Does the design provide bicycle connections to local bicycle, trail, and transit networks?
    - Are intersections and medians designed to safely facilitate bicycle and pedestrian movements?
        - Does the development maintain adequate visibility for all roadway users at intersections?
        - Does the development minimize pedestrian crossing distances by narrowing streets or travel lanes, extending curbs, reducing curb radii, or using medians or refuge islands to break up long crossings?
        - Are turning speeds limited to 15 mph?
        - Does the development use high visibility crosswalks, raised crosswalks, or similar enhancements?
        - Are any of the following pedestrian signals used at intersections?

            - Pedestrian actuated signals
            - Audible crossing signals
            - Countdown clocks
        - Are medians a minimum of 6 feet wide?
        - Are there appropriate breaks in medians for ADA accessibility?
- Is the site and are individual buildings designed to enhance pedestrian and bike safety?
    - Does the design support multiple alternative routes to and from destinations as well as within the site?
    - Are blocks of 500 feet or longer appropriately bisected by a grid of smaller streets and/or pedestrian pathways?
    - Does the proposed development use the fewest number of vehicular intrusions (e.g. driveways) into the pedestrian realm as necessary to facilitate access?
    - Do buildings have a primary façade facing onto sidewalks (and not parking lots)?
    - Does the design facilitate safe and accessible, deliveries to local industries and businesses?
    - Are there any continuous blank walls (more than 15 feet) along any sidewalk?
- Are parking lots designed to enhance pedestrian and bicycle safety?
    - Are parking lots located behind buildings or separated from sidewalks with appropriate landscaping including shrubs, trees, short walls and fences (designed not to obstruct sight lines), and raised berms?
    - Does the walkway layout take "desire lines" into consideration?
    - Are walkways a minimum of 4 feet in width?
    - Are walkways buffered from parking using bollards, landscaping, or similar strategies?
    - Are walkways covered?
    - Are walkways differentiated from the parking lot paving?
    - Are crosswalks provided when walkways cross travel lanes?
    - Is at least 15% of the parking hardscape surface shaded at noon on the summer solstice?
- Is there appropriate signage for pedestrians and bicyclists?
    - Is there appropriate wayfinding signage for pedestrians?
    - Is there appropriate wayfinding signage for bicyclists?
    - Is commercial signage appropriately scaled for pedestrians and bicyclists?
    - Is commercial signage appropriately located for pedestrians and bicyclists?
    - Are there appropriate warning signs for motorists such as "Share the Road" and "Bicycle Path Ahead"?
- Does the proposal include pedestrian and bike amenities? Mark those that apply (internal and external to site)
    - Bike Parking
    - Benches
    - Trash and recycling cans
    - Pedestrian scaled lighting
    - Bike Boxes at intersections

    - Bike symbols on bike lanes
    - other
- Does the proposal include any enhanced pedestrian or bicycle amenities? Mark those that apply
    - Outdoor café seating
    - Public art
    - Parklet
    - Indoor bicycle storage
    - Shower facilities
    - Other
- Are there amenities to support public transit? Mark those that apply
    - Bus Stops Signs
    - Bus Stop Benches
    - Bus Shelters
    - Taxi and ride-sharing pick-up/drop-off locations
    - Other
- Maintenance and Improvements
    - Are there any plans to improve existing pedestrian or bicycle infrastructure as part of this development application?
    - Has the applicant provided a plan for the continued maintenance of all bicycle and pedestrian infrastructure?