

NEW BRITAIN SAFETY ACTION PLAN

STRATEGY AND PROJECT SELECTIONS TECHNICAL MEMORANDUM

Prepared for
The City of New Britain

Prepared by
Cambridge Systematics, Inc.

with
Vanasse Hangen Brustlin, Inc.

May 11, 2025



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INTRODUCTION

This technical memorandum presents a strategic analysis and selection of infrastructure projects, engineering concepts, and interdisciplinary countermeasures to improve road user safety in the City of New Britain, Connecticut (“the City”). This analysis was conducted to support the development of the **New Britain Vision Zero Safety Action Plan** (“the Plan”) and directly informed by the findings and High Crash Safety Network identified in the Safety Data Analysis Technical Memorandum (“Data Memo”) supporting the same. This document is organized into the following chapters:

- **Chapter 1 – Introduction:** A brief description of the background of the Plan, its Safety Emphasis Areas, and the Strategic Framework deployed to select the projects and countermeasures described herein;
- **Chapter 2 – Safety Countermeasures and Impacts:** A description of the safety countermeasures utilized to mitigate safety issues on the High Crash Network in New Britain, their relationships to the Safety Emphasis Areas studied in the Plan, and examples of countermeasures deployed throughout the City;
- **Chapter 3 – High Crash Location Concepts:** A presentation of two detailed engineering concepts developing potential enhancements on Martin Luther King Drive and Corbin Avenue, two of the City’s high crash corridors; and
- **Chapter 4 – Mitigation Strategies for Other High Crash Locations:** Summary matrices of recommended approaches at each of the City’s remaining high crash corridors and intersections, accompanied by narrative explanations, recommendations, and order of magnitude estimates for investment.

This memorandum is submitted in fulfillment of the **Strategy and Project Selections** component, which is the sixth of seven components of the **Safe Streets for All (SS4A) Comprehensive Safety Action Plan**. This analysis was conducted in accordance with the Federal guidance for implementing the SS4A Grant Program to ensure compliance with the SS4A Self-Certification Worksheet (developed in federal fiscal year 2024).

The purpose of this memorandum is to fulfill the Self-Certification Worksheet requirement to “identify a comprehensive set of projects and strategies to address the safety problems in the Action Plan, with information about time ranges when projects and strategies will be deployed, and an explanation of project prioritization criteria.” To maintain consistency with the recommendations included in the **Policy and Process Changes** component of the Safety Action Plan, the countermeasures and strategies recommended throughout this report are aligned with the “Five E’s of Transportation Safety” framework developed by the City to support the Plan and described in Figure 1.

1.1 Background and Safety Emphasis Areas

The City of New Britain’s goal in developing its Vision Zero Safety Action Plan is to set a path for reducing roadway fatalities and serious injuries by 50% by 2035 and reaching zero by 2045. The data analysis and stakeholder input elements of the project were key phases for the plan’s development, resulting in information that revealed safety concerns contributing to roadway crashes, overrepresented crash locations, and populations disproportionately impacted by the crashes. As noted in the Safety Data Analysis Technical Memorandum (“Data Memo”), the Safety Action Plan evaluated the crash data in the city and identified top crash Emphasis Areas corresponding to the most important safety issues. These Emphasis Areas are shown in Table 1. Crash types that are more common in New Britain compared to statewide relative to each geography’s crash distribution are highlighted in orange.

TABLE 1 SAFETY EMPHASIS AREAS IDENTIFIED IN DATA ANALYSIS

Emphasis Area	All Crashes (2019-2023)			Fatal and Serious Injury Crashes (2019-2023)		
	Crashes	% of Total in New Britain	% of Total in CT	Crashes	% of Total in New Britain	% of Total in CT
Intersections	2,675	44.7%	39.9%	71	48.0%	39.9%
Roadway Departures	1,851	30.9%	16.3%	39	26.4%	22.3%
Aggressive Driving	1,267	21.1%	30.8%	54	36.5%	32.6%
Unrestrained Occupants	365	6.1%	5.8%	20	13.5%	17.2%
Impaired Driving	286	4.8%	3.0%	15	10.1%	13.1%
Distracted Driving	317	5.3%	5.8%	7	4.7%	5.1%
Older Drivers	843	14.1%	18.6%	17	11.5%	17.3%
Younger Drivers	1,726	28.8%	31.2%	48	32.4%	31.3%
Motorcyclists	150	2.5%	1.7%	41	27.7%	23.1%
Pedestrians	246	4.1%	1.6%	38	25.7%	17.8%
Bicyclists	38	0.6%	0.5%	0	0.0%	2.5%

Source: Connecticut Crash Data Repository, University of Connecticut.

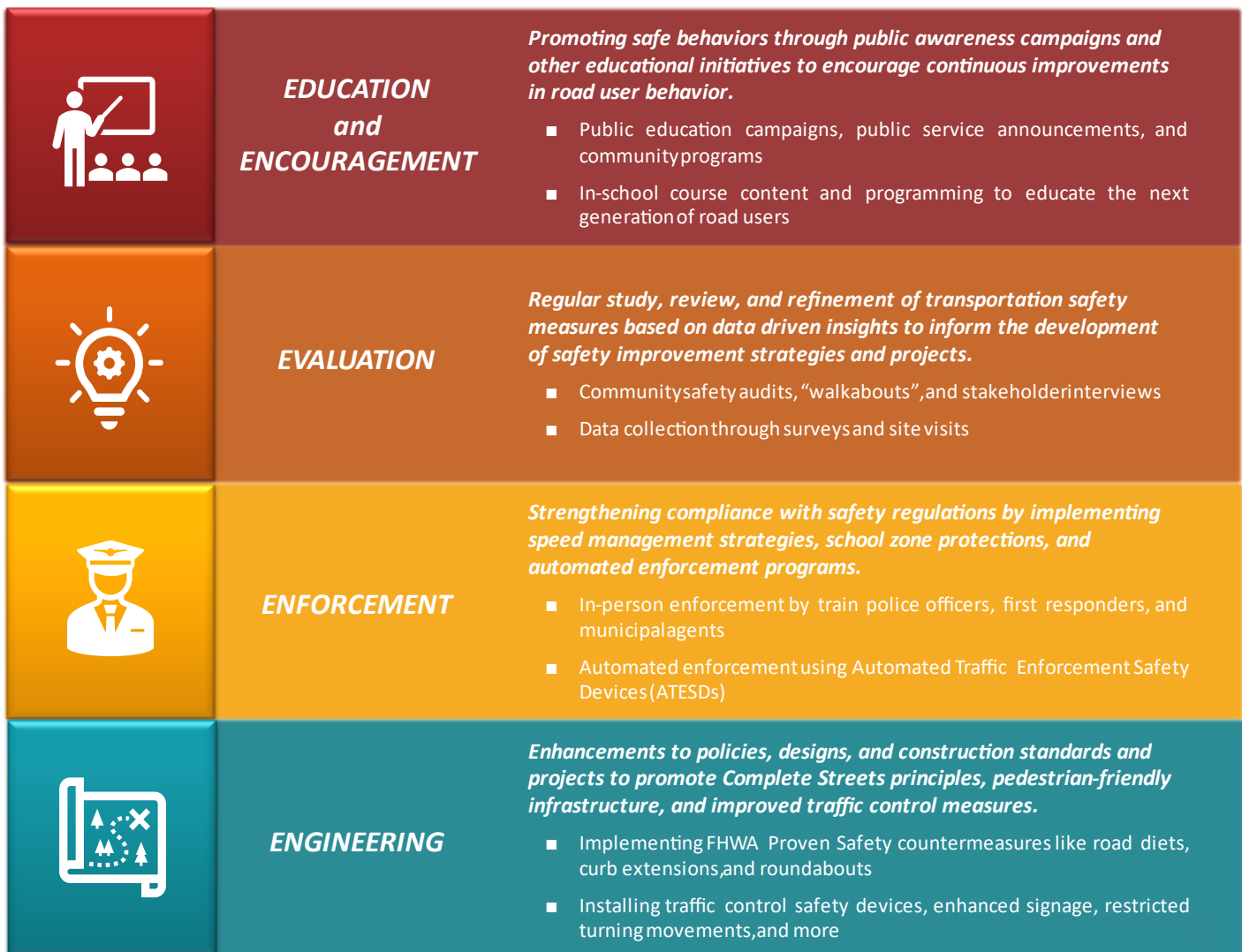
Within the period of analysis for this study (2019-2023), a total of 5,991 crashes were reported in the City of New Britain *excluding* crashes on limited access facilities. Key factors included in the identification of the High Crash Safety Network presented in the Data Memo and analyzed herein included:

- The total number, location, and rate of fatal and serious injury crashes, per 100 million vehicle-miles traveled;
- High-priority locations identified in other planning documents like the CRCOG Regional Transportation Safety Plan;
- Speed data from the Connecticut DOT Traffic Monitoring Station Viewer; and
- Expertise and local context from the Vision Zero Task Force and community stakeholders.

1.2 Strategic Framework to Select Projects and Countermeasures

Implementing effective projects, programs, and policies to address the 11 Emphasis Areas above could significantly reduce the number of fatal, serious injury, and injury crashes in the City over time. In addition, as shown in the Data Memo, crash types are often interrelated; addressing crashes in one Emphasis Area can positively impact results of other types of crashes as well. To address and prevent crashes, a comprehensive approach is necessary, including evaluation of existing issues, physical improvements, programs and educational efforts, and enforcement of traffic laws. For the purposes of this analysis, potential actions to mitigate safety issues were organized around a framework of safety strategies and countermeasures aligning with the “5 E’s of Transportation Safety” developed to support this Safety Action Plan and shown in the figure below.

FIGURE 1 FIVE E'S OF TRANSPORTATION SAFETY FRAMEWORK, NEW BRITAIN SAFETY ACTION PLAN



Traditionally, there are Four E's of Safety—Engineering, Enforcement, Education, and Emergency Response.¹ In this framework, however, Evaluation replaces Emergency Response as the latter falls outside the direct control of the City. In addition, Encouragement was added to broaden the set of available strategies beyond traditional educational initiatives. Each set of countermeasures are briefly described below.

1.2.1 Education and Encouragement

Education countermeasures as part of this framework include **Public Education Campaigns** and **In-School Content**. The Bike New Britain Initiative, described in the Policy Memo, is an example of an education campaign to raise awareness of traffic safety issues and inform the public about new traffic patterns, among other goals. In-School Content can help teach children about how to be safe in the transportation system and be responsible drivers when they are old enough.

1.2.2 Enforcement

Enforcement of existing traffic laws is necessary to address bad actors and create a safe environment for all users of the system. This can be done as **In-Person Enforcement** by uniformed officers, or as **Automated Enforcement** using Automated Traffic Enforcement Safety Devices (ATESDs) to address speeding and red-light running.

1.2.3 Evaluation

Evaluation can consist of various aspects of reviewing the effectiveness of countermeasures that have been implemented or assessing a location that has a history of crashes. This safety area focuses on **Safety Audits** and **Data Collection**. Audits can be used to review locations with safety concerns to determine a potential countermeasure, while Data Collection is needed to gather additional information on an identified safety concern. Some areas identified as High Crash Locations in the Data Analysis memo have already had significant investment in physical changes and streetscaping projects in recent years, especially Downtown. These locations need further review to determine the effectiveness of the engineering countermeasures, and if the safety issues still present there need to be addressed through non-infrastructure measures. Minor neighborhood streets outside of downtown, which have limited opportunity for physical countermeasures, may require further investigation to understand the context of the safety challenge.

1.2.4 Engineering

There are many potential engineering countermeasures that could be considered depending on the context of the location. These countermeasures can help slow traffic, make drivers more aware of traffic conditions, improve pedestrian and bicycle safety and mobility, and more. A detailed list of these countermeasures is included in Chapter 2.

¹ [Chapter 8—Considering all "4E's" | FHWA](#)

2

SAFETY COUNTERMEASURES AND IMPACTS

2.1 Countermeasure Matrix

Table 2 Table 2 Countermeasure Applicability to Emphasis Areas presents the different countermeasures and how they apply to the Safety Emphasis Areas. The countermeasures are placed on the left side and the Safety Emphasis Areas are along the top. A dot or check mark shows where certain countermeasures are most appropriate and effective in addressing that Emphasis Area. For the purposes of this table, some of the Emphasis Area categories have been combined where the crash type has overlapping themes. Specifically:

- Impaired Driving and Distracted Driving have been combined as they deal with driver inattention and impairment.
- Older Drivers and Younger Drivers have been combined as they relate to driver factors like age and experience.
- Motorcyclists, Pedestrians, and Bicyclists have been combined as Vulnerable Road Users.

The Engineering countermeasures are primarily drawn from the Federal Highway Administration's (FHWA's) Proven Safety Countermeasures, a collection of 28 countermeasures and strategies that are effective in reducing roadway fatalities and serious injuries on highways.² Many of these countermeasures have already been implemented successfully in New Britain as part of previous City projects. The **Index of Engineering Countermeasures** describes these countermeasures in more detail and the expected safety benefits of implementing them. The Engineering countermeasures presented here expand upon, and are complementary to, the Common Design Solutions presented in the New Britain Complete Streets Roadmap (2022). They are based on proven safety countermeasures, policies, programs, and other approaches that reflect the Safe System principles and can be used to improve road safety throughout the City.

Some Engineering Countermeasures can be implemented temporarily as demonstration projects, to test out a change to the roadway environment prior to a large investment, collect data on how well it is received by the public, and identify key factors for consideration in a future design. Demonstration projects may change intersection geometry, introduce traffic control, or test traffic calming measures using temporary signs and materials that can be quickly installed and removed. Candidates for demonstration projects include curb extensions, enhanced signage, bicycle lanes, parking

² See: <https://highways.dot.gov/safety/proven-safety-countermeasures>

changes, enhanced crosswalks, and horizontal deflection. New Britain has experience with testing curb extensions with bollards and paint at three crosswalks along Arch Street between Main Street and Hart Street/Whiting Street.

TABLE 2 COUNTERMEASURE APPLICABILITY TO EMPHASIS AREAS

Consolidated Emphasis Areas							
Potential Countermeasures	Intersections	Roadway Departures	Aggressive Driving	Unrestrained Occupants	Impaired & Distracted Driving	Older & Younger Drivers	Improve VRU Safety
<i>Percent of Crashes in New Britain</i>	44.7%	30.9%	21.1%	6.1%	9.9%	40.3%	7.2%
Education and Encouragement							
Public Education Campaigns	•	•	•	•	•	•	•
In-School Content	•	•	•	•	•	•	•
Enforcement							
In-Person Enforcement	•		•	•	•	•	•
Automated Enforcement	•		•				•
Evaluation							
Safety Audits	•	•	•	•			•
Data Collection			•		•	•	•
Engineering							
Road Diet	•	•	•				•
Traffic Control Devices	•		•			•	•
Curb Extensions	•						•
Enhanced Signage	•	•			•	•	
Bicycle Lanes							•
Traffic Operations	•	•	•			•	
Pavement Markings		•	•			•	
Parking Changes	•						•
Enhanced Lighting	•	•			•	•	•
Crosswalk Signage	•				•	•	•
Medians and Pedestrian Refuge Islands							•
Restricted Turning Movements	•						•
Enhanced Crosswalks	•				•	•	•
Roundabouts	•						
Horizontal Deflection			•				
Other Traffic Calming Measures	•	•	•			•	•

2.2 Index of Engineering Countermeasures

The following section provides brief descriptions of the **Engineering Countermeasures** identified in Table 2. Where applicable, pictures are provided of locations in New Britain where each component has been implemented. The index includes **expected safety benefits** from sources including the FHWA Proven Safety Countermeasures, Crash Modification Factors (CMF) Clearinghouse, and the Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE). In some cases, other types of benefits are referenced that are known to improve safety but are not tied to a specific CMF.

2.2.1 Road Diet

Typically, the reconfiguration of a four-lane roadway to three lanes: one travel lane in each direction, left turn lanes within the center median area, and bike lanes on each side.

Some road diets may be asymmetrical, with two travel lanes in one direction and one travel lane in the other. Road diets may also include the full removal of some traffic lanes from the road when the travel lanes are underutilized.

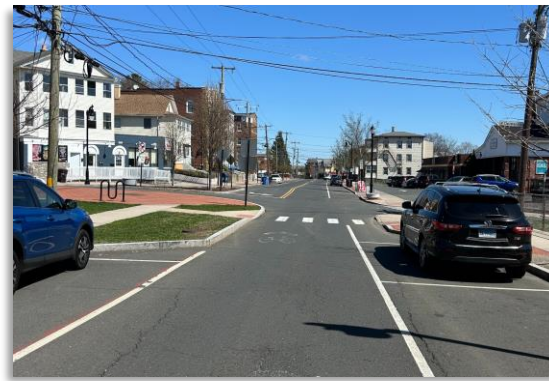


Road Diet recently completed on Chestnut Street

Expected Safety Benefit: 4-Lane to 3-lane road diet conversions can see a 19-47% reduction in total crashes.³

2.2.2 Traffic Control Devices

As defined by the MUTCD, these are “all signs, signals, markings, channelization devices, or other devices that use colors, shapes, symbols, words, sounds, and/or tactile information for the primary purpose of communicating a regulatory, warning, or guidance message to road users on a street, highway, pedestrian facility, bikeway, pathway, or site roadway open to public travel.” Examples include traffic signals, STOP signs and yield signs.



Curb Extension on Broad St at Cleveland St

Expected Safety Benefit: Installation of new traffic signals at unsignalized locations can reduce all crashes by up to 16%⁴ and converting two-way stop-controlled intersections to all-way stop-controlled intersections reduces crashes up to 70%.⁵

³ <https://highways.dot.gov/safety/proven-safety-countermeasures/road-diets-roadway-reconfiguration>

⁴ https://cmfclearinghouse.fhwa.dot.gov/study_detail.php?stid=507

⁵ https://cmfclearinghouse.fhwa.dot.gov/study_detail.php?stid=38

2.2.3 Curb Extensions

These are extensions of the adjacent curbing that extend out into the roadway—typically at intersections—creating a visual pinch point that encourages slower motor vehicles speeds. Curb extensions can be considered extensions of the adjacent sidewalk or contain landscape elements.

Expected Safety Benefit: Studies have shown that curb extensions can increase driver yielding rates and reduce the crossing time of pedestrians. There is also evidence that curb extensions can reduce crash severity.⁶



Curb Extension Pilot on Arch Street with Asphalt Art
Source: [Street Plans Instagram](#)

2.2.4 Enhanced Signage

Additional advisory and warning signs that enhance the presence of crosswalks, shared traffic lanes with bicyclists, intersections and conflict points, and other elements to motor vehicle drivers.

Expected Safety Benefit: Specific to Stop-controlled intersections, deploying a package of low-cost measures, including enhanced signing and pavement markings, can reduce fatal and injury crashes by 10% and nighttime crashes by 15%.⁷

2.2.5 On Street Bike Lanes

Designated lanes within the roadway for exclusive use by bicyclists. Typically 5'-6' wide, bike lanes may also include buffers, either striping only or with barrier elements such as raised medians or a row of parked cars.

Expected Safety Benefit: Bicycle lanes added to a roadway can reduce crashes up to 49% for total crashes on urban 4-lane undivided collectors and local roads, and up to 30% for total crashes on urban 2-lane undivided collectors and local roads.⁸



Buffered bike lanes on Columbus Blvd

⁶ https://www.pedbikeinfo.org/cms/downloads/PedestrianLitReview_April2014.pdf#page=27&zoom=100,69,330

⁷ <https://highways.dot.gov/safety/proven-safety-countermeasures/systemic-application-multiple-low-cost-countermeasures-stop>

⁸ <https://highways.dot.gov/safety/proven-safety-countermeasures/bicycle-lanes>

2.2.6 Traffic Operations

These include improvements to signal timing and phasing, signage and pavement markings that can reduce the likelihood of collisions at busy intersections.

Expected Safety Benefit: Examples of changes to signal timing and phasing to improve safety include Leading Pedestrian Intervals (LPI) – only with **concurrent pedestrian phasing** – to give pedestrians an opportunity to enter the crosswalk at an intersection 3-7 seconds before vehicles are given a green indication. LPI can reduce pedestrian-vehicles crashes at intersections by 13%;⁹ and improvements to yellow change intervals (the length of time that the yellow signal indication is displayed following a green signal indication), which can reduce red-light running by 36-50% and reduce total crashes by 8-14%.¹⁰

The City of New Britain currently uses exclusive pedestrian phasing, and implementing LPI will require conversion to concurrent pedestrian phasing. However, an analysis of pedestrian behavior at three intersections using traffic camera footage found that **pedestrians are more than four times as likely to cross using concurrent timing than they are to wait for, and utilize, exclusive phasing**. This presents a safety challenge because pedestrians are using vehicle movement cues, rather than dedicated crossing signals, to determine when to move, which drivers seeking to make a turning movement may not anticipate. **To address this, the City may consider transitioning to concurrent pedestrian phasing, particularly in the Downtown area, to align the safe movement of both vehicles and VRUs with observed road user tendencies.**



A motorized wheelchair user crosses Main Street at W Main Street using concurrent timing, April 2025

2.2.7 Pavement Markings

Markings on a roadway using paint, an epoxy, or thermoplastic which help to define travel/turn lanes, parking areas, bicycle lanes, crosswalks, railroad crossings, stop/yield lines, and flush medians.

Expected Safety Benefit: Descriptions of safety benefits of different types of pavement markings can be found under the Enhanced Signage, Crosswalk Signage, and Bicycle Lanes countermeasures.



Pavement markings at Arch St and Main St

⁹ <https://highways.dot.gov/safety/proven-safety-countermeasures/leading-pedestrian-interval>

¹⁰ <https://highways.dot.gov/safety/proven-safety-countermeasures/yellow-change-intervals>

2.2.8 Parking Changes

Revisions to on-street parking configurations can include angled or parallel parking, restricting parking, or conversion to loading zones.

Expected Safety Benefit: Converting angled parking to parallel parking can reduce all crashes by 35% and parking-related crashes by 63%; research has also shown that prohibiting on-street parking can reduce injury crashes by 20%.¹¹



Head-out angle parking on Chestnut Street
Source: [Urban Engineers](#)

2.2.9 Enhanced Lighting

Lighting enhancements include the replacement of existing light fixtures for brighter lighting, more frequent light fixtures along the length of the street, and/or more concentrated light at intersections or crosswalks.

Expected Safety Benefit: Intersection lighting can reduce pedestrian crashes up to 42%.¹²

2.2.10 Crosswalk Signage

Signs indicating the presence of a crosswalk should be located at the crosswalk itself with an advanced warning sign installed 100' to 125' prior to crosswalk for each direction of travel.

Expected Safety Benefit: Advance yield or stop markings and signs can reduce pedestrian crashes up to 25%.¹³



Crosswalk signage and RRFB at East St and Dix Ave

2.2.11 Medians/Pedestrian Refuge Islands

While medians are continuous raised areas in the approximate center of a roadway, pedestrian refuge islands are short segments of raised median at crosswalk locations. The intent is to provide a refuge for pedestrians between each direction of motor vehicle traffic, something most critical on roadways with more than two travel lanes.

Expected Safety Benefit: Medians with marked crosswalks can reduce crashes by 46%, while pedestrian refuge islands can reduce crashes by 56%.¹⁴

¹¹ https://cmfclearinghouse.fhwa.dot.gov/study_detail.php?stid=14

¹² <https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements>

¹³ <https://highways.dot.gov/safety/proven-safety-countermeasures/crosswalk-visibility-enhancements>

¹⁴ <https://highways.dot.gov/safety/proven-safety-countermeasures/medians-and-pedestrian-refuge-islands-urban-and-suburban-areas>

2.2.12 Restricted Turning Movements

Restricting left turn movements (and occasionally right turns) at intersections can improve safety for all users by removing a critical conflicting movement that can lead to crashes. Restrictions can also be used as access management strategy, such as allowing only “right-in, right-out” turns into and out of commercial sites (which can work well when nearby roundabouts allow for change of direction easily).

Expected Safety Benefit: Converting a two-way stop-controlled intersection or an unsignalized intersection to a Restricted Crossing U-turn intersection can reduce crashes up to 54%-63%.¹⁵

2.2.13 Enhanced Crosswalks

Enhancements include restriping with more durable pavement markings, the installation of rectangular rapid flashing beacons (RRFBs), bump outs, and/or pedestrian refuge islands. Crosswalks can also be combined with speed humps as a raised crosswalk. Each option is intended to improve compliance with crosswalk yielding laws and/or to slow traffic speeds.



Refuge area on E Main St at CTfastrak

Expected Safety Benefit: RRFBs can reduce pedestrian crashes up to 47% and increase motorist yielding rates up to 98% (although this varies by speed limit, number of lanes, crossing distance, and time of day).¹⁶ Raised crosswalks can reduce all crashes by 30%-36% and vehicle/pedestrian crashes by 46%.¹⁷ Safety benefits are also documented in this section under the Crosswalk Signage and Medians/Pedestrian Refuge Islands countermeasures.

2.2.14 Roundabouts

Typically used as an alternative to traffic signals at four-way intersections and all-way stop-controlled intersections, roundabouts can improve traffic flow, reduce maintenance costs, and reduce serious injury crashes by slower traffic speeds. While pedestrians and bicyclists can be easily accommodated in single-lane roundabouts, two lane roundabouts require careful design consideration to promote safety at crossings for vulnerable road users. Although



Roundabout at Bank St and Columbus Blvd

¹⁵ <https://highways.dot.gov/safety/proven-safety-countermeasures/reduced-left-turn-conflict-intersections>

¹⁶ <https://highways.dot.gov/safety/proven-safety-countermeasures/rectangular-rapid-flashing-beacons-rrfb>

¹⁷ https://cmfclearinghouse.fhwa.dot.gov/study_detail.php?stid=14

hybrid roundabouts (which may have two lanes on one side of the roundabout) are being designed in CT, there are no multi-lane roundabouts in CT (with two lanes of traffic on all sides).

Expected Safety Benefit: Converting a two-way stop-controlled intersection to a roundabout can result in an 82% reduction in fatal and injury crashes, while converting a signalized intersection to a roundabout reduce fatal and injury crashes up to 78%.¹⁸

2.2.15 Horizontal Deflection

These are roadway design features that require motorists to make a lateral shift in direction over a short segment of roadway. This encourages slower speeds and a greater awareness of conditions along the roadway. Deflection is created with the installation of splitter islands, chicanes on each side of the road, and travel lane realignment to achieve the lateral shift.

Expected Safety Benefit: Safety benefits are documented under the specific horizontal geometric countermeasures in this section, including Curb Extensions and Medians/Pedestrian Refuge Islands.

¹⁸ <https://highways.dot.gov/safety/proven-safety-countermeasures/roundabouts>

3

HIGH CRASH LOCATION CONCEPTS

The Data Analysis Memo detailed a **High Crash Network** with eighteen intersections and sixteen segments for the City of New Britain to focus on. In collaboration with the City, two locations were identified for developing improvement concepts to make infrastructure changes to support the goals of the Safety Action Plan. The other locations on the High Crash Network were reviewed to determine which Countermeasures described in Chapter 2 would be applicable to improve their safety. These are described in more detail in Chapter 4.

Detailed improvement concepts were created for:

- **Martin Luther King Drive (CT-71) from East Main Street to North Street/Stanley Street.** This high crash segment includes three busy intersections at:
 - East Main Street
 - Winter Street; and
 - North Street/Stanley Street.
- **Corbin Avenue from Hart Street to Chamberlain Street/Brookside Road.** This high crash segment includes four intersections with challenging traffic patterns, including:
 - Hart Street;
 - Monroe Street/Ten Acre Road;
 - Lincoln Street; and
 - Chamberlain Street/Brookside Road.

Traffic analyses were conducted for both locations to determine the impact to delays and queuing under the proposed conditions. The results of these analyses are described here, and the full table of results is included in the Appendix. Each of the detailed concept includes **order-of-magnitude estimates** for construction only, which do not include engineering, potential right-of-way or property acquisition, or permitting costs. These cost estimates are based off the concept-level detail provided as well as recent projects of comparable size and scope. They are not based on detailed material quantities which would be developed during a design project. The cost estimates are meant to provide the City of New Britain with a base construction cost that can inform their decisions about future funding and budgeting. **Additional concept development and design will need to be completed to refine these cost estimates.**

3.1 Concept Location #1: Martin Luther King Drive (CT-71)

Martin Luther King (MLK) Drive/CT-71 is a four-lane divided roadway with turn lanes at the intersections of East Main Street, Winter Street, and North Street/Stanley Street. **The limits of study for this concept are MLK Dr from E Main St to North St/Stanley St.** A center median island with plantings currently separates the northbound and southbound traffic. Sidewalks on either side of the street are at the edge of the travel lanes. CT transit bus route 128 (Hartford/Westfarms-New Britain) has inbound and outbound bus stops at the intersection of MLK Drive and Winter Street. Adjacent land uses include multi-family apartment buildings on both sides of the roadway, a McDonald's restaurant, and the eastern side of the New Brite Plaza – a conventional strip shopping mall with a large parking lot fronting the roadway. The Route 9/Route 72 interchange is 500' from the roadway, and the New Britain CTfastrak Busway is within walking distance.

Both MLK Drive at E. Main Street and at North Street/Stanley Street are High Crash Network Intersections with identified high crash rates and high numbers of VRU crashes. This segment of MLK Drive is also along a High Crash Network Segment for its high crash rate and number of VRU crashes. The current layout of the roadway encourages high-speed traffic through an urban area with high-density housing and retail, contributing to risk of rear-end and angle crashes. There are also limited opportunities for pedestrians to cross the roadway and crosswalks that do exist are long, increasing their exposure to vehicle traffic. There are no dedicated bicycle facilities to support less experienced bicyclists and connect with the rest of the New Britain bicycle network.

Traffic data and analysis show that this segment of MLK Drive has more traffic capacity than is needed in the existing and future conditions, allowing for consideration of a road diet as a countermeasure. Reducing the number of lanes on MLK Drive provides opportunities for creating comfortable, dedicated bicycle facilities, reduced pedestrian crossing distances, and additional planting space to beautify the area. The crosswalks at the intersections can also be realigned to take a shorter distance across the roadway to reduce crossing distances and needed walk times in conjunction with implementation of a leading pedestrian interval (LPI) phase.

Using the road diet countermeasure as the basis for improvements, three potential concepts for this segment were developed for consideration. For each of the concepts, the road diet for MLK Drive starts just north of the E. Main Street intersection, with the two lanes merging into one before the Winter Street intersection. The southbound approach to the intersection will be adjusted to include a single through-lane, right-turn lane, and left-turn lane. Due to the significant amount of traffic going through the MLK Drive and E. Main Street intersection, it is not feasible to reduce the number of travel lanes and turn lanes on the north, east, and west approaches.

Capacity Analysis for the intersections of MLK Drive with E. Main Street, Winter Street, and North Street/Stanley Street were conducted to understand how the road diet would impact traffic operations at these intersections. Traffic data was collected and modeled for the year 2035 to incorporate expected future traffic volumes as well. The proposed improvements in the concepts were included as part of this to model a 2035 Build condition.

- At MLK Drive and E. Main Street/Harry Truman Overpass, the intersection currently operates with an overall Level of Service (LOS) of C in the AM and PM peaks, indicating an average level of delays and queuing. The left turn lanes at the intersection operate at LOS D in the AM and PM conditions, with the eastbound (E. Main Street) left dropping to LOS E in the PM peak. In the 2035 Build conditions, both the AM peak and PM peak still operate acceptably overall, but the left turn lanes see higher delays and queuing, dropping them to LOS E. This is still an acceptable LOS for an urban area, and the turn lanes are well within their capacity limits.
- At MLK Drive and Winter Street, the intersection operates very well with an overall LOS of A in the AM and PM peaks, indicating little delays or queueing. The eastbound approach from Winter Street has some slight delays but is still LOS B. In the 2035 Build conditions, the intersection still functions very well overall. The Winter Street approach does drop to LOS D in the AM and PM peaks, and the westbound approach from the apartment driveway drops to LOS C.
- At MLK Drive and Stanley Street/North Street, the intersection operates with an overall LOS of B in the AM peak and LOS C in the PM peak. Some delays and queueing on approaches exist but are not substantial. In the 2035 Build conditions, both the AM and PM peaks operate at LOS C. The addition of a left turn lane on the North Street approach helps improve capacity issues with that movement in 2035. Most approaches drop to LOS C or D in the Build Condition with some delays in both peaks.

The full capacity analysis tables can be found in the Appendix.

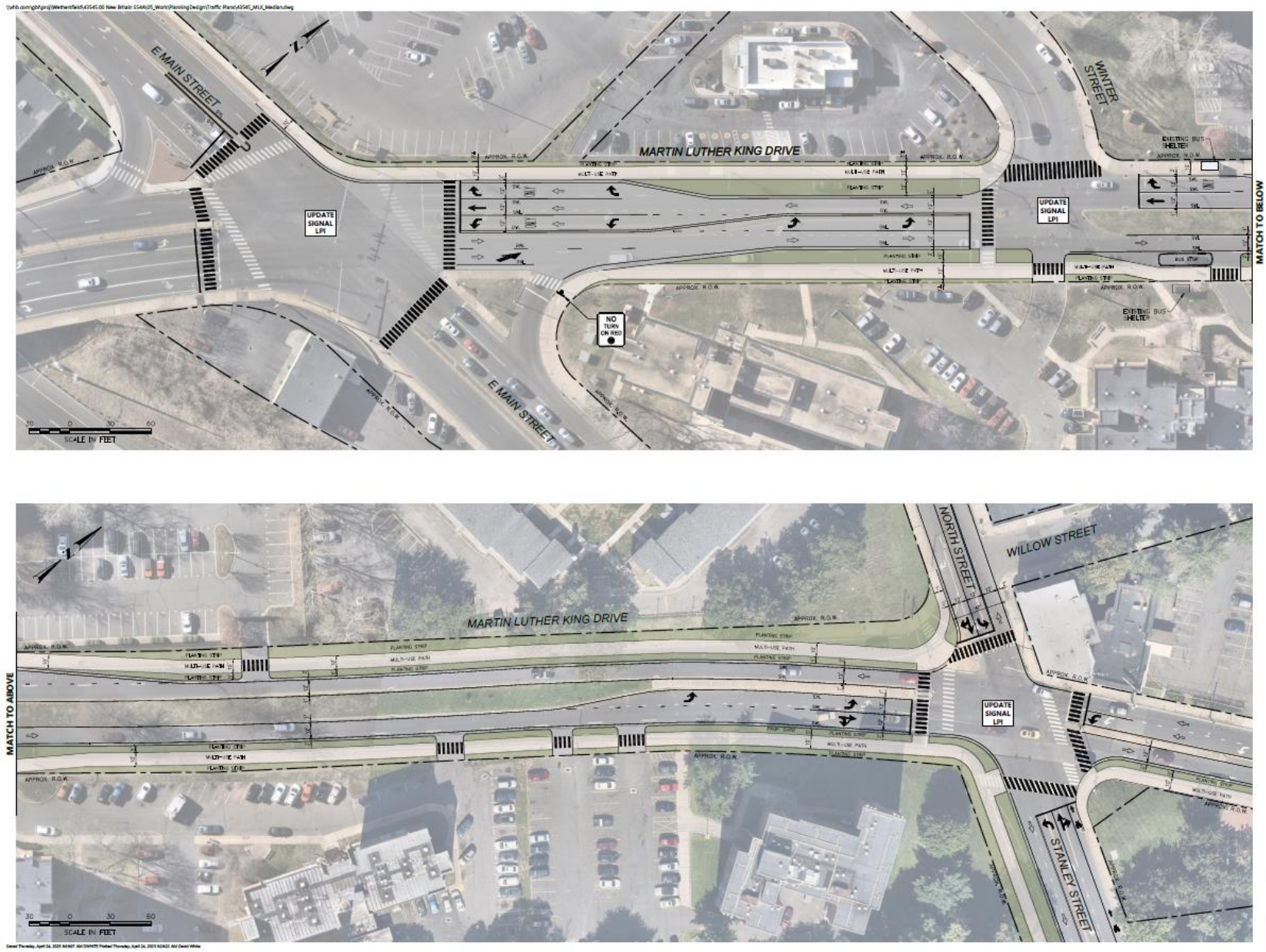
3.1.1 MLK Drive Concept Option #1: Road Diet With Median

The road diet involves reducing the number of through lanes from four to two. At Winter Street, the signal would be upgraded with an LPI. In this concept, the road diet on MLK Drive leaves the existing center median intact. The curb lines on either side of the road are brought into the roadway to reduce the number of lanes. The previous roadway space is used to create formal shared-use paths on both sides of the street to provide a shared space for people walking and bicycling. Additional planting space is also created to provide buffer space between the street and the path and a more comfortable environment for people walking and bicycling.

The intersection of North Street/Stanley Street remains signalized but is narrowed significantly to reduce the amount of road pavement and shorten the crosswalks for pedestrians. The free right turn lane from North Street to MLK Drive south is also removed to reduce traffic speeds and improve pedestrian safety. On Stanley Street, the shared-use path from MLK Drive continues east over Route 9. The existing planted median and pavement on MLK Drive is reused in this concept to minimize full depth reconstruction of the roadway. See concept diagram in Figure 2 on the next page.

Concept Cost Estimate: \$4.5 million

FIGURE 2 MLK DRIVE CONCEPT OPTION #1



3.1.2 MLK Drive Concept Option #2: Road Diet Without Median

This concept is generally the same as the first concept in terms of the road diet and the inclusion of two shared-use paths on both sides of the street. **However, this concept removes the center median entirely to create a narrower cross-section with a two-lane road in the middle.** This gives even more space for the two multi-use paths and vegetated space along the road.

Design approaches to the driveway crossing of the multi-use path will need to be considered, such as a raised crossing, pavement markings, and signage. The intersection of North Street/Stanley Street remains signalized as in Concept Option #1. Note that this concept requires significant pavement reconstruction and is thus more expensive than the first concept. See Figure 3 on the following page for a diagram of this concept. Figure 4 shows the existing cross-section of MLK Drive along with the two concept options with and without the center median.

Concept Cost Estimate: \$5.5 million

FIGURE 3

MLK DRIVE CONCEPT OPTION #2

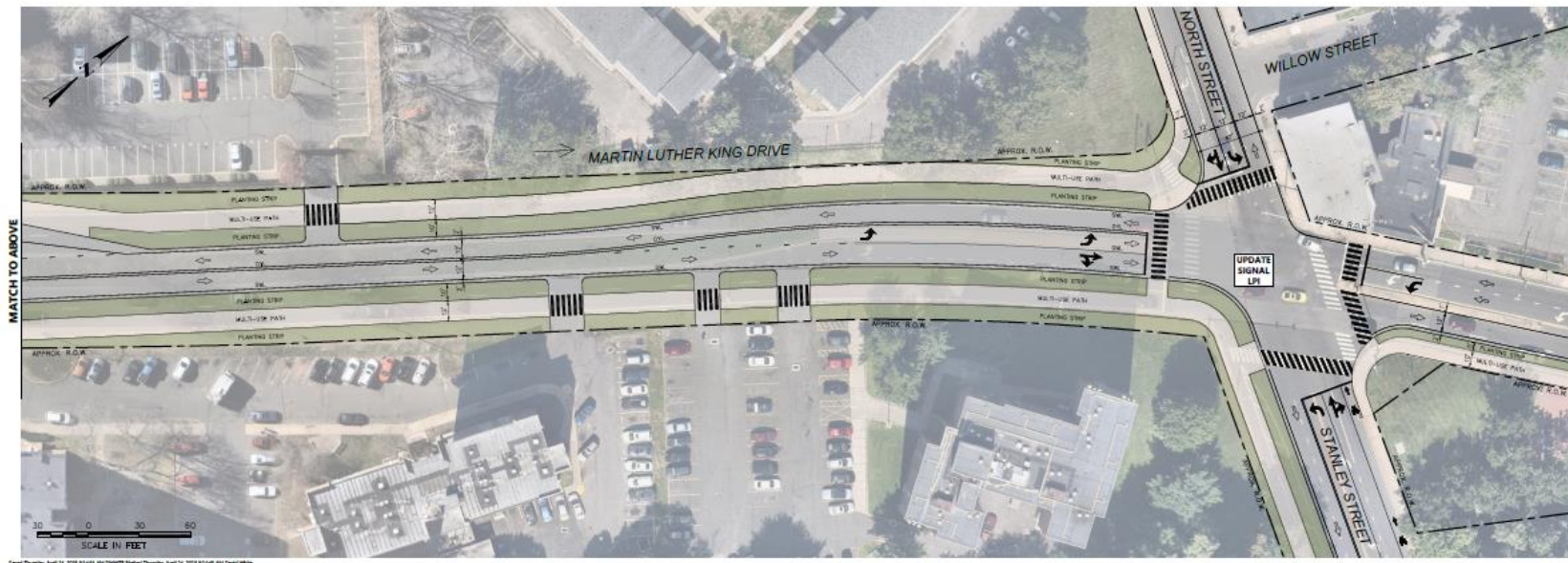
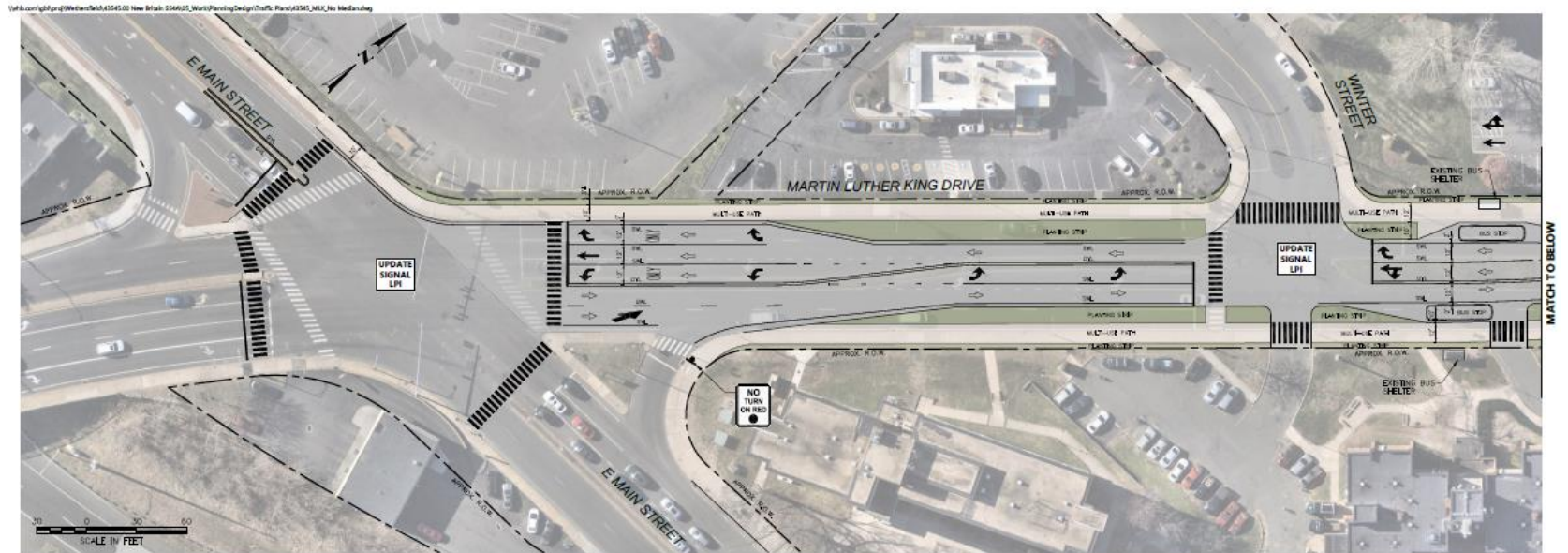
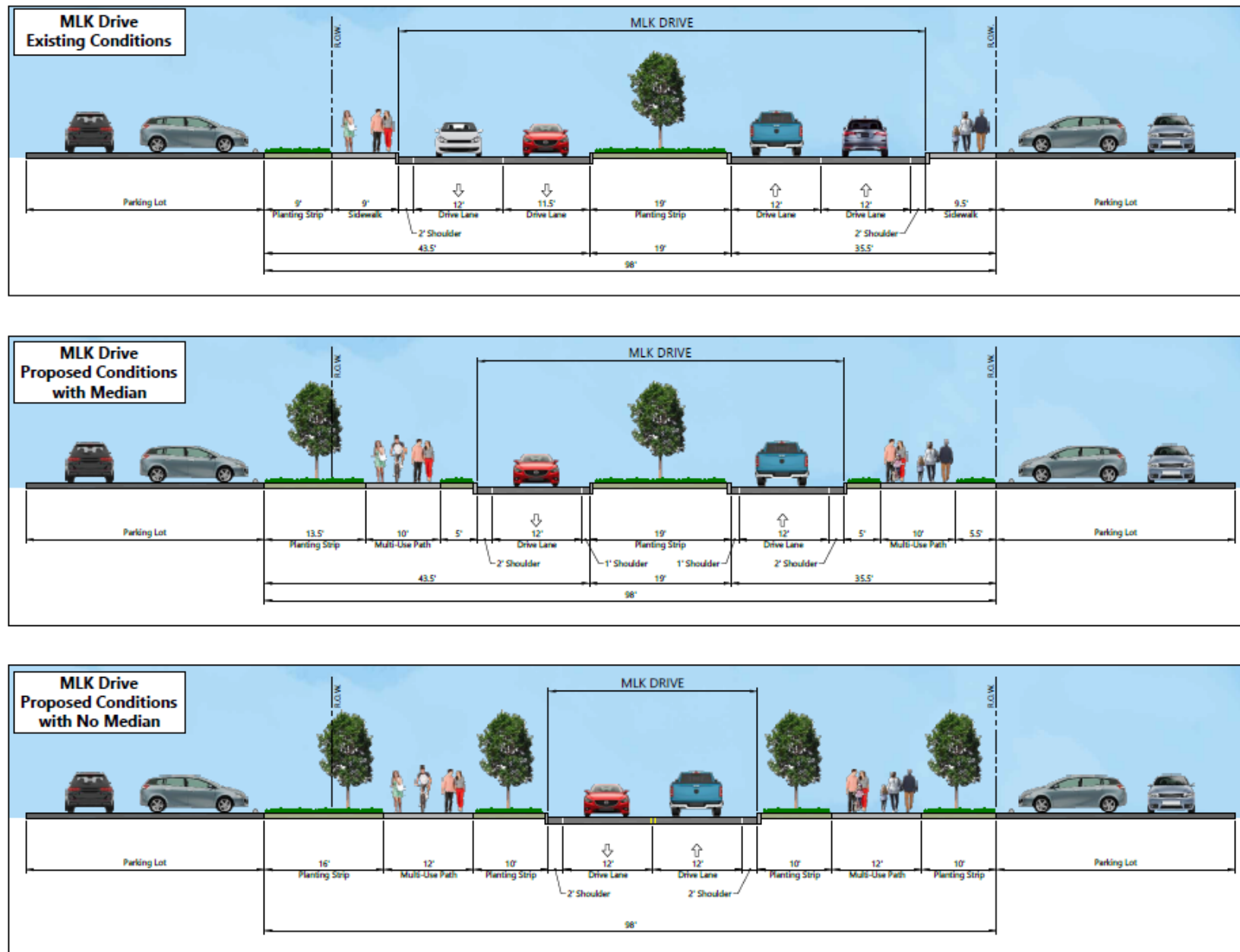


FIGURE 4 MLK DRIVE EXISTING AND CONCEPT CROSS-SECTIONS



3.1.3 MLK Drive Concept Option #3: Road Diet With Median and Roundabout

This concept is the same as Concept Option #1 in terms of retaining the center median. However, in reviewing the intersection of MLK Drive and North Street/Stanley Street, an additional option for the intersection was explored to convert the intersection to a roundabout.

The current signalized intersection would be removed and roundabout installed in its place. A roundabout would improve traffic flow and reduce traffic speeds, improving safety. A 120' and 110' roundabout were evaluated, as the larger roundabout would require additional right-of-way from the property on the southeast corner of the intersection to be able to fit. However, it can be designed to avoid significant impacts to nearby buildings. It is expected that an easement would be needed from the apartment building property on the southeast corner of the intersection to accommodate a sidewalk or shared-use path facility. The cross-section in Figure 1.3 of the proposed improvements with the median would be similar to the resulting cross-section in the roundabout option.

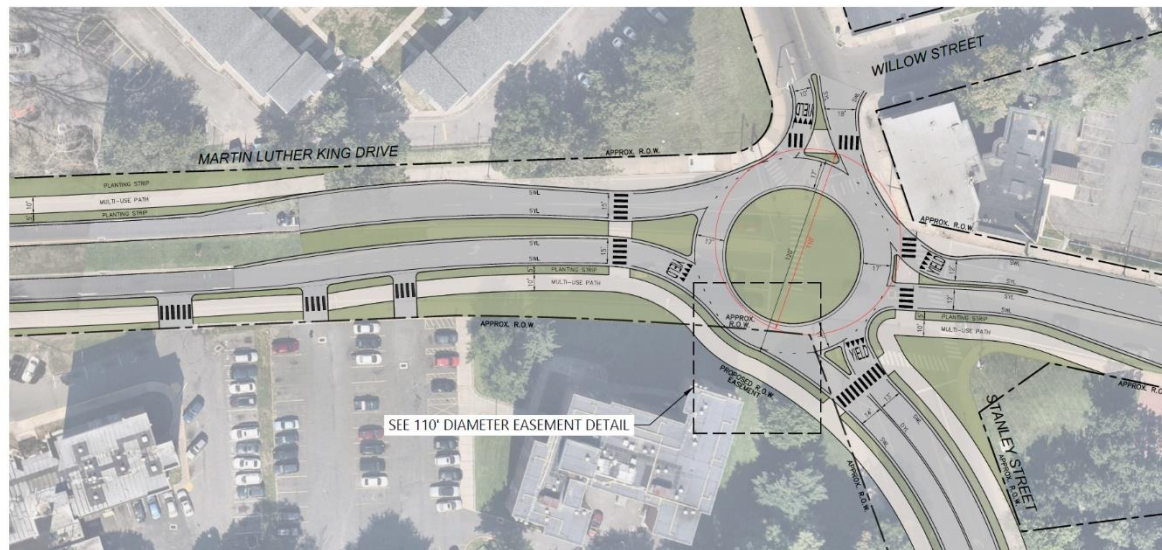
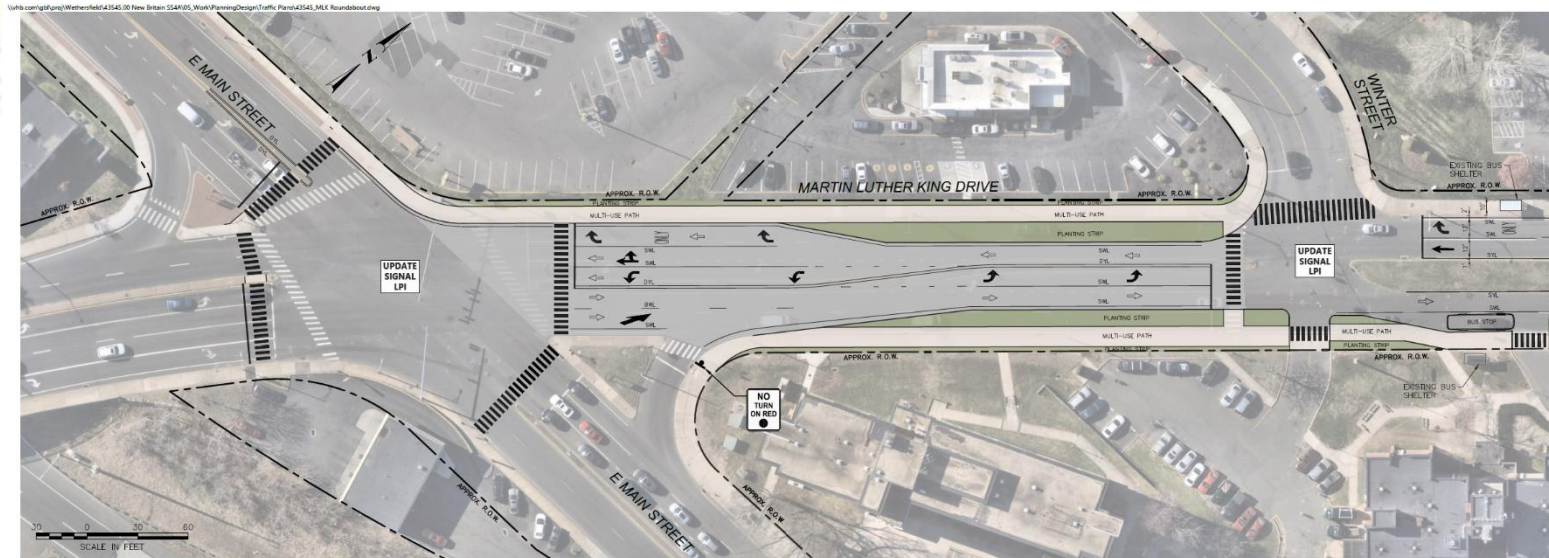
The North Street/Stanley Street intersection was modeled separately in the 2035 Build Conditions to determine the operational impacts of a roundabout. A roundabout at this location would work better operationally than having it remain as a traffic signal, with LOS A and B for all approaches in the AM peak, and LOS B and C in the PM peak. There would also be benefits in the form of reduced speeds and increased safety that would come with the installation of a roundabout.

See Figure 1.4 for a diagram of the improvements with the roundabout.

Concept Cost Estimate: Total \$8 million:

- \$4 million for roundabout
- 0.25 miles of road diet curb modifications, new landscaping, crosswalks, raised driveway crossings ~ \$3 million
- Widen sidewalk to Shared Use Path width (x2) over 0.25 miles ~ \$500K
- Update 2 signals for LPI and road diet ~ \$500K

FIGURE 5 MLK DRIVE CONCEPT OPTION #3



David Munday, May 5, 2021 10:47:10 PM (GMT-07:00); Printed Monday, May 5, 2021 1:01:01 PM David Munday

3.2 Concept Location #2: Corbin Avenue at Lincoln Street

This includes Corbin Avenue at Lincoln Street, as well as adjacent side streets including Monroe Street, Ten Acre Road, Brookside Road, and Chamberlain Street. Corbin Avenue is a two-lane road running north-south. It intersects Lincoln Street at a heavily skewed angle, requiring short one-way segments of Lincoln connecting to Monroe Street and Brookside Road. An existing traffic signal is at the Corbin/Lincoln/Monroe Street intersection. The skewed angle of the intersections creates significant sightline challenges for drivers going through them, increasing risk of angle and rear-end crashes. The short one-way segments of Lincoln Street, at skewed angles, allow drivers to take the shallow turns without slowing. Drivers unfamiliar with the operations of the intersections can easily go the wrong way, creating head-on crash risks. The off-set intersections create confusion and delays as drivers attempt to navigate multiple Stop-controlled intersections in a row. The series of intersections also lacks fully connected pedestrian facilities and crosswalks for pedestrian mobility. Poor sightlines increase crash risk to pedestrians who may be crossing in a driver's blind spot.

The goals of the concept development for this location are to simplify the intersection, realign the offset roadways to improve sightlines, reduce excess pavement, reduce speeding, and improve pedestrian mobility. These improvements will reduce the potential for crashes and improve safety. Eliminating the short one-way sections of Lincoln Street is a crucial element in accomplishing these goals for this area. Realigning the intersections to be less offset from one another is another strategy that was used as part of concept development for this location.

Two potential concepts were developed for this location, one retaining the traffic signal at Corbin Avenue and Monroe Street, and one replacing the signal with a roundabout. The concepts are explained in more detail below.

3.2.1 Corbin Avenue Concept Option #1: Close Lincoln Street at Monroe Street

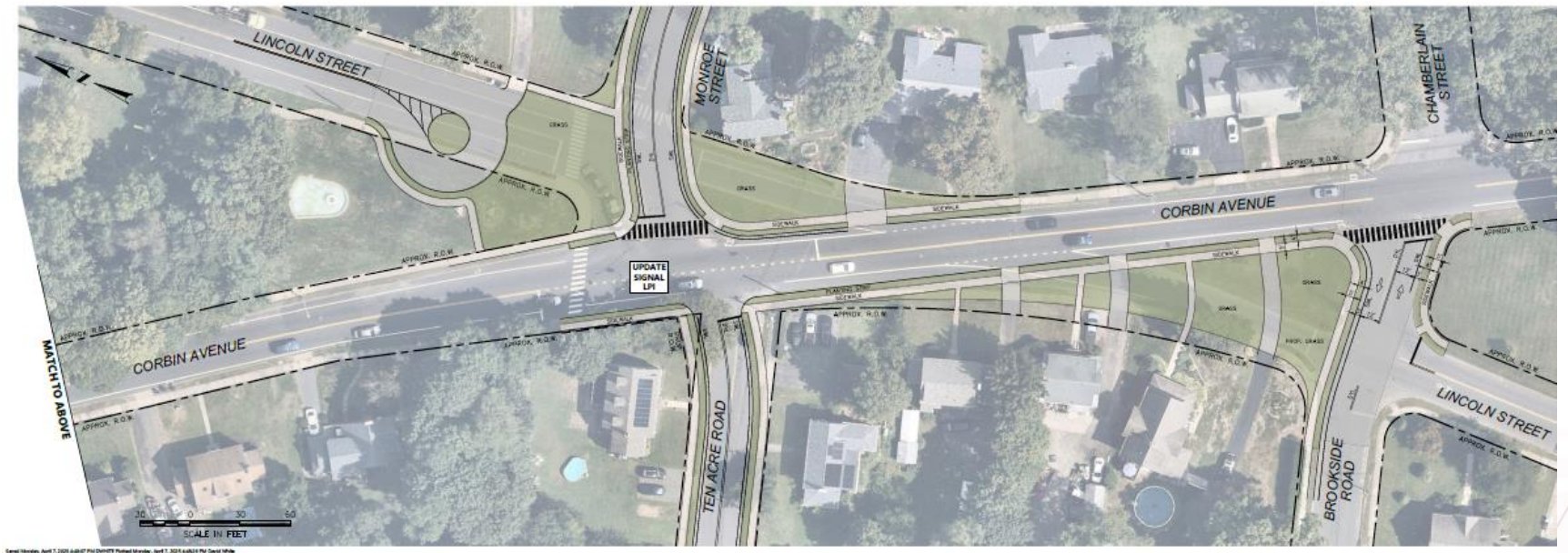
The concept for this location includes removing the one-way sections of Lincoln Street and disconnecting Lincoln Street from Monroe Street. Additional planting space will be added, as well as new sidewalks and crosswalks with reduced pedestrian crossing distances. The intersections of Monroe Street and Ten Acre Road, and Brookside Road and Chamberlain Street, will also be realigned to be closer together and not so far offset. Closing Lincoln Street at Monroe Street is a principal element of this concept because it removes challenging turning movements that create conflict with other users and require a stop-controlled intersection right next to a signalized intersection. Since drivers will no longer be able to go north on Lincoln Street from Monroe Street, they will need to continue on Corbin Avenue to Hart Street to access Lincoln Street. Similarly, drivers going south on Lincoln Street will have to turn right onto Hart Street and left onto Corbin Avenue. Due to this redirection of traffic, especially the considerable number of new left turns from Hart Street to Corbin Avenue that will need to be made, it is expected that a new traffic signal will be needed at Corbin Avenue and Hart Street.

A capacity analysis was completed for the Corbin Avenue intersection at Ten Acre Road and Monroe Street. From an operations standpoint, the intersection operates well at LOS B. In the 2035 Build condition, the intersection will continue to operate well, with only slight increases in delays and queuing in the eastbound and westbound (Ten Acre Road/Monroe Street) approaches in the future. The northbound and southbound approaches will operate better in this condition.

See Figure 1.5 for a diagram of this concept.

Concept Cost Estimate: \$2 million

FIGURE 6 CORBIN AVENUE AT LINCOLN STREET CONCEPT #1



3.2.2 Corbin Avenue Concept Option #2: Roundabout

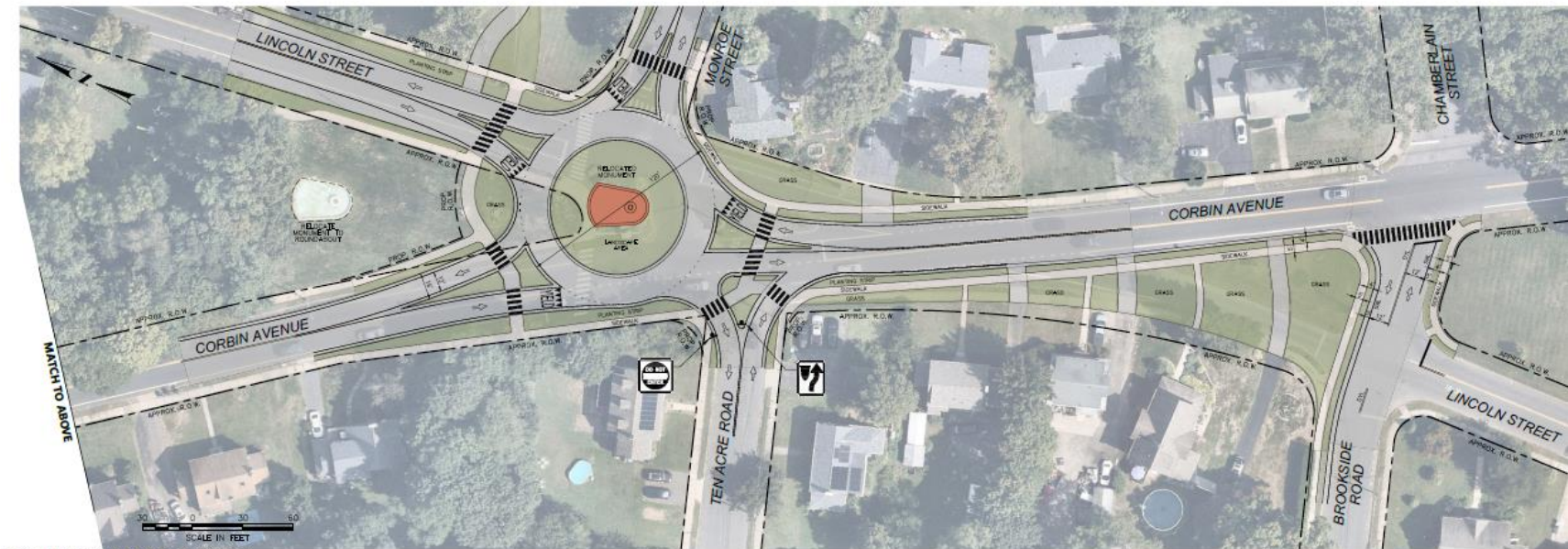
This concept proposes replacing the signalized intersection at Corbin Avenue and Monroe Street/Lincoln Street with a modern, 120' diameter roundabout. This size roundabout will allow all traffic movements to be accommodated within the roundabout while slowing traffic. However, Ten Acre Road will only have access from exiting the roundabout, not accessing the roundabout. A right-out only onto Corbin Avenue just south of the roundabout can be accommodated, as shown in the concept. This is due to geometrical and sightline issues of the proximity of the Ten Acre Road entrance to Corbin Avenue. Some property impacts and easements would be expected if this concept was designed for construction. Additionally, the monument located in the small park at Corbin Avenue and Lincoln Street could be relocated to accommodate the roundabout geometry – in this concept, it is proposed to be placed in the middle of the roundabout. Since Lincoln Street at Monroe Street can stay open to traffic in this concept, the proposed traffic signal at Corbin Avenue and Hart Street in Concept Option #1 would not be needed. The intersection of Corbin Avenue at Chamberlain Street and Brookside Road remains the same as in Concept Option #1.

A capacity analysis was not completed for this concept but should be done if the City decides to pursue this option.

See Figure 1.6 for a diagram of this concept.

Concept Cost Estimate: \$4 million

FIGURE 7 CORBIN AVENUE AT LINCOLN STREET CONCEPT #2



4

MITIGATION STRATEGIES FOR OTHER HIGH CRASH LOCATIONS

As noted at the beginning of Chapter 3, eighteen intersections and sixteen segments were identified as High Crash Locations. While concepts at the level of detail shown in the MLK Drive and Corbin Avenue segments described in Chapter 3 cannot be created for all these locations as part of this plan, the High Crash Locations were reviewed at a high level to determine which of the strategies and countermeasures from the “Five E’s” framework may be appropriate to deploy in an effort to improve safety. These High Crash Locations and potential countermeasures are shown in Table 3 and Table 4, separated between the Intersections and Segments. After the tables, more detailed lists of potential countermeasures at each location are included in Table 5 and Table 6, to give additional context.

Each location was reviewed via NearMap aerial imagery and Google Street View. Features of the locations were noted, such as intersection control, number of through lanes, presence of crosswalks and pedestrian facilities, presence of bicycle facilities, intersection and segment geometry, adjacent land uses, and turn lanes. The list of countermeasures was then reviewed to determine which ones would be appropriate for a particular location. For the Engineering Countermeasures, Section 2.2 lists the expected safety benefits and crash reduction for the various potential countermeasures. Some locations already have had extensive physical changes, while others have more limited opportunities for geometric countermeasures (such as residential intersections with existing traffic control and narrow roadways). For these locations, Education, Enforcement, and Evaluation countermeasures were closely considered for recommendation.

Common engineering countermeasures reviewed for **intersection** locations include curb extensions, improved traffic operations, and enhanced signage. Other ways to improve intersections, like road diets, were considered, but require further traffic analysis of the intersections to determine feasibility. Similarly, roundabouts were considered at most intersections, with a 120’-diameter roundabout concept used over an aerial image to do a preliminary test of feasibility and identify potential right-of-way and building impacts. Where these impacts did not appear to be present or were minor, a roundabout was identified as a potential improvement, pending more detailed analysis. Mini-roundabouts (80’-100’) could be considered where physical constraints limit installation of standard size roundabouts.

Segment locations were reviewed for corridor-wide application of certain Engineering countermeasures, and at various intersections along the corridor. In some cases, High Crash Intersections and High Crash Segments overlapped. In this case, potential countermeasures applied to that intersection in the segment would also apply within the segment, along with other countermeasures depending on the context. A more detailed review would need to be conducted to identify specific areas along the segments where the Engineering countermeasures would be placed.

TABLE 3

POTENTIAL COUNTERMEASURES FOR HIGH CRASH INTERSECTION LOCATIONS

High Crash Intersection Locations							
Potential Countermeasures	Farmington Ave & Slater Rd/Alexander Rd	Stanley St (CT-71a) & Blake Rd/Driveway to Stanley Quarter Park	Stanley St (CT-71a) & Eddy Glover Blvd	Osgood Ave & Corbin Ave	Corbin Ave & Myrtle St	W. Main St (CT-372) & Corbin Ave	Myrtle St & Burritt St
Education and Encouragement							
Public Education Campaigns	•		•				
In-School Content			•				
Enforcement							
In-Person Enforcement	•						
Automated Enforcement							
Evaluation							
Safety Audits			•				
Data Collection			•				
Engineering							
Road Diet							
Traffic Control Devices					•	•	•
Curb Extensions		•		•			•
Enhanced Signage			•	•	•	•	•
Bicycle Lanes	•	•	•				
Traffic Operations	•	•		•		•	
Pavement Markings				•	•		•
Parking Changes							
Enhanced Lighting							
Crosswalk Signage		•		•	•		
Medians and Pedestrian Refuge Islands							
Restricted Turning Movements							
Enhanced Crosswalks		•		•		•	
Roundabouts	•		•			•	
Horizontal Deflection	•		•			•	

High Crash Intersection Locations							
Potential Countermeasures	Corbin Ave (CT-372) & Black Rock Ave	Lincoln St & Hart St	Corbin Ave (CT-372) & Lincoln St/Monroe St	W. Main St (CT-555) & Washington St	Main St & W. Main St (CT-372)	E. Main St (CT-174) & MLK Drive (CT-71a)	North St/Stanley St (CT-71a) & MLK Drive (CT-71a)
Education and Encouragement							
Public Education Campaigns	•				•		
In-School Content	•						
Enforcement							
In-Person Enforcement							
Automated Enforcement							
Evaluation							
Safety Audits				•	•		
Data Collection				•	•		
Engineering							
Road Diet			•				•
Traffic Control Devices		•	•				
Curb Extensions		•					•
Enhanced Signage		•		•		•	•
Bicycle Lanes							
Traffic Operations	•	•	•	•		•	•
Pavement Markings	•		•			•	
Parking Changes			•				
Enhanced Lighting		•					
Crosswalk Signage			•				
Medians and Pedestrian Refuge Islands			•				•
Restricted Turning Movements			•				
Enhanced Crosswalks			•			•	•
Roundabouts	•		•		•		•
Horizontal Deflection			•				•

High Crash Intersection Locations				
Potential Countermeasures	E. Main St (CT-174) & Stanley St	Stanley St & Dwight St	Chestnut St & Columbus Blvd	CT-9 Ramp/Columbus Blvd & Ellis St
Education and Encouragement				
Public Education Campaigns			•	
In-School Content				
Enforcement				
In-Person Enforcement			•	
Automated Enforcement			•	
Evaluation				
Safety Audits			•	
Data Collection			•	
Engineering				
Road Diet	•			•
Traffic Control Devices		•		
Curb Extensions	•	•		•
Enhanced Signage	•			
Bicycle Lanes				•
Traffic Operations	•		•	
Pavement Markings				•
Parking Changes				
Enhanced Lighting				
Crosswalk Signage		•		•
Medians and Pedestrian Refuge Islands	•			
Restricted Turning Movements				
Enhanced Crosswalks	•	•		•
Roundabouts	•			•
Horizontal Deflection	•			•

TABLE 4 **POTENTIAL COUNTERMEASURES FOR HIGH CRASH SEGMENT LOCATIONS**

High Crash Segment Locations						
Potential Countermeasures	Farmington Ave from Slater Rd/Alexander Rd to Washington St	Hartford Rd (CT-71a) from Costco to town boundary	Stanley St (CT-71a) from Barbour Rd to Francis St	East St (CT-175) from Allen St to town boundary	W. Main St & Corbin Ave (CT-372 & CT-555) from Wooster St to Steele St	Lincoln St from W. Main St to Monroe St
<i>Education and Encouragement</i>						
Public Education Campaigns		•	•	•	•	
In-School Content			•	•	•	
<i>Enforcement</i>						
In-Person Enforcement		•	•	•	•	
Automated Enforcement	•	•	•	•	•	
<i>Evaluation</i>						
Safety Audits			•		•	
Data Collection			•		•	•
<i>Engineering</i>						
Road Diet		•			•	
Traffic Control Devices	•				•	
Curb Extensions				•		•
Enhanced Signage					•	•
Bicycle Lanes			•	•	•	
Traffic Operations			•		•	•
Pavement Markings					•	•
Parking Changes			•			•
Enhanced Lighting						•
Crosswalk Signage	•	•				
Medians and Pedestrian Refuge Islands			•			
Restricted Turning Movements						
Enhanced Crosswalks	•	•	•		•	•
Roundabouts	•	•	•	•	•	
Horizontal Deflection	•		•		•	•

High Crash Segment Locations						
Potential Countermeasures	Bassett St from Whiting St to Brook St	CT-71 from North St to town boundary	Stanely St from E. Main St to Whiting St	Ellis St from East St to Bassett St	E. Main St (CT-174) & Washington Ave from MLK Dr. to town boundary	East St from Smalley St to South St
Education and Encouragement						
Public Education Campaigns	•	•		•		•
In-School Content	•			•		•
Enforcement						
In-Person Enforcement	•	•	•	•	•	•
Automated Enforcement	•	•	•	•		•
Evaluation						
Safety Audits	•	•	•		•	•
Data Collection	•	•	•		•	•
Engineering						
Road Diet		•		•	•	
Traffic Control Devices						
Curb Extensions		•		•		
Enhanced Signage						•
Bicycle Lanes		•			•	
Traffic Operations		•		•		
Pavement Markings		•				
Parking Changes						
Enhanced Lighting						
Crosswalk Signage				•		•
Medians and Pedestrian Refuge Islands		•				
Restricted Turning Movements						
Enhanced Crosswalks		•				
Roundabouts		•				
Horizontal Deflection		•				

High Crash Segment Locations				
Potential Countermeasures	Broad St from Burritt St to Main St	North St from Main St to Stanley St	Main St from Broad St/Beaver St to Elm St/Franklin Square/S. Main St	Arch St from Main St to Shuttle Meadow Ave
Education and Encouragement				
Public Education Campaigns			•	•
In-School Content				
Enforcement				
In-Person Enforcement			•	
Automated Enforcement			•	•
Evaluation				
Safety Audits	•		•	
Data Collection	•	•	•	
Engineering				
Road Diet				
Traffic Control Devices				
Curb Extensions	•			•
Enhanced Signage	•			
Bicycle Lanes		•		
Traffic Operations				
Pavement Markings		•		•
Parking Changes		•		
Enhanced Lighting				
Crosswalk Signage	•	•		•
Medians and Pedestrian Refuge Islands				
Restricted Turning Movements				
Enhanced Crosswalks	•	•		•
Roundabouts				•
Horizontal Deflection				•

High Crash Intersections – Detailed Countermeasures

TABLE 5 DETAILED COUNTERMEASURES – HIGH CRASH INTERSECTION LOCATIONS

A. Farmington Avenue & Slater Road/Alexander Road
- Consider adding bicycle lanes on Farmington Avenue on the New Britain side of the intersection to improve connectivity. - Roundabout would fit with minor property impacts; excess existing pavement currently. - Improve signal timing if needed. - May be good education opportunity for people entering into New Britain from Farmington and coming off exit 37 of I-84. - Consider Automated Traffic Safety Enforcement Devices (ATESD) for speeding/red light running.
B. Stanley Street (CT-71a) & Blake Road/Driveway to Stanley Quarter Park
- Additional crosswalks at Blake Street/Driveway to Stanley Quarter Park to make full connection for pedestrians to access the park. - Improve signal timing if needed. - Explore potential for curb extensions for crosswalks. - Consider bicycle lanes for Stanley Street and Blake Road.
C. Stanley Street & Eddy Glover Boulevard
- Consider roundabout at this intersection, which would fit with only minor ROW impacts. - Install formal bike lanes on Stanley Street to connect to CCSU. - Improve signal visibility with back plates. - Public education opportunity in partnership with CCSU, education campaign and in-school education. - Review crash data/do safety audit to review effectiveness of complete streets improvements (road diet, bike lanes)
D. Osgood Avenue & Corbin Avenue
- Install curb extensions for crosswalks, consider protected intersection for bike lanes along with new curbs. - Install sidewalks and curb ramps on the southeast corner of the intersection. - Reduce size/close extra driveways by the intersection on northwest and northeast corners. - Repaint north/south markings and bike lane to be more visible. - Increase signal visibility with back plates.
E. Corbin Avenue & Myrtle Street
- Install crosswalks & pedestrian signals at intersection. - Increase signal visibility with back plates. - Improve pavement markings at Myrtle St approach for turn lanes.
F. W. Main Street (CT-372) & Corbin Avenue
- Consider single-lane roundabout here; although 120' diameter will work, it has some property impacts, so potentially a mini-roundabout could work. - Upgrade existing curb ramps to be ADA accessible. - Increase signal visibility with back plates. - Review signal timing; consider concurrent pedestrian phasing with LPI.

G. Myrtle Street & Burritt Street

- Consider curb extensions on Burritt Street approaches to make crossing shorter for pedestrians.
- Improve signal visibility by adding back plates.
- VHB project under design will include updated pavement markings, green pavement markings for bicycles, and update the pedestrian signals.

H. Corbin Avenue (CT-372) & Black Rock Avenue

- Consider feasibility of single-lane roundabout. Can fit without property impacts.
- Review signal timing; consider concurrent pedestrian phasing with LPI.
- Refresh pavement markings in the intersection and for the bike lane.

I. Lincoln Street & Hart Street

- Increase visibility of traffic control signage (Stop signs) – may include flashing lights to bring attention to them.
- Changes at Lincoln & Monroe will likely change the traffic patterns – should consider data collection before and after those changes are made.
- Consider enhanced/additional lighting here.
- Curb extensions could be considered on the approaches with wider shoulders.

J. Corbin Avenue (CT-372) & Lincoln Street/Monroe Street

- Conceptual improvements are proposed as part of Concept Location #2 in Section 1.3 (High Crash Location Concepts).

K. W. Main Street (CT-555) & Washington Street

- Improve signal visibility by installing back plates.
- Review signal timing; consider concurrent pedestrian phasing with LPI.
- Conduct safety audit and data collection to review greater detail on crash history and factors contributing to crashes at this location.

L. Main Street & W. Main Street (CT-372)

- In the future, consider a single-lane roundabout here, which will fit with minor property impacts.
- A public education campaign near this intersection, being in the center of downtown and where many people biking and walking would be found.
- Conduct safety audit and data collection to review greater detail on crash history and factors contributing to crashes at this location.

M. E. Main Street (CT-174) & MLK Drive (CT-71a)

- Conceptual improvements are proposed as part of Concept Location #1 in Section 1.3 (High Crash Location Concepts).

N. North Street/Stanley Street (CT-71a) & MLK Drive (CT-71a)

- Conceptual improvements are proposed as part of Concept Location #1 in Section 1.3 (High Crash Location Concepts).

O. E. Main Street (CT-174) & Stanley Street

- Consider single-lane roundabout –fits with minor impact to properties.
- Consider road diet on west leg of going westbound.
- Upgrade curb ramps for ADA accessibility.
- Improve signal visibility by installing back plates.
- Consider curb extensions where geometry allows.
- Pedestrian refuge island on the west side of the intersection in conjunction with road diet, noted above.
- Review signal timing; consider concurrent pedestrian phasing with LPI.

P. Stanley Street & Dwight Street

- Consider all-way Stop control based on potential sightline issues on southeast corner. Also review traffic volumes.
- Curb extensions on the west side of the intersection (in shoulder) to slow traffic through intersection.
- Curb extensions/tighten up east side of intersection (Dwight St) if possible.
- Install crosswalk on east side of intersection.
- Update curb ramps for ADA accessibility.
- Consider roundabout at this intersection.

Q. Chestnut Street & Columbus Boulevard

- Review signal timing; consider concurrent pedestrian phasing with LPI.
- A public education campaign near this intersection, being in the center of downtown and where many people biking and walking would be found.
- Conduct safety audit and data collection to review greater detail on crash history and factors contributing to crashes at this location.
- Consider in-person and automated enforcement here, as this is a major access point into downtown from Route 9.

R. CT-9 Ramp/Columbus Boulevard & Ellis Street

- Consider single-lane roundabout – or mini-roundabout to reduce some minor property impacts.
- Upgrade curb ramps and crosswalks for ADA accessibility.
- Repaint faded crosswalks across Ellis Street, install crosswalks on all legs.
- Install curb extensions on the east leg of Ellis Street.
- Consider bicycle lanes on the east side of Ellis Street.
- Road diet on east leg of Ellis Street – reduce from four lanes, add bike lanes.

High Crash Segments – Detailed Countermeasures

TABLE 6 DETAILED COUNTERMEASURES – HIGH CRASH SEGMENT LOCATIONS

A. Farmington Avenue from Slater Road/Alexander Road to Washington Street
- Install RRFB at crosswalk for Pulaski Middle School/Hutchinson Street. - Put accessible pedestrian crossing from Ruth Road to Aldi Grocery Store. - Consider single-lane roundabout at Farmington Avenue and Eddy Glover Boulevard; property impacts can be minimized; convert Biruta Street intersection just to the south to Stop controlled approach. - Install bicycle lanes throughout the corridor where width allows, may need to move parking to one side of the street. - Consider automated enforcement for speeding along corridor, particularly outside the middle school.
B. Hartford Road (CT-71a) from Costco to town boundary
- Consider the feasibility of single-lane roundabout at Hartford Road and Village Square Dr/Target driveway. Determine if it can manage existing traffic. - Install crosswalk and pedestrian signal on east leg of intersection across Target driveway. - Consider the feasibility of a road diet to reduce the number of lanes and include bicycle facilities. - In-person and automated enforcement in this segment since it is an entrance into the city from Route 9. - Potential for public education campaign in association with Target or Costco.
C. Stanley Street (CT-71a) from Barbour Road to Francis Street
- Install RRFBs at Commonwealth Avenue crosswalk and upgrade curb ramps for ADA accessibility. - Consider crosswalk at Highland Terrace to connect neighborhood to school for walkers. - See High Crash Intersection notes for Stanley Street & Eddy Glover Blvd. - Install RRFB at crosswalk between Stanley Quarter Park and St. Francis Catholic Church. - Stanley Street at Lyle Road – narrow Lyle Road opening, consider median/pedestrian refuge island, add crosswalk and curb ramps. - Consider bicycle lanes through this segment to connect to existing facilities. - Public education campaign/in-school education in conjunction with CCSU. - Consider in-person enforcement near CCSU, automated enforcement elsewhere.
D. East Street (CT-175) from Allen Street to town boundary
- Consider single-lane roundabout for East Street at Allen Street; there may be some property impacts. - Alternative to a roundabout, reduce radius of southwest corner of East Street at Allen Street intersection, reduce pavement width of intersection. - Public education campaign/in-school education in conjunction with CCSU. - Consider in-person enforcement near CCSU, automated enforcement elsewhere, for speeding. - Bicycle lanes between CTfastrak path and Biltmore Street or Paul J Manafort Drive (if possible) to better connect students to CT fastrak.

E. W. Main Street & Corbin Avenue (CT-372 & CT-555) from Wooster Street to Steele Street

- W Main Street at Wooster Street
 - Improve signal visibility by installing back plates.
 - Review signal timing; consider concurrent pedestrian phasing with LPI.
 - Conduct Safety Audit and Data Collection to review if recent upgrades have made a difference.
- W. Main Street section
 - Narrow lane widths if not done so in recent repaving.
 - Install bike lanes to connect to future bicycle facilities.
 - Consider in-person enforcement for speeding.
- W. Main Street & Corbin Avenue
 - See High Crash Intersections above.
- Corbin Avenue section
 - Install pedestrian signal heads and crosswalks at CT-72 ramps.
 - Review potential for road diet through this section (W. Main Street to Black Rock Avenue).
 - In-person and/or automated enforcement in this section, since it is an entrance to New Britain from CT-72.
 - Consider public education campaign with nearby senior housing (Jerome Home/Arbor Rose); in-school education with nearby middle school (Slade Middle).
- Corbin Avenue & Black Rock Avenue
 - See High Crash Intersections in Table 1.5.

F. Lincoln Street from W. Main Street to Monroe Street

- W. Main Street at Lincoln Street
 - Install pavement markings on eastbound W. Main Street approach to clarify the right turn only and through lanes.
 - Improve signal visibility by installing back plates.
 - Review signal timing; consider concurrent pedestrian phasing with LPI.
- Lincoln Street corridor
 - Consider RRFB for crosswalk at Adams St intersection.
 - Consider chicanes with parking bays as a traffic calming measure between Black Rock Avenue and Adams Street.
 - Changes at Lincoln & Monroe will likely change traffic patterns here. Collect before and after data to better understand changes.
- Lincoln Street at Hart Street
 - See High Crash Intersections in Table 1.5.

G. Broad Street from Burritt Street to Main Street

- Broad St at Main Street/Beaver Street
 - Install crosswalk on east leg of intersection.
 - Improve signal visibility by installing back plates.
 - Conduct safety audit and data collection to understand crashes and effectiveness of recent streetscape improvements.
- Broad Street corridor
 - Consider additional curb extensions at crosswalks for pedestrian safety and traffic calming.
 - RRFBs at Gold Street Silver Street, since they are both shown as school crossings.
 - Collect data and do safety audit, as needed, to review the effectiveness of complete streets improvements to the corridor. Understand remaining issues to be resolved.

H. North Street from Main Street to Stanley Street

- Install RRFB at crosswalk for St. Ann's Church.
- Install crosswalks on all legs of intersections with Spring Street and Oak Street.
- Extend bike lanes east to Stanley Street.
- Update pavement markings, delineate on-street parking bays.
- Collect data on the effectiveness of improvements at North Street and Main Street.

I. Main Street from Broad Street/Beaver Street to Elm Street/Franklin Square/S. Main Street

- Collect data and do safety audit, as needed, to review the effectiveness of complete streets improvements to the corridor. Understand remaining issues to be resolved.
- Public education campaign for downtown.
- In-person and automated enforcement for speeding/red light cameras for downtown.

J. Arch Street from Main Street to Shuttle Meadow Avenue

- Arch Street at Main Street – consider single-lane 120' roundabout in the future. Little property impact expected.
- Install RRFB at crosswalk at Attaqwa Mosque.
- Install RRFB at the crosswalk at W. Pearl Street.
- Install RRFB at the crosswalk at Grand Street.
- Review temporary curb extensions – make permanent if they are successful.
- Refresh pavement markings at Whiting/Arch Street/Hart Street and Arch Street/Monroe Street.
- Consider public education campaign in conjunction with local churches and downtown organizations.
- Consider automated enforcement due to proximity of hospital as safety zone.

K. Bassett Street from Whiting Street to Brook Street

- Conduct safety audit and collect more data to better understand crash issues and factors on these streets.
- Consider public education campaign and in-school education with nearby Northend Elementary School.
- Consider automated enforcement due to proximity of elementary school, as well as in-person enforcement.

L. CT-71 from North Street to town boundary

- North Street to E. Main Street – see concepts in Section 1.3.
- Harry Truman Overpass – consider road diet, install separated bike lanes.
- Chestnut Street/Elm Street/Harry Truman Overpass – consider single-lane roundabout in the future.
- Franklin Square/Pearl Street – install curb extensions at corners where space allows.
- Install RRFB at S. Main Street crosswalk at S. Whiting Street.
- Add bike lanes to S. Main Street.
- Collect data and do safety audit, as needed, to review the effectiveness of complete streets improvements to the corridor. Understand remaining issues to be resolved.
- Conduct in-person and automated enforcement.
- Consider public education campaign for this corridor in conjunction with other high crash locations.

M. Stanley Street from E. Main Street to Whiting Street

- Conduct safety audit and collect more data to better understand crash issues and if the recent repaving and remarking has made a difference.
- Consider in-person enforcement or automated enforcement for speeding.

N. Ellis Street from East Street to Bassett Street

- Consider road diet four-lane section between Columbus Boulevard and Stanley Street.
- Remove the right slip lane for Route 9 north, replace with a right turn lane. Upgrade curb ramps, install pedestrian signals and crosswalks at Route 9 intersection.
- Consider public education campaign and in-school education with nearby Northend Elementary School.
- Consider automated enforcement for speeding due to proximity of elementary school, as well as in-person enforcement, particularly on the east end of the corridor.

O. East Main Street (CT-174) & Newington Avenue from MLK Drive to Town boundary

- Install bike lanes on both East Main Street and Newington Avenue through this segment.
- Consider road diet between John Downey Drive and Newington Town line; this is a very short four lane section.
- Consider in-person speed enforcement – higher speed area, but automated enforcement may not be applicable.
- Data collection and safety audit to determine major safety issues through this segment.

P. East Street from Smalley Street to South Street

- Upgrade curb ramps for ADA accessibility at East Street and Smalley Street. Provide crosswalk on East Street.
- Improve signal visibility by installing back plates at signalized intersections (such as at E. Main Street and Newington Avenue).
- Review signal timing and consider concurrent pedestrian phasing with LPI at signalized intersections.
- Install bike lanes on east street in existing shoulder or when resurfaced.
- Consider in-person and/or automated enforcement near school off Pleasant Street/Goodwin Street (HALS Academy and others).
- Consider public education campaign and in-school education with nearby HALS Academy.
- Data collection and safety audit to determine major safety issues through this segment.

A.1 Appendix—Traffic Analysis Results

TABLE 7 SIGNALIZED CAPACITY ANALYSIS SUMMARY – NEW BRITAIN CONCEPTS

Location	Peak Hour	Mov't	2025 Existing Conditions					2035 Build Conditions				
			v/c ¹	Del ²	LOS ³	Q50 ⁴	Q95 ⁵	v/c	Del	LOS	Q50	Q95
Harry Truman Overpass/ML K Dr at E Main St	AM	EB L	0.25	44	D	17	55	0.41	53	D	23	56
		EB T	0.23	30	C	31	68	0.46	35	C	81	138
		EB R	0.27	4	A	0	41	0.31	3	A	0	37
		WB L	0.47	42	D	50	118	0.76	69	E	67	#160
		WB T	0.54	29	C	120	203	0.81	43	D	158	216
		WB R	0.16	1	A	0	0	0.31	31	C	47	90
		NB L	0.44	43	D	44	97	0.60	51	D	58	96
		NB T	0.30	23	C	76	124	0.30	19	B	87	117
		NB R	0.45	5	A	0	41	0.45	15	B	128	198
		SB L	0.19	43	D	13	45	0.27	61	E	17	49
		SB T	0.57	28	C	88	165	0.58	25	C	173	#229
		SB R	-	-	-	-	-	0.26	12	B	67	75
		Overall		23	C				29	C		
	PM	EB L	0.42	56	E	38	88	0.65	70	E	38	#103
		EB T	0.26	31	C	64	117	0.65	39	D	141	227
		EB R	0.25	4	A	0	41	0.31	4	A	5	44
		WB L	0.45	55	D	48	101	0.63	60	E	48	#97
		WB T	0.68	38	D	188	281	0.90	49	D	202	#278
		WB R	0.23	4	A	0	19	0.40	33	C	67	116
		NB L	0.63	52	D	107	203	0.84	67	E	109	#218
		NB T	0.40	28	C	132	203	0.45	23	C	126	181
		NB R	0.40	5	A	0	61	0.44	17	B	115	194
		SB L	0.36	54	D	33	75	0.45	65	E	36	73
		SB T	0.68	33	C	141	200	0.76	33	C	199	#260
		SB R	-	-	-	-	-	0.47	15	B	115	117
		Overall		29	C				34	C		
MLK Dr at Winter St	AM	EB L/T	0.13	12	B	7	20	0.42	46	D	32	60
		EB R	0.20	2	A	0	1	0.43	13	B	0	36
		WB L/T/R	0.02	0	A	0	0	0.08	1	A	0	0
		NB L	0.22	5	A	8	19	0.18	2	A	9	15
		NB T/R	0.35	5	A	37	63	0.33	3	A	34	44
		SB L/T	0.23	8	A	28	54	0.34	4	A	5	64
		SB R	-	-	-	-	-	0.04	0	A	0	m0
		Overall		5	A				6	A		
	PM	EB L/T	0.32	14	B	15	35	0.58	48	D	58	96
		EB R	0.25	3	A	0	8	0.42	10	A	0	40
		WB L/T/R	0.06	9	A	2	8	0.11	25	C	9	20
		NB L	0.37	8	A	13	36	0.31	5	A	15	m35

Location	Peak Hour	Mov't	2025 Existing Conditions					2035 Build Conditions				
			v/c ¹	Del ²	LOS ³	Q50 ⁴	Q95 ⁵	v/c	Del	LOS	Q50	Q95
		NB T/R	0.46	7	A	49	120	0.40	4	A	47	78
		SB L/T	0.44	11	B	41	75	0.47	6	A	32	73
		SB R	-	-	-	-	-	0.06	0	A	0	m0
		Overall		9	A				8	A		
MLK Dr at Stanley St	AM	EB L/T	0.54	20	B	64	119	0.83	46	D	192	288
		EB R	0.18	2	A	0	9	-	-	-	-	-
		WB L	0.09	15	B	6	19	0.18	27	C	12	34
		WB T/R	0.26	14	B	23	56	0.30	23	C	53	97
		NB L	0.29	25	C	17	46	0.41	36	D	26	64
		NB T/R	0.63	23	C	96	#205	0.48	16	B	174	234
		SB L	0.34	26	C	22	57	0.52	50	D	49	#95
		SB T/R	0.61	23	C	92	#210	0.47	21	C	161	258
		Overall		18	B				28	C		
	PM	EB L/T	0.57	22	C	60	113	0.92	59	E	193	#328
		EB R	0.20	2	A	0	11	-	-	-	-	-
		WB L	0.10	15	B	6	20	0.19	27	C	14	36
		WB T/R	0.54	19	B	54	99	0.57	31	C	119	177
		NB L	0.61	38	D	36	#110	0.65	44	D	56	121
		NB T/R	0.80	32	C	131	#332	0.60	15	B	202	325
		SB L	0.40	28	C	24	62	0.58	54	D	53	#116
		SB T/R	0.87	39	D	122	#303	0.64	26	C	230	362
		Overall		29	C				33	C		
Corbin Ave At Ten Acre Rd & Monroe St	AM	EB L/T/R	0.13	22	C	5	24	0.43	54	D	7	#34
		WB L/T	0.37	23	C	20	60	0.47	30	C	24	63
		WB R	0.18	1	A	0	0	0.18	1	A	0	0
		NB L/T/R	0.40	10	A	51	202	0.37	8	A	52	148
		SB L/T/R	0.50	12	B	60	#229	0.46	9	A	62	161
		Overall		12	B				11	B		
	PM	EB L/T/R	0.09	21	C	3	14	0.27	35	C	4	14
		WB L/T	0.47	24	C	30	78	0.62	36	D	36	#98
		WB R	0.18	1	A	0	0	0.18	1	A	0	0
		NB L/T/R	0.60	11	B	67	#261	0.46	8	A	64	178
		SB L/T/R	0.60	14	B	80	#354	0.55	9	A	76	219
		Overall		13	B				11	B		

Source:

- VHB, Inc. using Synchro 10 software.
- 1 volume-to-capacity ratio
 - 2 delay, in seconds
 - 3 level of service
 - 4 50th percentile queue length, in feet
 - 5 95th percentile queue length, in feet
 - EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; R = right; T = through, L = left
 - # 95th% volume exceeds capacity, queue may be longer
 - ~ Volume exceeds capacity, queue is theoretically infinite
 - m Volume for 95th percentile queue is metered by upstream signal

TABLE 8 ROUNDABOUT CAPACITY ANALYSIS SUMMARY – MLK DRIVE AT STANLEY STREET

Location	Peak Hour	Mov't	2025 Existing Conditions					2035 Build Conditions				
			v/c ¹	Del ²	LOS ³	Q50 ⁴	Q95 ⁵	v/c	Del	LOS	Q50	Q95
MLK Dr at Stanley St	AM	EB L/T	0.54	20	B	64	119	0.47	11	B	-	75
		EB R	0.18	2	A	0	9	-	-	-	-	-
		WB L	0.09	15	B	6	19	-	-	-	-	-
		WB T/R	0.26	14	B	23	56	0.21	7	A	-	25
		NB L	0.29	25	C	17	46	-	-	-	-	-
		NB T/R	0.63	23	C	96	#205	0.54	11	B	-	75
		SB L	0.34	26	C	22	57	-	-	-	-	-
		SB T/R	0.61	23	C	92	#210	0.46	9	A	-	50
	PM	EB L/T	0.57	22	C	60	113	0.51	13	B	-	75
		EB R	0.20	2	A	0	11	-	-	-	-	-
		WB L	0.10	15	B	6	20	-	-	-	-	-
		WB T/R	0.54	19	B	54	99	0.43	12	B	-	50
		NB L	0.61	38	D	36	#110	-	-	-	-	-
		NB T/R	0.80	32	C	131	#332	0.73	18	C	-	175
		SB L	0.40	28	C	24	62	-	-	-	-	-
		SB T/R	0.87	39	D	122	#303	0.65	14	B	-	125

Source: VHB, Inc. using Synchro 10 software.

1 volume-to-capacity ratio

2 delay, in seconds

3 level of service

4 50th percentile queue length, in feet

5 95th percentile queue length, in feet

EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound; R = right; T = through, L = left

95th% volume exceeds capacity, queue may be longer

~ Volume exceeds capacity, queue is theoretically infinite

m Volume for 95th percentile queue is metered by upstream signal