Capitol Region Roundabout Screening Study

FINAL REPORT June 30, 2024

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Executive Summary

This study, funded by the Connecticut Department of Transportation (CTDOT), provides the results of the Capitol Region Council of Governments (CRCOG) Roundabout Screening Study to identify intersections in the CRCOG region that could be significantly improved in terms of safety and traffic operations if converted into modern single-lane roundabouts.

The study used Geographic Information Systems (GIS) and technology applications in an extensive data-based analysis to review crash data, traffic volumes, Right-Of-Way impacts, and constructability constraints. The screening process identified potential intersection locations for roundabout conversions, focusing on intersections with a functional classification of minor collector road or higher on at least one intersection approach leg. The data-based screening methodology was developed resulting in a five-step screening process, including intersection location identification, crash data review and screening, traffic volume screening, intersection geometry review, and desktop constructability review. These desktop reviews were conducted during the final screening process for the top 100 ranked locations and some additional locations.

The primary focus of this screening methodology was the potential for reduction in fatal and serious injury crashes that are proven to be reduced with modern single-lane roundabouts. The screening methodology relied heavily on fatal and serious injury crash data over a three-year period and included factors for average daily traffic volumes and potential right-of-way impact. The intersection geometry and desktop constructability reviews further refined the screening efforts to a final recommended list of single-lane roundabout locations.

The study resulted in three lists of potential single-lane roundabout locations in the CRCOG region:

- Top 100 ranked locations based on Crash/Volume/ROW (CVR) score;
- Top 3 ranked locations in each city or town in the CRCOG region;
- Locations suggested by CRCOG municipalities.

From the Top 100 ranked location list, a total of 61 intersections are recommended for further study for conversion to modern single-lane roundabouts. These locations are shown in the listing below.

This study focused on potential locations that would likely result in a significant reduction in fatal and serious injury crashes. There are other potentially good roundabout locations in the CRCOG region, in addition to the recommended locations, that can provide significant improvement in traffic operations. However, those locations did not rank higher with this screening methodology, as it heavily weighted crash data and potential to reduce fatal and serious injury crashes.

CRCOG Roundabout Screening Study
Top Recommended Roundabout Locations (61 total)

Rank	CVR Score	Municipality	Major Road	Minor Road	Crash Score	ADT
1	250.20	HARTFORD	MAIN ST	MAHL AVE/PAVILLION ST	417.00	13500
3	187.54	HARTFORD	NEW BRITAIN AVE	SUMMIT ST/FAIRFIELD AVE	216.33	10600
4	187.50	BERLIN	MILL ST (CT 372)	SAVAGE HILL RD/BECKLEY RD	208.33	10300
6	149.93	HARTFORD	WASHINGTON ST	VERNON ST # 2	229.00	12100
9	108.48	HARTFORD	HOMESTEAD AVE/WALNUT ST	GARDEN ST #1	270.67	13100
13	67.43	SOUTHINGTON	MERIDAN-WATERBURY TPKE (CT 322)	CLARK ST (CT 509)	215.67	11700
17	58.25	HARTFORD	MAIN ST #2	CHARTER OAK AVE/BUCKINGHAM ST	233.00	15900
21	51.91	VERNON	HARTFORD TURNPIKE (CT 30)	RESERVIOIR RD/GROVE ST (CT 31)	67.00	11200
23	51.17	HARTFORD	CAPITOL AVE	LAUREL ST	57.00	10300
24	50.42	HARTFORD	FRANKLIN AVE	BOND ST	55.67	8600
26	46.67	NEW BRITAIN	COLUMBUS BLVD	CHESTNUT ST	46.67	8100
27	44.32	HARTFORD	CAPITOL AVE	BROAD ST	66.67	10300
29	42.05	NEW BRITAIN	COLUMBUS BLVD/CT 9 SB ENT/EXIT RAMP	ELLIS ST	45.00	8600
30	40.74	NEWINGTON	WILLARD AVE (CT 173)	ROBBINS AVE	54.33	13500
31	40.15	HARTFORD	WASHINGTON ST	JEFFERSON ST	75.33	12100
32	39.45	VERNON	HARTFORD TPKE (CT 30)	BOLTON RD/CENTER RD	52.33	11300
33	38.50	BERLIN	FRONTAGE RD/MILL ST (CT 372)	WORTHINGTON RIDGE (CT 372-SOUTH/572- NORTH)	51.33	13700
36	36.06	HARTFORD	WASHINGTON ST	PARK ST	75.33	12100
37	35.40	WEST HARTFORD	PROSPECT AVE	KANE ST	39.33	10500
39	34.50	COVENTRY	BOSTON TURNPIKE (US 44)	MAIN ST (CT 31)	38.33	10300
41	33.60	MANSFIELD	MIDDLE TURNPIKE (US 44)	STORRS RD (CT 195)	37.33	10900
45	32.33	BLOOMFIELD	BLOOMFIELD AVE (CT 189)	PARK AVE/MTN AVE (CT 178)	32.33	9900
46	31.68	HARTFORD	I-84 EB OFF/WB ON	CAPITOL AVE/OAK ST	52.00	10300

CRCOG Roundabout Screening Study
Top Recommended Roundabout Locations (61 total)

Rank	CVR Score	Municipality	Major Road	Minor Road	Crash Score	ADT
47	31.00	VERNON	TALCOTTVILLE RD (CT 83)	HARTFORD TURNPIKE/KELLY RD (CT 30)	41.33	12700
52	29.00	VERNON	HARTFORD TURNPIKE (CT 30)	DOBSON RD	29.00	9100
53	28.80	ENFIELD	ENFIELD ST (US 5)/FRANKLIN ST (CT 514)	CT 190 WB RAMP	32.00	11800
54	27.90	WEST HARTFORD	PROSPECT AVE/CAYA AVE	I-84 EB RAMPS	31.00	10500
56	26.75	HARTFORD	PULASKI CIR (CT 598)/WELLS ST	HUDSON ST	35.67	13800
58	26.24	WEST HARTFORD	TROUT BROOK DR	ASYLUM AVE	221.33	16300
59	26.24	HARTFORD	SIGOURNEY ST	HAWTHORN ST	30.67	11900
60	25.80	HARTFORD	WESTBOURNE PKWY	BLUE HILLS AVE (CT 187)	30.00	11300
61	25.57	ENFIELD	SHAKER RD (CT 220/CT 402)	TAYLOR RD (CT 220)	34.33	11400
62	25.38	NEW BRITAIN	MARTIN LUTHER KING DR (CT 71)	WINTER ST	41.33	13200
63	25.34	HARTFORD	WETHERSFIELD AVE	ELLIOTT ST	35.00	12000
64	25.00	FARMINGTON	SOUTH RD/COLT HIGHWAY (CT 531)	TWO MILE RD	25.00	10000
66	24.60	HARTFORD	WHITE ST	HARVARD ST	27.33	10600
67	24.46	HARTFORD	PARK ST	PARK TERR	92.00	13600
70	23.88	HARTFORD	ASYLUM AVE	WOODLAND ST	61.00	14300
71	23.25	SOUTHINGTON	WATERBURY TURNPIKE (CT 322)	I-691 WB RAMPS	31.00	12100
72	23.20	BLOOMFIELD	MOUNTAIN AVE (CT 178)	MAPLE AVE/BROWN ST	30.00	10400
75	23.11	HARTFORD	FAIRFIELD AVE #1	ZION ST #2	35.33	12900
76	23.04	VERNON	UNION ST (CT 83/CT 74)	WEST ST (CT 74/CT 83)	36.67	10100
77	23.00	HARTFORD	CAPITOL AVE	WASHINGTON ST/TRINITY ST	30.67	12100
79	22.25	NEW BRITAIN	CHESTNUT ST/ ELM ST (CT 71)	HARRY TRUMAN OP	29.67	12700

CRCOG Roundabout Screening Study
Top Recommended Roundabout Locations (61 total)

Rank	CVR Score	Municipality	Major Road	Minor Road	Crash Score	ADT
80	22.20	MANSFIELD	STORRS RD (CT 195)	NORTH FRONTAGE RD (CT 632)	24.67	10900
81	21.83	SOUTHINGTON	WATERBURY TURNPIKE (CT 322)/RUGGLES ROW	I-84 EB RAMPS	43.67	14700
82	21.75	ENFIELD	KING ST (US 5)	I-91 NB RAMPS	29.00	12900
84	21.67	NEW BRITAIN	MAIN ST #1	CHESTNUT ST/ARCH ST	21.67	6600
86	21.60	EAST HARTFORD	MAIN ST # 1	BROAD ST/MAPLE ST	31.67	13300
87	21.59	HARTFORD	VINE ST	GREENFIELD ST	58.67	5600
88	21.31	WEST HARTFORD	BOULEVARD	RAYMOND RD	40.67	6100
89	21.00	SOUTHINGTON	ATWATER ST	I-84 EB RAMP/MARION AVE	28.00	12400
91	20.75	SOUTHINGTON	MERIDEN WATERBURY TURNPIKE (CT 322)/I-84 WB EXIT	I-84 ENTRANCE RAMP	27.67	12700
92	20.70	CANTON	US 202	RIVER RD (CT 179)	23.00	11600
93	20.64	BERLIN	MILL ST (CT 372)	MIDDLETOWN RD/BERLIN ST	29.00	13000
94	20.32	NEW BRITAIN	SLATER RD/ALEXANDER DR/ FIENEMANN RD	FARMINGTON AVE	35.67	12800
95	19.67	NEW BRITAIN	CHESTNUT ST	CT RTE 9 SB EXIT RAMP	19.67	4500
96	19.57	EAST HARTFORD	SILVER LANE (CT 502)	FORBES ST	29.33	10800
98	19.50	WINDSOR	KENNEDY RD	ARCHER RD/I-91 NB EXIT RAMP	21.67	10300
99	19.39	HARTFORD	MARKET ST	PLEASANT ST	32.67	12800
100	18.87	NEW BRITAIN	STANLEY ST # 1	EAST MAIN ST	28.33	12800

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1

Introduction

The Capitol Region Council of Governments (CRCOG), in coordination with the Connecticut Department of Transportation (CTDOT), initiated this screening study to determine intersections in the CRCOG region that are most likely to see significant improvements in safety and traffic operations if the existing intersection is converted into a modern single-lane roundabout. This effort identified potential locations and their feasibility through Geographic Information Systems (GIS)-based data analysis. The screening analysis included reviewing traffic volumes, Right-Of-Way impacts, crash data, and desktop reviews of construction constraints. The use of roundabouts is a proven safety strategy for improving intersection safety by eliminating conflict points, reducing crash severity, and causing drivers to reduce speeds as they proceed into and through intersections (NCHRP Report 1043).

1.1 Objective of Study Effort

The screening efforts identified existing intersection locations in the Capitol Region where conversion of an existing intersection configuration to a modern single-lane roundabout can result in significant improvements first to traffic safety and then to traffic operations. In general, intersections within the CRCOG region and in the GIS database with a functional classification of minor collector road or higher on at least one leg of the intersection were reviewed under the base Scope of Work.

1.2 Scope of Work Overview

The Scope of Work for this project was broken down into the following tasks:

- **Task 1: Project Management**
- **Task 2: Selection Criteria/Methodology –** This task included developing a methodology for screening intersections for the potential to be converted into modern single-lane roundabouts. The primary criteria in the screening process were crash data from the Connecticut Crash Data Repository (CTCDR). The Project Team built upon the data from the CTCDR and compiled crash data for the region's intersections for subsequent analysis. The crash data was entered into a geodatabase to allow for summarization of the data to screen for locations with a documented crash history. The Connecticut Roadway Safety Management System (CRSMS) was used in part to inform the initial screening methodologies. More information can be found in Chapter 2.
- **Task 3: Collect Screening Data and Perform Screening Steps –** This task included compiling the data from the CRSMS and traffic volume data as well as mapping and conducting the actual screening steps.
- **Task 4: Screened and Suggested Locations –** This task provided the results of the initial and subsequent screening efforts.
- **Task 5: Project Outreach –** This task involved presentations to the CRCOG Transportation Committee in November 2021 and April 2023, as well as collecting suggested locations for roundabouts from the Committee and municipalities in the region, an online survey comment application for the municipal and comments on the results.
- **Task 6: Final Study Report**

1.3 Study Team

The Study Team was made up of staff from CRCOG, CTDOT, and VHB.

CRCOG	Roger Krahn—Project Manager Mike Cipriano—Deputy Project Manager
CTDOT	Grayson Wright—COG Coordinator & CTDOT Project Manager for Study Policy & Planning Technical Review Committee: › Frederick Kulakowski › Stephen Bruno › Maureen Lawrence › Scott Bushee › Edward Sabourin
VHB	Joe Balskus—Project Manager Will Britnell—Senior Advisor Dale Abbott—Applied Tech Manager Eric Tang—Senior Safety Engineer Dan Amstutz—Senior Planner

Subconsultant—Tighe & Bond

1.4 Single-Lane Roundabouts and NCHRP 672 and 1043

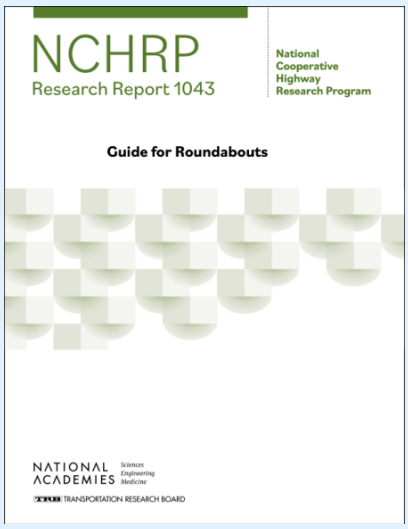
The project screening study efforts were developed for the consideration of potential roundabouts at the reviewed locations in the CRCOG region. The intersection screening efforts involved the application of single-lane roundabout traffic control at these intersections. Single-lane roundabouts are nominally 120 feet in diameter as specified in the National Cooperative Highway Research Program (NCHRP) Report 1043 *Guide for Roundabouts (2023)*.

Single-lane roundabout applications were the focus of the screening efforts to simplify the roundabout opportunities at each intersection and provide specific locations for these accepted roundabout types in Connecticut. Single lane roundabouts provide a simpler and easier to understand operation for drivers than roundabouts with multiple lane approaches.

There are less than a half dozen roundabouts in Connecticut that are hybrids—i.e., with multiple lanes on some approaches and/or two lanes in some part of the roundabouts. These roundabouts are not currently common in Connecticut and therefore the screening efforts used single-lane roundabouts as the preferred choice for consideration. Developing a screening methodology for single-lane roundabouts simplified the screening process, and single-lane roundabouts are more cost effective and more likely to receive widespread support for successful construction and operation. Some screened intersections were noted as being more suited to multiple-lane roundabouts but were otherwise not further investigated as part of this study.

The preceding NCHRP Report 1043 is the sole design reference for roundabout design projects in Connecticut and much of the country for the last two decades. The American Association of State Highway Transportation Officials (AASHTO), while promulgating highway design across the country, does not have roundabout design guidelines within its current design guidance. NCHRP Report 1043 serves as the basis for all roundabout design, except where some state and local agencies may have adopted similar or their own guidelines, such as the Massachusetts Department of Transportation *Guidelines for the Planning and Design of Roundabouts* (March 2022), and the Maryland Department of Transportation *Roundabout Design Guidelines*, which were adopted prior to the NCHRP guidance.

Figure 1 NCHRP Report 1043



Source: TRB

The NCHRP Report1043 include specific design requirements for single-lane roundabouts, such as a nominal diameter of 120 feet, splitter islands, a central island and maximum traffic volumes. The traffic volume guidance was utilized in the screening study methodology, as detailed in this report. The diameter and traffic volume guidance figured prominently in the screening study methodology.

1.5 Study Area

The Roundabout Screening Study area is the entire CRCOG region, which includes 38 municipalities in the Greater Hartford Metro area, located in north and central Connecticut. A wide variety of different communities make up the region, from urban to suburban to very rural development patterns. All municipalities in the region were included in the initial screening efforts and all eligible intersections in the region were screened for roundabouts based on the screening criteria detailed in Chapter 2. Figure 2 shows a map of the Project Study Area.

In addition, the CRCOG region includes the following municipalities as listed below:

ANDOVER
AVON
BERLIN
BLOOMFIELD
BOLTON
CANTON
COLUMBIA
COVENTRY
EAST GRANBY
EAST HARTFORD
EAST WINDSOR
ELLINGTON
ENFIELD
FARMINGTON
GLASTONBURY
GRANBY
HARTFORD
HEBRON
MANCHESTER
MANSFIELD
MARLBOROUGH
NEW BRITAIN
NEWINGTON
PLAINVILLE
ROCKY HILL
SIMSBURY
SOMERS
SOUTH WINDSOR
SOUTHINGTON
STAFFORD
SUFFIELD
TOLLAND
VERNON
WEST HARTFORD
WETHERSFIELD
WILLINGTON
WINDSOR
WINDSOR LOCKS

Figure 2 Screening Study Area/CRCOG Member Communities

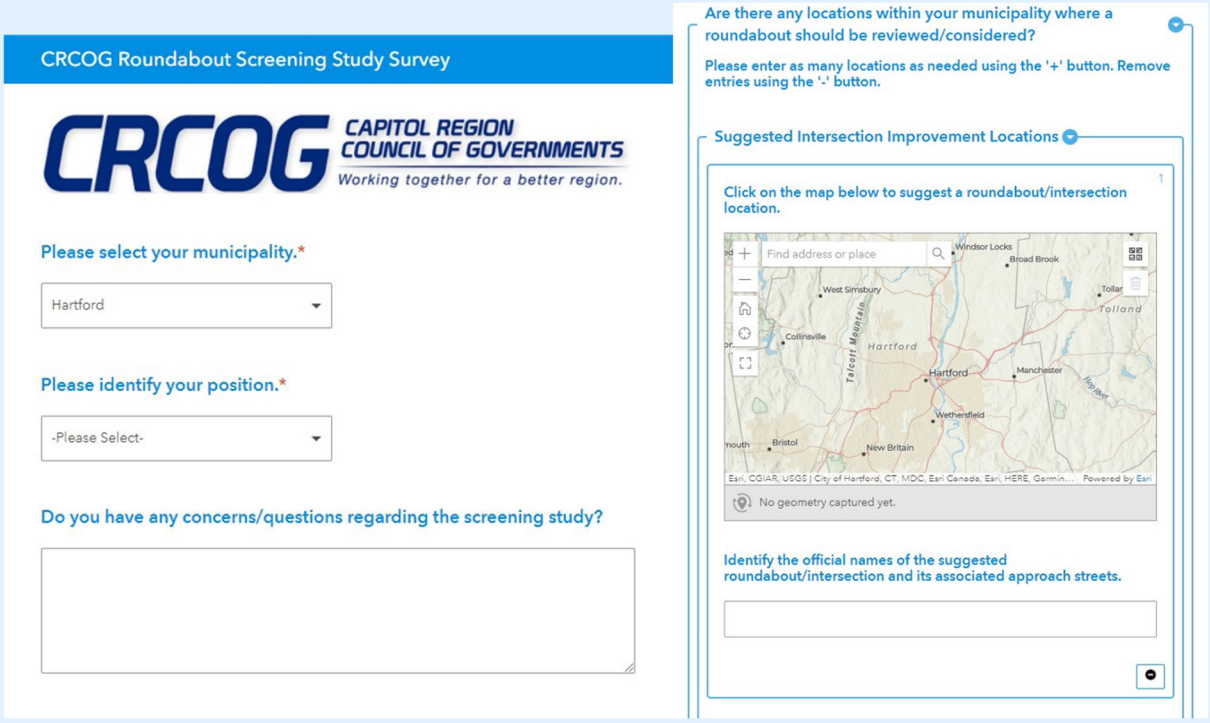
1.6 Outreach to Town Officials/Staff

The screening study efforts included two presentations to the CRCOG Transportation Committee members, one in November 2021 and one in April 2023. These presentations included the initial screening methodologies and the results of the screening study efforts and recommendations. The presentations included opportunities for each of the 38 community representatives to provide suggestions on intersections to be reviewed during the study, comments on the study methodology, and comments after development of the recommended list of locations.

In addition, an online survey was distributed to municipalities after the November 2021 presentation so municipal representatives could review intersections and suggest those to be reviewed through the study for the potential to be converted to roundabouts. An example of this survey is shown in Figure 3.

The comments provided by the municipalities in the GIS application tool and the comments provided on the recommended list of locations were documented and incorporated in the final screening efforts. These comments are included in the intersection summaries provided later in this report and in the appendix along with the listing of top municipal recommended locations.

Figure 3 Municipal Screening Study Survey



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2

Screening Methodology

This chapter describes the approach used to screen locations for potential roundabouts. This data driven approach combined an evaluation of crash data, traffic volume, and public Right-Of-Way (ROW) to determine which locations are viable for the conversion of existing intersections to roundabouts.

The screening methodology followed a five-step screening process using 3 primary data sets, to narrow down the locations where roundabouts would be most effective and feasible, based on geometric constraints and other factors. These five steps were:

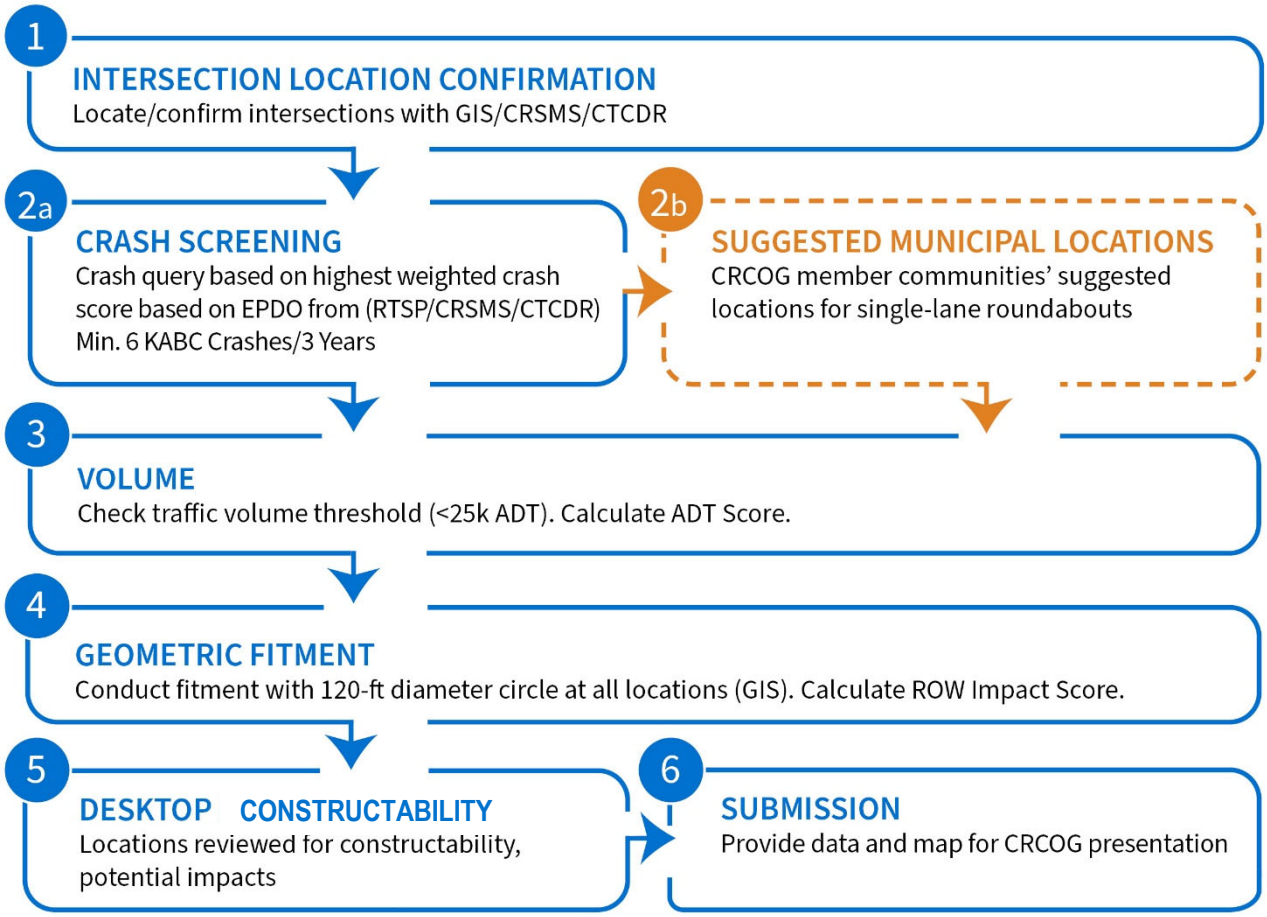
1. Confirmed locations of intersections through GIS analysis;
2. Reviewed **crash data** and processed it for intersections based on the highest weighted crash score using Equivalent Property Damage Only (EPDO);
3. Reviewed **traffic volume data** and screened intersections based on volume criteria for single-lane roundabouts;
4. Reviewed **Right-Of-Way (ROW) impact data** and screened intersections for geometric fit of a single-lane roundabout configuration based on potential right of way impact to nearby properties; and
5. After intersections were ranked from a screening calculation of the 3 data sets, desktop constructability reviews were performed on the top ranked locations.

In addition, to take advantage of local knowledge, the CRCOG Transportation Committee members were given the opportunity to suggest locations that they felt might benefit from conversion to modern single-lane roundabouts. This might be due to safety considerations, but could also be due to awkward intersection geometry, congestion, operational problems, or other reasons. The Committee members were given access to the GIS mapping so they could provide information on as many locations as they deemed appropriate. These locations subsequently received a desktop review, as described in Section 2.5, based primarily on safety considerations, but with further consideration of the problems and information provided by the Committee members. The overlap between the Suggested Municipal Locations list and the Top 100 Ranked Locations list (see Chapter 5) has been noted and it was found that some of the suggested

municipal locations did not meet the crash screening criteria used in the creation of the Top 100 list.

Figure 4 displays a flow chart with an overview of the screening process from intersection location confirmation to final submission. The following sections of this chapter describe this process in detail.

Figure 4 Roundabout Screening Process Flow Chart



2.1 Step 1: Intersection Location Identification

The first step of the project was to identify the location of all the potential intersections that could be screened for conversion into modern single-lane roundabouts. Locations reviewed included local and state roadways and only those intersections with a functional classification of minor collector on at least one approach. The functional classification of roadways is provided by CTDOT using a hierarchical listing of arterials, collectors, and local roadways. According to the CTDOT Highway Design Manual, arterial highways are characterized by a capacity to quickly move relatively large volumes of traffic and include expressways, freeways, and urban/rural

arterials with 2 or 4 lanes. Collector routes are characterized by a roughly even distribution of their access and mobility functions and traffic volumes and speeds are lower than those of arterials. Local roadways are all other roadways not classified as arterials or collectors. These local roadways are characterized by the lowest speeds, lowest traffic volumes, shortest trips, and highest mobility to adjacent uses.

Collector roadways for the screening methodology were selected from the CTDOT online functional classification mapping system.

A GIS-based approach was used to determine the locations of intersections to be screened. A total of 8,158 intersections were identified using the GIS-based approach, which is described below in sections 2.1.1 and 2.1.2.

2.1.1 Input Data

GIS data from CTDOT was pulled into the GIS system to determine locations of local and state roads. These included the CTDOT State Roads GIS Feature Class and the CTDOT Local Roads GIS Feature Class. Using these data sets, roadway intersections could be identified and cataloged using the method described in the section 2.1.2.

2.1.2 Methodology for Creating Intersection Locations

The following steps describe the process for creating the individual intersection locations in GIS:

1. Combined the State and Local roads feature classes into a Composite Roads layer.
2. Performed an Intersect geoprocessing analysis where the Composite Roads layer is intersected with itself, which produced point features where roads intersect or "cross" each other.
3. Performed an Intersect and Dissolve geoprocessing analysis on the results of the previous step to create a single intersection point for each road crossing. The Intersect function showed where the roadway centerlines intersected. The Dissolve function eliminated overlapping points. Approximately 43,000 potential intersection locations were identified after the Dissolve analysis.
4. Performed a Buffer geoprocessing analysis against the results of Step 3. A 5-ft buffer distance was used to allow for potential sidewalks along the outside perimeter of the roundabout.
5. Performed an Intersect geoprocessing analysis where the Results of Step 4 (intersection buffers) are intersected with the Composite Roads Layer. The result was a list of intersection approaches for each potential intersection location.
6. Performed a Summary Statistics analysis on the results of Step 5 to count the number of intersection approaches at each potential intersection location. This step was necessary to eliminate non-roadway intersections such as intersections at town lines, stream crossings, ramp merges, etc.
7. Deleted potential intersection locations where the approach count from Step 5 was less than three. This process eliminated road merges where a ramp merges with the mainline or where two divided roads merge together, breaks in roads at town lines and stream crossings, etc.
8. Several additional GIS overlay analyses were performed against the potential intersection locations to further reduce the number of potential intersections, resulting in a final

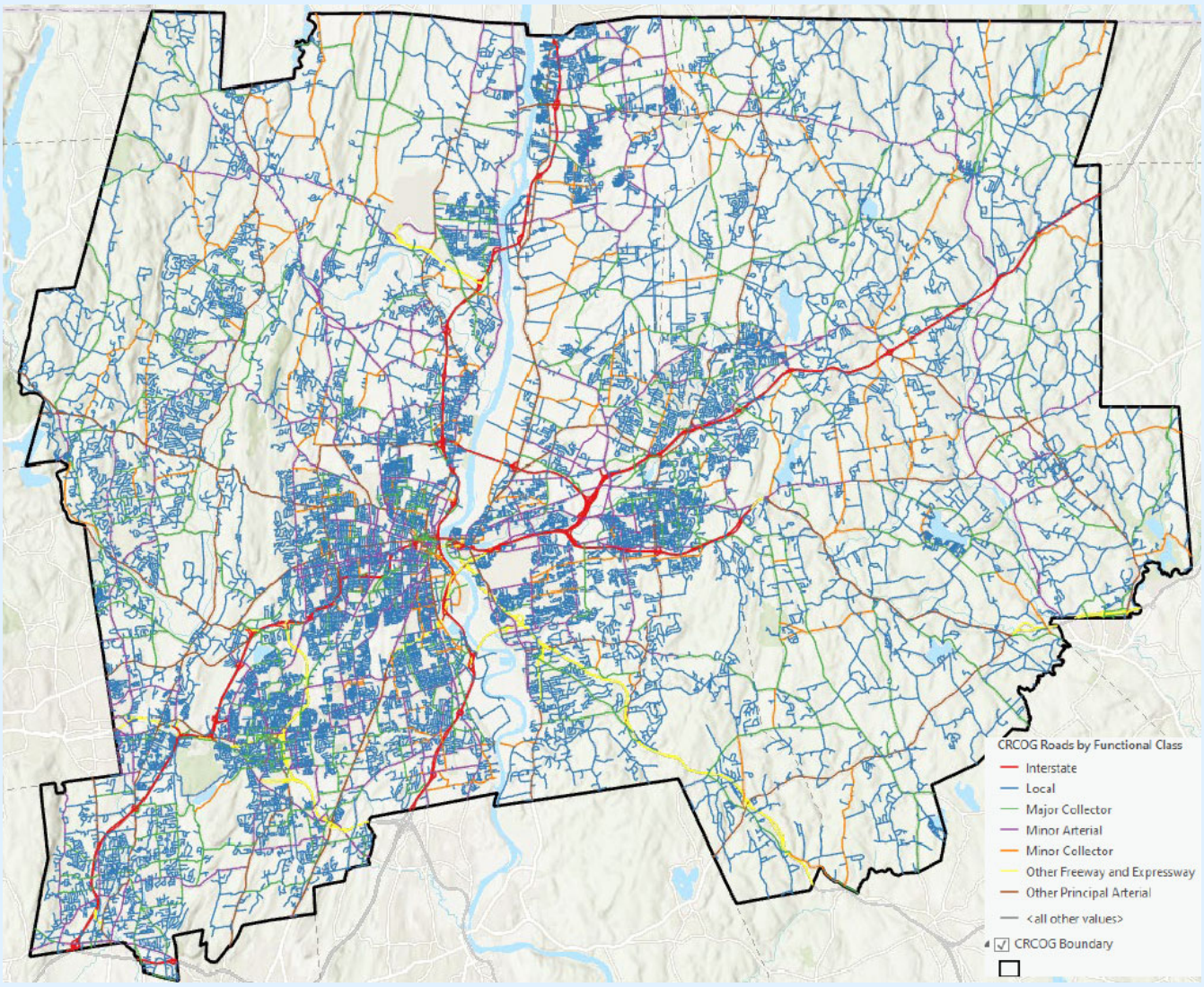
intersection layer for use in the roundabout study. For example, a functional class evaluation was performed on the intersection approaches to identify which intersections were local/local, which were associated with an interstate or freeway, and ownership. VHB eliminated all local/local intersections, in accordance with the Scope of Work, which stated that the screening study would only consider intersections with a functional classification of minor collector road or higher on at least one leg of the intersection. The results of the analysis are summarized below by ownership (ownership information was pulled from CTDOT's road inventory database):

- 4,508 Local Intersections (all approaches are owned by the municipality)
- 3,650 State/Local Intersections (CTDOT owns at least one of the intersection approaches)
- Total = 8,158 Intersections
- These total intersections included some duplicates resulting from median-divided intersections. These were filtered during the screening process.

9. Finally, a series of summary analyses were run against the intersection locations and their associated roadway approaches to identify the following information:
    - Minimum/maximum functional classification
    - Minimum/maximum speeds
    - Minimum/maximum lane count
    - Street names

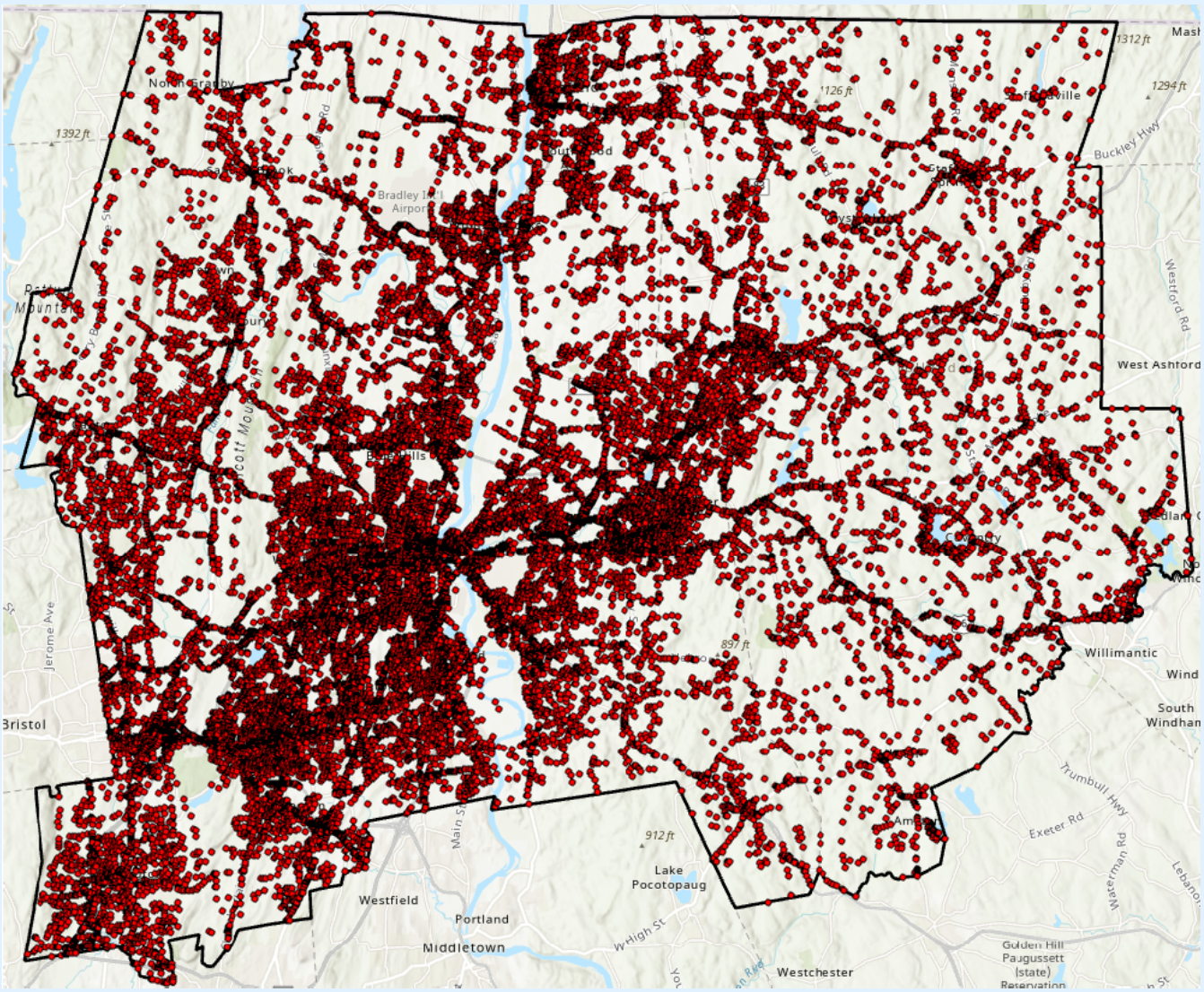
This approach resulted in a total of 8,158 intersections for review to undergo the next steps of the roundabout screening process. Figures 5, 6, and 7 display maps showing the progression of the above GIS analysis steps.

Figure 5 State & Local Road Functional Classifications within CRCOG Region



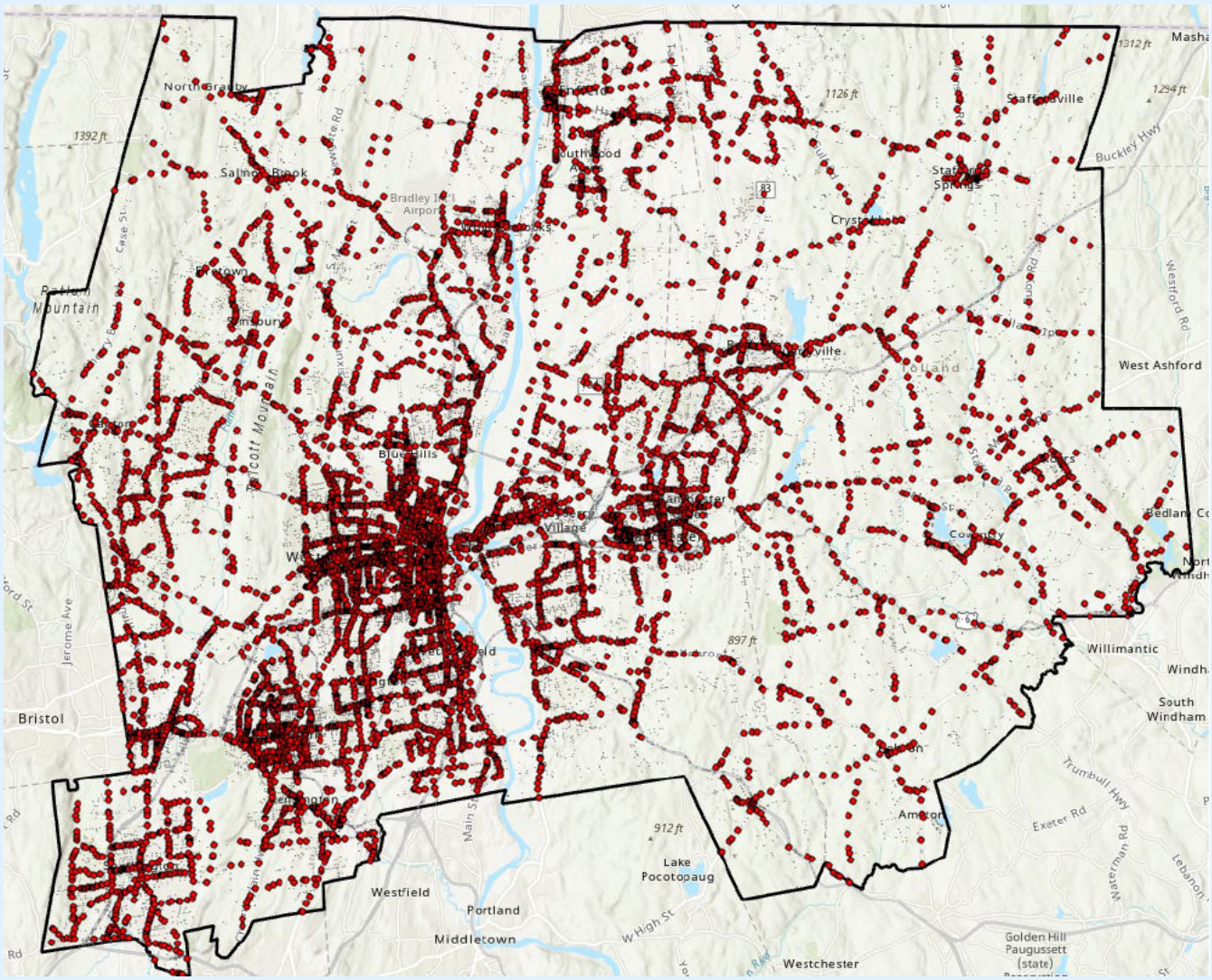
This figure depicts the functional classifications of all state and municipal roadways used to select intersections with one approach as a minor collector or higher classification.

Figure 6 Preliminary Intersection Locations



This figure depicts the results of the initial list of intersection locations with the CRCOG region. These locations were generated by intersecting the State and Local roads, which resulted in point locations where roads intersect or "cross" each other. Only intersections with a functional classification of minor collector road or higher on at least one leg were included.

Figure 7 Study Area Intersections



This figure depicts the results of the intersection creation methodology. A total of 8,158 intersection locations were identified for analysis. Many of these intersections were eliminated after the crash data screening was applied to each location.

2.2 Step 2: Crash Review and Screening Methodology

As this project was primarily focused on the conversion of intersections to modern single-lane roundabouts to improve traffic safety, a significant screening criterion in the process was calculating the number and severity of crashes around the intersections to determine which intersections should be given higher priority for safety countermeasures. Crash data from the Connecticut Crash Data Repository (CTCDR)[1] was utilized for this step. This data is also used in the Connecticut Roadway Safety Management System (CRSMS) that is referenced later in this section.

[1] https://www.ctcrash.uconn.edu

The CTCDR is comprised of crash data from two separate sources: The Department of Emergency Services and Public Protection (CTDESPP), and The Connecticut Department of Transportation (CTDOT).

The crash data in the CTCDR includes location information, which allowed for its integration into a geodatabase for subsequent summarization of the data to screen for locations with a documented crash history.

The following crash screening methodology was used to select locations, using a single elimination type process, based on the following sub-steps in 2.2.1 and 2.2.2.

2.2.1 Crash Data Collection and Severity Weighting

The Regional Transportation Safety Plan (RTSP) developed by CTDOT for the CRCOG region included a crash severity weighting that was reviewed as part of the roundabout crash screening effort for this study and considered in the development of the study's crash severity weighting. The RTSP severity weighting is included in the Appendix for reference. A new severity weighting formula was developed in concert with current FHWA requirements and the *Highway Safety Improvement Program Manual*.

- The first step was to compile the number of crashes from CTCDR for all intersections in the region over the three-year period from 2017 to 2019. This time period was selected as these screening efforts began in earnest in 2021 and excluded 2020 due to the COVID pandemic traffic impacts during this year.
- Next, an Equivalent Property Damage Only (EPDO) severity score, similar to that used in the 2020 CRCOG RTSP, was calculated. The methodology applies a weight to crashes of greater severity to assist with prioritizing locations. The EPDO screening weights used in the CRSMS from December 2020 were used for this effort. The CRSMS provides the weighting factors by crash severity based on the KABCO injury scale (Table 1), with each letter of the acronym defined by the following and its respective weight (the weight factor is read as the equivalent number of Property Damage Only crashes):

Table 1 Equivalent Property Damage Only (EPDO) Severity Weighting

KABCO Crash Severity		Weight
K	Fatal	574
A	Suspected Serious Injury	30
B	Suspected Minor Injury	11
C	Possible Injury	6
O	Property Damage Only	1

As an example of applying weights, the intersection of Newington Avenue at John Downey Drive in New Britain had 11 PDO crashes, 2 C crashes, 7 B crashes, 0 A crashes, and 0 K crashes during a three-year period. The related annual EPDO score for this location can be calculated as:

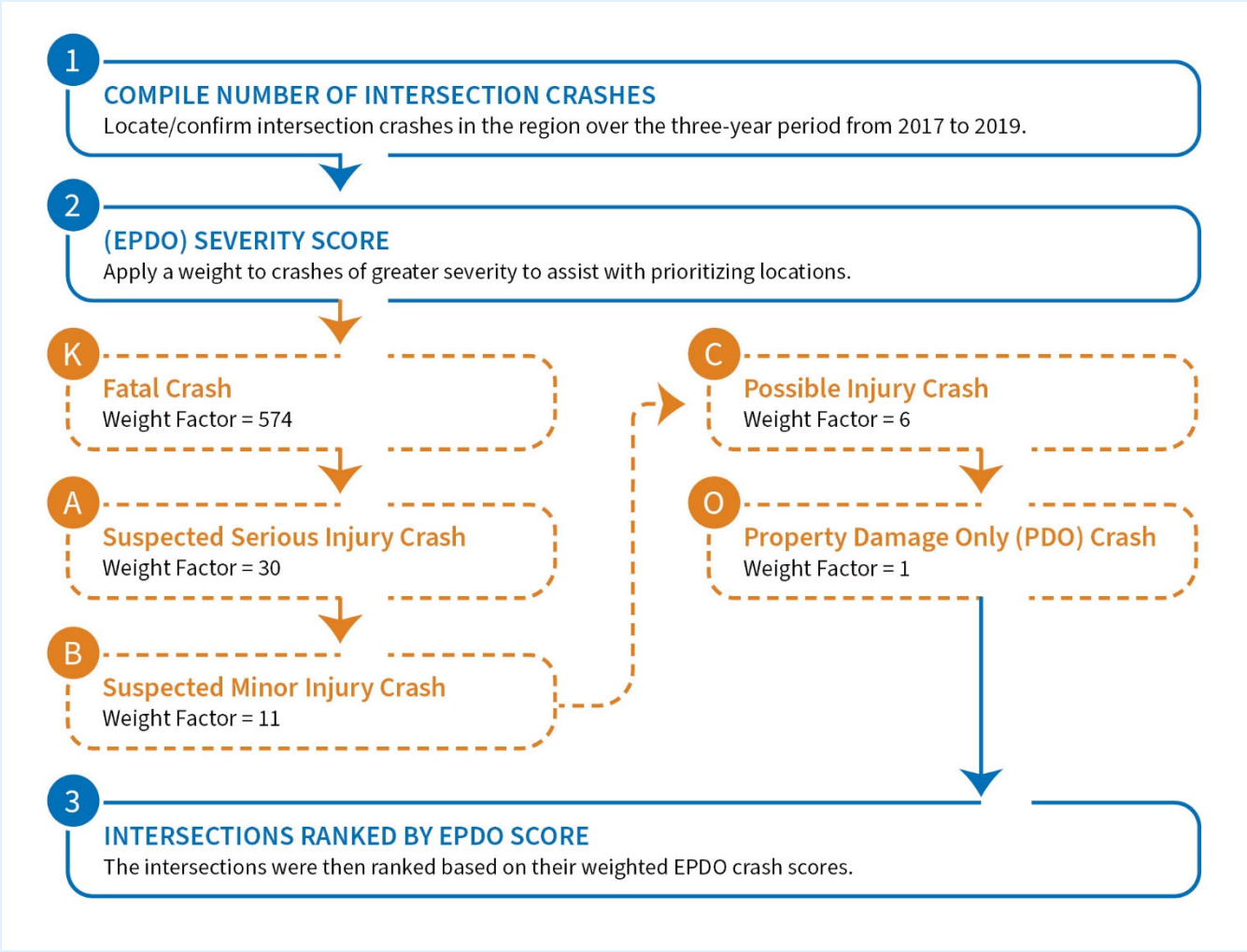
$$\text{Weighted Crash Score:} \quad \frac{(11*1+2*6+7*11+0*30+0*574)}{3} = 33.33$$

As noted in the FHWA *Highway Safety Improvement Program Manual*, the KABCO injury scale is frequently used by law enforcement for classifying injuries and can be used for establishing crash costs.

› The intersections were then ranked based on their weighted EPDO crash score.

Figure 8 below provides a flowchart describing the crash screening process.

Figure 8 Crash Data Collection and Severity Weighting



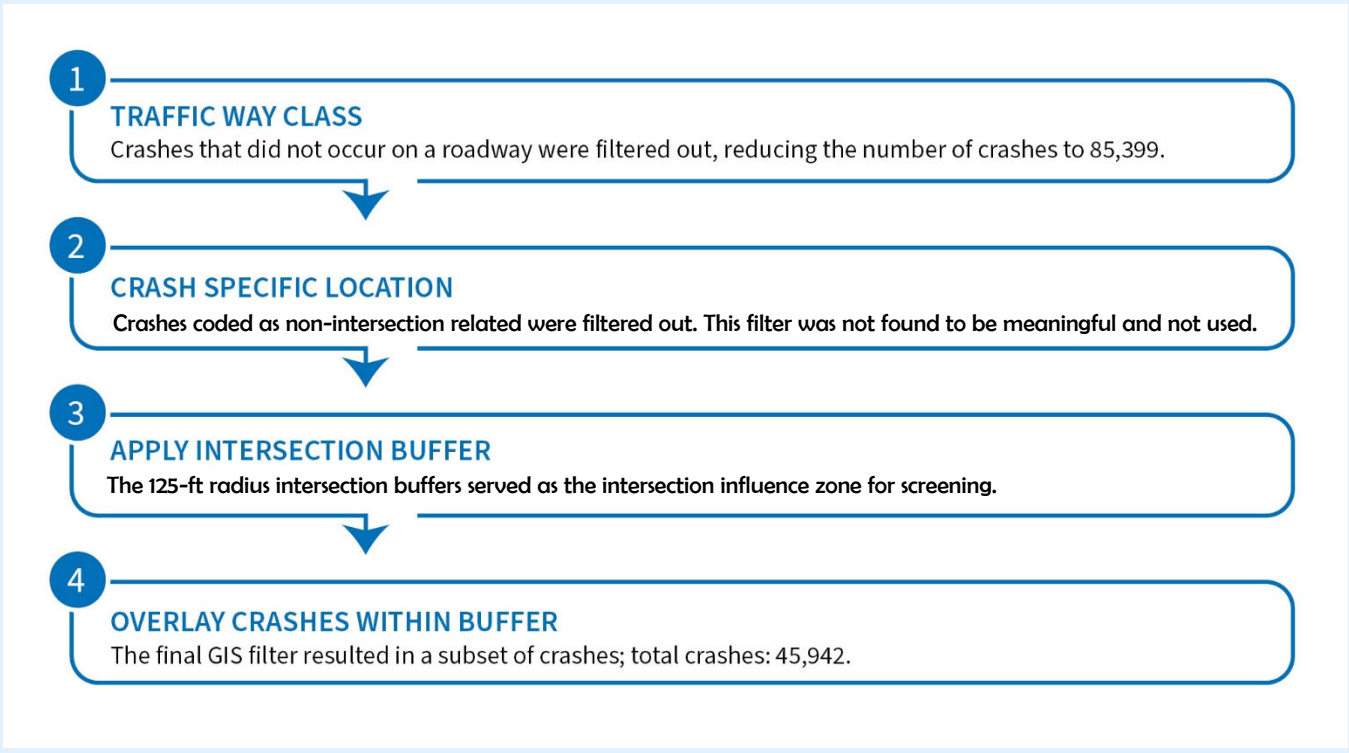
2.2.2 Crash Data Processing with Intersection Locations

The next step was to geospatially refine the number of intersections for prioritization based on the relationship of the crash data with the intersections. There were 89,383 total crashes within the CRCOG region over the three-year period from 2017 to 2019. Using the intersection layer developed for this study, VHB filtered the number of crashes down to a subset of intersection crashes based on the methodology below:

- Using the ***Traffic Way Class*** attribute within the crash database, crashes that did not occur on a roadway were filtered out (for example, crashes in parking lots and Non-Trafficway Crashes). Removing these crashes reduced the number of crashes to **85,399.**
- Then, the ***Crash Specific Location*** attribute in the crash database was evaluated using only those crashes coded as intersection-related. Based on this analysis, this filter was not found to be meaningful as *too many front-to-rear crashes that were physically located at an intersection were miscoded (i.e., coded as non-intersection-related in the crash database).*
- Each intersection within the study area was then buffered by a 125-ft-radius (250-ft-diameter study area) from the center of each intersection. This resulted in a 250-ft-diameter circle as shown in the figures below. This is the same buffer used in the Regional Transportation Safety Plans (RTSP) for CTDOT to analyze intersection-related crashes. For the purposes of this study, the 125-ft intersection buffers serve as the intersection influence zone for screening the crash data on each approach to the intersection. See Figures 11, 12, 13, and 14.
- The 250-foot intersection buffers were overlaid with the 85,399 crashes as the final GIS filter, resulting in a subset of crashes associated with the study area intersection locations. The total crashes within all the intersections within the Study Area came to **45,942.**

The flowchart in Figure 9 graphically shows this methodology.

Figure 9 Crash Data Processing with Intersection Locations



A summary statistics analysis was then performed, where each 125-ft radius intersection buffer was summarized by crash severity and the results joined to the intersection locations as attribute data. This was used to update the EPDO screening analysis to score intersections based on

crashes within the intersection buffers. Figure 10 shows a count of the crash data associated with the study area intersections, looking at crash severity and collision type.

Figure 10 Count of Crashes and Collision Type Summary

SEVERITY SUMMARY:		COLLISION TYPE SUMMARY:
Fatality 70	K	Angle 12,328
Serious/Incapacitating Injury 512	A	Front to Front 1,111
Non-Incapacitating Injury 5,350	B	Front to Rear 18,631
Possible Injury 7,103	C	Rear to Rear 70
Property Damage Only 32,887	O	Rear to Side 310
Null 20		Sideswipe, Opposite Direction 1008
		Sideswipe, Same Direction 6,122
		Other, Unknown, Not Applicable 6,362

Figures 11 through 14 graphically show the crash data processing through GIS to analyze the intersections.

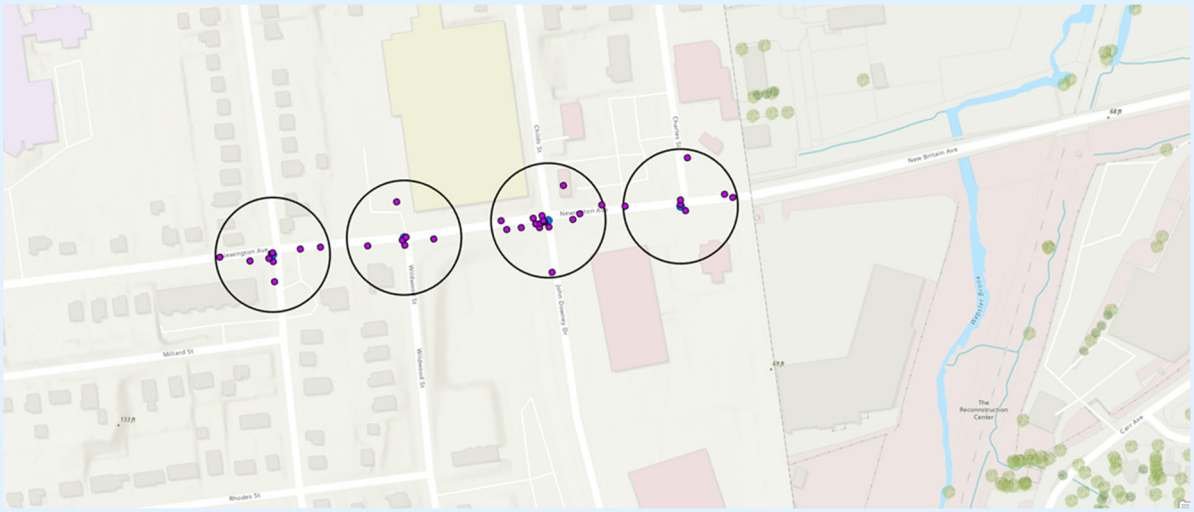
Figure 11 125-ft-Radius Intersection Buffers

This figure illustrates the 125-ft buffer area generated for each study intersection for use in screening the crash data. Note how local/local intersection locations have been removed. This segment of Newington Avenue is in New Britain.

Figure 12 CRCOG Crash Locations Shown Within 125-ft-Radius Intersection Buffers

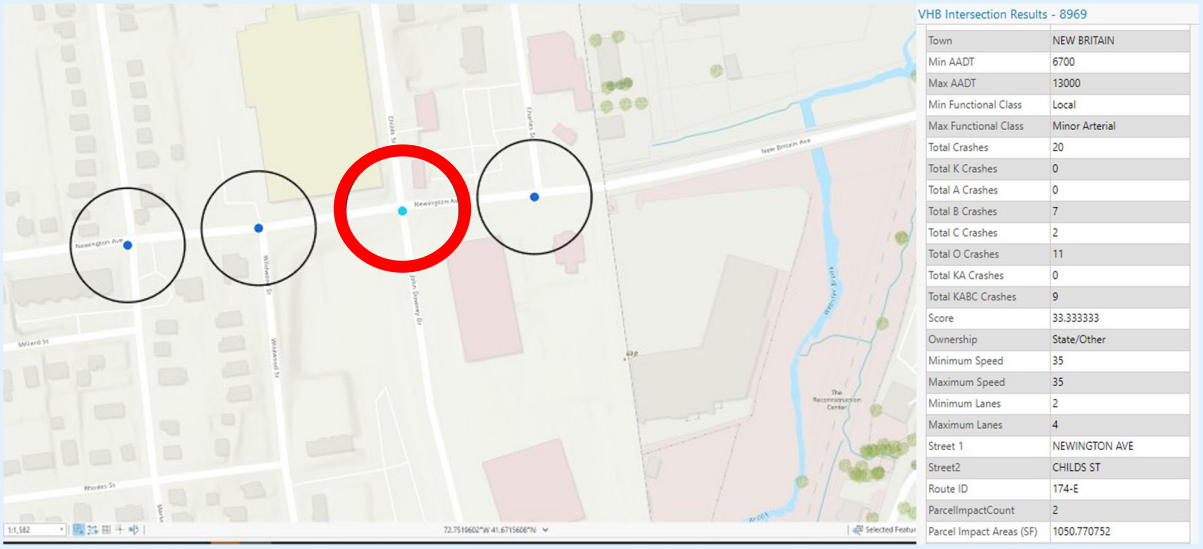
This figure depicts the crashes within the CRCOG region in relation to the 125-ft intersection buffers along Newington Avenue in New Britain.

Figure 13 Crashes Filtered to Intersection Buffers



This figure depicts the results of the preliminary crash analysis where crashes are filtered down to the project area intersection locations (Newington Avenue). For each intersection buffer, the total crashes and crash severity were summarized for use in the EPDO screening analysis.

Figure 14 Example Crash Summary Results



This figure illustrates the crash data summary for the intersection in the center of the image (red circle): Newington Avenue at John Downey Drive. For this location, there are 11 PDO crashes, 2 C crashes, 7 B crashes, 0 A crashes, and 0 K crashes during a 3-year period. The related EPDO score for the intersection can be calculated as:

Weighted Crash Score: $\frac{(11*1+2*6+7*11+0*30+0*574)}{3} = 33.33$

2.3 Step 3: Traffic Volume Screening Methodology

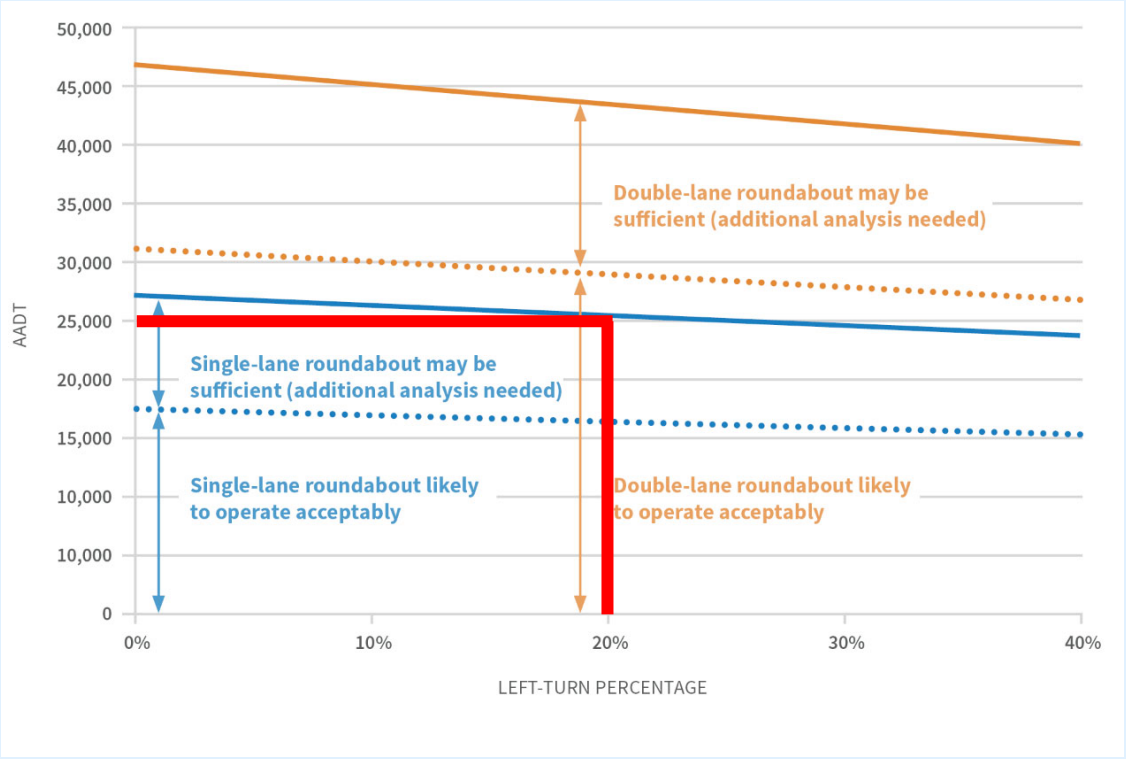
The volume screening methodology was applied to all intersections that were screened under Step 2: Crash Review and Screening Methodology. VHB used the traffic volume data available within the Connecticut Roadway Safety Management System (CRSMS) for all locations screened in Step 2.

In addition, for locations where traffic volume data was not available in the CRSMS, the data was obtained from the CRCOG Travel Demand Model for inclusion in the data sets to ensure all screened intersections were reviewed for traffic volumes.

The following traffic volume screening steps were conducted on all the 8,158 study intersection locations.

The NCHRP Report 1043 *Guide For Roundabouts (2023)* Exhibit 8-2, as shown in Figure 15, was the primary reference to guide the traffic volume screening. Since left-turning volume data were not available, an assumed 20% left-turn percentage was used for all locations in the screening. Due to this assumption and based on this guidance, intersections with average daily traffic (ADT) exceeding 25,000 (shown in red in Figure 15) were eliminated from further consideration in this single-lane roundabout screening, as they would need to be reviewed for hybrid or multi-lane roundabout configurations. These criteria are highlighted in Figure 15 below. The ADT value used was selected from the one intersection approach leg with the highest bi-directional ADT. See Figure 16 for a sample intersection, where the screening used the east leg ADT volume of 13,000 for the overall intersection value in the screening.

Figure 15 NCHRP Report 1043, Exhibit 8-2



Source: NCHRP Report 1043

The intersections were further screened with a volume adjustment factor to better evaluate the likelihood of a single-lane roundabout working at a given location. A system of ADT range and adjustment factors was used for each location under the 25,000 ADT threshold as shown in Table 2.

Table 2 ADT Range & Volume Adjustment Factors

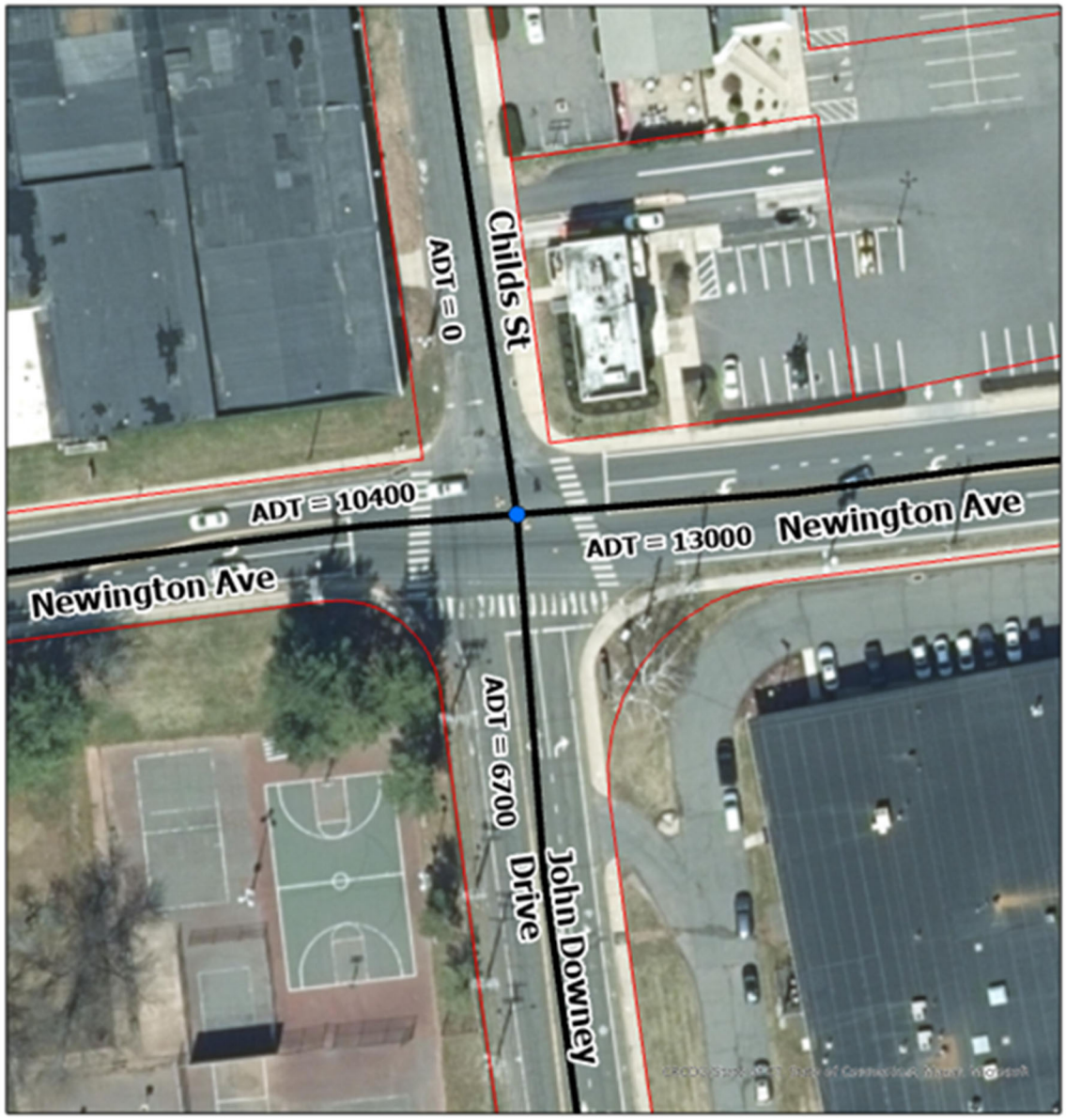
ADT Range		Factor
0	10,000	1.00
10,000	12,000	0.90
12,000	14,000	0.75
14,000	15,000	0.50
15,000	17,000	0.25
17,000	25,000	0.10
25,000	>	0.00

Using the system in Table 2, locations above 25,000 ADT were eliminated from further consideration.

Intersections with ADT less than 10,000 are assured to be roundabout-ready locations based upon capacity, and the value of 1 was used. While the NCHRP Report 1043 Exhibit 8-2 shows 15,000 ADT to be a threshold for roundabout-ready locations, using the adjustment factors provides a very high level of confidence in the operational capacity of the intersections with the potential of being converted to single-lane roundabouts. Also, it is important to note that the volume data that was used for the screening efforts were existing traffic volume counts from a variety of sources. The ADT values were not adjusted to future forecasted volumes. Therefore, if there is anticipated growth in volumes, using the factor helps account for some anticipated growth and ensures that a single-lane roundabout is a viable candidate for the screened intersections for further planning and development into an improvement project.

The volume adjustment factors were utilized in an overall intersection scoring system applied to all 8,158 intersections.

Figure 16 Sample Intersection Diagram with Volumes



2.4 Step 4: Intersection Geometry Review

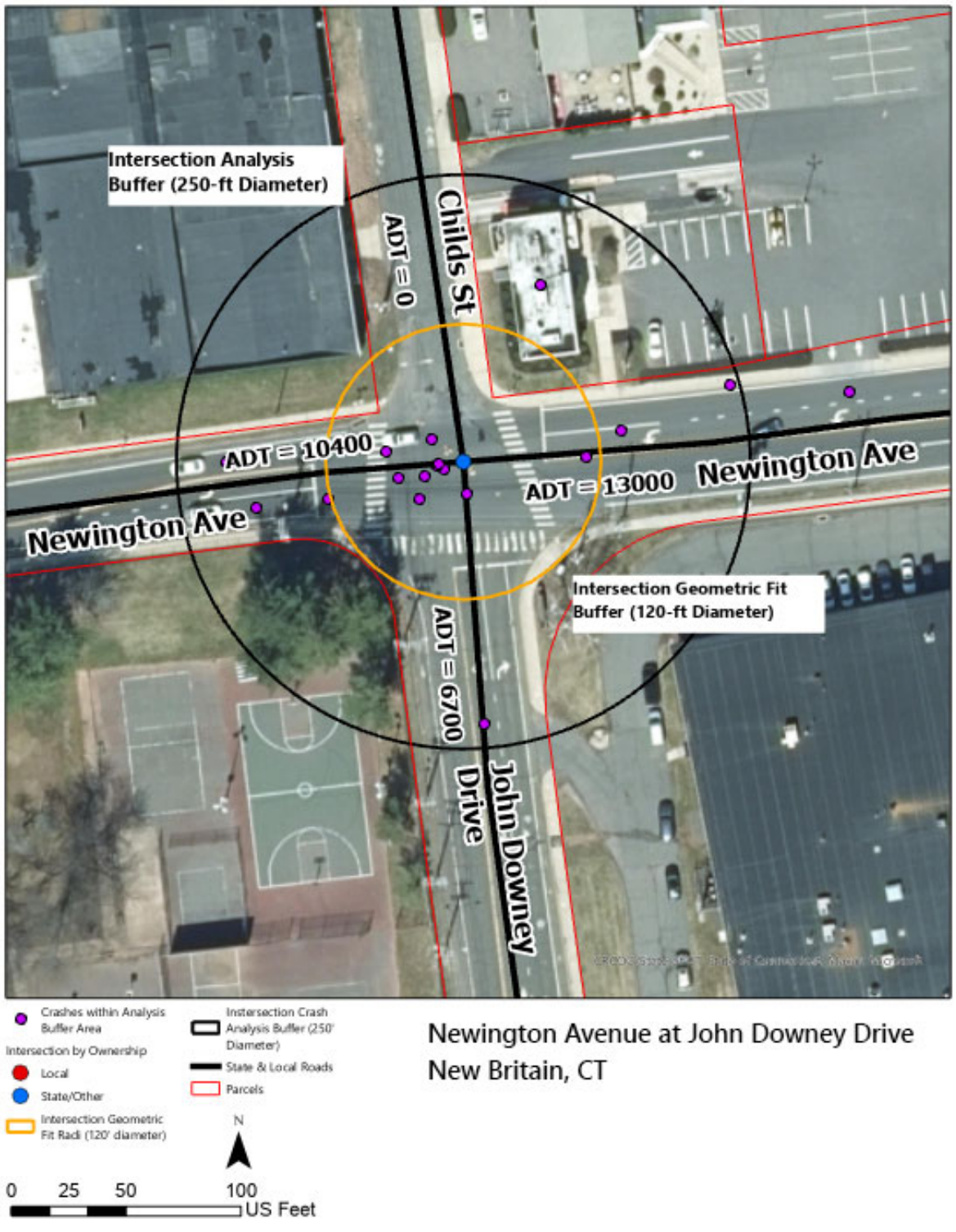
Each of the screened intersections was fitted with a nominal 120-ft-diameter circle to determine the potential fit of the circle which represented the typical footprint required for a roundabout installation. The fitment was done entirely in GIS mapping and used tools to place the circle at the GIS-determined center of the intersection while depicting intersection features available in the mapping, including Right-Of-Way (ROW), buildings, and other features. Where possible, shifting the 120-ft-diameter circle to avoid a ROW or building impact was considered during the Desktop Review Step, unless additional impacts were expected to be incurred.

The 120-ft-diameter circle was utilized for the screening study because this diameter is proven to accommodate up to WB-62 design vehicles through the roundabout for nearly all intersection geometries expected to be reviewed in the CRCOG region. A WB-62 design vehicle is the standard semi-trailer (tractor trailer) truck with a 50-foot-long trailer. The 120-ft-diameter circle can encompass the inscribed circle of a roundabout as well as a smaller roundabout (110-ft-diameter) with sidewalks on the perimeter.

The following was considered in the review of the intersection geometry overlaid with the circle:

- In locations where the overlaid circle extended beyond the public ROW and into private property, the GIS system generated an area of ROW (property impact) and building impact which was summarized per location.
- The impacted property ROW was listed as to the ownership criteria: private, municipal, State.
- Locations with impacts to property ROW greater than 2,000 square feet were eliminated based upon previous experience with roundabout projects.
- Locations with impacts to private buildings greater than 200 square feet were eliminated based upon previous experience with roundabout projects if the roundabout could not be adjusted to avoid the impact.
- For locations with ROW and building impacts less than the noted thresholds, a summary of the impacts at these locations was provided.

**Figure 17 Sample Fitment—
Intersection of Newington Avenue at John Downey Drive, New Britain**



The following scoring system was used to evaluate the impacts to private property beyond the public ROW and buildings, with locations with zero impacts given a total factor of 1.0. Impacts to ROW and Buildings were subtracted from this 1.0 value, up to a limit of 2,000 square for ROW and 200 square feet for buildings. Where impacts exceeded these values, the screening returns a negative value and the location is eliminated from consideration.

Private Property ROW Impact:	2,000 square feet (benchmark)
Building Impact:	200 square feet (benchmark)
Total Private Property ROW and Building Impact Factor:	**1-(sum)/2,200**

Locations with no impact were given a factor of 1.0. All other locations were given a factor of less than 1.0, based on the calculation used. Any locations that produced negative scores were given a score of 0.0 and thereby eliminated from further consideration.

Sample Intersection Calculation (Newington Ave. & John Downey Drive in New Britain):

Private Property ROW Impact:	1,050.7 square feet
Building Impact:	42 square feet
Total Private Property ROW and Building Impact Factor:	**1-(1050.7+42)/2,200 = .50**

2.4.1 Ranking Based on Steps 2, 3, and 4 Scoring

To rank the top locations using the above three screening steps, a scoring system was used combining the weighted crash score in Step 2, the volume adjustment factor in Step 3, and the Total ROW Impact factor in Step 4. From these scores a crash/volume/ROW score (CVR Score) was created using the following calculation:

CVR Score = Weighted Crash Score * Volume Adjustment Factor * Total ROW Impact Factor

2.4.2 KABC Filter

For the purposes of ranking, only potential sites with six or more KABC (injury-related) crashes over the three-year analysis period were included in the final ranking. This filter was applied to eliminate intersections that ranked high due to a fatal crash report but had few other injury crashes. The KABC filter was applied to focus on intersections with high potential for reducing fatal and serious injury crashes with a conversion to a roundabout. Roundabouts are an FHWA proven safety countermeasure and this screening process used potential crash reduction as the foundational priority for ranking. The volume adjustment process was the primary factor to confirm traffic operational feasibility. The right of way impact factor eliminated and downranked locations where there may be likely opposition to a proposed project based on right of way acquisition cost or property impact.

Example CVR Score Calculation (Newington Avenue at John Downey Drive in New Britain):

Step 1: Weighted Crash Score of 33.33
Step 2: Volume Adjustment Factor = 0.75
(ADT of the highest volume leg, east leg = 13,000)
Step 3: Total ROW Impact Factor = .50
CVR Score Calculation: CVR Score = 33.33 * 0.75 * 0.50 = 12.5

2.5 Step 5: Desktop Reviews

The final list of reviewed intersections included those with the highest CVR scores resulting after Step 4 and the municipal suggested intersections, as noted in the beginning of the chapter. The top-ranked locations with the 100 highest CVR scores were reviewed at the desktop level to determine if conversion of each intersection to a roundabout was feasible, considering obvious site condition impacts that would result from the physical construction of the roundabout. Desktop reviews also included all the municipal suggested locations. In addition, a desktop review was performed for the top three ranked intersections in each municipality. This was done to ensure that each municipality in the CRCOG region had some locations reviewed for potential conversion to a roundabout.

The desktop reviews of existing site conditions were conducted to identify obvious major constraints, such as adjacent buildings, major utilities, or significant historic structures, based on available GIS data and aerial mapping. Tabulated summaries of the locations with the roundabout locations to be considered for future design projects are provided in Chapter 5 of this report.

More information about the criteria used in the desktop reviews, the number of reviews, and how they were conducted can be found in Chapter 3.

2.6 Summary

As noted in the foregoing screening methodology, a comprehensive screening process for reviewing intersections in the CRCOG region for potential conversion to modern single-lane roundabouts was used for this project, using the available traffic volume and crash data from CTDOT and CRCOG sources.

The process included a hierarchy of weighted crash score, volume adjustment factor, and right-of-way impact factor. Scores were developed to rank the locations with the greatest potential to convert to modern single-lane roundabouts.

These ranked locations were reviewed at the “desktop” level, using available online mapping and GIS resource data, as well as local knowledge. This included a review of suggested locations provided by municipalities and the top three potential roundabout locations in each municipality in the region. This desktop engineering review of these locations provided the final determination on viability.

After the desktop screening was complete, three lists of locations were developed: Top 100 ranked, Top 3 ranked in each city/town in the CRCOG region, and reviews of the locations suggested by the municipalities during the outreach process.

The basis for this screening effort was data. Using the available data in this five-step screening process, appropriate single-lane roundabout locations were identified in a very efficient and defined process.

An overall roundabout screening methodology for the CRCOG region needs to be dynamic and capable of being modified in the future as conditions warrant, such as providing additional locations where mini-roundabouts and/or multilane roundabouts may be appropriate. However, the goal of this screening effort was to identify locations that can be considered for future funding for additional studies and design leading to construction of the safest form of intersection control: modern single-lane roundabouts.

3

Initial Screening Summary and Desktop Reviews

Once the three lists (Top 100 Locations, Top 3 Municipal Locations, and Suggested Municipal Locations) had been created, each location was reviewed by experienced professional roundabout designers, using a combination of Google Earth and Google Streetview, in addition to leveraging previous local knowledge of many of these locations. The Top 100 list was based on the CVR score, as described previously.

During the review process, some anomalies with the data were found, which required re-ranking the locations and resulted in some locations being added to the Top 100 while others dropped off the list. Consequently, more than 100 locations were reviewed in developing the Top 100 list. The Suggested Municipal Locations list included locations submitted by the CRCOG member municipalities that they felt might make good candidates for conversion to roundabouts. Of the 38 member communities, 12 submitted a total of 79 locations. In keeping with the purpose of this study, these locations were reviewed with a focus on safety and crash reduction, but it was noted that in some cases there might be other reasons why a particular location was submitted for review.

In addition to these two lists, it was recognized that several municipalities did not have any locations in the Top 100 due to the preponderance of crashes in the more urban areas with higher traffic volumes. Therefore, a Top 3 list was created, listing the top three ranked locations in each municipality by CVR score. Since some municipalities had three or more locations in the Top 100, there was some overlap between these two lists. Of the 114 locations (38 municipalities multiplied by three locations per municipality), there were 80 new locations created by the Top 3 list. Among all three lists, there were a total of 259 locations for which a desktop review was conducted (not including the extra locations reviewed due to the data anomalies mentioned above).

The ultimate result of these reviews was to either recommend or not recommend that a roundabout be further considered at an intersection. This decision was intentionally limited to

either a "yes" or "no" answer to avoid a "maybe" answer that would apply to many, if not most, of the sites. It should be noted that a "yes" answer indicates that the site can be reviewed further in the development of an engineering concept layout.

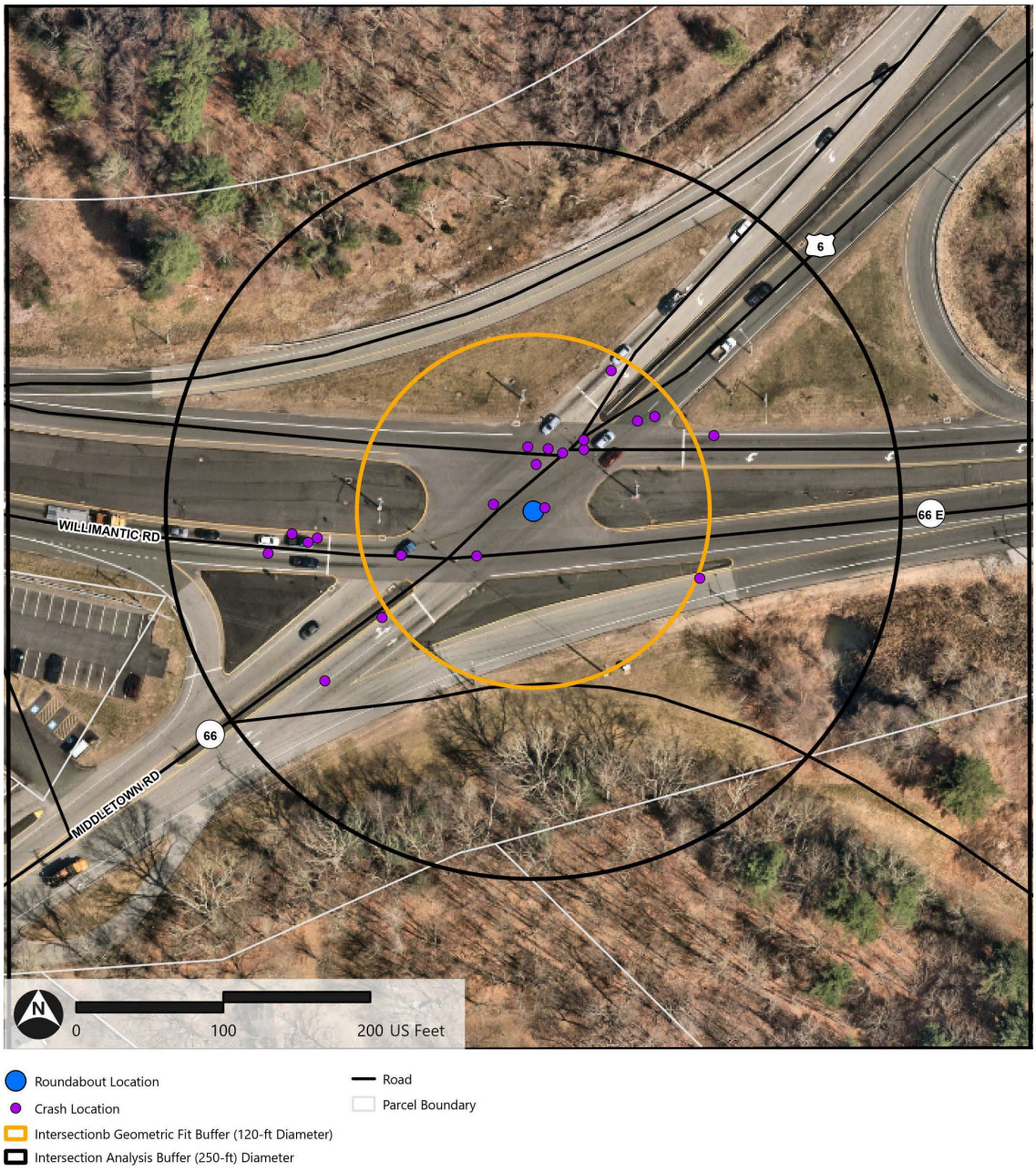
The desktop reviews looked at issues such as:

- Geometry of the intersection, including existing awkward geometry that would be improved with a roundabout
- Grades of the approaches and general topography of the intersection
- Presence of potentially historic or environmentally sensitive features
- Overhead utilities
- Impact on adjacent properties outside the Right-Of-Way, including the effect of any impacts on the viability of the properties
- Presence of adjacent signalized intersections
- Nearby intersections that might be affected by a roundabout installation or could be considered for inclusion in the roundabout, or for conversion to a separate roundabout
- Bridge abutments or piers, railroad crossings
- Presence of expressway off-ramps and the potential to better prevent wrong-way movements with a roundabout compared to signalized intersections
- Significant driveways
- Sightline issues
- Potentially significant pedestrian and bicycle volumes (generally, high volumes are considered to be better accommodated with a roundabout than with signals, but there are exceptions)
- Any other obvious factors that should be considered during the planning and design of a potential roundabout

Where any of these items were found, they were generally noted in the review comments and their effects on the viability of a roundabout installation were considered in the final decision whether to recommend the location for a potential roundabout.

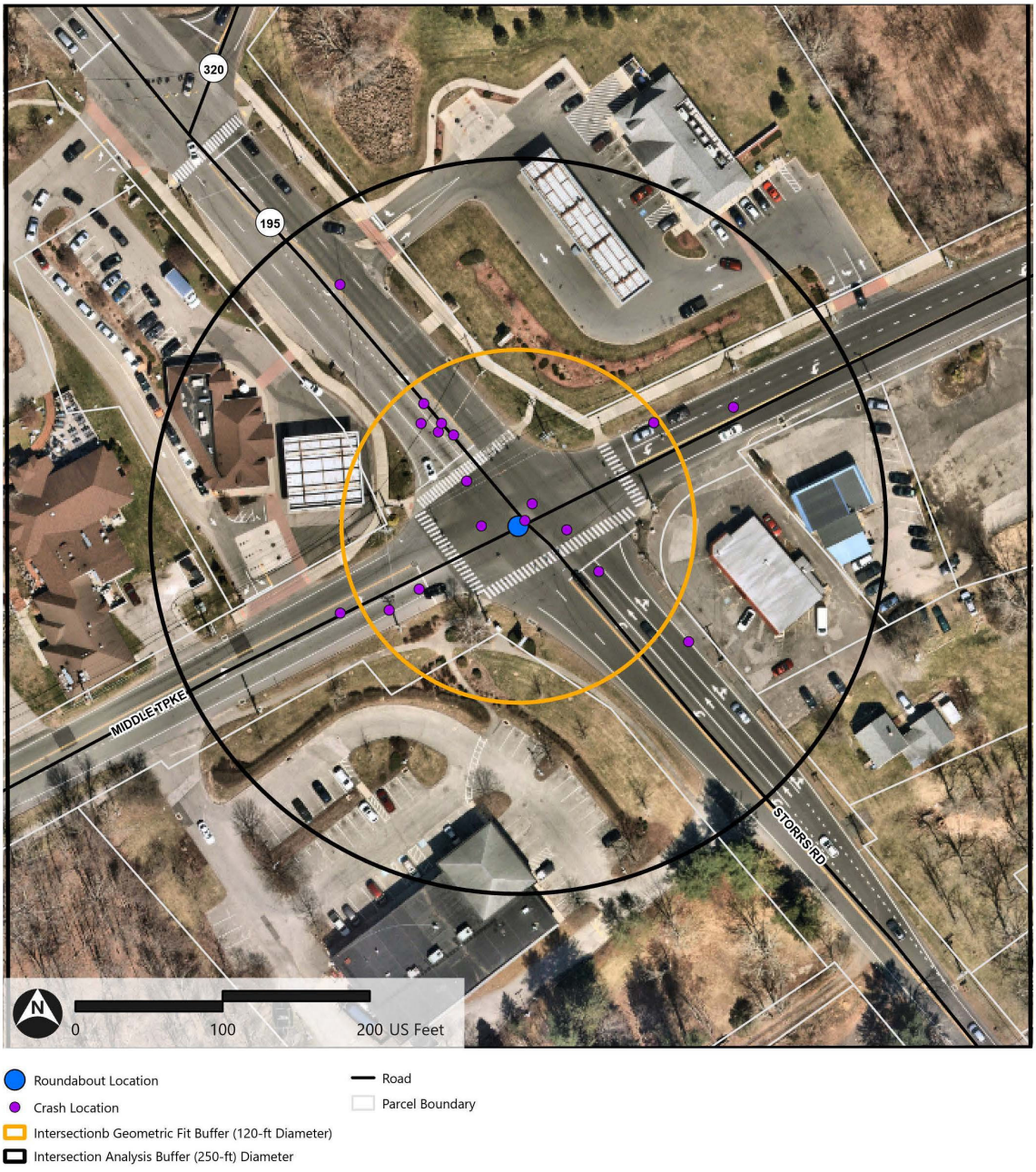
Figures 18 to 23 depict example locations that were reviewed for potential roundabouts and show the existing intersections, potential ROW impacts and other features which may allow or constrain the potential roundabout.

Figure 18 Columbia | Route 6 at Route 66



Source: NearMap. CT DEEP, VHB

Figure 19 Mansfield | Route 44 at Route 195



Source: NearMap. CT DEEP, VHB

Figure 20 Newington | Willard Avenue at Garfield Street

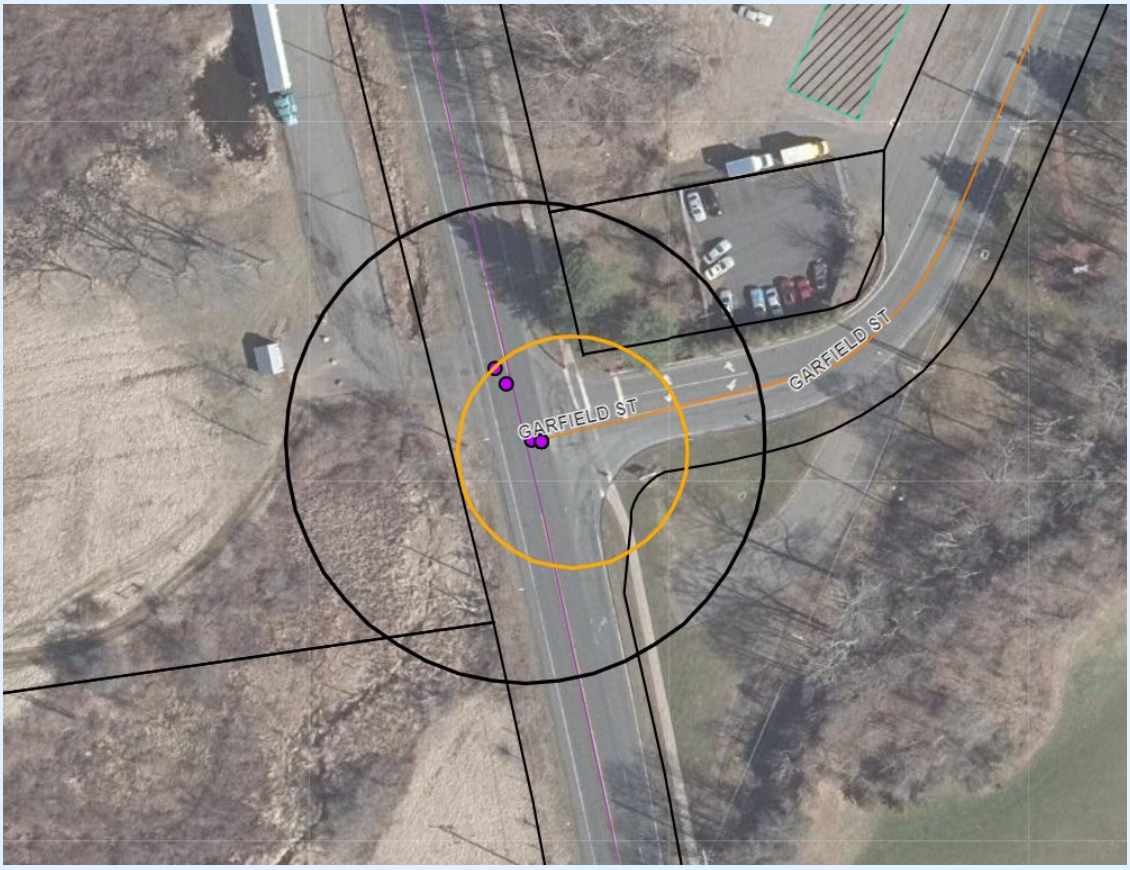
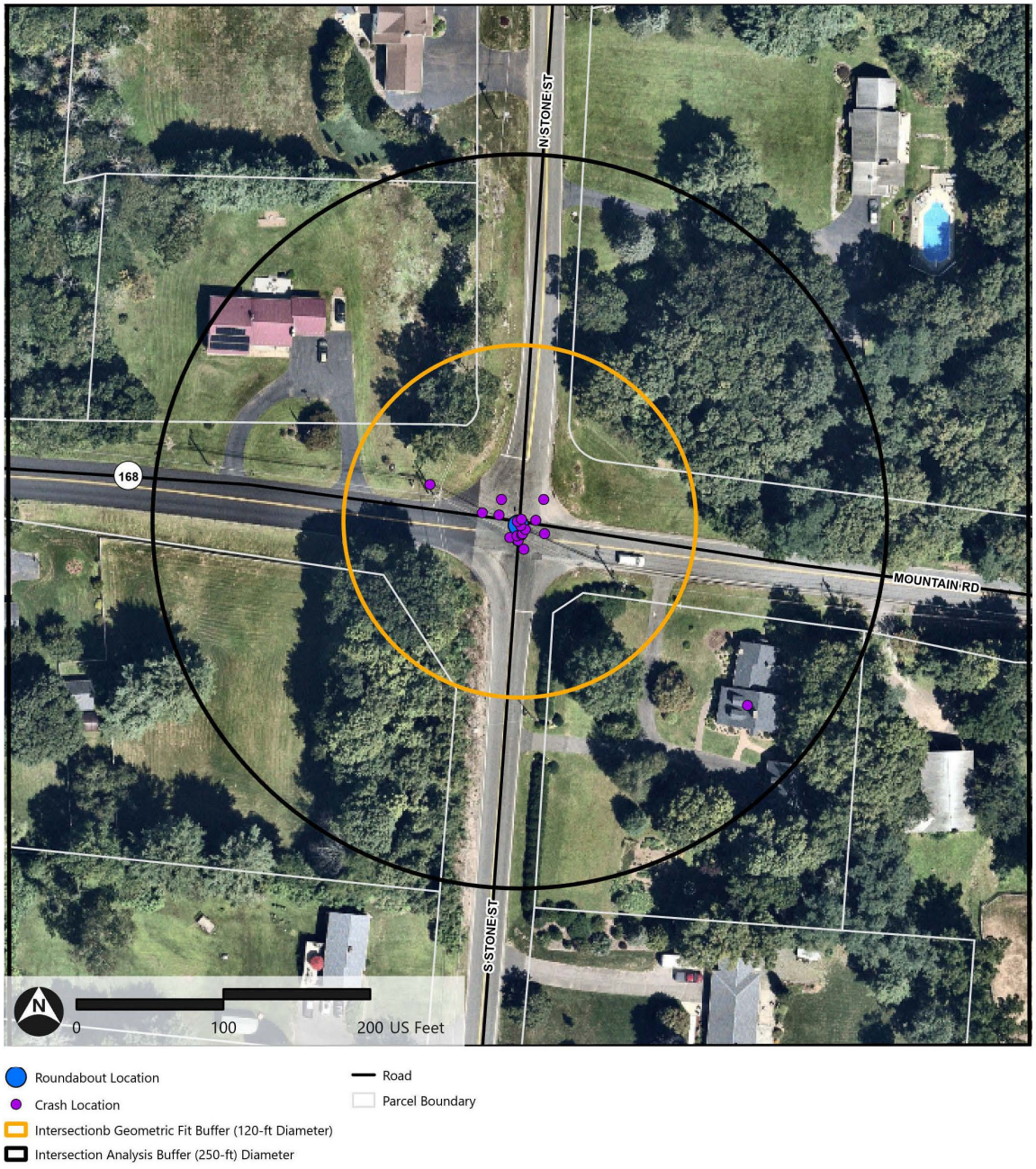
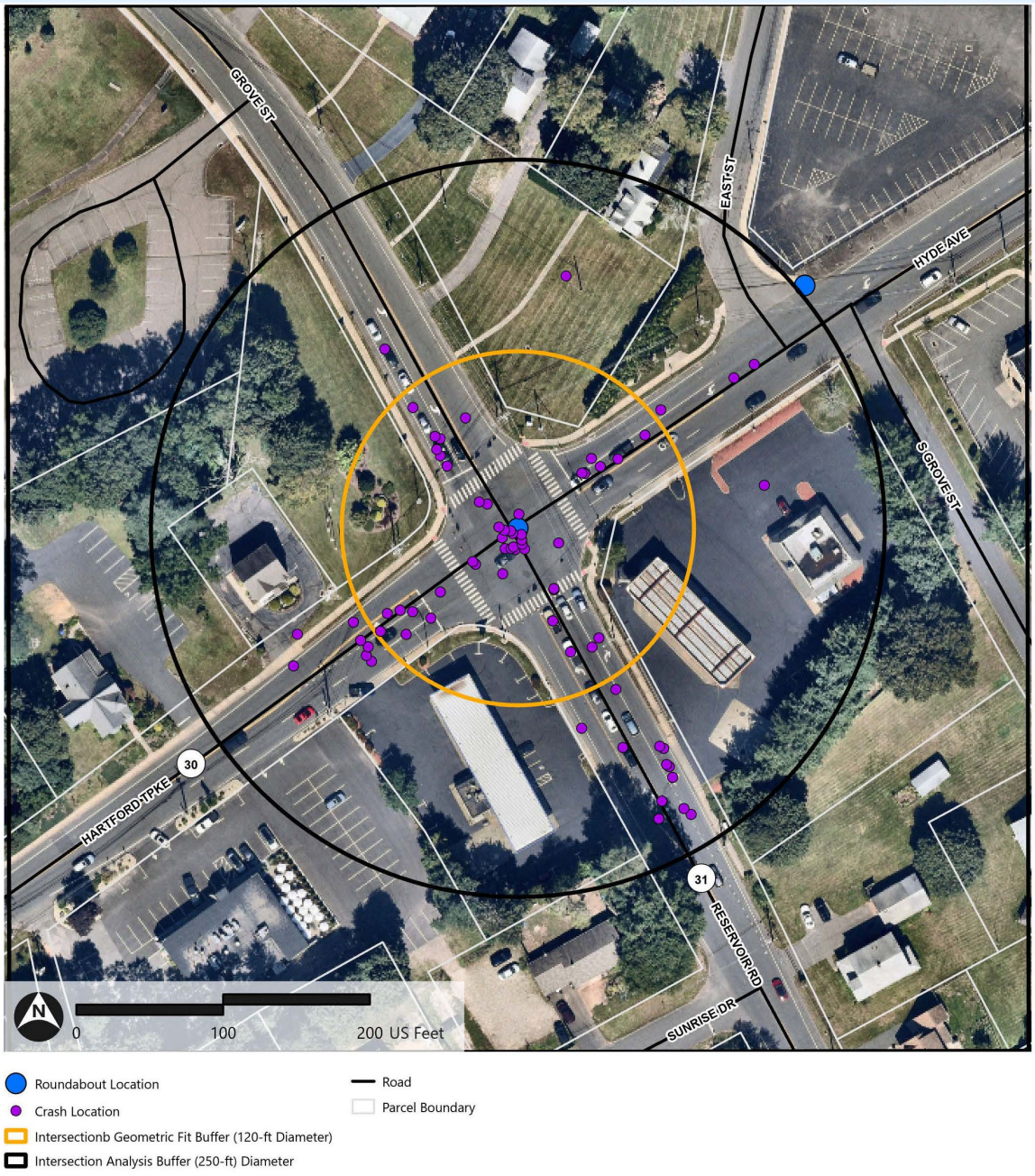


Figure 21 Suffield | Route 168 at Stone Street



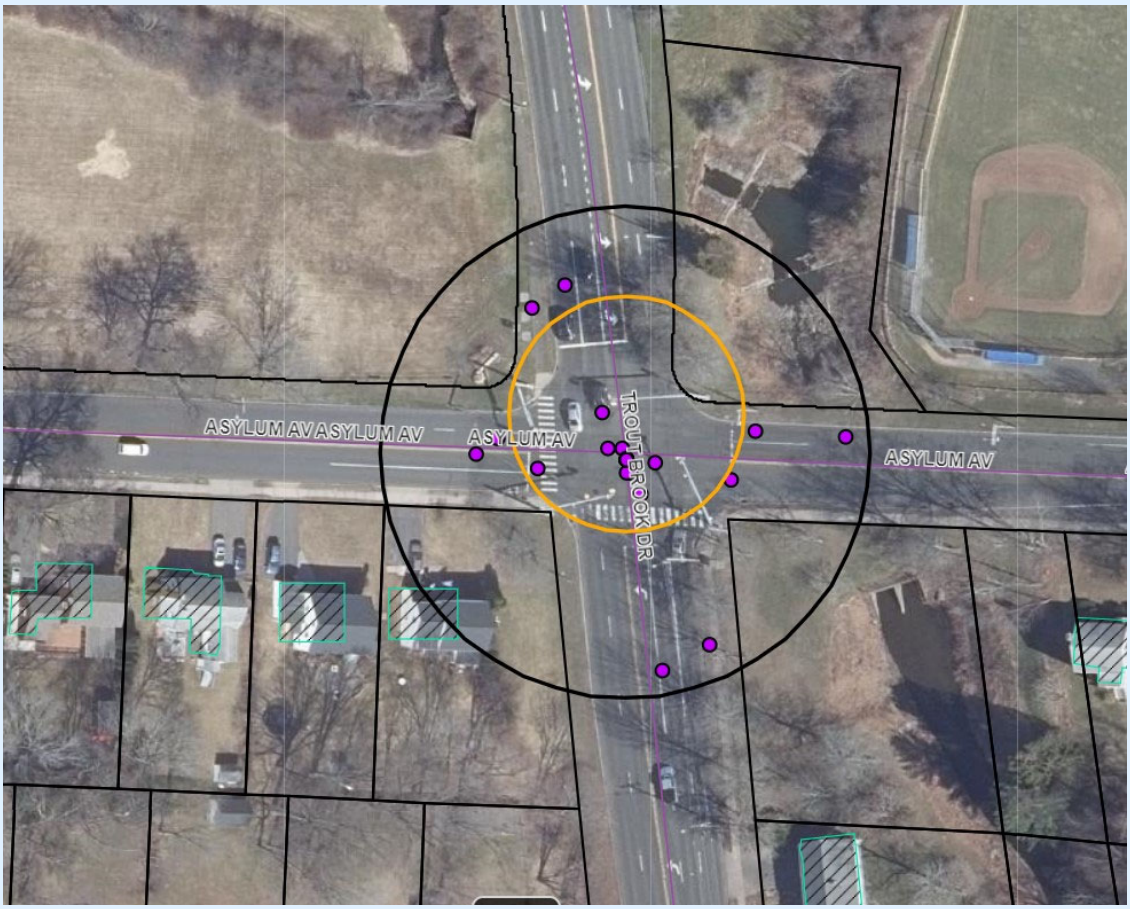
Source: NearMap. CT DEEP, VHB

Figure 22 Vernon | Route 30 at Route 31



Source: NearMap. CT DEEP, VHB

Figure 23 West Hartford | Trout Brook Drive at Asylum Avenue



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4

Screening Results Summaries

The results of the roundabout screening were filtered into three primary lists: the Top 100 ranked locations based on CVR scores, the Top 3 ranked locations in each municipality in the CRCOG region, and reviews of locations suggested by cities and towns during the outreach process.

The lists are shown on the following pages in Tables 3, 4, and 5. The lists for the Top 100 and Top 3 are ranked based on the CVR scores but not all top-ranked locations are recommended for conversion to modern single-lane roundabouts based on the desktop reviews and other factors. There was some overlap between the lists as some of the Top 100 locations were also the Top 3 in the respective city or town and in the list of municipal-suggested locations.

4.1 Top 100 Ranked Locations

Table 3 shows the Top 100 ranked locations in the CRCOG region. They are ranked in descending order by their crash/volume/ROW (CVR) score.

Listed across the top of the spreadsheet are the different columns of data, which are: overall rank, CVR score, municipal location, major road and minor road(s) of the intersection, total crashes, total KABC crashes, the crash score, ADT, ADT factor, a brief note about the scale of potential ROW issues (such as whether property impacts would be significant or insignificant), the geometric factor, whether it is recommended to pursue a roundabout, and brief comments if a roundabout is not recommended.

Rows highlighted in yellow identify the locations where a roundabout is recommended. In total, 61 locations in the Top 100 list are recommended for conversion to roundabouts. The comment column in the far right-hand side of the list provides a brief comment on why a roundabout was not recommended for that location, which can include issues around ROW, high volumes, nearby structures, topography issues, and others.

Of the Top 100 ranked locations, 48 are in Hartford, 10 are in New Britain, and 7 are in West Hartford. The remaining 35 are scattered across the region in other cities and towns.

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Roundabout recommended

Table 3 Top 100 Ranked Locations

Rank	CVR Score	Municipality	Major Road	Minor Road	Total Crashes	Total KABC Crashes	Crash Score	ADT	ADT Factor	ROW Issues	Geometric Factor	Recommended	Comment
1	250.20	Hartford	Main St	Mahl Ave/Pavilion St	31	10	417.00	13500	0.75	Moderate	0.80	Yes	
2	232.65	Hartford	Chapel St No/Walnut St/I- 84 EB Ramp	High St	60	11	232.67	9900	1	None	1.00	No	Volumes
3	187.54	Hartford	New Britain Ave	Summit St/Fairfield Ave	17	6	216.33	10600	0.9	Insignificant	0.96	Yes	
4	187.50	Berlin	Mill St (CT 372)	Savage Hill Rd/Beckley Rd	12	6	208.33	10300	0.9	None	1.00	Yes	
5	162.28	Hartford	Franklin Ave	Bushnell St	13	7	213.67	8600	1	Significant	0.76	No	ROW
6	149.93	Hartford	Washington St	Vernon St # 2	34	11	229.00	12100	0.75	Insignificant	0.87	Yes	
7	145.27	Hartford	Franklin Ave	Bliss St	13	7	213.67	8600	1	Significant	0.68	No	Fatal Likely Occurred at Bushnell
8	131.67	Hartford	Westland St	Barbour St	18	6	205.33	5700	1	Significant	0.64	No	ROW
9	108.48	Hartford	Homestead Ave/Walnut St	Garden St #1	54	28	270.67	13100	0.75	Moderate	0.53	Yes	
10	89.31	Hartford	Albany Ave (US 44)	Brook St	19	6	215.33	13400	0.75	Significant	0.55	No	ROW
11	81.67	Hartford	Wethersfield Ave	Adelaide St	19	7	212.33	12000	0.9	Significant	0.43	No	ROW
12	79.75	Hartford	Morgan St (US 44)	Market St	128	30	127.00	12800	0.75	Insignificant	0.84	No	ROW
13	67.43	Southington	Meriden-Waterbury Tpke (CT 322)	Clark St (CT 509)	15	7	215.67	11700	0.9	Moderate	0.35	Yes	Volumes, Signal System
14	65.05	Hartford	Zion St #1	Ward St	18	9	220.33	10400	0.9	Significant	0.33	No	ROW
15	64.30	Hartford	Farmington Ave	Broad St	84	23	89.67	12600	0.75	Insignificant	0.96	No	Needs Multi-Lane Roundabout
16	63.79	Hartford	Trumbull St	Chapel St South	47	18	67.00	7100	1	Significant	0.95	No	ROW, Volumes
17	58.25	Hartford	Main St #2	Charter Oak Ave/Buckingham St	36	14	233.00	15900	0.25	Moderate	1.00	Yes	
18	55.72	Hartford	New Britain Ave	Hillside Ave	44	15	247.00	10600	0.9	Significant	0.25	No	ROW
19	53.33	Hartford	Ann Uccello St #1/Pleasant St	Chapel St North	41	12	53.33	6800	1	Significant	1.00	No	ROW
20	52.44	Hartford	Main St (US 44)/Morgan St	Chapel St North	78	24	82.67	12500	0.75	Moderate	0.85	No	Volumes
21	51.91	Vernon	Hartford Turnpike (CT 30)	Reservoir Rd/Grove St (CT 31)	67	17	67.00	11200	0.9	Insignificant	0.86	Yes	
22	51.21	Hartford	Albany Ave (US 44)	Garden St # 1	85	22	271.00	16000	0.25	Significant	0.76	No	ROW, Recent Project
23	51.17	Hartford	Capitol Ave	Laurel St	47	13	57.00	10300	0.9	Moderate	1.00	Yes	
24	50.42	Hartford	Franklin Ave	Bond St	32	17	55.67	8600	1	Significant	0.91	Yes	
25	47.97	Hartford	Park Terr	Sigourney St/Russ St	47	18	64.00	13600	0.75	None	1.00	No	Already Converted to a Roundabout
26	46.67	New Britain	Columbus Blvd	Chestnut St	26	11	46.67	8100	1	Insignificant	1.00	Yes	
27	44.32	Hartford	Capitol Ave	Broad St	56	19	66.67	10300	0.9	Insignificant	0.74	Yes	
28	42.87	Hartford	Franklin Ave	Brown St	42	7	45.00	8600	1	Significant	0.95	No	ROW
29	42.05	New Britain	Columbus Blvd/CT 9 SB On/Off Ramp	Ellis St	26	11	45.00	8600	1	Insignificant	0.93	Yes	
30	40.74	Newington	Willard Ave (CT 173)	Robbins Ave	33	17	54.33	13500	0.75	Significant	1.00	Yes	
31	40.15	Hartford	Washington St	Jefferson St	51	22	75.33	12100	0.75	Moderate	0.71	Yes	
32	39.45	Vernon	Hartford Tpke (CT 30)	Bolton Rd/Center Rd	48	12	52.33	11300	0.9	Moderate	0.84	Yes	
33	38.50	Berlin	Frontage Rd/Mill St (CT 372)	Worthington Ridge (CT 372 South/572 North)	26	12	51.33	13700	0.75	Moderate	1.00	Yes	
34	37.99	West Hartford	New Park Ave	Flatbush Ave	70	22	76.67	14600	0.5	Significant	0.99	No	Volumes
35	37.50	Hartford	I-84 WB-115	Sigourney St	40	12	41.67	11900	0.9	Insignificant	1.00	No	Volumes, On Structure
36	36.06	Hartford	Washington St	Park St	64	15	75.33	12100	0.75	Moderate	0.64	Yes	
37	35.40	West Hartford	Prospect Ave	Kane St	33	11	39.33	10500	0.9	None	1.00	Yes	
38	34.75	Hartford	I-84 EB On Ramp	Broad St	64	12	46.33	13100	0.75	None	1.00	No	Bridge Piers
39	34.50	Coventry	Boston Turnpike (US 44)	Main St (CT 31)	30	11	38.33	10300	0.9	Insignificant	1.00	Yes	
40	34.23	New Britain	East Main	Main St	37	17	47.33	13100	0.75	None	0.96	No	Recent Project
41	33.60	Mansfield	Middle Turnpike (US 44)	Storrs Rd (CT 195)	37	12	37.33	10900	0.9	None	1.00	Yes	
42	32.70	Windsor	Windsor Ave (CT 159)	Rood Ave	25	10	36.33	10600	0.9	Insignificant	1.00	No	Realignment Needed, Major Utility Impacts
43	32.47	Hartford	Asylum Ave	Broad St/Cogswell St	95	20	81.67	14300	0.5	Insignificant	0.80	No	Volumes
44	32.33	Hartford	I-91 NB Ramp	I-91 SB Ramp	37	10	32.33	5200	1	None	1.00	No	Steep Grade
45	32.33	Bloomfield	Bloomfield Ave (CT 189)	Park Ave/Mtn Ave (CT 178)	27	9	32.33	9900	1	Insignificant	1.00	Yes	
46	31.68	Hartford	I-84 EB Off/I-84 WB On	Capitol Ave/Oak St	32	13	52.00	10300	0.9	None	0.68	Yes	
47	31.00	Vernon	Talcottville Rd (CT 83)	Hartford Turnpike/Kelly Rd (CT 30)	49	11	41.33	12700	0.75	None	1.00	Yes	
48	30.60	Hartford	Maple Ave	Fairfield Ave # 1	18	8	34.00	11000	0.9	Insignificant	1.00	No	ROW, Potential Historic Impact
49	30.50	Hartford	State St	Market St	53	6	40.67	13400	0.75	None	1.00	No	Potential Wetlands, Utility Impacts
50	30.09	Glastonbury	Glastonbury Blvd/Griswold St	Main St	63	9	49.00	13400	0.75	None	0.82	No	Hybrid May Be Needed, Signal System

Rank	CVR Score	Municipality	Major Road	Minor Road	Total Crashes	Total KABC Crashes	Crash Score	ADT	ADT Factor	ROW Issues	Geometric Factor	Recommended	Comment
51	29.38	Hartford	Farmington Ave	Sigourney St	68	19	72.33	12600	0.75	Moderate	0.54	No	ROW, Signal System
52	29.00	Vernon	Hartford Turnpike (CT 30)	Dobson Rd	37	6	29.00	9100	1	None	1.00	Yes	
53	28.80	Enfield	Enfield St (US 5)/Franklin St (CT 514)	CT 190 WB Ramp	17	8	32.00	11800	0.9	None	1.00	Yes	
54	27.90	West Hartford	Prospect Ave/Caya Ave	I-84 EB Ramps	28	10	31.00	10500	0.9	None	1.00	Yes	
55	27.82	Hartford	Franklin Ave	South St	22	9	29.00	8600	1	Significant	0.96	No	ROW
56	26.75	Hartford	Pulaski Cir (CT 598)/Wells St	Hudson St	47	9	35.67	13800	0.75	Insignificant	1.00	Yes	
57	26.27	Hartford	Church St	Spruce St	55	10	40.00	6400	1	Insignificant	0.66	No	Crash Data Incorrect
58	26.24	West Hartford	Trout Brook Dr	Asylum Ave	31	10	221.33	16300	0.25	Moderate	0.47	Yes	
59	26.24	Hartford	Sigourney St	Hawthorn St	23	7	30.67	11900	0.9	Insignificant	0.95	Yes	
60	25.80	Hartford	Westbourne Pkwy	Blue Hills Ave (CT 187)	30	7	30.00	11300	0.9	Insignificant	0.96	Yes	
61	25.57	Enfield	Shaker Rd (CT 220/CT 402)	Taylor Rd (CT 220)	23	11	34.33	11400	0.9	None	0.83	Yes	
62	25.38	New Britain	Martin Luther King Dr (CT 71)	Winter St	24	14	41.33	13200	0.75	Insignificant	0.82	Yes	
63	25.34	Hartford	Wethersfield Ave	Elliott St	21	8	35.00	12000	0.9	Moderate	0.80	Yes	
64	25.00	Farmington	South Rd/Colt Highway (CT 531)	Two Mile Rd	30	6	25.00	10000	1	None	1.00	Yes	
65	24.70	Hartford	I-84 EB Off/WB On	Spruce St	39	11	44.33	12200	0.75	Insignificant	0.74	No	Signal System
66	24.60	Hartford	White St	Harvard St	22	10	27.33	10600	0.9	Insignificant	1.00	Yes	
67	24.46	Hartford	Park St	Park Terr	67	27	92.00	13600	0.75	Moderate	0.35	Yes	
68	24.29	West Hartford	Boulevard	Four Mile Rd	22	13	43.67	6100	1	Moderate	0.56	No	ROW
69	24.02	Southington	West St (CT 229)	West Queen St	43	13	243.33	21100	0.1	Insignificant	0.99	No	Grade, Volumes
70	23.88	Hartford	Asylum Ave	Woodland St	49	16	61.00	14300	0.5	Moderate	0.78	Yes	
71	23.25	Southington	Waterbury Turnpike (CT 322)	I-691 WB Ramps	23	9	31.00	12100	0.75	None	1.00	Yes	
72	23.20	Bloomfield	Mountain Ave (CT 178)	Maple Ave/Brown St	21	8	30.00	10400	0.9	Insignificant	0.86	Yes	
73	23.17	New Britain	Whiting St	Webster St (Actually Glen St)	11	6	26.67	4100	1	Significant	0.87	No	ROW
74	23.14	Hartford	Chapel St South	Ann Uccello St # 1	47	6	29.00	7000	1	Significant	0.80	No	I-84 Overpass
75	23.11	Hartford	Fairfield Ave #1	Zion St #2	36	11	35.33	12900	0.75	Insignificant	0.87	Yes	
76	23.04	Vernon	Union St (CT 83/CT 74)	West St (CT 74/CT 83)	55	7	36.67	10100	0.9	Moderate	0.70	Yes	
77	23.00	Hartford	Capitol Ave	Washington St/Trinity St	23	8	30.67	12100	0.75	None	1.00	Yes	
78	22.98	Manchester	Middle Turnpike West/Middle Turnpike East #1	Main St (CT 83)	44	14	54.33	13300	0.75	Significant	0.56	No	ROW
79	22.25	New Britain	Chestnut St/Elm St (CT 71)	Harry Truman Op	24	9	29.67	12700	0.75	None	1.00	Yes	
80	22.20	Mansfield	Storrs Rd (CT 195)	North Frontage Rd (CT 632)	19	7	24.67	10900	0.9	None	1.00	Yes	
81	21.83	Southington	Waterbury Turnpike (CT 322)/Ruggles Row	I-84 EB Ramps	31	13	43.67	14700	0.5	None	1.00	Yes	
82	21.75	Enfield	King St (US 5)	I-91 NB Ramps	17	10	29.00	12900	0.75	Insignificant	1.00	Yes	
83	21.69	Hartford	Albany Ave (US 44)	Baltimore St	18	7	26.00	11200	0.9	Significant	0.93	No	ROW, Recent Project
84	21.67	New Britain	Main St #1	Chestnut St/Arch St	15	7	21.67	6600	1	None	1.00	Yes	
85	21.67	Willington	River Road (CT 32)	Tolland Turnpike (CT 74)	15	6	21.67	5200	1	None	1.00	No	Steep Grade
86	21.60	East Hartford	Main St # 1	Broad St/Maple St	30	9	31.67	13300	0.75	Insignificant	0.91	Yes	
87	21.59	Hartford	Vine St	Greenfield St	36	17	58.67	5600	1	Significant	0.37	Yes	
88	21.31	West Hartford	Boulevard	Raymond Rd	32	14	40.67	6100	1	Insignificant	0.52	Yes	
89	21.00	Southington	Atwater St	I-84 EB Ramp/Marion Ave	24	8	28.00	12400	0.75	None	1.00	Yes	
90	20.90	Hartford	Trumbull St	Chapel St North	25	6	25.00	7100	1	Insignificant	0.84	No	Signal System
91	20.75	Southington	Meriden Waterbury Turnpike (CT 322)/I-84 WB Exit	I-84 Entrance Ramp	18	8	27.67	12700	0.75	None	1.00	Yes	
92	20.70	Canton	US 202	River Rd (CT 179)	24	8	23.00	11600	0.9	None	1.00	Yes	
93	20.64	Berlin	Mill St (CT 372)	Middletown Rd/Berlin St	22	11	29.00	13000	0.75	None	0.95	Yes	
94	20.32	New Britain	Slater Rd/Alexander Dr/Fienemann Rd	Farmington Ave	28	8	35.67	12800	0.75	Insignificant	0.76	Yes	
95	19.67	New Britain	Chestnut St	CT Rte 9 SB Exit Ramp	9	6	19.67	4500	1	None	1.00	Yes	
96	19.57	East Hartford	Silver Lane (CT 502)	Forbes St	28	8	29.33	10800	0.9	Insignificant	0.74	Yes	
97	19.54	Hartford	Prospect Ave	Warrenton Ave	32	11	35.67	7100	1	Significant	0.55	No	ROW
98	19.50	Windsor	Kennedy Rd	Archer Rd/I-91 NB Exit Ramp	15	7	21.67	10300	0.9	None	1.00	Yes	
99	19.39	Hartford	Market St	Pleasant St	33	8	32.67	12800	0.75	Moderate	0.79	Yes	
100	18.87	New Britain	Stanley St # 1	East Main St	25	9	28.33	12800	0.75	Moderate	0.89	Yes	

4.2 Top 3 Municipal Locations

Table 4 shows the Top 3 municipal locations in each city or town in the CRCOG region. They are organized in alphabetical order by municipality and include almost all the same columns of information that were in the Top 100 ranked locations, excluding the crash score, ADT factor, or geometric factor. The list includes a note on whether the location was suggested by the municipality and the existing intersection control type (traffic signal, stop-controlled, etc.). The Top 3 municipal locations were chosen based on their CVR score.

Rows highlighted in yellow identify the locations where a roundabout is recommended, and the comment column provides a brief comment on why a roundabout was not recommended for that location.

Many locations have a note in the "Rank" column that says, "Not in Top 300." During the screening process, all potential intersections that made it through the screening—up to 300 locations—were ranked based on their CVR score, and this note in the column simply identifies that the intersection did not make it into that ranking. If an intersection received a ranking within the top 300, it is noted in the column.

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Table 4 Top 3 Ranked Municipal Locations

Roundabout recommended

Rank	CVR Score	Municipality	Major Road	Minor Road	Muni Identified List	Total Crashes	Total KABC Crashes	ADT	Intersection Control Type	Row Issues	Recommended	Comments
Not in Top 300	3.30	Andover	Jonathan Trumbull Highway/Willimantic Rd (US 6)	Jonathan Trumbull Highway (CT 87)	No	6	1	10600	Signal	None	No	Lack of Crash History
Not in Top 300	6.74	Andover	Jonathan Trumbull Highway (US 6)	Lake Rd	No	7	2	10600	Signal	Insignificant	No	Lack of Crash History
Not in Top 300	13.20	Andover	Jonathan Trumbull Highway (US 6)	Hebron Rd (CT 136)	No	14	4	11200	Signal	Moderate	No	Lack of Crash History
Not in Top 300	4.58	Avon	Lovely St (CT 177)	Westmont Rd/Country Club Rd	No	11	4	9400	Signal	Significant	Yes	
147	13.26	Avon	West Avon Rd (CT 167)	Country Club Rd	No	14	6	12400	Signal	Moderate	Yes	
Not in Top 300	5.36	Avon	Country Club Rd	Burnham Rd	No	5	4	5700	All-Way Stop	Moderate	Yes	
4	187.50	Berlin	Mill St (CT 372)	Savage Hill Rd/Beckley Rd	No	12	6	10300	Signal	None	Yes	
93	20.64	Berlin	Mill St (CT 372)	Middletown Rd/Berlin St	No	22	11	13000	Signal	None	Yes	
33	38.50	Berlin	Frontage Rd (CT 572)/Mill St (CT 372)	Worthington Ridge (CT 372 South/CT 572 North)	No	26	12	13700	Signal	Moderate	Yes	
72	23.20	Bloomfield	Mountain Ave (CT 178)	Maple Ave/Brown St	No	21	8	10400	Signal	Insignificant	Yes	
45	32.33	Bloomfield	Bloomfield Ave (CT 189)	Park Ave/Mountain Ave (CT 178)	No	27	9	9900	Signal	Insignificant	Yes	
196	7.91	Bloomfield	Wintonbury Ave (CT 178)	East Wintonbury Ave (CT 178)	No	33	11	15600	Signal	Insignificant	No	Volumes
Not in Top 300	191.33	Bolton	West St (CT 85)	Lyman Rd	No	1	1	4400	Side Street Stop	Insignificant	No	Lack of Crash History
Not in Top 300	16.20	Bolton	Boston Turnpike (US 44)	Quarry Rd	No	10	3	10200	Signal	Moderate	Yes	
Not in Top 300	5.78	Bolton	Boston Turnpike (US 44)	South Rd	No	13	2	9600	Signal	Moderate	Yes	
Not in Top 300	7.49	Canton	River Rd (CT 179)	Maple Ave	Yes	15	5	12700	<Null>	<Null>	Yes	
92	20.70	Canton	US 202	River Rd (CT 179)	No	24	8	11600	Signal	None	Yes	
Not in Top 300	9.00	Canton	Albany Turnpike (US 44)	Cherry Brook Rd (CT179)	No	10	3	10300	Signal	None	Yes	
Not in Top 300	193.56	Columbia	Middletown Rd (CT 66)	Hennequin Rd/Pine St	No	12	4	7700	Side Street Stop	Insignificant	Yes	
Not in Top 300	14.67	Columbia	Middletown Rd (CT 66)	Jonathan Trumbull Highway (CT 87)	No	14	5	8800	Signal	None	Yes	
Not in Top 300	21.00	Columbia	Willimantic Rd (US 6)	Willimantic Rd (CT 66)	No	30	4	12400	Signal	None	Yes	
Not in Top 300	3.04	Coventry	South St	Seagraves Rd	No	3	1	1700	Side Street Stop	Insignificant	No	Lack of Crash History
Not in Top 300	12.08	Coventry	Main St (CT 31)	Stonehouse Rd/Lake St	Yes	11	5	4900	<Null>	<Null>	<Null>	Volumes, Grade, Recent Project
39	34.50	Coventry	Boston Turnpike (US 44)	Main St (CT 31)	No	30	11	10300	Signal	Insignificant	Yes	
Not in Top 300	12.67	East Granby	South Main St (CT 187)	Hatchett Hill Rd	No	8	4	6500	Signal	None	Yes	
Not in Top 300	0.00	East Granby	Rainbow Rd (CT 20)	Bradley Park Rd	No	33	7	33400	Signal	Insignificant	No	Volumes
Not in Top 300	15.67	East Granby	North Main St (CT 187)	South Stone Rd	Yes	7	5	6900	<Null>	<Null>	Yes	
86	21.60	East Hartford	Main St	Broad St/Maple St	No	30	9	13300	Signal	Insignificant	Yes	
96	19.57	East Hartford	Silver Lane (CT 502)	Forbes St	No	28	8	10800	Signal	Insignificant	Yes	
183	9.23	East Hartford	Connecticut Blvd (US 44)	South Prospect St	No	12	6	11500	Signal	Significant	No	ROW
276	3.90	East Windsor	I-91-S-103	Prospect Hill Rd (US 5)	No	57	8	20800	Signal	None	No	Volumes
125	15.73	East Windsor	Bridge St (CT 140)	Main St	No	17	6	13100	Signal	Moderate	Yes	
Not in Top 300	2.28	East Windsor	Prospect Hill Rd (US 5)	North Rd (CT 140)	No	24	7	18600	Signal	Significant	No	Volumes
167	11.17	Ellington	West Rd (CT 83)	Lower Butcher Rd	No	17	9	8700	Signal	Moderate	Yes	
Not in Top 300	4.53	Ellington	Pinney St (CT 286)	Windermere Ave	No	16	2	6200	Signal	Moderate	Yes	
Not in Top 300	1.47	Ellington	Crystal Lake Rd (CT 140)	Burbank Rd	No	21	10	3400	Side Street Stop	Moderate	Yes	
82	21.75	Enfield	King St (US 5)	I-91 NB On And Off Ramps	No	17	10	12900	Signal	Insignificant	Yes	
53	28.80	Enfield	Enfield St (US 5)/Franklin St (CT514)	CT 190 WB Ramp	No	17	8	11800	Signal	None	Yes	
61	25.57	Enfield	Shaker Rd (CT 220/CT 402)	Taylor Rd (CT 220)	No	23	11	11400	All-Way Stop	None	Yes	
252	4.70	Farmington	Scott Swamp Rd (US 6)	Plainville Ave (CT 177)	No	51	12	22100	Signal	Insignificant	No	Volumes
110	17.00	Farmington	I-84-W-100	Farm Springs Rd	No	18	6	12400	Signal	None	Yes	
64	25.00	Farmington	South Rd/Colt Highway (CT 531)	Two Mile Rd	No	30	6	10000	All-Way Stop	None	Yes	
Not in Top 300	-13.03	Glastonbury	Hebron Ave	House St	No	22	8	6800	<Null>	<Null>	No	Already a Roundabout
50	30.09	Glastonbury	Glastonbury Blvd/Griswold St	Main St	No	63	9	13400	Signal	None	No	Volumes, Signal System
Not in Top 300	-8.70	Glastonbury	Griswold St	House St	No	17	6	14500	Signal	Moderate	Yes	
Not in Top 300	12.67	Granby	Barkhamsted Rd (CT 219)	Case St	No	4	2	7200	Side Street Stop	Insignificant	No	Lack of Crash History
Not in Top 300	7.05	Granby	West Granby Rd (CT 20)	Bushy Hill Rd	No	9	4	9400	Side Street Stop	Significant	No	Lack of Crash History
Not in Top 300	25.33	Granby	Hartland Rd (CT 20)	Day St	No	12	5	9200	Side Street Stop	None	Yes	
3	187.54	Hartford	New Britain Ave	Summit St/Fairfield Ave	No	17	6	10600	Signal	Insignificant	Yes	

Rank	CVR Score	Municipality	Major Road	Minor Road	Muni Identified List	Total Crashes	Total KABC Crashes	ADT	Intersection Control Type	Row Issues	Recommended	Comments
2	232.65	Hartford	Chapel St. North/Walnut St/I-84 EB Ramp	High St	No	60	11	9900	Signal	None	No	Signal System
1	250.20	Hartford	Main St	Mahl Ave/Pavilion St	No	31	10	13500	Signal	Moderate	Yes	
Not in Top 300	18.00	Hebron	Main St (CT 66)	Church St	No	24	5	9500	Signal	None	Yes	
Not in Top 300	8.48	Hebron	Main St (CT 66)	Millstream Rd	No	3	3	7700	Side Street Stop	Moderate	No	Lack of Crash History
Not in Top 300	8.33	Hebron	Gilead St (CT 85/CT 94)	North St (CT 85)	No	5	2	3800	Side Street Stop	Insignificant	No	Lack of Crash History
135	14.67	Manchester	I-84 W-302	Middle Turnpike West (US 44/US 6)	No	13	10	14200	Signal	None	Yes	
78	22.98	Manchester	Middle Turnpike West/Middle Turnpike East #1	Main St (CT 83)	No	44	14	13300	Signal	Significant	No	ROW
130	15.33	Manchester	Middle Turnpike East # 1	Summit St	No	19	7	9000	Signal	Significant	Yes	
80	22.20	Mansfield	Storrs Rd (CT 195)	North Frontage Rd (CT 632)	Yes	19	7	10900	Signal	None	Yes	
204	7.57	Mansfield	Middle Turnpike (US 44)	Stafford Rd (CT 32)	Yes	18	6	6100	Signal	<Null>	Yes	
41	33.60	Mansfield	Middle Turnpike (US 44)	Storrs Rd (CT 195)	Yes	37	12	10900	Signal	None	Yes	
Not in Top 300	13.50	Marlborough	Hebron Rd (CT 66)	South Main St	No	29	3	13700	Signal	None	Yes	
Not in Top 300	8.50	Marlborough	CT 2 East Off Ramp	Hebron Rd (CT 66)	No	19	3	13700	Side Street Stop	None	Yes	
Not in Top 300	11.00	Marlborough	CT 2-E-30	Portland Rd	No	3	3	4200	All-Way Stop	None	No	Lack of Crash History
29	42.05	New Britain	Columbus Blvd/CT 9 SB On/Off Ramp	Ellis St	No	26	11	8600	Signal	Insignificant	Yes	
26	46.67	New Britain	Columbus Blvd	Chestnut St	No	26	11	8100	Signal	Insignificant	Yes	
40	34.23	New Britain	East Main	Main St	No	37	17	13100	Signal	None	No	Recent Project
116	16.67	Newington	Pane Rd	Church St	No	21	6	13100	Signal	Insignificant	Yes	
30	40.74	Newington	Willard Ave (CT 173)	Robbins Ave	No	33	17	13500	Signal	Significant	Yes	
115	16.75	Newington	Main St (CT 176)	Market Sq	No	18	6	11800	Signal	Moderate	Yes	
123	16.20	Plainville	Woodford Ave (CT 536)	Ledge Rd	No	14	6	11400	Side Street Stop	Significant	No	Structure, grades
122	16.25	Plainville	CT 72-N	North Washington St (CT 177)	No	20	7	13100	Signal	None	Yes	
217	6.59	Plainville	CT 72-N-28	Day St	No	62	20	20500	Signal	Insignificant	Yes	
Not in Top 300	21.33	Rocky Hill	Main St (CT 99)	Gorman Rd	No	10	5	8900	Signal	None	Yes	
211	7.00	Rocky Hill	I-91-S-47	West St (CT 411)	No	52	17	19300	Signal	None	No	Volumes, Signal System
237	5.27	Rocky Hill	Silas Deane Highway (CT 99)	Town Line Rd	No	48	15	23900	Signal	None	No	Volumes, Signal System
131	15.30	Simsbury	Bushy Hill Rd (CT 167)	Stratton Brook Rd	No	16	6	11900	Signal	None	Yes	
Not in Top 300	6.32	Simsbury	Hopmeadow St (US 202/CT 10)	West St (CT 167)	No	16	4	14100	Signal	None	Yes	
Not in Top 300	13.25	Simsbury	Hartford Ave (CT 189)	Elm St (CT 315)/Mountain Rd	No	18	5	12900	Signal	None	Yes	
112	16.95	Somers	Main St (CT 190)	Gulf Rd	No	27	9	7900	Side Street Stop	Insignificant	Yes	
Not in Top 300	14.98	Somers	Main St (CT 190)	South Rd (CT 83)	No	19	5	7400	Signal	Moderate	Yes	
Not in Top 300	7.72	Somers	Hall Hill Rd (CT 186)	George Wood Rd	No	8	4	2100	Side Street Stop	Insignificant	Yes	
226	6.13	South Windsor	Oakland Rd (CT 30)	Slater St/Foster St	No	21	6	13600	Signal	Significant	No	ROW, grades
249	4.80	South Windsor	Sullivan Ave (CT 194)	Hillside Dr	No	15	6	12200	Side Street Stop	Moderate	Yes	
156	12.33	South Windsor	John Fitch Blvd (US 5)	Sullivan Ave (CT 194)	No	39	14	16700	Signal	None	No	Volumes
71	23.25	Southington	Waterbury Turnpike (CT 322)	I-691 WB Ramps	No	23	9	12100	Signal	None	Yes	
13	67.43	Southington	Meriden-Waterbury Turnpike (CT 322)	Clark St (CT 509)	No	15	7	11700	Signal	Moderate	Yes	
69	24.02	Southington	West St (CT 229)	West Queen St	No	43	13	21100	Signal	Insignificant	No	Volumes, Grades
Not in Top 300	2.89	Stafford	Crystal Lake Rd (CT 30)	Conklin Rd	No	4	1	3800	Side Street Stop	Significant	No	Lack of Crash History
Not in Top 300	8.54	Stafford	Crystal Lake Rd (CT 30)	Conklin Rd	No	6	2	3800	Signal	None	No	Lack of Crash History
Not in Top 300	1.60	Stafford	Monson Rd (CT 32)	Orcuttville Rd (CT 319)	No	6	1	3300	Signal	Insignificant	No	Lack of Crash History
Not in Top 300	18.33	Suffield	Mountain Rd (CT 168)	South Stone St/North Stone St	Yes	10	5	6400	Side Street Stop	None	Yes	
134	14.72	Suffield	East St North (CT 159)	Thompsonville Rd (CT190)	No	25	9	10000	Signal	Insignificant	Yes	
Not in Top 300	17.00	Suffield	North St (CT 75)	Halladay Ave East	No	11	5	6000	Side Street Stop	None	Yes	
Not in Top 300	9.00	Tolland	I-84 Ramp Terminal	Merrow Rd (CT 195)	No	24	4	14500	Signal	None	Yes	
Not in Top 300	14.67	Tolland	I-84 EB-272	Tolland Stage Rd (CT 74)	No	19	3	5700	Side Street Stop	None	Yes	
Not in Top 300	14.87	Tolland	Crystal Lake Rd (CT 30)	Hunter Rd	No	16	5	4100	Side Street Stop	Insignificant	Yes	
47	31.00	Vernon	Talcottville Rd (CT 183)	Hartford Turnpike/Kelly Rd (CT 30)	No	49	11	12700	Signal	None	Yes	
32	39.45	Vernon	Hartford Turnpike (CT 30)	Bolton Rd/Center Rd	No	48	12	11300	Signal	Moderate	Yes	
21	51.91	Vernon	Hartford Turnpike (CT 30)	Reservoir Rd/Grove St(CT 31)	No	67	17	11200	Signal	Insignificant	Yes	
34	37.99	West Hartford	New Park Ave	Flatbush Ave	No	70	22	14600	Signal	Significant	No	Volumes

Rank	CVR Score	Municipality	Major Road	Minor Road	Muni Identified List	Total Crashes	Total KABC Crashes	ADT	Intersection Control Type	Row Issues	Recommended	Comments
54	27.90	West Hartford	Prospect Ave/Caya Ave	I-84 EB Ramps	No	28	10	10500	Signal	None	Yes	
37	35.40	West Hartford	Prospect Ave	Kane St	Yes	33	11	10500	Signal	None	Yes	
296	3.40	Wethersfield	Silas Deane Highway (CT 99)	Executive Sq	No	28	7	23900	Signal	Insignificant	No	Volumes
272	4.00	Wethersfield	Silas Deane Highway (CT 99)	Maple St	No	70	7	21700	Signal	None	No	Volumes, Signal System
267	4.13	Wethersfield	Silas Deane Highway (CT 99)	Wells Rd	No	44	12	20600	Signal	None	No	Volumes, Signal System
Not in Top 300	3.88	Willington	Tolland Turnpike (CT 74)	Moose Meadow Rd	No	4	1	4100	Side Street Stop	Insignificant	No	Lack of Crash History
85	21.67	Willington	River Rd (CT 32)	Tolland Turnpike (CT 74)	No	15	6	5200	Signal	None	No	Grade
Not in Top 300	7.33	Willington	River Rd (CT 32)	Village Hill Rd	No	2	2	5700	Side Street Stop	Insignificant	No	Lack of Crash History
42	32.70	Windsor	Windsor Ave (CT 159)	Rood Ave	No	25	10	10600	Signal	Insignificant	No	Cost, Geometry
133	15.00	Windsor	I-91-S-209	Park Ave (CT 178)	No	20	6	13700	Signal	None	Yes	
98	19.50	Windsor	Kennedy Rd	Archer Rd/I-91 NB Off Ramp	No	15	7	10300	Signal	None	Yes	
Not in Top 300	8.33	Windsor Locks	South Main St (CT 159)	Lawnacre Rd	No	10	2	8000	Signal	None	No	Cost, Lack of Crash History
Not in Top 300	51.18	Windsor Locks	Old County Rd	Halfway House Rd	No	20	4	10300	All-Way Stop	Moderate	Yes	
Not in Top 300	8.62	Windsor Locks	South Main St (CT 159)	Main St (CT 159/CT 140)	No	14	5	11400	Signal	Moderate	Yes	

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4.3 Suggested Municipal Locations

Table 5 shows reviews of the suggested municipal locations that were collected during the outreach process. Like the Top 3 Ranked Municipal Locations, the list is organized in alphabetical order by municipality. The columns of data listed across the top of the spreadsheet are slightly different than the Top 100 Ranked locations and Top 3 Ranked Municipal Locations. They are: overall rank, CVR score, municipality location, major road and minor road(s) of the intersection, intersection control, grade issues, skew (of the intersection), potential environmental issues, ROW issues, utility issues, whether a roundabout is viable, if a multi-lane roundabout may be needed, if a mini-roundabout or compact roundabout may be possible, if a road diet would be required (to reduce the number of lanes on the adjoining roads), and whether it is recommended to pursue a roundabout or not. Rows highlighted in yellow identify the locations where a roundabout is recommended.

Compact roundabouts and mini-roundabouts are roundabouts that are smaller than the typical 120' diameter modern roundabout. Compact roundabouts can be between 65 and 120' in diameter, can have raised splitter islands and may have traversable central islands to allow large vehicles to turn. Mini-roundabouts have traversable central islands and are between 45 and 90 feet in diameter. Mini-roundabouts typically do not have raised splitter islands.

Multi-lane roundabouts include roundabouts with two approach lanes and/or two lanes in the roundabout itself, to accommodate higher traffic volumes. In Connecticut there are a couple of these "hybrid" multi-lane roundabouts, one in Salem at the former Four Corners, one in west Danbury and the newest hybrid roundabout in Farmington at South Road. Hybrid roundabouts are a form of multilane roundabout, where there are two lane approaches, however there are not two lanes completely around the roundabout. These are two by one, or 2 x 1 roundabouts. These roundabouts are typically a minimum 130 to 160 feet in diameter.

As with the Top 3 Ranked Municipal Locations, many locations have a note in the "Rank" column that says, "Not in Top 300." If the intersection has a rank within that Top 300 list, it is noted.

A list of the Suggested Municipal Locations that includes various notes from the municipalities and comments from the desktop review can be found in the Appendix.

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Table 5 Suggested Municipal Locations

Roundabout recommended

Rank	CVR Score	Municipality	Major Road	Minor Road	Intersection Control	Grade Issues	Skew	Potential Environmental Issues	ROW Issues	Utility Issues	Viable	Hybrid Needed	Mini-Roundabout Possible	Road Diet Required	Recommended
Not in Top 300	Not in Top 300	Andover	Hebron Rd (CT 316)	School Road	Side Street Stop	No	No	Wetlands	Significant	Minor	Yes	No	Yes	No	No
Not in Top 300	Not in Top 300	Andover	Lake Road	Lakeside Dr	All-Way Stop	No	Minor		Insignificant	Minor	No	No	Yes	No	No
Not in Top 300	Not in Top 300	Canton	Maple Ave/Bridge St	River Rd (CT 179)	Side Street Stop	No	Minor	Wetlands	Significant	Minor	Maybe	No	Maybe	No	Yes
Not in Top 300	Not in Top 300	Canton	Albany Turnpike (US 44)	Dowd Ave (CT 565)/Canton Springs Rd	Signal	No	Minor	Historic	Significant	Minor	No	Likely	Maybe	No	No
Not in Top 300	Not in Top 300	Canton	Albany Turnpike (US 44)	US 202	Signal	Minor	Significant		None	No	Yes	No		No	Yes
Not in Top 300	Not in Top 300	Canton	Maple Ave/Dowd Ave (CT 565)	Simonds Ave/Old Canton Rd	Side Street Stop	No	Minor	Wetlands	Insignificant	Minor	Yes	No	No	No	No
Not in Top 300	Not in Top 300	Canton	Lawton Rd	Washburn Rd	All-Way Stop	Minor	Significant		Insignificant	Minor	No	No	Yes	No	No
Not in Top 300	Not in Top 300	Coventry	Main St (CT 31)	Ripley Hill Rd	Side Street Stop	Minor	No		Insignificant	Minor	Yes	No	Yes	No	No
Not in Top 300	Not in Top 300	Coventry	Main St (CT 31)	Stonehouse Rd (CT 275)/Lake St	Side Street Stop	Significant	Minor	Historic	Significant	Minor	No	No	No		No
Not in Top 300	Not in Top 300	Enfield	Post Office Rd	Raffia Rd/Simon Rd	Signal	No	Significant	Hazardous Waste	Significant	Significant	Maybe	No		No	No
Not in Top 300	Not in Top 300	Farmington	Farmington Ave (CT 4)	Old Mountain Rd/Talcott Notch Rd	Signal	No	Minor		None	Minor	Yes	Likely		Yes	Yes
Not in Top 300	Not in Top 300	Hartford	Albany Ave (US 44)	Bloomfield Ave (CT 189)	Signal	Minor	Minor		Insignificant	Minor	Yes	Likely	No	No	No
Not in Top 300	Not in Top 300	Hartford	Albany Ave (US 44)	Main St/Ely St	Signal	No	Minor		None	Minor	Yes	Likely		No	Yes
Not in Top300	Not in Top 300	Hartford	Rev R A Moody overpass	Weston St	Signal	No	No		Insignificant	Minor	Yes	Likely		Yes	No
Not in Top300	Not in Top 300	Hartford	Leibert Rd	Jennings Rd	Signal	Minor	No		None	Minor	Yes	Maybe		No	No
Not in Top 300	Not in Top 300	Hartford	Boce Barlow Way	Windsor St	Signal	Minor	No		Insignificant	Minor	Yes	Likely		No	Yes
214	6.92	Hartford	Main St	Windsor St	Signal	No	Minor		Insignificant	Minor	Yes	Likely		No	Yes
56	26.75	Hartford	Pulaski Circle												Yes
77	23.00	Hartford	Capitol Ave	Washington St/Trinity St											Yes
136	14.49	Hartford	Maple Ave	King St/Webster St	Signal	No	Significant	Hazardous Waste	Moderate	No	Maybe	Maybe		No	Yes
Not in Top 300	Not in Top 300	Hartford	Main St/Maple Ave	Jefferson St/Wyllys St	Signal	No	Significant		Moderate	Minor	Yes	Likely	No	No	Yes
Not in Top 300	Not in Top 300	Hartford	Maple Ave	Retreat Ave	Signal	No	Significant		Moderate	Minor	Maybe	Maybe		Yes	Yes
137	14.40	Hartford	Maple Ave	Broad St/White St/Douglas St	Signal	No	Significant	Hazardous Waste	Moderate	No	Maybe	Maybe	No	No	Yes
103	18.30	Hartford	Maple Ave	Freeman St	Signal	No	Minor		None	No	Yes	No		No	Yes
48	30.60	Hartford	Maple Ave	Fairfield											No
Not in Top 300	Not in Top 300	Hartford	Maple Ave	Franklin Ave	Signal	No	Significant	Historic	Insignificant	No	Yes	Maybe		No	Yes
Not in Top 300	Not in Top 300	Hartford	Columbus Blvd	Sheldon	Signal	Minor	No		Insignificant	No	Maybe	Likely	No	No	Yes
Not in Top 300	Not in Top 300	Hartford	Airport Rd	Brainard Rd	Signal	Minor	No		None	Minor	Yes	Likely	No	No	No
Not in Top 300	Not in Top 300	Hartford	Brainard Rd	Murphy Rd	Signal	No	No	Hazardous Waste	None	Minor	Yes	Likely	No	No	No
179	9.83	Hartford	New Britain Ave	Newington Ave	Signal	Minor	Significant		Moderate	Minor	Yes	Maybe		Yes	Yes
66	24.60	Hartford	New Britain Ave	White/Chandler	Signal	Minor	Significant		None	Minor	Yes	Maybe		No	Yes
37	35.40	Hartford	Prospect Ave	Kane St											Yes
Not in Top 300	Not in Top 300	Manchester	Spencer St/W Center St (CT 502)	Olcott St/Hartford Rd	Signal	No	No		None	No	Yes	Maybe		No	No
Not in Top 300	Not in Top 300	Manchester	N Main St (CT 83)	N School Rd/Main St	Signal	No	No		Insignificant	Minor	Yes	Likely	No	Yes	No
260	4.40	Manchester	Center St/E Center St (US 6/44)	Main St (CT 83)	Signal	No	Minor	Historic	Insignificant	Minor	Yes	Likely	No	Yes	Yes
264	4.23	Manchester	S Main St (CT 83)	Hartford Rd/Charter Oak St (CT 534)	Signal	No	No		None	No	Yes	Likely	No	Yes	Yes
Not in Top 300	Not in Top 300	Manchester	S Main St (CT 83)	I-384 Exit 3 EB Off- Ramp/Hackmatack St	Signal	No	No		None	No	Yes	Maybe		Yes	No
Not in Top 300	Not in Top 300	Manchester	Wetherell St	I-384 Exit 2 EB Off- Ramp/Bridge St	Side Street Stop	Significant	No		Insignificant		Maybe	No		No	Yes
Not in Top 300	Not in Top 300	Manchester	Hillstown Rd	Great Path (Manchester Comm College Main Entrance)	Side Street Stop	Minor	No		None	No	Yes	No	Maybe	No	No
Not in Top 300	Not in Top 300	Manchester	E Center St (US 6/44)	Porter St/Lenox St	Signal	No	Significant	Historic	Insignificant	Minor	Maybe	Maybe	No	Yes	Yes
Not in Top 300	Not in Top 300	Manchester	E Center St (US 6/44)	Parker St	Signal	Significant	Significant		Significant	Minor	No	No	Maybe	No	No
Not in Top 300	Not in Top 300	Manchester	S Main St (CT 83)	Fern St	Side Street Stop	No	No		Insignificant	No	Yes	No	Yes	No	No
Not in Top 300	Not in Top 300	Manchester	Middle Turnpike E (US 6/44)	Garth Rd/Lake St	Side Street Stop	No	Minor		None	Minor	Yes	No		Yes	No
Not in Top 300	Not in Top 300	Manchester	Middle Turnpike E (US 6/44)	Vernon St/Cook S t/Riverside Dr/Middle Turnpike E Frontage Rd	Signal	Minor	Minor	Hazardous Waste	Significant	Minor	Maybe	No	No	Yes	No
Not in Top 300	Not in Top 300	Manchester	Tolland Turnpike (CT 30/83)	Parker St	Signal	No	No		Insignificant	Minor	Yes	Likely	No	Yes	Yes
162	11.67	Manchester	Center St (US 6/44)	Adams St	Signal	No	Significant	Hazardous Waste	Significant	Minor	Yes	Maybe		No	Yes
Not in Top 300	Not in Top 300	Manchester	Adams St	New State Rd	Signal	No	Minor		Insignificant	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	South Eagleville Rd (CT 275)/Charles Smith											Yes

Rank	CVR Score	Municipality	Major Road	Minor Road	Intersection Control	Grade Issues	Skew	Potential Environmental Issues	ROW Issues	Utility Issues	Viable	Hybrid Needed	Mini-Roundabout Possible	Road Diet Required	Recommended
				Way											
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	Hanks Hill Rd/Flaherty Rd	Side Street Stop	Significant	Significant	Wetlands	Insignificant	Minor	Yes	No		No	No
80	22.2	Mansfield	Storrs Rd (CT195)	North Frontage Rd(CT 632)	Signal	Minor	No		None	No	Yes	Maybe		Yes	Yes
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	South Frontage Rd (CT 633)	Signal	Minor	No		None	Minor	Yes	Maybe		Yes	Yes
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	Warrenville Rd (CT 89)	Signal	Significant	No		Insignificant	Minor	Yes	No	Maybe	No	No
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	Horsebarn Hill Rd	Signal	No	No		Insignificant	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Mansfield	Storrs Rd (CT 195)	North Eagleville Rd (CT 430)	Signal	No	No		None	Minor	Yes	No		No	No
41	33.60	Mansfield	Storrs Rd (CT195)	Middle Turnpike (Us44)											Yes
Not in Top300	Not in Top 300	Mansfield	Storrs Rd (CT195)	Stafford Rd (CT 32)	Signal	Minor	Minor	Hazardous Waste	None	Minor	Yes	No		No	No
204	7.57	Mansfield	Middle Turnpike (US 44)	Stafford Rd (CT 32)	Signal	Significant	Significant		Insignificant	Minor	Yes	No		No	Yes
Not in Top 300	Not in Top 300	Mansfield	Stafford Rd (CT 32)	South Eagleville Rd (CT 275)	Signal	Significant	No	Historic	Significant	Minor	No	No	Maybe	No	No
Not in Top 300	Not in Top 300	Newington	Maple Hill Ave	Robbins Ave	Signal	No	Minor		None	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Newington	Deming St	Culver St	All-Way Stop	No	Minor		Insignificant	Minor	Yes	No	Yes	No	No
Not in Top 300	Not in Top 300	Newington	Fenn Rd/W Hartford Rd	West Hill Rd/Reservoir Rd	Signal	Minor	Significant		None	Minor	Yes	No		No	Yes
Not in Top300	Not in Top 300	Newington	Main St (CT 176)	Hopkins Dr	Side Street Stop	No	No		Insignificant	Minor	Yes	No		No	No
Not in Top300	Not in Top 300	Newington	Cedar St (CT175)	Alumni Rd	Signal	No	No		Moderate	Minor	Maybe	Likely	No		No
Not in Top 300	Not in Top 300	Newington	Cedar St (CT 175)	Fenn Rd	Signal	Minor	No		None	Minor	Yes	Likely			No
Not in Top 300	Not in Top 300	Newington	Fenn Rd	Myra Cohen Way	Signal	Minor	No	Wetlands	Insignificant	Minor	Yes	Likely	No		Yes
180	9.68	Newington	Willard Ave (CT 173)	Garfield St	Side Street Stop	No	No		Insignificant	Minor	Yes	No		No	Yes
Not in Top300	Not in Top 300	Newington	Fenn Rd	Holmes Rd	Signal	Minor	No		None	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Newington	Fenn Rd	Commerce CT	Side Street Stop	Minor	No		Insignificant	Minor	Yes	No		No	Yes
Not in Top 300	Not in Top 300	Suffield	Main St (CT 75)	Mountain Rd (CT 168)/Bridge St (CT513)	Signal	No	No		Insignificant	Minor	Yes	Maybe	No	No	Yes
Not in Top 300	Not in Top 300	Suffield	Thompsonville Rd (CT 190)	Mapleton Ave	Side Street Stop	No	Minor		None	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Suffield	Main St (CT 75)	Private Roads	Side Street Stop	No	No		None	Minor	Yes	No		No	No
Not in Top 300	Not in Top 300	Suffield	Sheldon St (CT 187)	N Main St (CT 187)/South Stone St	Side Street Stop	No	No		None	No	Yes	No		No	Yes
Not in Top 300	Not in Top 300	Suffield	Mountain Rd (CT 168)	N Stone St/S Stone St	Side Street Stop	Minor	No		None	Minor	Yes	No		No	Yes
58	26.24	West Hartford	Trout Brook Dr	Asylum Ave											Yes
Not in Top 300	Not in Top 300	West Hartford	Park Rd	Quaker Lane South	Signal	No	Significant	Hazardous Waste	Significant	Minor	No	Maybe	Maybe	No	No
Not in Top 300	Not in Top 300	West Hartford	Mountain Rd	Fern St/Hunter Dr	Signal	No	Minor		Insignificant	Minor	Yes	Maybe		No	No
Not in Top 300	Not in Top 300	West Hartford	Park Rd	Oakwood Ave/Arnoldale Rd	Signal	No	Minor	Hazardous Waste	Significant	Minor	No	No	Yes	No	No
Not in Top 300	Not in Top 300	Wethersfield	Jordan Ln (CT 314)	Wolcott Hill Rd	All-Way Stop	No	Minor	Hazardous Waste	Moderate	Minor	Yes	Maybe	No	Yes	Yes
Not in Top 300	Not in Top 300	Wethersfield	Wolcott Hill Rd	Nott St	All-Way Stop	No	Significant		Significant	Minor	No	No	No	No	No

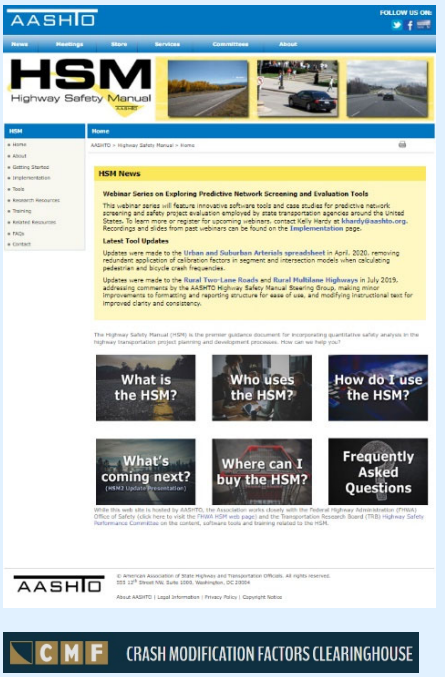
5

Crash Reduction and Estimation of Benefits

This section describes the approach used to calculate the benefits from the conversion of intersections to roundabouts in the study area.

In recent years, there has been research at the national level to estimate the safety impact of changes to roadway infrastructure. One such resource is the *Highway Safety Manual* (HSM) published by the American Association of State Highway Transportation Officials (AASHTO), the organization that represents the leaders of state highway agencies across the United States. This resource includes a variety of tables, graphs, and mathematical formulas that can be used to predict crash frequency for a roadway segment or intersection, given the characteristics of the location, such as traffic volume, number of lanes, or urban/rural setting. However, the current version of the HSM does not include any formulas or procedures to calculate the predicted crash frequency for a roundabout.

Figure 24 Highway Safety Manual



As an alternative, the HSM includes general planning procedures to estimate a change in the number of crashes resulting from a physical change to a roadway segment or an intersection. These general estimates are presented as a Crash Modification Factor (CMF), which is a number that is used to compute the expected number of crashes upon implementation of the proposed change. Typically, this number is used to multiply against the expected number of crashes prior to the change to calculate the resultant expected number after the change. For example, if an intersection is experiencing 100 angle crashes per year and a countermeasure with a CMF of 0.80 is applied, the expectation is that the crash frequency would be reduced to 80 angle crashes per year. CMFs can sometimes be presented as a formula that requires inputs for a calculation. The CMFs are also organized by reduction in crash severity and are based on the operational factors of the site of

the proposed change, such as traffic volumes, urban/rural setting, and number of lanes. In the first edition of the HSM released in 2010, general estimates are provided to estimate a crash reduction from the conversion of an intersection to a roundabout based on urban/rural setting, number of lanes, and crash severity.

In the upcoming release of the 2nd edition of the HSM planned to be released by AASHTO in 2025, there will be new chapters dedicated to estimating crash frequency for roundabouts. This will mean there will be prediction models that use inputs such as traffic volumes, number of lanes, and other characteristics to determine a more robust estimate of expected crash frequency instead of simply using a CMF. It should be noted that HSM predictive models are based on a sampling of locations from a variety of sites nationwide; therefore, it is critical to calibrate these models, so they are more reflective of local conditions. The Connecticut Transportation Safety Research Center (CTSRC) at the University of Connecticut has calibrated HSM Safety Performance Function (SPF) models for roadway segments and for State-owned intersections and is currently working on models for municipally-owned intersections. There are no current Connecticut models to estimate crash frequency at roundabouts; therefore, for the purposes of this roundabout study, Connecticut intersection models were used to determine an expected crash frequency number at an existing intersection. A general roundabout conversion CMF was then applied to that number to determine the resultant crash frequency number.

The calculation of crash frequency at an existing intersection using Connecticut-calibrated HSM methods uses an Empirical Bayes (EB) approach. The EB approach is used to account for both current observed crashes and predicted crash frequency from SPFs. The EB approach compensates for regression-to-the-mean while determining an expected number of crashes at the intersection. See Figure 25.

As noted, CTSRC only has SPFs calibrated for intersections on State owned roads. Based on communication with CTSRC, it was deemed appropriate to use the State-owned roadway intersection SPFs for all intersections evaluated in this study, regardless of the roadway ownership. As these SPFs are calibrated for Connecticut and its environment, they should not be particularly different than the future SPFs for the intersections of municipally-owned roadways; it is better to use Connecticut-based SPFs than a generic nationwide SPF.

The CTSRC-developed SPFs are broken down by urban/rural, number of lanes, intersection legs, and traffic control. Furthermore, CTSRC also developed intersection SPF equations by crash severity groupings (i.e., KABC, KAB, KA, and PDO). The biggest contributors in the SPF equations are the major and minor traffic volumes [presented as Average Annual Daily Traffic (AADT)]. Most intersections have AADT available—for those minor roads without an AADT, an assumed AADT was used based on the road classification of the minor road.

A calculation spreadsheet was developed for use to summarize the potential benefits accrued from the conversion of an intersection to a roundabout. This spreadsheet incorporated the identified intersections from the crash, volume, and geometric screening process and identified the major and minor AADT at the intersection and the appropriate CTSRC SPF to be used to calculate the crash frequency of the existing intersection. The spreadsheet then used the EB approach to calculate the expected crash frequency for the intersection. The appropriate CMF was then used to calculate the crash frequency, by severity, of the converted intersection, and with low and high range values based on a 95th percentile confidence interval of the CMF. The new crash frequency was then subtracted from the pre-intersection conversion crash frequency to determine the change in the number of crashes for the intersection.

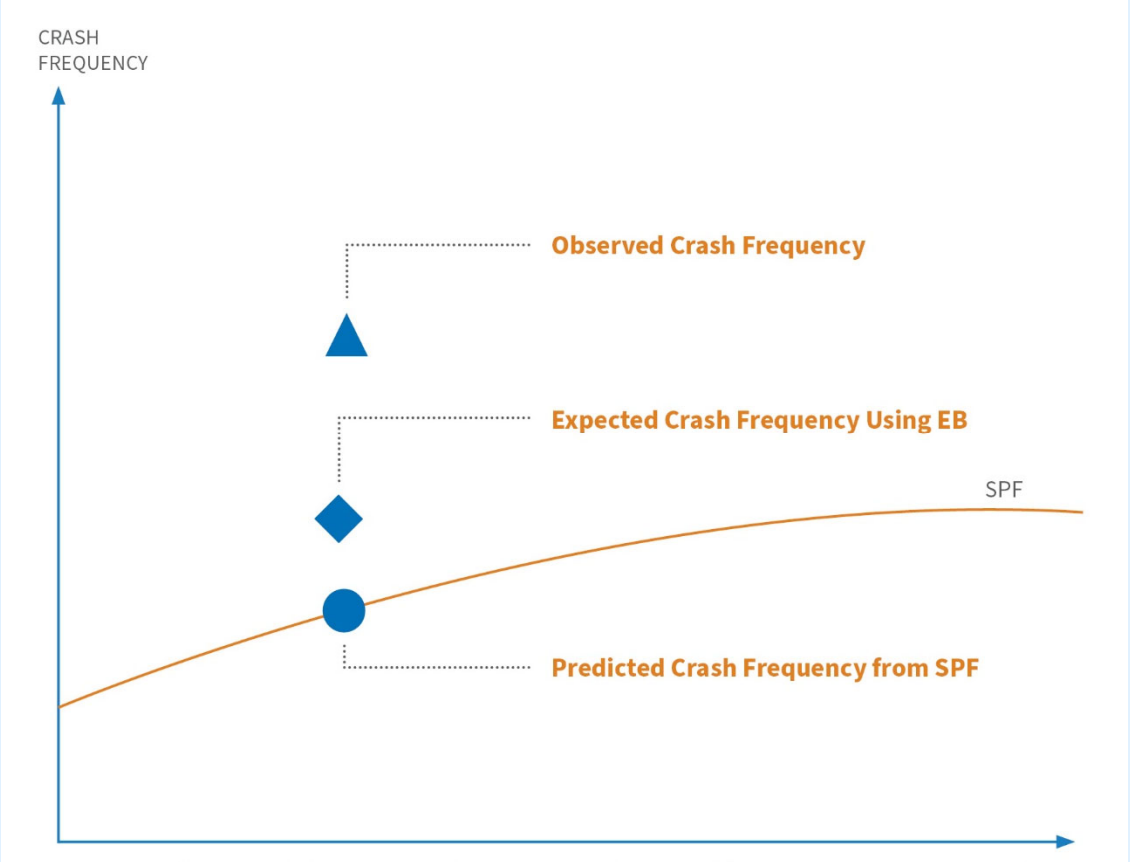
CTSRC's crash severity costs, as published in the CRSMS user manual, were then used to determine the potential safety benefit of a roundabout improvement in monetary terms. The costs are comprehensive costs, which refer to the effects of injury on people's entire lives.

The components of a comprehensive cost include property damage, lost earnings, lost household production, medical costs, emergency services costs, travel delay, vocational rehabilitation, workplace costs, administrative costs, legal costs, and pain and lost quality of life. These costs in CRSMS correspond to the KABCO severity weights described in Chapter 2 and below:

Level	Mean Comprehensive Cost per Crash	Weight Factor
K	$6,415,389	574
A	$338,576	30
B	$123,646	11
C	$69,541	6
O	$11,186	1

The calculation of benefits in terms of comprehensive costs help to provide a monetary aspect to the benefit-cost calculation of a roundabout improvement and can be used to compare roundabout project sites.

Figure 25 Empirical Bayes Method



The Empirical Bayes method compensates for regression-to-the-mean while determining an expected number of crashes at the intersection. The expected number of crashes lies between the predicted crashes from the SPF and the observed number of crashes.

Table 7 shows the predicted number of crashes to be reduced per year at each of the top 100 locations as well as the recommended municipal locations.

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Table 6 Crash Reduction by Location

CVR Rank	Major Road	Minor Road	Municipality	Recommended	Predicted Number of Crashes Reduced Per Year	
					KABC	PDO
Intersections ranked in Top 100						
1	MAIN ST NO 1	MAHL AVE/PAVILLION ST	HARTFORD	yes	1.81	0.07
2	CHAPEL ST NORTH/WALNUT ST/I-84 EB RAMP	HIGH ST	HARTFORD	No	1.81	0.15
3	NEW BRITAIN AV	SUMMIT ST/FAIRFIELD AV NO 2	HARTFORD	yes	0.99	0.03
4	MILL ST (CT 372)	SAVAGE HILL RD/BECKLEY RD	BERLIN	yes	1.13	0.00
5	FRANKLIN AV	BUSHNELL ST	HARTFORD	No	1.61	0.56
6	WASHINGTON ST	VERNON ST NO 2	HARTFORD	yes	2.00	0.07
7	FRANKLIN AV	BLISS ST	HARTFORD	No	2.33	2.00
8	WESTLAND ST	BARBOUR ST	HARTFORD	No	1.08	0.00
9	HOMESTEAD AV/WALNUT ST	GARDEN ST NO 1	HARTFORD	yes	5.26	0.09
10	ALBANY AVE (US 44)	BROOK ST	HARTFORD	No	1.17	0.04
11	WETHERSFIELD AV	ADELAIDE ST	HARTFORD	No	1.71	1.13
12	MORGAN ST (US 44)	MARKET ST	HARTFORD	No	5.65	0.32
13	MERIDEN WATERBURY TPKE	CLARK ST (CT 509)	SOUTHINGTON	yes	1.28	0.03
14	ZION ST NO 1	WARD ST	HARTFORD	No	1.69	0.00
15	FARMINGTON AV	BROAD ST	HARTFORD	No	4.35	0.20
16	TRUMBULL ST	CHAPEL ST SOUTH	HARTFORD	No	3.32	0.09
17	MAIN ST NO 2	CHARTER OAK AVE/BUCKINGHAM ST	HARTFORD	yes	2.67	0.07
18	NEW BRITAIN AV	HILLSIDE AV	HARTFORD	No	2.82	0.09
19	ANN UCCELLO ST NO 1/PLEASANT ST	CHAPEL ST NORTH	HARTFORD	No	2.16	0.09
20	MAIN ST (US 44)/MORGAN ST	CHAPEL ST NORTH	HARTFORD	No	4.52	0.18
21	HARTFORD TPKE (CT 30)	RESERVOIR RD/GROVE ST (CT 31)	VERNON	yes	3.17	0.16
22	ALBANY AVE (US 44)	GARDEN ST NO 1	HARTFORD	No	4.11	0.00
23	CAPITOL AV	LAUREL ST	HARTFORD	yes	2.41	0.00
24	FRANKLIN AV	BOND ST	HARTFORD	yes	3.61	1.40
25	PARK TER	SIGOURNEY ST/RUSS ST	HARTFORD	No	*	*
26	COLUMBUS BLVD	CHESTNUT ST	NEW BRITAIN	yes	2.01	0.05
27	CAPITOL AV	BROAD ST	HARTFORD	yes	3.58	0.12
28	FRANKLIN AV	BROWN ST	HARTFORD	No	1.29	0.00
29	COLUMBUS BLVD/CT 9 SB ENTRANCE/EXIT RAMP	ELLIS ST	NEW BRITAIN	yes	1.97	0.00
30	WILLARD AVE (CT 173)	ROBBINS AV	NEWINGTON	yes	3.24	0.05
31	WASHINGTON ST	JEFFERSON ST	HARTFORD	yes	4.17	0.10
32	HARTFORD TPKE (CT 30)	BOLTON RD/CENTER RD	VERNON	yes	2.15	0.00
33	FRONTAGE RD (CT 572)/MILL ST (CT 372)	WORTHINGTON RIDGE (CT 372-SOUTH/572-NORTH)	BERLIN	yes	2.20	0.05

					Predicted Number of Crashes Reduced Per Year	
CVR Rank	**Major Road**	**Minor Road**	**Municipality**	**Recommended**	**KABC**	**PDO**
34	NEW PARK AV	FLATBUSH AV	WEST HARTFORD	No	4.19	0.16
35	I-84-W-115	SIGOURNEY ST	HARTFORD	No	2.11	0.09
36	WASHINGTON ST	PARK ST	HARTFORD	yes	2.84	0.16
37	PROSPECT AV	KANE ST	WEST HARTFORD	yes	2.06	0.07
38	I-84 EB ON RAMP	BROAD ST	HARTFORD	No	2.22	0.17
39	BOSTON TPKE (US 44)	MAIN ST (CT 31)	COVENTRY	yes	2.47	2.96
40	EAST MAIN ST	MAIN ST	NEW BRITAIN	no	3.20	0.07
41	MIDDLE TPKE (US 44)	STORRS RD (CT 195)	MANSFIELD	yes	2.75	3.94
42	WINDSOR AVE (CT 159)	ROOD AV	WINDSOR	No	*	*
43	ASYLUM AV	BROAD ST/COGSWELL ST	HARTFORD	No	3.80	0.25
44	I-91-NB RAMP	I-91 SB RAMP/LEIBERT RD	HARTFORD	No	1.22	0.07
45	BLOOMFIELD AVE (CT 189)	PARK AVE/MOUNTAIN AVE (CT 178)	BLOOMFIELD	yes	1.70	0.06
46	I-84 EB OFF/WB ON	CAPITOL AVE/OAK ST	HARTFORD	yes	2.42	0.06
47	TALCOTTVILLE RD (CT 183)	HARTFORD TURNPIKE/KELLY RD (CT 30)	VERNON	yes	2.03	0.12
48	MAPLE AV	FAIRFIELD AV NO 1	HARTFORD	No	1.52	0.03
49	STATE ST	MARKET ST	HARTFORD	No	1.13	0.15
50	GRISWOLD ST/GLASTONBURY BLVD	MAIN ST	GLASTONBURY	No	1.70	0.18
51	FARMINGTON AV	SIGOURNEY ST	HARTFORD	No	3.63	0.16
52	HARTFORD TPKE (CT 30)	DOBSON RD	VERNON	yes	1.12	0.10
53	ENFIELD ST (US 5)/FRANKLIN ST (CT 514)	CT 190 WB RAMP	ENFIELD	yes	1.46	0.00
54	PROSPECT AV/CAYA AV	I-84 EB RAMPS	WEST HARTFORD	yes	1.61	0.06
55	FRANKLIN AV	SOUTH ST	HARTFORD	No	1.63	0.00
56	PULASKI CIR(CT 598)/WELLS ST	HUDSON ST	HARTFORD	yes	*	*
57	CHURCH ST	SPRUCE ST	HARTFORD	No	1.78	0.00
58	TROUT BROOK DR	ASYLUM AVE	WEST HARTFORD	yes	1.91	0.07
59	SIGOURNEY ST	HAWTHORN ST	HARTFORD	yes	1.35	0.05
60	WESTBOURNE PKWY	BLUE HILLS AVE (CT 187)	HARTFORD	yes	1.29	0.00
61	SHAKER RD (CT 220/CT 402)	TAYLOR ROAD (CT 220)	ENFIELD	yes	**-0.08**	**-0.11**
62	MARTIN LUTHER KING DR (CT 71)	WINTER ST	NEW BRITAIN	yes	2.51	0.03
63	WETHERSFIELD AV	ELLIOTT ST	HARTFORD	yes	1.52	0.00
64	SOUTH RD/COLT HIGHWAY (CT 531)	TWO MILE RD	FARMINGTON	yes	**-0.05**	**-0.23**
65	I-84 EB OFF/WB ON	SPRUCE ST	HARTFORD	No	2.04	0.09
66	WHITE ST	HARVARD ST	HARTFORD	yes	1.87	0.04
67	PARK ST	PARK TER	HARTFORD	yes	5.12	0.13
68	BOULEVARD	FOUR MILE RD	WEST HARTFORD	No	2.59	0.82

CVR Rank	Major Road	Minor Road	Municipality	Recommended	Predicted Number of Crashes Reduced Per Year	
					KABC	PDO
69	WEST ST (CT 229)	WEST QUEEN ST	SOUTHINGTON	No	2.48	0.10
70	ASYLUM AV	WOODLAND ST	HARTFORD	yes	3.08	0.11
71	WATERBURY TURNPIKE (CT 322)	I-691 WB RAMPS	SOUTHINGTON	yes	1.43	0.04
72	MOUNTAIN AVE (CT 178)	MAPLE AV/BROWN ST	BLOOMFIELD	yes	1.46	0.00
73	WHITING ST	GLEN ST	NEW BRITAIN	No	1.01	0.00
74	CHAPEL ST SOUTH	ANN UCCELLO ST NO 1	HARTFORD	No	1.07	0.13
75	FAIRFIELD AV NO 1	ZION ST NO 1	HARTFORD	yes	2.10	0.08
76	UNION ST (CT 83/CT 74)	WEST ST (CT 74/CT 83)	VERNON	yes	1.31	0.00
77	CAPITOL AV	WASHINGTON ST/TRINITY ST	HARTFORD	yes	1.49	0.00
78	MIDDLE TURNPIKE WEST/MIDDLE TURNPIKE EAST	MAIN ST (CT 83)	MANCHESTER	No	2.63	0.00
79	CHESTNUT ST/ ELM ST (CT 71)	HARRY TRUMAN OP	NEW BRITAIN	yes	1.68	0.05
80	STORRS RD (CT 195)	NORTH FRONTAGE RD (CT 632)	MANSFIELD	yes	1.20	0.04
81	WATERBURY TURNPIKE (CT 322)/RUGGLES ROW	I-84 EB RAMPS	SOUTHINGTON	yes	2.41	0.06
82	KING ST (US 5)	I-91 NB EXIT AND ENTRANCE RAMP	ENFIELD	yes	1.75	0.02
83	ALBANY AVE (US 44)	BALTIMORE ST	HARTFORD	No	1.58	1.04
84	MAIN ST NO 1	CHESTNUT ST/ARCH ST	NEW BRITAIN	yes	1.16	0.00
85	RIVER RD (CT 32)	TOLLAND TPKE (CT 74)	WILLINGTON	No	1.47	1.41
86	MAIN ST NO 1	BROAD ST/MAPLE ST	EAST HARTFORD	yes	1.63	0.00
87	VINE ST	GREENFIELD ST	HARTFORD	yes	**-0.12**	**-0.14**
88	BOULEVARD	RAYMOND RD	WEST HARTFORD	yes	2.54	0.06
89	ATWATER ST	I-84 EB/MARION AVE	SOUTHINGTON	yes	1.43	0.05
90	TRUMBULL ST	CHAPEL ST NORTH	HARTFORD	No	1.06	0.06
91	MERIDEN WATERBURY TPKE (CT 322)/I-84 WB EXIT	I-84 ENTRANCE RAMP	SOUTHINGTON	yes	1.35	0.03
92	US 202	RIVER RD (CT 179)	CANTON	yes	1.51	0.05
93	MILL ST (CT 372)	MIDDLETOWN RD/BERLIN ST	BERLIN	yes	2.00	0.00
94	SLATER RD/ALEXANDER DR/ FIENEMANN RD	FARMINGTON AVE	NEW BRITAIN	yes	1.47	0.00
95	CHESTNUT ST	CT RTE 9 SB EXIT RAMP	NEW BRITAIN	yes	0.87	0.01
96	SILVER LANE (CT 509)	FORBES ST	EAST HARTFORD	yes	1.51	0.07
97	PROSPECT AV	WARRENTON AV	HARTFORD	No	**-0.08**	**-0.20**
98	KENNEDY RD	ARCHER RD/I-91 NB EXIT RAMP	WINDSOR	yes	1.30	0.03
99	MARKET ST	PLEASANT ST	HARTFORD	yes	1.52	0.08
100	STANLEY ST NO 1	EAST MAIN ST	NEW BRITAIN	yes	1.67	0.00
Total reduction in annual number of crashes for all locations in the top 100					**200.86**	**20.08**
Total reduction in annual number of crashes for recommended locations in the top 100					**117.25**	**10.44**

					Predicted Number of Crashes Reduced Per Year	
CVR Rank	**Major Road**	**Minor Road**	**Municipality**	**Recommended**	**KABC**	**PDO**
Additional intersections ranked in Top 300 and additional unranked intersections within Top 3 recommended municipal locations from outreach process						
110	I-84-W-100	FARM SPRINGS RD	FARMINGTON	yes - Farmington	1.08	0.04
112	MAIN ST	GULF RD	SOMERS	yes - Somers	1.70	1.56
116	PANE RD	CHURCH ST	NEWINGTON	yes - Newington	1.13	0.00
122	CT 72-N	NORTH WASHINGTON ST CT 177)	PLAINVILLE	yes - Plainville	1.29	0.04
125	BRIDGE ST	MAIN ST	EAST WINDSOR	yes - East Windsor	1.10	0.00
130	MIDDLE TPK EAST NO 1	SUMMIT ST	MANCHESTER	yes - Manchester	1.28	0.00
131	BUSHY HILL RD	STRATTON BROOK RD	SIMSBURY	yes - Simsbury	1.11	0.00
134	EAST ST NORTH	THOMPSONVILLE RD	SUFFIELD	yes - Suffield	1.65	0.00
135	84-W-302	MIDDLE TPKE WEST	MANCHESTER	yes - Manchester	1.72	0.01
147	WEST AVON RD	COUNTRY CLUB RD	AVON	yes - Avon	1.12	0.00
167	WEST RD	LOWER BUTCHER RD	ELLINGTON	yes - Ellington	1.61	0.00
204	MIDDLE TPKE	STAFFORD RD	MANSFIELD	yes - Mansfield	1.50	1.89
217	72-N-28	DAY ST	PLAINVILLE	yes - Plainville	3.87	0.14
249	SULLIVAN AVE	HILLSIDE DR	SOUTH WINDSOR	yes - South Windsor	1.13	0.03
Unranked	COUNTRY CLUB RD	BURNHAM RD	AVON	yes - Avon	-0.03	-0.01
Unranked	LOVELY ST (CT 177)	WESTMONT RD/COUNTRY CLUB RD	AVON	yes - Avon	0.75	0.00
Unranked	BOSTON TURNPIKE (US 44)	QUARRY RD	BOLTON	yes - Bolton	0.49	0.02
Unranked	BOSTON TURNPIKE (US 44)	SOUTH RD	BOLTON	yes - Bolton	0.31	0.03
Unranked	RIVER RD (CT 179)	MAPLE AVE	CANTON	yes - Canton	1.18	0.93
Unranked	ALBANY TURNPIKE (US 44)	CHERRY BROOK RD (CT 179)	CANTON	yes - Canton	0.57	0.02
Unranked	MIDDLETOWN RD (CT 66)	HENNEQUIN RD/PINE ST	COLUMBIA	yes - Columbia	0.85	1.83
Unranked	WILLIMANTIC RD (US 6)	WILLIMANTIC RD (CT 66)	COLUMBIA	yes - Columbia	0.92	3.99
Unranked	MIDDLETOWN RD (CT 66)	JONATHAN TRUMBULL HIGHWAY (CT 87)	COLUMBIA	yes - Columbia	1.13	1.39
Unranked	SOUTH MAIN ST (CT 187)	HATCHETT HILL RD	EAST GRANBY	yes - East Granby	0.72	0.00
Unranked	NORTH MAIN ST (CT 187)	SOUTH STONE RD	East Granby	yes - East Granby	0.91	0.18
Unranked	CRYSTAL LAKE RD (CT 140)	BURBANK RD	ELLINGTON	yes - Ellington	1.54	0.86
Unranked	PINNEY ST (CT 286)	WINDERMERE AVE	ELLINGTON	yes - Ellington	0.35	0.00
Unranked	GRISWOLD ST	HOUSE ST	GLASTONBURY	yes - Glastonbury	1.16	0.00
Unranked	HARTLAND RD (CT 20)	DAY ST	GRANBY	yes - Granby	1.04	1.41
Unranked	MAIN ST (CT 66)	CHURCH ST	HEBRON	yes - Hebron	1.16	2.99
Unranked	HEBRON RD (CT 66)	SOUTH MAIN ST	MARLBOROUGH	yes - Marlborough	0.57	0.00
Unranked	CT 2 EAST EXIT RAMP	HEBRON RD (CT 66)	MARLBOROUGH	yes - Marlborough	0.51	0.05

					Predicted Number of Crashes Reduced Per Year	
CVR Rank	**Major Road**	**Minor Road**	**Municipality**	**Recommended**	**KABC**	**PDO**
Unranked	MAIN ST	MARKET SQ	NEWINGTON	yes - Newington	1.08	0.00
Unranked	MAIN ST (CT 99)	GORMAN RD	ROCKY HILL	yes - Rocky Hill	0.89	0.00
Unranked	HARTFORD AVE (CT 189)	ELM ST (CT 315)/MOUNTAIN RD	SIMSBURY	yes - Simsbury	0.93	0.04
Unranked	HOPMEADOW ST (US 202/CT 10)	WEST ST (CT 167)	SIMSBURY	yes - Simsbury	0.76	0.04
Unranked	MAIN ST (CT 190)	SOUTH RD (CT 83)	SOMERS	yes - Somers	0.89	0.00
Unranked	HALL HILL RD (CT 186)	GEORGE WOOD RD	SOMERS	yes - Somers	0.59	0.32
Unranked	MOUNTAIN RD (CT 168)	SOUTH STONE ST/NORTH STONE ST	SUFFIELD	yes - Suffield	0.99	1.14
Unranked	NORTH ST (CT 75)	HALLADAY AVE EAST	SUFFIELD	yes - Suffield	1.02	0.55
Unranked	CRYSTAL LAKE RD (CT 30)	HUNTER RD	TOLLAND	yes - Tolland	0.86	2.40
Unranked	I-84-E-272	TOLLAND STAGE RD (CT 74)	TOLLAND	yes - Tolland	0.67	3.09
Unranked	I-84 RAMP TERMINAL	MERROW RD (CT 195)	TOLLAND	yes - Tolland	0.75	0.00
Unranked	91-S-209	PARK AVE	WINDSOR	yes - Windsor	1.11	0.00
Unranked	OLD COUNTY RD	HALFWAY HOUSE RD	WINDSOR LOCKS	yes - Windsor Locks	**-0.03**	**-0.15**
Unranked	SOUTH MAIN ST (CT 159)	MAIN ST (CT 159/CT 140)	WINDSOR LOCKS	yes - Windsor Locks	0.91	0.03
Total reduction in annual number of crashes for additional locations					**46.83**	**24.88**
Total reduction in annual number of crashes for all locations					**247.69**	**44.96**
Total reduction in annual number of crashes for all recommended locations					**164.07**	**35.32**

*A Safety Performance Function to predict the frequency of crashes at this intersection was unavailable.

Bolded values note: Intersections with Stop Control, when converted to roundabouts, may show an increase in crashes (a negative number in this table), however, the standard error in predictive formulas also suggests there could be a decrease in crashes. This analysis uses the midpoint of the Crash Modification Factor for converting an All-way Stop to a roundabout, which is the midpoint estimate for change in crash frequency.

6

Summary and List of Top Recommended Locations

The list of the Top Recommended Roundabout Locations is shown in Table 8 on the following pages.

Out of the top-ranked locations shown in Section 5.1, 61 are recommended to be reviewed in more detail for conversion to a modern single-lane roundabout. This list is generated from the 100 ranked locations resulting from the data driven screening methodology. If project selection is based strictly on the methodology used in this screening study, then this is the resulting list for project prioritization.

However, it is important to note that other good potential locations should not be dismissed. Table 8 excludes other potentially good roundabout locations that are recommended in Section 4.2 Top 3 Municipal Locations, and Section 4.3 Suggested Municipal Locations. Many factors need to be considered in infrastructure project selection and Tables 4 and 5 should also be considered to identify good roundabout locations.

Also, it is noted that this screening study methodology weighted the potential for crash reduction as the primary screening criteria and did not specifically weight the improvement in general traffic operations that roundabouts can provide at many locations.

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Table 7 Top Recommended Roundabout Locations

Rank	CVR Score	Municipality	Major Road	Minor Road	Total Crashes	Total KABC Crashes	Crash Score	ADT	ADT Factor	ROW Issues	Geometric Factor	Recommended	Comment
1	250.20	Hartford	Main St	Mahl Ave/Pavilion St	31	10	417.00	13500	0.75	Moderate	0.80	Yes	
3	187.54	Hartford	New Britain Ave	Summit St/Fairfield Ave	17	6	216.33	10600	0.9	Insignificant	0.96	Yes	
4	187.50	Berlin	Mill St (CT 372)	Savage Hill Rd/Beckley Rd	12	6	208.33	10300	0.9	None	1.00	Yes	
6	149.93	Hartford	Washington St	Vernon St # 2	34	11	229.00	12100	0.75	Insignificant	0.87	Yes	
9	108.48	Hartford	Homestead Ave/Walnut St	Garden St #1	54	28	270.67	13100	0.75	Moderate	0.53	Yes	
13	67.43	Southington	Meriden-Waterbury Tpke(CT 322)	Clark St (CT 509)	15	7	215.67	11700	0.9	Moderate	0.35	Yes	
17	58.25	Hartford	Main St #2	Charter Oak Ave/Buckingham St	36	14	233.00	15900	0.25	Moderate	1.00	Yes	
21	51.91	Vernon	Hartford Turnpike (CT 30)	Reservoir Rd/Grove St (CT 31)	67	17	67.00	11200	0.9	Insignificant	0.86	Yes	
23	51.17	Hartford	Capitol Ave	Laurel St	47	13	57.00	10300	0.9	Moderate	1.00	Yes	
24	50.42	Hartford	Franklin Ave	Bond St	32	17	55.67	8600	1	Significant	0.91	Yes	
26	46.67	New Britain	Columbus Blvd	Chestnut St	26	11	46.67	8100	1	Insignificant	1.00	Yes	
27	44.32	Hartford	Capitol Ave	Broad St	56	19	66.67	10300	0.9	Insignificant	0.74	Yes	
29	42.05	New Britain	Columbus Blvd/CT 9 SB On/Off Ramp	Ellis St	26	11	45.00	8600	1	Insignificant	0.93	Yes	
30	40.74	Newington	Willard Ave (CT 173)	Robbins Ave	33	17	54.33	13500	0.75	Significant	1.00	Yes	
31	40.15	Hartford	Washington St	Jefferson St	51	22	75.33	12100	0.75	Moderate	0.71	Yes	
32	39.45	Vernon	Hartford Tpke (CT 30)	Bolton Rd/Center Rd	48	12	52.33	11300	0.9	Moderate	0.84	Yes	
33	38.50	Berlin	Frontage Rd/Mill St (CT 372)	Worthington Ridge (CT 372 South/572 North)	26	12	51.33	13700	0.75	Moderate	1.00	Yes	
36	36.06	Hartford	Washington St	Park St	64	15	75.33	12100	0.75	Moderate	0.64	Yes	
37	35.40	West Hartford	Prospect Ave	Kane St	33	11	39.33	10500	0.9	None	1.00	Yes	
39	34.50	Coventry	Boston Turnpike (US 44)	Main St (CT 31)	30	11	38.33	10300	0.9	Insignificant	1.00	Yes	
41	33.60	Mansfield	Middle Turnpike (US 44)	Storrs Rd (CT 195)	37	12	37.33	10900	0.9	None	1.00	Yes	
45	32.33	Bloomfield	Bloomfield Ave (CT 189)	Park Ave/Mtn Ave (CT 178)	27	9	32.33	9900	1	Insignificant	1.00	Yes	
46	31.68	Hartford	I-84 EB Off/WB On	Capitol Ave/Oak St	32	13	52.00	10300	0.9	None	0.68	Yes	
47	31.00	Vernon	Talcottville Rd (CT 83)	Hartford Turnpike/Kelly Rd (CT 30)	49	11	41.33	12700	0.75	None	1.00	Yes	
52	29.00	Vernon	Hartford Turnpike (CT 30)	Dobson Rd	37	6	29.00	9100	1	None	1.00	Yes	
53	28.80	Enfield	Enfield St (US 5)/Franklin St (CT 514)	CT 190 WB Ramp	17	8	32.00	11800	0.9	None	1.00	Yes	
54	27.90	West Hartford	Prospect Ave/Caya Ave	I-84 EB Ramps	28	10	31.00	10500	0.9	None	1.00	Yes	
56	26.75	Hartford	Pulaski Cir (CT 598)/Wells St	Hudson St	47	9	35.67	13800	0.75	Insignificant	1.00	Yes	
58	26.24	West Hartford	Trout Brook Dr	Asylum Ave	31	10	221.33	16300	0.25	Moderate	0.47	Yes	
59	26.24	Hartford	Sigourney St	Hawthorn St	23	7	30.67	11900	0.9	Insignificant	0.95	Yes	
60	25.80	Hartford	Westbourne Pkwy	Blue Hills Ave (CT 187)	30	7	30.00	11300	0.9	Insignificant	0.96	Yes	
61	25.57	Enfield	Shaker Rd (CT 220/CT 402)	Taylor Rd (CT 220)	23	11	34.33	11400	0.9	None	0.83	Yes	
62	25.38	New Britain	Martin Luther King Dr (CT 71)	Winter St	24	14	41.33	13200	0.75	Insignificant	0.82	Yes	
63	25.34	Hartford	Wethersfield Ave	Elliott St	21	8	35.00	12000	0.9	Moderate	0.80	Yes	
64	25.00	Farmington	South Rd/Colt Highway (CT 531)	Two Mile Rd	30	6	25.00	10000	1	None	1.00	Yes	
66	24.60	Hartford	White St	Harvard St	22	10	27.33	10600	0.9	Insignificant	1.00	Yes	
67	24.46	Hartford	Park St	Park Terr	67	27	92.00	13600	0.75	Moderate	0.35	Yes	
70	23.88	Hartford	Asylum Ave	Woodland St	49	16	61.00	14300	0.5	Moderate	0.78	Yes	
71	23.25	Southington	Waterbury Turnpike (CT 322)	I-691 WB Ramps	23	9	31.00	12100	0.75	None	1.00	Yes	
72	23.20	Bloomfield	Mountain Ave (CT 178)	Maple Ave/Brown St	21	8	30.00	10400	0.9	Insignificant	0.86	Yes	
75	23.11	Hartford	Fairfield Ave #1	Zion St #2	36	11	35.33	12900	0.75	Insignificant	0.87	Yes	
76	23.04	Vernon	Union St (CT 83/CT 74)	West St (CT 74/CT 83)	55	7	36.67	10100	0.9	Moderate	0.70	Yes	
77	23.00	Hartford	Capitol Ave	Washington St/Trinity St	23	8	30.67	12100	0.75	None	1.00	Yes	
79	22.25	New Britain	Chestnut St/Elm St (CT 71)	Harry Truman Op	24	9	29.67	12700	0.75	None	1.00	Yes	
80	22.20	Mansfield	Storrs Rd (CT 195)	North Frontage Rd (CT 632)	19	7	24.67	10900	0.9	None	1.00	Yes	
81	21.83	Southington	Waterbury Turnpike (CT 322)/Ruggles Row	I-84 EB Ramps	31	13	43.67	14700	0.5	None	1.00	Yes	
82	21.75	Enfield	King St (US 5)	I-91 NB Ramps	17	10	29.00	12900	0.75	Insignificant	1.00	Yes	
84	21.67	New Britain	Main St #1	Chestnut St/Arch St	15	7	21.67	6600	1	None	1.00	Yes	
86	21.60	East Hartford	Main St # 1	Broad St/Maple St	30	9	31.67	13300	0.75	Insignificant	0.91	Yes	
87	21.59	Hartford	Vine St	Greenfield St	36	17	58.67	5600	1	Significant	0.37	Yes	

Rank	CVR Score	Municipality	Major Road	Minor Road	Total Crashes	Total KABC Crashes	Crash Score	ADT	ADT Factor	ROW Issues	Geometric Factor	Recommended	Comment
88	21.31	West Hartford	Boulevard	Raymond Rd	32	14	40.67	6100	1	Insignificant	0.52	Yes	
89	21.00	Southington	Atwater St	I-84 EB Ramp/Marion Ave	24	8	28.00	12400	0.75	None	1.00	Yes	
91	20.75	Southington	Meriden Waterbury Turnpike (CT 322)/I-84 WB Exit	I-84 Entrance Ramp	18	8	27.67	12700	0.75	None	1.00	Yes	
92	20.70	Canton	US 202	River Rd (CT 179)	24	8	23.00	11600	0.9	None	1.00	Yes	
93	20.64	Berlin	Mill St (CT 372)	Middletown Rd/Berlin St	22	11	29.00	13000	0.75	None	0.95	Yes	
94	20.32	New Britain	Slater Rd/Alexander Dr/ Fienemann Rd	Farmington Ave	28	8	35.67	12800	0.75	Insignificant	0.76	Yes	
95	19.67	New Britain	Chestnut St	CT Rte 9 SB Off Ramp	9	6	19.67	4500	1	None	1.00	Yes	
96	19.57	East Hartford	Silver Lane (CT 502)	Forbes St	28	8	29.33	10800	0.9	Insignificant	0.74	Yes	
98	19.50	Windsor	Kennedy Rd	Archer Rd/I-91 NB Off Ramp	15	7	21.67	10300	0.9	None	1.00	Yes	
99	19.39	Hartford	Market St	Pleasant St	33	8	32.67	12800	0.75	Moderate	0.79	Yes	
100	18.87	New Britain	Stanley St # 1	East Main St	25	9	28.33	12800	0.75	Moderate	0.89	Yes	

Appendix

Screening Methodology

300 Ranked Locations

Benefit Calculations

GIS Tool

Screening Methodology

Memorandum

To: Roger Krahn, CRCOG

Date: 6/24/22

Project #: 42852.00

From: Joseph Balskus, Project Manager

Re: Roundabout Screening Study
Screening Methodology

The Roundabout Screening Study is underway with the crash screening and volume screening efforts. This memorandum summarizes the completed screening efforts and is the Task 2 deliverable for the scope of work prepared to describe the following 5-step screening process: 1) Crash Methodology, 2) Traffic Volume Screening Methodology, 3) Geometry of Intersection, 4) Known Congestion/Operational hotspots, and 5) Desktop reviews. These steps outline the screening process to identify potential locations of single lane roundabouts in the CRCOG region.

Development of Intersection Locations

An existing GIS-based intersection inventory for the CRCOG region is not available. VHB developed the following methodology to create intersections for use in the roundabout study. The methodology leverages Esri's ArcGIS Pro software.

Input Data

CTDOT State Roads GIS Feature Class

CTDOT Local Roads GIS Feature Class

Methodology for Creating Intersection Locations:

1. Combine the State & Locals roads feature classes into a Composite Roads layer.
2. Perform an **Intersect** geoprocessing analysis where the Composite Roads layer is intersected with itself, which produces point features where roads intersect "cross" each other.
3. Perform a **Dissolve** geoprocessing analysis on the results of Step 2 to create a single intersection point for each road crossing. The Dissolve function eliminates overlapping points. Approximately 34,000 potential intersection locations were identified after the Dissolve analysis.
4. Perform a **Buffer** geoprocessing analysis against the results of Step 3. A 5-ft buffer distance was used.
5. Perform an **Intersect** geoprocessing analysis where the Results of Step 4 (intersection buffers) are intersected with the Composite Roads Layer. The result is a list of intersection approaches for each potential intersection location.
6. Perform a **Summary Statistics** analysis on the results of Step 5 to count the number of intersection approaches at each potential intersection location. This step is necessary to eliminate non-roadway intersections such as intersections at town lines, stream crossings, ramp merges, etc.
7. Delete potential intersection locations where the approach count from Step 5 was less than 3. This process eliminates road merges where a ramp merge with the mainline or where two divided roads merge together, breaks in roads at town lines and stream crossings, etc.
8. Several additional GIS overlay analyses were performed against the potential intersection locations to further reduce the number of potential intersections, resulting in a final intersection layer for use in the roundabout

Memorandum

study. For example, a functional class evaluation was performed on the intersection approaches to identify which intersections were local/local, were associated with an interstate or freeway, and ownership. VHB eliminated all local/local intersections, in accordance with the scope of work, that stated that the screening study would only consider intersections with a functional classification of minor collector road or higher on at least one leg of the intersection. The results of the analysis are summarized below by ownership (ownership information pulled from CTDOT's road inventory database):

- 4,508 Local Intersections (all approaches are owned by the municipality)
- 3,650 State/Local Intersections (DOT owns at least one of the intersection approaches)
- Total = 8,158 Intersections

These total intersections may include some duplicates resulting from median divided intersections. These will be filtered during the screening process.

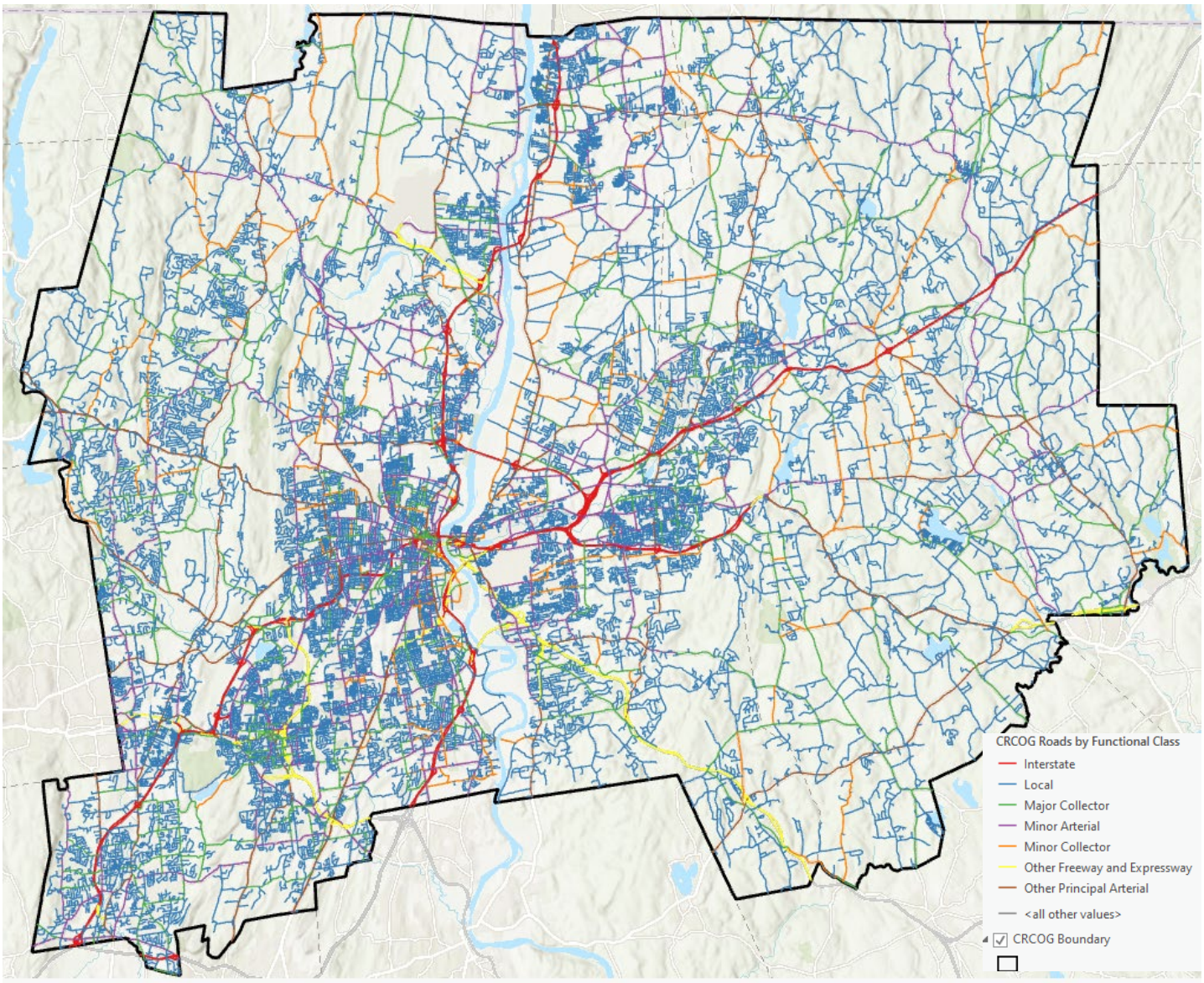
9. Finally, a series of summary analyses were run against the intersection locations and their associated roadway approaches to identify the following information:
    - min/max functional classification
    - min/max speeds,
    - min/max lane count
    - street names

In Summary, a total of 8,158 intersections within the CRCOG region will undergo the 5-step screening as described in the following steps. The data for these screened intersections will be provided to CRCOG in GIS data set for CRCOG to disseminate to the communities as needed.

Figures 1 through 3 below provide a graphical summary of the genesis of the above roadway screening to generate the total listing of screened intersections.

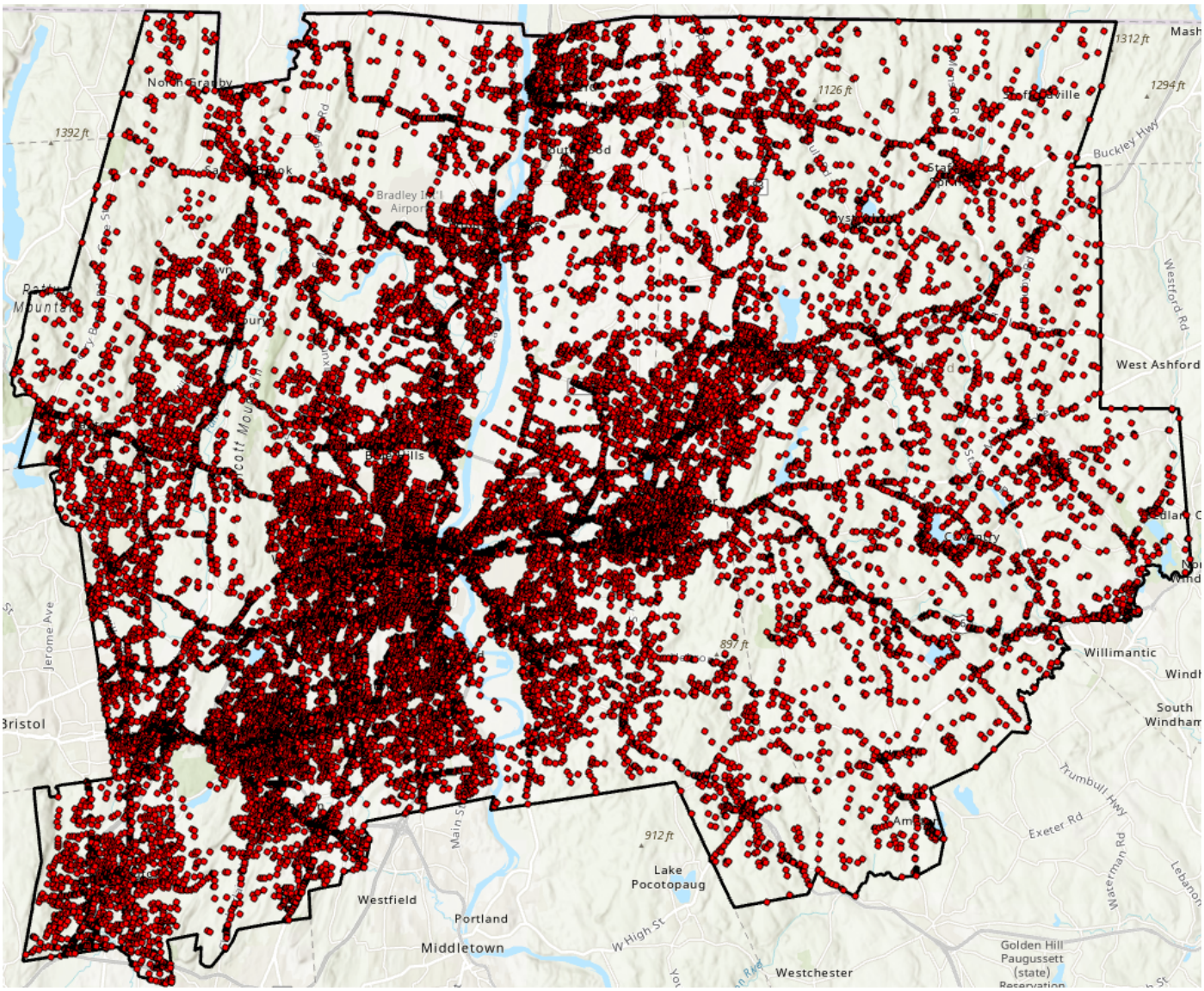
Memorandum

Figure 1: State & Local Roads within CRCOG Region



Memorandum

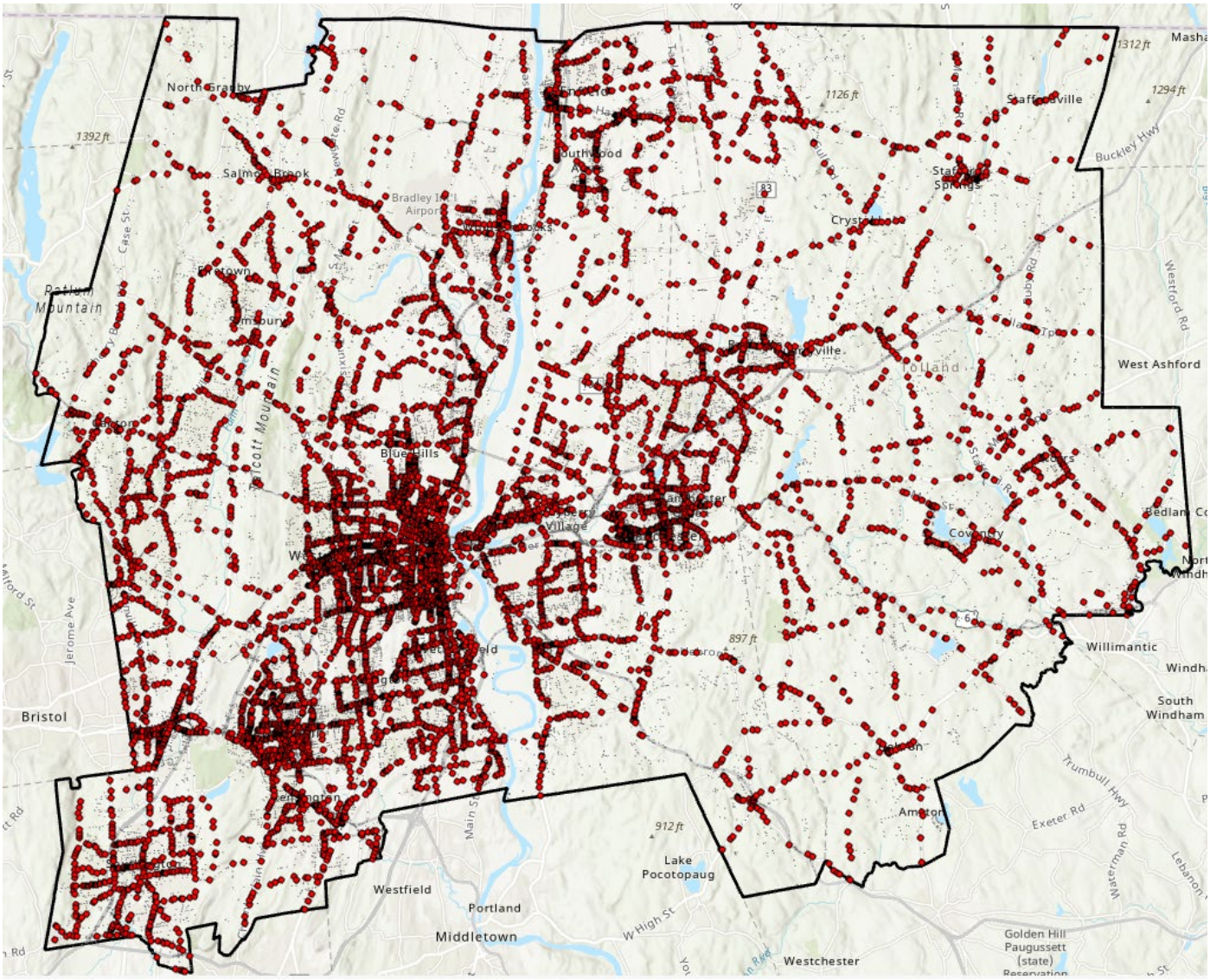
Figure 2: Preliminary Intersection Locations



This figure depicts the results of initial list of intersection locations with the CRCOG region. These locations were generated by intersecting the State & Locals roads, where the result is a point location where roads intersect "cross" each other. Only intersections with a functional classification of minor collector road or higher on at least one leg are included.

Memorandum

Figure 3: Study Area Intersections



This figure depicts the results of the intersection creation methodology. 8,158 intersection locations were identified for analysis. Many of these intersections will be eliminated after the crash data screening is applied to each location.

Memorandum

Step 1: Crash Methodology

The primary and initial screening criteria in the screening process is the crash data from the Connecticut Crash Data Repository (CTCDR). The crash data is being entered into a geodatabase to allow for summarization of the data to screen for locations with a documented crash history. The VHB Team is using the Connecticut Roadway Safety Management System (CRSMS) in part to inform the initial screening methodologies.

The following screening methodology is being utilized for the selection criteria elements, using a single elimination type process, based on the following steps:

The CTDOT Regional Transportation Safety Plan (RTSP) developed a crash severity weighting that was reviewed as part of this roundabout crash screening efforts and considered in the development of the following crash screening severity weighting. The RTSP severity weighting is included in the Appendix for refence. A new severity weighting formula was developed in concert with current FHWA requirements and Highway Safety Manual.

A. Crash Data Collection and Severity Weighting

i. Document number of crashes from CT Crash Data Repository over the 3-year period from 2017 to 2019.

ii. Apply the Equivalent Property Damage Only (EPDO) severity ranking methodology, similar to the that included in the CRCOG Regional Transportation Safety Plan 2020. VHB is using the EPDO screening methodology used in the CT Roadway Safety Management System from December 2020 (see Appendix for an explanation of the severity ranking weights). Below is a summary of the weighting factors by crash severity (KABCO injury scale):

K – Weight Factor = 574
A – Weight Factor = 30
B – Weight Factor = 11
C – Weight Factor = 6
O – Weight Factor = 1

For example, using the intersection of Newington Ave at John Downey Drive in New Britain, there are 11 PDO crashes, 2 C crashes, 7 B crashes, 0 A crashes, and 0 K crashes during a 3- year period, the related EPDO score for this location can be calculated as:

$$\text{Weighted Crash Score:} \quad \frac{(11*1+2*6+7*11+0*30+0*574)}{3} = 33.33$$

As noted in the FHWA Highway Safety Improvement Manual, the KABCO Injury Scale is frequently used by law enforcement for classifying injuries and also can be used for establishing crash costs. (K – Fatal; A – Incapacitating injury; B – Non-incapacitating injury; C – Possible injury; and O – No injury.)

iii. Perform crash query based on highest weighted crash score based on EPDO (as per procedures outlined in the CRSMS).

Memorandum

B. Crash Data Processing with Intersection Locations

i. There are 89,383 total crashes with the CRCOG Region over the 3-year period from 2017 to 2019. Using the intersection layer developed for the roundabout study, VHB filtered the 89,383 crashes down to a subset of intersection crashes based on the methodology below:

- Using the ***Traffic Way Class*** Attribute within crash database, filtered out any crashes that did not occur on a roadway (for example in parking lots and Non-Trafficway Crashes)
  Crash Count = 85,399
- VHB analyzed the ***Crash Specific Location*** Attribute in the crash database to evaluate using only those crashes where the Crash Specific Location Attribute = Intersection. Based on our analysis, we ignored this potential filter. *VHB found too many front-to-rear crashes that were physically located at an intersection, that were miscoded (coded as non-intersection related in the crash database).*
- The study area intersections were buffered by 125 feet (250' diameter study area) from the center of each intersection. This results in a 250-foot diameter circle as shown on the figures below. This is the same buffer used in the Regional Transportation Safety Plans (RTSP) for CTDOT. For the purposes of the roundabout study, the 125-foot intersection buffers serve as the intersection influence zone for screening the crash data on each approach to the intersection. See Figures 4, 5, 6, and 7.
- The 125' intersection buffers were intersected with the 85,399 crashes as the final GIS filter resulting in a subset of crashes associated with the study area intersection locations.
  Total Crashes within Intersection Study Area = 45,942

VHB then performed a summary statistics analysis, where each 125-foot intersection buffer was summarized by crash severity with the results joined to the intersection locations as attribute data for use in running the EPDO screening analysis. Below is a count of the crash data associated with the study area intersections looking at crash severity and the collision type.

Count of crashes in the study area by severity:
K = 70 (Fatality)
A = 512 (Serious/incapacitating injury)
B = 5,350 (Non-incapacitating injury)
C = 7,103 (Possible injury)
O = 32,887 (No injury)
Null = 20

Collision Type Summary:
Angle= 12,328
Front to Front =1,111
Front to Rear = 18,631
Rear to Rear = 70
Rear to Side = 310
Sideswipe, opposite Direction = 1008
Sideswipe, same direction = 6,122
Other, Unknown, Not Applicable = 6,362

Memorandum

Figure 4: 125-foot radius Intersection Buffers

This figure illustrates the 125-foot buffer area generated for each study intersection for use in screening the crash data. Note how local/local intersection locations have been removed. This segment of Newington Avenue is in New Britain.

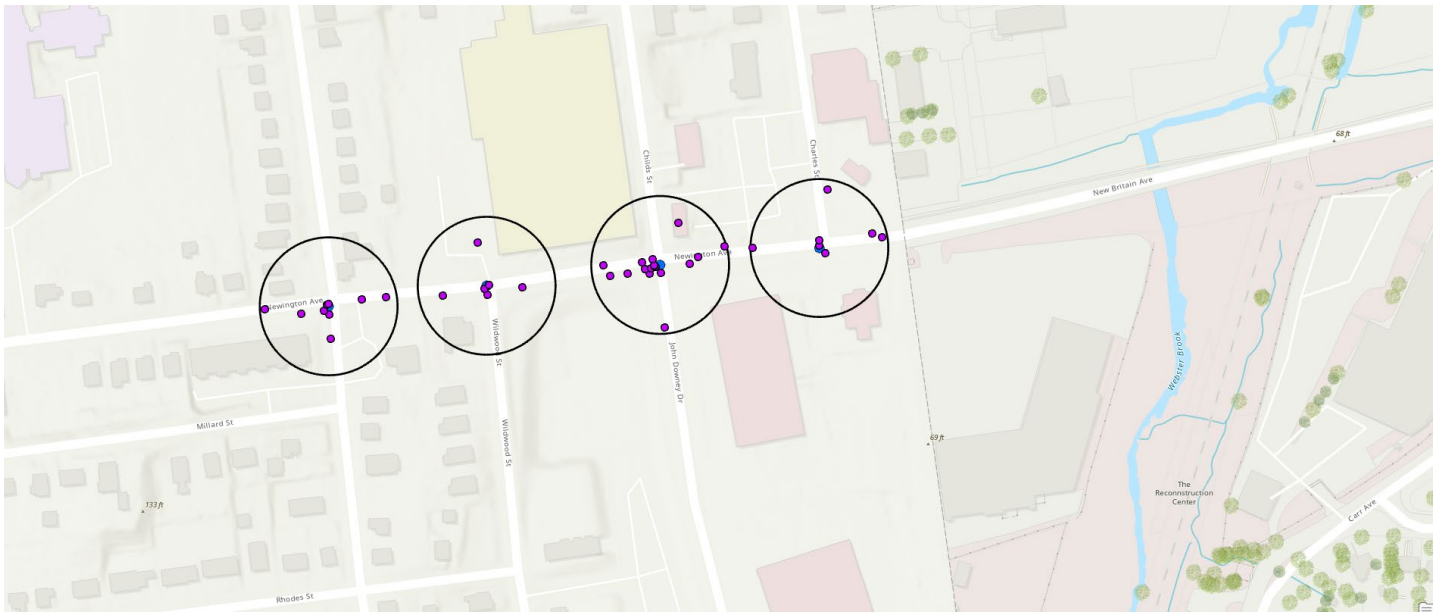
Memorandum

Figure 5: CRCOG crash locations show within 125-foot radius Intersection Buffers

This figure depicts the crashes within the CRCOG region in relation to the 125-foot intersection buffers along Newington Avenue in New Britain.

Memorandum

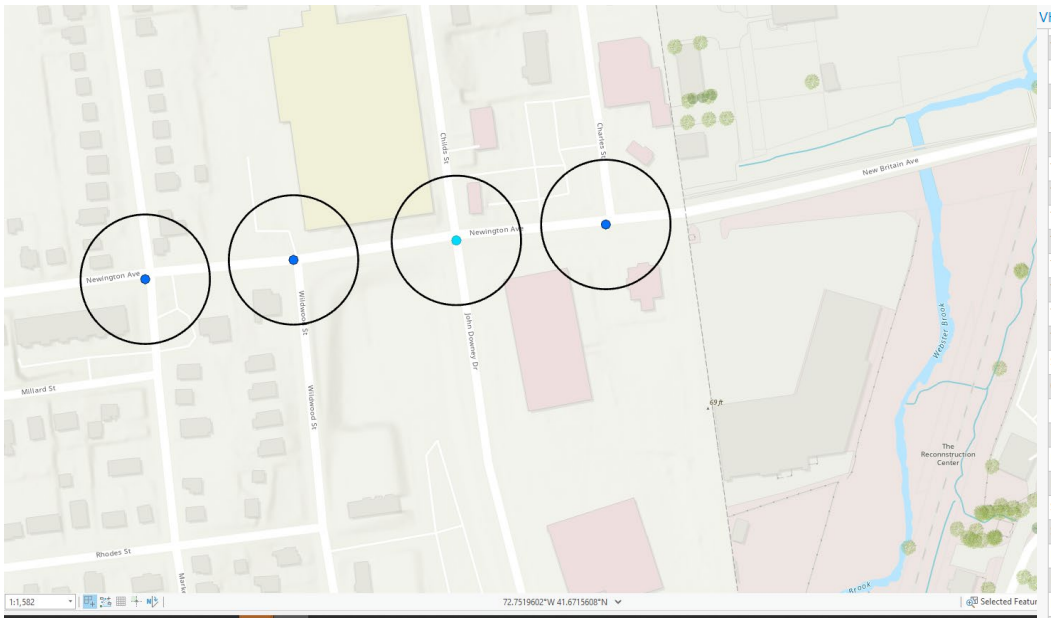
Figure 6: Crashes Filtered to Intersection Buffers



This figure depicts the results of the preliminary crash analysis where crashes are filtered down to the project area intersection locations (Newington Avenue). For each intersection buffer, the total crashes and crash severity were summarized for use in the EPDO screening analysis.

Memorandum

Figure 7: Example Crash Summary Results



VHB Intersection Results - 8969

Town	NEW BRITAIN
Min AADT	6700
Max AADT	13000
Min Functional Class	Local
Max Functional Class	Minor Arterial
Total Crashes	20
Total K Crashes	0
Total A Crashes	0
Total B Crashes	7
Total C Crashes	2
Total O Crashes	11
Total KA Crashes	0
Total KABC Crashes	9
Score	33.333333
Ownership	State/Other
Minimum Speed	35
Maximum Speed	35
Minimum Lanes	2
Maximum Lanes	4
Street 1	NEWINGTON AVE
Street2	CHILDS ST
Route ID	174-E
ParcelImpactCount	2
Parcel Impact Areas (SF)	1050.770752

This figure illustrates the crash data summary for the intersection in the center of the image: Newington Avenue at John Downey Drive. For this location there are 11 PDO crashes, 2 C crashes, 7 B crashes, 0 A crashes, and 0 K crashes during a 3-year period, the related EPDO score for the intersection can be calculated as:

$$\text{Weighted Crash Score: } \frac{(11*1+2*6+7*11+0*30+0*574)}{3} = 33.33$$

Memorandum

Step 2: Traffic Volume Screening Methodology

The volume screening methodology will be applied to all intersections that were screened under Step 1 Crash Screening. VHB is using the traffic volume data available within the Connecticut Roadway Safety Management System (CRSMS) for all locations screened in Step 1.

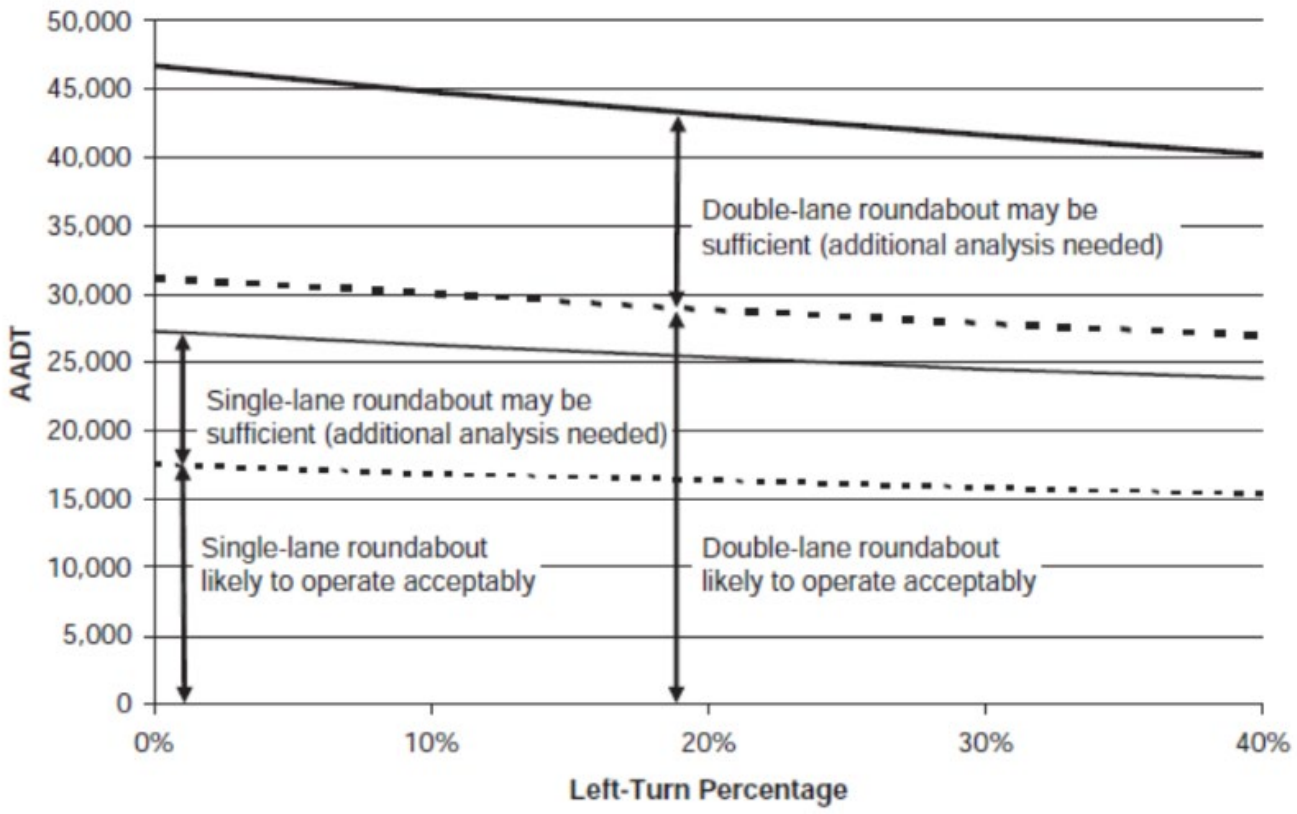
In addition, locations where traffic volume data is not available in the CRSMS, traffic data has been obtained from the CRCOG Travel Demand Model for inclusion in the data sets to ensure all screened intersections can be reviewed for traffic volumes.

All traffic volume data to be utilized will be taken from years prior to 2020 (the pandemic).

The following traffic volume screening steps will be conducted on all the 8,158 study intersection locations.

The NCHRP Report 672 Roundabouts: An Informational Guide, Exhibit 3-12, as shown below, is the primary reference to guide the traffic volume screening. Left turning volume data are not available and therefore an assumed 20% left-turn percentage will be used for all locations in the screening. This results in intersections with average daily traffic (ADT) exceeding 25,000 being eliminated from further consideration in this single lane roundabout screening. The ADT value used, will be selected from the one intersection approach leg with the highest bi-directional ADT. See Figure 9 for a sample intersection, where the screening will use the 13,000 east leg ADT volume, for the overall intersection value in the screening.

Figure 8: NCHRP 672 Exhibit 3-12



Memorandum

In addition, the intersections will be further screened with a volume adjustment factor to better evaluate the likelihood of a single lane roundabout working at the given location. The following system is proposed for each location under the 25,000 ADT threshold:

Table 1 ADT Range & Volume Adjustment Factors

ADT Range		Factor
0	10,000	1.00
10,000	12,000	0.90
12,000	14,000	0.75
14,000	15,000	0.50
15,000	17,000	0.25
17,000	25,000	0.10
25,000	>	0.00

As shown above, locations above 25,000 ADT are essentially eliminated from further consideration.

Intersections with ADT less than 10,000 are assured to be roundabout ready locations based upon capacity, and the value of 1 is proposed. While the NCHRP Exhibit 3-12 shows 15,000 ADT to be a threshold, using the proposed adjustment factors provides a very high level of confidence in the operational capacity of the intersections being converted to single lane roundabouts. Also, it is important to note that the volume data being used for the screening efforts are existing traffic volume counts from a variety of sources. The ADT values are not adjusted to future forecasted volumes. Therefore, if there is anticipated growth in volumes, using the factor helps account for some anticipated growth and ensures that a single lane roundabout is a good candidate for the screened intersections for further planning and development into an improvement project.

These volume adjustment factors will be utilized in an overall intersection scoring system applied to all 8,158 intersections, as presented in the following sections.

Memorandum

Figure 9: Sample Intersection Diagram with Volumes

Newington Avenue at John Downey Drive
New Britain, CT

Step 3: Geometry of Intersection

Each of the screened intersections will be fitted with a nominal 120-foot diameter circle to determine the potential fit of the circle at each of the screened intersections. The fitment will be done entirely in GIS mapping and use tools to place the circle at the GIS determined center of the intersection while depicting intersection features available in the mapping including Right Of Way (ROW), buildings and other features. Where possible, shifting the 120-foot diameter circle to avoid a ROW or building impact will be considered unless additional impacts are incurred during the Desktop Review Step.

The following will be considered in the review of the intersection geometry overlaid with the circle:

- In locations where the overlaid circle extends into ROW, the GIS system will generate an area of ROW and building impact which will be summarized per location.
- The impacted ROW will be listed as to ownership criteria: private, municipal, State
- Locations with impacts to private ROW greater than 2,000 square feet will be eliminated
- Locations with impacts to private buildings greater than 200 square feet will be eliminated if the roundabout cannot be adjusted to avoid the impact
- For locations with ROW and building impacts less than the noted thresholds, a summary of the impacts at these locations will be provided.

Memorandum

Figure 10: Sample Fitment – Intersection of Newington Avenue at John Downey Drive, New Britain

Memorandum

The geometric fitting test will be summarized with a list of locations that work and a summary graphic.

The following scoring system is proposed to evaluate the impacts to ROW and buildings with locations that have zero impacts given a total factor of 1.00.

ROW Impact:	2,000	-	x square feet
Building Impact:	200	-	x square feet
Total ROW Impact Factor:	(sum)/2,200		

Locations with no impact will have a factor of 1.0, all others will be less than 1.0, and any locations with negative scores will be given a score of 0.0 and thereby eliminated from further consideration.

Sample Intersection Calculation (Newington Ave. & John Downey Drive in New Britain):

Private parcel ROW impact = 1,050.7 square feet

Building impact = 42

Total ROW Impact Factor = (1050.7+42)/2,200 = .50

SUMMARY OF STEP 1, 2, and 3 SCORING

To rank the top locations using the above 3 screening steps; a scoring system is used combining the Step 1 weighted crash score, Step 2 volume adjustment factor, and Step 3, Total ROW Impact score. This provides the crash, volume, ROW score (CRV Score) using the following calculation:

CVR Score = Weighted Crash Score * Volume Adjustment Factor * Total ROW Impact Factor

KABC Filter

For the purposes of ranking, only potential sites with 6 or more KABC (injury related crashes) crashes over the 3-year analysis period, were included in the final ranking. The KABC filter was applied to focus on sites with high benefit/cost ratios for a proposed improvement.

Figure 10 Example CVR Score Calculation (Newington Avenue at John Downey Drive in New Britain):

Step 1: Weighted Crash Score of 33.33

Step 2: Volume Adjustment Factor = 0.75

(ADT of the highest volume leg, east leg = 13,000)

Step 3: Total ROW Impact Factor = .50

CVR Score Calculation: CVR Score = 33.33 * 0.75 * 0.50 = 12.5

Step 4: Known Congestion/Operational Hotspots

Memorandum

Intersections that do not meet the screening criteria but are intersections with known congestion, operational problems and locations suggested by the CRCOG Transportation Committee members via the survey email to municipalities will also be reviewed and screened for consideration.

If these locations were previously eliminated from the crash and volume screening, they will be reviewed for geometry fitting of the roundabout and considered in the screening process.

Step 5: Desktop Reviews

Using the highest CVR scores resulting after Step 3, the list will then be adjusted to include intersections as noted in Step 4. The top ranked locations, with the 100 highest CVR scores will be reviewed at the desktop level to determine if conversion of the intersection to a roundabout is feasible considering obvious site condition impacts that would result from the physical construction of the roundabout.

The desktop reviews of existing site conditions will be conducted to identify obvious major constraints, such as adjacent buildings, major utilities, or significant historic structures based on available GIS data and aerial mapping. The desktop reviews will include a graphical and tabulated summary of the locations with the roundabout locations to be considered for future design projects.

In addition, the screening process will consider an effort to ensure that all CRCOG communities are represented with at least one roundabout location.

The 100 screened locations will be summarized by location and will provide a summary of key criteria at each intersection location (e.g., number of crashes in 3-year period, ADT, state or local ownership, etc.)

Analysis of Potential Crash Reductions

After the completion of the desktop reviews, the roundabout locations will be reviewed for potential crash reductions using AASHTO and NCHRP procedures. This analysis step will be the final step in the screening process to document the screening of the top 100 locations and supplemented with a crash reduction summary.

These procedures will be used to demonstrate the safety benefits of the recommended roundabout locations.

i. Use procedures from the AASHTO Highway Safety Manual (HSM) to predict expected changes in crash frequency based on conversion of intersections to roundabouts. These procedures include using the Empirical Bayes (EB) method to determine the expected crash frequency for the identified candidate signalized/unsignalized intersections and then using the appropriate Crash Modification Factor from the Crash Modification Factor Clearinghouse to determine the expected crash frequency with the roundabout. The EB method is implemented through the use of HSM spreadsheet tools developed by AASHTO and/or safety performance factors calibrated by CTDOT, if available. Figure 11 below is a sample screenshot of the AASHTO spreadsheet tool, which allows a user to input existing geometric and traffic volumes for the signalized/unsignalized intersection, generating an output for the expected number of crashes. Separate spreadsheets are available for different location types: rural two-lane roads, rural multi-lane highways, and urban and suburban arterials. The Enhanced Interchange Safety Analysis Tool (ISATe) is also available from AASHTO to analyze ramp termini.

ii. The CMF Clearinghouse lists a variety of CMFs that show the potential reduction in the frequency of crashes as a result of a conversion of an intersection to a roundabout. Each CMF is assigned a star value to indicate the quality of the data used to establish the CMF and its standard error. Where possible, CMFs with higher star ratings are to be used. The CMF Clearinghouse also groups roundabout CMFs based on the conversion to single-lane roundabouts (separate CMFs are available for multi-lane roundabouts):

- Intersection to single-lane roundabout
- Stop-Controlled intersection to single-lane roundabout
- No control/yield intersection to single-lane roundabout
- Two-way stop-controlled intersection to single-lane roundabout
- All-way stop-controlled intersection to single-lane roundabout
- Signalized intersection to modern roundabout
- Unsignalized intersection to single-lane roundabout

iii. Each CMF includes parameters that indicate the applicability of the CMF. Such parameters include:

- Urban or rural location
- Crash severity the CMF addresses
- Type of crash the CMF addresses
- Roadway geometry
- Minimum and maximum traffic volume

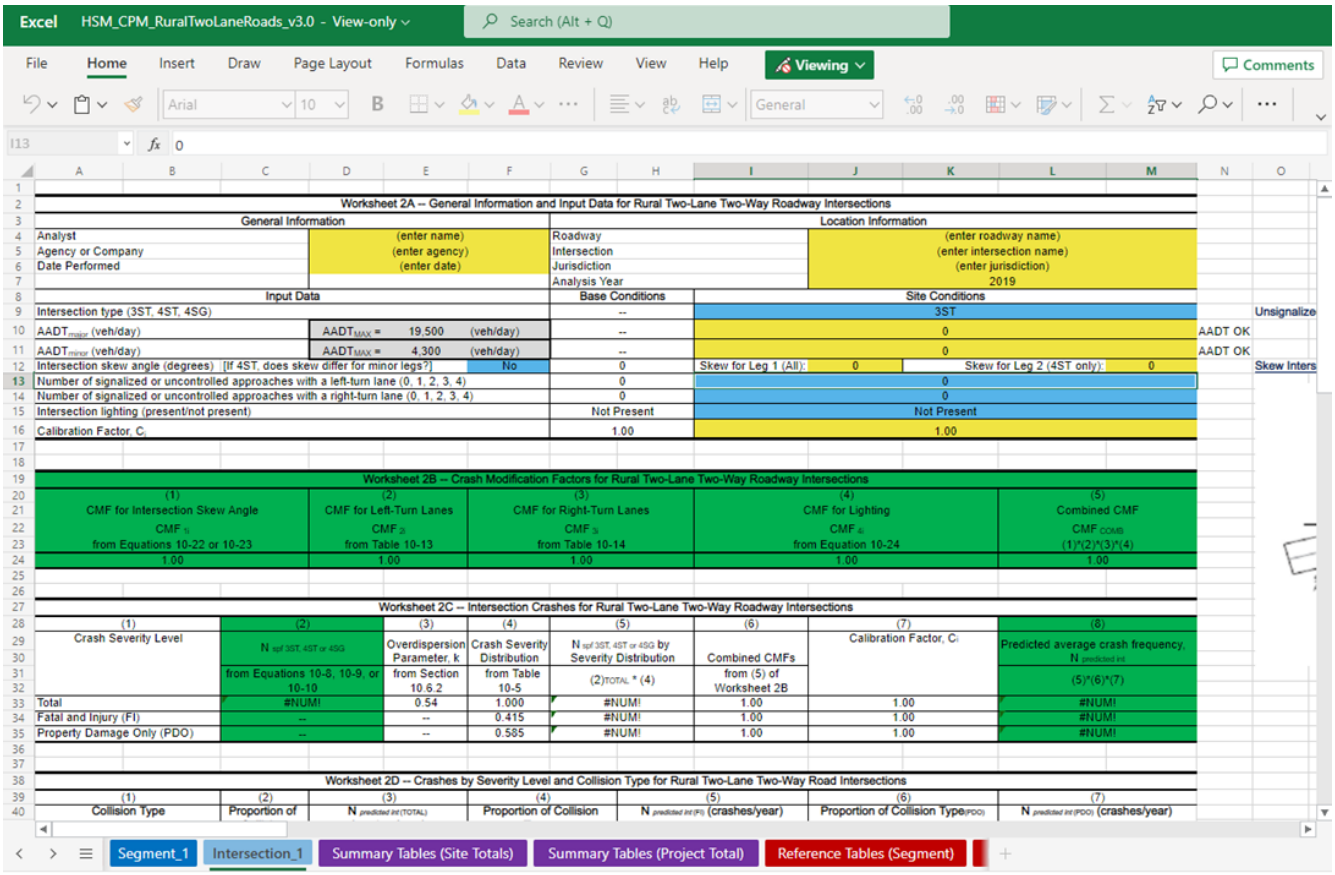
iv. Figure 12 below shows how various CMFs in the Clearinghouse can be compared and illustrates the various parameters behind each CMF. The project team will use the CMF comparison tool to select an appropriate set of CMFs to be consistently applied to the top sites to determine the expected percent reduction in crashes. While the HSM has a listing of roundabout CMFs, these are also included in the CMF Clearinghouse – therefore, the Clearinghouse has the best set of CMFs available for use.

v. Identify potential economic benefit of crash reductions based on the outcomes of the EB analysis and applying economic benefit values used and calibrated by CTDOT as appropriate.

vi. Determine a threshold value of number of crashes reduced over a 3-year period, to be considered for additional roundabout screening, or eliminated from screening.

Figure 11: AASHTO Spreadsheet Tool

Memorandum



Excel HSM_CPM_RuralTwoLaneRoads_v3.0 - View-only

Search (Alt + Q)

File Home Insert Draw Page Layout Formulas Data Review View Help Viewing Comments

Arial 10 B General

I13 0

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1															
2	Worksheet 2A -- General Information and Input Data for Rural Two-Lane Two-Way Roadway Intersections														
3	General Information						Location Information								
4	Analyst			(enter name)			Roadway		(enter roadway name)						
5	Agency or Company			(enter agency)			Intersection		(enter intersection name)						
6	Date Performed			(enter date)			Jurisdiction		(enter jurisdiction)						
7							Analysis Year		2019						
8	Input Data						Base Conditions		Site Conditions						
9	Intersection type (3ST, 4ST, 4SG)						--		3ST						Unsignalize
10	$AADT_{major}$ (veh/day)			$AADT_{MAX}$ =	19,500	(veh/day)	--		0					AADT OK	
11	$AADT_{minor}$ (veh/day)			$AADT_{MAX}$ =	4,300	(veh/day)	--		0					AADT OK	
12	Intersection skew angle (degrees) [If 4ST, does skew differ for minor legs?]					No	0		Skew for Leg 1 (All):	0		Skew for Leg 2 (4ST only):	0		Skew Inters
13	Number of signalized or uncontrolled approaches with a left-turn lane (0, 1, 2, 3, 4)						0		0						
14	Number of signalized or uncontrolled approaches with a right-turn lane (0, 1, 2, 3, 4)						0		0						
15	Intersection lighting (present/not present)						Not Present		Not Present						
16	Calibration Factor, C_i						1.00		1.00						
17															
18															
19	Worksheet 2B -- Crash Modification Factors for Rural Two-Lane Two-Way Roadway Intersections														
20	(1)			(2)			(3)		(4)			(5)			
21	CMF for Intersection Skew Angle			CMF for Left-Turn Lanes			CMF for Right-Turn Lanes		CMF for Lighting			Combined CMF			
22	CMF_{1i}			CMF_{2i}			CMF_{3i}		CMF_{4i}			CMF_{COMB}			
23	from Equations 10-22 or 10-23			from Table 10-13			from Table 10-14		from Equation 10-24			(1)*(2)*(3)*(4)			
24	1.00			1.00			1.00		1.00			1.00			
25															
26															
27	Worksheet 2C -- Intersection Crashes for Rural Two-Lane Two-Way Roadway Intersections														
28	(1)	(2)		(3)	(4)	(5)		(6)	(7)			(8)			
29	Crash Severity Level	$N_{spf\ 3ST,\ 4ST\ or\ 4SG}$		Overdispersion Parameter, k	Crash Severity Distribution	$N_{spf\ 3ST,\ 4ST\ or\ 4SG}$ by Severity Distribution		Combined CMFs	Calibration Factor, C_i			Predicted average crash frequency, $N_{predicted\ int}$			
30															
31		from Equations 10-8, 10-9, or 10-10		from Section 10.6.2	from Table 10-5	$(2)_{TOTAL}$ * (4)		from (5) of Worksheet 2B				(5)*(6)*(7)			
32															
33	Total	#NUM!		0.54	1.000	#NUM!		1.00	1.00			#NUM!			
34	Fatal and Injury (FI)	--		--	0.415	#NUM!		1.00	1.00			#NUM!			
35	Property Damage Only (PDO)	--		--	0.585	#NUM!		1.00	1.00			#NUM!			
36															
37															
38	Worksheet 2D -- Crashes by Severity Level and Collision Type for Rural Two-Lane Two-Way Road Intersections														
39	(1)	(2)		(3)	(4)	(5)			(6)			(7)			
40	Collision Type	Proportion of		$N_{predicted\ int\ (TOTAL)}$	Proportion of Collision	$N_{predicted\ int\ (FI)}$ (crashes/year)			Proportion of $Collision_{(PDO)}$			$N_{predicted\ int\ (PDO)}$ (crashes/year)			

Segment_1 Intersection_1 Summary Tables (Site Totals) Summary Tables (Project Total) Reference Tables (Segment)

Memorandum

Figure 12: Clearinghouse CMF Example

Countermeasure Name	Conversion of stop-controlled intersection into single-lane roundabout	Conversion of stop-controlled intersection into single-lane roundabout	Convert all-way, stop-controlled intersection to roundabout	Convert all-way, stop-controlled intersection to roundabout
CMF ID	206	207	242	4933
CMF	0.28	0.42	1.03	0.544
Study Reference	PERSAUD ET AL., 2001	PERSAUD ET AL., 2001	RODEGERDTS ET AL., 2007	QIN ET AL., 2013
Unadjusted Standard Error CMF	*0.06*	*0.07*	*0.15*	*0.196*
CMFunction				
Star Rating	★★★★☆	★★★★☆	★★☆☆☆	★★☆☆☆
Rating Score Total	*130*	*130*	*55*	*45*
Crash Type	All	All	All	All
Crash Severity	*All*	*All*	*All*	*Fatal,Serious injury,Minor injury*
Crash Time of Day				*All*
Area Type	*Urban*	*Rural*	*All*	*All*
Road Division Type				*All*
Road Type	Not specified	Not specified	Not Specified	Not specified
Number of Lanes			*1 or 2*	*2,4*
Intersection Type	Roadway/roadway (not interchange related)	Roadway/roadway (not interchange related)	Roadway/roadway (not interchange related)	Roadway/roadway (not interchange related)
Intersection Geometry	*Not specified*	*Not specified*	*4-leg*	*3-leg,4-leg*
Traffic Control	Stop-controlled	Stop-controlled	Stop-controlled	Stop-controlled
Speed Limit				
Study Type	2	2	2	2
Years From				*1994*
Years To				*2010*
Traffic Volume Unit	*Annual Average Daily Traffic (AADT)*	*Annual Average Daily Traffic (AADT)*	*Unit Unknown*	*Annual Average Daily Traffic (AADT)*
Min Traffic Volume				
Max Traffic Volume				
Min Major Rd Volume				*4100 (total entering)*
Max Major Rd Volume				*48100 (total entering)*
Min Minor Rd Volume				
Max Minor Rd Volume				
Avg Traffic Volume				
Avg Major Rd Volume				
Avg Minor Rd Volume				
State of Origin				WI
Municipality				*Statewide*
Country				*USA*
Comments				*- Study included three-year before and after crash data for each site.- Reported traffic volume is total entering volume.*

Memorandum

Summary

As noted in the foregoing screening methodology, this memorandum provides a comprehensive screening process for reviewing intersections in the CRCOG region for potential conversion to a modern single lane roundabout, using the available traffic volume and crash data from CTDOT and CRCOG sources.

The process includes a hierarchy of weighted crash score, volume adjustment factor, and right of way impact factor. A score is developed in order to rank the locations with the greatest potential to convert to a modern single lane roundabout.

These ranked locations will then be reviewed at the "desktop" level, using available online mapping and GIS resource data, as well as local knowledge. This desktop engineering review of these locations will provide a final determination on viability.

The basis for this screening effort is data. Using the available data in this 5 step screening process, appropriate single lane roundabout locations were identified in a very efficient and defined process.

An overall roundabout screening methodology for the CRCOG region needs to be dynamic, and can be modified in the future as conditions warrant, such as providing additional locations where mini-roundabouts and/or multilane roundabouts may be appropriate. However, the goal of this particular screening effort is to identify locations that can be considered for future funding of additional studies and design leading to construction of the safest form of intersection control: modern single lane roundabouts.

Memorandum

Appendix

Adjusted EPDO Weighting Summary

Memorandum

Adjusted EPDO Weighting Summary

The equivalent property damage only (EPDO) method used by UCONN in its CRSMS tool calculates a combined frequency and severity score for each site by assigning weighting factors to crashes by crash severity and monetary consequences. The weighting factors are based on the costs of property damage only crashes, and the calculated score accounts for the severity of crashes and the expected crash costs for each site. The initial weighting factors are estimated by the Federal Highway Administration (FHWA) using the 2001 dollar values and documented in the **"Safety Analyst User Manual"** based on the mean comprehensive monetary costs for each severity level. Level K has a mean comprehensive cost equal to $5,800,000 per crash, and a weight factor equal to 1450; level A has a mean comprehensive cost equal to $402,000 per crash, and a weight factor equal to 100; level B has a mean comprehensive cost equal to $80,000 per crash, and a weight factor equal to 20; level C has a mean comprehensive cost equal to $42,000 per crash, and a weight factor equal to 10; level PDO has a mean comprehensive cost equal to $4,000 per crash, and a weight factor equal to 1. The EPDO score is weighted to the per mile per year unit for segments and per year for intersections and is then used for ranking sites. However, the 2001 dollar values might not be representative to the current values due to the inflation. Therefore, the weighting factors of crash severities used in this study are adjusted to the current economic situation using the Consumer Price Index (CPI) and Employment Cost Index (ECI) released by the U.S. Bureau of Labor Statistics (BLS). BLS releases the CPI and ECI monthly. However, the monthly changes of CPI and ECI are very small and UCONN decided to update the weighting factors for EPDO analysis once a year. **The latest EPDO weights used in the CRSMS from December 2020 are**:

K – Weight Factor = 574 ,
A – Weight Factor = 30,
B – Weight Factor = 11,
C – Weight Factor = 6,
O – Weight Factor = 1

These weights are different than those used in the previous CRCOG RTSP study as VHB determined weights in that study based off FHWA's **national guidance** ((https://safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf) and adjusted them for Connecticut, rather than using UCONN's approach of adjusting the values in the Safety Analyst tool. Using the RTSP approach Level K has a mean comprehensive cost equal to $16,185,746 per crash, and a weight factor equal to 949; level A has a mean comprehensive cost equal to $938,535 per crash, and a weight factor equal to 55; level B has a mean comprehensive cost equal to $284,430 per crash, and a weight factor equal to 17; level C has a mean comprehensive cost equal to $179,924 per crash, and a weight factor equal to 11; level PDO has a mean comprehensive cost equal to $17,061 per crash, and a weight factor equal to 1.

December 2020 CRSMS User Manual				June 2019 CRSMS User Manual				CRCOG RTSP Weights			
Severity	**Value**	**Ratio**	**Weight**	Severity	Value	Ratio	Weight	Severity	Value	Ratio	Weight
K	**$ 6,415,389**	**573.5195**	**574**	K	$ 5,800,000	1450	1450	K	$ 16,185,746	948.6986	949
A	**$ 338,576**	**30.26783**	**30**	A	$ 402,000	100.5	100	A	$ 938,535	55.01055	55
B	**$ 123,646**	**11.05364**	**11**	B	$ 80,000	20	20	B	$ 284,430	16.67136	17
C	**$ 69,541**	**6.216789**	**6**	C	$ 42,000	10.5	10	C	$ 179,924	10.54592	11
O	**$ 11,186**	**1**	**1**	O	$ 4,000	1	1	O	$ 17,061		1

300 Ranked Locations

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
08-04-23

Rank	Municipality	Town Identified List	Town Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
1	HARTFORD	No	Yes	MAIN ST. NO. 1	MAHL AVE/PAVILLION ST.	Local	2200	13500	31	2	1	2	5	21	3	10	417.00	0.75	0.80	250.20	Only 3 KA, but 2 K's. No obvious safety issues. Check volumes, might need hybrid. Shift to avoid buildings on east side.	Signal	on-street parking, Main Street is 5 lanes wide	Moderate	Yes
2	HARTFORD	No	Yes	CHAPEL ST. NORTH/WALNUT ST/I-84 EB RAMP	HIGH ST. #1	State/Other	3500	9900	60	1	0	3	7	49	1	11	232.67	1.00	1.00	232.65	Only 1 KA, (1K), but 60 crashes overall (49 PDOs).	Signal	5 lanes on Chapel St WB. Volumes likely too high - 9,900 ADT on one-way approach.	None	No
3	HARTFORD	No	Yes	NEW BRITIAN AVE	SUMMIT ST/FAIRFIELD AVE NO. 2	Local	7000	10600	17	1	1	2	2	11	2	6	216.33	0.90	0.96	187.54	Fire Station within the intersection. Might have to be an oval with skew. ROW needed is city owned.	Signal	Potential roundabout corridor	Insignificant	Yes
4	BERLIN	No	Yes	MILL ST (CT 372)	SAVAGE HILL RD/BECKLEY RD	State/Other	10300	10300	12	1	0	3	2	6	1	6	208.33	0.90	1.00	187.50	1 KA (1K), 6 KABC, 12 overall. two shopping plaza drives close to intersection, potential 2 roundabouts with Mill and Middletown Rd	Signal		None	Yes
5	HARTFORD	No	No	FRANKLIN AV	BUSHNELL ST	Local	8600	8600	13	1	0	5	1	6	1	7	213.67	1.00	0.76	162.28	ROW too tight, off street parking impacted.	Side Street Stop		Significant	No
6	HARTFORD	No	No	WASHINGTON ST	VERNON ST NO 2	Local	2700	12100	34	1	0	6	4	23	1	11	229.00	0.75	0.87	149.93	spacious intersection but might need ROW on west side corners	Signal	only 1 KA, but 11 KABC, 34 overall.	Insignificant	Yes
7	HARTFORD	No	No	FRANKLIN AV	BLISS ST	Local	8600	8600	13	1	0	5	1	6	1	7	213.67	1.00	0.68	145.27	1 K, likely same fatal crash as Franklin & Bushnell. Bliss one-way away from Franklin		Bliss Street one-way away from intersection	Significant	No
8	HARTFORD	No	No	WESTLAND ST	BARBOUR ST	Local	5200	5700	18	1	0	0	5	12	1	6	205.33	1.00	0.64	131.67	1KA, 6KABC, 18 overall. ROW too tight.	Signal		Significant	No
9	HARTFORD	No	No	Homestead Ave/Walnut St	Garden St. #1	Local	6700	13100	54	1	0	10	17	26	1	28	270.67	0.75	0.53	108.48	54 total crashes, 28 injuries. Need fair amount of ROW in NE quadrant	Signal		Moderate	Yes
10	HARTFORD	No	No	Albany Ave (US 44)	Brook St	State/Other	13400	13400	19	1	1	1	3	13	2	6	215.33	0.75	0.55	89.31	ROW too tight	Signal		Significant	No
11	HARTFORD	No	No	WETHERSFIELD AV	ADELAIDE ST	Local	12000	12000	19	1	0	3	3	12	1	7	212.33	0.90	0.43	81.67	ROW too tight	Side Street Stop		Significant	No
12	HARTFORD	No	No	Morgan St (US 44)	Market St	State/Other	7300	12800	128	0	2	11	17	98	2	30	127.00	0.75	0.84	79.75	volumes likely too high due to one-way approach, intersection is part of coordinated signal system	Signal		Insignificant	No
13	SOUTHINGTON	No	Yes	MERIDAN-WATERBURY TPKE (CT 322)	CLARK ST. (CT 509)	State/Other	2900	11700	15	1	1	1	4	8	2	7	215.67	0.90	0.35	67.43	15 Crashes, 2 KA (1K), 7 KABC. ROW needed but vacant land available on NW corner.	Signal		Moderate	Yes
14	HARTFORD	No	No	ZION ST NO 1	WARD ST	Local	10400	10400	18	1	0	6	2	9	1	9	220.33	0.90	0.33	65.05	ROW too tight, cemetery on SE quadrant	Signal		Significant	No
15	HARTFORD	No	No	FARMINGTON AV	BROAD ST	Local	8400	12600	84	0	0	14	9	61	0	23	89.67	0.75	0.96	64.30	"Trident" intersection studied previously, would require multi-lane roundabout combining both intersections	Signal	Proximity of two intersections would require treatment at both	Insignificant	No
16	HARTFORD	No	No	TRUMBULL ST	CHAPEL ST SOUTH	Local	7000	7100	47	0	1	8	9	29	1	18	67.00	1.00	0.95	63.79	check volumes, one-way approach. ROW too tight.	Signal		Significant	No
17	HARTFORD	No	No	Main ST #2	Charter Oak Ave/Buckingham St	Local	7500	15900	36	1	0	5	8	22	1	14	233.00	0.25	1.00	58.25	spacious intersection, high volumes	Signal		Moderate	Yes
18	HARTFORD	No	No	NEW BRITAIN AV	HILLSIDE AV	Local	7100	10600	44	1	1	6	7	29	2	15	247.00	0.90	0.25	55.72	ROW too tight	Signal		Significant	No
19	HARTFORD	No	No	Ann Uccello St #1 /Pleasant St	Chapel St. North	Local	4000	6800	41	0	1	7	4	29	1	12	53.33	1.00	1.00	53.33	ROW too tight	Signal		Significant	No
20	HARTFORD	No	No	Main St & Morgan St.	North/Chapel St. North	State/Other	7300	12500	78	0	0	10	14	54	0	24	82.67	0.75	0.85	52.44	0 KA but 24 KABC and 78 overall. Volumes likely too high due to one-way road. Too close to other signalized intersections, part of coordinated system. Only consider if other intersections also converted to roundabouts	Signal	Part of coordinated signal system	Moderate	No
21	VERNON	No	Yes	HARTFORD TPKE (CT 30)	RESERVIOIR RD/GROVE ST (31)	State/Other	5600	11200	67	0	1	5	11	50	1	17	67.00	0.90	0.86	51.91	67 crashes, 1KA (A), 17 IKABC, ROW needed is town owned - park?			Insignificant	Yes
22	HARTFORD	No	No	Albany Ave (US 44)	Garden St No. 1	State/Other	6000	16000	85	1	0	10	11	63	1	22	271.00	0.25	0.76	51.21	Part of recently completed Albany Ave project, ROW very tight, high volumes	Signal		Significant	No
23	HARTFORD	No	No	CAPITOL AV	LAUREL ST	Local	0	10300	47	0	1	7	5	34	1	13	57.00	0.90	1.00	51.17	47 overall, 1A, 13 injs. Building tight on NW corner, other three open. I-84 obstructs visibility to signals, roundabout would be visible, bridge pier in median on Laurel, ROW tight - might conflict with bridge pier on SE corner?			Moderate	Yes
24	HARTFORD	No	No	FRANKLIN AV	BOND ST	Local	8600	8600	32	0	0	10	7	15	0	17	55.67	1.00	0.91	50.42	0KA, 17 KABC, 32 overall. ROW very tight, one leg is one-way away towards Franklin, 3 lanes plus on-street parking on Franklin	Side Street Stop	roundabout could help prevent wrong-ways; some loss of on-street parking required. Mini or compact may be better option. Possible 2 roundabout project with Franklin and Barker	Significant	Yes
25	HARTFORD	No	No	Park Ter	Signorny St/ Russ St.	Local	11900	13600	47	0	0	11	7	29	0	18	64.00	0.75	1.00	47.97	Recently converted to a roundabout	Signal			No
26	NEW BRITAIN	No	Yes	COLUMBUS BLVD	CHESTNUT ST	Local	4500	8100	26	0	1	7	3	15	1	11	46.67	1.00	1.00	46.67	26 crashes, 1A, 11 KABC. RR X-ing on east leg at intersection, part of coordinated signal system?, bike lanes on Columbus. Potential roundabout corridor on Chestnut.	Signal	RR X-ing requires pre-emption	Insignificant	Yes
27	HARTFORD	No	No	CAPITOL AV	BROAD ST	Local	8400	10300	56	0	1	5	13	37	1	19	66.67	0.90	0.74	44.32	1A, 19 KABC, 56 overall. Space available on north side, owned by State (park?), bike lanes on Broad, near LOB - high peds	Signal	Bike lanes on Broad, likely high ped vols near LOB.	Insignificant	Yes
28	HARTFORD	No	No	FRANKLIN AV	BROWN ST	Local	5700	8600	42	0	2	2	3	35	2	7	45.00	1.00	0.95	42.87	2A, 42 overall, ROW very tight		On-street parking on Franklin and Brown would be impacted	Significant	No
29	NEW BRITAIN	No	Yes	COLUMBUS BLVD & CT 9 SB ENTRANCE/EXIT RAMP	ELLIS ST	State/Other	3300	8600	26	0	1	6	4	15	1	11	45.00	1.00	0.93	42.05	1A, 11KABC, 26 overall. ROW tight on NE, SW corners. Oval? Good opportunity to prevent wrong-way movements onto Rte. 9. Steep down grade on Ellis towards intersection.	Signal	On ramp also provides access to residential street.	Insignificant	Yes
30	NEWINGTON	No	Yes	WILLARD AVE (CT 173)	ROBBINS AVE	State/Other	9200	13500	33	0	0	9	8	16	0	17	54.33	0.75	1.00	40.74	0 KA, 17 Injs, 33 overall. Watercourse adj to Willard, bridge on Robbins likely to be impacted (or add'l ROW on west side). Cost of bridge work needs to be considered.	Signal		Significant	Yes
31	HARTFORD	No	No	WASHINGTON ST	JEFFERSON ST	Local	9200	12100	51	0	0	13	9	29	0	22	75.33	0.75	0.71	40.15	0KA, 22 KABC, 51 overall. ROW needed is open space , gas station drive on SE corner, ROW is tight for 100' ICD, larger ICD possible?	Signal	gas station on SE corner - 2 drives on Washington, 1 on Jefferson,	Moderate	Yes
32	VERNON	No	Yes	HARTFORD TPKE (CT 30)	BOLTON RD/CENTER RD	State/Other	2500	11300	48	0	1	5	6	36	1	12	52.33	0.90	0.84	39.45	1A, 12 KABC, 36 overall. ROW tight on three corners but buildings set back. ROW and space on NW corner but major utility pole next to road. Viable with ROW takes.	Signal	church driveway at stop bar on west leg - remove or right turn out only.	Moderate	Yes
33	BERLIN	No	Yes	FRONTAGE RD (CT 572) , MILL ST (372)	WORTHINGON RIDGE (CT 372-SOUTH & 572- NORTH)	State/Other	3000	13700	26	0	2	4	6	14	2	12	51.33	0.75	1.00	38.50	2 KA, 12 KABC, 26 overall, Odd ROW on NE corner (confirmed on Berlin GIS), wetlands located to NE - not in immediate vicinity but could impact	Signal	13,700 AADT, adjacent signal 300 feet south, high speed WB approach due to grade	Moderate	Yes
34	WEST HARTFORD	No	No	NEW PARK AV	FLATBUSH AV	Local	9400	14600	70	0	0	10	12	48	0	22	76.67	0.50	0.99	37.99	70 Crashes, 0 KA, 22 KABC. Intersection has been reviewed for a roundabout previously, volumes were too high,, too much impact to newly developed parcel on NW corner. Unlikely to work as a single lane roundabout, not enough space to fit as a hybrid design.	Signal		Significant	No
35	HARTFORD	No	No	84-W-115	SIGOURNEY ST	State/Other	9500	11900	40	0	0	5	7	28	0	12	41.67	0.90	1.00	37.50	40 Crashes, 0 KA, 12 KABC. Intersection is on structure, likely would have to be widened for a roundabout. In the middle of a signalized system.	Signal			No
36	HARTFORD	No	No	Washington St	Park St	Local	8400	12100	64	0	3	3	9	49	3	15	75.33	0.75	0.64	36.06	3 KA's, 15 KABC, 64 overall. ROW impacts on all corners within sidewalk, plaza, or grass areas.	Signal	Washington has 2 lanes NB/SB, but AADT of 12.1K suggest a single lane might work	Moderate	Yes
37	WEST HARTFORD	Yes	No	PROSPECT AV	KANE ST	Local	6000	10500	33	0	0	6	5	22	0	11	39.33	0.90	1.00	35.40	0 KA, 11 KABC, 33 overall. Circle shifted NW for better fit. Potential spillback to I-84 ramps (signalized) to the west.	Signal	AADT of 10,500 suggests single lane RA will work, would require a road diet.	None	Yes
38	HARTFORD	No	No	84-E	BROAD ST	State/Other	8400	13100	64	0	0	3	9	52	0	12	46.33	0.75	1.00	34.75	64 crashes, 0 KA, 12 KABC. Bridge piers make it unlikely to be able to fit in a conventional roundabout.	Signal	piers and bridges on either side on Broad. Dedicated bike lanes on both sides of Broad Street.	None	No
39	COVENTRY	No	Yes	BOSTON TPKE (RTE 44)	MAIN ST (RTE 31)	State/Other	1400	10300	30	0	0	6	5	19	0	11	38.33	0.90	1.00	34.50	0 KA, 11 KABC, 30 overall, circle shifted to SE to avoid ROW impact, may have ROW impact to construct retaining wall on NE corner	Signal	10,300 AADT, adjacent intersection (stop control), no sidewalks	Insignificant	Yes

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
08-04-23

Rank	Municipality	Town Identified List	Town Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
40	NEW BRITAIN	No	Yes	EAST MAIN	MAIN ST	Local	6500	13100	37	0	0	4	13	20	0	17	47.33	0.75	0.96	34.23	0 KA, 17 KABC, 37 overall, Shifted circle SE to improve fit, avoid bank ROW impacts, Beehive Bridge to south, intersection recently upgraded as part of City project therefore roundabout not recommended	Signal	13,100 AADT, NB/ SB bike lane, median on east leg, road diet required on east leg only	None	No
41	MANSFIELD	Yes	Yes	MIDDLE TURNPIKE (US 44)	STORRS RD (CT 195)	State/Other	3900	10900	37	0	0	3	9	25	0	12	37.33	0.90	1.00	33.60	0 KA, 12 KABC, 37 overall, Multi-lane approaches only near int, 2-lane cross-section beyond commercial area, Assume no environmental impact due to gas stations because of large available ROW	Signal	10,900 AADT, Closely spaced intersection to the north, likely coordinated, Multiple curb cuts, Overlapping potential improvement location	None	Yes
42	WINDSOR	No	Yes	WINDSOR AVE(CT159)	ROOD AVE	State/Other	1800	10600	25	0	1	2	7	15	1	10	36.33	0.90	1.00	32.70	1 KA, 10 KABC, 25 overall, re-alignment of Rood Ave is likely necessary due to skew, potential for major utility pole impacts, large available ROW on SE triangular corner, circle shifted southeast to remove ROW impacts	Signal	10,600 AADT, road diet required on north and south legs, narrow raised median located north and south of intersection	Insignificant	No
43	HARTFORD	No	No	Asylume Ave	Broad St./Cogswell St	Local	8400	14300	95	0	0	10	10	75	0	20	81.67	0.50	0.80	32.47	0 KA, 20 KABC, 95 overall, Circle shifted to avoid parking lot impact, "Trident" intersection studied previously, would require multi-lane roundabout combining both intersections	Signal	14,300 AADT, Likely a cluster with Broad/ Farmington to the South, ROW impact only within grass/ sidewalk areas, Road diet required in NB/ SB directions, Moderate ped activity	Insignificant	No
44	HARTFORD	No	No	I91 NB Ramp	I91 SB Rmap	State/Other	400	5200	37	0	0	2	8	27	0	10	32.33	1.00	1.00	32.33	0 KA, 10 KABC, 37 overall, I-91 HOV off-ramp (steep grade)	Signal	diet required on Liebert, High traffic volumes during events	None	No
45	BLOOMFIELD	No	Yes	BLOOMFIELD AVE (RTE 189)	PARK AVE/MTN AVE (RTE178)	State/Other	8400	9900	27	0	0	5	4	18	0	9	32.33	1.00	1.00	32.33	0 KA, 9 KABC, 27 overall, shifted circle slightly NE to avoid ROW impact, Consider incorporating Wintonbury intersection to the north into potential roundabout design	Signal	only near intersection, long ped crossing distance on east leg, closely spaced intersection to the north at Wintonbury Ave - likely cluster	Insignificant	Yes
46	HARTFORD	No	No	84-W-191	OAK ST	State/Other	5600	10300	32	0	1	7	5	19	1	13	52.00	0.90	0.68	31.68	32 Crashes, 1 KA, 13 KABC. Good potential to prevent wrong-way crashes on I-84. Might need hybrid, but space available. State owns all adjacent parcels. Part of signalized corridor but intersection to the east is also a roundabout candidate. Near State LOB.	Signal		None	Yes
47	VERNON	No	Yes	TALCOTTVILLE RD(RTE183)	HARTFORD TPKE/KELLY RD (RTE30)	State/Other	3500	12700	49	0	0	4	7	38	0	11	41.33	0.75	1.00	31.00	0 KA, 11 KABC, 49 overall, skewed approach and multi-lane approaches	Signal	12,700 AADT, Road diet required, EB/ WB channelized right turn lanes, hybrid likely based on existing geometry	None	Yes
48	HARTFORD	Yes	No	MAPLE AV	FAIRFIELD AV NO 1	Local	8900	11000	18	0	1	4	3	10	1	8	34.00	0.90	1.00	30.60	1 KA, 8 KABC, 18 overall, CRCOG improvement location, City has looked at this before, ROW impacts could be more with side street re-alignment and incorporation of Cedar Hill Cemetery Driveway, Cemetery may be historic, location requires in depth review with the various complexities	Signal	west side of Maple Ave, adjacent signal located immediately south at Cedar Hill Cemetery, likely cluster, second signal located south at Ridge Rd, several converging driveways, narrow raised median on north, south, and east legs, road diet required but Maple Ave transitions to 2-lane	Insignificant	No
49	HARTFORD	No	No	STATE ST	MARKET ST	Local	4900	13400	53	0	1	3	2	47	1	6	40.67	0.75	1.00	30.50	1KA , 6 KABC, 53 overall, Located within NDDB area; potentially major underground utilities	Signal	downtown, road diet required on east & west approaches, double rights on east leg, median island on west leg, likely high ped	None	No
50	GLASTONBURY	No	Yes	GLASTONBURY BLVD/GRISWALD ST	MAIN ST	Local	5700	13400	63	0	1	3	5	54	1	9	49.00	0.75	0.82	30.09	1 KA, 9 KABC, 63 overall, hybrid may be needed to accommodate multi-lane approaches; signal installed in 2014 and part of Main Street signal system therefore roundabout not recommended	Signal	13,400 AADT, narrow raised island on west leg, coordinated signal directly to south, congested area	None	No
51	HARTFORD	No	No	FARMINGTON AV	SIGOURNEY ST	Local	11800	12600	68	0	1	6	12	49	1	19	72.33	0.75	0.54	29.38	1 KA, 19 KABC, 68 Overall, ROW impacts on NW corner - shifted circle to SE to minimize impact, still likely to lose parking,	Signal	12,600 AADT, Possibly part of coordinated signal system, Moderate ped activity, Road diet required	Moderate	No
52	VERNON	No	No	Hartford Tpke (Rte30)	Dobson Rd	State/Other	5200	9100	37	0	0	4	2	31	0	6	29.00	1.00	1.00	29.00	0 KA, 6 KABC, 37 overall, no ROW impacts	Signal	west approaches but does narrow to 2 lane cross section beyond commercial/ ramp area, located near 2 I-84 ramps	None	Yes
53	ENFIELD	No	Yes	ENFIELDST(US 5) & FRANKLIN ST (RTE514)	RTE 190 WB RAMP	State/State	3600	11800	17	0	1	3	4	9	1	8	32.00	0.90	1.00	28.80	1 KA, 8 KABC, 17 overall,	Signal	road diet study segment to the north, Route 191 off-ramp, one-way WB entering, Rte 190 off-ramp approach may need to be reconfigured	None	Yes
54	WEST HARTFORD	No	No	Prospect Ave & Caya Ave	I-84 EB Ramps	Local	2000	10500	28	0	0	3	7	18	0	10	31.00	0.90	1.00	27.90	28 crashes, 0 KA, 10 KABC. High crash numbers for a 10,500 ADT road. Roundabout would simplify the intersection, likely reduce congestion which should help reduce crashes.	Signal	merge into one. Caya one way EB, three lanes with double left onto Prospect NB. Prospect has 4 lanes. SB has prot+perm phasing but no left turn lane.	None	Yes
55	HARTFORD	No	No	FRANKLIN AV	SOUTH ST	Local	4000	8600	22	0	0	4	5	13	0	9	29.00	1.00	0.96	27.82	0 KA, 9 KABC, 22 overall, major ROW impacts to parking at businesses	Signal	8,600 AADT, bike lanes NB-SB, on-street parking on all approaches,	Significant	No
56	HARTFORD	Yes	No	PulaskiCir (CT 598) & Wells St	Hudson St	State/State	2300	13800	47	0	0	3	6	38	0	9	35.67	0.75	1.00	26.75	0 KA, 9 KABC, 47 overall, part of existing Pulaski Circle - need to study entire area for a more comprehensive change, Located within NDDB area,	Yield	13,800 AADT, Existing traffic circle, Road diet required on 2 approaches, I-91 off-ramp on east leg, heavy traffic during large events	Insignificant	Yes
57	HARTFORD	No	No	CHURCH ST	SPRUCE ST	Local	4400	6400	55	0	0	3	7	45	0	10	40.00	1.00	0.66	26.27	Crash data is incorrect due to inclusion of crashes on I-84 located directly over this intersection. The intersection does not appear to warrant a roundabout installation.	Signal		Insignificant	No
58	WEST HARTFORD	Yes	Yes	TROUT BROOK DR	ASYLUM AVE	Local	7000	16300	31	1	0	3	6	21	1	10	221.33	0.25	0.47	26.24	1K, 10 KABC, 31 overall. Watercourse on east side, close to Trout Brook Dr, culvert under east leg, may require retaining wall (or impact residential property on SW corner).		5 lanes on Trout Brook	Moderate	Yes
59	HARTFORD	No	No	SIGOURNEY ST	HAWTHORN ST	Local	11900	11900	23	0	1	2	4	16	1	7	30.67	0.90	0.95	26.24	23 crashes, 1 KA, 7 KABC. Approx. 250 feet from signal at I-84 WB off-ramp (loc. #35). Area recently reconstructed as part of busway project. Likely would need ROW from Aetna. Not recommended at this time due to recent reconstruction, could reconsider in the future.	Signal	Driveway to busway station	Insignificant	No
60	HARTFORD	No	No	Westbourne Pkwy	Blue Hills Ave (CT 187)	State/Other	4200	11300	30	0	0	5	2	23	0	7	30.00	0.90	0.96	25.80	0 KA, 7 KABC, 30 overall	Signal	west legs, on-street parking on all legs, school located on SE corner, high ped/ bus activity	Insignificant	Yes
61	ENFIELD	No	No	Shaker Rd (CT 220/CT 402)	Taylor Rd (CT 220)	State/Other	2600	11400	23	0	0	5	6	12	0	11	34.33	0.90	0.83	25.57	23 crashes, 0 KA, 11 KABC (incl. 5 type B). All land in area owned by State (Osborn Prison). Roundabout could eliminate need for second lanes and bypass leg?	All-Way Stop	and a right turn bypass (stop controlled). No sidewalks in area (no residential areas nearby).	None	Yes
62	NEW BRITAIN	No	No	Martin Luther King (CT 71)	Winter St.	State/Other	13200	13200	24	0	0	6	8	10	0	14	41.33	0.75	0.82	25.38	0 KA, 14 KABC, 24 overall, ROW impacts only to grass/ garden areas on NE/NW corners	Signal	approaches, skewed EB approach, east leg is pvt driveway, raised median on north/ south legs, adjacent signal located 400' south	Insignificant	Yes
63	HARTFORD	No	No	WETHERSFIELD AV	ELLIOTT ST	Local	12000	12000	21	0	1	4	3	13	1	8	35.00	0.90	0.80	25.34	1 KA, 8 KABC, 21 overall, circle shifted east to limit impact to school on NW corner, proximate to former high school and Trinity Health Stadium, RA possible if redevelopment of school site provided some land	Signal	12,000 AADT, bike lanes on north leg, on-street parking, high ped activity due to school?, one-way EB only	Moderate	Yes
64	FARMINGTON	No	Yes	SOUTH RD	TWO MILE RD	State/Other	3700	10000	30	0	0	3	3	24	0	6	25.00	1.00	1.00	25.00	30 Crashes, 0 KA, 6 KABC. Roundabout already proposed for this intersection.	All-Way Stop	High SB right turn to access I-84 on-ramp to the west of the intersection.	None	Yes
65	HARTFORD	No	No		SPRUCE ST	State/Other	4300	12200	39	0	1	3	7	28	1	11	44.33	0.75	0.74	24.70	39 crashes, 1 KA(A), 11 KABC. Good potential to prevent wrong-way crashes. Close to other signals on Capitol Ave, likely would impact operation of roundabout.	Signal	part of coordinated signal system?	Insignificant	No
66	HARTFORD	Yes	No	WHITE ST	HARVARD ST	Local	5700	10600	22	0	0	2	8	12	0	10	27.33	0.90	1.00	24.60	22 crashes, 0 KA, 10 KABC. Reviewed and recommended under CRCOG suggested locations list. Good opportunity to remove awkward intersection.	Signal		Insignificant	Yes
67	HARTFORD	No	No	PARK ST	PARK TER	Local	8400	13600	67	0	1	10	16	40	1	27	92.00	0.75	0.35	24.46	1 KA, 27 KABC, 67 overall, new housing not shown in aerial on SE corner, shifted circle to NW to avoid ROW impact on NE & SE corners	Signal	13,600 AADT, on-street parking on east leg, road diet required NB/ SB	Moderate	Yes
68	WEST HARTFORD	No	No	BOULEVARD	FOUR MILE RD	Local	6100	6100	22	0	1	4	8	9	1	13	43.67	1.00	0.56	24.29	1 KA, 13 KABC, 22 overall, This was recently reconfigured to be one-way NB and one-way SB by using curb extensions - aerial is not accurate, significant ROW impact on all 4 corners, safety should be re-evaluated again accounting for recent improvements, lower volume street	Side Street Stop	6,100 AADT, One-way entering only on NB and SB approaches, residential on-street parking on east and west legs	Moderate	No
69	SOUTHINGTON	No	Yes	WEST ST. (CT 229)	WEST QUEEN ST	State/Other	6200	21100	43	1	1	6	5	30	2	13	243.33	0.10	0.99	24.02	2 KA, 13 KABC, 43 overall, steep downgrade on WB approach and drop-off on NW corner, shifted circle east to limit ROW/ slope impact, Not recommended due to grade and volumes	Signal	21,100 AADT, road diet required in NB direction only,	Insignificant	No
70	HARTFORD	No	No	ASYLUM AV	WOODLAND ST	Local	12400	14300	49	0	1	6	9	33	1	16	61.00	0.50	0.78	23.88	1 KA, 16 KABC, 49 overall, ROW lines shown are conflicting - should be confirmed, minor ROW impacts should not preclude installation, likely major underground utilities	Signal	14,300 AADT, road diet required, hospital and school located nearby - high ped/ bus activity,	Moderate	Yes
71	SOUTHINGTON	No	Yes	WATERBURY TPKE (CT 322)	I-691 WB RAMPS	State/Other	1100	12100	23	0	0	5	4	14	0	9	31.00	0.75	1.00	23.25	0 KA, 9 KABC, 23 overall, located within NDDB area, realignment of I-691 ramp approaches required	Signal	road diet study segment to the north, Route 191 off-ramp, one-way WB entering, Rte 190 off-ramp approach may need to be reconfigured, 12,100 AADT, road diet required is minor - only on SB approach	None	Yes

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
08-04-23

Rank	Municipality	Town Identified List	Town Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
72	BLOOMFIELD	No	Yes	MOUNTAIN AVE. (CT 178)	MAPLE AVE. #1 & BROWN ST	State/Other	3800	10400	21	0	1	1	6	13	1	8	30.00	0.90	0.86	23.20	1 KA, 8 KABC, 21 overall, recent intersection improvements, potential wetlands at NE corner, minor ROW impacts to NE, SW corners, no ROW shown on NW corner - assume minor impact based Town GIS	Signal	10,400 AADT, bus stop located to north of intersection, limited ped access - discontinuous sidewalks to east and north,	Insignificant	Yes
73	NEW BRITAIN	No	No	WHITING ST	WEBSTER ST	Local	2400	4100	11	0	1	3	2	5	1	6	26.67	1.00	0.87	23.17	Webster Street is a cul-de-sac, location appears on list due to crashes at adjacent intersection of Whiting and Glen Streets, which is not a viable location due to ROW impacts. Review is of Whiting and Glen - 16 crashes, 1 KA, 6 KABC.	Side Street Stop		Significant	No
74	HARTFORD	No	No	CHAPEL ST SOUTH	ANN UCCELLO ST NO 1	Local	3000	7000	47	0	0	2	4	41	0	6	29.00	1.00	0.80	23.14	0 KA, 6 KABC, 47 overall, not viable due to adjacent I-84 overpass, recessed I-84, elevated adjacent ramps with retaining walls, ROW impacts to SW parking lot	Signal	7,000 AADT, road diet on all approaches may not be viable	Significant	No
75	HARTFORD	No	No	Fairfield Ave. #1	Zion St. #2	Local	8900	12900	36	0	0	3	8	25	0	11	35.33	0.75	0.87	23.11	0 KA, 11 KABC, 36 overall, minor ROW impacts to City of Hartford property only on 3/4 corners	Signal	coordinated, road diet required on EB and WB approaches - 2-lane EB cross section beyond adjacent signal to the east, bike lanes to north, park located to the SE	Insignificant	Yes
76	VERNON	No	No	Union St (CT83)/Union St (CT 74)	West St (CT 74)/West St (CT 83)	State/Other	7200	10100	55	0	0	4	3	48	0	7	36.67	0.90	0.70	23.04	55 crashes, 0 KA, 7 KABC. Would need property from either church and/or Walgreens, probably less impact with church.	Signal		Moderate	Yes
77	HARTFORD	Yes	No	Capitol Ave. & Washington St	Trinity St.	Local	6300	12100	23	0	1	1	6	15	1	8	30.67	0.75	1.00	23.00	23 Crashes, 0 KA, 8 KABC. Capitol Ave is 5 lanes, Trinity approaches on a curve. Would need oval or larger roundabout but space is available.	Signal	Awkward geometry, elongated intersection.	None	Yes
78	MANCHESTER	No	Yes	MIDDLE TPK WEST/MIDDLE TPK EAST #1	MAIN ST. (CT 83)	State/Other	9000	13300	44	0	1	5	8	30	1	14	54.33	0.75	0.56	22.98	44 crashes, 1 KA (A), 14 KABC. ROW very tight, construction would impact parking lots and outdoor eating area. Gas station on NE corner.	Signal	Poor E-W alignment, WB thru requires jog, left turn lanes not aligned. Very tight radii on corners.	Significant	No
79	NEW BRITAIN	No	No	Chestnut St & Elm St (CT 71)	Harry Truman OP	State/Other	4500	12700	24	0	0	4	5	15	0	9	29.67	0.75	1.00	22.25	24 crashes, 0 KA, 9 KABC. multiple lanes on all approaches, raised medians on N-S approaches. Potential roundabout corridor on Chestnut Street.	Signal	Free flow RT bypass lane on WB approach.	None	Yes
80	MANSFIELD	Yes	No	STORRS RD	NORTH FRONTAGE RD	State/Other	5000	10900	19	0	0	4	3	12	0	7	24.67	0.90	1.00	22.20	Reviewed and recommended under Town suggested list. 19 Crashes, 0 KA, 7 KABC. Adjacent intersection at South Frontage Road also recommended.	Signal			
81	SOUTHINGTON	No	No	Waterbury Tpke (CT 322) & Ruggles Row	I -84 EB Ramps	State/Other	3600	14700	31	0	0	7	6	18	0	13	43.67	0.50	1.00	21.83	31 crashes, 0 KA, 13 KABC. Good potential to prevent wrong-way crashes, pair with other half of interchange (location #79). May need hybrid but space is available. 4 lanes on Rte 322.	Signal		None	Yes
82	ENFIELD	No	Yes	KING ST	I-91 NB EXIT AND ENTRANCE RAMPS	State/Other	2200	12900	17	0	0	4	6	7	0	10	29.00	0.75	1.00	21.75	17 crashes, 0 KA, 10 KABC. Over half of crashes involved injuries. Shift circle to avoid/minimize impact to gas station. Good potential to prevent wrong-way crashes on I-91 (side by side on/off ramps).	Signal	adjacent signal 330 feet south	Insignificant	Yes
83	HARTFORD	No	No	Albany Ave (US 44)	Check this one	State/Other	11200	11200	18	0	0	5	2	11	0	7	26.00	0.90	0.93	21.69	18 crashes, 0 KA, 7 KABC. ROW very tight, recently completed Albany Ave reconstruction project.	Signal		Significant	No
84	NEW BRITAIN	No	No	Main St. #1	Chestnut St & Arch St	Local	1100	6600	15	0	0	3	4	8	0	7	21.67	1.00	1.00	21.67	15 crashes, 0 KA, 7 KABC. Roundabout would cut into sidewalks/bump-outs but should fit. Some on-street parking on Main would likely have to be eliminated. Potential roundabout corridor on Chestnut Street.	Signal	High pedestrian volumes, buke lanes on Main	None	Yes
85	WILLINGTON	No	Yes	RIVER ROAD (CT 32)	TOLLAND TPKE (CT 74)	State/Other	2300	5200	15	0	0	4	2	9	0	6	21.67	1.00	1.00	21.67	15 Crashes, 0 KA, 6 KABC. Steep (over 6%) downhill grade on Rte 74 WB could be problematic with a roundabout, especially in winter. Signal has improved safety versus unsignalized condition. Current crash history not significant enough to risk installation. If grade reduction were included, perhaps a roundabout could be considered.	Signal	Downhill approach on Rte 74 has a flashing "stop ahead" sign.	None	No
86	EAST HARTFORD	No	Yes	MAIN ST. NO. 1	BROAD ST./MAPLE ST	Local	2400	13300	30	0	0	4	5	21	0	9	31.67	0.75	0.91	21.60	30 crashes, 0 KA, 9 KABC (4B). Possible to combine two sidewalks on west side of Main Street to minimize ROW impact? If hybrid needed, ROW impact likely. Plaza driveway at intersection likely have to be closed.	Signal	2 sidewalks on west side of Main Street, both on public ROW. Plaza on NE corner with driveway at WB stop bar.	Insignificant	Yes
87	HARTFORD	No	No	VINE ST	GREENFIELD ST	Local	3900	5600	36	0	0	11	6	19	0	17	58.67	1.00	0.37	21.59	36 crashes, 0 KA, 17 KABC. Very high crash numbers for an all-way stop intersection, half of crashes involve injuries. Roundabout would require significant ROW from 4 residential properties but no building takes and significant lawn areas remain. Despite significant ROW impacts, crash history is compelling enough to warrant installation. Could also consider mini or compact roundabout.	All-Way Stop		Significant	Yes
88	WEST HARTFORD	No	Yes	BOULEVARD	RAYMOND RD	Local	5300	6100	32	0	0	4	10	18	0	14	40.67	1.00	0.52	21.31	0KA, 14 KABC, 21 Overall. SE quadrant owned by State.	Signal	wide median on Boulevard	Insignificant	Yes
89	SOUTHINGTON	No	No	Atwater St	I-84 EB Ramp & Marion Ave.	State/Other	3600	12400	24	0	0	4	4	16	0	8	28.00	0.75	1.00	21.00	24 crashes, 0 KA, 8 KABC. Need to consider impact of signals to the east and west on operation of roundabout. Those signals do not appear to be good candidates for roundabouts based solely on safety, but might be beneficial from an operations viewpoint.	Signal	I-84 WB ramps signal 400' to the west, West St signal 500' to the east.	None	Yes
90	HARTFORD	No	No	TRUMBULL ST	CHAPEL ST NORTH	Local	2600	7100	25	0	0	4	2	19	0	6	25.00	1.00	0.84	20.90	25 crashes, 0 KA, 6 KABC. Multiple lanes needed due to adjacent signals for queueing reasons. Signal is part of coordinated system, would eliminate progression if converted to roundabout.	Signal	4 lane approach on Chapel (one-way WB), 3 lanes on Trumbull.	Insignificant	No
91	SOUTHINGTON	No	No	Meriden Waterbury Tpke & I-84 WB exit	entrance ramps:	State/Other	2700	12700	18	0	0	5	3	10	0	8	27.67	0.75	1.00	20.75	18 crashes, 0 KA, 8 KABC. Pair with other half of interchange (location #69). Good potential for preventing wrong-way crashes on I-84 ramps.	Signal		None	Yes
92	CANTON	No	Yes	RIVER RD (CT 179)	US 202	State/Other	6800	11600	24	0	0	1	7	16	0	8	23.00	0.90	1.00	20.70	24 crashes, 0 KA, 8 KABC. Plenty of space available in case hybrid design is needed.	Signal		None	Yes
93	BERLIN	No	Yes	MIDDLETOWN RD/BERLIN ST.	MILL ST. (CT 372)	State/Other	2900	13000	22	0	0	2	9	11	0	11	29.00	0.75	0.95	20.64	23 crashes, 0 KA, 11 KABC. ROW needed is town owned. Potential two roundabout project with Mill and Beckley (loc. #4)	Signal		None	Yes
94	NEW BRITAIN	No	No	Slater Rd/Alexander Dr. & Fienemann Rd	Farmington Ave.	Local	3400	12800	28	0	1	3	4	20	1	8	35.67	0.75	0.76	20.32	28 crashes, 1 KA(A), 8 KABC. ROW needed on NW and SW corners is open. Gas station on NE corner, Apts on SE corners but driveways shouldn't be an issue.	Signal		Insignificant	Yes
95	NEW BRITAIN	No	No	Chesnut S	CT Rte 9 SB exit ramp	State/Other	2800	4500	9	0	0	4	2	3	0	6	19.67	1.00	1.00	19.67	9 crashes, 0 KA, 6 KABC. Not many crashes but 2/3 of crashes result in injuries (4 type B). Intersection is on structure, could be expensive to reconfigure to a conventional roundabout - compact or mini might be appropriate. Volumes (4500, 2800 ADTs) suggest mini would work, although current intersection has two lane approaches on all three legs. Potential roundabout corridor on Chestnut. Potential to prevent wrong-way crashes on Route 9.	Signal		None	Yes
96	EAST HARTFORD	No	Yes	SILVER LANE (CT 502)	FORBES ST	State/Other	6700	10800	28	0	0	4	4	20	0	8	29.33	0.90	0.74	19.57	28 crashes, 0KA, 8 KABC. School on SE corner - high pedestrian activity. Space available on North side, but NE corner is designated as park. NW is Walgreens with parking far from intersection. Town pursuing development to the west (former cinemas), would affect volumes.	Signal	School on SE corner = high pedestrian activity.	Insignificant	Yes
97	HARTFORD	No	No	PROSPECT AV	WARRENTON AV	Local	7100	7100	32	0	0	4	7	21	0	11	35.67	1.00	0.55	19.54	32 crashes, 0 KA, 11KABC. High crash numbers for an all-way stop. ROW impact would be significant for conventional roundabout. Volumes suggest mini roundabout could work with reduced impacts.	All-Way Stop		Significant	No
98	WINDSOR	No	Yes	KENNEDY RD	ARCHER RD/I-91 NB EXIT RAMP	State/Other	4700	10300	15	0	0	3	4	8	0	7	21.67	0.90	1.00	19.50	15 crashes, 0 KA, 7 KABC. Half of crashes resulted in injuries. Potential to prevent wrong-way crashes. ROW tight on SE corner, west side drops off to I-91, might need retaining wall.	Signal	Off-ramp with two road opposite ramp.	None	Yes

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
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Rank	Municipality	Town Identified List	Town Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
99	HARTFORD	No	No	MARKET ST	PLEASANT ST	Local	6800	12800	33	0	0	5	3	25	0	8	32.67	0.75	0.79	19.39	33 crashes, 0 KA, 8 KABC. ROW tight on all 4 corners but some acquisition appears possible with little impact. Road diet needed on 3 of 4 legs. Fourth legs is access to parking lot for Yard Goats games - might need manual control after games. High pedestrian activity.	Signal		Moderate	Yes
100	NEW BRITAIN	No	No	STANLEY ST NO 1	EAST MAIN ST	State/Other	4800	12800	25	0	0	3	6	16	0	9	28.33	0.75	0.89	18.87	25 Crashes, 0 KA, 9 KABC. Would need ROW on SE corner owned by State (Military Dept.).	Signal		Moderate	Yes
101	SOUTHINGTON	No	No	Columbus Ave/Berlin Ave & N.Main St (CT 10)	Main St.	Local	4200	12500	36	0	0	3	5	28	0	8	30.33	0.75	0.82	18.68	36 crashes, 0 KA, 8 KABC. Awkward 5 legged intersection could be improved with roundabout. Town Green area on north side would be impacted but roundabout could become a gateway feature.	Signal	5-legged signal, 5th leg is one-way into intersection. Long NB left protected plus permissive movement.	Moderate	Yes
102	HARTFORD	No	No	FARMINGTON AV	LAUREL ST	Local	12600	12600	32	0	1	6	5	20	1	12	48.67	0.75	0.50	18.36	ROW tight on all 4 corners, parking on NW and SW corners would be impacted, possibly even with a mini.	Signal		Significant	No
103	HARTFORD	Yes	No	MAPLE AV	FREEMAN ST NO 2	Local	4000	11000	16	0	0	2	5	9	0	7	20.33	0.90	1.00	18.30					
104	HARTFORD	No	No	WHITE ST	FAIRFIELD AV NO 1	Local	5700	8900	22	0	0	2	11	9	0	13	32.33	1.00	0.57	18.29	22 crashes, 0 KA, 13 KABC, over half of crashes involved injuries, although 11 of the 13 injuries are type C. ROW impact to 4 residential properties. Mini roundabout could be a good option.	Signal		Moderate	No
105	SOUTHINGTON	No	No	MERIDEN WATERBURY	OLD TURNPIKE RD	State/Other	4200	10400	23	0	0	2	4	17	0	6	21.00	0.90	0.96	18.11					
106	HARTFORD	No	No	FRANKLIN AV	BARKER ST	Local	8600	8600	26	0	0	0	6	20	0	6	18.67	1.00	0.95	17.66	26 crashes, 0 KA, 6 KABC. ROW is tight but may be possible to avoid significant impact. Mini or compact may be better option, volumes suggest either might be viable.	Signal		Moderate	No
107	HARTFORD	No	No	New Park Ave & Grace St	Hamilon St.	Local	8800	8800	24	0	0	4	7	13	0	11	33.00	1.00	0.53	17.52	24 crashes, 0 KA, 11 KABC. ROW tight on east side, owned by church on west side and slopes up from road.	Signal	on street parking on New Park.	Significant	No
108	NEW BRITAIN	No	No	CORBIN AV	OSGOOD AV NO 1	Local	5200	7900	21	0	1	3	5	12	1	9	35.00	1.00	0.50	17.46	21 crashes, 1 KA(A), 9 KABC. ROW too tight for conventional roundabout, unless building on NE corner (vacant?) is taken and land from church on SE corner. Mini roundabout could be an option.	Signal		Significant	No
109	SOUTHINGTON	No	No	WEST ST	PROSPECT ST	Local	1400	6300	15	0	1	5	4	5	1	10	38.00	1.00	0.46	17.29	15 crashes, 1 KA, 10 KABC. 2/3 of crashes involve injuries, including 1 Type A. ROW too tight for conventional roundabout, mini roundabout may be a good option.	Side Street Stop	reason (installed 2017 +/- due to complaints from property owners about crashes?). Flashing yellow light overhead (single lens	Significant	No
110	FARMINGTON	No	Yes	84-W-100	FARM SPRINGS RD	State/Other	2100	12400	18	0	0	4	2	12	0	6	22.67	0.75	1.00	17.00	18 Crashes, 0 KA, 6 KABC. Geometric score is incorrect which affects ranking. Ranked # 555 after KABC filter. Good potential to prevent wrong-way movements onto I-84. No existing sidewalks.	Signal		None	Yes
111	ENFIELD	No	No		KING ST	State/Other	2300	13500	18	0	0	4	2	12	0	6	22.67	0.75	1.00	17.00					
112	SOMERS	No	Yes	MAIN ST	GULF RD	State/Other	1500	7900	27	0	0	6	3	18	0	9	34.00	1.00	0.50	16.95	27 Crashes, 0 KA, 9 KABC. Ranked # 140 before KABC filter, #104 after filter. Very high crash numbers. Significant grade and topography issues, limited sightline from north leg. Flashing beacon (single lens on all legs). Likely high speeds on Rte 190, may need larger diameter roundabout but space is available. No existing sidewalks.	Side Street Stop		Insignificant	Yes
113	VERNON	No	No	TALCOTTVILLE RD	REGAN RD	State/Other	4700	14300	54	0	0	2	8	44	0	10	38.00	0.50	0.89	16.89					
114	HARTFORD	No	No	MAIN ST NO 2	CENTRAL ROW	Local	5700	15900	55	0	1	9	8	37	1	18	71.33	0.25	0.94	16.78					
115	NEWINGTON	No	No	MAIN ST	MARKET SQ	State/Other	2100	11800	18	0	0	2	4	12	0	6	19.33	0.90	0.96	16.75					
116	NEWINGTON	No	Yes	PANE RD	CHURCH ST	Local	6000	13100	21	0	0	4	2	15	0	6	23.67	0.75	0.94	16.67	21 Crashes, 0 KA, 6 KABC. Ranked #145 before filter, #107 after filter. Cemetery, steep slope on NW corner. Vertical crest curve on Pane, could become visibility concern. Likely need minor take(s), but reasonable, possible retaining wall(s). Might be costly, but crash history supports it.	Signal		Insignificant	Yes
117	HARTFORD	No	No	ZION ST NO 1	CATHERINE ST NO 1	Local	10400	10400	21	0	0	3	6	12	0	9	27.00	0.90	0.69	16.66					
118	VERNON	No	No	TALCOTTVILLE RD	MERLINE RD	State/Other	14300	14300	22	1	2	4	1	14	3	8	232.67	0.50	0.14	16.52					
119	HARTFORD	No	No	WOODLAND ST	WOODLAND ST	Local	12400	13100	48	0	0	6	6	36	0	12	46.00	0.75	0.48	16.45					
120	HARTFORD	No	No	WEBSTER ST	BARNARD ST	Local	5700	12100	42	0	0	5	9	28	0	14	45.67	0.75	0.48	16.36					
121	SOUTHINGTON	No	No	691-E-16	MERIDEN WATERBURY TPK	State/Other	1700	9700	14	0	0	1	5	8	0	6	16.33	1.00	1.00	16.33					
122	PLAINVILLE	No	No	72-N	NORTH WASHINGTON ST	State/Other	6200	13100	20	0	0	2	5	13	0	7	21.67	0.75	1.00	16.25					
123	PLAINVILLE	No	Yes	WOODFORD AVE	LEDGE RD	State/Other	0	11400	14	0	0	2	4	8	0	6	18.00	0.90	1.00	16.20	14 Crashes, 0 KA, 6 KABC - Note: some of these crashes appear to have actually occurred on I-84 (above the intersection), need to confirm. I-84 structure abutments require circle to be shifted south onto residential property. Grade on Ledge Rd would be problematic.	Side Street Stop	I-84 overpass just west of intersection	Significant	No
124	VERNON	No	No	REGAN RD	RIDGEWOOD DR	State/Other	2300	6900	19	0	0	2	4	13	0	6	19.67	1.00	0.81	15.93					
125	EAST WINDSOR	No	Yes	BRIDGE ST	MAIN ST	State/Other	2900	13100	17	0	0	5	1	11	0	6	24.00	0.75	0.87	15.73	17 Crashes, 0 KA, 6 KABC. Ranked #248 before KABC, #158 after filter. Has been reviewed for roundabout previously. Fish restaurant very close on NW corner, park on SW corner, would have to acquire property on SE and possibly NE corners. Consider compact roundabout.	Signal		Moderate	Yes
126	HARTFORD	No	No	MAPLE AV	BOND ST	Local	8800	11000	17	0	0	1	5	11	0	6	17.33	0.90	1.00	15.60					
127	ENFIELD	No	No		FREW TER	State/Other	3000	11200	7	0	0	3	3	1	0	6	17.33	0.90	1.00	15.60					
128	HARTFORD	No	No	MAIN ST	CHAPEL ST SOUTH	State/Other	7000	15900	70	0	0	7	10	53	0	17	63.33	0.25	0.97	15.34					
129	NEW BRITAIN	No	No	MARTIN LUTHER KING DR	NORTH ST	State/Other	4800	13200	40	0	0	7	9	24	0	16	51.67	0.75	0.40	15.33					
130	MANCHESTER	No	Yes	MIDDLE TPK EAST NO 1	SUMMIT ST	Local	4500	9000	19	0	2	2	3	12	2	7	37.33	1.00	0.41	15.33	19 Crashes, 2 KA, 7 KABC. Ranked #170 before KABC filter, #119 after filter. Near schools, high pedestrian volumes. Conventional roundabout would result in substantial residential impacts. Possible mini roundabout site (approx. 75' ICD within existing pavement).	Signal		Significant	Yes
131	SIMSBURY	No	Yes	BUSHY HILL RD	STRATTON BROOK RD	State/Other	4300	11900	16	0	0	1	5	10	0	6	17.00	0.90	1.00	15.30	16 Crashes, 0 KA, 6 KABC. Ranked #171 before KABC, #120 after filter. No existing sidewalks.	Signal		None	Yes
132	HARTFORD	No	No	84-E	HIGH ST NO 1	State/Other	1200	3900	92	0	1	11	11	69	1	23	95.33	1.00	0.16	15.17					
133	WINDSOR	No	No	91-S-209	PARK AVE	State/Other	3800	13700	20	0	0	2	4	14	0	6	20.00	0.75	1.00	15.00					
134	SUFFIELD	No	Yes	EAST ST NORTH	THOMPSONVILLE RD	State/Other	4700	10000	25	0	0	5	4	16	0	9	31.67	1.00	0.46	14.72	25 Crashes, 0 KA, 9 KABC, ranked #101 after KABC filter. Short concrete retaining wall on west edge of road might be impacted by widening for splitter island, but ROW available to replace it. Possible mini or compact roundabout site due to ROW.	Signal		Insignificant	Yes
135	MANCHESTER	No	No	84-W-302	MIDDLE TPKE WEST	State/Other	3500	14200	13	0	0	5	5	3	0	10	29.33	0.50	1.00	14.67					
136	HARTFORD	Yes	No	MAPLE AV	KING ST	Local	3000	11000	15	0	0	2	4	9	0	6	18.33	0.90	0.88	14.49					
137	HARTFORD	Yes	No	MAPLE AV	DOUGLAS ST	Local	5700	11000	13	0	0	0	7	6	0	7	16.00	0.90	1.00	14.40					
138	HARTFORD	No	No	BOCE BARLOW WAY	WESTON ST	Local	15700	17000	57	0	0	6	11	40	0	17	57.33	0.25	1.00	14.33					
139	HARTFORD	No	No	FRANKLIN AV	STANDISH ST NO 1	Local	8600	8600	11	0	0	1	5	5	0	6	15.33	1.00	0.91	13.88					
140	MANCHESTER	No	No	PINE ST	PINE ST	Local	4700	14500	35	0	0	4	9	22	0	13	40.00	0.50	0.69	13.70					
141	WEST	No	No	FERN ST	WALBRIDGE RD	Local	7800	7800	18	0	0	4	6	8	0	10	29.33	1.00	0.47	13.69					
142	HARTFORD	No	No	MAPLE AV	WEST PRESTON ST	Local	3200	11000	25	0	1	5	3	16	1	9	39.67	0.90	0.38	13.68					
143	HARTFORD	No	No	MAIN ST NO 1	CAPEN ST	Local	4400	13500	17	0	1	3	5	8	1	9	33.67	0.75	0.54	13.57					
144	MANCHESTER	No	No	WEST CENTER ST	MCKEE ST	State/Other	3900	8900	20	0	0	4	6	10	0	10	30.00	1.00	0.45	13.48					
145	HARTFORD	No	No	ZION ST NO 1	HAMILTON ST	Local	7000	10400	18	0	0	3	3	12	0	6	21.00	0.90	0.71	13.42					
146	BERLIN	No	No	9-N-50	MILL ST	State/Other	2900	14300	35	0	0	2	5	28	0	7	26.67	0.50	1.00	13.33					
147	AVON	No	Yes	WEST AVON RD	COUNTRY CLUB RD	State/Other	5700	12400	14	0	0	2	4	8	0	6	18.00	0.75	0.98	13.26	14 Crashes, 0 KA, 6 KABC. Ranked #135 after KABC filter. Almost half of crashes resulted in injuries, suggests high speeds. Additional ROW would be needed to construct 120' roundabout but land appears to be available.	Signal		Moderate	Yes
148	MANCHESTER	No	No	OAKLAND ST	OLD NORTH MAIN ST	Local	4500	10500	27	0	0	4	3	20	0	7	27.33	0.90	0.53	13.16					
149	WINDSOR	No	No		WINDSOR AVE	State/Other	2400	15400	41	0	0	6	11	24	0	17	52.00	0.25	1.00	13.00					
150	NEW BRITAIN	No	No	NEWINGTON AVE	CHILDS ST	State/Other	6700	13000	20	0	0	7	2	11	0	9	33.33	0.75	0.52	12.99					
151	MANCHESTER	No	No	MIDDLE TPK WEST	BROAD ST	Local	4300	13300	29	0	0	3	3	23	0	6	24.67	0.75	0.70	12.98					
152	NEWINGTON	No	No	WILLARD AVE	LOUIS ST	State/Other	11400	11400	20	0	1	4	2	13	1	7	33.00	0.90	0.44	12.94					
153	HARTFORD	No	No	MORGAN ST	MARKET ST	State/Other	6100	12800	137	0	0	10	9	118	0	19	94.00	0.75	0.18	12.77					
154	SOUTHINGTON	No	No	MERIDEN WATERBURY	MARION AV	State/Other	3100	11800	28	0	0	3	7	18	0	10	31.00	0.90	0.45	12.45					
155	NEW BRITAIN	No	No	STANLEY ST	ALLEN ST	State/Other	6800	9700	23	0	0	4	7	12	0	11	32.67	1.00	0.38	12.41					
156	SOUTH WINDSOR	No	Yes	JOHN FITCH BLVD	SULLIVAN AV	State/Other	1300	16700	39	0	1	3	10	25	1	14	49.33	0.25	1.00	12.33	39 Crashes, 1 KA, 14 KABC. Volumes likely too high for single lane roundabout, hybrid or multi-lane likely needed. Part of signal system on Route 5.	Signal		None	No
157	HARTFORD	No	No	CORNWALL ST	MANCHESTER ST	Local	2400	2400	13	0	1	1	5	6	1	7	25.67	1.00	0.48	12.31					
158	HARTFORD	No	No	GRANBY ST	WESTBOURNE PKWY	Local	4900	7000	13	0	0	5	3	5	0	8	26.00	1.00	0.47	12.23	13 crashes, 0 KA, 8 KABC. Over half of crashes involve injuries. Can shift circle to avoid residential properties, take all needed property from Performing Arts Center (might need retaining wall).	Side Street Stop	wide medians on Westbourne Parkway.	Insignificant	Yes

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
08-04-23

Rank	Municipality	Town Identified List	Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
159	VERNON	No	No	HARTFORD TPKE	SOUTH GROVE ST NO 1	State/Other	1400	7300	38	0	0	5	5	28	0	10	37.67	1.00	0.32	12.11					
160	NEWINGTON	No	No	EAST ROBBINS AVE	MAIN ST	State/Other	8700	15800	27	0	1	7	3	16	1	11	47.00	0.25	1.00	11.75					
161	HARTFORD	No	No	BUCKINGHAM ST	HUDSON ST	Local	6800	7500	20	0	1	4	4	11	1	9	36.33	1.00	0.32	11.68					
162	MANCHESTER	Yes	No	ADAMS ST	ST JOHN ST	State/Other	2200	12100	22	0	0	1	7	14	0	8	22.33	0.75	0.70	11.67					
163	HARTFORD	No	No	TOWER AV	COVENTRY ST	Local	5700	11700	22	0	1	2	3	16	1	6	28.67	0.90	0.45	11.63					
164	NEW BRITAIN	No	No	HIGH ST	HIGH ST	Local	6400	6500	16	0	0	4	4	8	0	8	25.33	1.00	0.45	11.30					
165	HARTFORD	No	No	MAIN ST NO 1	FLORENCE ST	Local	13500	13500	13	0	1	1	5	6	1	7	25.67	0.75	0.58	11.25					
166	SOUTHINGTON	No	No	MERIDEN WATERBURY	CANAL ST	State/Other	1800	11700	16	0	0	2	5	9	0	7	20.33	0.90	0.61	11.24					
167	ELLINGTON	No	Yes	WEST RD	LOWER BUTCHER RD	State/Other	3100	8700	17	0	0	2	7	8	0	9	24.00	1.00	0.47	11.17	17 Crashes, 0 KA, 9 KABC. Ranked #255 before KABC filter, #156 after filter. Over half of crashes resulted in injuries. Property required from gas station on SE corner, Agway on NW corner, but reasonable acquisitions in light of crash history.	Signal		Moderate	Yes
168	HARTFORD	No	No	GARDEN ST NO 1	WESTLAND ST	Local	5700	6000	16	0	1	2	3	10	1	6	26.67	1.00	0.41	11.00					
169	HARTFORD	Yes	No	WINDSOR ST	WINDSOR ST	Local	6600	15700	29	0	1	3	9	16	1	13	44.33	0.25	0.98	10.85					
170	WINDSOR	No	No	PARK AVE	MATIANUCK AV	State/Other	3700	13700	21	0	0	3	3	15	0	6	22.00	0.75	0.66	10.83					
171	VERNON	No	No	HARTFORD TPKE	WELLES RD	State/Other	8400	8500	16	0	1	2	4	9	1	7	28.33	1.00	0.38	10.81					
172	HARTFORD	No	No	FLATBUSH AV	BROADVIEW TER	Local	9500	9500	22	0	0	6	5	11	0	11	35.67	1.00	0.30	10.65					
173	HARTFORD	No	No	TOWER AV	TOWER AV	State/Other	11300	12600	26	0	0	4	4	18	0	8	28.67	0.75	0.50	10.65					
174	WINDSOR	No	No	BROAD ST	CAPEN ST	State/Other	9700	11900	7	0	0	5	1	1	0	6	20.67	0.90	0.54	10.14					
175	HARTFORD	No	No	WETHERSFIELD AV	BROWN ST	State/Other	5700	18700	91	0	1	14	16	60	1	31	113.33	0.10	0.89	10.07					
176	HARTFORD	No	No	VINE ST	EDGEWOOD ST NO 2	Local	5600	5600	21	0	0	3	5	13	0	8	25.33	1.00	0.40	10.03					
177	HARTFORD	No	No	BLUE HILLS AVE	HOLCOMB ST	State/Other	3100	11300	20	0	0	5	4	11	0	9	30.00	0.90	0.37	9.92					
178	VERNON	No	No	HARTFORD TPKE	WEST ST	State/Other	5400	11300	42	0	0	1	7	34	0	8	29.00	0.90	0.38	9.85					
179	HARTFORD	Yes	No	NEW BRITAIN AVE	STONE ST	State/Other	6700	16900	38	0	0	4	8	26	0	12	39.33	0.25	1.00	9.83					
180	NEWINGTON	Yes	No	WILLARD AVE	GARFIELD ST	State/Other	3400	12800	10	0	0	3	4	3	0	7	20.00	0.75	0.65	9.68					
181	HARTFORD	No	No	FARMINGTON AV	WHITNEY ST	Local	5900	12600	31	0	0	6	0	25	0	8	30.33	0.75	0.41	9.39					
182	HARTFORD	No	No	BROWN ST	CAMPFIELD AV	Local	3000	5700	13	0	1	4	3	5	1	8	32.33	1.00	0.29	9.34					
183	EAST	No	No	CONNECTICUT BLVD	SOUTH PROSPECT ST	State/Other	8200	11500	12	0	1	1	4	6	1	6	23.67	0.90	0.43	9.23					
184	HARTFORD	No	No	ALBANY AVE	IRVING ST NO 2	State/Other	16000	16000	36	0	0	4	7	25	0	11	37.00	0.25	1.00	9.21					
185	HARTFORD	No	No	ALBANY AVE	WESTBOURNE PKWY	State/Other	4900	16400	35	0	0	4	7	24	0	11	36.67	0.25	1.00	9.17					
186	HARTFORD	No	No	WESTON ST	WEST SERVICE RD NO 2	Local	1800	17000	23	0	2	2	5	14	2	9	42.00	0.25	0.85	8.95					
187	HARTFORD	No	No	ALBANY AVE	SIGOURNEY ST	State/Other	11800	16000	32	0	0	7	7	18	0	14	45.67	0.25	0.78	8.93					
188	WEST	No	No	SOUTH MAIN ST	SOUTH MAIN ST NO 1	State/Other	9300	19500	74	0	0	11	18	45	0	29	91.33	0.10	0.98	8.93					
189	HARTFORD	No	No	ASYLUM AV	SIGOURNEY ST	Local	11800	14300	69	0	0	4	9	56	0	13	51.33	0.50	0.35	8.88					
190	EAST	No	No	SILVER LA	ROBERTS ST	State/Other	12800	16200	37	0	1	1	6	29	1	8	35.33	0.25	1.00	8.83					
191	HARTFORD	No	No	ALBANY AVE	BEDFORD ST NO 1	State/Other	13400	13400	14	0	0	4	2	8	0	6	21.33	0.75	0.53	8.41					
192	HARTFORD	No	No	MAIN ST NO 2	PARK ST	Local	7300	15900	33	0	2	6	4	21	2	12	57.00	0.25	0.59	8.39					
193	WEST	No	No	SOUTH MAIN ST NO 2	SEDGWICK RD	Local	7700	16500	30	0	0	4	9	17	0	13	38.33	0.25	0.86	8.27					
194	HARTFORD	No	No	WETHERSFIELD AV	PRESTON ST	Local	5400	12000	19	0	1	3	2	13	1	6	29.33	0.90	0.31	8.26					
195	HARTFORD	No	No	EDWARDS ST	EDWARDS ST	Local	3000	9900	25	0	1	8	1	15	1	10	46.33	1.00	0.17	8.08					
196	BLOOMFIELD	No	No	WINTONBURY AVE	EAST WINTONBURY AVE	State/Other	9700	15600	33	0	1	3	7	22	1	11	42.33	0.25	0.75	7.91					
197	EAST	No	No	BURNSIDE AVE	ELM ST	State/Other	3800	12600	17	0	1	3	5	8	1	9	33.67	0.75	0.31	7.85					
198	HARTFORD	No	No	FLATBUSH AV	BROOKFIELD ST	Local	6700	16600	34	0	0	3	7	24	0	10	33.00	0.25	0.95	7.84					
199	HARTFORD	No	No	ASYLUM AV	SCARBOROUGH ST	Local	5900	14300	24	0	1	2	5	16	1	8	32.67	0.50	0.48	7.82					
200	VERNON	No	No	WINDSOR AVE	BERGER RD	State/Other	9800	9800	14	0	0	1	8	5	0	9	21.33	1.00	0.37	7.80					
201	HARTFORD	No	No	WETHERSFIELD AV	BOND ST	Local	12000	12000	12	0	0	4	2	6	0	6	20.67	0.90	0.42	7.73					
202	HARTFORD	No	No	BROAD ST	JEFFERSON ST	Local	8400	9200	27	0	0	5	2	20	0	7	29.00	1.00	0.27	7.69					
203	HARTFORD	No	No	ALBANY AVE	LENOX ST	State/Other	16000	16000	26	0	0	7	5	14	0	12	40.33	0.25	0.76	7.66					
204	MANSFIELD	Yes	No	MIDDLE TPKE	STAFFORD RD	State/Other	4300	6100	18	0	0	2	4	12	0	6	19.33	1.00	0.39	7.57					
205	HARTFORD	No	No	WETHERSFIELD AV	SHULTAS PL	Local	3100	12000	14	0	0	4	3	7	0	7	23.00	0.90	0.35	7.30					
206	HARTFORD	No	No	MAIN ST NO 2	ATHENEUM SQ NORTH	Local	4800	15900	24	0	1	4	4	15	1	9	37.67	0.25	0.78	7.30					
207	WINDSOR	No	No	POQUONOCK AVE	DAY HILL RD	State/Other	16500	16500	42	0	0	2	5	35	0	7	29.00	0.25	1.00	7.25					
208	NEW BRITAIN	No	No	CORBIN AVE	BLACK ROCK AV	State/Other	3300	16400	26	0	0	5	6	15	0	11	35.33	0.25	0.81	7.17					
209	WEST	No	No	NEW BRITAIN AVE	RIDGEWOOD RD	State/Other	12700	22800	73	0	0	4	20	49	0	24	71.00	0.10	1.00	7.10					
210	EAST	No	No	SCHOOL ST	GOODWIN ST	Local	2000	12300	18	0	1	3	3	11	1	7	30.67	0.75	0.31	7.07					
211	ROCKY HILL	No	No	91-S-47	WEST ST	State/Other	4700	19300	52	0	2	5	10	35	2	17	70.00	0.10	1.00	7.00					
212	WINDSOR	No	No		PUTNAM MEMORIAL HWY	State/Other	4700	16200	49	0	0	1	5	43	0	6	28.00	0.25	1.00	7.00					
213	HARTFORD	No	No	MAIN ST	TRUMBULL ST	State/Other	7100	18000	58	0	0	10	10	38	0	20	69.33	0.10	1.00	6.93					
214	HARTFORD	Yes	No	MAIN ST NO 1	WINDSOR ST	Local	6600	17000	23	0	0	2	8	13	0	10	27.67	0.25	1.00	6.92					
215	MANCHESTER	No	No	WOODBRIDGE ST	OAKLAND ST	Local	4500	10500	29	0	0	4	4	21	0	8	29.67	0.90	0.26	6.87					
216	BERLIN	No	No		BERLIN TPKE	State/Other	1600	24200	49	0	0	10	10	29	0	20	66.33	0.10	1.00	6.63					
217	PLAINVILLE	No	No	72-N-28	DAY ST	State/Other	12600	20500	62	0	0	8	12	42	0	20	67.33	0.10	0.98	6.59					
218	HARTFORD	No	No	ALBANY AVE	BURTON ST	State/Other	5600	16000	35	0	0	1	8	26	0	9	28.33	0.25	0.92	6.50					
219	NEW BRITAIN	No	No	9-N-73	HARTFORD RD	State/Other	4800	22900	58	0	0	5	17	36	0	22	64.33	0.10	1.00	6.43					
220	NEW BRITAIN	No	No	HARRY S TRUMAN OP	MARTIN LUTHER KING DR	State/Other	13100	18100	45	0	0	9	12	24	0	21	65.00	0.10	0.98	6.39					
221	HARTFORD	No	No	ALBANY AVE	CABOT ST	State/Other	16000	16000	24	0	0	5	4	15	0	9	31.33	0.25	0.81	6.35					
222	HARTFORD	No	No	MAIN ST NO 1	NELSON ST NO 1	Local	13500	13500	41	0	2	7	9	23	2	18	71.33	0.75	0.12	6.35					
223	WINDSOR	No	No	91-N-160	BLOOMFIELD AVE	State/Other	3600	15800	30	0	0	1	7	22	0	8	25.00	0.25	1.00	6.25					
224	PLAINVILLE	No	Yes	UNIONVILLE AVE	NORTHWEST DR	State/Other	4400	16300	36	0	1	3	3	29	1	7	36.67	0.25	0.68	6.24	36 Crashes, 1 KA, 7 KABC. Ranked # 478 before KABC, # 210 after filter. High crash and injury numbers. Geometry score is low due to ROW impacts but in actuality roundabout almost fits within existing pavement (parcel data suggests existing intersection is on private property). Resulting ranking should be higher. If hybrid design is required, additional ROW may be required but appears to be available with negligible impacts to commercial properties and church.	Signal		Insignificant	Yes
225	HARTFORD	No	No	CAPITOL AV	SOUTH WHITNEY ST	Local	7200	10300	19	0	0	4	2	13	0	6	23.00	0.90	0.30	6.21					
226	SOUTH WINDSOR	No	Yes	OAKLAND RD	SLATER ST	State/Other	50	13600	21	0	0	2	4	15	0	6	20.33	0.75	0.40	6.13	21 Crashes, 0 KA, 6 KABC. Ranked #485 before KABC filter, #212 after filter. Significant downgrade on Slater approaching intersection and on Foster leaving intersection. Grades would require retaining walls on SW and NE corners (probably NW corner also) resulting in significant impacts in addition to area of properties needed. Possible total take of property on NE corner required. Grade on Foster and Slater would have to be adjusted to meet roundabout. Compact or mini roundabout would have similar (although reduced) impacts. No existing sidewalks. In spite of significant crash history, ROW impacts are deemed too severe for roundabout installation. If property on NE corner becomes available, consider purchase to facilitate roundabout installation.	Signal		Significant	No
227	HARTFORD	No	No	WETHERSFIELD AV	STANDISH ST NO 2	Local	12000	12000	22	0	0	4	4	14	0	8	27.33	0.90	0.24	6.00					
228	WEST	No	No	NEW BRITAIN AVE	BERKSHIRE RD	State/Other	15300	15300	24	0	0	3	4	17	0	7	24.67	0.25	0.94	5.79					
229	HARTFORD	No	No	FARMINGTON AV	NORTH BEACON ST	Local	12600	12600	13	0	0	3	3	7	0	6	19.33	0.75	0.39	5.69					
230	HARTFORD	No	No	ALBANY AVE	MAGNOLIA ST NO 2	State/Other	16000	16000	25	0	0	2	5	18	0	7	23.33	0.25	0.97	5.65					
231	NEW BRITAIN	No	No	SOUTH MAIN ST	ELLIS ST	State/Other	8600	10300	26	0	0	5	5	16	0	10	33.67	0.90	0.18	5.46					
232	HARTFORD	No	No	BARBOUR ST	KENSINGTON ST	Local	3500	5200	25	0	0	4	5	16	0	9	30.00	1.00	0.18	5.45					
233	HARTFORD	No	No	91-N-186	MARKET ST	State/Other	1800	12800	51	0	0	3	8	40	0	11	40.33	0.75	0.18	5.41					
234	HARTFORD	No	No	BROAD ST	WHITE ST	Local	5700	8400	17	0	0	2	4	11	0	6	19.00	1.00	0.28	5.39					
235	BLOOMFIELD	No	No	BLUE HILLS AVE	WALSH ST	State/Other	16200	16200	39	0	1	5	5	28	1	11	47.67	0.25	0.45	5.31					
236	BERLIN	No	No	BERLIN TPKE	DEMING RD	State/Other	9100	24200	53	0	0	5	11	37	0	16	52.67	0.10	1.00	5.27					
237	ROCKY HILL	No	No	SILAS DEANE HWY	TOWN LINE RD	State/Other	12000	23900	48	0	0	7	8	33	0	15	52.67	0.10	1.00	5.27					
238	EAST	No	No	ROBERTS ST	SIMMONS RD	Local	2900	17400	32	0	1	3	13	15	1	17	52.00	0.10	1.00	5.20					
239	HARTFORD	No	No	MAIN ST NO 2	ASYLUM ST	Local	12200	15900	30	0	0	3	5	22	0	8	28.33	0.25	0.73	5.15					
240	PLAINVILLE	No	Yes	NORTH WASHINGTON ST	WEST MAIN ST	State/Other	6900	11100	29	0	0	6	4	19	0	10	36.33	0.90	0.16	5.11	29 Crashes, 0 KA, 10 KABC. Ranked #564 before KABC, #226 after filter. 6 of 10 injuries are Type B. ROW impacts required on all 4 corners. Properties are commercial within a residential area. Impacts would be significant but warranted by crash data. High West to North and reverse movements. NB through movement requires shift to right to avoid SB left turn lane. Consider compact design to minimize ROW impacts.	Signal		Significant	Yes

CRCOG Roundabout Screening Study
Top 300 Ranked Intersection Locations
08-04-23

Rank	Municipality	Town Identified List	Town Top 3	Cross Street 1	Cross Street 2	Ownership	Min AADT	Max AADT	Total Crashes	Total K Crashes	Total A Crashes	Total B Crashes	Total C Crashes	Total O Crashes	Total KA Crashes	Total KABC Crashes	Weighted Crash Score	AADT Factor	Geometric Factor	CVR Score	VHB Review Comments	Intersection Control Type	VHB Operational Issues	ROW Issues	Recommended
241	EAST	No	No	MAIN ST	PARK AV	State/Other	6000	19700	50	0	1	7	8	34	1	16	63.00	0.10	0.80	5.06					
242	WINDSOR	No	No	MAIN ST	CHURCH ST	State/Other	13000	16300	19	0	0	2	5	12	0	7	21.33	0.25	0.95	5.06					
243	HARTFORD	No	No	JEFFERSON ST	SEYMOUR ST	Local	9200	9200	26	0	0	1	6	19	0	7	22.00	1.00	0.23	5.02					
244	EAST	No	No	MAIN ST	GARVAN ST	State/Other	3900	16900	20	0	0	2	7	11	0	9	25.00	0.25	0.80	4.99					
245	HARTFORD	No	No	COLUMBUS BLVD	CHARTER OAK AV	Local	9800	22300	34	0	0	7	10	17	0	17	51.33	0.10	0.96	4.93					
246	WINDSOR	No	No		MATIANUCK AV	State/Other	1500	22500	45	0	0	5	10	30	0	15	48.33	0.10	1.00	4.83					
247	WINDSOR	No	No	BLUE HILLS AVE EXT	BLUE HILLS AVE EXT	State/Other	11900	19300	30	0	0	9	5	16	0	14	48.33	0.10	1.00	4.83					
248	ROCKY HILL	No	No	WEST ST	CROMWELL AVE	State/Other	19900	22900	58	0	0	7	5	46	0	12	51.00	0.10	0.95	4.83					
249	SOUTH	No	No	SULLIVAN AVE	HILLSIDE DR	State/Other	12200	12200	15	0	2	2	2	9	2	6	34.33	0.75	0.19	4.80					
250	HARTFORD	Yes	No	NEW BRITAIN AV	HARVARD ST	Local	5700	10600	21	0	0	3	7	11	0	10	28.67	0.90	0.19	4.77					
251	WEST	No	No	FARMINGTON AV	TROUT BROOK DR	Local	10200	19900	44	0	0	7	8	29	0	15	51.33	0.10	0.92	4.71					
252	FARMINGTON	No	Yes	SCOTT SWAMP RD	PLAINVILLE AVE	State/Other	16700	22100	51	0	0	6	6	39	0	12	47.00	0.10	1.00	4.70	51 Crashes, 0 KA, 12 KABC. Volumes too high for single lane roundabout, multi-lane likely needed.	Signal		Insignificant	No
253	HARTFORD	No	No	WETHERSFIELD AV	BLISS ST	Local	12000	12000	11	0	0	3	3	5	0	6	18.67	0.90	0.28	4.63					
254	NEWINGTON	No	No	FENN RD	HOLLY DR	State/Other	13200	24800	45	0	1	6	5	33	1	12	53.00	0.10	0.87	4.59					
255	HARTFORD	Yes	No	WYLLYS ST	CONGRESS ST	Local	9200	18100	61	0	0	9	2	50	0	11	53.67	0.10	0.85	4.55					
256	WEST	No	No	ALBANY AVE	KING PHILIP DR	State/Other	8600	22800	36	0	0	4	12	20	0	16	45.33	0.10	1.00	4.52					
257	HARTFORD	No	No	CAPITOL AV	NEWTON ST	Local	10300	10300	16	0	0	3	5	8	0	8	23.67	0.90	0.21	4.51					
258	WEST	No	No	PARK RD	SOUTH HIGHLAND ST	Local	8300	8300	14	0	0	4	3	7	0	7	23.00	1.00	0.20	4.49					
259	HARTFORD	No	No	ASYLUM AV	PROSPECT AV	Local	7000	14300	15	0	0	2	4	9	0	6	18.33	0.50	0.49	4.47					
260	MANCHESTER	Yes	No	MAIN ST RT 83	EAST CENTER ST	State/Other	12400	17200	34	0	2	3	2	27	2	7	44.00	0.10	1.00	4.40					
261	BERLIN	No	No	BERLIN TPKE	MIDDLETOWN RD	State/Other	2300	24200	35	0	0	5	9	21	0	14	43.33	0.10	1.00	4.33					
262	NEW BRITAIN	No	No	9-S-813	EAST MAIN ST	State/Other	3700	16600	11	0	0	2	4	5	0	6	17.00	0.25	1.00	4.25					
263	MANCHESTER	No	No	384-W-11	CEMETERY RD	State/Other	2800	20400	42	0	0	7	4	31	0	11	44.00	0.10	0.96	4.24					
264	MANCHESTER	Yes	No	SOUTH MAIN ST	HARTFORD RD	State/Other	7200	20900	28	0	1	3	8	16	1	12	42.33	0.10	1.00	4.23					
265	EAST	No	No	MAIN ST	EAST RIVER DR EXT	State/Other	7700	21000	45	0	1	4	6	34	1	11	48.00	0.10	0.88	4.21					
266	WINDSOR	No	No		PUTNAM MEMORIAL HWY	State/Other	4300	22500	40	0	0	4	9	27	0	13	41.67	0.10	1.00	4.17					
267	WETHERSFIELD	No	No	SILAS DEANE HWY	WELLS RD	State/Other	3500	20600	44	0	0	4	8	32	0	12	41.33	0.10	1.00	4.13					
268	MANCHESTER	No	No	84-E-303	MIDDLE TPKE WEST	State/Other	2700	17600	44	0	0	3	10	31	0	13	41.33	0.10	1.00	4.13					
269	NEWINGTON	No	No	WILLARD AVE	STODDARD AV	State/Other	6900	15400	12	0	0	4	2	6	0	6	20.67	0.25	0.80	4.12					
270	WEST	No	No	ALBANY AVE	NORTH STEELE RD	State/Other	1000	16100	23	0	0	4	5	14	0	9	29.33	0.25	0.55	4.05					
271	HARTFORD	Yes	No	WELLS ST	WELLS ST	Local	2300	17800	56	0	0	3	7	46	0	10	40.33	0.10	1.00	4.03					
272	WETHERSFIELD	No	No	SILAS DEANE HWY	MAPLE ST	State/Other	12500	21700	70	0	0	3	4	63	0	7	40.00	0.10	1.00	4.00					
273	NEWINGTON	No	No	EAST CEDAR ST	RUSSELL RD	State/Other	300	20800	45	0	0	4	7	34	0	11	40.00	0.10	1.00	4.00					
274	EAST	No	No	MAIN ST	CONNECTICUT BLVD	State/Other	8200	20600	34	0	1	3	8	22	1	12	44.33	0.10	0.89	3.95					
275	HARTFORD	Yes	No		PULASKI CIR	State/Other	2300	17800	48	0	0	4	6	38	0	10	39.33	0.10	1.00	3.93					
276	EAST WINDSOR	No	Yes	91-S-103	PROSPECT HILL RD	State/Other	10500	20800	57	0	0	4	4	49	0	8	39.00	0.10	1.00	3.90	57 Crashes, 0 KA, 8 KABC. Ranked #711 before filter, #262 after filter. Hybrid or multi-lane roundabout required but space is available. Good potential to prevent wrong-way movements onto I-91. Not recommended as part of this study as volumes too high for single lane roundabout, but good candidate for hybrid/multi-lane roundabout.	Signal		None	No
277	HARTFORD	No	No	WINDSOR ST	PLEASANT ST	Local	6600	6800	14	0	0	1	5	8	0	6	16.33	1.00	0.24	3.84					
278	HARTFORD	No	No	ALBANY AVE	WILLIAMS ST	State/Other	13300	13400	20	0	0	5	3	12	0	8	28.33	0.75	0.18	3.83					
279	HARTFORD	No	No	HAMILTON ST	FRANCIS AV	Local	8800	8800	28	0	2	5	9	12	2	16	60.33	1.00	0.06	3.82					
280	MANCHESTER	No	No	MCKEE ST	HARTFORD RD	Local	3900	18100	44	0	1	4	5	34	1	10	46.00	0.10	0.83	3.81					
281	WEST	No	No	TROUT BROOK DR	BOULEVARD	Local	6100	22600	37	0	0	6	9	22	0	15	47.33	0.10	0.80	3.81					
282	HARTFORD	No	No	MAIN ST NO 3	WYLLYS ST	Local	7300	18100	61	0	0	7	13	41	0	20	65.33	0.10	0.58	3.79					
283	WEST	No	No	ALBANY AVE	NORTH MAIN ST	State/Other	17200	22800	53	0	0	1	10	42	0	11	37.67	0.10	1.00	3.77					
284	HARTFORD	Yes	No	MAIN ST NO 1	HIGH ST NO 1	State/Other	3900	18000	42	0	0	5	5	32	0	10	39.00	0.10	0.96	3.73					
285	SOUTH	No	No	ELLINGTON RD	JOHN FITCH BLVD	State/Other	2500	23600	32	0	0	6	4	22	0	10	37.33	0.10	1.00	3.73					
286	ROCKY HILL	No	No	91-N-46A	WEST ST	State/Other	3300	19300	31	0	0	5	6	20	0	11	37.00	0.10	1.00	3.70					
287	NEW BRITAIN	No	No		CORBIN AVE	State/Other	6100	20300	28	0	0	6	4	18	0	10	36.00	0.10	1.00	3.60					
288	NEWINGTON	No	No	EAST CEDAR ST	MAIN ST	State/Other	11800	25000	58	0	0	3	4	51	0	7	36.00	0.10	1.00	3.60					
289	NEW BRITAIN	No	No		CORBIN AVE	State/Other	6400	18900	27	0	0	7	2	18	0	9	35.67	0.10	1.00	3.57					
290	BERLIN	No	No	BERLIN TPKE	MIDDLETOWN RD	State/Other	2300	24200	36	0	0	3	8	25	0	11	35.33	0.10	1.00	3.53					
291	HARTFORD	No	No	MAIN ST	PLEASANT ST	State/Other	6800	18000	46	0	0	3	6	37	0	9	35.33	0.10	1.00	3.53					
292	SOUTH	No	No	OAKLAND RD	BUCKLAND RD	State/Other	9900	23500	34	0	0	4	7	23	0	11	36.33	0.10	0.96	3.48					
293	FARMINGTON	No	No	PLAINVILLE AVE	WEST DISTRICT RD	State/Other	3000	17000	22	0	0	5	2	15	0	7	27.33	0.25	0.51	3.47					
294	BERLIN	No	No	BERLIN TPKE	NEW PARK DR	State/Other	24100	24100	20	0	1	2	7	10	1	10	34.67	0.10	1.00	3.47					
295	NEW BRITAIN	No	No	CORBIN AV	CLINTON ST NO 1	Local	7900	9800	17	0	0	2	4	11	0	6	19.00	1.00	0.18	3.45					
296	WETHERSFIELD	No	No	SILAS DEANE HWY	EXECUTIVE SQ	State/Other	23900	23900	28	0	1	3	3	21	1	7	34.00	0.10	1.00	3.40					
297	SOUTH	No	No	JOHN FITCH BLVD	GOVERNOR'S HWY	State/Other	5200	20200	22	0	0	7	2	13	0	9	34.00	0.10	1.00	3.40					
298	HARTFORD	No	No	HILLSIDE AV	FLATBUSH AV	Local	7100	9500	27	0	1	5	6	15	1	12	45.33	1.00	0.07	3.39					
299	HARTFORD	No	No	WETHERSFIELD AV	SOUTH ST	Local	4000	12000	28	0	0	2	5	21	0	7	24.33	0.90	0.15	3.37					
300	SOUTHINGTON	No	No	84-W-95	QUEEN ST	State/Other	7600	24500	56	0	0	2	5	49	0	7	33.67	0.10	1.00	3.37					

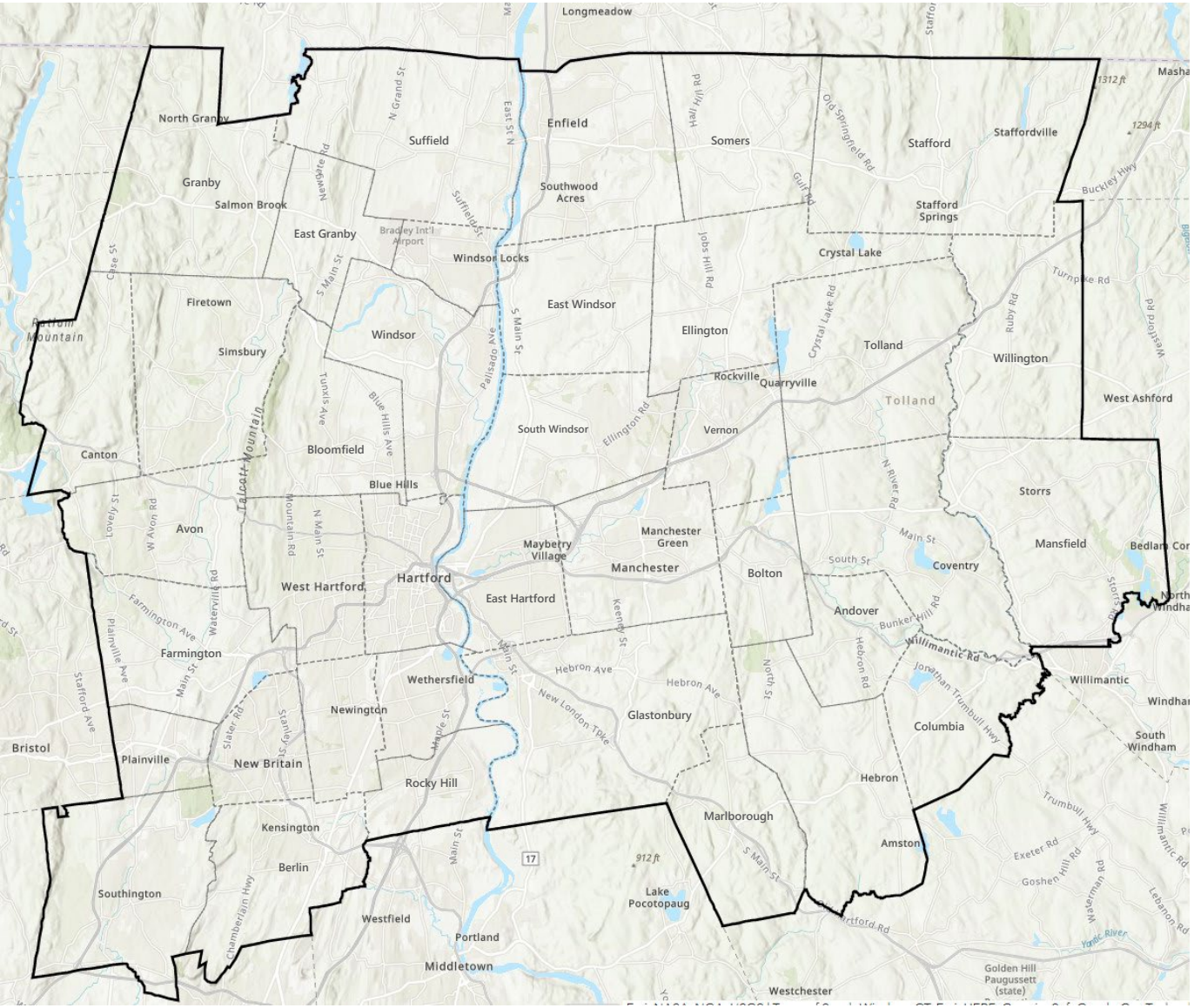
Benefit Calculation

CRCOG Roundabout Conversion Benefit Calculations

Intersection ID	Street 1	Street 2	Route Name	Town	CVR Rank	Intersection Control	Turn Lane	comments	Top 100 Check	Recommended	Traffic Volumes		SPF equation code	Predicted Crash Frequencies Per Year			
											AADTmajor	AADTminor		KABC	KAB	KA	PDO
14129	NEW BRITAIN AV	SUMMIT ST/FAIRFIELD AV NO 2		HARTFORD	3	Signal			14129	yes	10600	700	UML4LSG	0.447201	0.180213	0.015211	1.175625
15519	MAIN ST NO 1	MAHL AVE/PAVILLION ST		HARTFORD	1	Signal	yes		15519	yes	13500	2200	UML4LSG	0.905008	0.324616	0.027399	2.519688
11420	MILL ST (CT 372)	SAVAGE HILL RD/BECKLEY RD	372-E	BERLIN	4	Signal			11420	yes	10300	10300	U2L4LSG	1.321291	0.428711	0.036055	1.42E-05
14882	WASHINGTON ST	VERNON ST NO 2		HARTFORD	6	Signal			14882	yes	12100	2700	UML4LSG	0.951126	0.34187	0.028855	2.598889
14592	HOMESTEAD AV/WALNUT ST	GARDEN ST NO 1		HARTFORD	9	Signal			14592	yes	13100	6700	UML4LSG	1.573199	0.52433	0.044256	4.403852
721	MERIDEN WATERBURY TPKE	CLARK ST (CT 509)	322-E	SOUTHINGTON	13	Signal			721	yes	11700	2900	UML4LSG	0.969987	0.348664	0.029429	2.635432
29780	HARTFORD TPKE (CT 30)	RESERVOIR RD/GROVE ST (CT 31)	30-N	VERNON	21	Signal	yes		29780	yes	11200	5600	UML4LSG	1.327501	0.458686	0.038715	3.6006
15630	MAIN ST NO 2	CHARTER OAK AVE/BUCKINGHAM ST		HARTFORD	17	Signal	yes		15630	yes	15900	7500	UML4LSG	1.835818	0.589661	0.04977	5.337679
13726	CAPITOL AV	LAUREL ST		HARTFORD	23	Signal		no min AADT in GIS; assum	13726	yes	10300	7600	U2L4LSG	1.173571	0.390156	0.032812	1.23E-05
7265	COLUMBUS BLVD	CHESTNUT ST		NEW BRITAIN	26	Signal	yes		7265	yes	8100	4500	UML4LSG	1.009789	0.371937	0.031393	2.569696
14574	CAPITOL AV	BROAD ST		HARTFORD	27	Signal	yes		14574	yes	10300	8400	UML4LSG	1.565492	0.53243	0.044939	4.196039
11159	WILLARD AVE (CT 173)	ROBBINS AV	173-N	NEWINGTON	30	Signal	yes		11159	yes	13500	9200	UML4LSG	1.877364	0.609214	0.05142	5.302206
28532	HARTFORD TPKE (CT 30)	BOLTON RD/CENTER RD	30-N	VERNON	32	Signal	yes		28532	yes	11300	2500	U2L4LSG	0.795252	0.286046	0.024057	6.87E-06
10598	TROUT BROOK DR	ASYLUM AVE		WEST HARTFORD	58	Signal	yes		10598	yes	16300	7000	UML4LSG	1.794501	0.577026	0.048703	5.238622
14931	WASHINGTON ST	JEFFERSON ST		HARTFORD	31	Signal	yes		14931	yes	12100	9200	UML4LSG	1.777356	0.586311	0.049487	4.916411
10454	BOULEVARD	RAYMOND RD		WEST HARTFORD	88	Signal			10454	yes	6100	5300	UML4LSG	0.952567	0.361937	0.030549	2.300688
7370	COLUMBUS BLVD/CT 9 SB ENTRANCE/EXIT RAMP	ELLIS ST		NEW BRITAIN	29	Signal	yes		7370	yes	8600	3300	U2L4LSG	0.777338	0.281799	0.0237	9.42E-06
14960	WASHINGTON ST	PARK ST		HARTFORD	36	Signal			14960	yes	12100	8400	UML4LSG	1.696778	0.563306	0.047545	4.689254
12418	PROSPECT AV	KANE ST		WEST HARTFORD	37	Signal	yes		12418	yes	10500	6000	UML4LSG	1.331379	0.462263	0.039017	3.56957
33135	MIDDLE TPKE (US 44)	STORRS RD (CT 195)	44-E	MANSFIELD	41	Signal	yes		33135	yes	10900	3900	R4LSG	0.653472	0.259252	0.00149	2.216019
6897	EAST MAIN ST	MAIN ST		NEW BRITAIN	40	Signal			6897	no	13100	6500	UML4LSG	1.549071	0.517385	0.043669	4.334997
10542	BLOOMFIELD AVE (CT 189)	PARK AVE/MOUNTAIN AVE (CT 178)	178-E	BLOOMFIELD	45	Signal	yes		10542	yes	9900	8400	UML4LSG	1.534793	0.5251	0.044321	4.082913
27309	TALCOTTVILLE RD (CT 183)	HARTFORD TURNPIKE/KELLY RD (CT 30)	83-N	VERNON	47	Signal	yes		27309	yes	12700	3500	UML4LSG	1.112312	0.38977	0.032898	3.075364
13969	PARK ST	PARK TER		HARTFORD	67	Signal	yes		13969	yes	13600	8400	UML4LSG	1.798878	0.586824	0.04953	5.083042
31031	BOSTON TPKE (US 44)	MAIN ST (CT 31)	44-E	COVENTRY	39	Signal	yes		31031	yes	10300	1400	R4LSG	0.560128	0.200559	0.001153	1.372409
27708	HARTFORD TPKE (CT 30)	DOBSON RD	30-N	VERNON	52	Signal	yes		27708	yes	9100	5200	UML4LSG	1.152212	0.41285	0.034846	3.002043
22013	ENFIELD ST (US 5)/FRANKLIN ST (CT 514)	CT 190 WB RAMP	5-N	ENFIELD	53	Signal	yes		22013	yes	11800	3600	U2L4LSG	0.936034	0.325451	0.027371	7.91E-06
15539	PULASKI CIR(CT 598)/WELLS ST	HUDSON ST		HARTFORD	56	Yield		already a roundabout, no s	15539	yes	13800	2300					
15816	WETHERSFIELD AV	ELLIOTT ST		HARTFORD	63	Signal	yes		15816	yes	12000	12000	U2L4LSG	1.5091	0.475641	0.040002	1.38E-05
13589	WESTBOURNE PKWY	BLUE HILLS AVE (CT 187)		HARTFORD	60	Signal	yes		13589	yes	11300	4200	U2L4LSG	0.973588	0.335956	0.028254	8.76E-06
7250	MARTIN LUTHER KING DR (CT 71)	WINTER ST	71-S	NEW BRITAIN	62	Signal	yes	same min/max AADT	7250	yes	13200	13200	UML3LSG	1.159919	0.396688	0.044593	2.960101
10064	FRONTAGE RD (CT 572)/MILL ST (CT 372)	WORTHINGTON RIDGE (CT 372-SOUTH/572-NORTH)	372-E	BERLIN	33	Signal	yes		10064	yes	13700	3000	UML4LSG	1.067928	0.374001	0.031567	2.990865
13416	ASYLUM AV	WOODLAND ST		HARTFORD	70	Signal	yes		13416	yes	14300	12400	UML4LSG	2.249899	0.708859	0.059831	6.44344
3491	WATERBURY TURNPIKE (CT 322)	I-691 WB RAMPS		SOUTHINGTON	71	Signal	yes	Interstate ramp	3491	yes	12100	1100	UML3LSG	0.532288	0.223823	0.02516	1.206549
9497	MOUNTAIN AVE (CT 178)	MAPLE AV/BROWN ST	178-E	BLOOMFIELD	72	Signal	yes		9497	yes	10400	3800	U2L4LSG	0.89975	0.315843	0.026563	8.84E-06
14032	FAIRFIELD AV NO 1	ZION ST NO 1		HARTFORD	75	Signal			14032	yes	12900	8900	UML4LSG	1.804403	0.590915	0.049876	5.050639
28587	UNION ST (CT 83/CT 74)	WEST ST (CT 74/CT 83)	83-N	VERNON	76	Signal	yes		28587	yes	10100	7200	U2L4LSG	1.138319	0.380897	0.032034	1.22E-05
15015	CAPITOL AV	WASHINGTON ST/TRINITY ST		HARTFORD	77	Signal		Awkward geometry	15015	yes	12100	6300	U2L4LSG	1.178447	0.390717	0.03286	1.01E-05
7058	CHESTNUT ST/ ELM ST (CT 71)	HARRY TRUMAN OP	71-N	NEW BRITAIN	79	Signal	yes		7058	yes	12700	4500	UML4LSG	1.264416	0.435343	0.036745	3.504707
477	WATERBURY TURNPIKE (CT 322)/RUGGLES ROW	I-84 EB RAMPS		SOUTHINGTON	81	Signal	yes		477	yes	14700	3600	UML4LSG	1.214012	0.415356	0.035058	3.452096
6885	MAIN ST NO 1	CHESTNUT ST/ARCH ST		NEW BRITAIN	84	Signal	yes		6885	yes	6600	1100	U2L4LSG	0.44602	0.18176	0.015286	6.73E-06
14419	VINE ST	GREENFIELD ST		HARTFORD	87	Stop			14419	yes	5600	3900	U2L4LSN	0.486056	0.223809	0.010953	0.304746
12406	PROSPECT AV/CAYA AV	I-84 EB RAMPS		WEST HARTFORD	54	Signal	Yes	Interstate ramp	12406	yes	10500	2000	UML3LSG	0.575668	0.233723	0.026273	1.295402
5981	SLATER RD/ALEXANDER DR/ FIENEMANN RD	FARMINGTON AVE		NEW BRITAIN	94	Signal	yes		5981	yes	12800	3400	U2L4LSG	0.951848	0.329505	0.027712	7.29E-06
853	ATWATER ST	I-84 EB/MARION AVE		SOUTHINGTON	89	Signal	yes	Interstate ramp	853	yes	12400	3600	U2L3LSG	0.527402	0.174827	0.016919	1.904291
338	MERIDEN WATERBURY TPKE (CT 322)/I-84 WB EXIT	I-84 ENTRANCE RAMP		SOUTHINGTON	91	Signal	yes		338	yes	12700	2700	UML3LSG	0.71338	0.277964	0.031246	1.69411
131	US 202	RIVER RD (CT 179)	202-N	CANTON	92	Signal	yes		131	yes	11600	6800	UML4LSG	1.491621	0.505767	0.042689	4.080724
11362	MILL ST (CT 372)	MIDDLETOWN RD/BERLIN ST	372-E	BERLIN	93	Signal	yes		11362	yes	13000	2900	U2L4LSG	0.901277	0.315456	0.02653	6.69E-06
7452	CHESTNUT ST	CT RTE 9 SB EXIT RAMP		NEW BRITAIN	95	Signal	yes	Interstate ramp	7452	yes	4500	2800	UML3LSG	0.359754	0.153448	0.017249	0.680969
20163	MAIN ST NO 1	BROAD ST/MAPLE ST		EAST HARTFORD	86	Signal	yes		20163	yes	13300	2400	U2L4LSG	0.846372	0.300004	0.025231	6.03E-06
21559	SILVER LANE (CT 509)	FORBES ST		EAST HARTFORD	96	Signal	yes		21559	yes	10800	6700	UML4LSG	1.428433	0.49007	0.041364	3.854587
18635	KENNEDY RD	ARCHER RD/I-91 NB EXIT RAMP		WINDSOR	98	Signal	yes		18635	yes	10300	4700	UML4LSG	1.164229	0.412385	0.034807	3.102453
16058	MARKET ST	PLEASANT ST		HARTFORD	99	Signal	yes		16058	yes	12800	6800	UML4LSG	1.566875	0.523497	0.044185	4.367532
21408	KING ST (US 5)	I-91 NB EXIT AND ENTRANCE RAMP	91-N-111	ENFIELD	82	Signal	yes		21408	yes	12900	2200	U2L3LSG	0.445958	0.142985	0.013837	1.643258
26534	SHAKER RD (CT 220/CT 402)	TAYLOR ROAD (CT 220)	220-E	ENFIELD	61	Stop	yes	all-way stop	26534	yes	11400	2600	U2L4LSN	0.642754	0.305704	0.014961	1.652037
2695	WEST AVON RD	COUNTRY CLUB RD	167-N	AVON	147	Signal	yes		no	yes - Avon	12400	5700	U2L4LSG	1.146737	0.382228	0.032146	9.49E-06
3018	COUNTRY CLUB RD	BURNHAM RD		AVON	0	Stop	no	all-way stop	no	yes - Avon	5700	5700	U2L4LSN	0.537422	0.233603	0.011433	1.686982
1099	LOVELY ST (CT 177)	WESTMONT RD/COUNTRY CLUB RD	177-N	AVON	0	Signal	no		no	yes - Avon	9400	5700	U2L4LSG	1.003975	0.344996	0.029015	1.15E-05
29530	BOSTON TURNPIKE (US 44)	QUARRY RD	44-E	BOLTON	0	Signal	yes		no	yes - Bolton	10200	1500	UML3LSG	0.519404	0.216353	0.024321	1.148076
29925	BOSTON TURNPIKE (US 44)	SOUTH RD	44-E	BOLTON	0	Signal	no		no	yes - Bolton	9600	450	U2L3LSG	0.189957	0.060037	0.00581	0.704332
289	RIVER RD (CT 179)	MAPLE AVE	179-N	CANTON	0	Stop	no	1 approach is stop control	no	yes - Canton	12700	6300	U2L3LSN	0.667319	0.277536	0.025736	2.254346
123	ALBANY TURNPIKE (US 44)	CHERRY BROOK RD (CT 179)	44-E	CANTON	0	Signal	yes		no	yes - Canton	10300	5700	UML4LSG	1.28459	0.448916	0.03789	3.429803
32251	MIDDLETOWN RD (CT 66)	HENNEQUIN RD/PINE ST	66-E	COLUMBIA	0	Stop	no		no	yes - Columbia	7700	7400	R4LSN	0.483717	0.433849	0.003407	2.618175
32947	WILLIMANTIC RD (US 6)	WILLIMANTIC RD (CT 66)	6-E	COLUMBIA	0	Signal	yes		no	yes - Columbia	12400	2700	R4LSG	0.653407	0.236787	0.001361	1.957161
32550	MIDDLETOWN RD (CT 66)	JONATHAN TRUMBULL HIGHWAY (CT 87)	66-E	COLUMBIA	0	Signal	no		no	yes - Columbia	8800	3100	R4LSG	0.585971	0.244268	0.001404	1.86623
10327	SOUTH MAIN ST (CT 187)	HATCHETT HILL RD	187-N	EAST GRANBY	0	Signal	yes		no	yes - East Granby	6500	4300	U2L4LSG	0.753497	0.275797	0.023195	1.29E-05
12188	NORTH MAIN ST (CT 187)	SOUTH STONE RD	187-N	East Granby	0	Stop	no	1 approach is stop control	no	yes - East Granby	6900	4700	R3LSN	0.315608	0.168391	0.010794	0.926549
20372	BRIDGE ST	MAIN ST	140-E	EAST WINDSOR	125	Signal	yes		no	yes - East Windsor	13100	2900	U2L4LSG	0.904598	0.316351	0.026605	6.66E-06
28643	WEST RD	LOWER BUTCHER RD	83-N	ELLINGTON	167	Signal	yes		no	yes - Ellington	8700	3100	U2L4LSG	0.762835	0.277575	0.023344	9.07E-06
30732	CRYSTAL LAKE RD (CT 140)	BURBANK RD		ELLINGTON	0	Stop	no		no	yes - Ellington	3400	1000	U2L4LSN	0.269138	0.155058	0.007589	0.499564
27890	PINNEY ST (CT 286)	WINDERMERE AVE	286-N	ELLINGTON	0	Signal	no		no	yes - Ellington	6200	1900	U2L4LSG	0.535664	0.210394	0.017694	9.08E-06
6491	SOUTH RD/COLT HIGHWAY (CT 531)	TWO MILE RD	CT 531	FARMINGTON	64	Stop	yes	all-way stop	6491	yes	10000	3700	U2L4LSN	0.652619	0.295943	0.014483	1.848396
5452	I-84-W-100	FARM SPRINGS RD		FARMINGTON	110	Signal	yes		no	yes - Farmington	12400	2100	UML4LSG	0.847018	0.308717	0.026057	2.319378
21134	GRISWOLD ST	HOUSE ST		GLASTONBURY	0	Signal	yes		no	yes - Glastonbury	14500	14500	U2L4LSG	1.779182	0.540961	0.045495	1.32E-05
4187	HARTLAND RD (CT 20)	DAY ST	20-E	GRANBY	0	Stop	no	two-way stop	no	yes - Granby	9200	650	R4LSN	0.46875	0.582282	0.004573	0.659161
31181	MAIN ST (CT 66)	CHURCH ST	66-E	HEBRON	0	Signal	yes		no	yes - Hebron	9500	4800	R4LSG	0.638057	0.27269	0.001567	2.328349
23317	84-W-302	MIDDLE TPKE WEST		MANCHESTER	135	Signal	yes	I-84 ramp	no	yes - Manchester	14200	3500	UML3LSG	0.828876	0.313168	0.035204	2.038381
26272	MIDDLE TPK EAST NO 1	SUMMIT ST		MANCHESTER	130	Signal	no		no	yes - Manchester	9000	4500	U2L4LSG	0.896643	0.315501	0.026534	1.06E-05
32500	MIDDLE TPKE	STAFFORD RD	44-E	MANSFIELD	204	Signal	no		no	yes - Mansfield	6100	4300	R4LSG	0.533905	0.264121	0.001518	1.923022

28885	HEBRON RD (CT 66)	SOUTH MAIN ST	66-E	MARLBOROUGH	0	Signal	yes		no	yes - Marlborough	13700	6000	U2L4LSG	1.227256	0.402948	0.033888	9.09E-06
28917	CT 2 EAST EXIT RAMP	HEBRON RD (CT 66)	2-E-34A	MARLBOROUGH	0	Yield	yes		no	yes - Marlborough	13700	900	U2L3LSG	0.326106	0.098673	0.009549	1.244727
10318	PANE RD	CHURCH ST		NEWINGTON	116	Signal	yes		no	yes - Newington	13100	6000	U2L4LSG	1.201156	0.396326	0.033331	9.37E-06
11799	MAIN ST	MARKET SQ	176-N	NEWINGTON	0	Signal	yes		no	yes - Newington	11800	2100	U2L4LSG	0.758576	0.275372	0.023159	6.14E-06
1896	CT 72-N	NORTH WASHINGTON ST CT 177)		PLAINVILLE	122	Signal	yes	ramp	no	yes - Plainville	13100	6200	U2L3LSG	0.682694	0.229747	0.022234	2.443847
1879	72-N-28	DAY ST		PLAINVILLE	217	Signal	yes	ramp	no	yes - Plainville	20500	12600	UML4LSG	2.715913	0.809774	0.068348	8.330277
18878	MAIN ST (CT 99)	GORMAN RD	99-N	ROCKY HILL	0	Signal	yes		no	yes - Rocky Hill	8900	2200	U2L4LSG	0.674656	0.251687	0.021167	7.61E-06
4246	BUSHY HILL RD	STRATTON BROOK RD	167-N	SIMSBURY	131	Signal	no		no	yes - Simsbury	11900	4300	U2L4LSG	1.007269	0.344956	0.029011	8.55E-06
8484	HARTFORD AVE (CT 189)	ELM ST (CT 315)/MOUNTAIN RD	315-E	SIMSBURY	0	Signal	yes	there is a fourth leg that is	no	yes - Simsbury	12900	6800	U2L3LSG	0.700371	0.237591	0.022993	2.494811
5424	HOPMEADOW ST (US 202/CT 10)	WEST ST (CT 167)	10-N	SIMSBURY	0	Signal	yes		no	yes - Simsbury	14100	11100	U2L3LSG	0.909997	0.310229	0.030022	3.234243
29994	MAIN ST	GULF RD	190-E	SOMERS	112	Stop	no	two approaches stop cont	no	yes - Somers	7900	1500	U2L4LSN	0.463763	0.243084	0.011897	1.001437
29320	MAIN ST (CT 190)	SOUTH RD (CT 83)	190-E	SOMERS	0	Signal	no		no	yes - Somers	7400	3000	U2L4LSG	0.696849	0.258797	0.021765	9.98E-06
27788	HALL HILL RD (CT 186)	GEORGE WOOD RD	186-N	SOMERS	0	Stop	no	2 stop controlled aproache	no	yes - Somers	2100	1600	U2L4LSN	0.233376	0.12774	0.006252	0.486964
23875	SULLIVAN AVE	HILLSIDE DR	194-E	SOUTH WINDSOR	249	Stop	no	all-way stop	no	yes - South Windsor	12200	12200	U2L3LSG	0.849061	0.300236	0.029055	2.948765
12401	MOUNTAIN RD (CT 168)	SOUTH STONE ST/NORTH STONE ST	168-E	SUFFIELD	0	Stop	no	two-way stop.	no	yes - Suffield	6400	5300	R4LSN	0.409074	0.36871	0.002895	1.971902
20568	EAST ST NORTH	THOMPSONVILLE RD	159-N	SUFFIELD	134	Signal	no		no	yes - Suffield	10000	4700	U2L4LSG	0.959287	0.332496	0.027963	1E-05
19076	NORTH ST (CT 75)	HALLADAY AVE EAST	75-N	SUFFIELD	0	Stop	no	two-way stop.	no	yes - Suffield	6000	6000	U2L4LSN	0.559072	0.240657	0.011778	1.784902
30622	CRYSTAL LAKE RD (CT 30)	HUNTER RD	30-N	TOLLAND	0	Stop	no	two-way stop, two-way fla	no	yes - Tolland	4100	3700	R4LSN	0.281856	0.243722	0.001914	1.300806
32316	I-84-E-272	TOLLAND STAGE RD (CT 74)		TOLLAND	0	Stop	no	I-84 ramp	no	yes - Tolland	5700	500	R4LSN	0.316805	0.370813	0.002912	0.454009
31340	I-84 RAMP TERMINAL	MERROW RD (CT 195)	84-E-268	TOLLAND	0	Signal	yes	I-84 ramp	no	yes - Tolland	14500	1700	U2L4LSG	0.771191	0.278344	0.023409	4.83E-06
16674	91-S-209	PARK AVE		WINDSOR	0	Signal	yes	ramp	no	yes - Windsor	13700	3800	U2L4LSG	1.027003	0.349748	0.029414	7.33E-06
16842	OLD COUNTY RD	HALFWAY HOUSE RD		WINDSOR LOCKS	0	Stop	no	all-way stop	no	yes - Windsor Locks	10300	3400	U2L4LSN	0.649606	0.297984	0.014583	1.797418
19983	SOUTH MAIN ST (CT 159)	MAIN ST (CT 159/CT 140)	159-N	WINDSOR LOCKS	0	Signal	yes		no	yes - Windsor Locks	11400	6200	U2L3LSG	0.615963	0.213727	0.020683	2.162477
15251	CHAPEL ST NORTH/WALNUT ST/I-84 EB RAMP	HIGH ST		HARTFORD	2	Signal	yes		15251	No	9900	3500	UML3LSG	0.650927	0.25405	0.028558	1.478646
15543	FRANKLIN AV	BUSHNELL ST		HARTFORD	5	Stop	yes	1 approach is stop control	15543	No	8600	8600	U2L3LSN	0.57033	0.241314	0.022378	1.981426
15546	FRANKLIN AV	BLISS ST		HARTFORD	7	No Control	yes	No control. Minor leg is a c	15546	No							
15310	WESTLAND ST	BARBOUR ST		HARTFORD	8	Signal	no		15310	No	5700	5200	U2L4LSG	0.761889	0.278657	0.023435	1.54E-05
14833	ALBANY AVE (US 44)	BROOK ST	44-E	HARTFORD	10	Signal	no		14833	No	13400	13400	UML4LSG	2.265822	0.716968	0.060515	6.414361
15911	WETHERSFIELD AV	ADELAIDE ST		HARTFORD	11	Stop	yes	one approach is stop contr	15911	No	12000	12000	U2L3LSN	0.885335	0.353971	0.032824	3.169427
16074	MORGAN ST (US 44)	MARKET ST	44-W	HARTFORD	12	Signal	yes		16074	No	12800	7300	UML4LSG	1.624611	0.540098	0.045586	4.531682
14128	ZION ST NO 1	WARD ST		HARTFORD	14	Signal	no		14128	No	10400	10400	U2L4LSG	1.332445	0.431537	0.036293	1.42E-05
14634	FARMINGTON AV	BROAD ST		HARTFORD	15	Signal	yes		14634	No	12600	8400	UML4LSG	1.73148	0.571346	0.048224	4.822115
15617	TRUMBULL ST	CHAPEL ST SOUTH		HARTFORD	16	Signal	yes		15617	No	7100	7000	UML4LSG	1.184347	0.43139	0.036411	2.952404
13703	NEW BRITAIN AV	HILLSIDE AV		HARTFORD	18	Signal	no		13703	No	10600	7100	UML4LSG	1.457621	0.499456	0.042156	3.921679
15410	ANN UCCELLO ST NO 1/PLEASANT ST	CHAPEL ST NORTH		HARTFORD	19	Signal	yes		15410	No	6800	4000	UML4LSG	0.871274	0.332178	0.028037	2.142195
15790	MAIN ST (US 44)/MORGAN ST	CHAPEL ST NORTH	44-W	HARTFORD	20	Signal	yes		15790	No	12500	7300	UML4LSG	1.60546	0.535633	0.04521	4.458127
14676	ALBANY AVE (US 44)	GARDEN ST NO 1	44-E	HARTFORD	22	Signal	yes		14676	No	16000	6000	U2L4LSG	1.322169	0.426763	0.035891	8.18E-06
15466	FRANKLIN AV	BOND ST		HARTFORD	24	Stop	yes	two approaches stop cont	15466	yes	8600	8600	U2L4LSN	0.737659	0.296537	0.014513	2.652139
14081	PARK TER	SIGOURNEY ST/RUSS ST		HARTFORD	25			recently converted to roun	14081	No							
15612	FRANKLIN AV	BROWN ST		HARTFORD	28	Signal	yes		15612	No	8600	5700	U2L4LSG	0.962012	0.333827	0.028075	1.22E-05
12271	NEW PARK AV	FLATBUSH AV		WEST HARTFORD	34	Signal	yes		12271	No	14600	9400	UML4LSG	1.973883	0.632101	0.053352	5.659611
13999	I-84-W-115	SIGOURNEY ST		HARTFORD	35	Signal	yes		13999	No	11900	9500	UML3LSG	0.983633	0.348606	0.039188	2.421541
14603	I-84 EB ON RAMP	BROAD ST		HARTFORD	38	Signal	yes		14603	No	13100	8400	U2L3LSG	0.77087	0.263391	0.025489	2.734465
17950	WINDSOR AVE (CT 159)	ROOD AV	159-N	WINDSOR	42	Signal	yes	5-leg SPF non-existent	17950	No			UML4LSG				
14636	ASYLUM AV	BROAD ST/COGSWELL ST		HARTFORD	43	Signal	yes		14636	No	14300	8400	UML4LSG	1.844592	0.597224	0.050408	5.262156
17344	I-91-NB RAMP	I-91 SB RAMP/LEIBERT RD		HARTFORD	44	Signal	no		17344	No	5200	400	UML3LSG	0.225422	0.110895	0.012466	0.407501
14804	I-84 EB OFF/WB ON	CAPITOL AVE/OAK ST		HARTFORD	46	Signal	yes		14804	yes	10300	5600	UML4LSG	1.273047	0.445433	0.037596	3.398381
14222	MAPLE AV	FAIRFIELD AV NO 1		HARTFORD	48	Signal	no		14222	No	11000	8900	UML4LSG	1.666231	0.558863	0.04717	4.52481
15997	STATE ST	MARKET ST		HARTFORD	49	Signal	yes	Awkward geometry	15997	No	13400	4900	UML4LSG	1.356445	0.460532	0.038871	3.801552
20564	GRISWOLD ST/GLASTONBURY BLVD	MAIN ST		GLASTONBURY	50	Signal	yes		20564	No	13400	5700	UML4LSG	1.465205	0.492219	0.041545	4.112575
14000	FARMINGTON AV	SIGOURNEY ST		HARTFORD	51	Signal	no		14000	No	12600	11800	UML4LSG	2.059183	0.663505	0.056003	5.754279
15652	FRANKLIN AV	SOUTH ST		HARTFORD	55	Signal	yes		15652	No	8600	4000	U2L4LSG	0.837901	0.299115	0.025156	1.03E-05
14973	CHURCH ST	SPRUCE ST		HARTFORD	57	Signal	no	Crashes from i-84 capture	14973	No	6400	4400	U2L4LSG	0.754646	0.27618	0.023227	1.32E-05
13982	SIGOURNEY ST	HAWTHORN ST		HARTFORD	59	Signal	no	Not recommended due to	13982	yes	11900	11900	UML4LSG	2.009797	0.652783	0.055097	5.556079
14962	I-84 EB OFF/WB ON	SPRUCE ST	84-W-191A	HARTFORD	65	Signal	yes		14962	No	12200	4300	UML4LSG	1.210873	0.420764	0.035514	3.329266
13370	WHITE ST	HARVARD ST		HARTFORD	66	Signal	no		13370	yes	10600	5700	UML4LSG	1.303164	0.453449	0.038273	3.498425
9615	BOULEVARD	FOUR MILE RD		WEST HARTFORD	68	Stop	no	two approaches are stop-c	9615	No	6100	6100	U2L4LSN	0.566234	0.242975	0.011891	1.817652
741	WEST ST (CT 229)	WEST QUEEN ST	229-N	SOUTHINGTON	69	Signal	yes		741	No	21100	6200	UML4LSG	1.919159	0.598739	0.050536	5.876993
6853	WHITING ST	GLEN ST		NEW BRITAIN	73	Signal	no	Dashboard indicates that \	6853	No	4100	2400	U2L4LSG	0.481115	0.194103	0.016324	1.34E-05
15366	CHAPEL ST SOUTH	ANN UCCELLO ST NO 1		HARTFORD	74	Signal	yes		15366	No	7000	3000	UML4LSG	0.763362	0.295668	0.024956	1.881817
26001	MIDDLE TURNPIKE WEST/MIDDLE TURNPIKE EAST	MAIN ST (CT 83)	CT 83	MANCHESTER	78	Signal	yes		26001	No	13300	9000	U2L4LSG	1.417208	0.451935	0.038008	1.12E-05
33842	STORRS RD (CT 195)	NORTH FRONTAGE RD (CT 632)		MANSFIELD	80	Signal	yes		33842	yes	10900	5000	UML3LSG	0.769935	0.289526	0.032546	1.812074
13384	ALBANY AVE (US 44)	BALTIMORE ST		HARTFORD	83	Stop	yes	one approach is stop contr	13384	No	11200	11200	U2L4LSN	0.904044	0.345634	0.016915	3.546401
32516	RIVER RD (CT 32)	TOLLAND TPKE (CT 74)	32-N	WILLINGTON	85	Signal	yes		32516	No	5200	2300	R4LSG	0.463966	0.225514	0.001296	1.378849
15670	TRUMBULL ST	CHAPEL ST NORTH		HARTFORD	90	Signal	yes	Not recommended due to	15670	No	7100	2600	UML4LSG	0.714686	0.279007	0.023549	1.764051
12361	PROSPECT AV	WARRENTON AV		HARTFORD	97	Stop	no	all-way stop	12361	No	7100	7100	U2L4LSN	0.636444	0.265338	0.012986	2.14799
7604	STANLEY ST NO 1	EAST MAIN ST		NEW BRITAIN	100	Signal	yes		7604	yes	12800	4800	U2L4LSG	1.088868	0.366681	0.030838	8.57E-06

GIS Tool

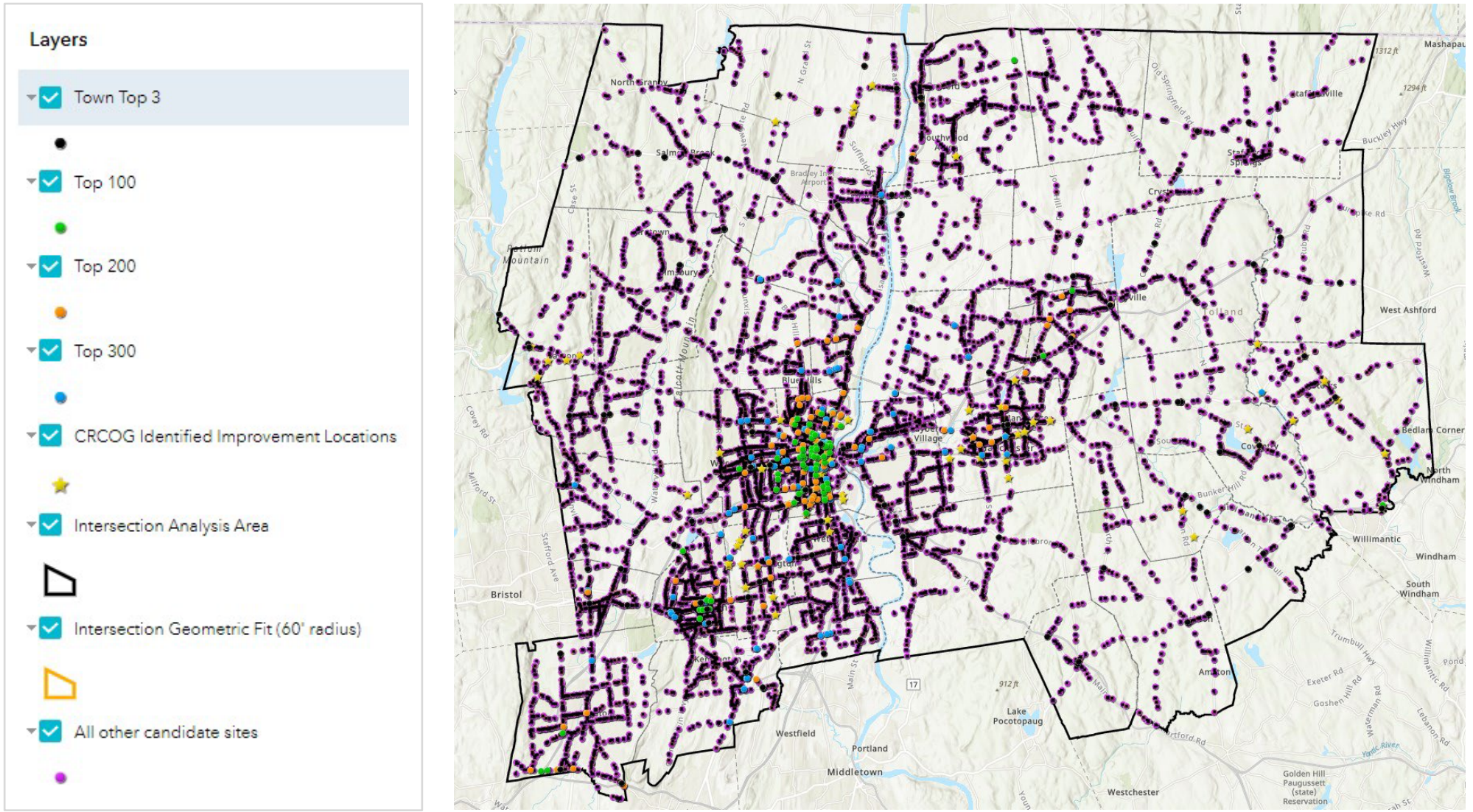


Capitol Region Roundabout Screening Study

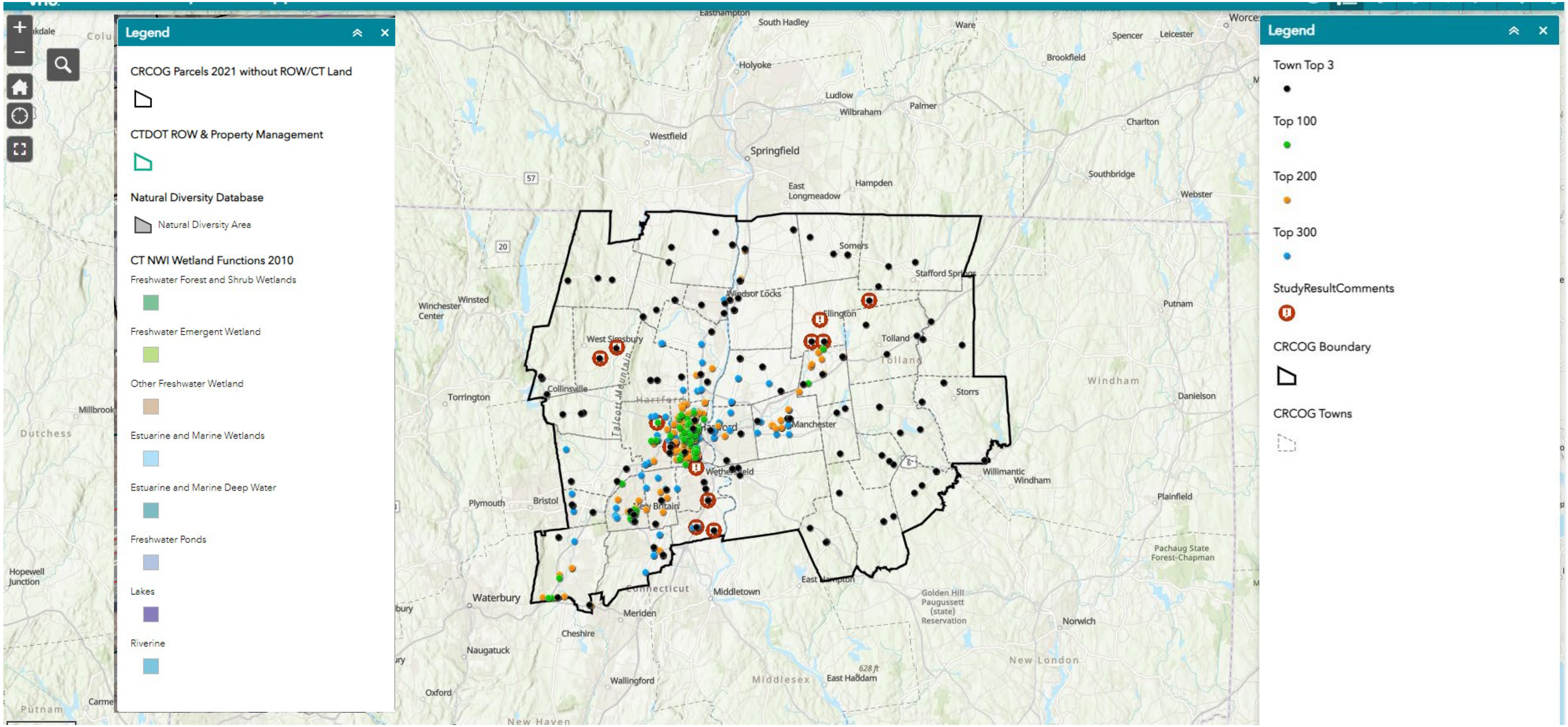
GIS Tool Example Slides

FINAL REPORT APPENDIX

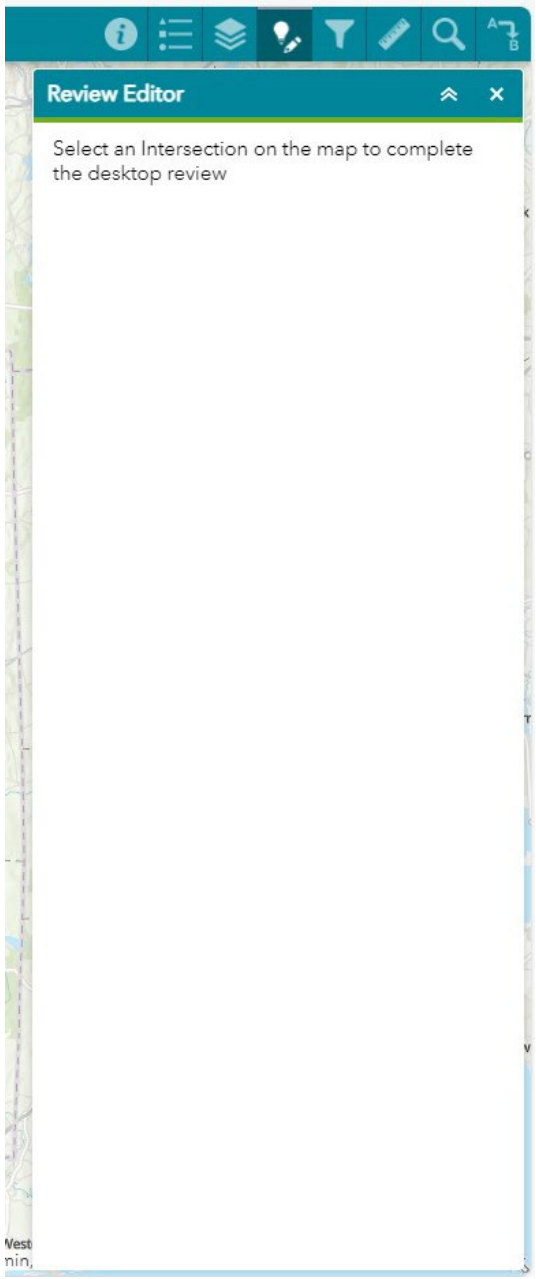
GIS Tool Demonstration

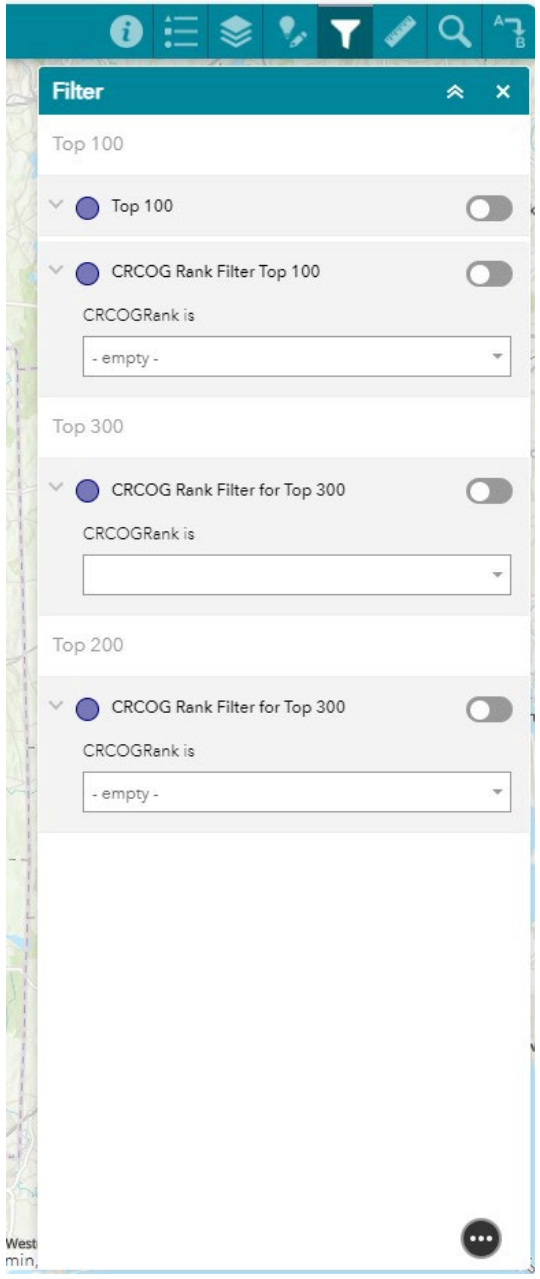


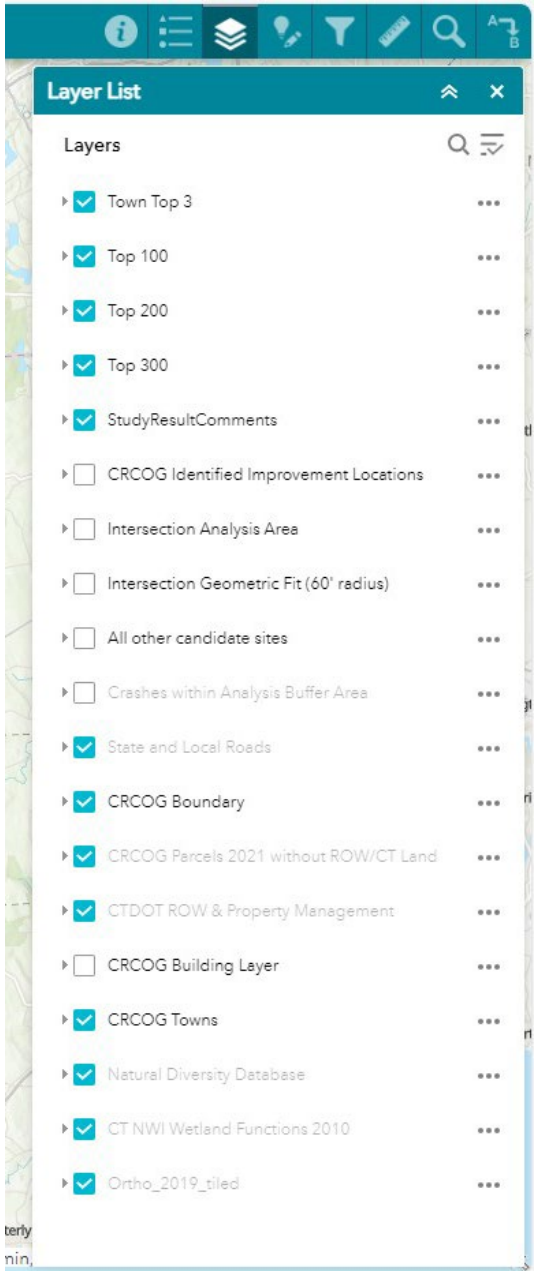
Legend Tab


Legend
CRCOG Parcels 2021 without ROW/CT Land
CTDOT ROW & Property Management
Natural Diversity Database
Natural Diversity Area
CT NWI Wetland Functions 2010
Freshwater Forest and Shrub Wetlands
Freshwater Emergent Wetland
Other Freshwater Wetland
Estuarine and Marine Wetlands
Estuarine and Marine Deep Water
Freshwater Ponds
Lakes
Riverine
Legend
Town Top 3
Top 100
Top 200
Top 300
StudyResultComments
CRCOG Boundary
CRCOG Towns

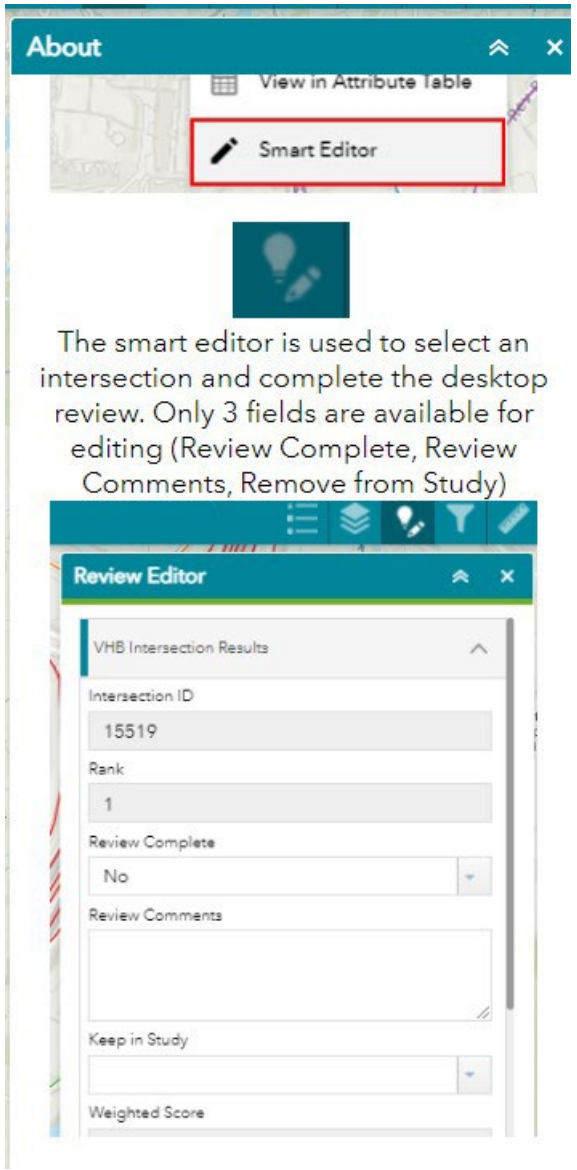
Filter, Layer, Editor Tabs



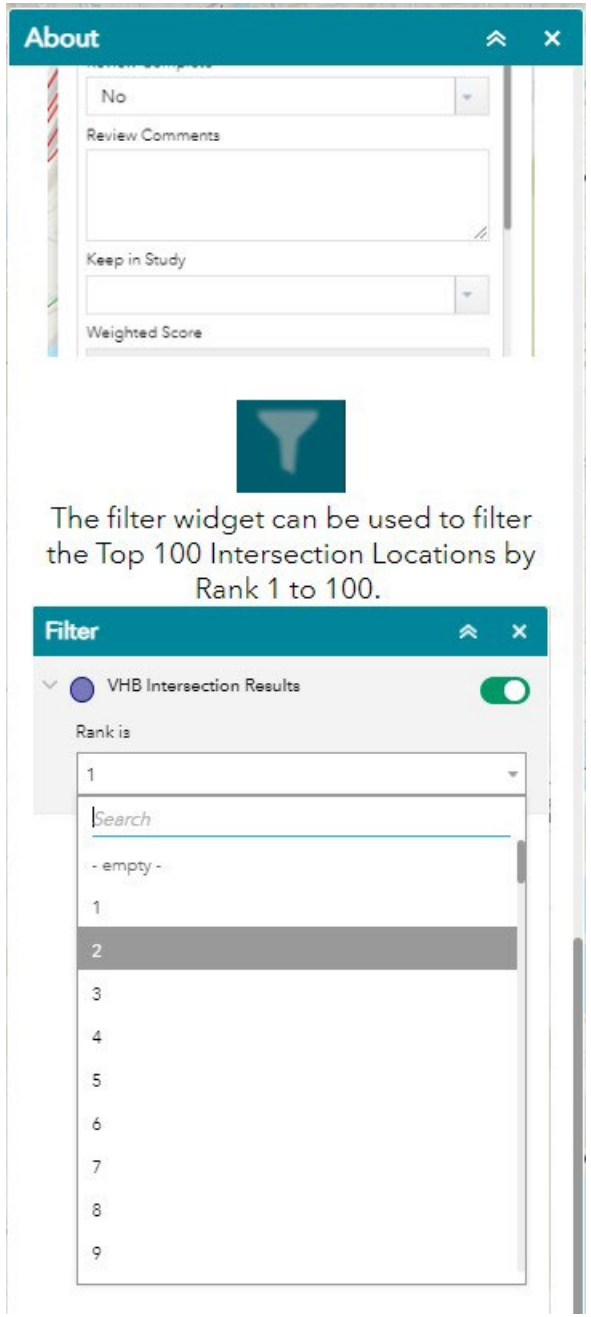




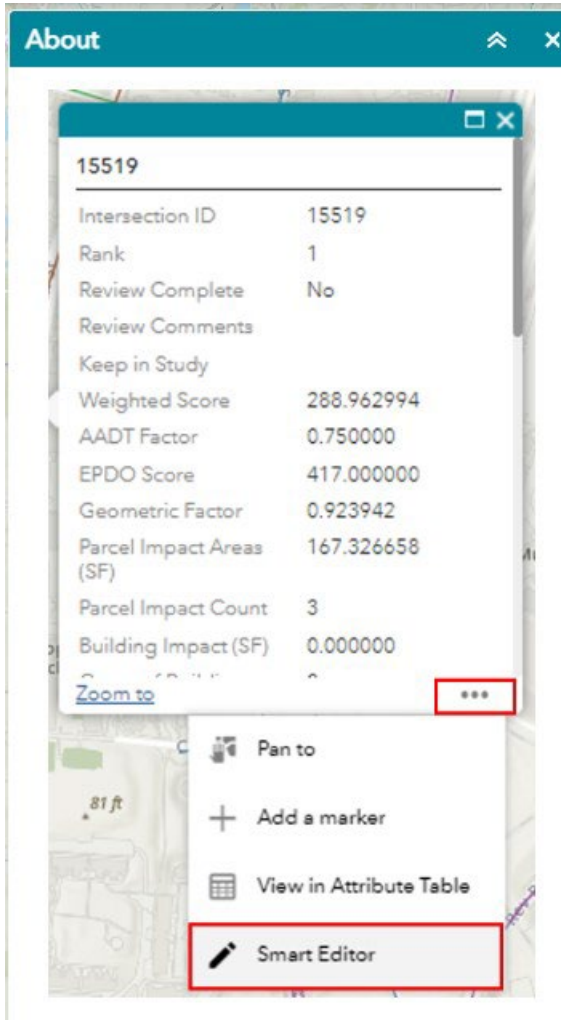
Review Editor Tabs



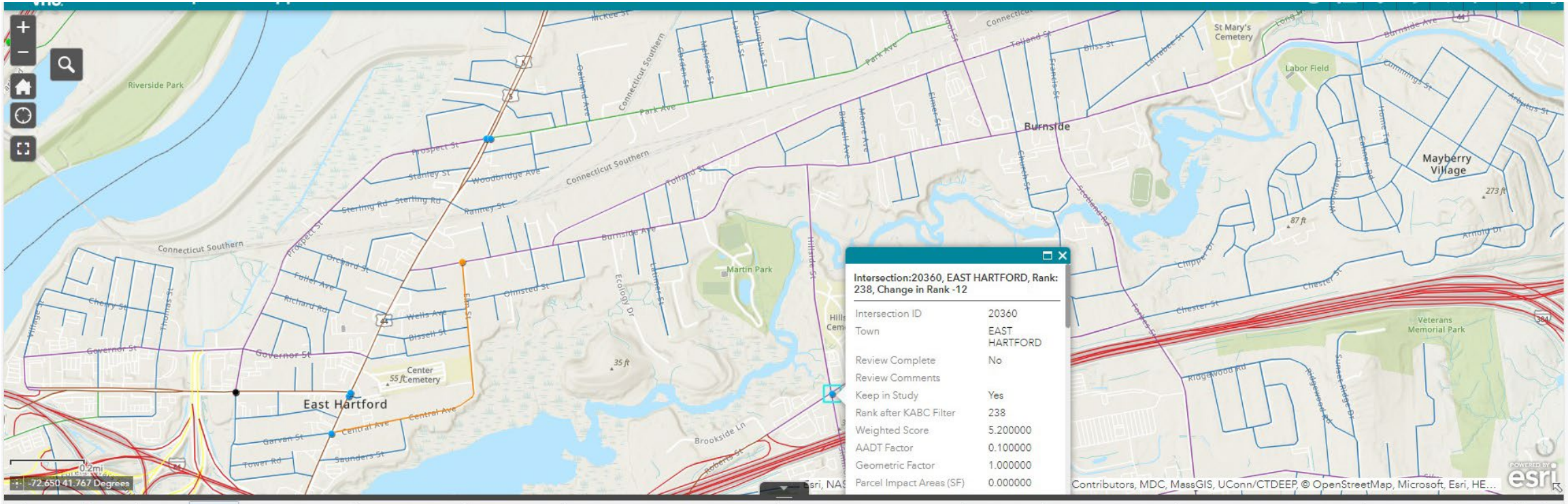
The smart editor is used to select an intersection and complete the desktop review. Only 3 fields are available for editing (Review Complete, Review Comments, Remove from Study)



The filter widget can be used to filter the Top 100 Intersection Locations by Rank 1 to 100.



Intersection Information Table

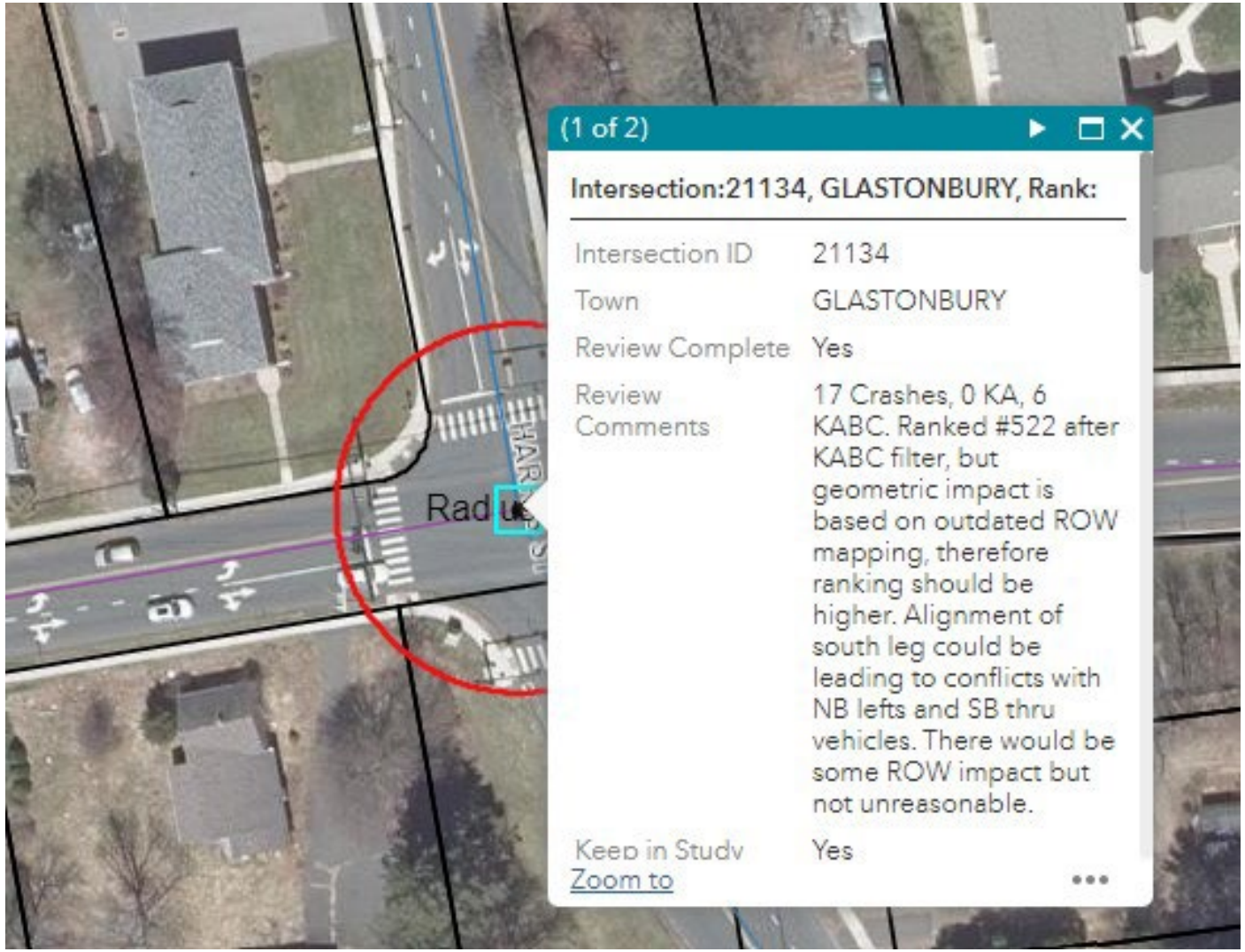


Town Top 3 | Top 100 | Top 200 | Top 300 | StudyResultComments | State and Local Roads | CRCOG Boundary | CRCOG Parcels 2021 without ROW/CT Land | CTDOT ROW & Property Management | CRCOG Towns | Natural Diversity Database | Freshwater Forest and Shrub Wetlands | Freshwater Emergent Wetland

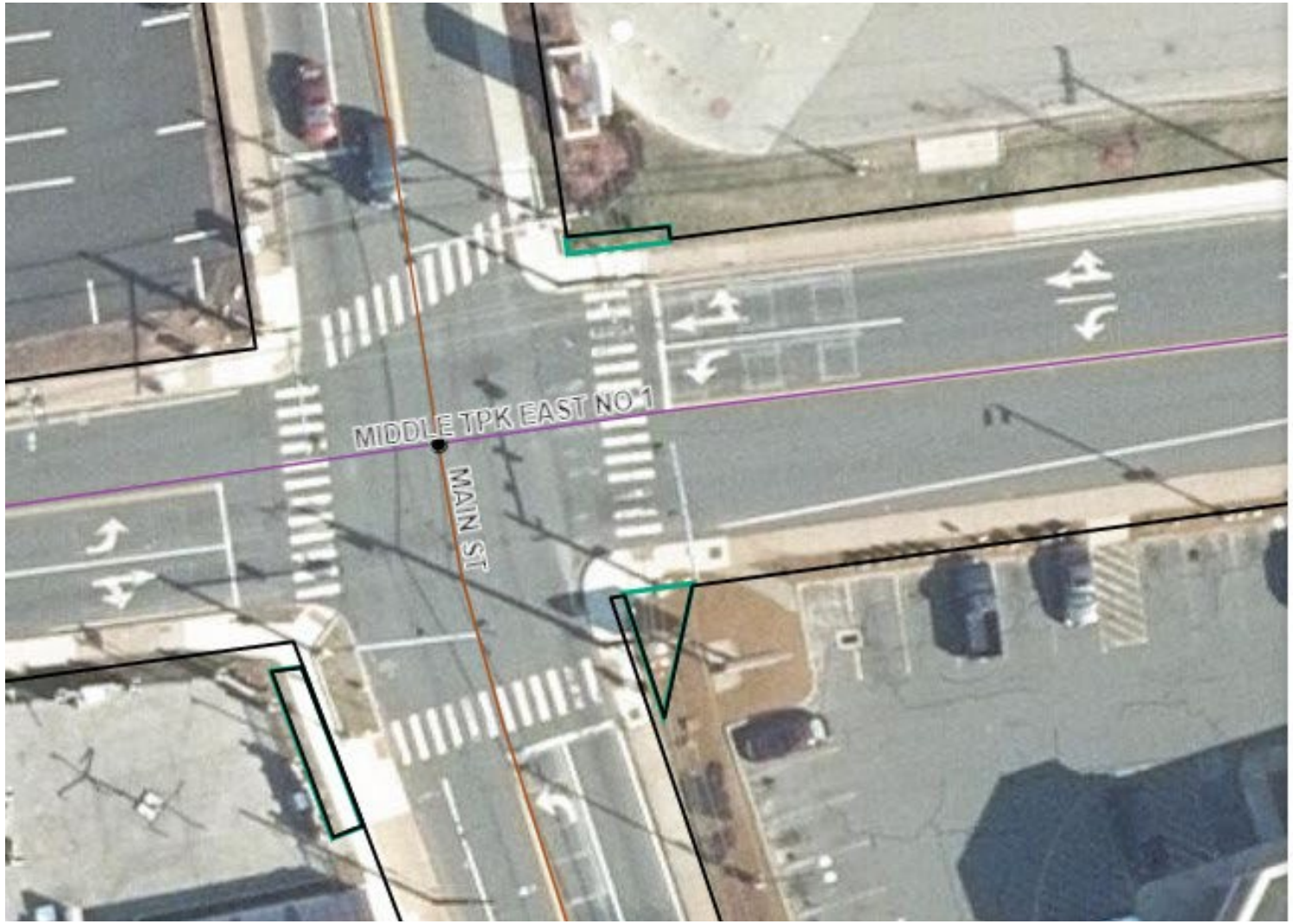
Options | Filter by map extent | Zoom to | Clear selection | Refresh

Intersection ID	Town	Review Complete	ReviewComments	Keep in Study	Rank after KABC Filter	New Weighted Score	AADT Factor	Geometric Factor	Parcel Impact Areas (SF)	Building Impact (SF)	Town Identified List	Town Top 3	Updated Min AADT	Updated Max AADT	Min Functional Class	Max Functional Class	Total Crashes	Total
20360	EAST HARTFORD	No		Yes	238	5.200000	0.100000	1.000000	0.000000	0.000000	No	No	2900	17400	Minor Arterial	Minor Arterial	32	0

Intersection Review Editor



Intersection Ranking



MANCHESTER

Review Comments

44 crashes, 1 KA (A), 14 KABC. ROW very tight, construction would impact parking lots and outdoor eating area. Gas station on NE

Keep in Study

Yes

Rank after KABC Filter

78

EPDO Score

54.3333333333333

AADT Factor

0.75

Geometric Factor

0.564025811037205

Parcel Impact Areas (SF)