Congestion Reduction Project Scopes Study

FINAL REPORT

NOVEMBER 2025

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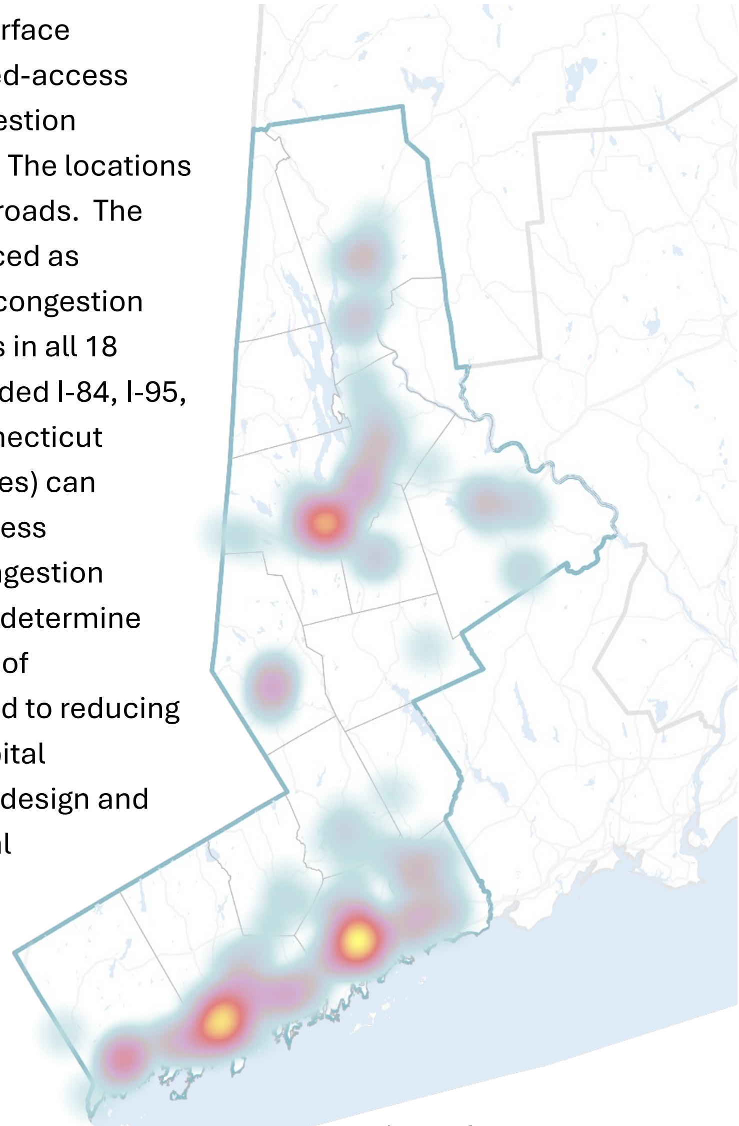
Glossary of Terms

AADT	AADT stands for Annual Average Daily Traffic. It is a key metric used in transportation planning and traffic engineering to represent the average number of vehicles that pass a specific point on a roadway each day over the course of a year.
Functional Classification	Refers to the process of categorizing roads and streets based on the type of service they are intended to provide.
Local Road	A roadway primarily designed to provide direct access to adjacent properties rather than facilitate through traffic.
LOS	Level of Service is a qualitative measure used to describe the operational conditions of a roadway or intersection, based on factors like speed, travel time, traffic interruptions, and comfort.
LOTCIP	The Local Transportation Capital Improvement Program (LOTCIP) is a Connecticut State-funded program designed to provide financial assistance to municipal governments for transportation projects.
Major Collector	A roadway that serves to gather traffic from local roads and funnel it to arterial roads.
Minor Arterial	A roadway designed for moderate-length trips, connect smaller communities, and distribute traffic to and from collector roads and local streets.
Minor Collector	A roadway that serves a more localized traffic than a Major Collector but still plays a role in connecting local roads to the broader transportation network.
Peanut Roundabout	Is a specialized roundabout designed to manage traffic at skewed or elongated intersections where a traditional roundabout would not work.
Principal Arterial	A roadway that is designed to provide high-capacity, long-distance travel and are a key part of the regional and national transportation network.
Regional Integrated Transportation Information System (RITIS)	A data-driven platform for transportation analysis, monitoring, and data visualization.
StreetLight	A vendor of proprietary transportation data analysis tools, including those related to traffic analysis, roadway volumes, congestion management and mode splits.

Introduction and Study Scope



The study identified the region’s most congested surface street/road locations (i.e., on any road except limited-access highways) and prepared conceptual plans for congestion reduction projects at several of the worst locations. The locations include a combination of State highways and local roads. The conceptual project plans are intended to be advanced as municipally led capital improvement projects. The congestion analysis encompassed local roads and State routes in all 18 towns and thousands of miles of roadways. It excluded I-84, I-95, and Route 15 (Merritt Parkway), since only the Connecticut Department of Transportation (and not municipalities) can make improvements to these roads. The study process advanced through several phases to (1) identify congestion levels across all surface roadways in the region, (2) determine which locations are experiencing the highest levels of congestion, (3) identify locations that are best suited to reducing congestion through a municipally administered capital improvement project, and (4) provide a conceptual design and related information for a limited number of potential projects.

Throughout the study, collaboration between WestCOG, a working group (consisting of representatives from several towns), and municipal staffs occurred at several stages to validate results and discuss recommendations. The input from WestCOG communities was critical for refining recommendations and understanding relative interest in pursuing municipal projects to implement the proposed countermeasures.

Factors leading to the selection of the six candidate project locations were:

- Existing congestion,
- Potential effectiveness of congestion mitigation,
- Municipal interest in a potential project at the subject location,
- Positive indications of project viability (i.e., absence of fatal flaws),
- Absence of another planned project,

- Estimated project cost is in a reasonable range.

The primary study results are conceptual designs of six potential projects at some of the region's most congested locations that are amenable to successful intervention. In addition to the six conceptual designs, the results of this project provide valuable insights into congestion levels and considerations for other potential improvements.

Phase 1: Quantification of Congestion and Hot Spot Ranking

The initial phase of the study identified and mapped congestion levels across the WestCOG region. The analysis leveraged Google Maps traffic data to maximize its detailed coverage of the local road network. Other data tools, such as Regional Integrated Transportation Information System (RITIS) and StreetLight, which are often used for congestion analysis, lack the granularity and region-wide depth of data to perform the required assessment. The team used an automated script to capture snapshots of the Google Maps traffic layer at 30-minute intervals for the AM and PM peak periods to build a Space-Time cube. Targeting both the AM and PM peak periods ensured that the collected data reflected the highest and most prolonged levels of congestion on the roadway network, providing a conservative estimate of regional congestion. The morning peak period consisted of four collection points (i.e., snap shots) between 7AM-8:30AM, and the evening peak consisted of six collection points between 3PM-5:30PM, which allowed the team to stack multiple time periods spatially. Multiple 30-minute periods were used to capture sustained congestion levels rather than short-term anomalies.

The Space-Time Cube was created by layering the traffic layer maps for each time period and assigning levels of congestion or relative vehicle free-flow speed based on the reported congestion. The values are as follows:

- Green (fast): 85 – 100% of free-flow speeds
- Yellow (moderate): 65 – 85%
- Orange (slow): 45 – 65%
- Red (stop and go): 0 – 45%
- Deep Red (stop): 0%

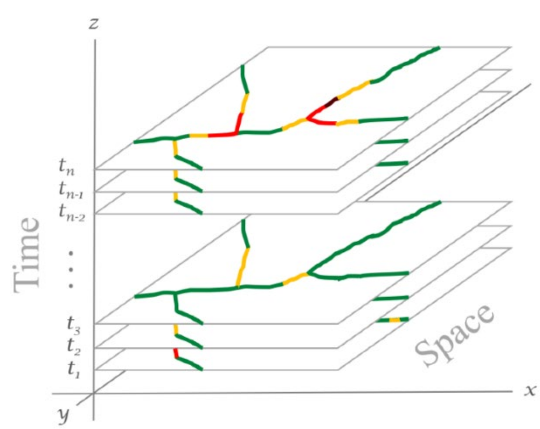


Figure 1. Representation of a Space-Time Cube

Each of these five colors and respective free-flow values was assigned a numerical score as follows.

- Green (fast): 85 – 100% → 0
- Yellow (moderate): 65 – 85% → 10
- Orange (slow): 45 – 65% → 100
- Red (stop and go): 0 – 45% → 1,000
- Deep Red (stop): 0% → 2000

In the Space-Time Cube for the AM there are four data points, so any given segment of a roadway's congestion score is equal to the sum of its numerical scores. For example, a road segment with individual time capture scores of 10, 100, 100, and 1,000 would result in a congestion score for that segment of 1,210. Initially, all locations with a score above 2,000 for both periods were considered 'highly congested' and flagged for additional review. The process yielded over 500 locations. The top 150 regional locations had scores ranging from 4,400 to over 25,000.

To further define the level of congestion at the top 150 locations around the region, a congestion index formula was developed that incorporates the previously developed congestion score (CS), the length of the queue (Q) (i.e., the congested segment), and the roadway traffic volume (V).

$$Congestion\ Index = \ln\left(\sum all\ approaches\ (Q \times V \times CS)\right)$$

This formula sums the intensity of congestion (CS) with the number of vehicles impacted by the congestion (V) and the extent of the intersection impacts (Q) for each leg of intersection to create a single value for each congested location. The resulting congestion index enabled the ranking of the various locations.

Phase 2: Identification of the Region's Most Congested Locations

Using the congestion metrics described above, a list of the top 75 congested locations was developed and distributed to the WestCOG municipalities for review to determine if the analysis results were consistent with anecdotal observations. The municipalities generally concurred with the analysis results.

None of the top 75 congested locations were in the WestCOG towns of Bridgewater, New Fairfield or Sherman. For these three towns, two of the most congested locations in each town were identified for consideration in the next phase, following coordination with the municipalities.

The full ranking can be found in *Appendix A: Top 75 Congested Hot Spots* document dated December 1, 2023.

Phase 3: Countermeasures and Project Selection

The 75 most congested locations and the two most congested locations in Bridgewater, New Fairfield and Sherman, as identified in the previous phase, were evaluated to determine their suitability for improvement by a municipally sponsored capital improvement project. Congested locations were eliminated from consideration if project (i.e., apart from this study) is planned or where low-cost interventions (i.e., below the minimum LOTCIP threshold) would be effective at congestion reduction. This screening process identified 20 locations for further consideration. Schematic design concepts were developed for these locations to further evaluate feasibility and to facilitate engagement with municipal staff. The complete set of schematic designs is presented in *Appendix B: Preliminary Recommendations, Candidate Project Locations and Scopes*.

Each concept sheet included a description, a graphic representation of recommended countermeasures, congestion reduction effects, a construction cost estimate, and impacts that may affect feasibility and public support or opposition. The proposed improvements were determined using AADT and anticipated benefits. Some intersections received two concept alternatives. For example, the intersection at White Street-Newtown Road-Triangle Street in Danbury received two alternative options: a peanut roundabout and a full signal upgrade with geometric modification.

Virtual workshops were coordinated and conducted for each municipality with at least one potential project in a top 20 location. For each workshop, the study team presented information (e.g., background, analysis, recommendations) and facilitated the meeting to gather feedback on concepts and address the concerns of meeting participants. The meeting focus was to discuss the respective municipality's interest in pursuing the proposed project concept(s).

An evaluation matrix was developed to prioritize potential projects at the top 20 locations. Evaluation factors included: mobility/safety benefits, design complexity, congestion reduction effect and municipal support for implementation. For example, a high design complexity would be scored 0, a medium complexity would be scored 10, and a low complexity would be scored 30. A higher-ranking score means that the project is a stronger candidate for further development under this study. Combining the scoring and WestCOG's input, the team selected six locations to advance to the Concept Design stage.

Projects Selected to Move Forward

The ranking process led to six locations selected for Concept Design. Each is described below.

Newtown: South Main Street (Route 25) at Mile Hill Road (Route 860)

The Newtown location on South Main Street (Route 25) at Mile Hill Road (unsigned State Route SR 860) is currently a signalized T-intersection. Mile Hill Road is classified as a Major Collector, and South Main Street is classified as a Principal Arterial. During the PM peak, queues stretch at least 2,500 feet in the northbound (NB) and southbound (SB) directions on South Main Street approaching the intersection. According to the Connecticut Department of Transportation (CTDOT) traffic monitoring data website, the AADT SB is 17,600 and the AADT NB is 19,900. The AADT westbound (WB) from Mile Hill Road is 10,600. The highest levels of congestion occur at the NB and SB approaches on South Main Street.

The intersection experiences significant congestion during both the AM and PM. As shown in Figure 2, significant congestion occurs on each of the three approaches. Significant congestion indicates that the highlighted area operates at 0-45% of free flow speeds in each of the three AM and/or four PM peak one-hour collection periods. The moderate congestion areas refer to locations where operating speeds were 45-65% of free flow speeds across all hours of the collection periods.

The most significant queueing occurs on the southbound approach to the intersection along South Main Street and on the westbound approach along Mile Hill Road. The queueing along South Main Street measured at least 1,200 feet and 600 feet along Mile Hill Road. Segments of moderate congestion were identified along the other approaches.

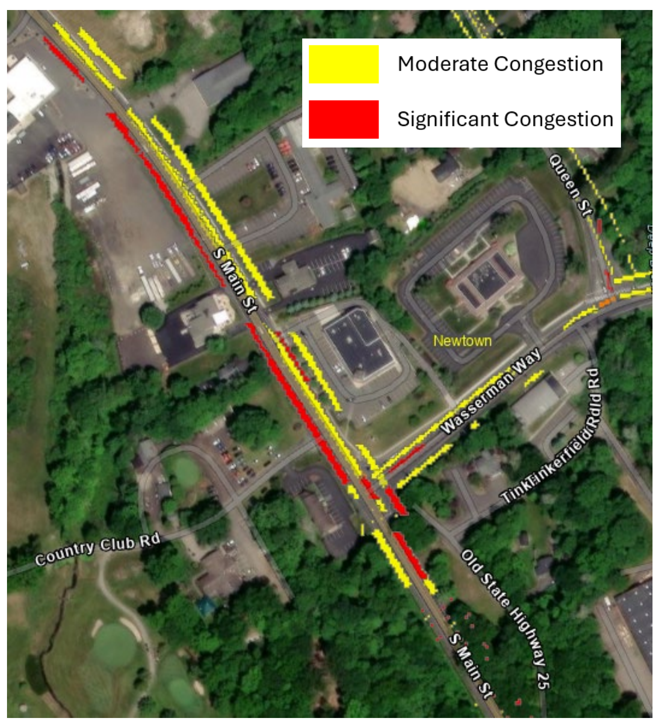


Figure 2. Overlayed Congestion at Grove Street at Broad Street

The identified congestion suggests that the intersection is not operating effectively in part due to the high traffic volumes on both roadways at the intersection. Potential factors contributing to observed congestion under prevailing traffic conditions are:

1. Heavy left turn volume onto Mile Hill Road from South Main Street.
2. The Mile Hill Road approach has a fairly steep grade, which negatively affects intersection capacity and results in extended queues. Large and heavy vehicles exacerbate this effect.

The recommended countermeasure is a roundabout, which would help alleviate congestion by smoothing the flow of traffic through the intersection.

Figure 3. South Main Street (Route 25) at Mile Hill Road Concept Sketch (Concept Design May Differ)

Stamford: Grove Street at Broad Street

Grove Street at Broad Street is currently a four-way signalized intersection. Grove Street and Broad Street are both classified as Minor Arterials. The queue during PM hours extends approximately 900 feet in the SB direction on Grove Street approaching the intersection.

The queue extends approximately 500 feet in the NB direction approaching the intersection. In the eastbound (EB) and WB directions approaching the intersection, the queuing stretches to approximately 400 feet. According to the CTDOT traffic monitoring data website, the AADT on Grove Street in the SB direction approaching the intersection is 16,800, and the AADT on Grove Street in the NB direction approaching the intersection is 15,700. The AADT on Broad Street is 14,900. All approaches to the intersection experience high levels of congestion, which suggests that the intersection is not operating effectively. Based on the existing lane configuration, much of the traffic conflict may be due to left-turning vehicles.

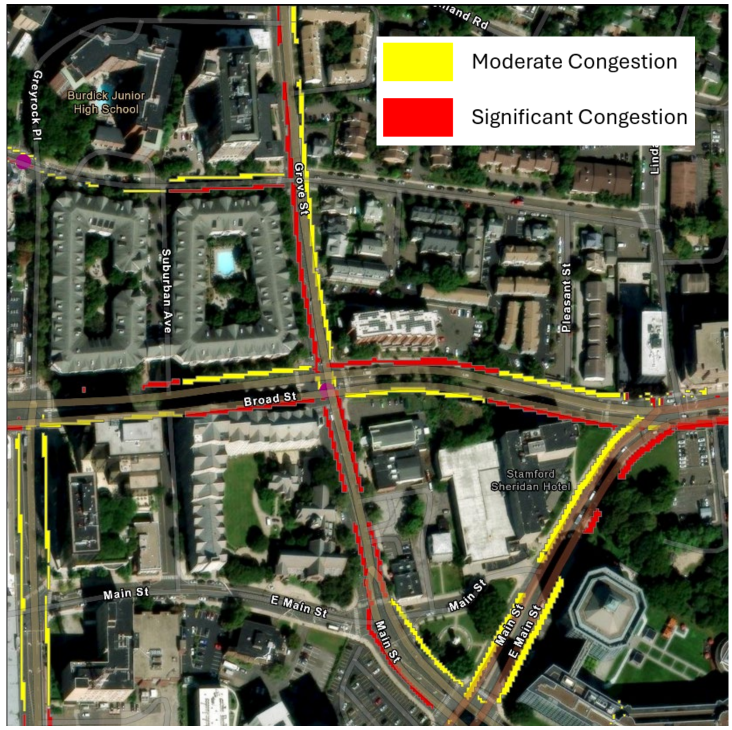


Figure 4. Overlayed Congestion at Grove Street at Broad Street

This location experiences daily congestion during the weekday AM and PM peak periods. As shown in Figure 3 significant congestion occurs on each of the four approaches. Significant congestion indicates that the highlighted area is operating at 0-45% of free flow speeds in each of the three AM and/or four PM peak 1-hour collection periods. Moderate congestion refers to locations where operating speeds were 45-65% of free flow speeds across all hours of the collection periods.

The typical queue during PM hours is approximately 900 feet in the SB direction on Grove Street approaching the intersection and approximately 500 feet in the NB direction. In the EB and WB directions approaching the intersection, the queuing stretches to approximately 400 feet upstream from the intersection, with further sections of moderate congestion following each of these segments.

The identified congestion suggests that the intersection is not operating effectively, in part due to the high traffic volumes on both roadways at the intersection. Several potential factors contributing to the observed congestion under prevailing traffic conditions are:

1. Left turn conflicts for all directions.
2. Right turns impacting through movement.

3. Poor signal timing.
4. Poor adjacent signal coordination leading to traffic queuing within the intersection inhibiting other movements.

The recommended countermeasure is an adaptive signal network coordinated with surrounding signals. This potential project includes modifying the timing and phasing of signals at other intersections to prioritize SB traffic during the PM peak. Additional recommendations include lane restriping, median island widening, and sidewalk reconstruction on the northwest corner with a bump-out. Left turns at the intersection are protective/permissive, which stops all other traffic and allows left-turns indicated by a green left arrow. Immediately following this phase, all through lanes receive a green signal and left turns are permitted as oncoming traffic allows. Multiple lane configurations would be considered for the NB approach on Grove Street.

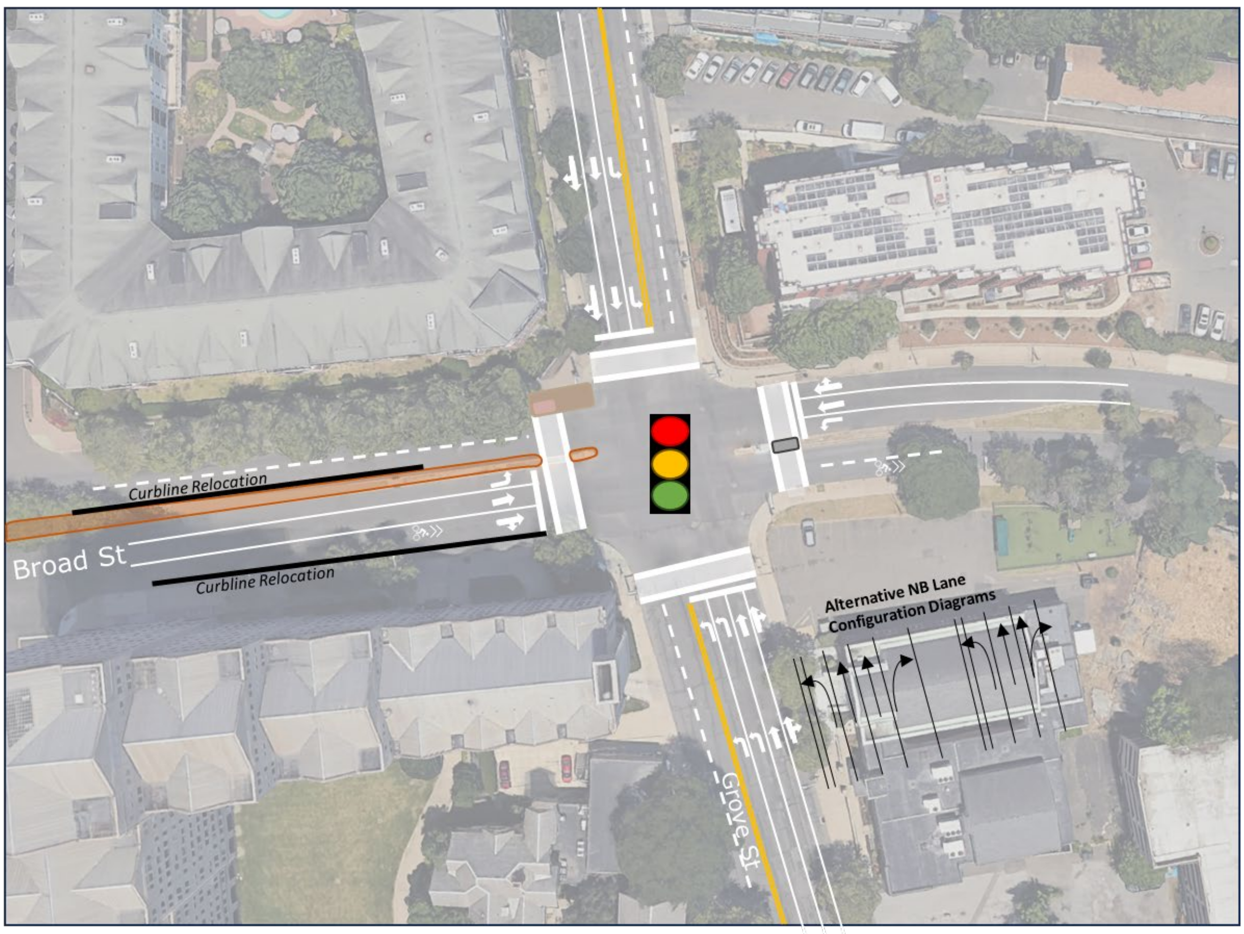


Figure 5. Grove Street at Broad Street Concept Sketch (Concept Design May Differ)

Danbury: White Street-Newtown Road-Triangle Street Intersection

The Danbury location on White Street/Newtown Road/Beaver Brook Road and Triangle Street is a four-way signalized intersection. White Street/Newtown Road is classified as a Minor Arterial. Triangle Street is classified as a Major Collector, and Beaver Brook Road is classified as a local road. The queues on White Street extend to approximately 1,000 feet during the PM peak. There is also approximately 150 feet of congestion on Triangle Street in both directions near the intersection during PM hours. According to the CTDOT traffic monitoring data website, there is an AADT of 18,200 on White Street/Newtown Road. There is an AADT of 8,200 on Triangle Street approaching the intersection. Existing right-of-way is limited with a mixture of commercial and residential abutters.

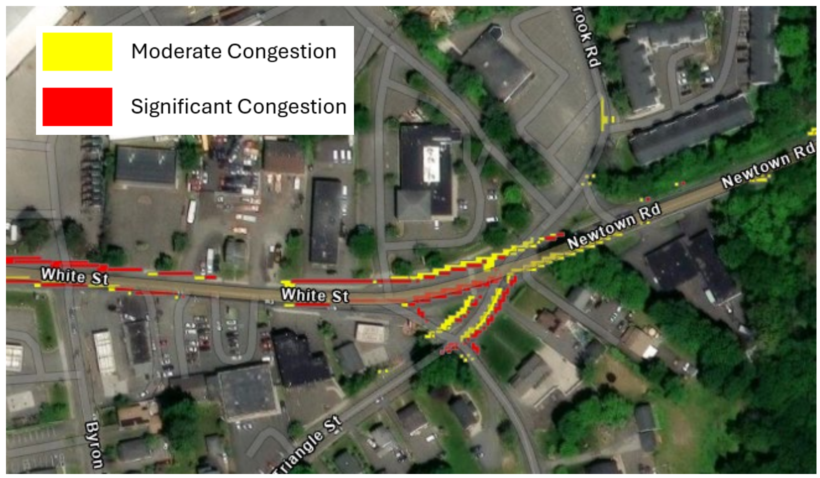


Figure 6. Overlayed Congestion at White Street – Newtown Road – Triangle Street

The existing intersection experiences significant congestion during the morning and afternoon peak periods, which is likely driven by the intersection's complex geometry and numerous approaches. Significant congestion occurs on both the White Street and Triangle Street approaches. Significant congestion indicates that the highlighted area is operating at 0-45% of free flow speeds in each of the three AM and/or four PM peak 1-hour collection periods. Moderate congestion areas are those operating at 45-65% of free flow speed across all hours of the collection periods.

Peanut Roundabout: Is a specialized roundabout designed to manage traffic at skewed or elongated intersections where a traditional roundabout would not work.

The proposed countermeasure is a peanut roundabout, with five major approaches and several driveways.[1] This alternative requires roadway widening and relocation of curblines and driveways. Crosswalks would also be provided at approaches where there is a connection to existing sidewalks.

[1] When this location was brought to the concept design it had to be expanded from five legs as shown in the Figure 7 concept graphic to include an additional leg for Interstate Waste Services and accommodations for several additional private driveways.

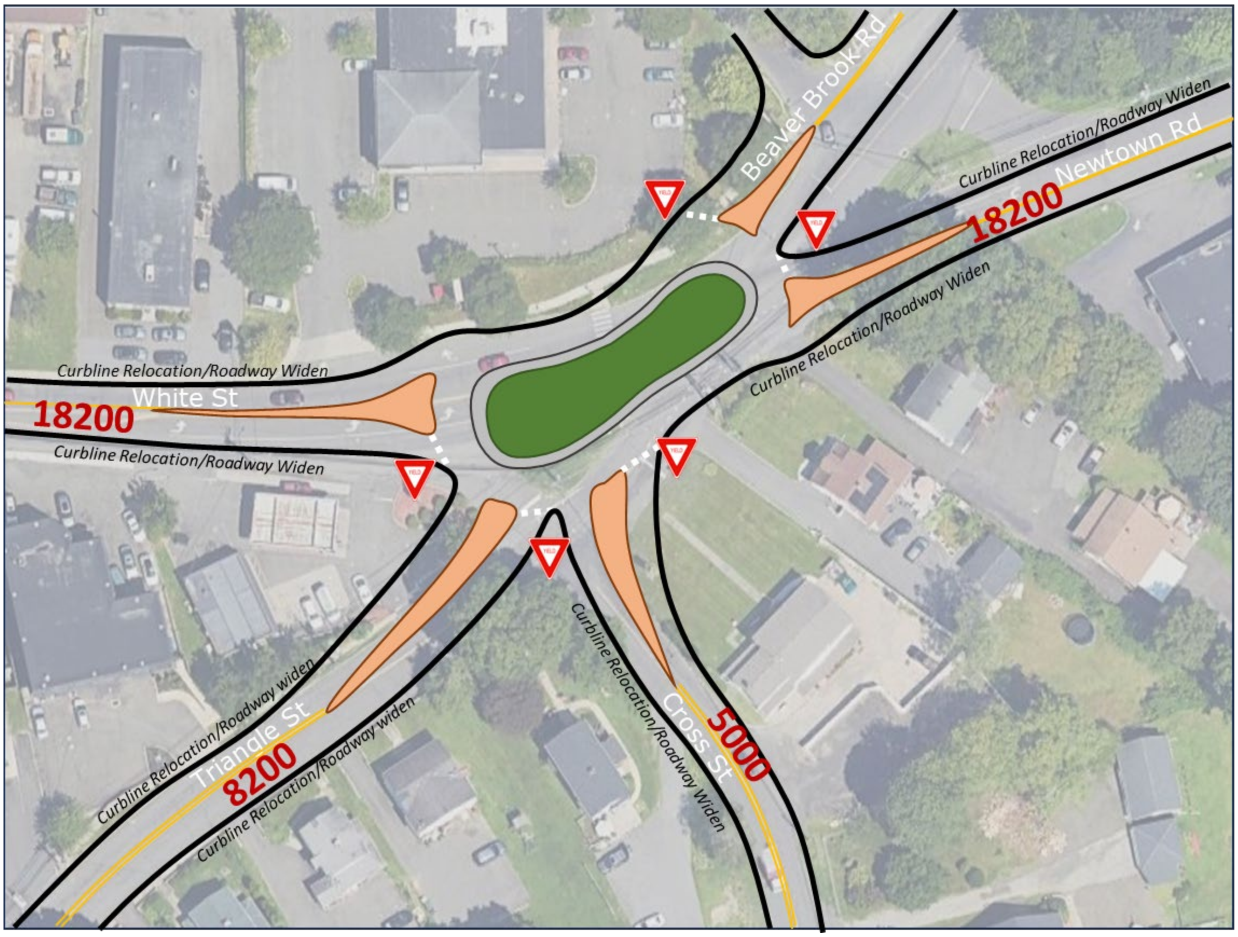


Figure 7. White Street-Newtown Road-Triangle Street Intersection Peanut Roundabout Initial Concept Sketch (Concept Design May Differ)

Wilton: Westport Road (Route 33) at Chestnut Hill Road (Route 53)

The intersection of Westport Road and Chestnut Hill Road in Wilton is a four-way signalized intersection with a right-turn WB slip lane. Westport Road and Chestnut Hill Road are both classified as Minor Arterials. Queues on the EB approach extend approximately 700 feet, while those on the NB approach extend approximately 400 feet. There is also queuing on the right-turn WB slip lane. According to the CTDOT traffic monitoring data website, Westport Road AADT is 10,200 on the EB approach and 11,700 on the WB approach. On Chestnut Hill Road, the AADT is 6,800 on the NB approach and 4,700 on the SB approach. One of the noted potential causes of congestion is left turning conflicts based on the identified queuing. Traffic is stopped for too long on Westport Road in the EB direction due to the signal, causing a long queue.

The intersection experiences significant congestion during both the AM and PM peak periods. Significant congestion indicates that the highlighted area is operating at 0-45% of free flow speeds in each of the three AM and/or four PM peak 1-hour collection periods. Moderate congestion refers to those locations where operating speeds were 45-65% of free flow speeds across all hours of the collection periods. The queuing on the EB approach extends approximately 700 feet and the queuing on the NB approach extends approximately 400 feet. There is also queueing on the right-turn WB slip-lane. The identified congestion suggests that there is likely a conflict at the intersection due to left-turning vehicles preventing through traffic from clearing the intersection, leading to extended queueing and reduced intersection throughput.

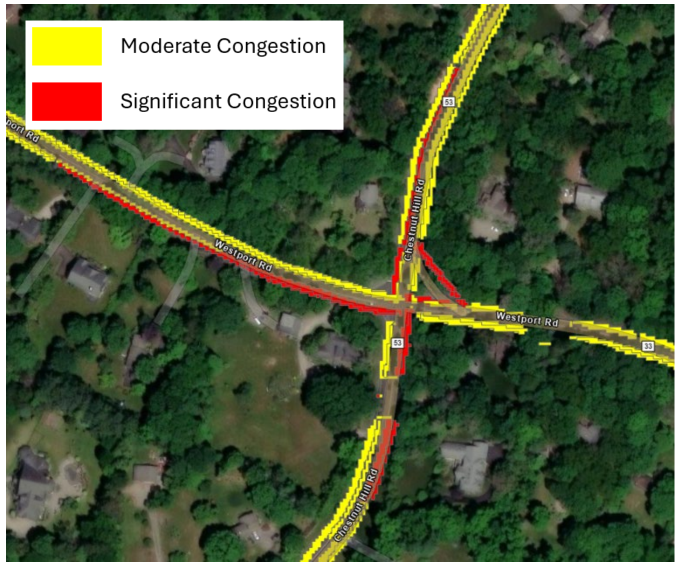


Figure 8. Overlayed AM and PM Congestion at Westport Rd at Chestnut Hill

The recommended congestion countermeasure is a roundabout with refuge islands on all approaches to keep traffic continuously moving and flowing. In addition to congestion mitigation benefits a roundabout could potentially reduce the intersection's footprint and improve visibility for oncoming traffic.

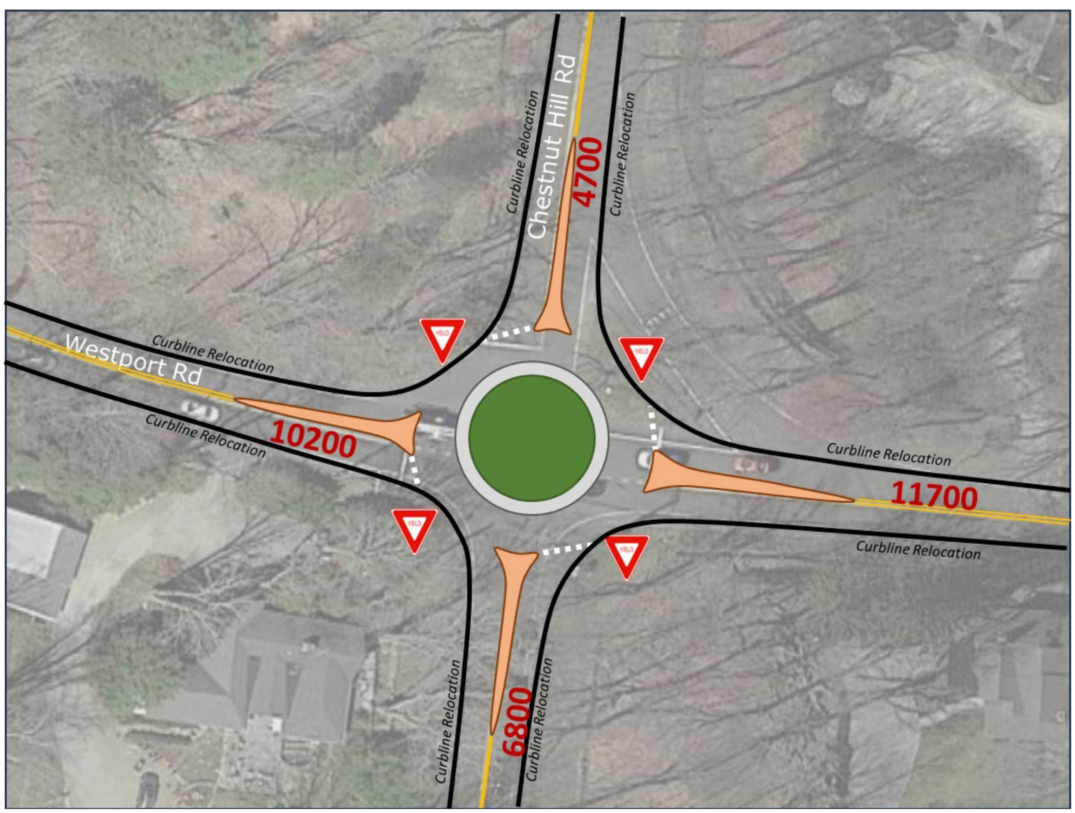


Figure 9. Westport Road at Chestnut Hill Road Concept Sketch (Concept Design May Differ)

New Milford: Danbury Road (Route 202) at Sullivan Road

The intersection of Danbury Road (Route 202) and Sullivan Road in New Milford is currently a four-way signalized intersection, with a commercial parking lot on the east side. Danbury Road is classified as a Principal Arterial, and Sullivan Road is classified as a Minor Arterial. The queueing on Danbury Road extends approximately 1,400 feet for the NB approach and 400 feet for the SB approach. According to the CTDOT traffic monitoring data website, the AADT on Danbury Road is 30,200 for the SB approach and 29,100 for the NB approach. The AADT on Sullivan Road is 5,700.

Despite the scale of the intersection and existing lane configurations, this location experiences daily congestion during the weekday AM and PM peak periods. As shown in Figure 3, significant congestion occurs at the northbound and southbound approaches on Danbury Road and to a lesser degree along the Sullivan Road approach. Significant congestion indicates that the highlighted area is operating at 0-45% of free flow speeds in each of the three AM and/or four PM peak 1-hour collection periods. The moderate congestion areas refer to locations where operating speeds were 45-65% of free flow speeds across all hours of the collection periods.

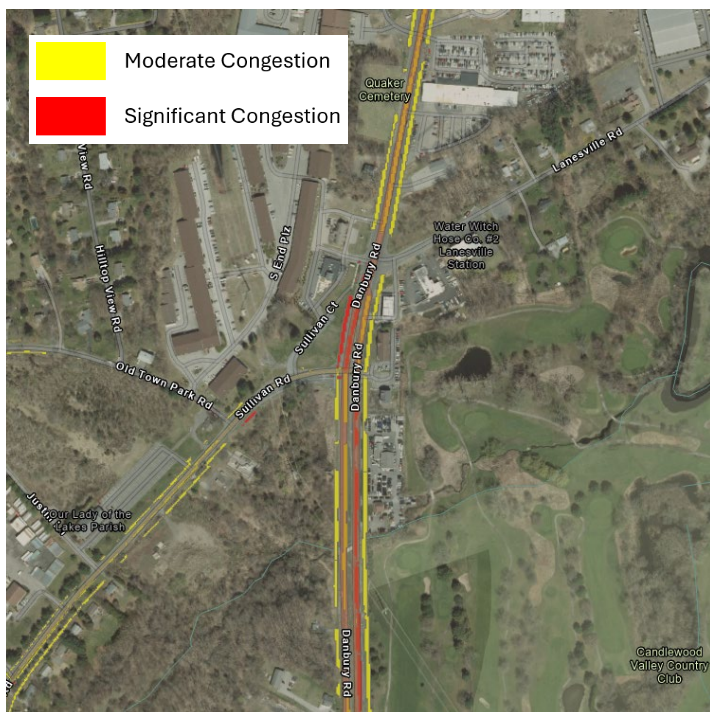


Figure 10. Overlayed AM and PM Congestion at Danbury Road at Sullivan Road

The typical queue during the PM peak extends more than 1,000 feet in the NB direction on Danbury Road (Route 202) approaching the intersection and approximately 500 feet in the SB direction. In the EB direction approaching the intersection, the queuing stretches to approximately 400 feet upstream from the intersection, with further sections of moderate congestion following each of these segments.

The identified congestion suggests that the intersection is not operating effectively, in part due to the high traffic volumes on Danbury Road. Several potential factors contributing to the observed congestion under prevailing traffic conditions are:

1. Left turn conflicts for all directions.

2. Poor signal timing
3. Poor adjacent signal coordination.
4. Direct access by an adjacent commercial property.

The proposed project converts the intersection into a roundabout with an expected circulating capacity of two lanes. A roundabout can improve safety for pedestrian crossings by integrating crosswalks and sidewalks as part of the proposed countermeasures.

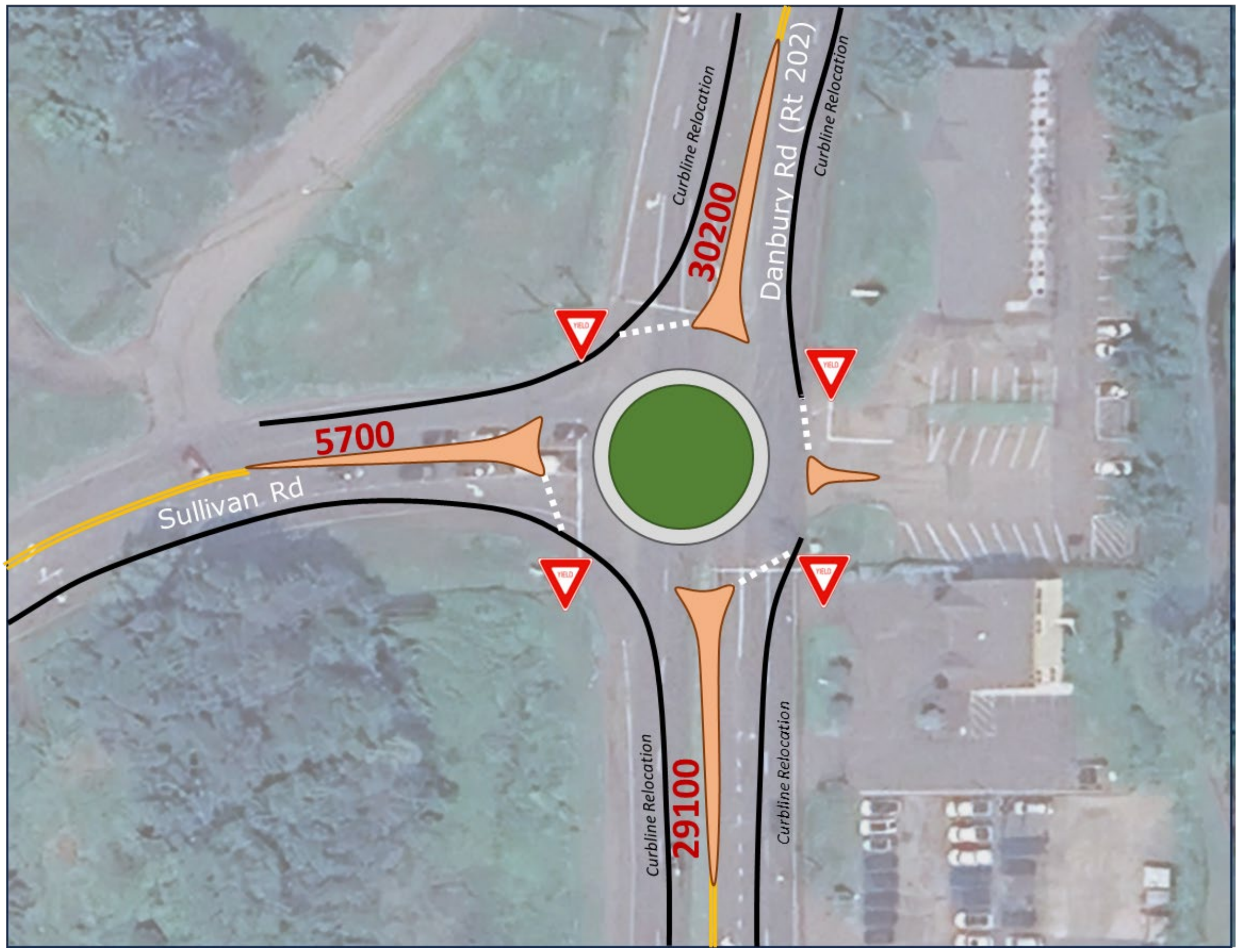


Figure 11. Danbury Road (Route 202) at Sullivan Road Concept Sketch (Concept Design May Differ)

Westport: Wilton Road (Route 33) at King's Highway North[2]

The intersection of Wilton Road (Route 33) and Kings Highway North in Westport is a four-way signalized intersection. Wilton Road is classified as a Minor Arterial. The easterly approach of Kings Highway North is classified as a Minor Arterial, while the westerly approach is classified as a local road. Congestion was identified on all approaches during the PM peak. The queue extends approximately 800 feet on Wilton Road in the SB direction approaching the intersection. The queue extends approximately 700 feet on Wilton Road in the NB direction approaching the intersection. The queue extends approximately 200 feet on Kings Highway North in the WB direction approaching the intersection. The queue extends approximately 1,300 feet on Kings Highway North in the EB direction approaching the intersection. Only one of the approaches has designated left-turn lanes.

The existing intersection experiences significant congestion during both the morning and afternoon periods with additional moderate congestion occurring on all approaches. Significant congestion indicates that the highlighted area is operating at 0-45% of free flow speeds in each of the three AM and/or four PM peak 1-hour collection periods. Moderate congestion refers to locations where operating speeds were 45-65% of free flow speeds across all hours of the collection periods.

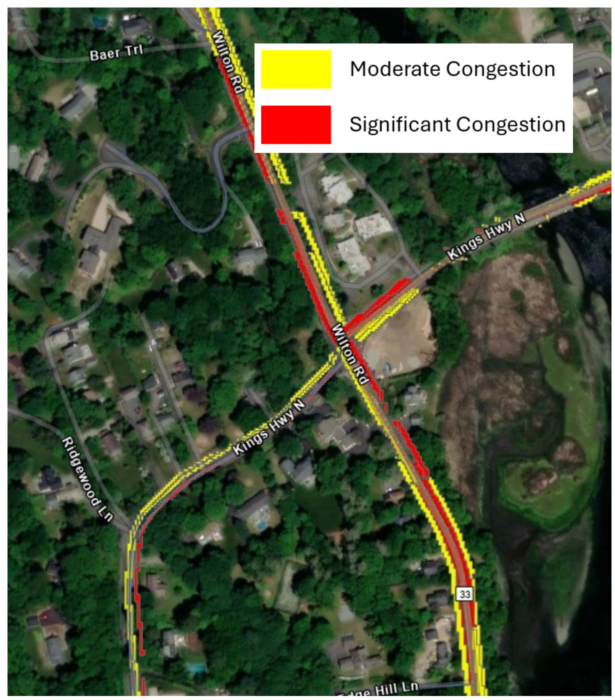


Figure 12. Overlayed AM and PM Congestion at Wilton Rd at Kings Highway N

The queueing extends for approximately 800 feet on Wilton Road in the SB direction approaching the intersection. The queuing on Wilton Road in the NB direction approaching the intersection is approximately 700 feet. The queueing on Kings Highway N in the WB direction approaching the intersection is approximately 200 feet. The queuing on Kings Highway N in the EB direction approaching the intersection is approximately 1300 feet. Only the westbound Kings Highway N approach

[2] The project concept developed for the Westport intersection did not indicate sufficient congestion reduction benefits to be considered at this time and is not included in phase 4 of the Final Report, Appendix C, Appendix D or Appendix E.

has a designated left-turn lane that likely contributes to the congestion as the other legs attempt to make left turns.

A full signal upgrade with the addition of an Eastbound Kings Highway North left turn lane are the proposed countermeasures. The added turn lane may require minor roadway widening that may include ROW impact(s) at the corners of the intersection. Adding crosswalks and pedestrian curb ramps is also included as part of the proposed scope, where accommodated by existing infrastructure. Design efforts should include consideration of signal coordination with the Wilton Road and Canal Street intersection because the intersections are located within 1,000 feet of each other.

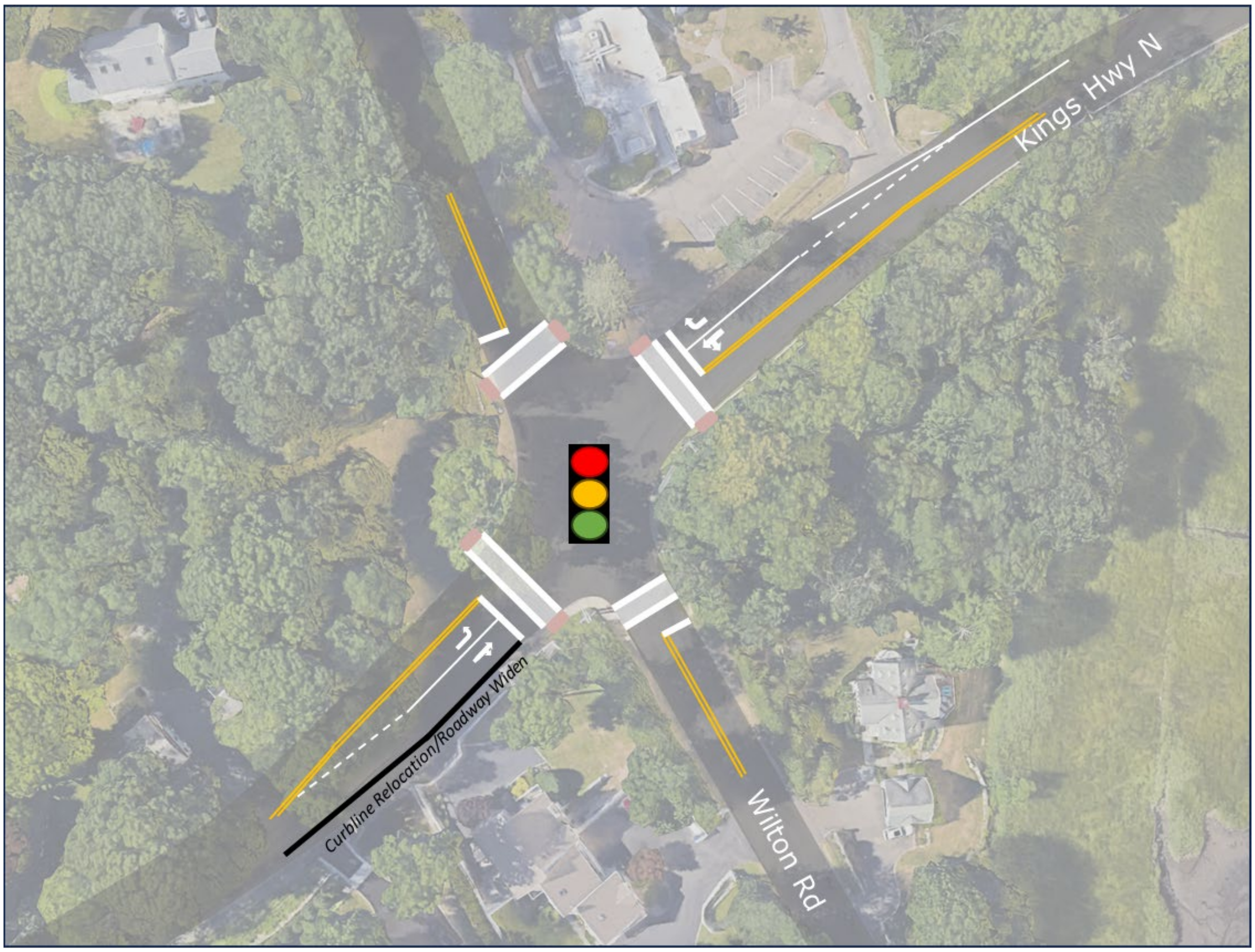


Figure 13. Wilton Road (Route 33) at King's Highway North Initial Concept Sketch (Concept Design May Differ)

Phase 4: Concept Design, Congestion Reduction Benefits and Cost Estimates

A project concept design, summary of congestion reduction benefits and a preliminary cost estimate were prepared for the six locations previously identified. These materials are packaged in *Appendix C: Design Justification Report* and *Appendix D: Project Concept Designs,* which supplements this document.

Project Concept Design

The project concept design expands upon the concept project sketch to provide a feasible basis for design, identifying the proposed lane configuration, intersection scale, property impacts, and key dimensions to ensure the project meets applicable design standards. The concept designs were used to develop preliminary cost estimates. An example from one of six locations is provided below.

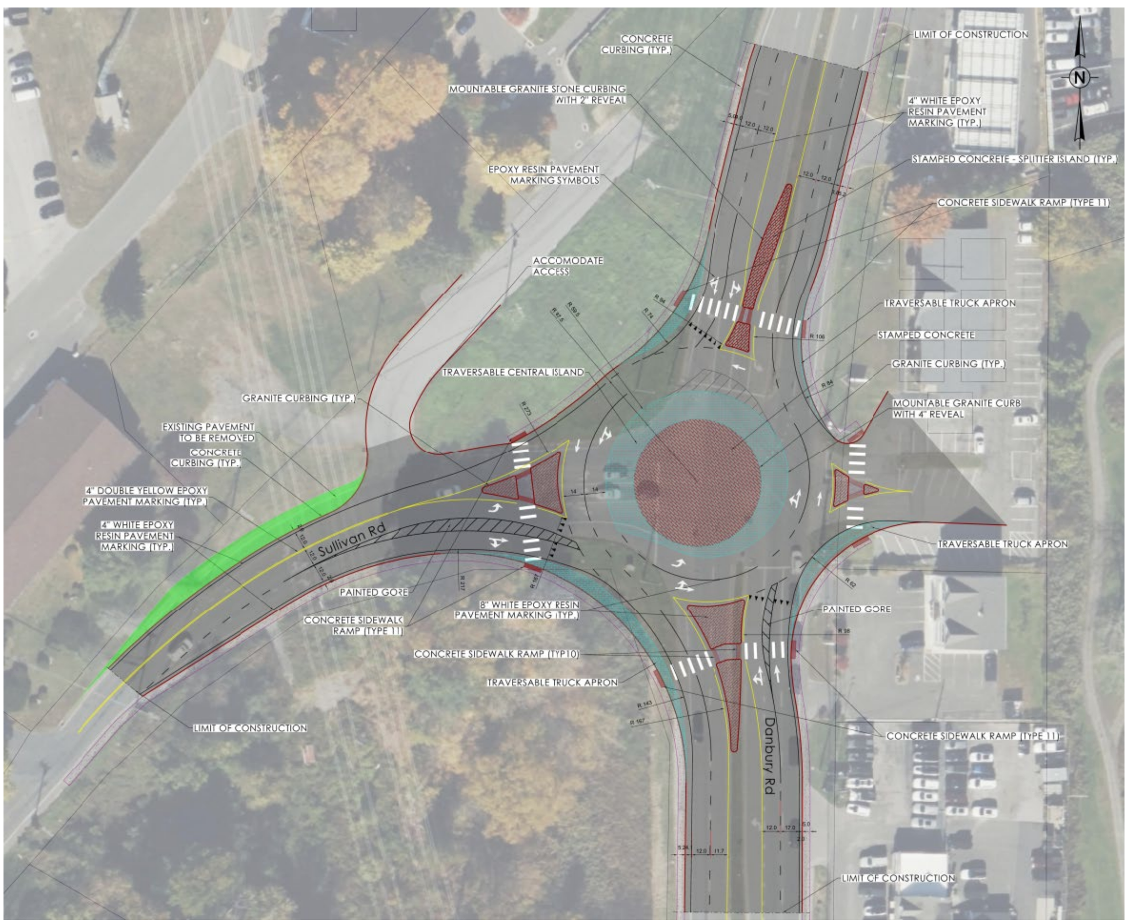


Figure 14. Example of Project Concept Design, included example is Danbury Road (Route 202) at Sullivan Road in New Milford

Congestion Reduction Benefits

The expected benefits of congestion reduction were estimated using computational methods. The Highway Capacity Manual (HCM) Quick Estimation Methodology was used for Existing, Future No-Build, and Future Build years. The Existing condition is the current infrastructure conditions (no project) and current (Year 2024) traffic conditions. The Future No-Build condition refers to the scenario of existing infrastructure (i.e., no congestion reduction measures are implemented) and traffic conditions projected 20 years in the future (Year 2044). The Future Build condition refers to the scenario in which the proposed project is implemented under 2044 traffic conditions. For the four locations where a roundabout is the recommended countermeasure, the HCM Quick Estimation Methodology was used for the Existing and Future No-Build conditions, and the Georgia Department of Transportation (GDOT) Roundabout Analysis Tool was used for the Future Build scenario. Both these tools are widely used to assess congestion at intersections.

The HCM Quick Estimation Methodology was used to compute the intersection delay, volume-to-capacity (v/c) ratio, and level of service for each location under existing conditions. For all locations, volumes were pulled from Wednesday weekday data from either 2024 or 2025, collected by WestCOG. The Quick Estimation method included lane volume computations and calculation of the average vehicle delay. Future No-Build conditions were modeled using the Quick Estimation method and projecting traffic volumes 20 years at an annual growth rate of 0.5%. The same future volumes were also input for Future Build conditions. For the locations that included a proposed roundabout, the GDOT roundabout analysis tool was utilized to produce intersection delay, v/c ratio and LOS results. This allows for an apples-to-apples comparison between two analysis methods and between pre- and post-implementation conditions.

Level of Service (LOS) is an indicator of operating conditions that occur on a given roadway feature while accommodating varying levels of traffic volumes. It is a measure that accounts for several operational factors, including roadway geometry, speed, traffic composition, peak-hour factors, freedom to maneuver, and driver expectations. When all these measures are assessed and an average delay per vehicle is calculated, the LOS is assigned to a roadway or intersection based on the calculated delay. The LOS is equivalent to presenting an “index” to the operational qualities of the section under study. LOS is classified in the 2000 edition of the Highway Capacity Manual (2000 HCM) into six levels, designated ‘A’ through ‘F’, based on the control delay ranges they fall under. These ranges are presented in Table 1, for both unsignalized and signalized intersections. In practice, any given roadway/intersection may operate at a wide LOS range depending upon time of day, day of week, or period of year.

Table 1: Level of Service (LOS) Criteria for Signalized and Unsignalized Intersections

	Average Delay (Seconds)	
Level of Service (LOS)	**Unsignalized Intersections**	**Signalized Intersections**
A	≤10	≤10
B	>10 and ≤15	>10 and ≤20
C	>15 and ≤25	>20 and ≤35
D	>25 and ≤35	>35 and ≤55
E	>35 and ≤50	>55 and ≤80
F	>50	>80

Intersection Geometry

The conceptual intersection geometry was developed in accordance with CTDOT's Highway Design Manual, Section 11-3 (Intersections At-Grade, Jan 2012). The applicable CTDOT design vehicles include P, SU, BUS, WB-62, and WB-67. For each approach, the largest vehicle expected to turn frequently was selected as the governing design vehicle. The geometry was verified using turning templates for the controlling right-turn movements and receiving-lane widths. At constrained locations, limited tolerable encroachment was permitted in accordance with §11-3.03, and noted in the tables provided for each intersection.

Congestion Reduction Benefits for Candidate Projects

Newtown: South Main Street (Route 25) at Mile Hill Road (Route 860)

The congestion reduction benefits of the proposed concept were assessed using a combination of the HCM Quick Estimation Methodology for existing and Future No-Build scenarios and the GDOT Roundabout Analysis Tool for the Future Build scenario. The table below summarizes the overall intersection delay and Level of Service for the weekday morning and afternoon peak hours, under the Existing, Future No-Build, and Future Build scenarios.

Table 2. South Main Street (Route 25) at Mile Hill Road Summary of Congestion Reduction Benefits

	Existing		**Future No-Build**		**Future Build**	
	Delay [1]	**LOS [2]**	**Delay [1]**	**LOS [2]**	**Delay [1]**	**LOS [2]**
Weekday Morning Peak Hour	205	LOS F	272	LOS F	12	LOS B
Weekday Afternoon Peak Hour	315	LOS F	416	LOS F	14	LOS B
[1] Overall Intersection Delay, measured in seconds per vehicle [2] Level of Service						

This intersection currently operates at an estimated 205 seconds of delay in the morning peak and 315 seconds in the afternoon peak, equating to a severe LOS F. The level of delay experienced at the intersection is projected to worsen in the Future No-Build due to volume increasing in the corridor. The proposed project is projected to significantly reduce congestion at the intersection with an anticipated delay reduction of 95% when compared to the No-Build condition, and leading to a Future-Build LOS B during both the morning and afternoon peak periods.

Table 3. South Main Street (Route 25) at Mile Hill Road Summary of Congestion Reduction Benefits Intersection Geometry Design Vehicle Recommendations

Approach (Functional Classification)	Turn to: (functional classification)	Design Vehicle	Basic CTDOT Guidance Concept Plan Notes
South Main Street - Both approaches (Principal Arterial)	Mile Hill Road (Major Collector)	WB-62	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.
Mile Hill Road (Major Collector)	South Main Street (Principal Arterial)	WB-62	Higher-classification design vehicle due to proximity to NHS/Interstate and existing HV volumes, which are noted to contribute to intersection congestion.

Stamford: Grove Street at Broad Street Intersection

The congestion reduction benefits of the proposed concept were assessed using a combination of the HCM Quick Estimation Methodology for Existing, Future No-Build, and Future Build scenario. The table below summarizes the overall intersection delay and Level of Service for the weekday morning and afternoon peak hours, under the Existing, Future No-Build, and Future Build scenarios.

Table 4. Grove Street at Broad Street Summary of Congestion Reduction Benefits

	Existing		Future No-Build		Future Build	
	Delay [1]	**LOS [2]**	**Delay [1]**	**LOS [2]**	**Delay [1]**	**LOS [2]**
Weekday Morning Peak Hour	139	LOS F	175	LOS F	52	LOS D
Weekday Afternoon Peak Hour	75	LOS E	125	LOS F	98	LOS F

[1] Overall Intersection Delay, measured in seconds per vehicle
[2] Level of Service

This intersection is currently operating at an estimated 139 seconds of delay in the morning peak hour and 75 seconds in the afternoon peak hour, which equates to a LOS F and LOS E. For the Future Build scenario, there is a delay reduction of 70% in the morning peak period and 22% in the evening peak period. While the intersection is projected to operate at an LOS of F in the Future Build condition for the afternoon peak, the percent reduction in seconds of delay is substantial, given the constraints of the corridor and volume in the corridor during peak periods.

Table 5. Grove Street at Broad Street Intersection Geometry Design Vehicle Recommendations

Approach (Functional Classification)	**Turn to: (functional classification)**	**Design Vehicle**	**Basic CTDOT Guidance** **Concept Plan Notes**
Grove Street (Minor Arterial)	Broad Street (Minor Arterial)	WB-62	The intersection geometry was evaluated for the WB-62 design vehicle per CTDOT's Highway Design Manual (Section 11-3). In urban, pedestrian-focused areas like this location, the Manual allows for design vehicle encroachment into adjacent lanes due to physical constraints, such as the Broad Street median, pedestrian bump outs, and Grove Street's skewed approach. This approach prioritizes pedestrian safety and urban context over full truck maneuverability, as permitted by the Manual [Section 11-3.03.01]. The Concept Plan presented in Appendix D illustrates turning templates that confirm the WB-62 can complete movements with encroachment, which is acceptable given the City's pedestrian focus and the availability of alternate truck routes. The design balances operational needs with safety and accessibility goals.
Broad Street (Minor Arterial)	Grove Street (Minor Arterial)	WB-62	The intersection geometry was evaluated for the WB-62 design vehicle per CTDOT's Highway Design Manual (Section 11-3). In urban, pedestrian-focused areas like this location, the Manual allows for design vehicle encroachment into adjacent lanes due to physical constraints, such as the Broad Street median, pedestrian bump outs, and Grove Street's skewed approach. This approach prioritizes pedestrian safety and urban context over full truck maneuverability, as permitted by the Manual [Section 11-3.03.01]. The Concept Plan presented in Appendix D illustrates turning templates that confirm the WB-62 can complete movements with encroachment, which is acceptable given the City's pedestrian focus and the availability of alternate truck routes. The design balances operational needs with safety and accessibility goals.

Danbury: White Street – Newtown Road – Triangle Street

The congestion reduction benefits of the proposed concept were assessed using a combination of the HCM Quick Estimation Methodology for Existing and Future No-Build scenarios and the GDOT Roundabout Analysis Tool for the Future Build scenario. The table below summarizes the overall intersection delay and Level of Service for the weekday morning and afternoon peak hours, under the Existing, Future No-Build, and Future Build scenarios.

Table 6. White Street – Newtown Road – Triangle Street Summary of Congestion Reduction Benefits

	Existing		Future No-Build		Future Build	
	Delay [1]	**LOS [2]**	**Delay [1]**	**LOS [2]**	**Delay [1]**	**LOS [2]**
Weekday Morning Peak Hour	205	LOS F	272	LOS F	12	LOS B
Weekday Afternoon Peak Hour	315	LOS F	416	LOS F	14	LOS B

[1] Overall Intersection Delay, measured in seconds per vehicle
[2] Level of Service

This intersection currently operates at an estimated 205 seconds of delay in the morning peak and 315 seconds in the afternoon peak, equating to a severe LOS F. The level of delay experienced at the intersection is projected to worsen in the Future No-Build due to volume increasing in the corridor. The proposed project is projected to significantly reduce congestion at the intersection with an anticipated delay reduction of 95% when compared to the Future No-Build condition, and leading to a Future-Build LOS B during both the morning and afternoon peak periods.

Table 7. White Street – Newtown Road – Triangle Street Intersection Geometry Design Vehicle Recommendations

Approach (Functional Classification)	Turn to: (functional classification)	Design Vehicle	Basic CTDOT Guidance & Concept Plan Notes
White Street (Minor Arterial)	Triangle Street (Collector), other roadways (Local Roadways)	WB-62	Recommend SU due to the residential nature of Triangle Street and the acute angle to connect with White Street.
Triangle Street (Major Collector)	White Street (Arterial), other roadways (Local Roadways)	SU	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.
Other roadways (Local Roadways)	White Street (Arterial), Triangle Street (Collector)	SU	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.

Wilton: Westport Road (Route 33) at Chestnut Hill Road (Route 53) Intersection

The congestion reduction benefits of the proposed concept were assessed using a combination of the HCM Quick Estimation Methodology for Existing and Future No-Build scenarios and the GDOT Roundabout Analysis Tool for the Future Build scenario. The table below summarizes the overall intersection delay and Level of Service for the weekday morning and afternoon peak hours, under the Existing, Future No-Build, and Future Build scenarios.

Table 8. Westport Road (Route 33) at Chestnut Hill Road (Route 53) Summary of Congestion Reduction Benefits

	Existing		**Future No-Build**		**Future Build**	
	Delay [1]	**LOS [2]**	**Delay [1]**	**LOS [2]**	**Delay [1]**	**LOS [2]**
Weekday Morning Peak Hour	127	LOS F	207	LOS F	21	LOS C
Weekday Afternoon Peak Hour	218	LOS F	335	LOS F	16	LOS C

[1] Overall Intersection Delay, measured in seconds per vehicle
[2] Level of Service

This intersection is currently operating at an estimated 127 seconds of delay in the morning peak and 218 seconds in the afternoon peak, equating to a LOS F. Forecasted volume increase in the Future, the No-Build scenario sees the estimated level of delay increase. For the Future Build condition, it is shown that a single-lane roundabout will result in a significant reduction in intersection delay and would achieve an LOS C equating to an approximate 90% delay reduction during both the morning and afternoon peak periods.

Table 9. Westport Road (Route 33) at Chestnut Hill Road (Route 53) Intersection Geometry Design Vehicle Recommendations

Approach (Functional Classification)	**Turn to: (functional classification)**	**Design Vehicle**	**Basic CTDOT Guidance & Concept Plan Notes**
Westport Road (Minor Arterial)	Chestnut Hill Road (Minor Arterial)	WB-62	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.
Chestnut Hill Road (Minor Arterial)	Westport Road (Minor Arterial)	WB-62	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.

New Milford: Danbury Road (Route 202) at Sullivan Road Intersection

The congestion reduction benefits of the proposed concept were assessed using a combination of the HCM Quick Estimation Methodology for Existing and Future No-Build scenarios and the GDOT Roundabout Analysis Tool for the Future Build scenario. The table below summarizes the overall intersection delay and Level of Service for the weekday morning and afternoon peak hours, under the Existing, Future No-Build, and Future Build scenarios.

Table 10. Danbury Road (Route 202) at Sullivan Road Summary of Congestion Reduction Benefits

	Existing		**Future No-Build**		**Future Build**	
	Delay [1]	**LOS [2]**	**Delay [1]**	**LOS [2]**	**Delay [1]**	**LOS [2]**
Weekday Morning Peak Hour	483	LOS F	640	LOS F	13	LOS B
Weekday Afternoon Peak Hour	590	LOS F	788	LOS F	17	LOS C
[1] Overall Intersection Delay, measured in seconds per vehicle [2] Level of Service						

The intersection is currently operating at an estimated 483 seconds of delay in the morning peak and 590 seconds in the afternoon peak. This equates to a severe LOS F, indicating that significant delays are being experienced by roadway users. Without intervention, the intersection operations worsen further in the Future No-Build scenario due to increased roadway volumes. Results from the GDOT Roundabout Analysis Tool indicate that the proposed multilane roundabout would have a substantial impact on improving intersection operations. Under the Future Build, there would be an estimated 98% delay reduction in when compared to the No-Build condition, leading to LOS of B and C in the morning and afternoon peaks, respectively.

Table 11. Danbury Road (Route 202) at Sullivan Road Intersection Geometry Design Vehicle Recommendations

Approach (Functional Classification)	**Turn to: (functional classification)**	**Design Vehicle**	**Basic CTDOT Guidance & Concept Plan Notes**
Danbury Road (Principal Arterial)	Sullivan Road (Minor Arterial)	WB-62	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.
Sullivan Road (Minor Arterial)	Danbury Road (Principal Arterial)	WB-62	The Concept Plan presented in Appendix D illustrates compliance by the recommended design vehicle.

Cost Estimates

Cost estimates for each location were produced pursuant to the CTDOT Local Transportation Capital Improvement Program (LOTCIP) guidelines. These estimates are presented in 2025 dollars and are not escalated, as the anticipated construction years for the proposed projects are not yet known. The itemized cost estimate can be found in *Appendix E: Conceptual Cost Estimates*.

Table 12. Conceptual Cost Estimates

Intersection	**Conceptual Cost**
Newtown: South Main Street (Route 25) at Mile Hill Road (Route 860) Intersection	$3,800,000
Stamford: Grove Street at Broad Street Intersection	$2,000,000
Danbury: White Street – Newtown Road – Triangle Street Intersection	$2,900,000
Wilton: Westport Road (Route 33) at Chestnut Hill Road (Route 53) Intersection	$3,200,000
New Milford: Danbury Road (Route 202) at Sullivan Road Intersection	$3,500,000