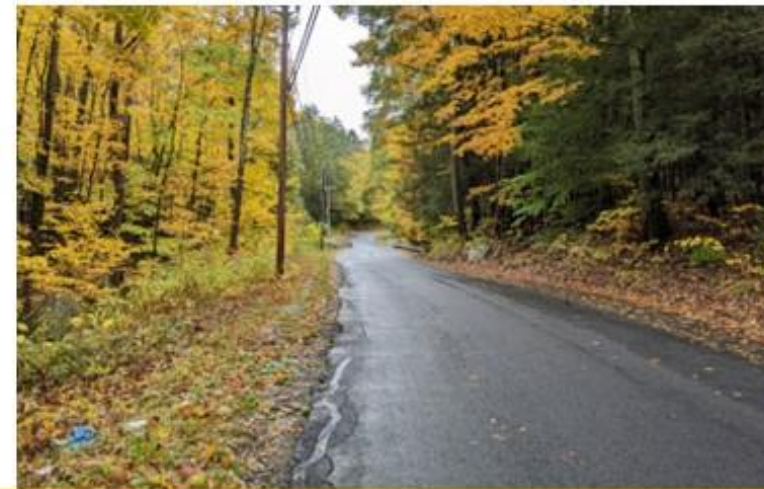


TORRINGTON ROAD SAFETY AUDIT

ROUTE 4 (GOSHEN ROAD) AND LOVERS LANE



FEBRUARY 2023

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1 COMMUNITY CONNECTIVITY PROGRAM



1.1 Program Background

The Connecticut Department of Transportation (CTDOT) has created a Community Connectivity Program that focuses on improving the state's transportation network for all users. A major component of this program is conducting Road Safety Audits (RSAs) at selected locations. An RSA is a formal safety assessment of the existing roadway. It is a qualitative review by an independent team experienced in traffic, pedestrian, and bicycle operations and design that considers the safety of all road users and proactively assesses mitigation measures to improve the safe operation of the facility by reducing the potential crash risk frequency and/or severity.

The RSA team includes CTDOT staff, municipal officials and staff, municipal police, local stakeholders, FHI Studio staff, and community leaders. The RSA team is established for each municipality based on the requirements of the individual location. They assess and review factors that can promote or obstruct safe walking and bicycling routes. These factors include traffic volumes and speeds, topography, roadway geometrics, crash data, roadway inventory (i.e. signage, curbs, bicycle/pedestrian facilities, amenities, safety components), and sidewalks.

Each RSA is conducted using RSA protocols published by the FHWA. For details on this program, please refer to the CT Connectivity RSA site on the CTDOT webpage.

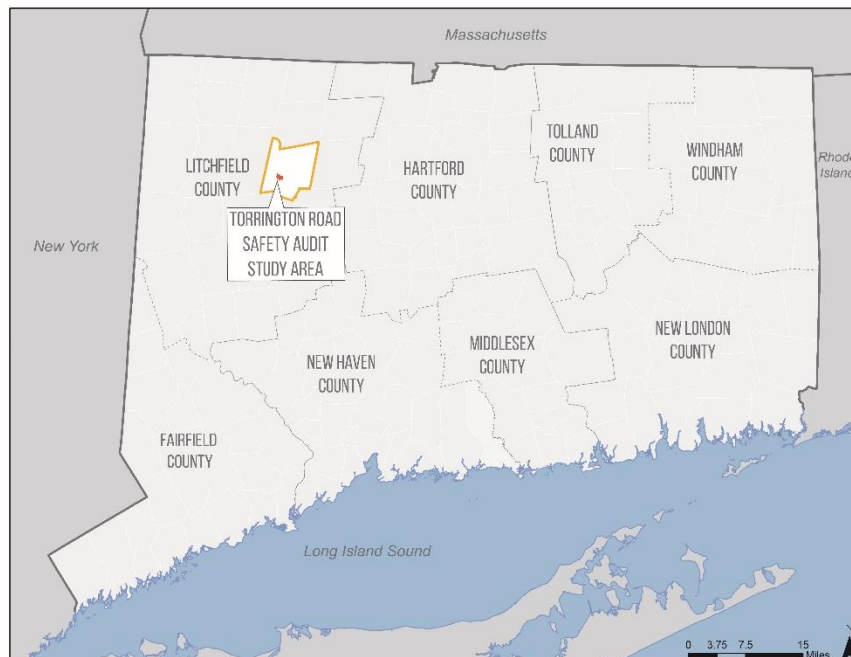
Prior to the site visit, area topography, land use characteristics, intersection sight distance concerns, sidewalk locations, parking, and bicycle facilities are examined using available mapping and imagery. The site visit includes a "Pre-Audit" meeting, the "Field Audit" itself, and a "Post-Audit" meeting to discuss the field observations and formulate recommendations. This procedure and the summary results are discussed in the following sections.

1.2 Torrington RSA Study Area and Location

CTDOT sponsored an RSA for the Town of Torrington along Route 4 (Goshen Road) between University Drive and Route 272 (Norfolk Road)/Riverside Avenue as well as Lovers Lane between Route 4 (Goshen Road) and 187 Lovers Lane (Country Woods of Torrington).

Exhibit 1 shows the study area in context to the State of Connecticut, while Exhibit 2 shows the study area in further detail.

Exhibit 1: Torrington RSA regional location



The purpose of the RSA is to observe any safety concerns while discussing possible safety improvements for pedestrians and bicyclists travelling along the study area corridor. The study area functions primarily as a minor arterial along Route 4 (Goshen Road) connecting downtown Torrington with Goshen and points further west. Route 4 in this area is generally sparsely populated, with a few businesses and residential communities along the corridor such as: The Cottage of Litchfield Hills, a senior community, and the Country Woods of Torrington, an 80-unit condo complex located at 187 Lovers Lane, Bicron Electronics, a manufacturing facility, and small retail store fronts at Goshen Road Plaza. The study area is approximately two and a half miles from Torrington City Hall. See Exhibit 3 for points of interest located along the corridor.

Route 4 is a minor arterial that provides a regional connection to east and west. The study area does not currently have sidewalks or crosswalks and has no bicycle infrastructure such as bike lanes or other facilities. Route 4 in this area is identified as part of the on-road bicycle planning network as part of the CTDOT Statewide Active Transportation Plan.

Average Daily Traffic (ADT) in the study area ranges between 5,500 vehicles to 7,300 vehicles per day along Route 4 (Goshen Road).

Exhibit 4 displays daily traffic in the study area. There is one (1) signalized intersection in the study area at the intersection of Route 4 (Goshen Road) and Route 272 (Norfolk Road)/Riverside Avenue on the eastern end of the study area. All other intersections within the RSA study area are unsignalized. These intersections are signed as two-way stop control where Route 4 (Goshen Road) does not stop.

Exhibit 2: Torrington RSA study area

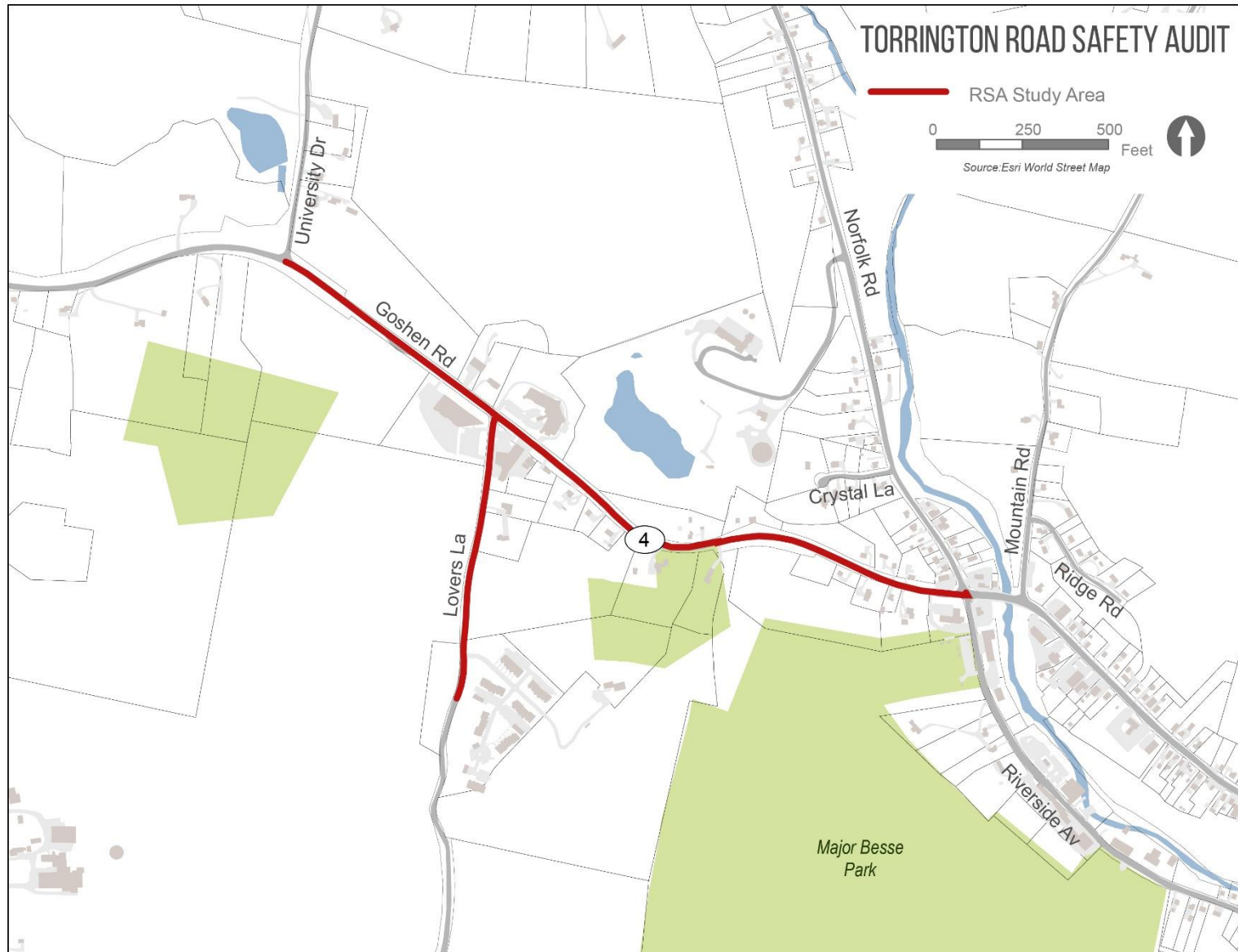


Exhibit 3: Study area points of interest

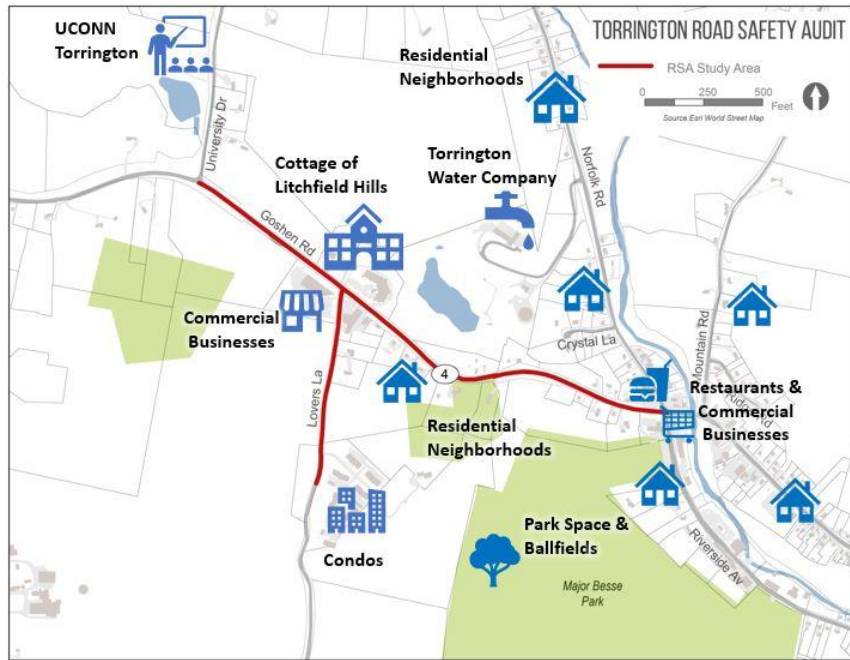
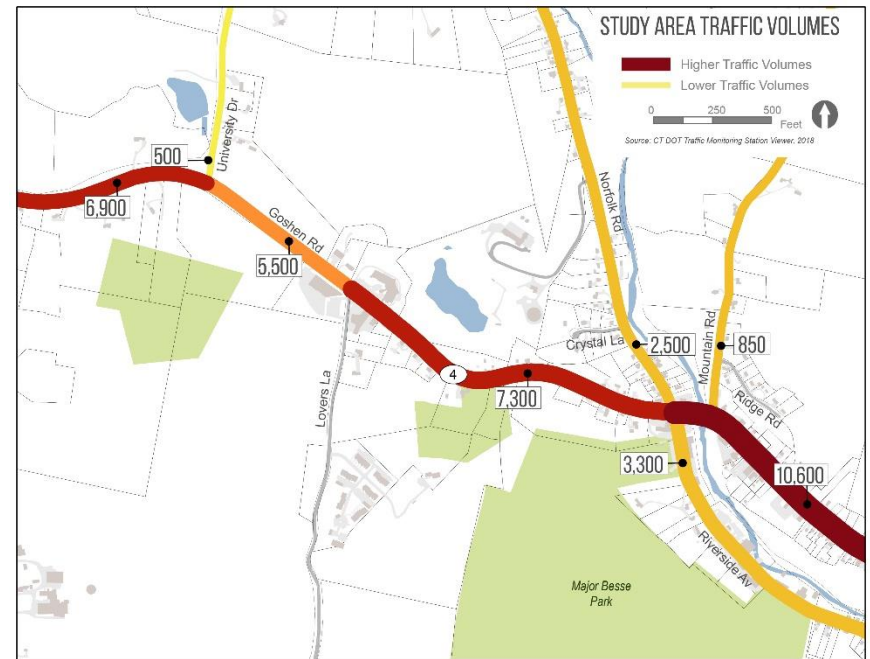


Exhibit 4: Average daily traffic volumes

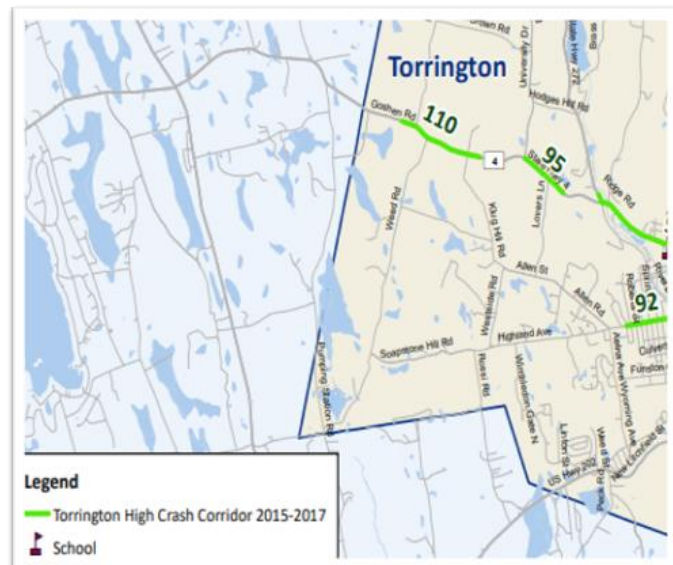


2 PRIOR EFFORTS IN STUDY AREA

2.1 Northwest Hills Transportation Safety Plan 2019

The Northwest Hills Council of Governments completed a Transportation Safety Plan in 2019. In it, recommendations were made for edge line rumble strips with bicycle gaps and roadway illumination along Route 4 (Goshen Road). Additionally, Route 4 (Goshen Road) was identified as a high crash corridor that would benefit from treatments to reduce the roadway departure incidents and dark lighted crash conditions. Traffic calming measures designed to reduce speed were also recommended along Route 4 (Goshen Road). Exhibit 5 shows these corridors.

Exhibit 5: Route 4 (Goshen Road) identified as a High Crash Corridor at the intersection of Lovers Lane



2.2 Connecticut Bicycle and Pedestrian Plan

Route 4 (Goshen Road) in the study area is identified on the Statewide On road Bicycle Planning Network. Review of analysis conducted for the Active Transportation Plan shows this area was identified as a Tier II implementation priority, indicating that bicycle facilities should be incorporated into maintenance or other road work as opportunities for improvements arise.

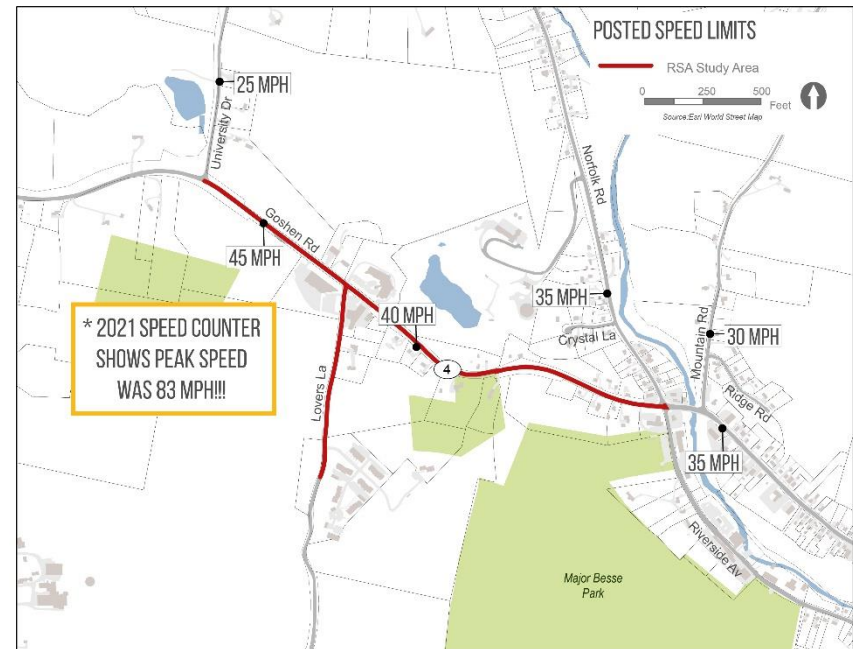
3 PRE-AUDIT MEETING

3.1 Pre-Audit Information

The RSA team conducted a pre-audit meeting in the afternoon of Monday, October 13, 2022. The RSA team presented a brief presentation that included an overview of the Torrington RSA goals and purpose, the study area, and key existing conditions findings. Key themes discussed during the pre-audit meeting are presented below.

Speeds: Speed limits in the study area range between 40 miles per hour (mph) on Route 4 (Goshen Road) to the east of Lovers Lane to 45 mph on Route 4 (Goshen Road) to the west of Lovers Lane. In the neighboring residential areas, the speed limit varies between 25 mph and 30 mph. Exhibit 6 displays speed limits in the study area.

Exhibit 6: Study area speed limits

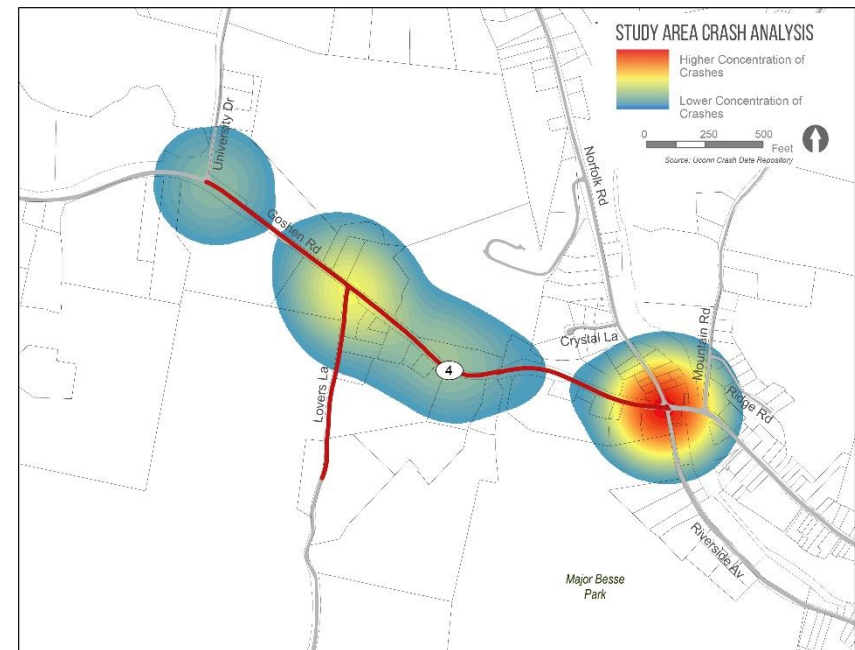


Crashes: Based on data retrieved from the Connecticut Crash Data Repository (CTCDR) for the five-year period between January 2017 through December 2021, there were a total of 49 crashes in the Torrington RSA study area. Crashes were concentrated in the vicinities of the Route 4 (Goshen Road) / Route 272 (Norfolk Road) intersection in the commercial area, the intersection of Route 4 (Goshen Road) / Lovers Lane intersection and the intersection of Route 4 (Goshen Road) and University Drive. Exhibit 7 displays the study area crash summary and Exhibit 8 displays a study area crash heatmap.

Exhibit 7: Study area crash summary

| Year | Fatality | Serious Injury | Minor Injury | Possible Injury | Property Damage Only | TOTAL |
|--------------|----------|----------------|--------------|-----------------|----------------------|-----------|
| 2017 | | | 4 | 1 | 5 | 10 |
| 2018 | | 1 | 1 | 1 | 8 | 11 |
| 2019 | 1 | | 1 | | 9 | 11 |
| 2020 | | 1 | | | 8 | 9 |
| 2021 | | | 3 | 1 | 4 | 8 |
| TOTAL | 1 | 2 | 9 | 3 | 34 | 49 |

Exhibit 8: Study area crash heatmap



Crashes by Type: Most crashes are angle crashes, which typically involve vehicles turning into or out of driveways along a corridor and are indicative of conflicting turning movements from vehicles traveling in opposing directions. Single vehicle crashes are indicative of crashes where motorists veered off the road, ran into a guardrail, etc. Other types of crashes including front to rear crashes and sideswipe crashes are common in areas with frequently stopped traffic and issues with passing sight distances. Exhibit 9 and Exhibit 10 display the location and breakdown of crashes by type in the corridor.

Exhibit 9: Crashes by type

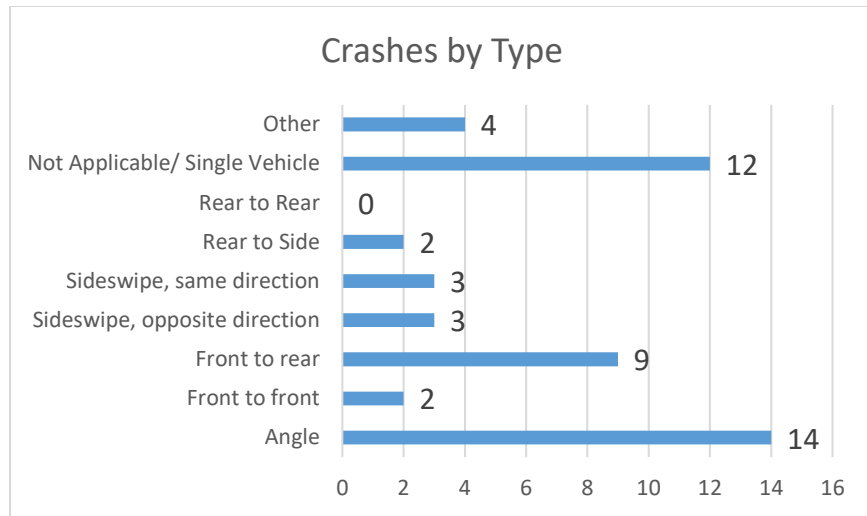
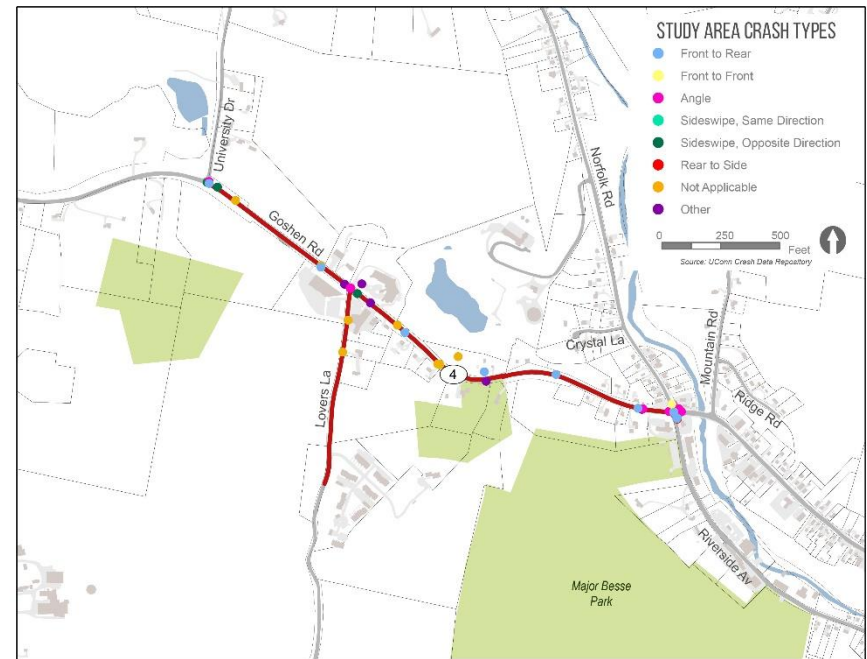


Exhibit 10: Crashes by type by location



Crash Severity: There was 3 crashes resulting in a possible injury in the study area, with one of these crashes resulting in serious injury (vehicular crash). There was one fatal crash reported in 2019 due to a lane departure by a motorcyclist at the intersection of University Drive and Route 4 (Goshen Road). Many crashes (34) are classified as property damage only. This is typical for single vehicle and angle type crashes that are prevalent in the study area. Exhibit 11 and Exhibit 12 show crash severity by location and a summary of total crashes by severity.

Crashes by Involved Person: There was no crashes involving a pedestrian or bicyclist in the study area. Exhibit 13 shows the location of the pedestrian crash.

Exhibit 11: Crash severity by location

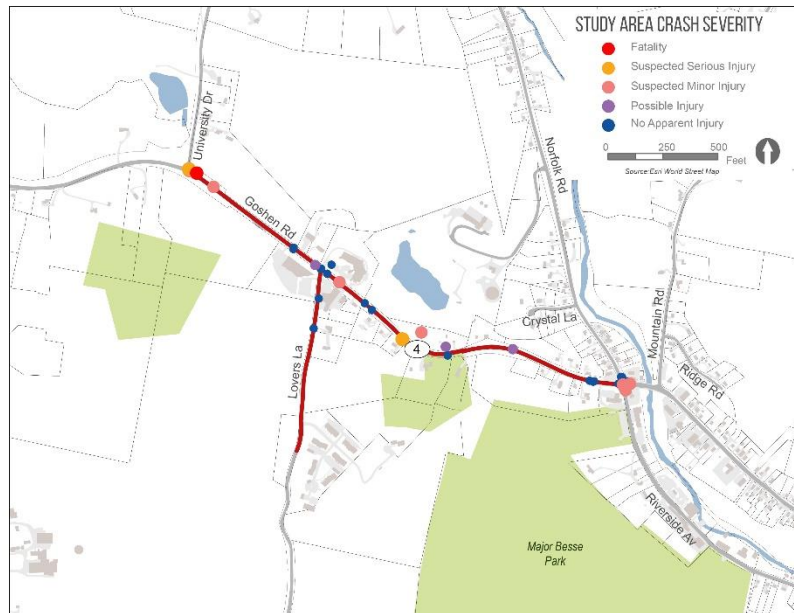


Exhibit 12: Crash severity summary

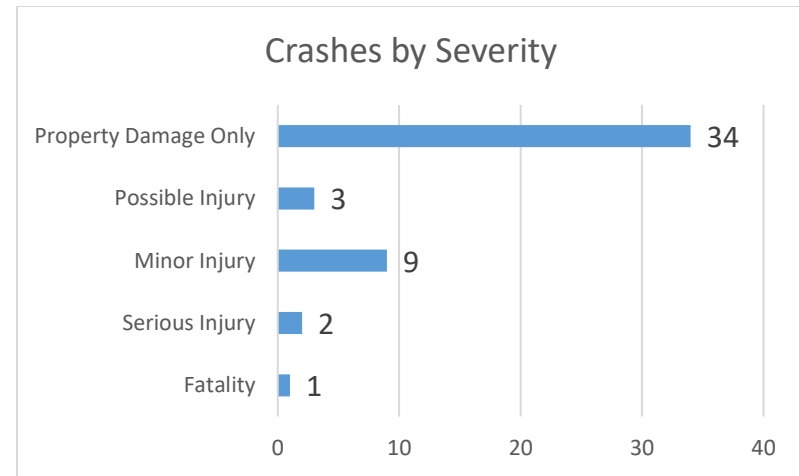
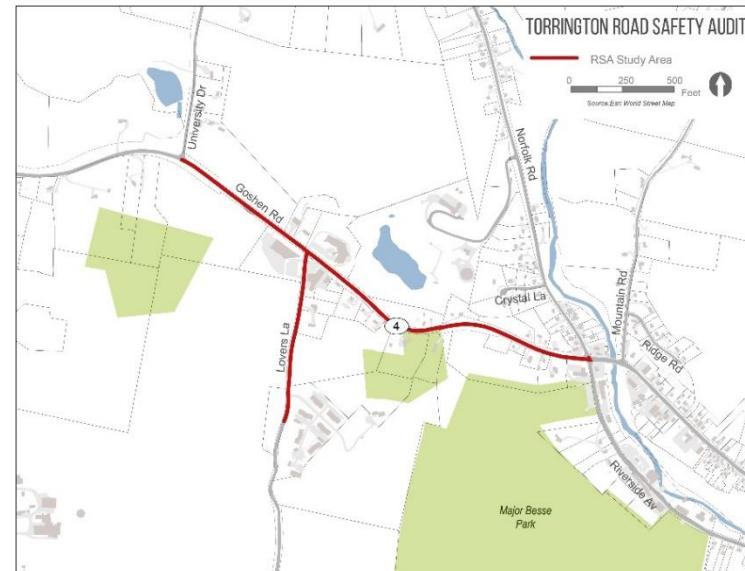


Exhibit 13: Crashes by involved person



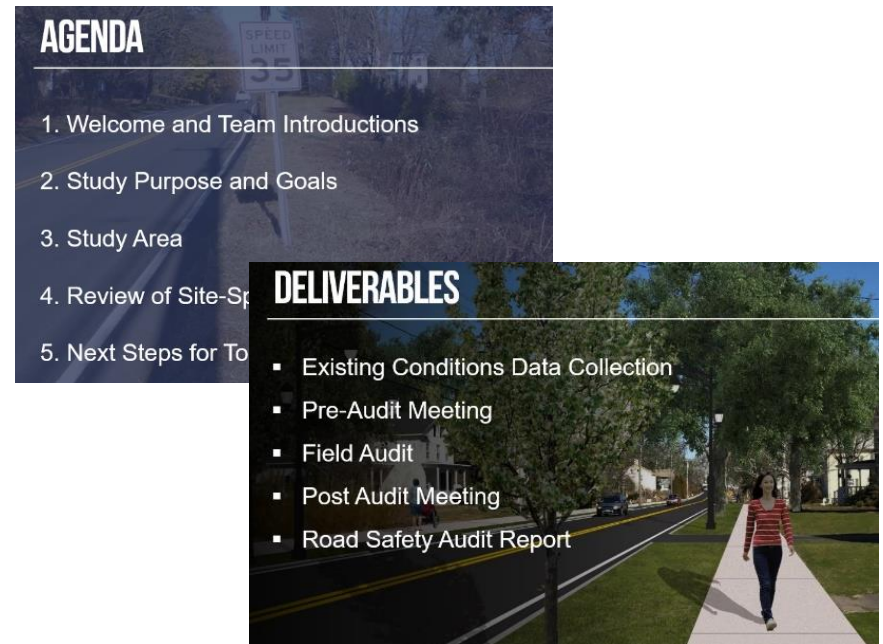
3.2 Pre-Audit Discussion

Immediately following the pre-audit presentation, a discussion followed that highlighted concerns and notes regarding the Torrington RSA study area. Highlights from this discussion are presented below:

- Route 4 (Goshen Road) is the primary route for traffic from Torrington to Goshen and points further west.
- Access is provided to what was formerly the UConn Torrington Campus via University Drive.
- There are restaurants and commercial uses throughout the Route 4 corridor, though in this specific area it has a more rural characteristic.
- A strong desire among residents of The Cottages at Litchfield Hills to walk or bike across Route 4 (Goshen Road) to Lovers Lane.
- Access to residential neighborhoods is provided by Route 4 (Goshen Road).
- The former Torrington Water Company, now known as Aquarion Water Company, is located behind The Cottages.

Sample slides from the pre-audit presentation are shown in Exhibit 14.

Exhibit 14: Sample slides from pre-audit presentation



4 RSA ASSESSMENT

The following summary describes observations and discussion regarding issues and concerns throughout the Torrington RSA study area. Exhibit 15 shows RSA participants engaging in conversation during the RSA. Discussions were held at each of the noted locations below.

Exhibit 15: RSA participants during the RSA assessment date



4.1 Intersection of Route 4 (Goshen Road) at Lovers Lane

- The unsignalized intersection generally functions well for thru vehicular traffic.
- Residents of The Cottages cross Route 4 (Goshen Road) to walk up and down Lovers Lane and have expressed a desire for enhanced pedestrian connections at the intersection of Route 4 (Goshen Road) and Lovers Lane. Participants noted that a crossing on the west side

of the intersection with Lovers Lane would be preferable. Exhibit 16 shows the intersection of Lovers Lane and Route 4 from The Cottages.

- The geometry of the intersection can be challenging. Lovers Lane intersects Route 4 (Goshen Road) at a sharp angle, which can cause operational issues for traffic turning left into Lovers Lane
- The grass area next to the shoulder was observed to be worn down to dirt. Torrington Police indicated that westbound traffic on Route 4 often pass vehicles waiting to turn left onto Lovers Lane by traveling over this grass area. Participants discussed the potential for curbing along this area.
- Participants noted that lighting at this intersection is present, but could be increased

Exhibit 16: The intersection of Route 4 (Goshen Road) and Lovers Lane



4.2 Route 4 (Goshen Road) East of Lovers Lane

- Travel lanes are approximately 12' 8" inches wide to the east of the Route 4 (Goshen Road) and Lovers Lane intersection. Exhibit 17 shows the view towards downtown Torrington from The Cottages.
- Narrow 2' foot shoulders border the travel lanes and there are no pedestrian or bike accommodations present.
- Route 4 (Goshen Road) is popular among cyclists for training purposes as Route 4 traverses' hilly terrain
- Potential pedestrian connection to downtown Torrington along Route 4 (Goshen Road) were mentioned as a possible amenity.
- Eastbound traffic speeds along Route 4 (Goshen Road) are higher than westbound traffic speeds on average as eastbound traffic traverses down the hill
- East of Lovers Lane, Route 4 (Goshen Road) is hilly and windy. There are few single-family homes on this section, with some of these properties having limited driveway space to turn around, causing some residents to have to back out on Route 4 (Goshen Road).
- The intersection of Route 4 (Goshen Road) and Route 272 (Norfolk Road) has a traffic signal. There are sidewalks to the south and east of this intersection, however sidewalks do not connect to curb ramps, there is no marked crosswalk, and no pedestrian signal heads. See Exhibit 18 for a photo of this intersection.

Exhibit 17: Route 4 (Goshen Road) looking east towards downtown Torrington.



Exhibit 18: Route 4 (Goshen Road) and Route 272 (Norfolk Road) intersection looking east.



4.3 Route 4 (Goshen Road) West of Lovers Lane

- There is a passing zone on Route 4 (Goshen Road) immediately to the west of the intersection of Lovers Lane. RSA participants noted that this should be reviewed due to turning traffic in this area and potential sightline constraints. RSA participants favored converting this to a double-yellow centerline. Exhibit 19 shows the westbound segment of Route 4 (Goshen Road).
- The intersection of Route 4 (Goshen Road) and University Drive is located in a horizontal curve and a hill on Route 4 (Goshen Road). This can be a challenging intersection to turn onto Route 4 (Goshen Road) due to this geometry. However, traffic on this road is reduced as the University of Connecticut at Torrington campus is closed and has since been replaced by an art studio/collective.
- Travel lane width varies in this area between 11 to 14-feet. Right-of-way (ROW) varies considerably in this area. Near University drive, ROW is approximately 135-feet (based on Torrington GIS). At its narrowest point, ROW is approximately 55-feet.

Exhibit 19: Route 4 (Goshen Road) looking westbound past the intersection of Lovers Lane.



4.4 Lovers Lane

- Participants discussed options for realignment of Lovers Lane. There may be impacts to properties at Bicon Electronics or Goshen Road Plaza. Impacts should be minimized if realignment is pursued.
- Residents of The Cottages like to walk along Lovers Lane up to the Country Woods of Torrington driveway.
- Heavily wooded land next to Lovers Lane, with narrow shoulders.
- Potential for the installation of an advisory lane/shoulder to provide safe space for pedestrians and cyclists to navigate up and down Lovers Lane.
- The presence of a culvert and brook represent a challenge for connecting the Country Woods of Torrington to The Cottages via a walking path, as shown in Exhibit 20.

Exhibit 20: Entrance to Country Woods Condos looking south down Lovers Lane.



5 RECOMMENDATIONS

Based on the findings discussed during the RSA, the RSA team compiled a set of recommendations for the study area. These recommendations are organized by study area location. The report includes a review of four areas: the intersection of Route 4 (Goshen Road) and Lovers Lane, Route 4 (Goshen Road) east of Lovers Lane, Route 4 (Goshen Road) west of Lovers Lane, and south of Route 4 (Goshen Road) on Lovers Lane. The area of Route 4 (Goshen Road) and Lovers Lane is depicted with conceptual graphics to provide further detail of potential recommendations in this area.

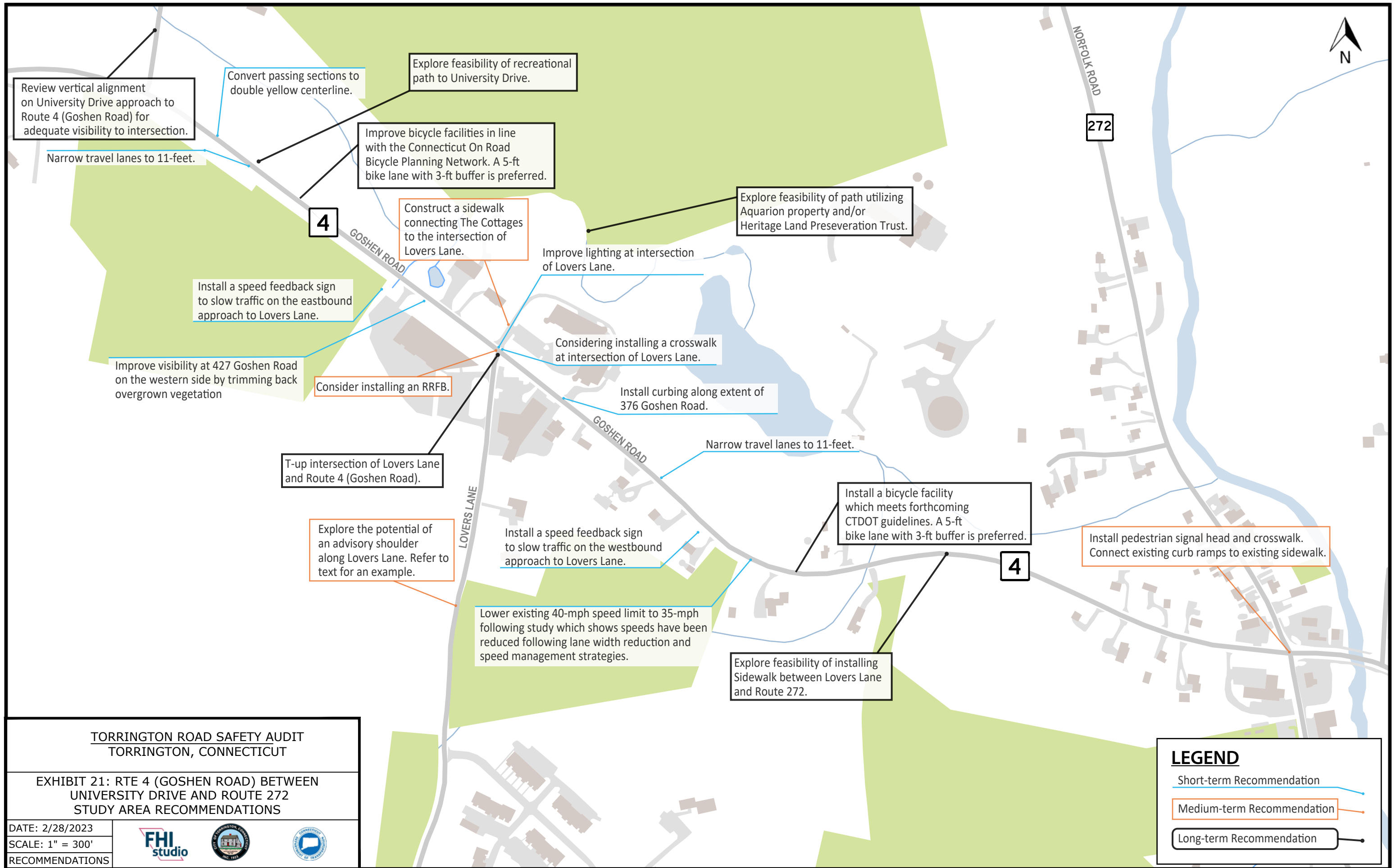
All recommendations for all locations are divided into short-term, medium-term, and long-term recommendations.

- **Short-term recommendations:** These are improvements that are simpler and could be completed on a quick timeline. These recommendations are low-cost alternatives such as striping and signage. These recommendations generally do not require extensive engineering or construction costs. More extensive recommendations which have funding previously committed may be included. These projects are defined as those that may be completed within two years.
- **Medium-term recommendations:** These are improvements that may require more substantial engineering than those generally included as short-term recommendations. These may require establishment of funding in capital improvement plans, or a dedicated funding item. However, these recommendations are generally simpler than long-term recommendations and generally do not include ROW acquisition etc. These projects are defined as those that may be completed in two-to-five years.

- **Long-term recommendations:** These are improvements that require substantial study and engineering. These recommendations generally require significant funding for implementation and may require several years of planning to budget. These projects are defined as those recommendations that may take five years or longer to complete.

It should be noted that any work within the State ROW to be done by non-State forces will require an encroachment permit from the District 4 Permit Office and/or an official request from the Torrington Local Traffic Authority (Torrington Chief of Police).

Exhibit 21 displays the recommendations of the overall study area on a map. Further detail is provided in the sections below,



**TORRINGTON ROAD SAFETY AUDIT
TORRINGTON, CONNECTICUT**

**EXHIBIT 21: RTE 4 (GOSHEN ROAD) BETWEEN
UNIVERSITY DRIVE AND ROUTE 272
STUDY AREA RECOMMENDATIONS**

DATE: 2/28/2023

SCALE: 1" = 300'

RECOMMENDATIONS

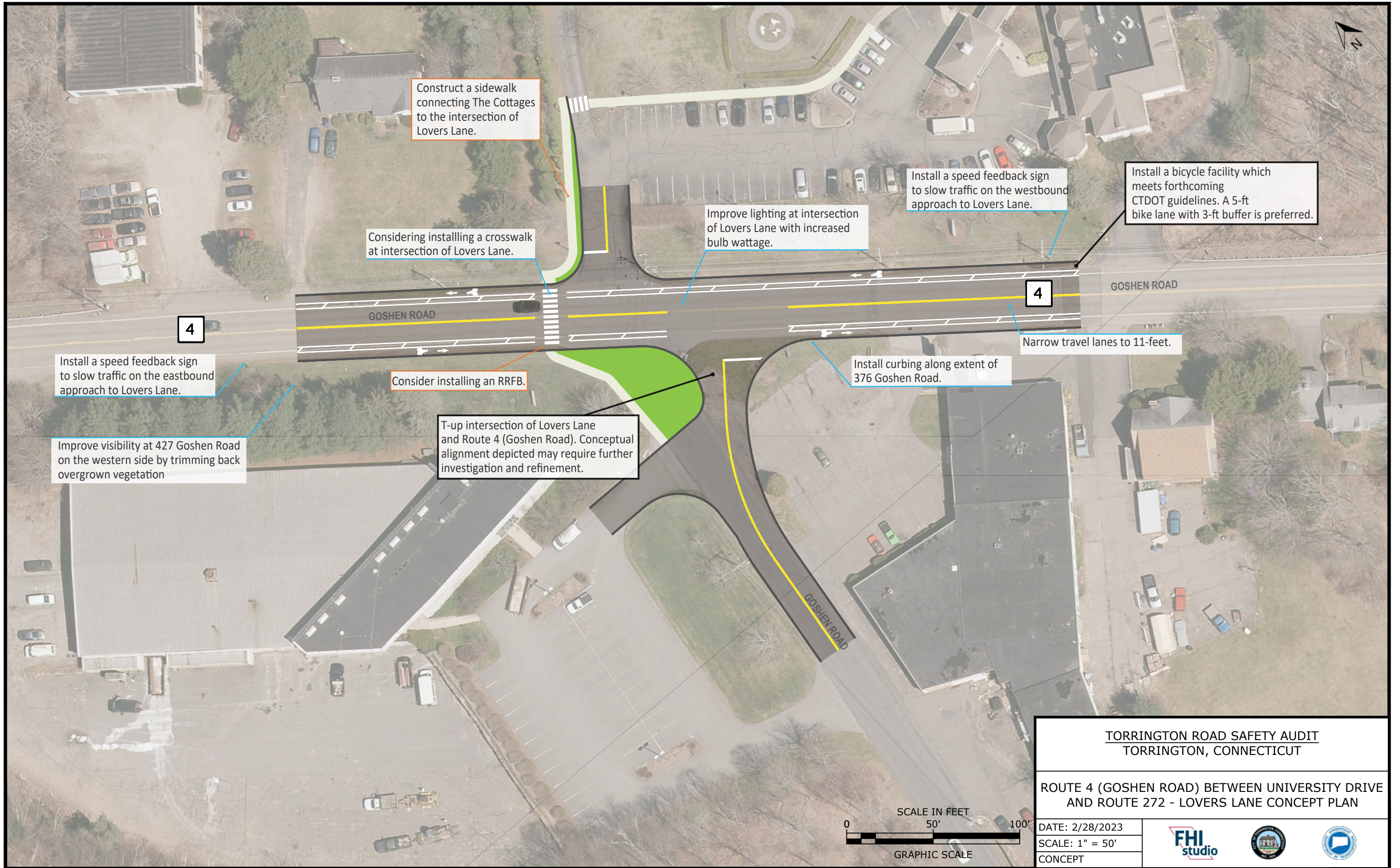


LEGEND

Short-term Recommendation

Medium-term Recommendation

Long-term Recommendation



Construct a sidewalk connecting The Cottages to the intersection of Lovers Lane.

Considering installing a crosswalk at intersection of Lovers Lane.

Improve lighting at intersection of Lovers Lane with increased bulb wattage.

Install a speed feedback sign to slow traffic on the westbound approach to Lovers Lane.

Install a bicycle facility which meets forthcoming CTDOT guidelines. A 5-ft bike lane with 3-ft buffer is preferred.

4

Install a speed feedback sign to slow traffic on the eastbound approach to Lovers Lane.

Consider installing an RRFB.

Install curbing along extent of 376 Goshen Road.

4

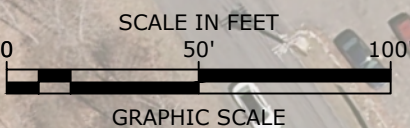
Narrow travel lanes to 11-feet.

Improve visibility at 427 Goshen Road on the western side by trimming back overgrown vegetation

T-up intersection of Lovers Lane and Route 4 (Goshen Road). Conceptual alignment depicted may require further investigation and refinement.

**TORRINGTON ROAD SAFETY AUDIT
TORRINGTON, CONNECTICUT**

**ROUTE 4 (GOSHEN ROAD) BETWEEN UNIVERSITY DRIVE
AND ROUTE 272 - LOVERS LANE CONCEPT PLAN**



DATE: 2/28/2023
SCALE: 1" = 50'
CONCEPT



5.1 Intersection of Route 4 (Goshen Road) and Lovers Lane

The recommendations at this intersection seek to improve pedestrian safety and reduce conflict points at the intersection of Route 4 and Lovers Lane. The potential exists to T-up the existing intersection and provide a slightly narrowed cross section to facilitate the crossing of pedestrians from The Cottages to Lovers Lane.

Short-term

- 1) Lower existing 40-mph speed limit between Lovers Lane and Route 272 to 35-mph following study which shows speeds have been reduced following lane width reduction and speed management strategies.
- 2) Install curbing along the extent of 376 Goshen Road (The Cottages at Litchfield Hills) to discourage bypass of turning vehicles in front lawn to The Cottages and close to proximity to existing utility pole.
- 3) Narrow lane widths to 11-foot CTDOT standard.
- 4) Rotate dynamic speed feedback sign to the speed limit signage for eastbound traffic to the west of Lovers Lane.
- 5) Install additional lighting at the intersection of Lovers Lane.

Medium-term

- 1) Consider installing a crosswalk and RRFB across Route 4 (Goshen Road) at Lovers Lane, on the western side of the intersection. Include high intensity crosswalk lights. See Exhibit 23 for an example of an RRFB system and Exhibit 24 for an example of high intensity lights which can be included with an RRFB system.
- 2) Install sidewalk connecting The Cottages to the proposed crosswalk at Lovers Lane.

Long-term

- 1) Explore feasibility of recreational paths and/or sidewalks which do not require crossing Route 4 (Goshen Road) such as:
 - a) Sidewalk between Lovers Lane and Route 272 (Norfolk Road) on the north side of Route 4 (Goshen Road).
 - b) Recreational path behind The Cottage at Litchfield Hills which could utilize Aquarion property and/or property owned by the Heritage Land Preservation Trust.
 - c) Recreational path between The Cottage at Litchfield Hills and University Drive. This path could be located at the edge of an existing field but would likely require wider right-of-way to be acquired. University Drive is similar in character to Lovers Lane and should be considered for additional pedestrian safety measures if this option is pursued.
- 2) T-up intersection of Route 4 (Goshen Road) and Lovers Lane.

Exhibit 23: An example of RRFB (Source: CTDOT)



Exhibit 24: An example of a crosswalk high intensity light integrated with an RRFB at night in West Hartford, CT. Note – The yellow flashers are not activated in this photo to demonstrate the crosswalk light.



5.2 Route 4 (Goshen Road) East of Lovers Lane

Short Term

- 1) Narrow lane widths to 11-foot CTDOT standard.
- 2) Rotate dynamic speed feedback sign to the speed limit signage for westbound traffic to the east of Lovers Lane. Consider the need for horizontal curve signage on Route 4 (Goshen Road) between Lovers Lane and Route 272 (Norfolk Road).

Medium-term

- 1) Install pedestrian signal heads and crosswalk at the intersection of Route 4 (Goshen Road) and Route 272 (Norfolk Road). Connect curb ramps to existing sidewalk to the east and south of this intersection.

Long-term

- 1) Explore feasibility of installing sidewalk between Lovers Lane and Route 272 (Norfolk Road) as part of comprehensive study of other alternatives as noted above.
- 2) Install a bicycle facility which meets forthcoming CTDOT guidelines. A 5-ft bike lane with 3-ft buffer is preferred. Installation of rumble strips as recommended in the regional safety plan *is not* recommended due to its interference with bicycle use.

5.3 Route 4 (Goshen Road) West of Lovers Lane

Short-term

- 1) Consider removing passing on Route 4 (Goshen Road) between Lovers Lane and University Drive with the installation of a double yellow centerline.
- 2) Trim back branches to tree to the east of the western driveway to 427 Goshen Road (Bicron Electronics) as this is overgrown and causing sightline issues for driveway traffic.
- 3) Narrow lane widths to 11-foot CTDOT standard.

- 4) Rotate dynamic speed feedback sign to the speed limit signage for eastbound traffic to the west of Lovers Lane.

Long Term

- 1) Install a bicycle facility which meets forthcoming CTDOT guidelines. A 5-ft bike lane with 3-ft buffer is preferred. Installation of rumble strips as recommended in the regional safety plan *is not* recommended due to its interference with bicycle use.
- 2) Review the vertical alignment on University Drive approach to Route 4 (Goshen Road) for adequate visibility to intersection.
- 3) Explore feasibility of installing recreational path between Lovers Lane and University Drive as part of comprehensive study of other alternatives as noted above.

5.4 Lovers Lane

Short-term

- 1) Explore installing an advisory shoulder along Lovers Lane with 18-foot traveled way. See Exhibit 25 for an example of advisory shoulder.

Long-term

- 1) Explore the feasibility of installing a walking path on Lovers Lane between Route 4 (Goshen Road) and 187 Lovers Lane (Country Woods of Torrington)

Exhibit 25: Advisory shoulder on a two-way roadway in Hanover, NH (Source: FHWA Small Town and Rural Multimodal Networks Guide)



6 SUMMARY

This report documents the observations, discussions, and recommendations developed during the completion of the Town of Torrington's RSA. It provides the Town with an outlined strategy to improve the transportation network for all users in the study area, particularly focusing on pedestrians and cyclists. Moving forward, the Town of Torrington and CTDOT may use this report to prepare strategies for funding and implementing the improvements. This report provides Torrington with a toolkit to plan for including these multi-modal recommendations into future development within the study area.

The aforementioned Community Connectivity Program: Road Safety Audit Report is an objective review intended for the municipality use to help assess the existing conditions within a predetermined area of town selected by the municipality. The conclusions of this report are advisory and intended for general planning purposes to help identify bicycle, pedestrian and non-motorized transportation needs that encourage walking and bicycling, as well as assists in developing recommendations to improve the existing conditions. The contents of this report are not intended to be legally binding, but rather offer recommendations to improve safety in the vicinity of the audit location and create a more appealing transportation alternative.

APPENDICES

A: Pre-Audit Presentation

B: Walk Audit Materials

TORRINGTON ROAD SAFETY AUDIT

Goshen Road (Route 4) between
University Drive and Riverside Avenue



OCTOBER 2022



INTRODUCTIONS

AGENDA

1. Welcome and Team Introductions
2. Study Purpose and Goals
3. Study Area
4. Review of Site-Specific Data and Issues
5. Next Steps for Tomorrow's Site Visit Audit

PROJECT TEAM

- Connecticut Department of Transportation (CTDOT) is sponsoring
- City of Torrington
- FHI Studio is conducting the Road Safety Audit reporting

PURPOSE AND GOALS OF THE ROAD SAFETY AUDIT

Safety assessment of existing walking and biking routes

Improve transportation network for all users by making conditions safer and more comfortable for pedestrians and cyclists

Identify the issues that may discourage or prevent walking and bicycling

Identify next steps, evaluate feasibility of proposed improvements, and potential funding sources.

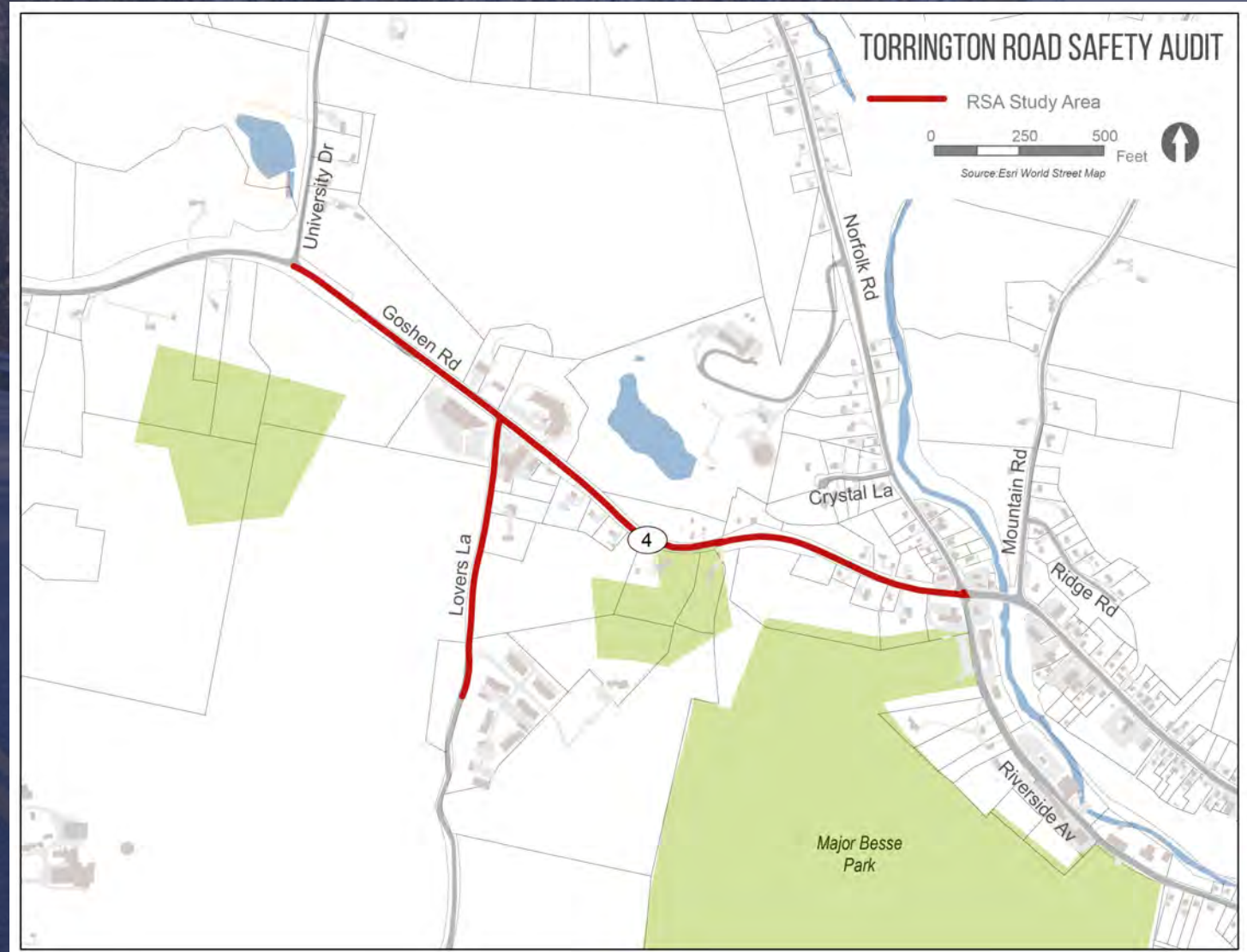
DELIVERABLES

- Existing Conditions Data Collection
- Pre-Audit Meeting
- Field Audit
- Post Audit Meeting
- Road Safety Audit Report



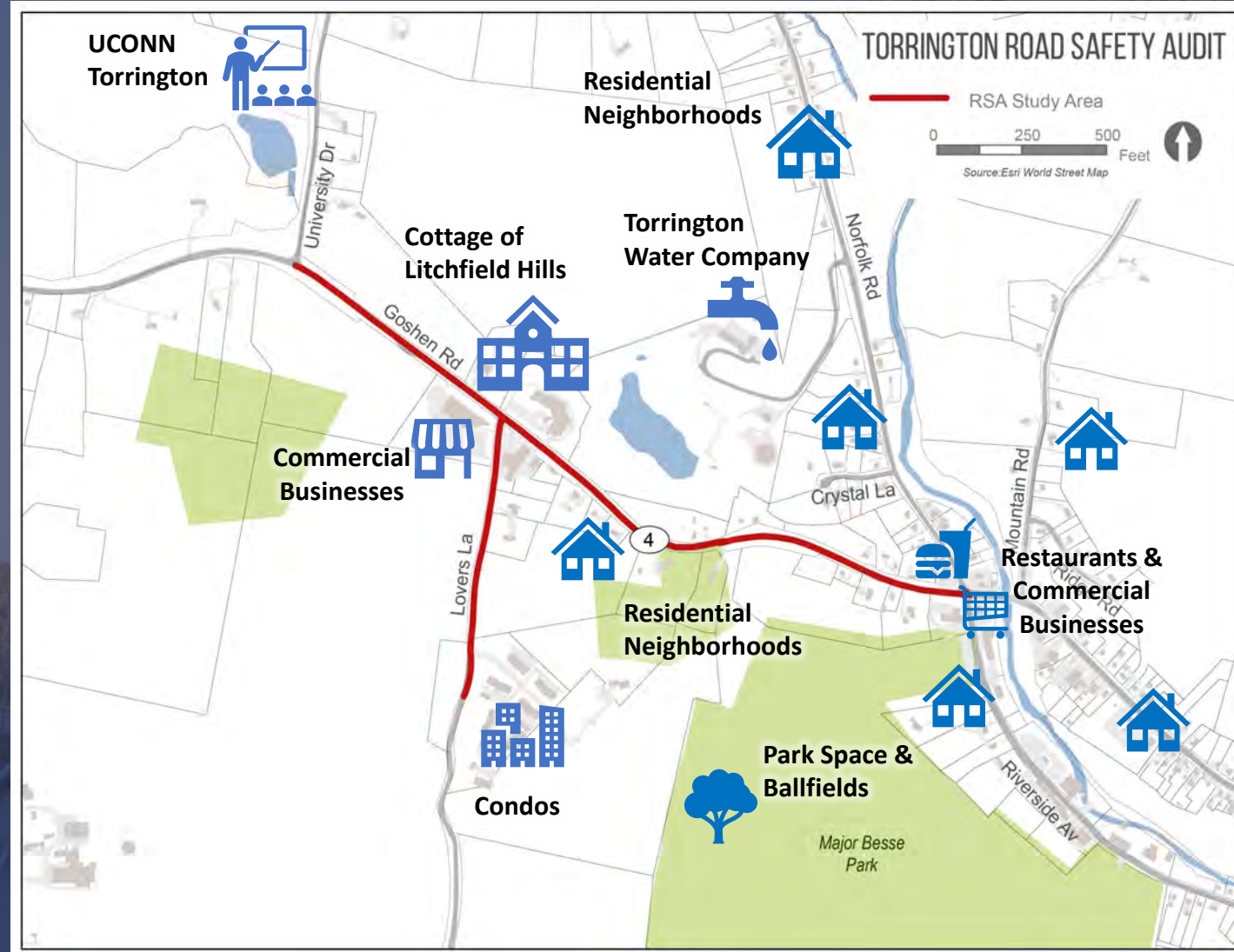
STUDY AREA

- Route 4 (Goshen Road) between University Drive and Riverside Avenue/ Norfolk Road intersection
- Vicinity of the Cottage of Litchfield Hills complex and Lovers Lane



POINTS OF INTEREST

- Cottage of Litchfield Hills
- Residential Neighborhoods
- Restaurants and Commercial Businesses
- Torrington Water Company
- Access to Uconn Torrington
- Parks and Open Space



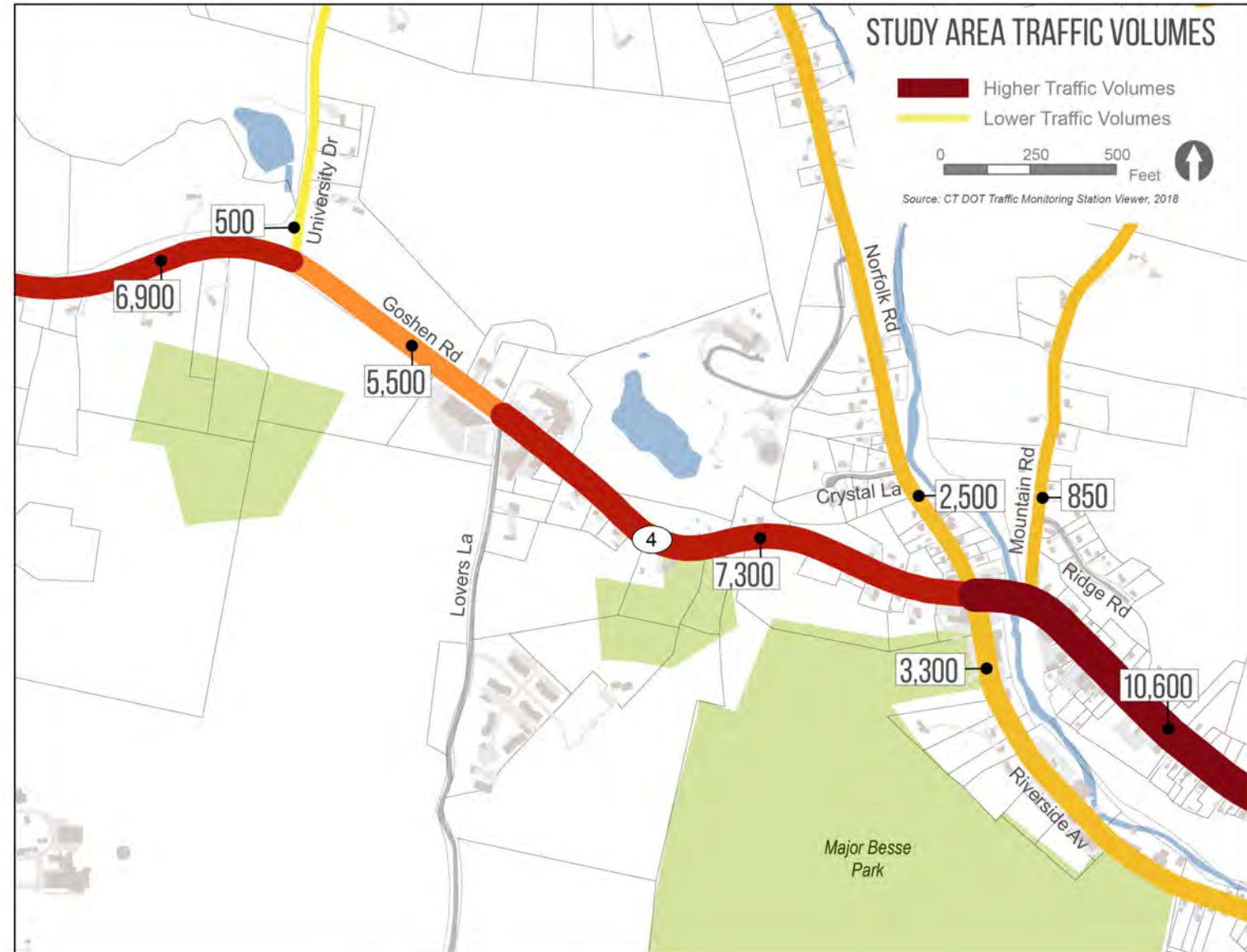
EXISTING CONDITIONS FINDINGS

Route 4 (Goshen Road)

- Regional Traffic
- Access to Uconn Torrington Campus
- Restaurants/ Commercial uses
- Business and service industry uses
- Pedestrian and Bicyclist movements from Cottage of Litchfield Hills Residents
- Access to residential neighborhoods
- Access to Torrington Water Company

TRAFFIC VOLUMES

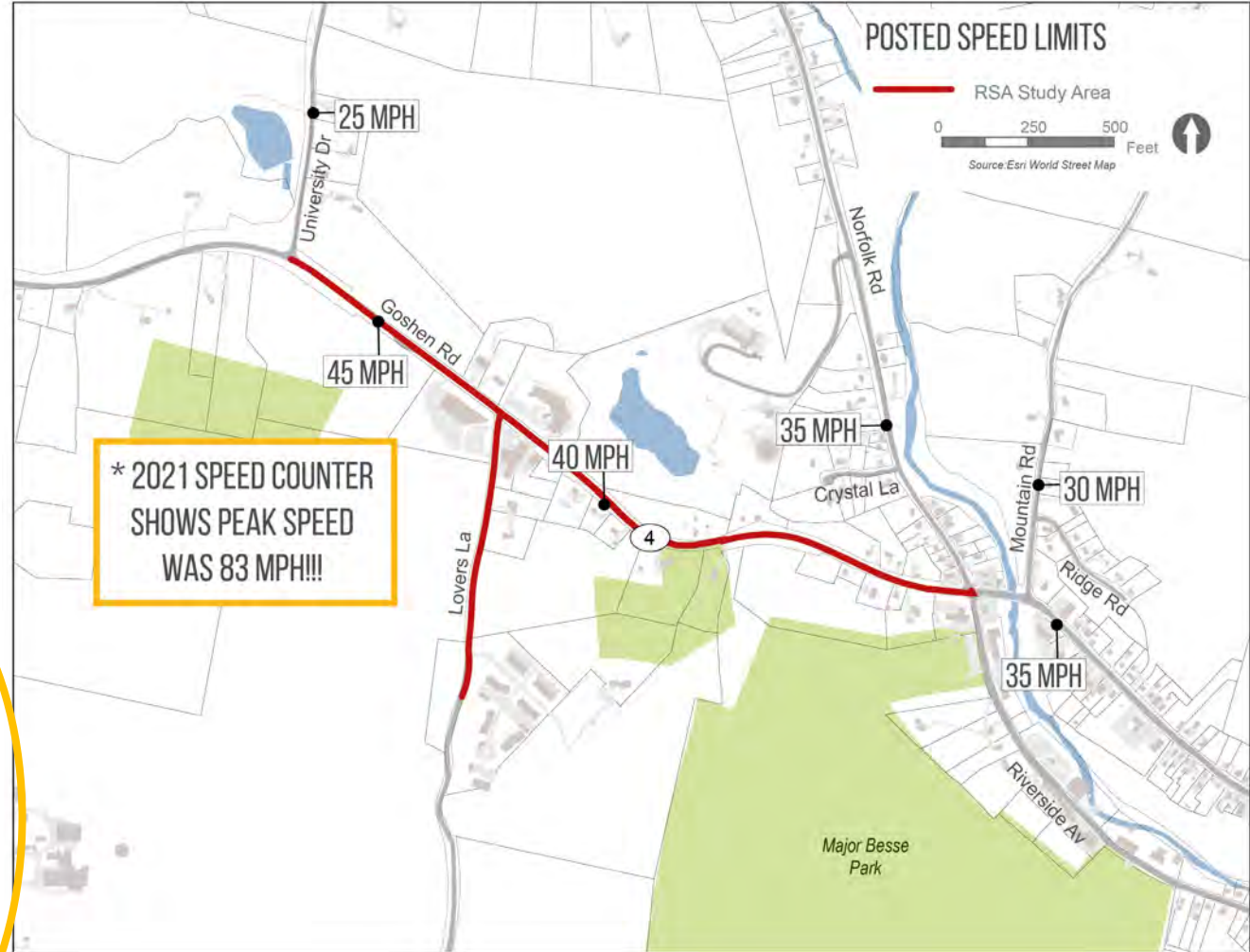
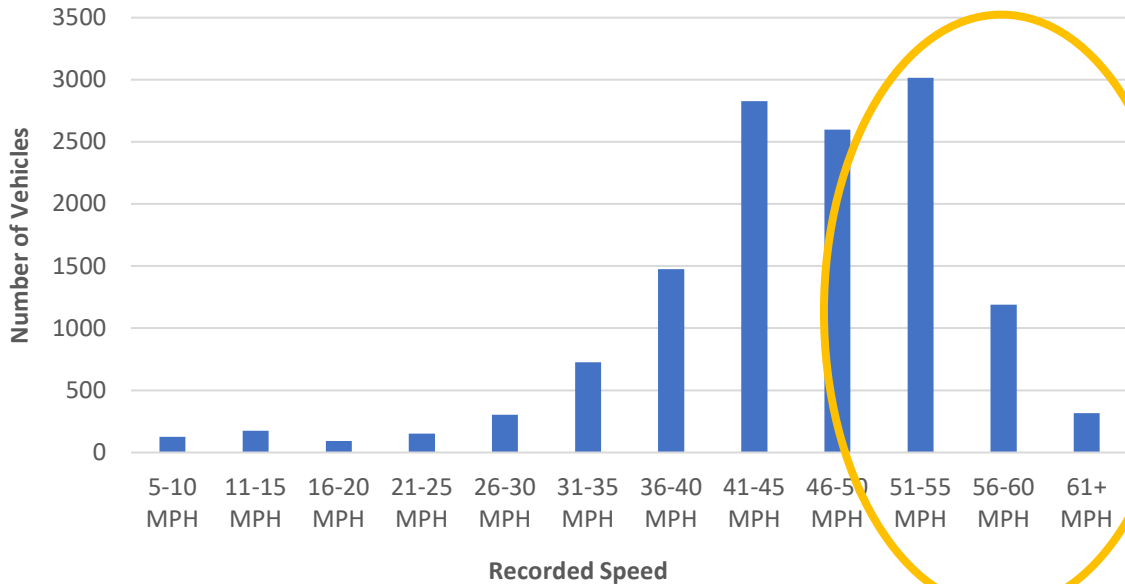
- Higher traffic volumes in center of Study Area between Lovers Lane and Riverside Avenue intersection – 2018 counts prior to Covid
 - Highest volumes on Route 4, east of Riverside Avenue/ Norfolk Road intersection
 - Lowest volumes found on University Drive
 - High volumes on Route 4, west of Lovers Lane



TRAFFIC SPEED LIMITS

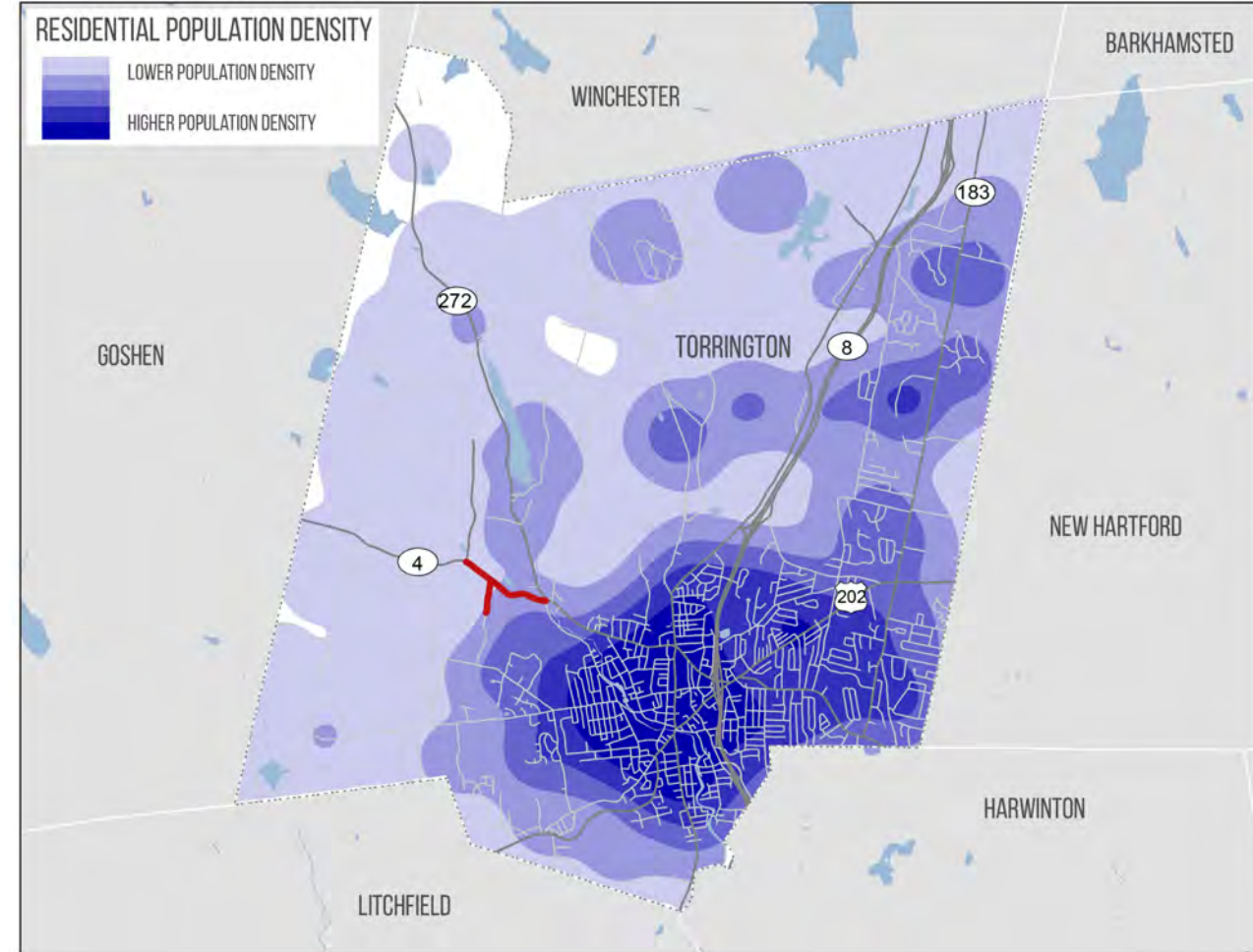
- Speed limit in Study ranges between 40 MPH and 45 MPH, 25 MPH on Lovers Lane
- Over 3,000 vehicles recorded going 51 - 55 MPH
- 85th percentile speed – 54 MPH

2021 Speed Counter Recorded Speeds



POPULATION DENSITY

- Population density in the Study Area is lower than eastern portion of Town
- Residential population density is highest to the southeast of the Study Area



ROADWAY GEOMETRY

Torrington - RSA - Route 4 (Goshen Road) / Lovers Lane Street Inventory

| Road | From | To | Distance | Direction | Lanes | Lane Width | Sidewalk | | | ADA Ramps | | Curb | Parking | Shoulder | Notes |
|--------------------------|--------------------------|----------------------|----------|-----------|-------|------------|----------|-------|-----------|-----------|-----------|------|---------|----------|--|
| | | | | | | | Type | Width | Condition | Present | Compliant | | | | |
| Route 4 (Goshen Road) | Route 272 (Norfolk Road) | East Hill Road | 4,600' | EB | 1 | 12.5' | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5' | WB sightline to Lovers Lane approx. 700' |
| | | | | WB | 1 | 12.5' | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 2.5' | |
| Lovers Lane | Goshen Road | Country Woods Condos | 1,400' | NB | 1 | 11' | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | No Centerline |
| | | | | SB | 1 | 11' | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | |

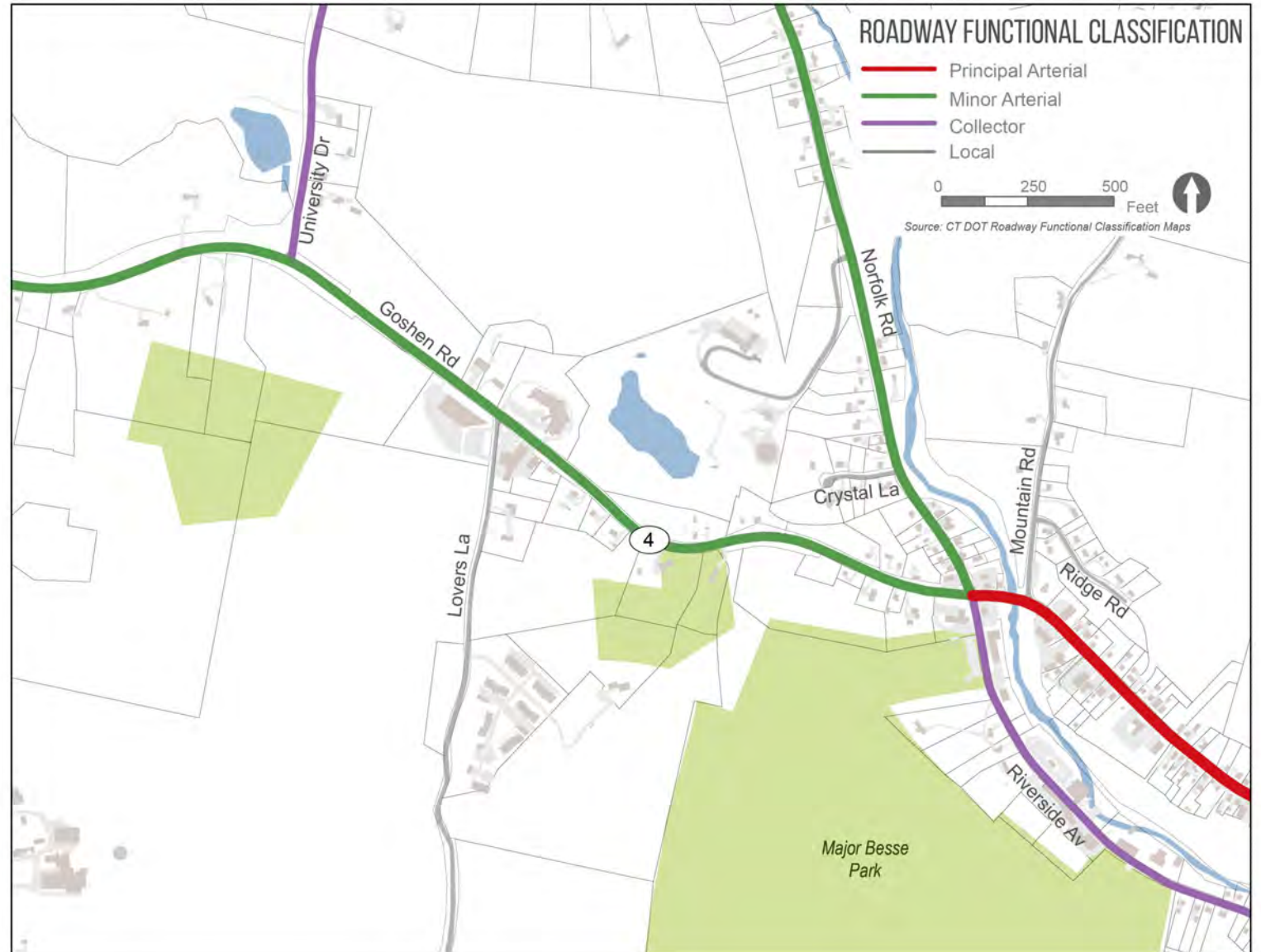
*CONDITION - "Good" is Serviceable Condition that meets current design standards. "Fair" is generally serviceable, but may need minor repairs, or may not completely align with current design standards. "Poor" is not serviceable, and generally inadequate for continued long-term use.

Highlighted cells indicate values which may warrant further investigation

Stopping Sight Distance (SSD) @ 55 MPH – 495'

FUNCTIONAL CLASSIFICATION

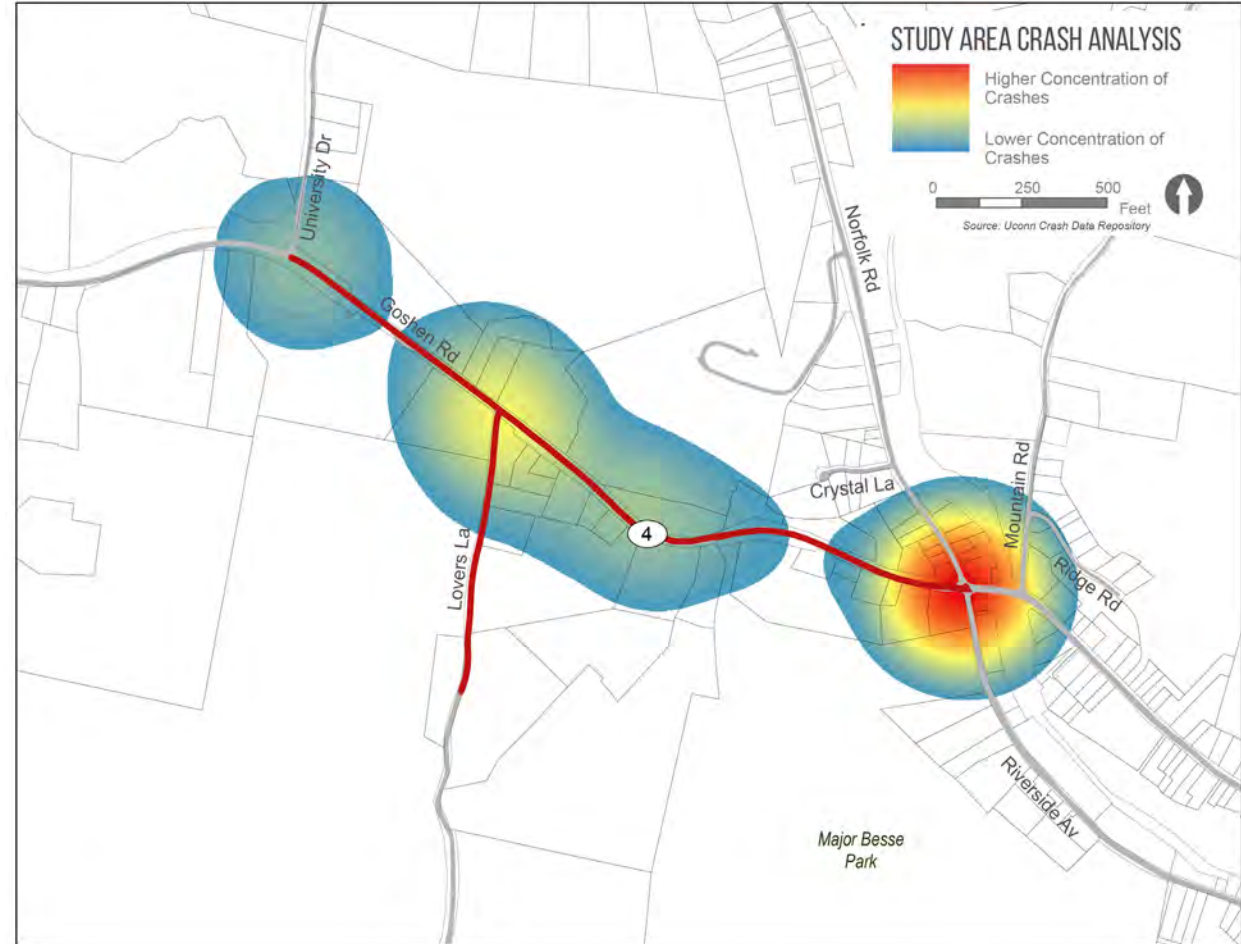
- Route 4 is a Minor Arterial Roadway west of Riverside Avenue
- Route 4 is a Principal Arterial Roadway east of Riverside Avenue
- Norfolk Road is a Minor Arterial
- University Drive and Riverside Avenue are Collector Roadways
- Lovers Lane is a Local Roadway



CRASH ANALYSIS

2017 - 2021

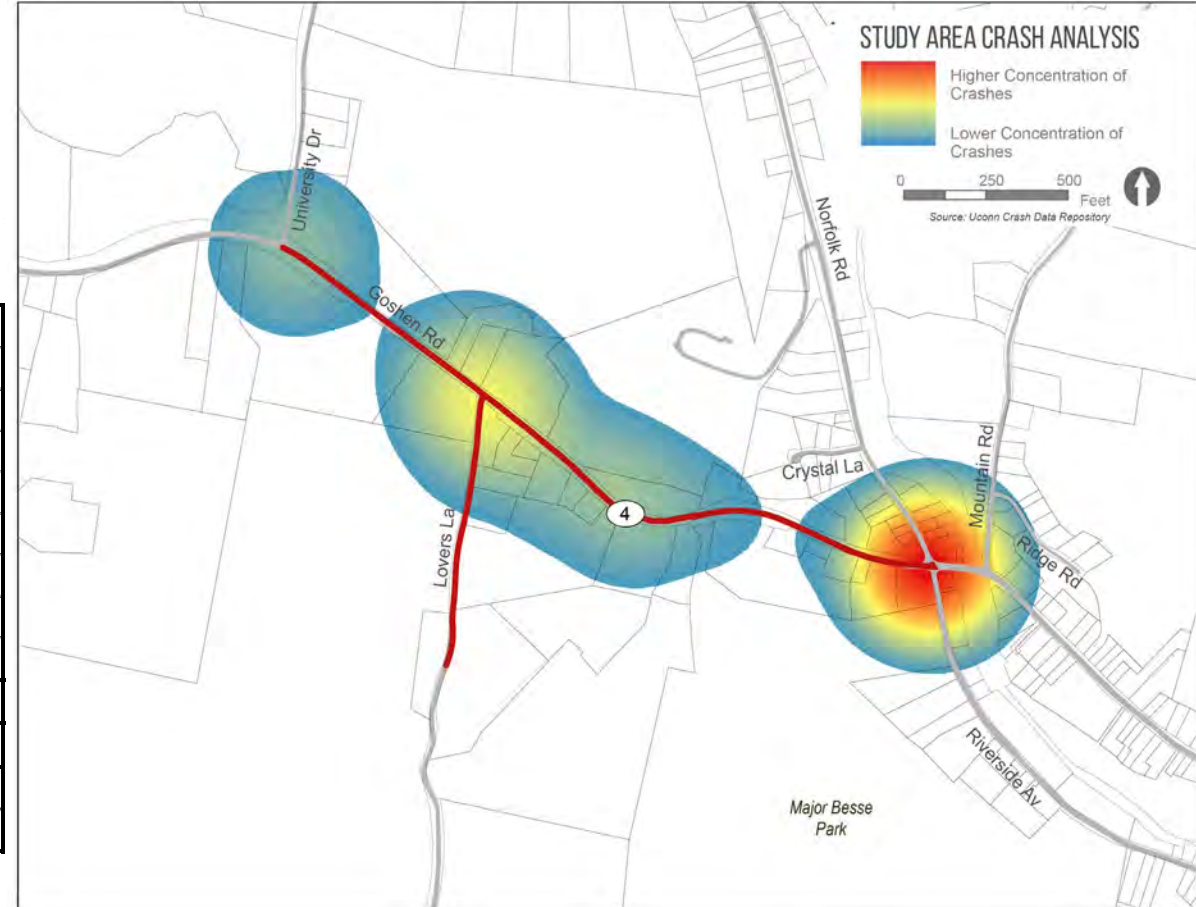
| Year | Fatality | Serious Injury | Minor Injury | Possible Injury | Property Damage Only | TOTAL |
|--------------|----------|----------------|--------------|-----------------|----------------------|-----------|
| 2017 | | | 4 | 1 | 5 | 10 |
| 2018 | | 1 | 1 | 1 | 8 | 11 |
| 2019 | 1 | | 1 | | 9 | 11 |
| 2020 | | 1 | | | 8 | 9 |
| 2021 | | | 3 | 1 | 4 | 8 |
| TOTAL | 1 | 2 | 9 | 3 | 34 | 49 |



CRASH ANALYSIS

2017 - 2021

| | Crash Severity | | | | | TOTAL |
|-------------------------------|----------------|----------------|--------------|-----------------|----------------------|-----------|
| | Fatality | Serious Injury | Minor Injury | Possible Injury | Property Damage Only | |
| Angle | | 1 | 3 | | 10 | 14 |
| Front to front | | | | | 2 | 2 |
| Front to rear | | | 2 | 2 | 5 | 9 |
| Sideswipe, opposite direction | 1 | | | | 2 | 3 |
| Sideswipe, same direction | | | | | 3 | 3 |
| Rear to Side | | | | | 2 | 2 |
| Rear to Rear | | | | | | 0 |
| Not Applicable | | 1 | 3 | | 8 | 12 |
| Other | | | 1 | 1 | 2 | 4 |
| TOTAL | 1 | 2 | 9 | 3 | 34 | 49 |
| Crashes Involving Pedestrians | 0 | 0 | 0 | 0 | 0 | 0 |
| Crashes Involving Bicyclists | 0 | 0 | 0 | 0 | 0 | 0 |

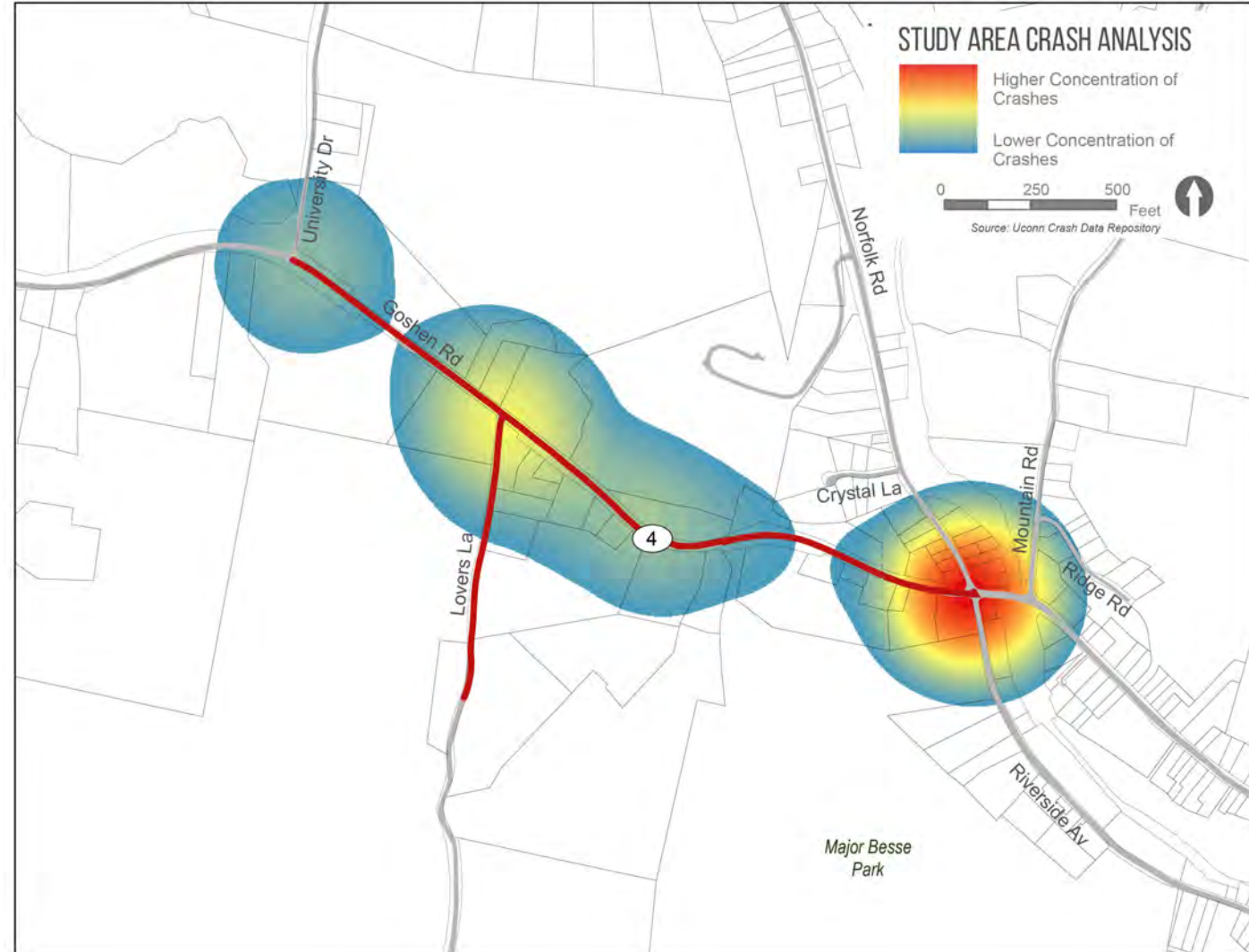


CRASH ANALYSIS

Crash Hotspots (5 Year Crash Total approx.)

49 Crashes Total

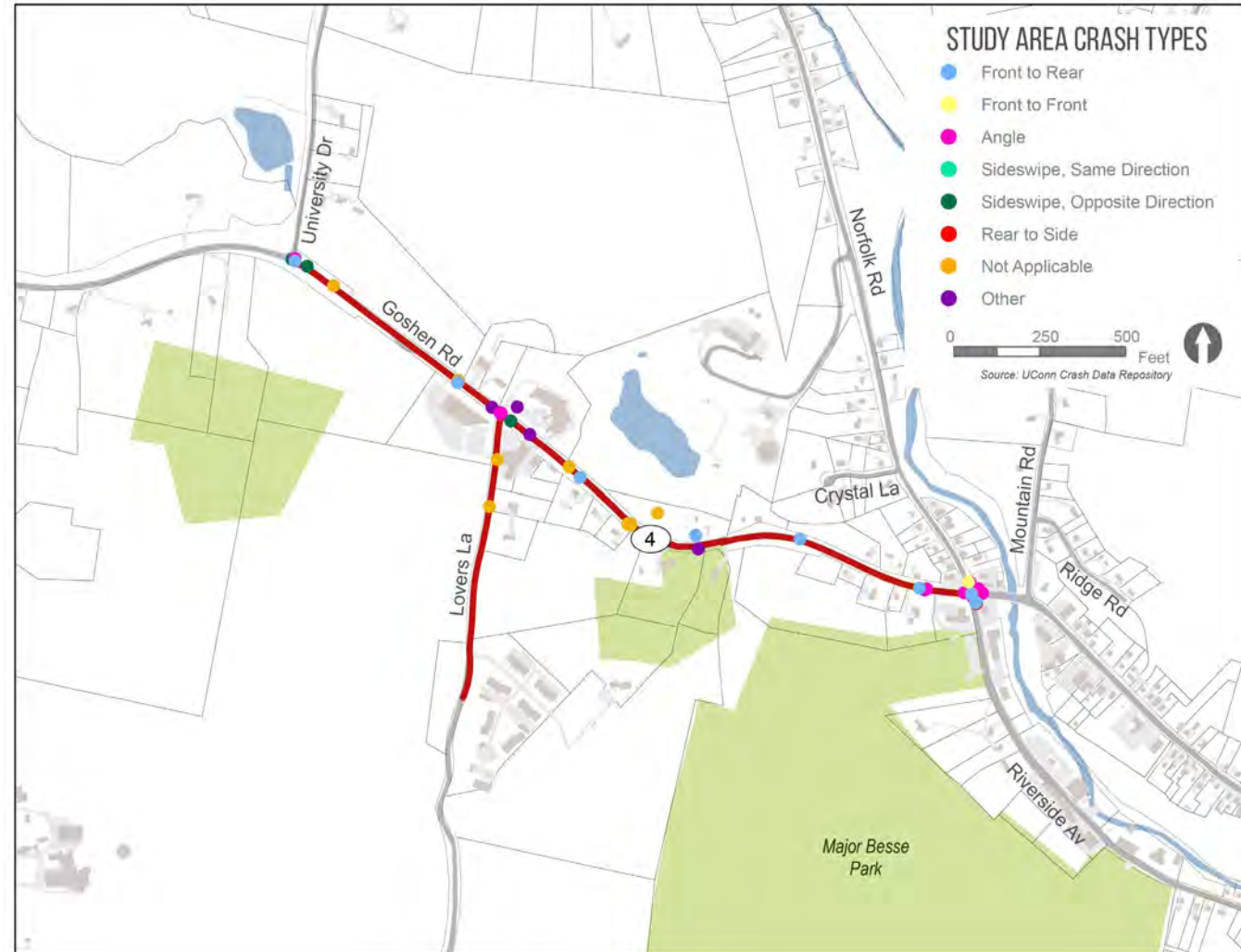
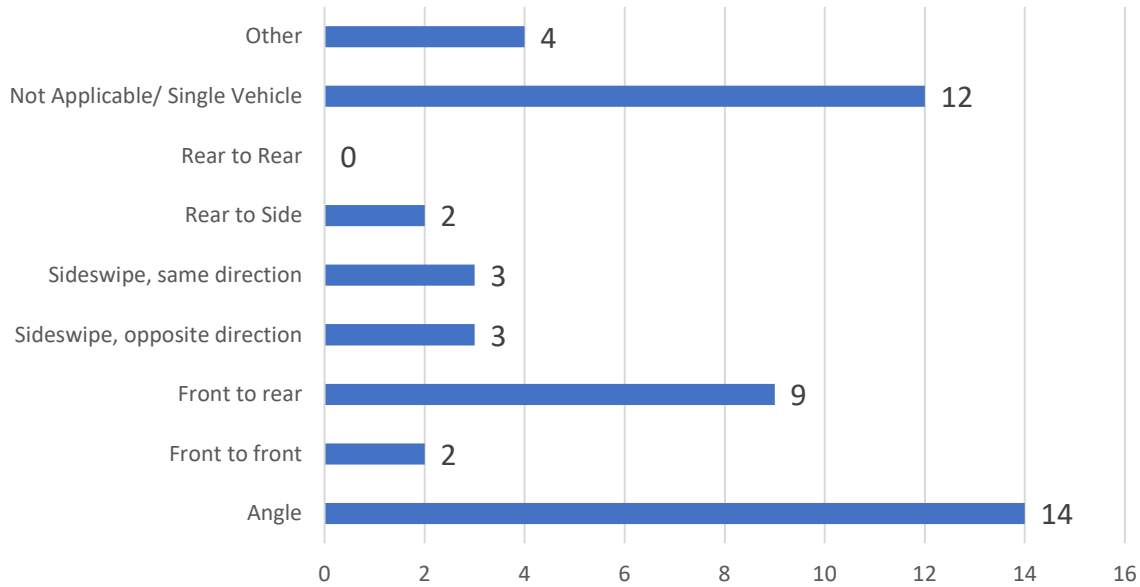
- Approximately 20 crashes in the vicinity of Goshen Road, Norfolk Road, Riverside Avenue intersection
- Approximately 12 crashes in the vicinity of Goshen Road and Lovers Lane
- Approximately 5 crashes in the vicinity of Goshen Road and University Drive



CRASH TYPE

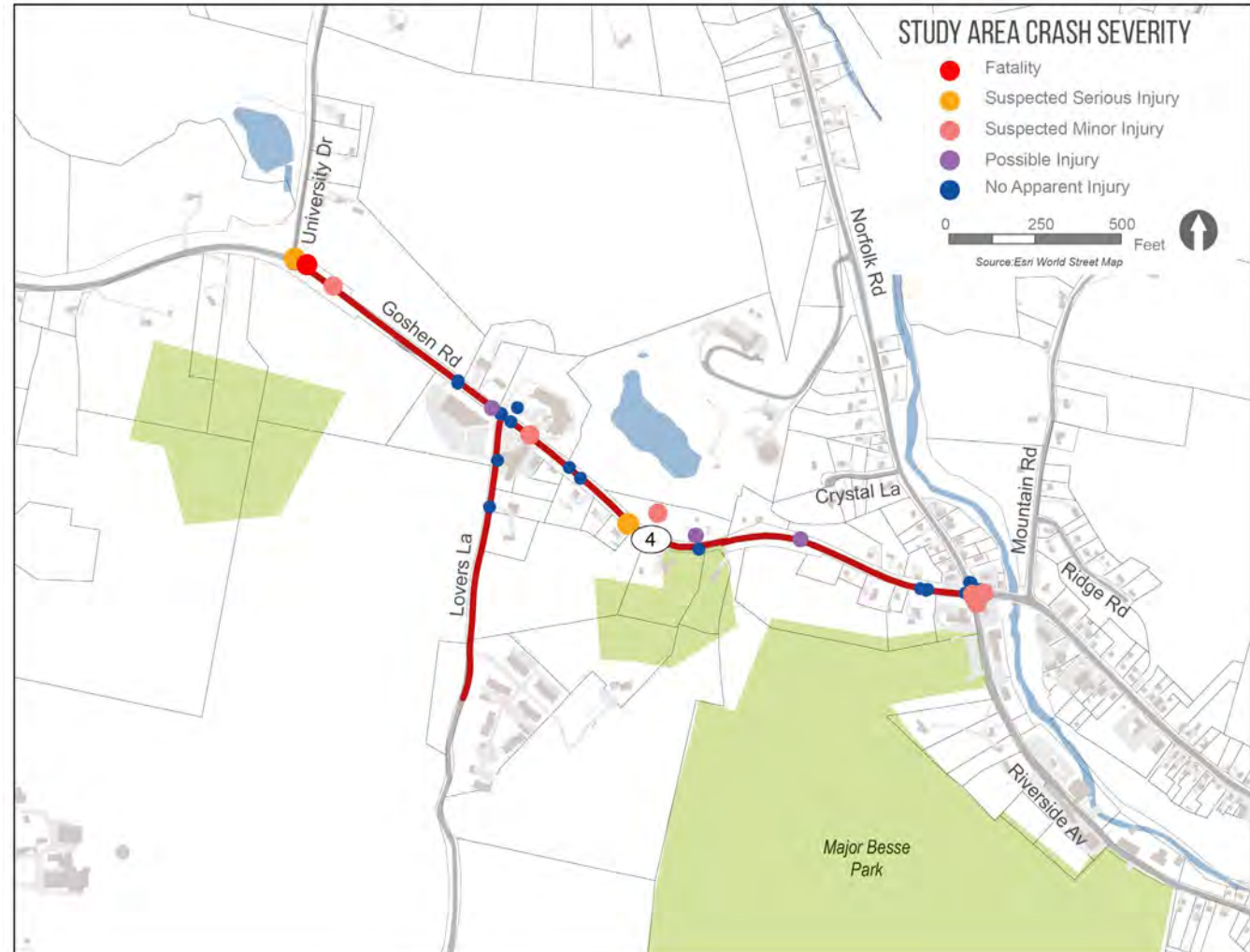
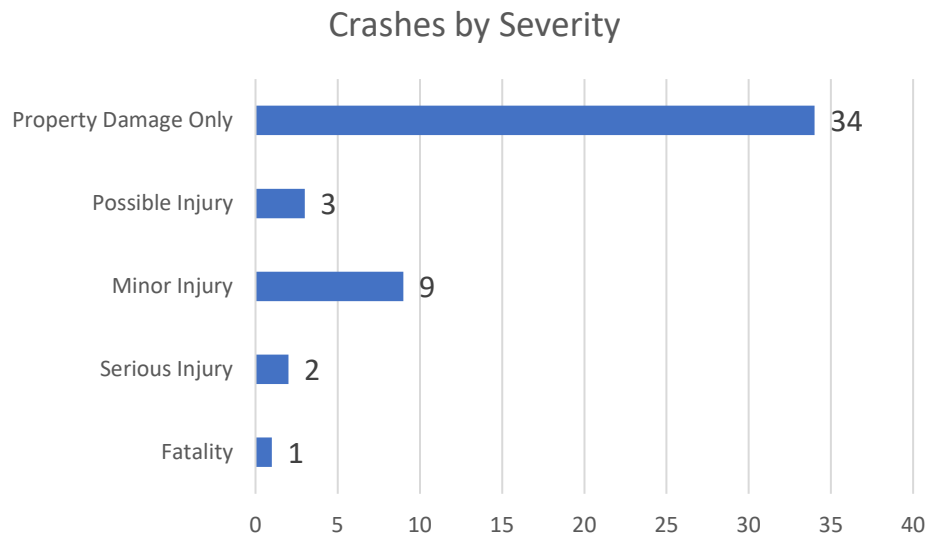
- Majority of crashes are front to rear, angle crashes, or single vehicle crashes

Crashes by Type



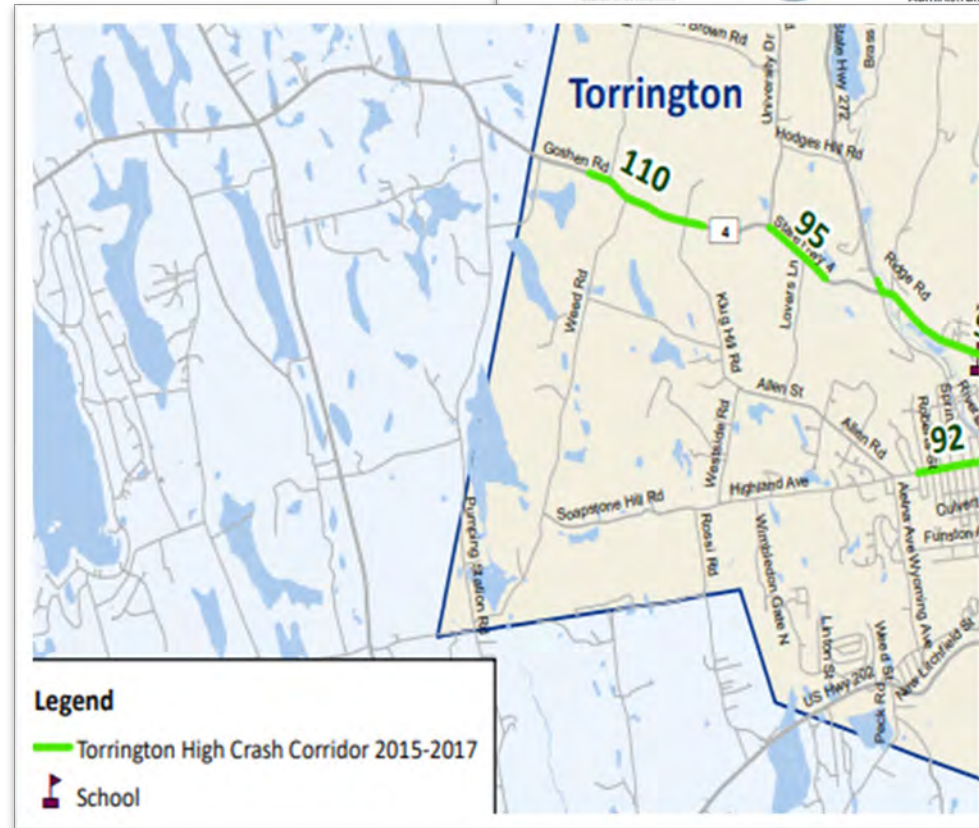
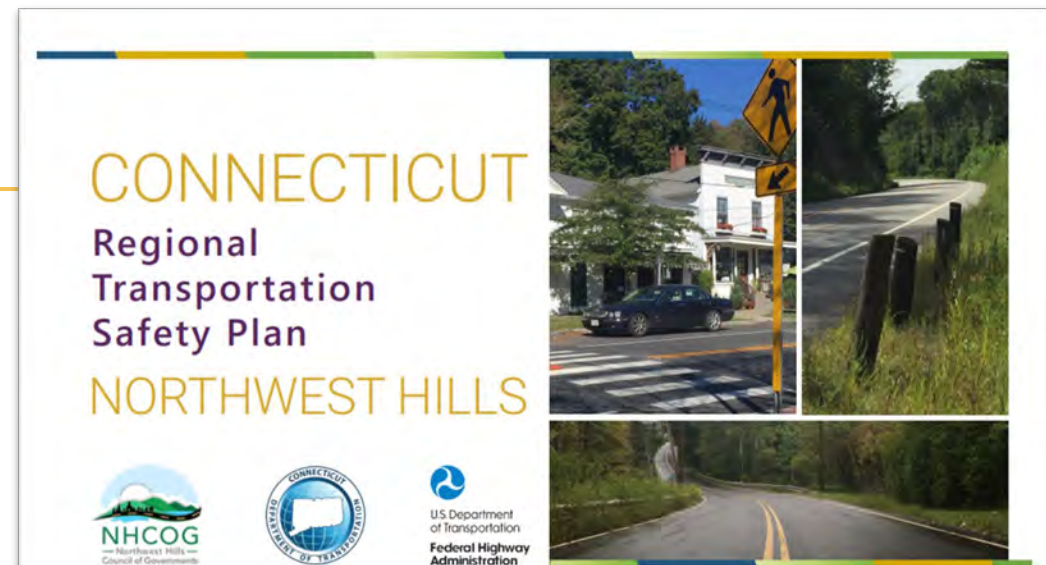
CRASH SEVERITY

- Majority of crashes (34) are classified as No Apparent Injury- Property Damage Only
- There were 3 crashes resulting in a possible injury and 9 minor injury crashes
- 1 crash in 2019 resulting in a fatality east of University Drive



REVIEW OF PAST/CURRENT WORK

- Northwest Hills Council of Governments Transportation Safety Plan 2019
 - Recommended edge line rumble strips with bicycle gaps and roadway illumination
 - Recommends re-stripping crosswalks
- Route 4 identified as a high crash corridor





**SAMPLE IMPROVEMENTS TO IMPROVE
SAFETY IN THE STUDY AREA**

PEDESTRIAN COUNTERMEASURES

SIDEWALKS

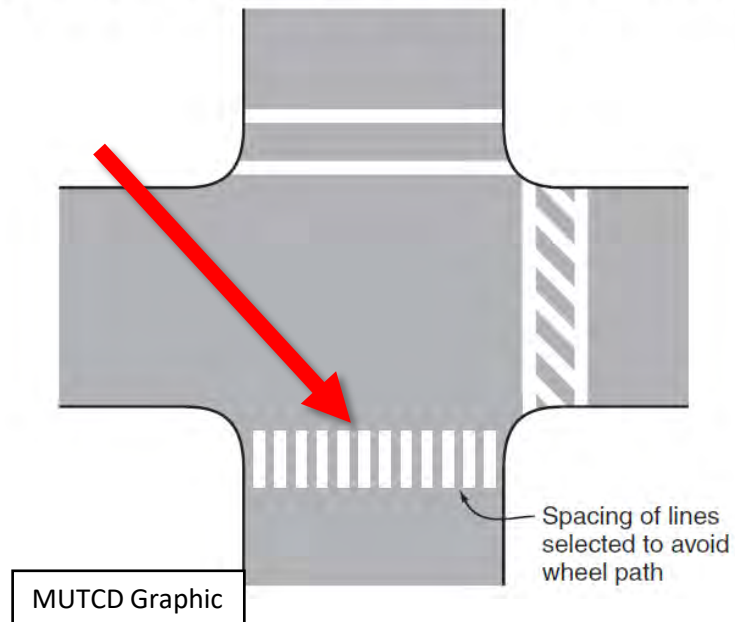
- Sidewalks provide a dedicated space for pedestrians
- 5 feet is preferred minimum width



CROSSWALKS

- Continental crosswalks provide the most visibility for crosswalks
- Continental crosswalks are already standard at many crossings, but some crossings do not have any markings

Figure 3B-19. Examples of Crosswalk Markings



Decorative Crosswalk in Hartford, CT at Night

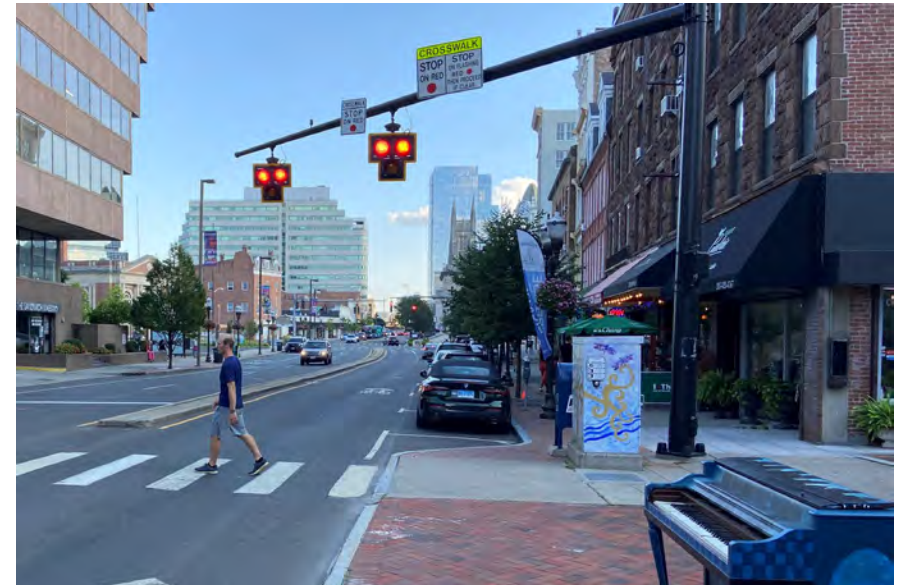
MEDIAN ISLAND WITH PEDESTRIAN REFUGE

- Raise island wide enough to provide allow pedestrian to cross in two-stages



RRFB & HAWK

- RRFB
 - Rectangular Rapid Flashing Beacon
 - Provides enhanced visibility of crosswalks, but is **not** a regulatory signal
- HAWK = **H**igh Intensity **A**ctivated **C**ross**W**alk
 - Provides a red signal for on-coming motorists



Top – RRFB in Bronxville, NY; Bottom – HAWK in Stamford, CT

LIGHTING AT CROSSWALKS

- Lighting conditions at night in areas of pedestrian crossings should be considered
- Lighting can be increased with RRFB systems with a higher intensity light to enhance visibility of crossing



SIDEPATHS & SHARED USE PATH

- Sidepaths and Shared Use Paths can provide a dedicated space for bicyclist and pedestrians off the roadway
- Typically 10-12' in width
- Minimum 8' in width
- Consideration for driveway crossings



Sidepath in Mansfield, CT

LANE NARROWING

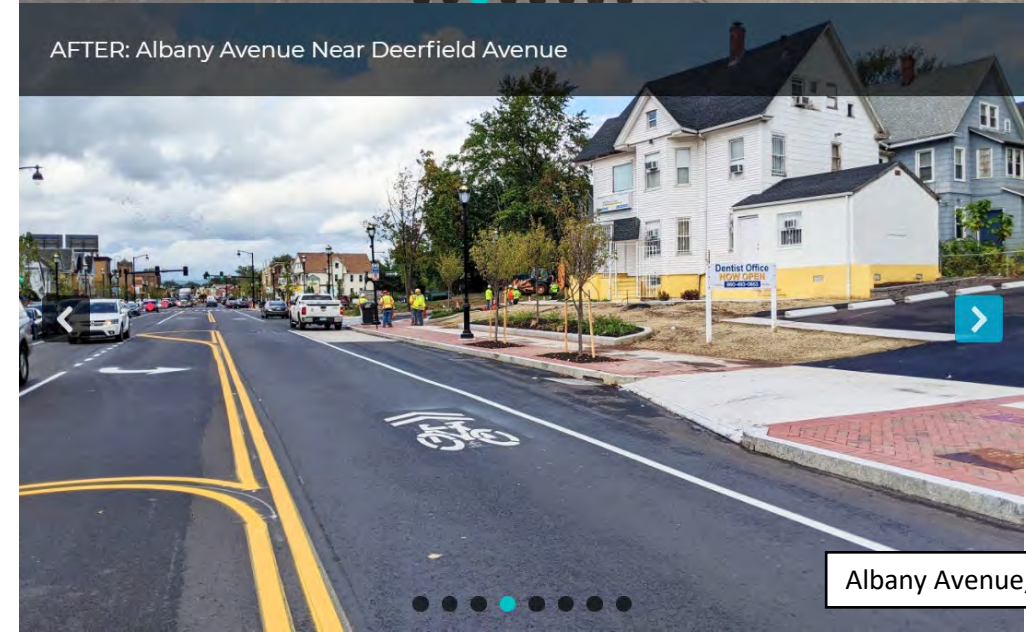
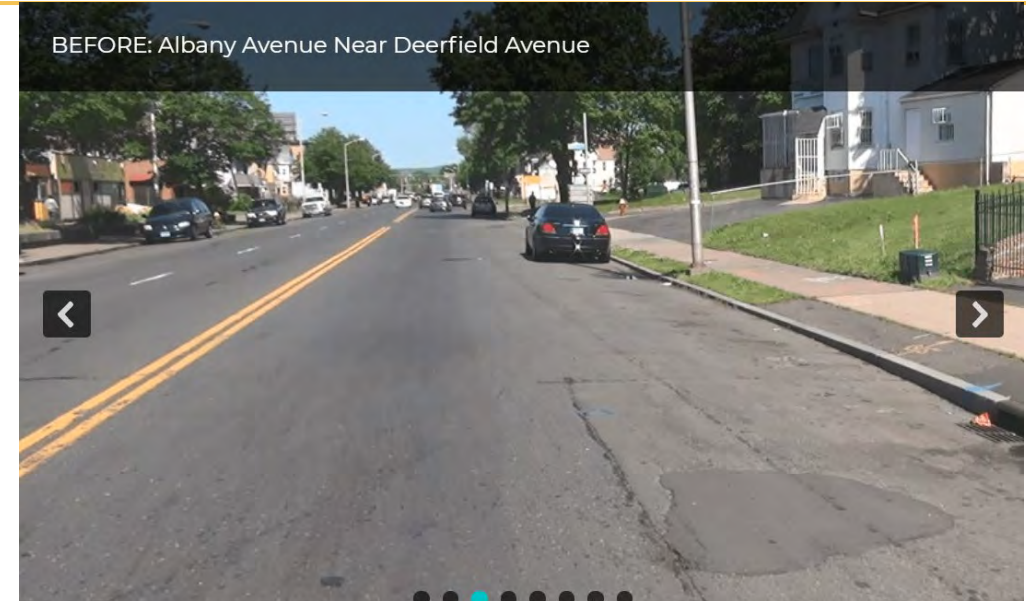
- Standard CTDOT lane width is 11 feet
- Narrow lane width (as low as 9 feet) can promote slower speeds and provide space for other purposes
- Narrower width may be appropriate in areas with limited daily traffic and truck traffic



A 10-ft lane installed in Hopkinton, NH

STREETSCAPE DESIGN

- Streetscape elements can communicate different priorities based on design with use of:
 - Curbing materials
 - Landscaping
 - Lighting
 - Sidewalk / Buffer Materials
 - Other amenities



Albany Avenue, Hartford, CT

DYNAMIC SPEED FEEDBACK SIGNAGE

- Dynamic speed feedback signs display speeds of oncoming vehicles
- Must be placed with existing speed limit sign (or include such sign on a mobile unit)
- Requires encroachment permit by CTDOT
- Effectiveness
 - Up to 4 MPH average reduction in passenger vehicle speeds (1)
 - Most reductions from 1,000 ft upstream of sign and 300 ft past sign (2)
 - Decreased effectiveness over time (2)



County of San Luis Obispo

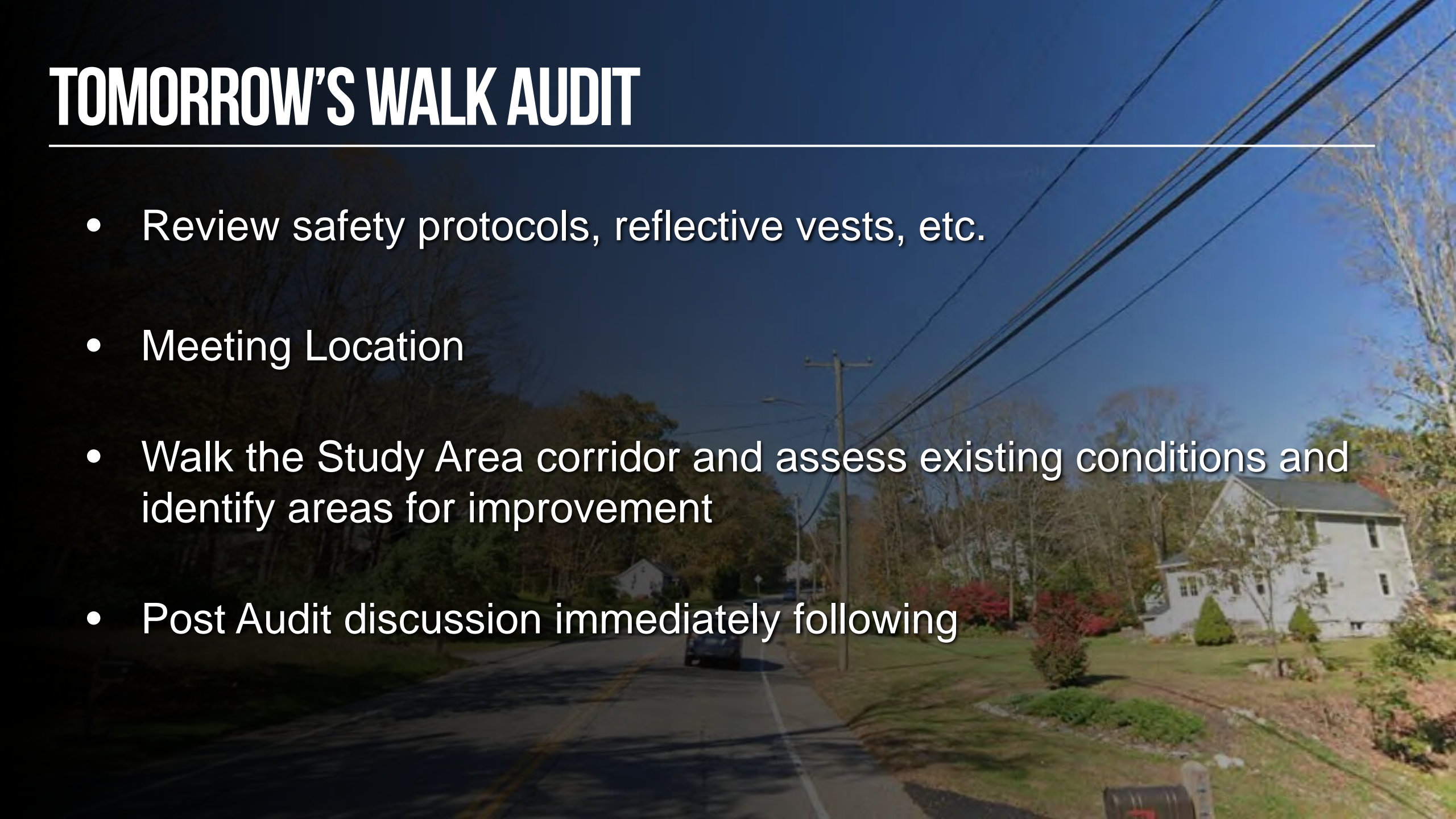
(1) Flynn, D. et al. *Dynamic Speed Feedback Signs Are Effective in Reducing Driver Speeds: A Meta-Analysis*. 2020

(2) Santiago-Chaparro, K. et al. *Spatial Effectiveness of Speed Feedback Signs*. 2012



**DISCUSSION ON
ISSUES IN THE STUDY AREA AND
OPPORTUNITIES**

TOMORROW'S WALK AUDIT

- Review safety protocols, reflective vests, etc.
 - Meeting Location
 - Walk the Study Area corridor and assess existing conditions and identify areas for improvement
 - Post Audit discussion immediately following
- 
- A background photograph of a residential street. A utility pole with multiple power lines is visible in the center. The street is paved and has a white line marking. On the right side, there is a two-story house with a grey roof and a lawn with some bushes. The sky is clear and blue.



THANK YOU!



Torrington Road Safety Audit

Meeting Location: Virtual Meeting

Date and Time: October 13th, 1:00 PM – 2:00 PM

Agenda

- 1. Welcome and Introductions**
- 2. Pre-Audit Presentation and Discussion**
 - Definition of Study Area
 - Review Site Specific Data
 - Average Daily Traffic
 - Crash Data
 - Geometrics
- 3. Walk Audit Procedures and Safety**

Notes for Participants

- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, as stakeholders' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.



Torrington Road Safety Audit

Meeting Location: Cottage of Litchfield Hills

Address: 376 Goshen Road

Date and Time: October 14th, 10:00 AM

Agenda

4. Welcome and Introductions

5. Review of Road Safety Audit Route

6. Audit

- Visit Study Area
- Complete Audit Checklist
- Identify issues and opportunities for improvements

7. Post-Audit Discussion

- Discussion observations and finalize findings
- Discuss potential improvements and final recommendations
- Next Steps

Notes for Participants

- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, as stakeholders' opinions are key elements to the success of the overall RSA process.
- After the RSA meeting, participants will be asked to comment and respond to the document materials to assure it is reflective of the RSA completed by the multidisciplinary team.



Torrington Audit Checklist

| Pedestrians and Bicycles | Comment |
|---|---------|
| <p>Pedestrian Crossings</p> <ul style="list-style-type: none"> • Sufficient time to cross (signal) • Signage • Pavement Markings • Detectable warning devices (signal) • Adequate sight distance • Wheelchair accessible ramps <ul style="list-style-type: none"> ○ Grades ○ Orientation ○ Tactile Warning Strips • Pedestrian refuge at islands • Other | |
| <p>Pedestrian Facilities</p> <ul style="list-style-type: none"> • Sidewalk <ul style="list-style-type: none"> ○ Width ○ Grade ○ Materials/Condition ○ Drainage ○ Buffer • Pedestrian lighting • Pedestrian amenities (benches, trash receptacles) • Other | |

Bicycles

- Bicycle facilities/design
- Separation from traffic
- Conflicts with on-street parking
- Pedestrian Conflicts
- Bicycle signal detection
- Visibility
- Roadway speed limit
- Bicycle signage/markings
- Shared Lane Width
- Shoulder condition/width
- Traffic volume
- Heavy vehicles
- Pavement condition
- Other

Roadway & Vehicles

- Speed-related issues
 - Alignment;
 - Driver compliance with speed limits
 - Sight distance adequacy
 - Safe passing opportunities

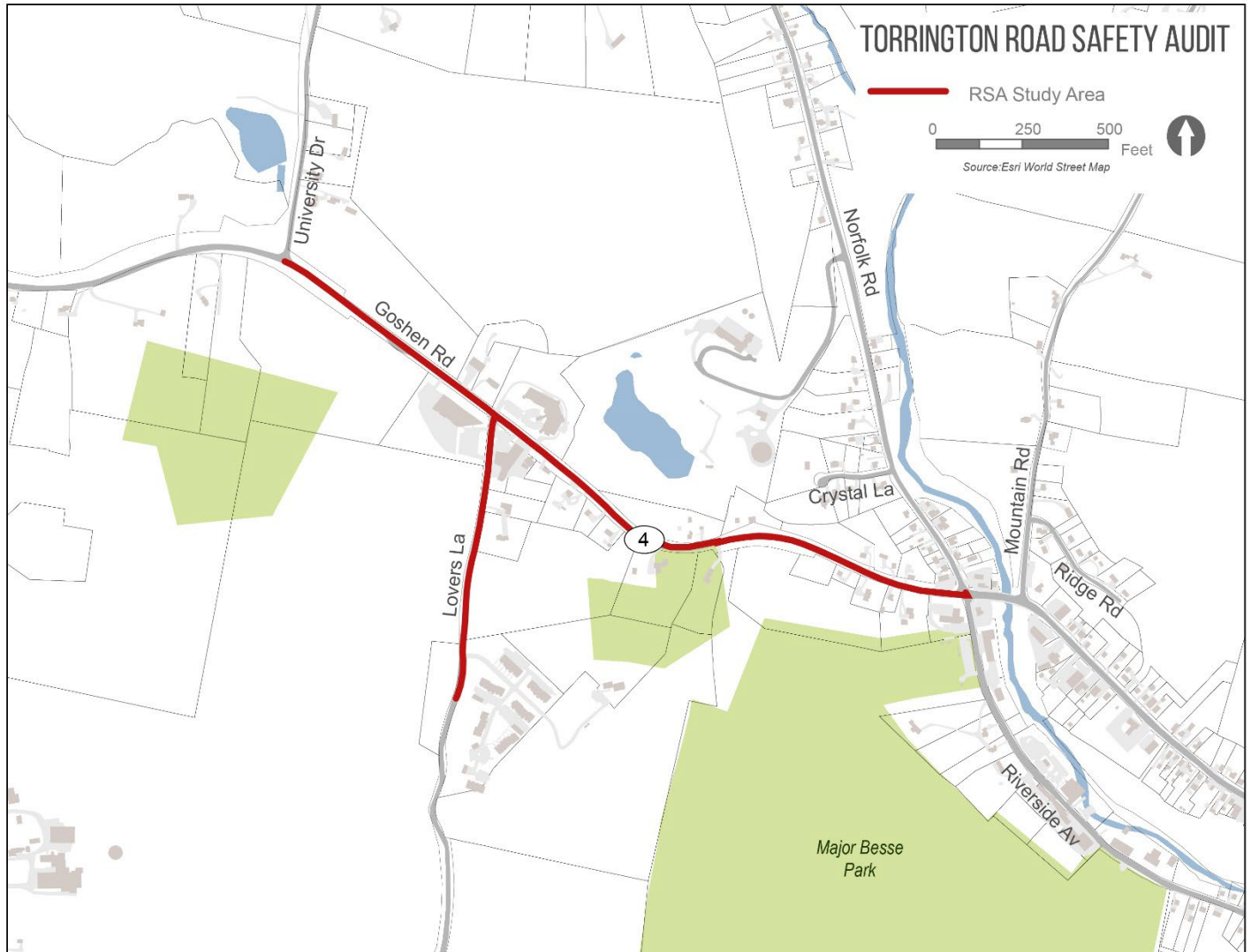
- Geometry
 - Road width (lanes, shoulders, medians);
 - Access points;
 - Drainage
 - Tapers and lane shifts
 - Roadside clear zone /slopes
 - Guide rails / protection systems

- Intersections
 - Geometrics
 - Sight Distance
 - Traffic control devices
 - Safe storage for turning vehicles
 - Capacity Issues

| | |
|--|--|
| <ul style="list-style-type: none"> • Pavement <ul style="list-style-type: none"> ○ Pavement Condition (excessive roughness or rutting, potholes, loose material) ○ Edge drop-offs ○ Drainage issues • Lighting Adequacy | |
| <ul style="list-style-type: none"> • Signing <ul style="list-style-type: none"> • Correct use of signing • Clear Message • Good placement for visibility • Adequate retroreflectivity • Proper support | |
| <ul style="list-style-type: none"> • Signals <ul style="list-style-type: none"> ○ Proper visibility ○ Proper operation ○ Efficient operation ○ Safe placement of equipment ○ Proper sight distance ○ Adequate capacity | |
| <ul style="list-style-type: none"> • Pavement Markings <ul style="list-style-type: none"> ○ Correct and consistent with MUTCD ○ Adequate visibility ○ Condition ○ Edgelines provided | |
| <ul style="list-style-type: none"> • Miscellaneous <ul style="list-style-type: none"> ○ Weather conditions impact on design features. ○ Snow storage | |

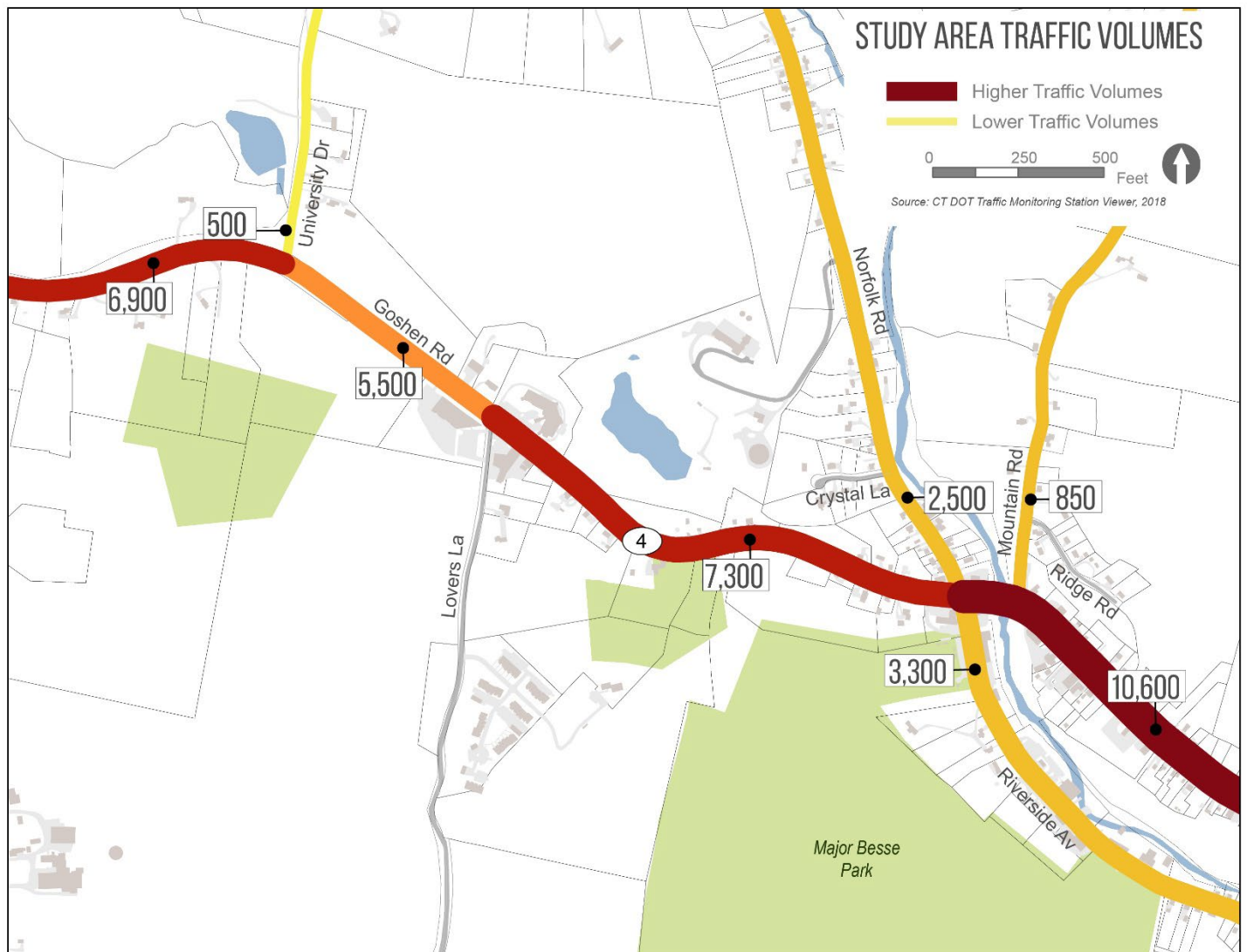
Torrington Road Safety Audit - Study Area

- Route 4 (Goshen Road between University Drive and Riverside Avenue/Norfolk Road intersection)
- Vicinity of the Cottage of Litchfield Hills complex and Lovers Lane



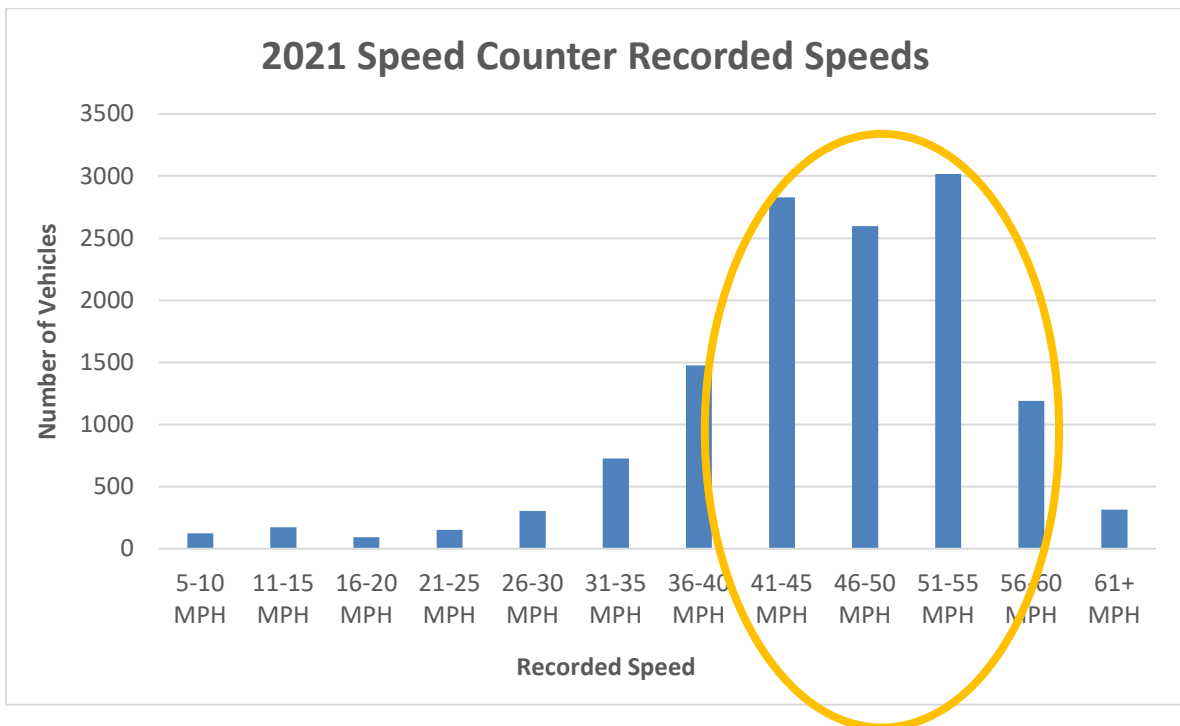
Torrington Road Safety Audit - Average Daily Traffic Volumes in 2018

- Higher traffic volumes in center of Study Area between Lovers Lane and Riverside Avenue intersection – 2018 counts prior to Covid
- Highest volumes on Route 4, east of Riverside Avenue/Norfolk Road intersection
- High volumes on Route 4 west of Lovers Lane
- Lowest volumes found on University Drive

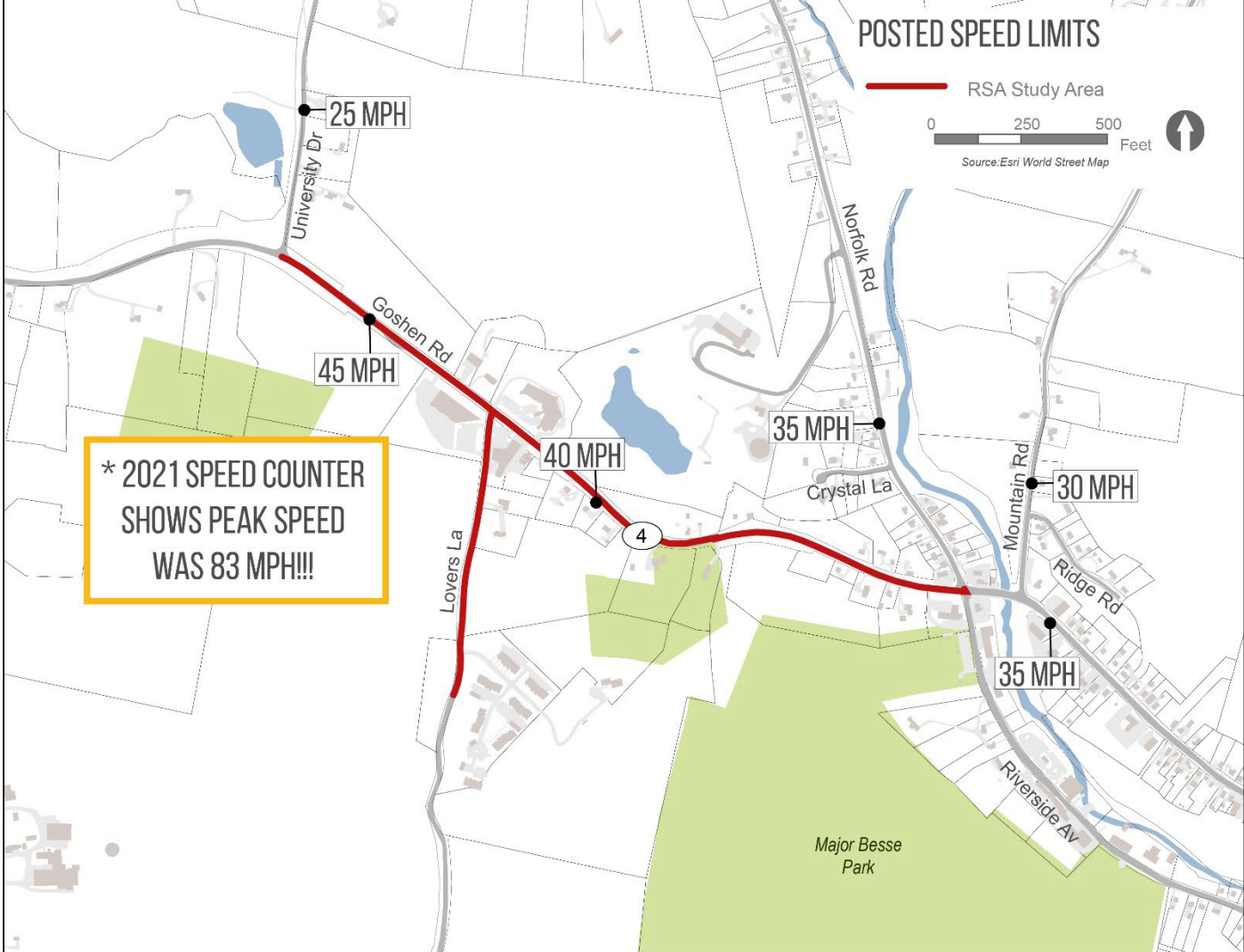


Torrington Road Safety Audit – Posted Speed Limits

- Speed limit in Study ranges between 40 MPH and 45 MPH, 25 MPH on Lovers Lane
- Over 3,000 vehicles recorded going 51 - 55 MPH
- 85th percentile speed – 54 MPH

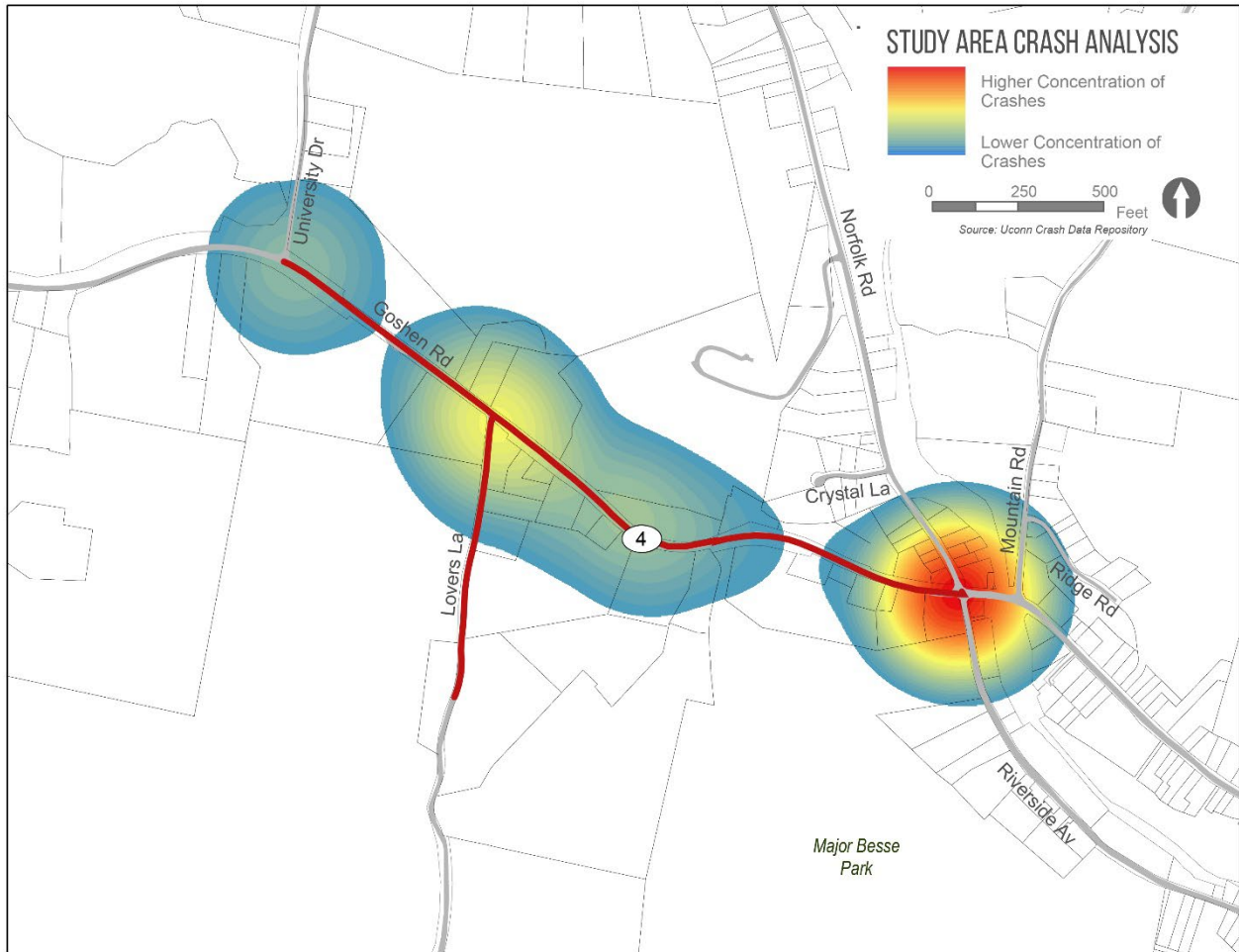


POSTED SPEED LIMITS



*** 2021 SPEED COUNTER SHOWS PEAK SPEED WAS 83 MPH!!!**

Torrington Road Safety Audit - Crash Summary Heat Map



Torrington Road Safety Audit - Crash Summary

Years: 2017 - 2021

| | Crash Severity | | | | | TOTAL |
|-------------------------------|----------------|----------------|--------------|-----------------|----------------------|-----------|
| | Fatality | Serious Injury | Minor Injury | Possible Injury | Property Damage Only | |
| Angle | | 1 | 3 | | 10 | 14 |
| Front to front | | | | | 2 | 2 |
| Front to rear | | | 2 | 2 | 5 | 9 |
| Sideswipe, opposite direction | 1 | | | | 2 | 3 |
| Sideswipe, same direction | | | | | 3 | 3 |
| Rear to Side | | | | | 2 | 2 |
| Rear to Rear | | | | | | 0 |
| Not Applicable | | 1 | 3 | | 8 | 12 |
| Other | | | 1 | 1 | 2 | 4 |
| TOTAL | 1 | 2 | 9 | 3 | 34 | 49 |
| Crashes Involving Pedestrians | 0 | 0 | 0 | 0 | 0 | 0 |
| Crashes Involving Bicyclists | 0 | 0 | 0 | 0 | 0 | 0 |

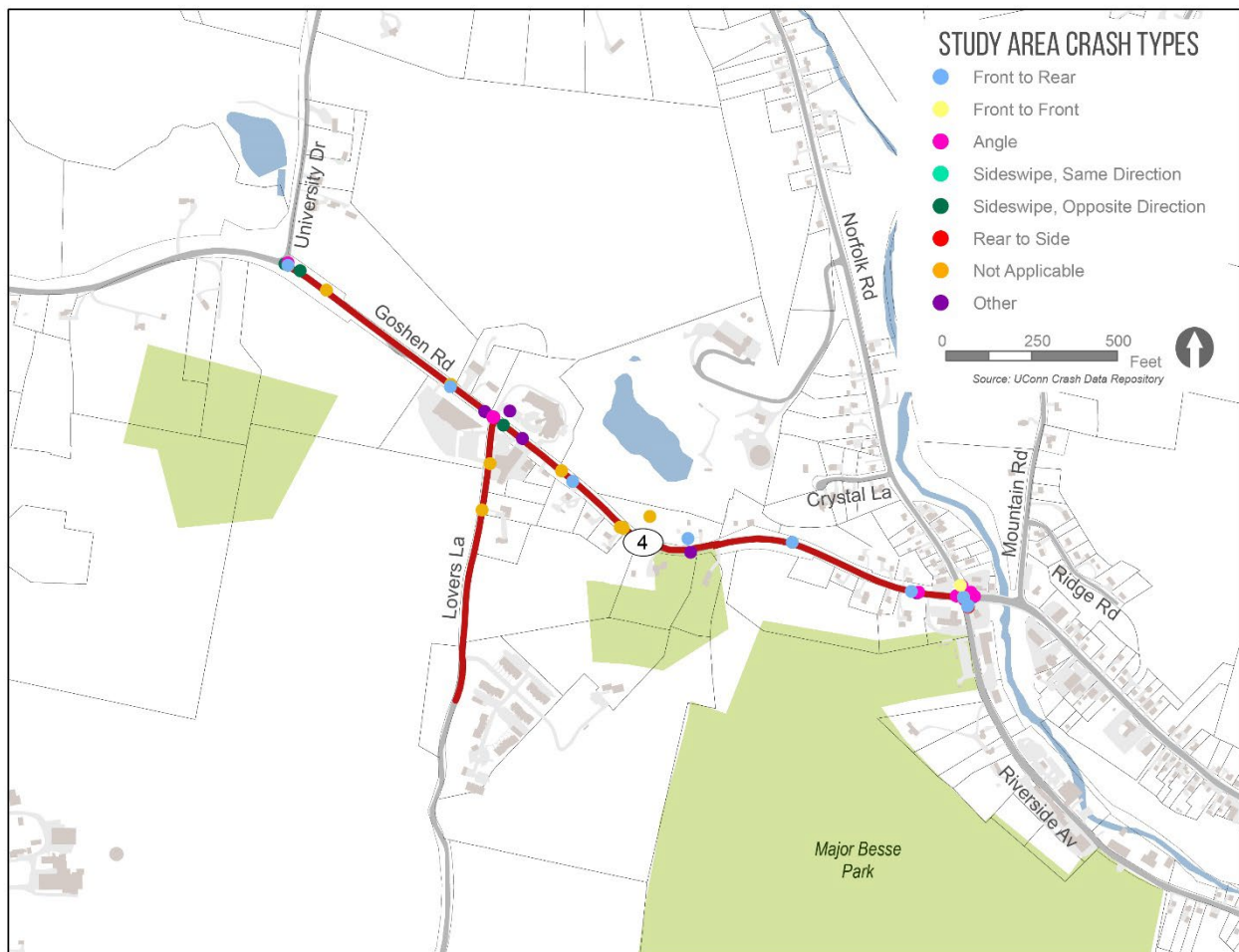
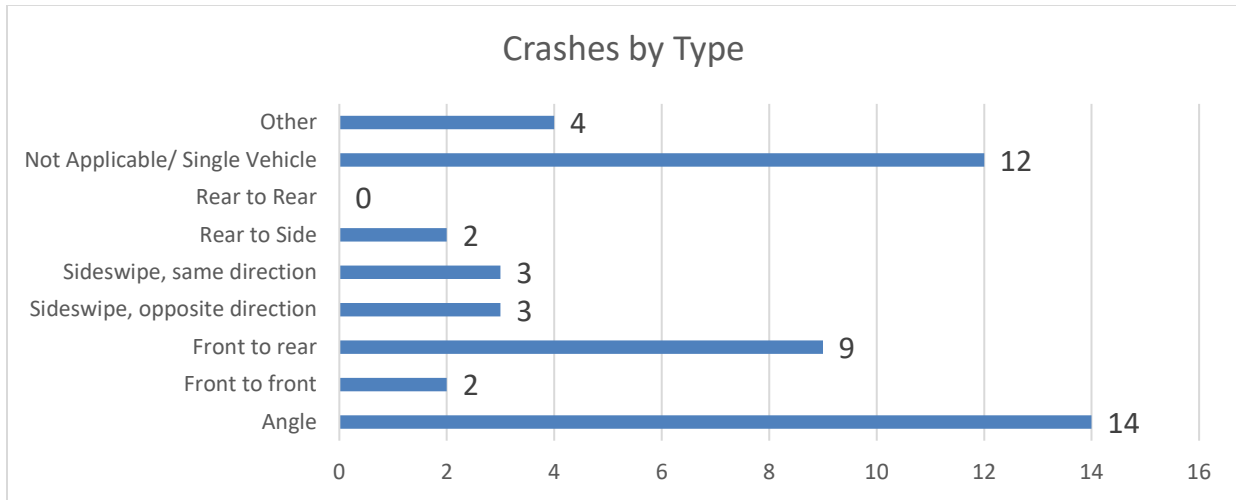
Summary Analysis:

Crash Hotspots (5 Year Crash Total approx.) 49 Crashes Total

- Approximately 20 crashes in the vicinity of Goshen Road, Norfolk Road, Riverside Avenue intersection
- Approximately 12 crashes in the vicinity of Goshen Road and Lovers Lane
- Approximately 5 crashes in the vicinity of Goshen Road and University Drive

Torrington Road Safety Audit Crash Summary - Crashes by Type

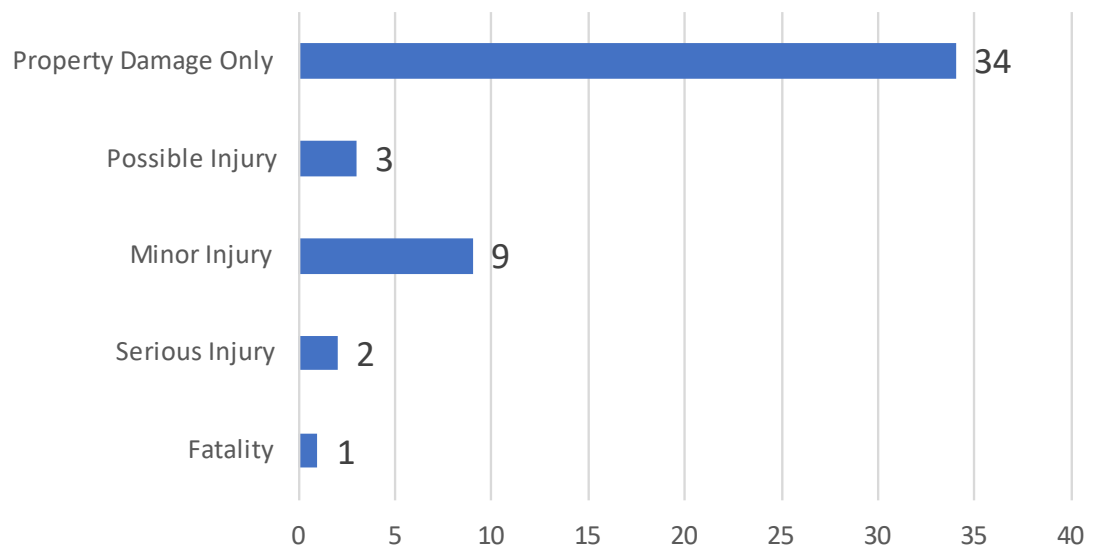
- Majority of crashes are front to rear, angle crashes, or single vehicle crashes



Torrington Road Safety Audit Crash Summary - Crash Severity

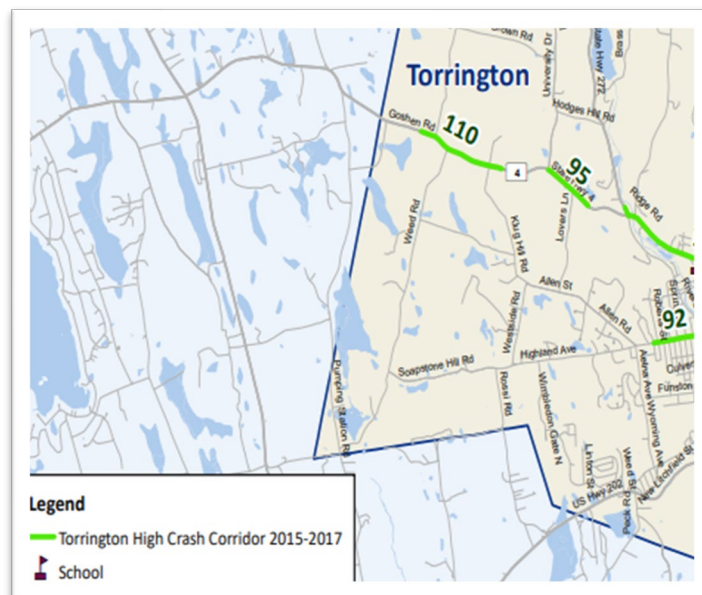
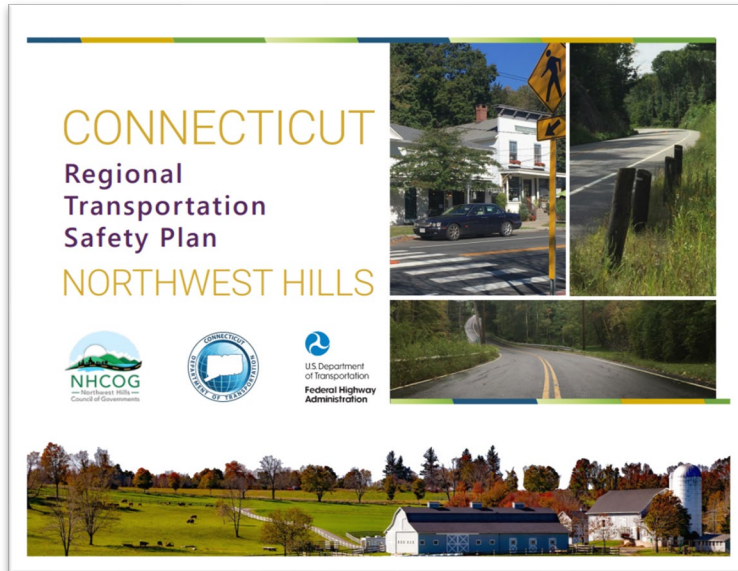
- Majority of crashes (34) are classified as No Apparent Injury- Property Damage Only
- There were 3 crashes resulting in a possible injury and 9 minor injury crashes
- 1 crash in 2019 resulting in a fatality east of University Drive

Crashes by Severity



Torrington Road Safety Audit – Review of Past and Current Work

- Northwest Hills Council of Governments Transportation Safety Plan 2019
 - Recommended edge line rumble strips with bicycle gaps and roadway illumination
 - Recommends re-stripping crosswalks
- Route 4 identified as a high crash corridor



Torrington Road Safety Audit - Post Audit Discussion Guide

Safety Issues:

- Confirmation of safety issues identified during the pre-audit meeting and the walk audit

Potential Recommendations to Address Issues:

- **Short Term Recommendations**

- **Medium Term Recommendations**

- **Long Term Recommendations**

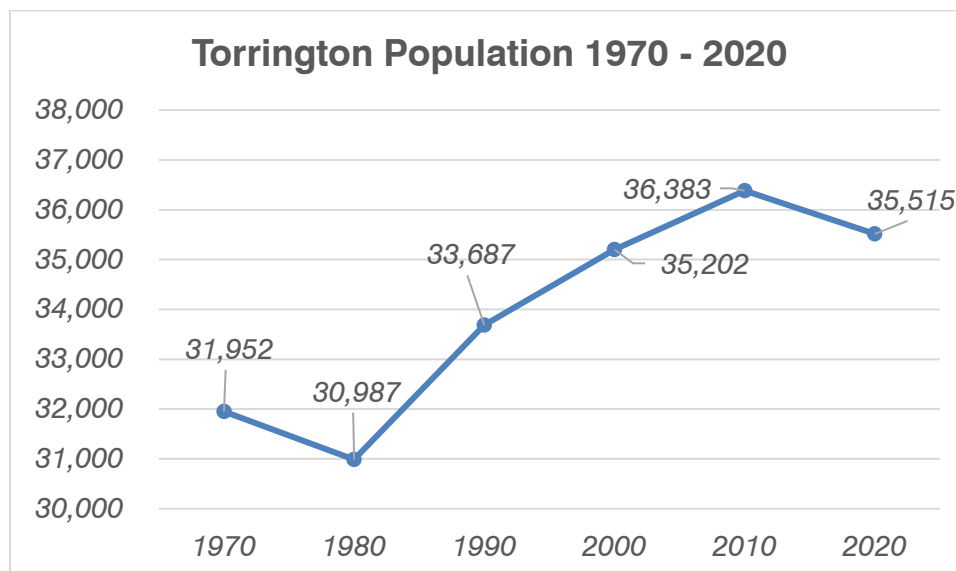
Next Steps

- Discussion involving implementation strategies and responsibilities and funding sources

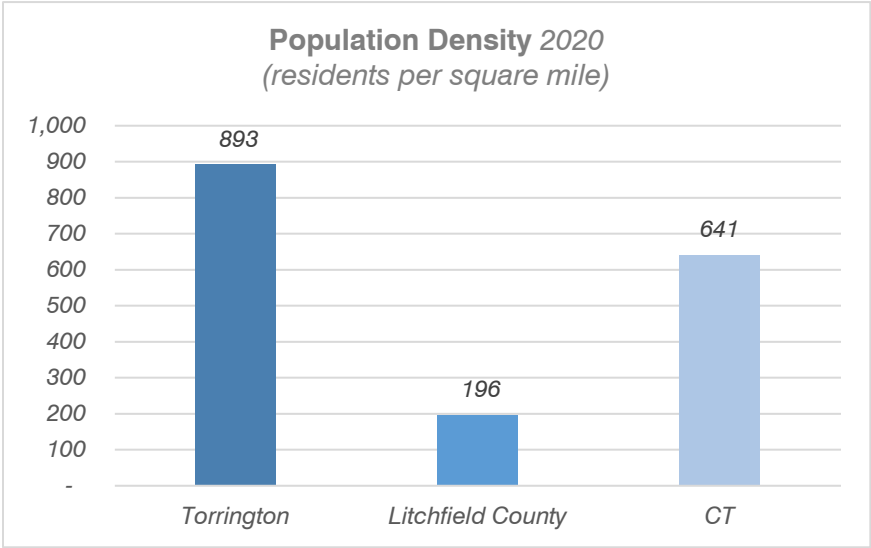
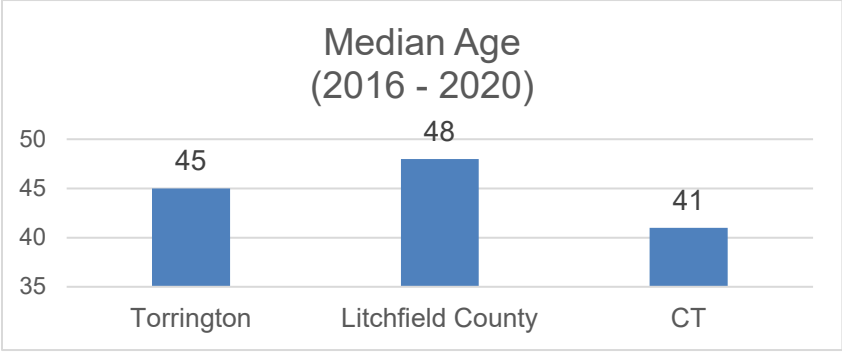
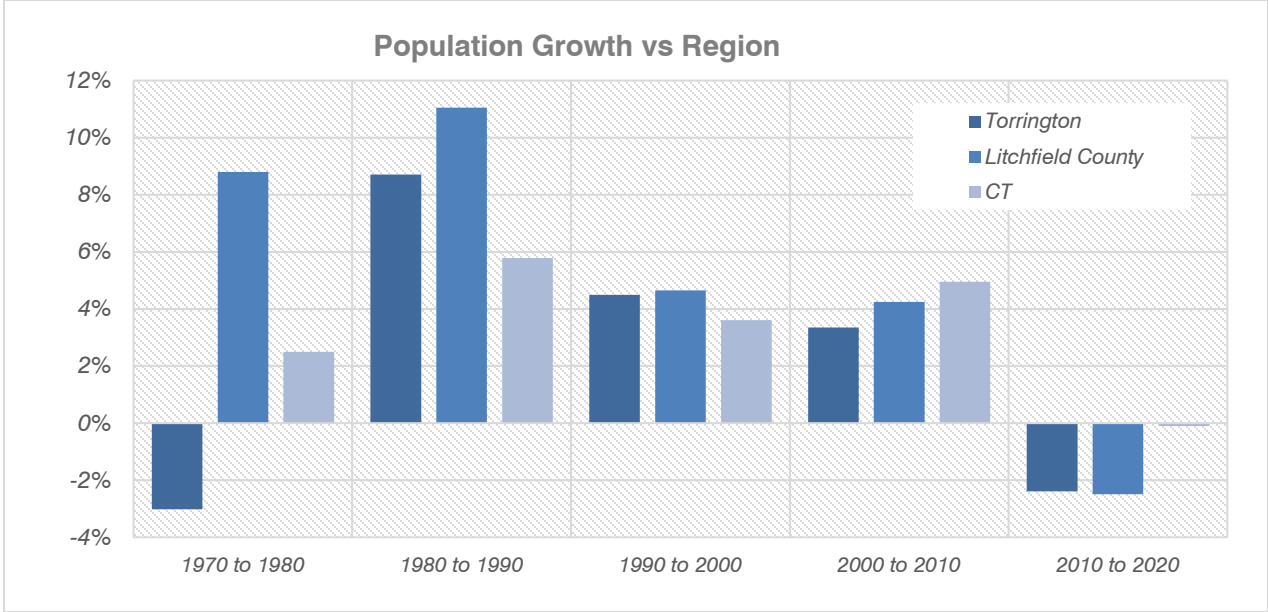
Torrington Road Safety Audit – Torrington Fact Sheet

Demographic Highlights¹:

- Total population in Torrington is 35,515.
- Torrington saw significant growth between 1980 and 2010. Torrington, Litchfield County, and the State all declined in population between 2010 and 2020.
- There are approximately 893 residents per square mile in Torrington, making it much more densely developed than Litchfield County and more dense than the State as a whole.
- The median age in Torrington is 45. Litchfield County's median age is 47 and the State's is 41 years old.



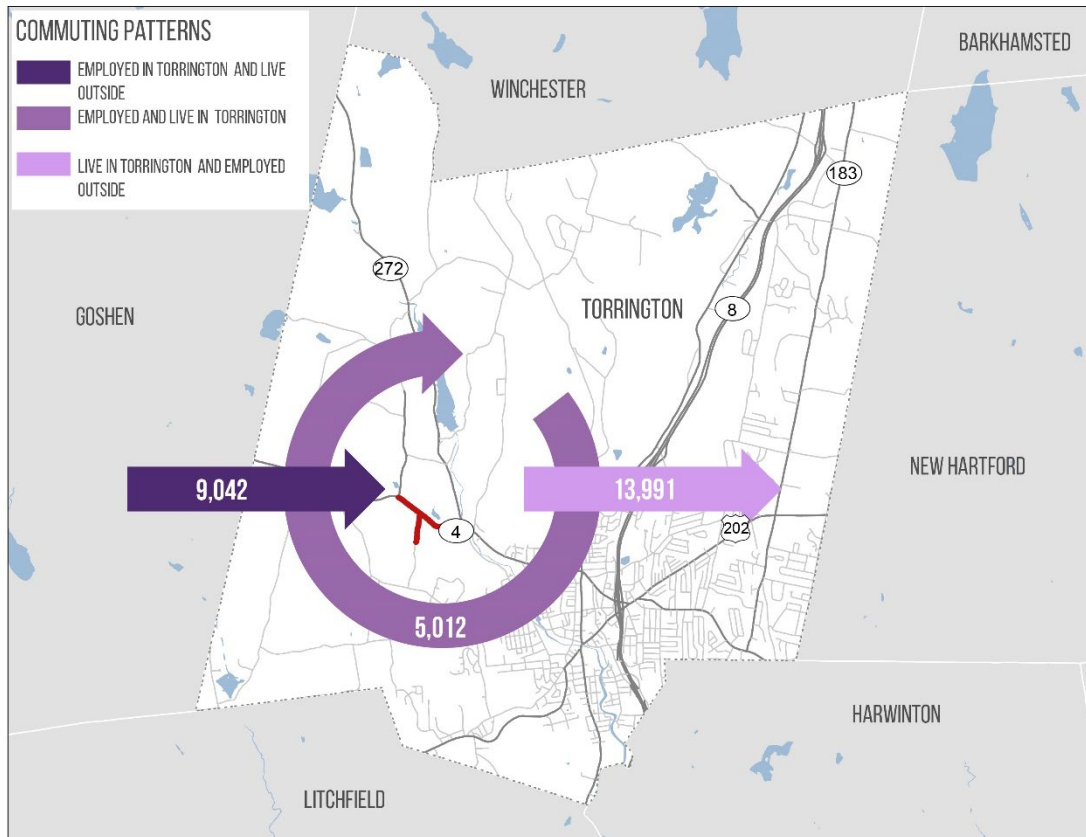
¹ 2020 Decennial Census and 2016- 2020 American Community Survey, 5- year estimate table DP05, Accessed on 10/10/2022 at <https://data.census.gov/cedsci/>



Torrington Road Safety Audit – Torrington Fact Sheet

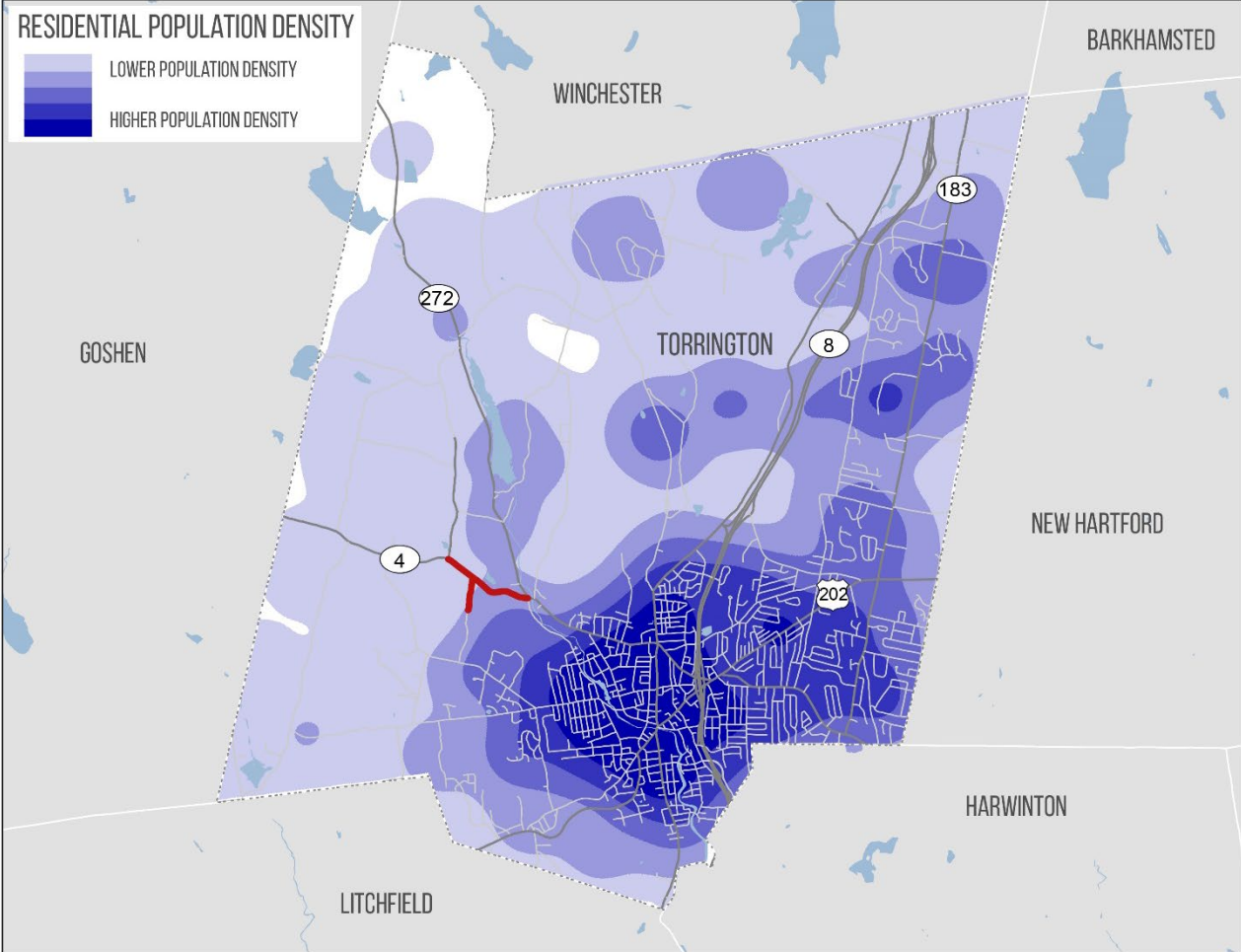
Employment Highlights²:

- There were approximately 9,042 workers commuting into Torrington for employment in 2019. Approximately 5,012 residents of Torrington are also employed in Torrington and 13,991 Torrington residents commuted out of town for employment. (2019)
- The top five employment destinations for Torrington’s residents include:
 - Torrington
 - Waterbury
 - Hartford
 - New York City
 - Bristol
- The Study Area and surrounding neighborhoods have a medium population density. The Study Area is home to a variety of uses including residential neighborhoods, commercial and restaurant uses, the Cottage of Litchfield Hills residential complex, access to Uconn Torrington, parks and open space



² U.S. Census Bureau. (2021). LEHD Origin-Destination Employment Statistics (2002-2019) All Jobs. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program, accessed on October 10, 2022 at <https://onthemap.ces.census.gov>. LODS 7.5

Residential Population Density



Torrington Road Safety Audit – Roadway Functional Classification

- Route 4 is a Minor Arterial Roadway west of Riverside Avenue
- Route 4 is a Principal Arterial Roadway east of Riverside Avenue
- Norfolk Road is a Minor Arterial
- University Drive and Riverside Avenue are Collector Roadways
- Lovers Lane is a Local Roadway

