



COMMUNITY
connectivity program

Berlin

Deming Road – Road Safety Audit

July 6, 2016



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Acknowledgements:

OFFICE OF INTERMODAL PLANNING
BUREAU OF POLICY AND PLANNING
CONNECTICUT DEPARTMENT OF TRANSPORTATION

With assistance from AECOM Transportation Planning Group

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The Connecticut Department of Transportation (CTDOT) is undertaking a Community Connectivity Program that focuses on improving the state's transportation network for all users, with an emphasis on bicyclists and pedestrians. A major component of this program is conducting Road Safety Audits (RSA's) at selected locations. An RSA is a formal safety assessment of the existing conditions of walking and biking routes and is intended to identify the issues that may discourage or prevent walking and bicycling. 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 or severity.

The RSA team is made up of CTDOT staff, municipal officials and staff, enforcement agents, AECOM staff, and community leaders. An 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, presence or absence of bicycle lanes or sidewalks, and social influences.

Each RSA was conducted using RSA protocols published by the FHWA. For details on this program, please refer to www.ctconnectivity.com. Prior to the site visit, area topography and land use characteristics are examined using available mapping and imagery. Potential sight distance issues, sidewalk locations, on-street and off-street parking, and bicycle facilities are also investigated using available resources. 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 is discussed in the following sections.



1 Introduction to the Berlin (Deming Road) RSA

The Town of Berlin submitted an application to complete an RSA along Deming Road to improve safety for pedestrians and bicyclists. The alignment of this intersection, coupled with high traffic volumes, has resulted in what is perceived as a confusing and stressful environment for pedestrians and bicyclists. Specifically, the town has received complaints regarding poor sidewalk and triangular channelizing island conditions, lack of safety features including ramp warning strips, pedestrian crossing signals that are not audible and do not provide a countdown, and ADA accessibility concerns. In addition to these concerns, pedestrians have been observed crossing mid-block, posing a safety risk from conflict with unsuspecting motorists.

The Berlin application contained information on traffic volumes, crash data, and mapping of the intersection. The application and supporting documentation are included in Appendix A.

1.1 Location

The site is the section of Deming Road between the Berlin Turnpike and Christian Lane in the Town of Berlin (Figure 1.). Deming Road Average Daily Traffic (ADT) is 13,500 vehicles per day (vpd). The ADT on Christian Lane just north of the intersection with Deming Road is 6,800 vpd, just south it is south is 16,000 vpd. This indicates that many vehicles are turning onto Christian Lane northerly from Deming Road. These are significant volumes of traffic for a local road to process.



Figure 1. Deming Road Berlin

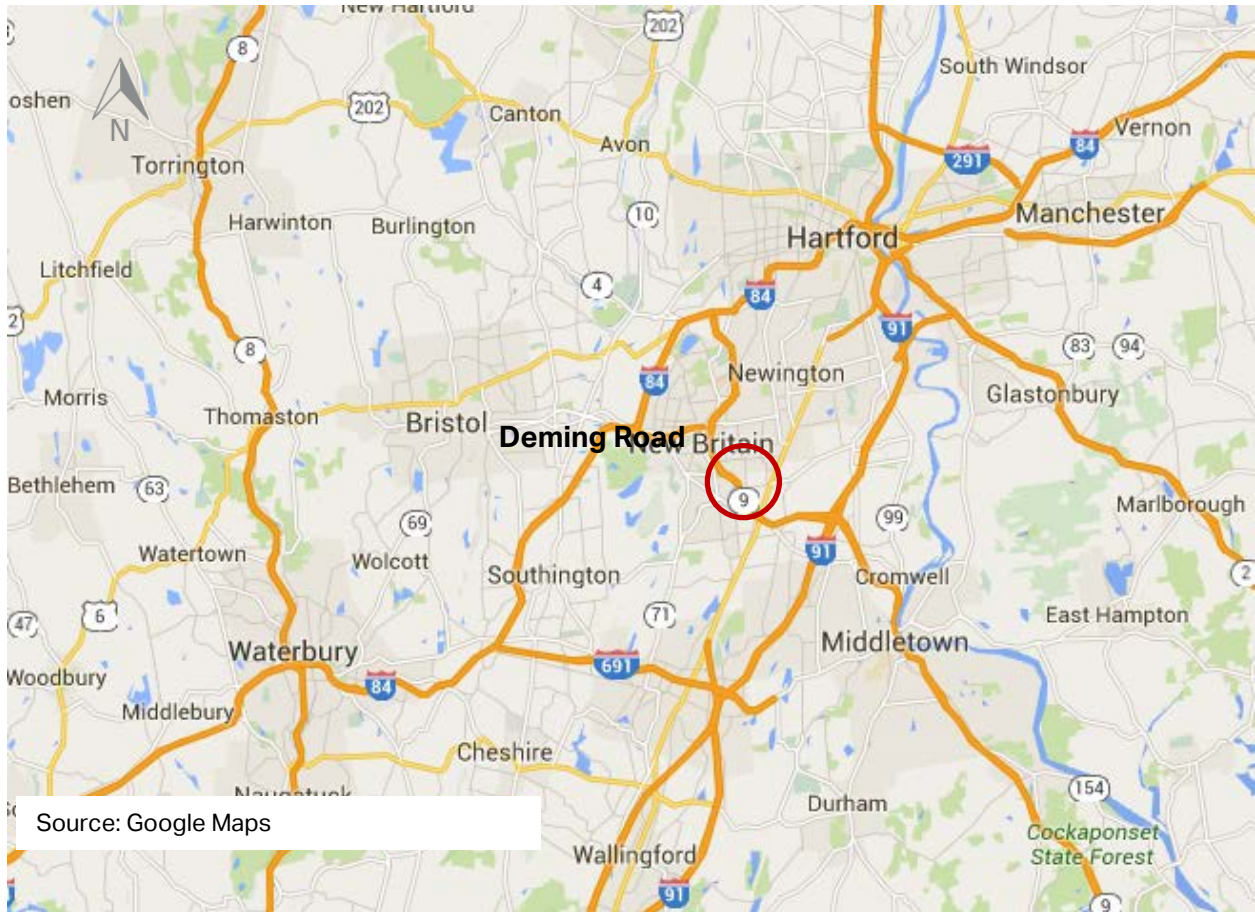


Figure 2. Deming Road Regional Context

2 Pre-Audit Assessment

2.1 Pre-Audit Information

As noted previously, traffic volumes are significant at this location. Crash history shows that the most frequent are rear-end crashes on the approaches to the intersections (Tables 1 and 2, Figure 3). This is indicative of congestion. The peak crash rate is in the afternoon, which can be attributed to the combined impact of commuting, shopping, and school activities.

Severity Type	Number of Accidents	
Property Damage Only	102	80%
Injury (No fatality)	26	20%
Fatality	0	0%
Total	128	

Table 1. Crash Severity 2012-2014

Source: UConn Connecticut Crash Data Repository

Manner of Crash / Collision Impact	Number of Accidents	
Unknown	0	0%
Sideswipe-Same Direction	6	5%
Rear-end	80	63%
Turning-Intersecting Paths	11	9%
Turning-Opposite Direction	6	5%
Fixed Object	12	9%
Backing	1	1%
Angle	2	2%
Turning-Same Direction	4	3%
Moving Object	3	2%
Parking	0	0%
Pedestrian	1	1%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	2	2%
Total	128	
Unknown	0	0%

Table 2. Crash Type 2012-2014

Source: UConn Connecticut Crash Data Repository

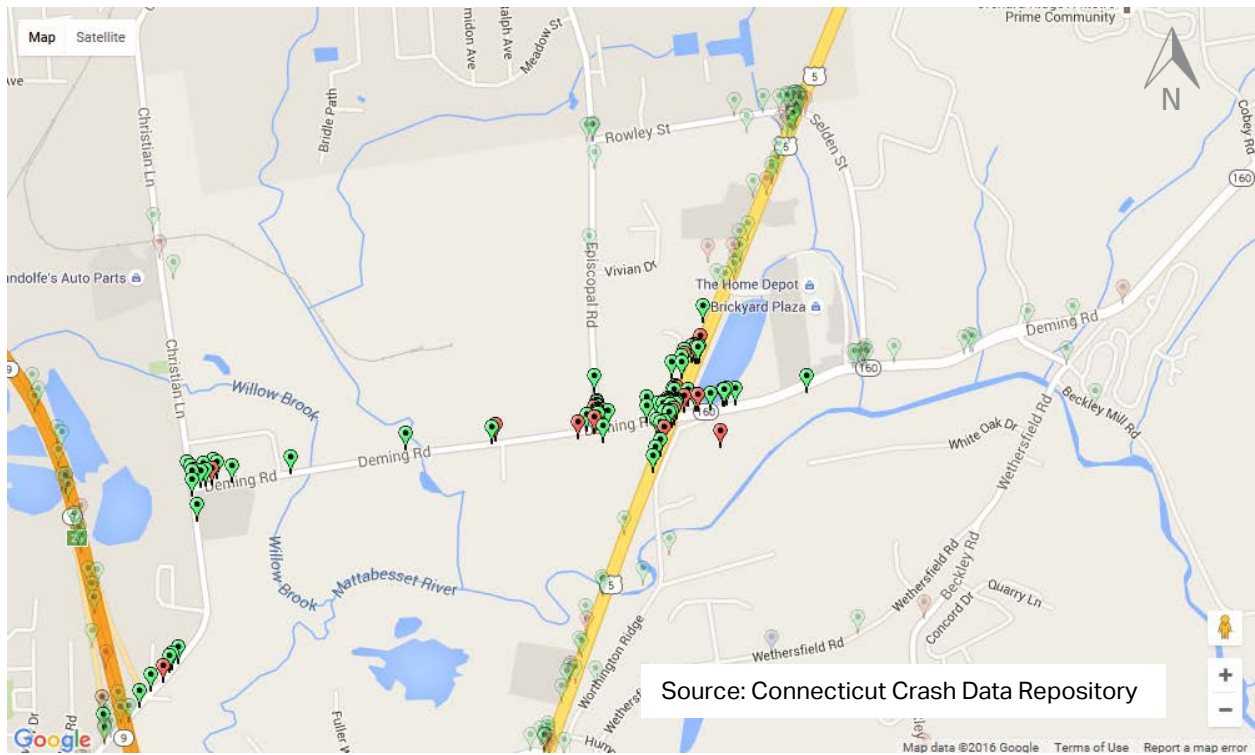


Figure 3. Crashes that Occurred in 2015 (Connecticut Crash Data Repository)

Deming Road is a town owned and maintained facility that runs in an east/west direction. It is a two lane road with very wide lanes, asphalt curbing, and no shoulder markings. There are no sidewalks or crosswalks (Figure 4).

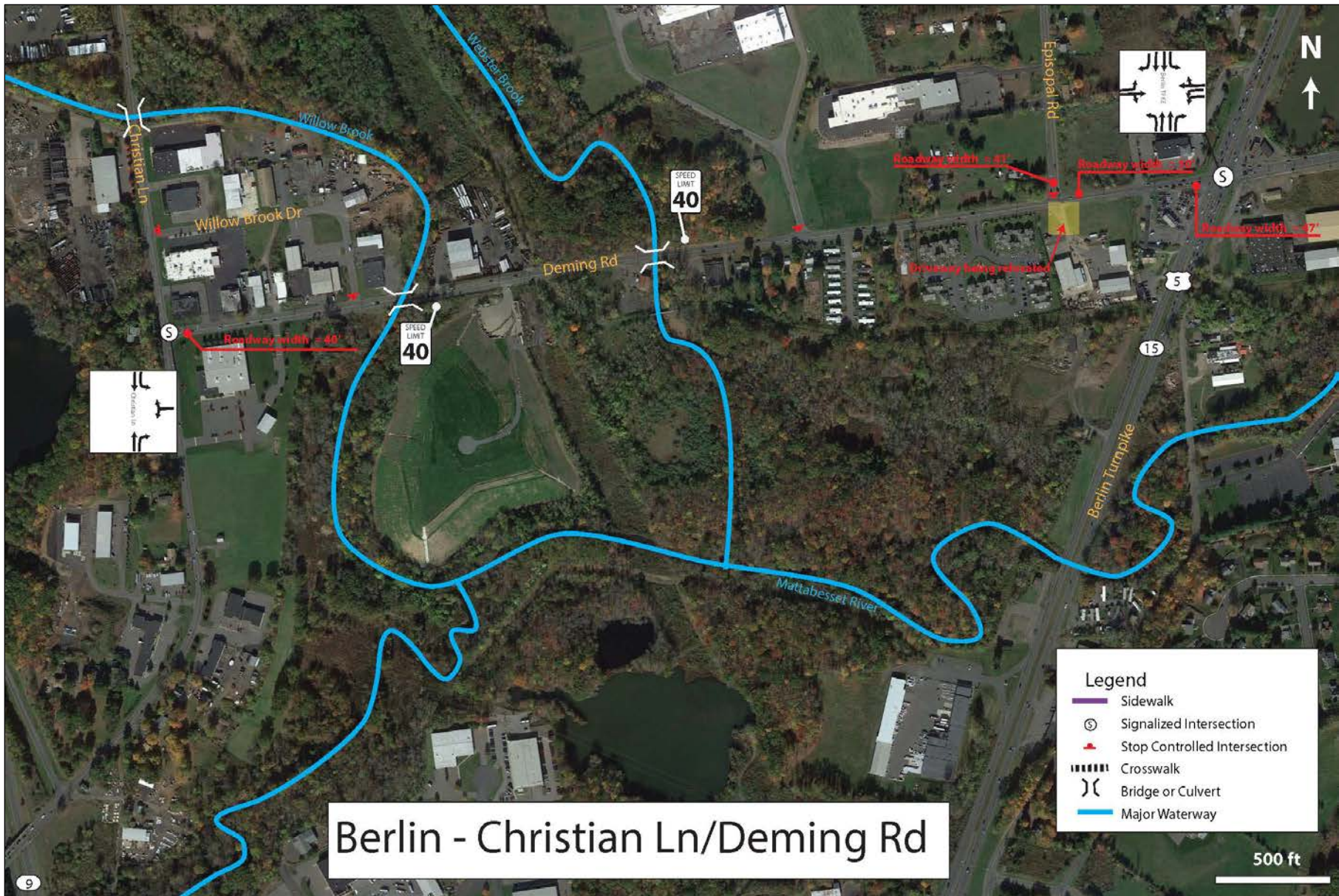


Figure 4. Deming Road Geometrics

2.2 Prior Successful Efforts

A number of best practices have already been applied along the corridor. The detector loops on Deming Road at the Christian Lane intersection were moved to better align with traffic. Traffic counts were performed by the Berlin Police Department at the intersection of Deming Road and Christian Lane to understand the traffic patterns.

2.3 Pre-Audit Meeting

The RSA was conducted on July 6, 2016. The Pre-Audit meeting was held at 8:30 AM in the Berlin Town Hall Caucus Room A, located at 240 Kensington Road.

The RSA Team was comprised of staff from CTDOT and AECOM, and representatives from several Berlin departments and organizations including Public Works, Police Department and the Board of Education. The complete list of attendees can be found in Appendix B. Materials distributed to the RSA Team, including the agenda, audit checklist, ADT counts, crash data and road geometrics, can be found in Appendix C.

RSA Team members from Berlin presented relevant information for the audit, including:

- Deming Road is extremely busy during the peak hours. There are several large businesses and it provides connections to Route 9 and the Berlin Turnpike. Vehicles from other locations also use Deming Road to travel between the Berlin Turnpike and Route 9. Christian Lane also has ramp access to Route 9 north and from Route 9 south.
- Deming Road is not pedestrian or cycling friendly.
- Berlin anticipates that within the next few years, industrial activity along Deming Road will increase. Within 18 months they anticipate 2 new buildings.
- The Berlin Police Department conducted a traffic count over the course of 4 days at the intersection of Deming Road and Christian Lane. Over 60,000 vehicles were counted.
- The traffic signal at Deming Road and Christian Lane cycles with the primary street as Christian Lane and the actuated phase on Deming Road. The phase on Deming Road is not long enough, resulting in long queues, particularly during the afternoon peak. Part of the issue may be the location of the detector loops, and the town is looking into fixing this. This is a town owned traffic signal.
- Large vehicles turning right onto Deming Road from Christian Lane have difficulty making the turn and often go over the curb.
- There is a significant amount of truck traffic along Christian Lane due to the industrial land uses in the area.

- The primary residential neighborhood on Deming Road is Fieldstone Crossing. Pedestrians have been observed walking along Deming Road from Fieldstone Crossing to access the Brickyard Shopping Plaza on the other side of the Berlin Turnpike.
- There are upwards of 20 school children living in Fieldstone Plaza, the school bus stops along Deming Road and there is a concern that vehicles turning from Episcopal Road do not see the school bus lights.
- Episcopal Road was designed as a local residential road but has experienced increased traffic and is being used as a cut through road to avoid the Berlin Turnpike. Side streets are experiencing an increase in traffic due to GPS routing.
- Vehicles queue on Episcopal Road ("STOP" controlled), and it is difficult to turn onto Deming Road due to traffic and sight lines.
- Episcopal Road is wide.
- An Acura Dealership is being constructed between the Berlin Turnpike and Episcopal Road just north of the CVS. The driveway onto Episcopal Road will be right turn only.
- A traffic signal cannot be installed at the intersection of Episcopal Road and Deming Road, as it would be too close to the signal at Berlin Turnpike. A three way stop at Episcopal would be problematic, as traffic could queue up to the Berlin Turnpike. Traffic coming downhill from the west is at higher speeds and this could cause accidents when vehicles are not expecting to stop. Could a round-about be installed? Is there enough right-of-way? How would pedestrian circulation work? Where would a bike lane go?
 - The right-of way for a round-about depends on the volume of traffic. Larger traffic volumes require larger radius for the roundabout.
 - It is possible to implement bicycle and pedestrian facilities with a roundabout but it does increase the right-of-way requirements. Bike lanes are typically brought up to the sidewalk and crossings are made at the approaches.
- The land just west of CVS is for sale, and is expected to be developed. A driveway would have to tie into the existing CVS driveway.
- The intersection of Deming Road and Berlin Turnpike is not pedestrian friendly.
- Would narrowing the roadways help reduce the speeds?
- Willow Brook Road provides access to the industrial area. It is used as a cut through to avoid the Christian Lane Signal.
- The fire marshal does not like one way roads because they limit access for emergency vehicles.
- Could a bike lane fit in between Christian Lane and Episcopal Road?

3 RSA Assessment

3.1 Field Audit Observations

Christian Lane

- Utility poles are on the south side of Deming Road and are close to the curb.
- Large vehicles are cutting the curb to turn right onto Deming Road from Christian Lane (Figure 5).
- There are no pedestrian amenities (sidewalk, crosswalk, signal phase) at this intersection (Figure 6).
- There is significant truck traffic turning right onto Christian Lane from Deming Road. The radius of the curb at this location is small and many trucks stop ahead of the stop bar to make the turn.
- A truck was observed trying to turn left from Christian Lane onto Deming Road and had to back up to complete the turn because another vehicle had stopped just past the stop bar.
- There are no shoulder lines on either Deming Road or Christian Lane (Figure 7).
- There is a dedicated left turn lane.
- Long term, the town envisions this area as all industrial.
- The catch basin grates are bicycle friendly.
- The roadway width for Deming Road is 40 feet. Each turn lane is 10 feet wide and the eastbound lane is 20 feet wide.
- Motorists trying to turn out of Willow Brook Drive onto Deming Road can have a long wait, especially during rush hour.



Figure 5. Tire Track Marks Going Over the Curb

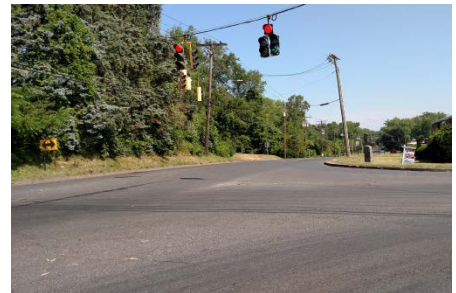


Figure 6. Lack of Pedestrian Amenities



Figure 7. No Shoulder Lines

- During the evening rush hour a significant queue develops here.

Episcopal Road

- The driveway opposing Episcopal Road is being relocated east of the fire hydrant by the property owner as part of an expansion project.
- Episcopal Road is 41 feet wide. Each turn lane is 12 feet wide, and the northbound lane is 15 feet wide with a 2 foot shoulder. It is a stop controlled (Figure 8).
- There are shoulder lines on Episcopal Road
- Sight lines in both directions at the stop sign on Episcopal Road are poor. Vehicles turning in both directions must pull completely past the stop bar to see. The visibility is poor due to the grade in the road and overgrown vegetation west of the intersection (Figure 9).
- Episcopal Road has a posted speed limit of 30 MPH.
- Deming Road is 40 feet wide, with the westbound and eastbound lanes at 20 feet in width.
- The fence on the corner property (on the north-west corner) is close to the curb and may be within the town's right-of-way (Figure 10).
- One possibility for this intersection would be to install a roundabout. Right-of-way lines would first need to be determined.



Figure 8. Intersection with Episcopal Road

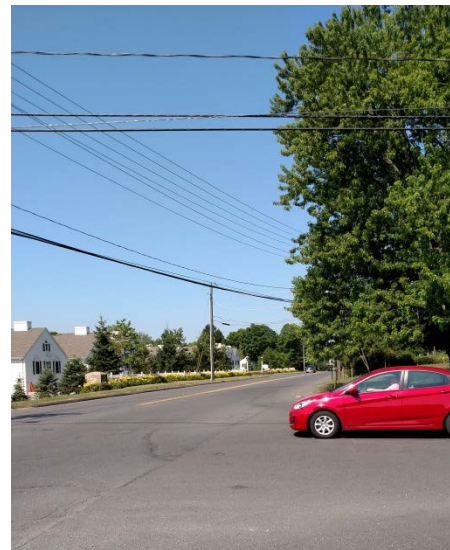


Figure 9. Vehicle Pulls Past Stop bar to Gain Sight Distance



Figure 10. Fence Possibly in Town Right-of-way

Berlin Turnpike

- Deming road is 47 feet wide at the intersection with the Berlin Turnpike.

- There is a left and a right/through turn lane on Deming Road. Each turn lane is 10.5 feet wide. The westbound lane is 26 feet wide (Figure 11).
- There are no crosswalks. There is a pedestrian “push for green” button to call up the side street (Deming Road) phase so that pedestrians can cross the Berlin Turnpike. There are no pedestrian signal heads (Figure 12).
- Would it be feasible to restripe Deming road to accommodate a dedicated right turn lane?
- Route information signs did not meet the minimum height requirement of 5 feet per the MUTCD and vegetation completely blocked the lowest sign (Figure 13).

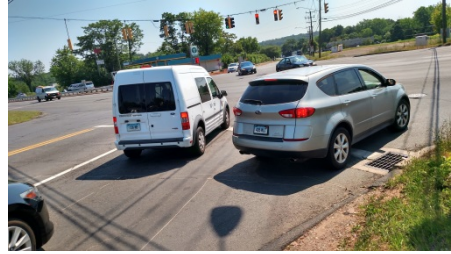


Figure 11. Vehicle Creates Own Right Turn Lane



Figure 12. Lack of Crosswalks



Figure 13. Signs Blocked by Overgrown Vegetation

General

- Six cyclists were observed riding on this road.
- There are no sidewalks in this area.
- There are no painted shoulder lines.
- Deming Road was previously striped as a four-lane road.
- All radius curbing is concrete. Otherwise, curbs are asphalt.
- The Speed limit on Deming Road is 40 MPH.

3.2 Post-Audit Workshop - Key Issues

1. There is significant width along Deming Road to work with.
2. The lack of shoulder lines encourage motorists to travel faster and pass on the right when vehicles are trying to take left turns.
3. There is a sight line issue at the Episcopal Road stop sign in both directions. This intersection needs to be redesigned to reduce the speed of vehicles traveling east on

Deming Road and improve the sight lines from Episcopal Road. The right-of-way needs to be examined to determine if a roundabout could be installed.

4. Roadway signage is too close to the ground and blocked by vegetation.
5. Traffic speeds along Deming Road are a concern. If traffic data is collected it would provide information such as the 85th percentile.
6. The east side of Deming Road (of the intersection with the Berlin Turnpike) is Route 160 and has wide shoulders.
7. Berlin is working to get the Route 160 designation extended from the intersection with the Berlin Turnpike to Route 9 via Deming Road and Christian Lane. This would transfer ownership to the state.
8. Trucks have difficulty turning to and from Christian lane. The curb radii are small and the stop bars are too far forward. Any redesign would require relocating utility poles.
9. If the major employers along Deming Road had staggered starts and releases this could help stagger traffic.
10. Traffic at the Deming Road and Berlin Turnpike intersection backs up. Right turn on red is allowed, but since through and right turn vehicles share a lane, traffic backs up. Vehicles turning right attempt to squeeze past the through vehicle to turn while the light is red.
11. What are the requirements to add center turn lanes?
12. There needs to be a pedestrian connection between Fieldstone and the Brickyard plaza. There are currently no safe pedestrian crossings at the Berlin Turnpike. Crossings should not be mid-block and should be located properly to provide visual cues.
13. Adding dedicated bicycle lanes may require widening the roadway if center turn lanes are also installed.
14. Traffic is greatest on Deming Road during the afternoon peak between 3:30 and 5:30 PM.

4 Recommendations

From the discussions during the Post-Audit meeting, the RSA team compiled a set of recommendations that are divided into short-term, mid-term, and long-term categories. For the purposes of the RSA, **Short-term** is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of way acquisition.) **Mid-term** recommendations may be more costly and require establishment of a funding source, or they may need some additional study or design in order to be accomplished. Nonetheless, they are relatively quick turn-around items, and should not require significant lengths of time before they can be implemented. Generally, they should be

completed within a window of eighteen months to two years if funding is available. **Long-term** improvements are those that require substantial study and engineering, and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more when funding is available.

4.1 Short Term

1. Paint shoulder lines on Deming Road (Figure 14).
2. Trim back the bushes blocking the sight line on Episcopal Road.
3. Examine town right-of-way at Episcopal Road.
4. Work with the property owner at Episcopal Road to relocate the fence.
5. Raise signage to meet the current minimum of 5 feet.
6. Clear vegetation blocking all signage.
7. Enforce the town blight ordinance.
8. Conduct speed counts along Deming Road and perform a speed study.
9. Reduce the speed limit to 35 MPH on Deming Road.
10. Move the left turn stop bar on Deming Road at the Christian Lane intersection back.
11. Reach out to the major employers to discuss staggered releases.
12. Restripe to add a third lane at the Deming Road and Berlin Turnpike intersection to create a dedicated left, through and right turn lanes.
13. Add a left turn lane on Deming Road for Episcopal Road.
14. Work with CTDOT to model roundabout requirements for Episcopal Road.
15. Replace non-bicycle friendly catch basin grates with friendly ones (Figure 15).
16. Add a no left turn sign from Willow Brook Road to Deming Road.

Figure 16 depicts these short term recommendations.



Figure 14. Shoulder Striping Provides Place for Cyclists to Ride.



Figure 15. Bicycle Friendly Catch Basin

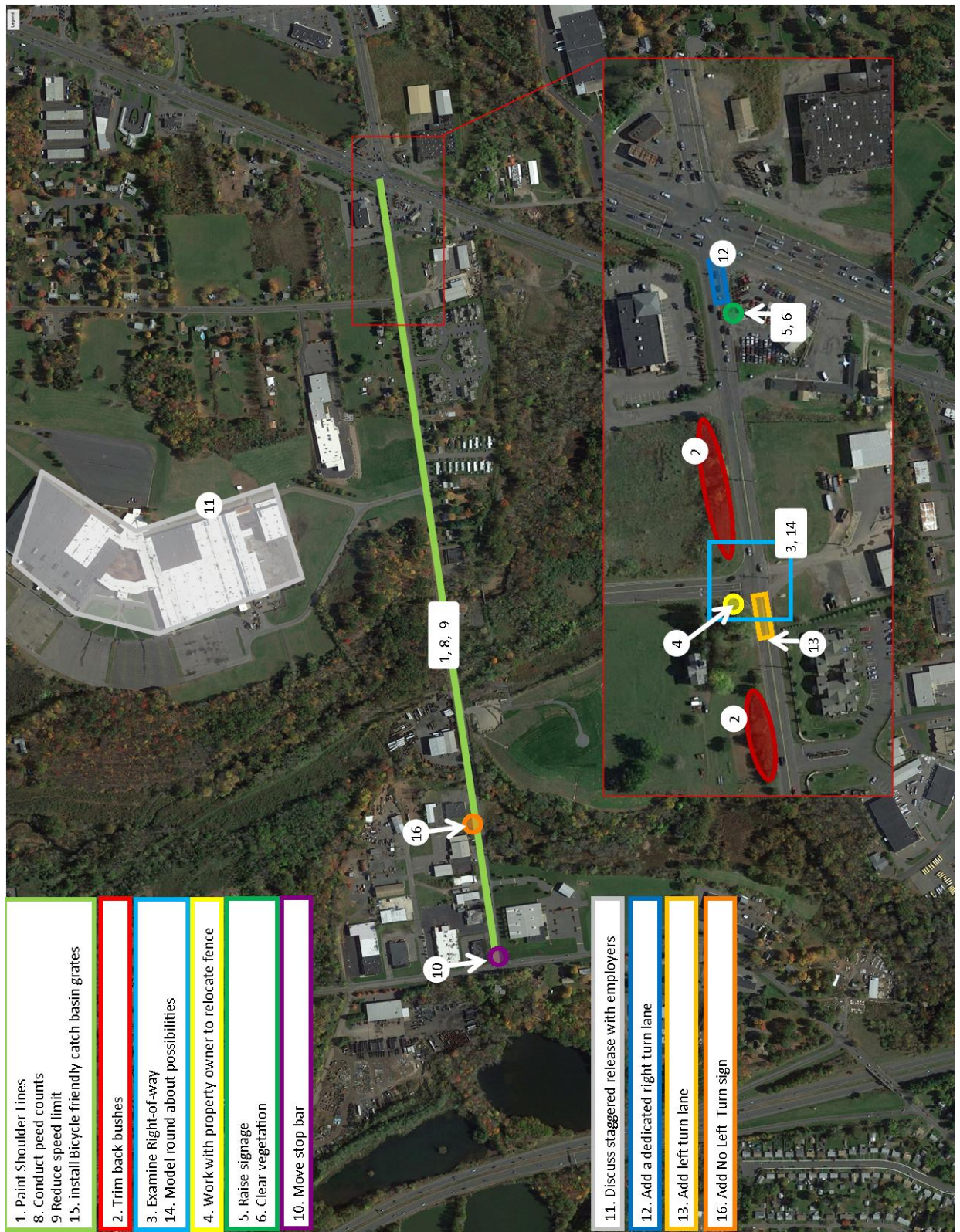


Figure 16. Short Term Recommendations

4.2 Medium Term

1. State to extend the route 160 designation and take over Deming Road and Christian Lane.
2. Install center turn lanes from Episcopal Road to Willow Brook Drive along Deming Road (Figure 17).
3. Pursue a detailed study with CRCOG of the corridor between Episcopal Road and the intersection of Porters Pass and Farmington Avenue to bring concepts to design.

Figure 18 depicts these recommendations.



Figure 17. Center Turn Lanes

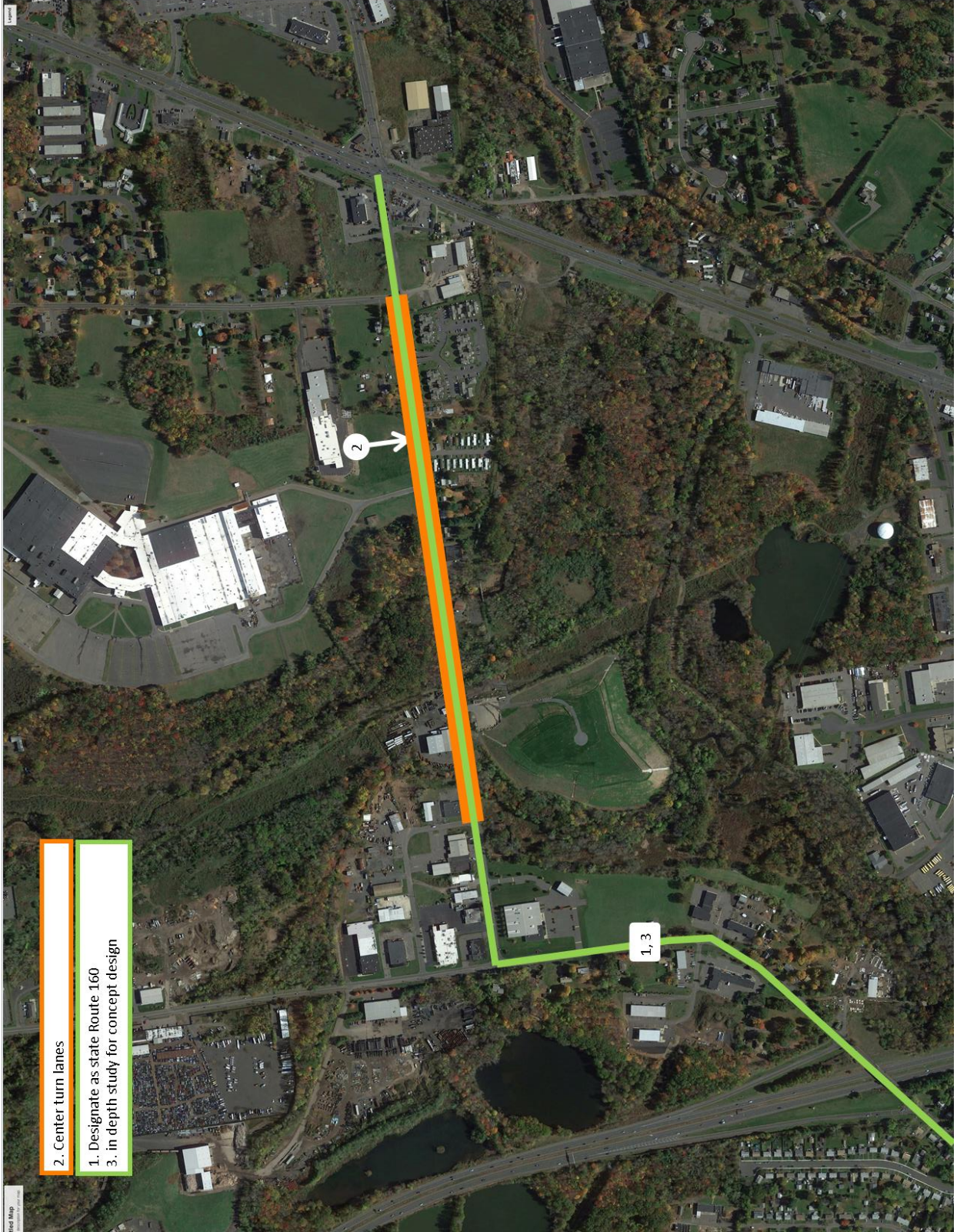


Figure 18. Mid Term Recommendations

4.3 Long Term

1. Redesign the Christian Lane and Deming Road Intersection to improve the turning radii, and increase capacity by adding an additional left turn from Deming Road.
2. Install a roundabout at Episcopal Road (Figure 18).
3. Construct a sidewalk from Fieldstone to the Berlin Turnpike intersection with a crossing on the north side of the intersection to connect to the Brickyard Plaza.
4. Install a controlled pedestrian crossing on the north side of the Berlin Turnpike Intersection with countdown pedestrian heads.
5. Add designated bike lanes on Deming Road.

Figure 20 depicts these long term recommendations.



Figure 19. Example of a Roundabout

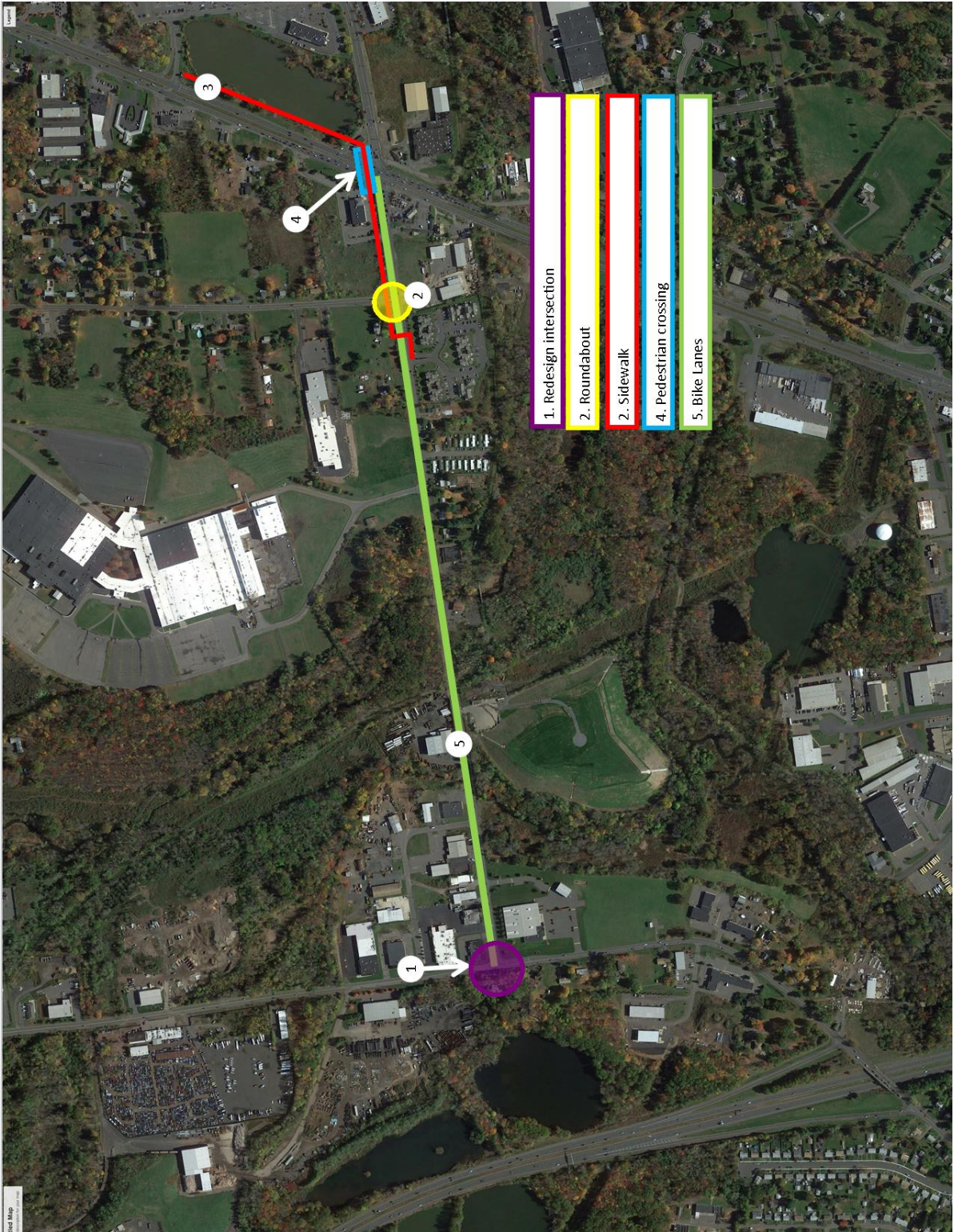


Figure 20. Long Term Recommendations

4.4 Summary

This report outlines the observations, discussions and recommendations developed during the RSA. It documents the successful completion of the Town of Berlin RSA and provides Berlin with an outlined strategy to improve the transportation network along Deming Road,, particularly focusing on pedestrians and cyclists. Moving forward, Berlin may use this report to prepare strategies for funding and implementing the improvements, and as a tool to plan for including these recommendations into future development along Deming Road.



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Appendix A



AECOM
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Welcome to the Community Connectivity Program Application



Please fill in the following information to provide the Audit team leaders with a comprehensive description of the area contained in this application.

1. Applicant contact information

Name	<input type="text" value="Christopher Edge"/>
Title	<input type="text" value="Economic Development Director"/>
Email Address	<input type="text" value="cedge@town.berlin.ct.us"/>
Telephone Number	<input type="text" value="(860) 828-7005"/>

2. Location information

Address	<input type="text" value="240 Kensington Road"/>
Description	<input type="text"/>
City / Town	<input type="text" value="Town of Berlin"/>

3. Roadway type
(Please select all that apply)

State road

Local road

Private Road

Other (please specify)

4. Zoning
(Please select all that apply)

Industrial

Residential

Commercial

Mixed Use

Retail

N/A (not applicable)

Other (please specify)

Uses are of business, residences and a workers housing complex.

5. Approximate mile radius around the location

1/2 mile

Other (Please Specify)

6. Community Sites
(Please select all that apply)

Community Centers

Business Districts

Restaurant/Bar Districts

Churches

Housing Complexes

Proximity to Schools

Tourist Locations (examples – Casino, Malls, Parks, Aquarium, etc...)

N/A (not applicable)

Other (please specify)

Uses are of business, residences and a workers housing complex.

7. Employment Facilities
(Retail, Industrial, etc...)

Yes

No

If Yes please describe (please specify)

Industrial park area with residences across from and adjacent to these facilities.

8. Educational facilities

(Please select all that apply)

Public, Parochial, Private Schools (more than 1 school within a ½ mile)

University / Community Colleges

N/A (not applicable)

Other (please specify)

9. Transit facilities

(Please select all that apply)

Bus

Rail

Ferry

Airport

Park and Ride Lot

N/A (not applicable)

Other (please specify)

Bike and pedestrian are now in the area, but safety is a major factor due to the volume

10. Safety Concerns

(Please select all that apply)

Traffic (volumes & speed)

Collisions

Sidewalks

Traffic Signals

Traffic Signs

Parking Restrictions / Additions

Drainage

ADA Accommodations

Agricultural & Live Stock crossing

Maintenance issues (cutting grass, leaves, snow removal)

N/A (not applicable)

Other (please specify)

11. Are there any past, current or future transportation/economic development projects near this location (i.e. Federal, State or local projects)?

Yes

If Yes please describe and list all projects.

We are now working with three different potential projects:
A new state of the art Acura Dealership on the Berlin Turnpike (\$10 million investment) - some traffic will dump into this area.
A new manufacturing facility on Christian Lane (\$6 million investment) that will bring about 50 new employees (and their vehicles).
A new contractor complex (size and investment TBD) on Deming Road - likely a late 2016 or early 2017 project.

12. Environmental Concerns:

N/A not applicable

If Yes please describe and list.

[Empty box for describing and listing environmental concerns]

13. Please explain why this location should be considered for an RSA

The corridor encompassing Christian Lane/Deming Road/Episcopal Road and the Berlin Turnpike is one of the busiest and fastest growing areas in Berlin (see 3 projects above). Accordingly, we see the area as one where the growth or expansion of bike and pedestrian traffic can happen.

Just from the daily backups onto Deming Road from the Berlin Turnpike, from Christian Lane down Deming Road and the Berlin Turnpike/Deming Road intersection being the most accident-prone area in Berlin, this area needs to be studied in both a short and long-term basis.

But, we have been trying to find resources to study the Christian Lane/Deming Road/Episcopal Road/Berlin Turnpike corridor as it is growing in traffic, congestion and, sadly, accidents. To date, we have been unable to in resources within the Town of Berlin budgets. Discussions with the Capitol Region Council of Governments was good, but studies are tough to fund and complete for them.

We feel a study in this area will help us to better determine the current status, potential challenges to making the area safer and strategies to do so. A study can help the Town of Berlin and our Police Department be better able to apply for planning monies or grants to create a long-term plan for this area.

14. Are there plans to expand the area?

(Transportation Oriented Development, Economic Development, housing, etc...)

Yes

See economic development projects in #11.

If a plan was made to make the area safer, more pedestrian and bike friendly, we would move forward to finding the resources to do so. Without a plan, we cannot look for funding options.

15. Any other pertinent information that is unique to this location?

Yes

This area is a major link from the Berlin Turnpike to Route 9 North and from Route 9 South to the Berlin Turnpike. As this is a major roadway, we see traffic from small vehicles up to 18 wheelers. With this in mind, the road will likely need to be looked at for widening as the creation of better avenues for pedestrian and bike traffic.

Information (below) will be send over in a separate email. I cannot seem to be able to attach documents to this one.

Thank you for completing the Community Connectivity application.

Please click on the "submit button" below and include the following attachments

- 1 Location map (google, GIS) **(Required)**
- 2 Collision data (If available)
- 3 Traffic data (ADT or VMT) (If available)
- 4 Pedestrian/bicycle data (If available)



Submit Application



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Appendix B



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Road Safety Audit

Town: Berlin
RSA Location: 240 Kensington Road
Meeting Location: Berlin Town Hall, Caucus Room A
Address: 240 Kensington Road
Date: 7/6/2016
Time: 8:30 AM

Participating Audit Team Members

Audit Team Member	Agency/Organization
Krystal Oldread	Aecom
Steve Mitchell	Aecom
Ryan Gould	Berlin PD
Patrick Zapatka	CTDOT
Peter Agostini	New Britain Trans
Eva Gallupe	Berlin Public Schools
Chris Edge	Berlin
Pete Rosso	Berlin



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Appendix C



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Road Safety Audit – Berlin

Meeting Location: Berlin Town Hall, Caucus Room A
Address: 240 Kensington Road
Date: 7/6/2016
Time: 8:30 AM

Agenda

- Type of Meeting:** Road Safety Audit – Pedestrian Safety
- Attendees:** Invited Participants to Comprise a Multidisciplinary Team
- Please Bring:** Thoughts and Enthusiasm!!
- 8:30 AM** **Welcome and Introductions**
- Purpose and Goals
 - Agenda
- 8:45 AM** **Pre-Audit**
- Definition of Study Area
 - Review Site Specific Data:
 - Average Daily Traffic
 - Crash Data
 - Geometrics
 - Issues
 - Safety Procedures
- 10:00 AM** **Audit**
- Visit Site
 - As a group, identify areas for improvements
- 12:00 PM** **Post-Audit Discussion / Completion of RSA**
- Discussion observations and finalize findings
 - Discuss potential improvements and final recommendations
 - Next Steps
- 2:30 PM** **Adjourn for the Day – but the RSA has not ended**

Instruction for Participants:

- Before attending the RSA, participants are encouraged to observe the intersection and complete/consider elements on the RSA Prompt List with a focus on safety.
- All participants will be actively involved in the process throughout. Participants are encouraged to come with thoughts and ideas, but are reminded that the synergy that develops and respect for others' 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.



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	



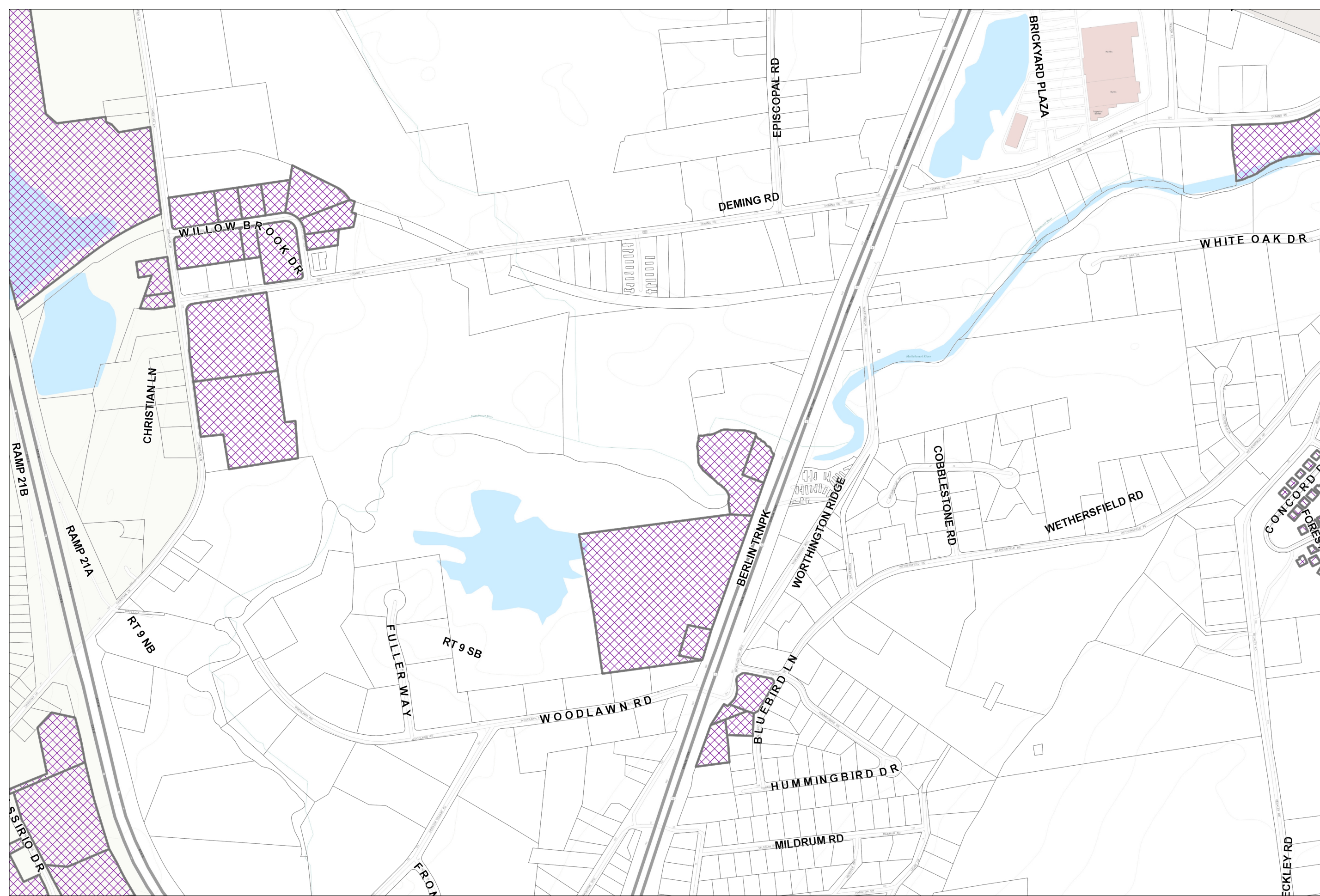
Bicycles <ul style="list-style-type: none">• Bicycle facilities/design• Separation from traffic• Conflicts with on-street parking• Pedestrian Conflicts• Bicycle signal detection• Visibility• Roadway speed limit• Bicycle signage/markings• Shared Lane Width• Shoulder condition/width• Traffic volume• Heavy vehicles• Pavement condition• Other	
--	--

Roadway & Vehicles	
<ul style="list-style-type: none">• Speed-related issues<ul style="list-style-type: none">○ Alignment;○ Driver compliance with speed limits○ Sight distance adequacy○ Safe passing opportunities	
<ul style="list-style-type: none">• Geometry<ul style="list-style-type: none">○ Road width (lanes, shoulders, medians);○ Access points;○ Drainage○ Tapers and lane shifts○ Roadside clear zone /slopes○ Guide rails / protection systems	

<ul style="list-style-type: none">• Intersections<ul style="list-style-type: none">○ 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	



Legend

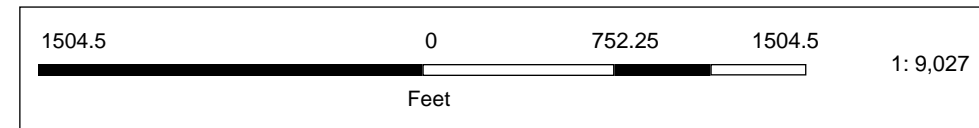
- Parcels
- Town Border
- Town Clerk Parcels

Location

Notes

Deming Road from the intersection of Christian Lane to the intersection of the Berlin Turnpike (Route 5/15)

**NEW ENGLAND
GEOSYSTEMS**
GEOGRAPHIC INFORMATION SYSTEM CONSULTANTS
282 Main Street Extension - C2
Middletown, CT 06457 • (203) 404-7129 • www.ne-geo.com



RSA Proposed Study Area in Berlin, CT



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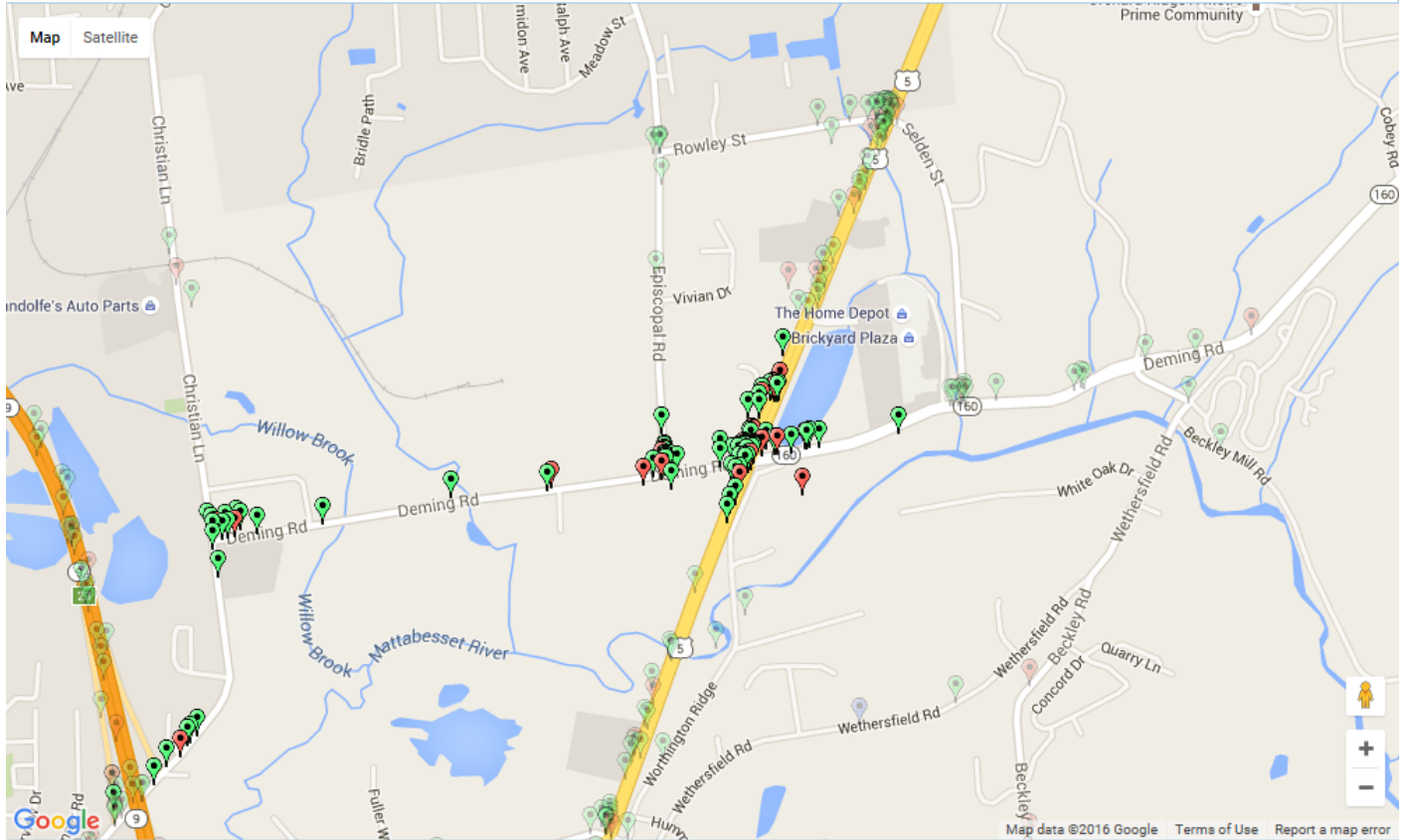
2015 Crashes

UConn

Connecticut Crash Data Repository

Search Criteria:

Dataset: mmucc
Towns: Berlin
Crash Severity: Injury of any type (Serious, Minor, Possible), Fatal (Kill), Property Damage Only
Case Status: Complete



Markers Heatmap Crashes By Route **Select & Query** Injury of any type (Serious, Minor, Possible) Select All
Fatal (Kill) Property Damage Only Deselect All
Route Segment Scale
0 0

This web site is exempt from discovery or admission under 23 U.S.C. 409.

Connecticut Crash Data Repository - [User Guide](#) [Contact Us](#)



Road Safety Audit – Berlin

Crash Summary

Data: 3 years (2012-2014)

1 crash involved a pedestrian which resulted in an injury.

1 crash involved a cyclist and resulted in property damage only.

Severity Type	Number of Crashes	
Property Damage Only	102	80%
Injury (No fatality)	26	20%
Fatality	0	0%
Total	128	

Manner of Crash / Collision Impact	Number of Crashes	
Unknown	0	0%
Sideswipe-Same Direction	6	5%
Rear-end	80	63%
Turning-Intersecting Paths	11	9%
Turning-Opposite Direction	6	5%
Fixed Object	12	9%
Backing	1	1%
Angle	2	2%
Turning-Same Direction	4	3%
Moving Object	3	2%
Parking	0	0%
Pedestrian	1	1%
Overturn	0	0%
Head-on	0	0%
Sideswipe-Opposite Direction	2	2%
Total	128	



Weather Condition	Number of Crashes	
Snow	5	4%
Rain	13	10%
No Adverse Condition	107	84%
Unknown	1	1%
Blowing Sand, Soil, Dirt or Snow	0	0%
Other	1	1%
Severe Crosswinds	0	0%
Sleet, Hail	0	0%
Fog	1	1%
Total	128	

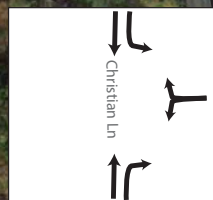
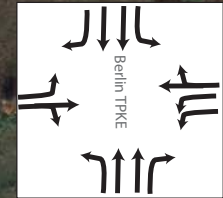
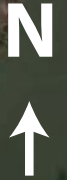
Light Condition	Number of Crashes	
Dark-Not Lighted	2	2%
Dark-Lighted	25	20%
Daylight	98	77%
Dusk	1	1%
Unknown	1	1%
Dawn	1	1%
Total	128	

Road Surface Condition	Number of Crashes	
Snow/Slush	3	2%
Wet	21	16%
Dry	103	80%
Unknown	0	0%
Ice	1	1%
Other	0	0%
Total	128	









Time		Number of Crashes	
0:00	0:59	0	0.0%
1:00	1:59	0	0.0%
2:00	2:59	2	1.6%
3:00	3:59	1	0.8%
4:00	4:59	0	0.0%
5:00	5:59	1	0.8%
6:00	6:59	1	0.8%
7:00	7:59	5	3.9%
8:00	8:59	5	3.9%
9:00	9:59	3	2.3%
10:00	10:59	4	3.1%
11:00	11:59	6	4.7%
12:00	12:59	7	5.5%
13:00	13:59	13	10.2%
14:00	14:59	10	7.8%
15:00	15:59	11	8.6%
16:00	16:59	17	13.3%
17:00	17:59	23	18.0%
18:00	18:59	5	3.9%
19:00	19:59	7	5.5%
20:00	20:59	0	0.0%
21:00	21:59	5	3.9%
22:00	22:59	2	1.6%
23:00	23:59	0	0.0%
Total		128	

DRAFT



Legend

-  Sidewalk
-  Signalized Intersection
-  Stop Controlled Intersection
-  Crosswalk
-  Bridge or Culvert
-  Major Waterway

Berlin - Christian Ln/Deming Rd

500 ft





Road Safety Audit – Berlin

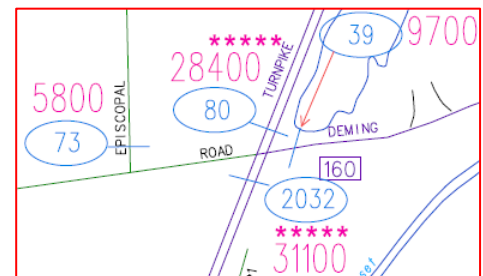
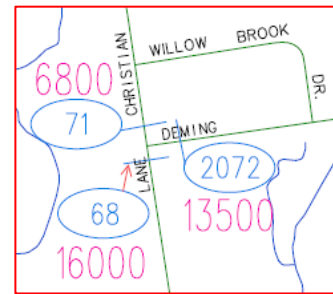
Fact Sheet

Functional Classification:

- Christian Lane is classified as a Minor Arterial
- Deming Road East of Berlin Turnpike is classified as a Minor Arterial
- Deming Road West of Berlin Turnpike is classified as Collector
- Episcopal Road is classified as a Collector
- Berlin Turnpike is classified as a Principal Arterial

ADT

- ADT on Christian Lane South of Deming Road is 16,000
- ADT on Christian Lane North of Deming Road is 6,800
- ADT on Deming Road is 9,700 - 13,500
- ADT on Episcopal Road 5,800
- ADT on Berlin Turnpike South of Deming Road is 31,100
- ADT on Berlin Turnpike North of Deming Road is 28,400



Population and Employment Data (2014):

- Population: 20,352
- Employment: 11,535

Urbanized Area

- Christian Lane, Deming Road, Episcopal Road and the Berlin Turnpike are located in the Hartford Urbanized Area

Demographics

- The statewide average percentage below the poverty line is 10.31%. There are no areas in Berlin exceeding the state's average.
- The statewide average percentage minority population is 30.53%. There are no areas in Berlin that exceed the state's average.

Air Quality

- Berlin's CIPP number 202
- Berlin is within the Greater CT Marginal Ozone Area
- Berlin is within a CO Attainment Area