



REPORT OF THE LINCOLN CYCLING SAFETY ADVISORY COMMITTEE

OCTOBER 15, 2018



For more information: <http://www.lincolntown.org/848/Cycling-Safety-Advisory-Committee>

Cycling Safety Advisory Committee

Report to the Town, October 2018

WHY FOCUS ON CYCLING SAFETY NOW

The Town of Lincoln enjoys over 50 miles of public roads. Many of these roads are narrow, two-lane roadways that offer viewscapes into our beautiful conservation land and open spaces. These roads help to give Lincoln its “rural character” even though our town lies mere miles from metropolitan Boston.

It is this special character which also makes Lincoln’s roads popular for many different types of cyclists: Recreational Cyclists-hundreds of whom can be found using our roads on weekends throughout the spring, summer, and fall, often riding in groups; Commuting Cyclists- with our close proximity to the Route 128 Technology Belt, the roads of Lincoln are also heavily utilized during the morning and evening rush hours by commuting cyclists on a year round basis; School Age Children-children attending both public and private schools in Lincoln also utilize our roads and roadside paths to enjoy the benefits of cycling to school on pleasant days during the school year.

Lincoln, like other neighboring communities, has experienced an increase in vehicular traffic on our local roads. This has resulted in more conflicts between the various users of our roadways. In addition to numerous, serious accidents involving cyclists and vehicles in recent years, in 2016, Lincoln suffered two tragic fatalities on our roadways involving cyclists Eugene Thornberg, and Mark Himelfarb.

The Lincoln Board of Selectmen, in response to these tragedies, established the Cycling Safety Advisory Committee (“CSAC”) as a special purpose committee, and charged the committee to develop recommendations to improve cycling safety throughout the Town. The Committee was also charged with the following tasks:

- Prepare a report that describes existing conditions and opportunities for improving cycling safety. Recommendations should be organized in manner that distinguishes fairly straightforward, maintenance and improvement opportunities that can be implemented quickly and inexpensively, from those that will require more extensive planning, design and significant resources. The Committee is urged to explore opportunities, where appropriate and cost-effective, for implementing new measures on a trial basis. Although detailed and precise cost estimates are not necessary for purposes of the Report, ballpark cost estimates would be useful.
- Assess existing roadway and path conditions, relying on input from Public Safety and Public Works, among other sources.
- Engage representatives of Lincoln’s cycling community to understand current concerns, challenges, impediments and opportunities for improved cycling safety throughout the Town.
- Identify techniques and best practices that have been implemented elsewhere that may be adaptable to Lincoln.

- Conduct its business in an open and participatory manner, providing multiple opportunities for input from a diversity of Town residents, as determined appropriate by the Committee, which may include public meetings, workshops, other forums, surveys, and interviews.

On February 16, 2017, CSAC, comprised of members James Craig, Co-Chair (Board of Selectmen), Margaret Olson (Planning Board), Ginger Reiner (Parks & Recreation Committee), John Mendelson (Community Member), Zack Moldenhauer (Community Member), Megan Kate Nelson (Community Member) and Bob Wolf, Co-Chair, (Community Member), along with Lincoln Police Department liaison Detective Ian Spencer, held its initial meeting and has been hard at work ever since.

The following report represents a summary of our work to date and provides recommendations to the Town, both short and long term.

The Committee would also like to recognize and thank the contributions of: Tim Higgins, Town Administrator, Peggy Elder, Administrative Assistant, Jennifer Burney, Director of Planning and Land Use, Paula Vaughn-MacKenzie, Assistant Director of Planning and Land Use, Chris Bibbo, Director of DPW, Daniel Pereira, Director of Parks & Recreation Department, Ashley Du Toit, Lincoln Sudbury High School Student and Girl Scout, and Kevin Kennedy, Chief of Police, Lincoln Police Department.

HOW LINCOLN CAN PROMOTE CYCLING SAFETY

Based on conversations with regional and national experts and research of published documents, CSAC has concluded that there are several keys to bike safety.

The first, but perhaps generally least practical, is physical separation of motor vehicles from vulnerable users such as cyclists. More applicable to all of our multi-use roadways, all users-- drivers, riders, walkers-- must:

- Anticipate all road users that may be present;
- Recognize the responsibility for the safety of others rests with all road users;
- Be predictable in their own use of the roadway.

If everyone abides by these principles, safety on Lincoln's roads will be improved.

Right now the town has an imperfect infrastructure and user behaviors are “all over the map,” creating frequent hazardous situations and conflicts. The town and the state, however, have tools to address these issues.

Building and maintaining safe infrastructure, including roads, intersections, off-road or other non-motor vehicle alternatives, signals, paint, signs, and roadway enhancements can protect users from others and themselves.

In addition, the town can influence road user behavior directly through police enforcement, education, formal programs, “teachable moments,” and normalizing cycling so that motorists will always anticipate their presence.

Lincoln is not alone in its desire to achieve safety for vulnerable road users. Advocacy groups such as Massachusetts Bicycle Coalition (MassBike), Vision Zero, and the League of American Bicyclists, in addition to many states, cities, and towns in Massachusetts, share these objectives.

WHAT WE HAVE DONE

Since convening in February 2017, the Cycling Safety Advisory Committee had taken action to promote cycling safety in a number of ways:

Learned from regional, national, and international expertise and experience on bike safety.
The committee has consulted research and met with experts in traffic planning and safety from several organizations across Massachusetts, including MassDOT, the Federal Highway Administration (FHWA), other states, and a range of nonprofits and consultancies.

On July 27, 2017 the committee met with Phil Goff of Alta Planning, who presented his organization's "[Small Town and Rural Multimodal Networks Guide](#)".¹ Published by the FHWA, it identifies many innovative approaches to rural and small town road networks.

We consulted with MassBike for both political support and knowledge.

We attended and learned from Vision Zero webinars.

We also reviewed research and guidelines from Vision Zero, Mass DOT, and other municipalities including Cambridge and Stow. A collection of written resources can be found in the Committee's [document repository](#).²

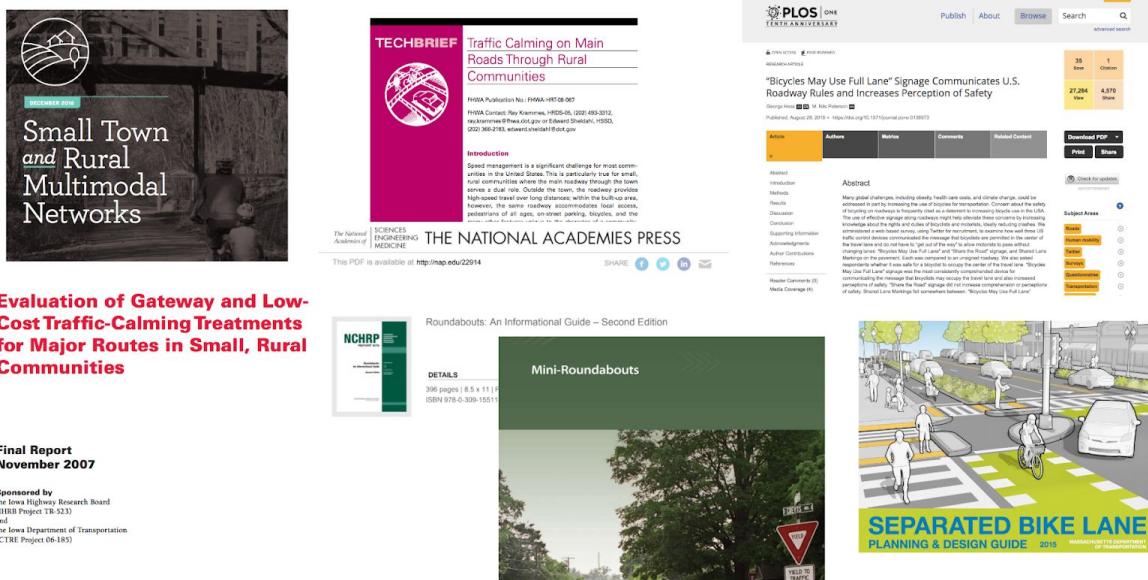


Exhibit A: A sample of published resources that were accessed.

Identified Lincoln's cycling network

The “cycling network” consists of connecting roads in Lincoln that cyclists - both local residents and users from surrounding communities - use most often. The “Heatmap” from Strava (a route tracking service), which shows the relative importance of each road to cyclists, shows that there are heavily utilized roads throughout Lincoln, and also that our town is positioned in the center of one of the richest cycling networks in the Northeast.

¹ https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/small_towns/fhwahep17024_lg.pdf

² https://drive.google.com/drive/folders/0B_cv5cIxvgdMIV2OUV1eGthS00

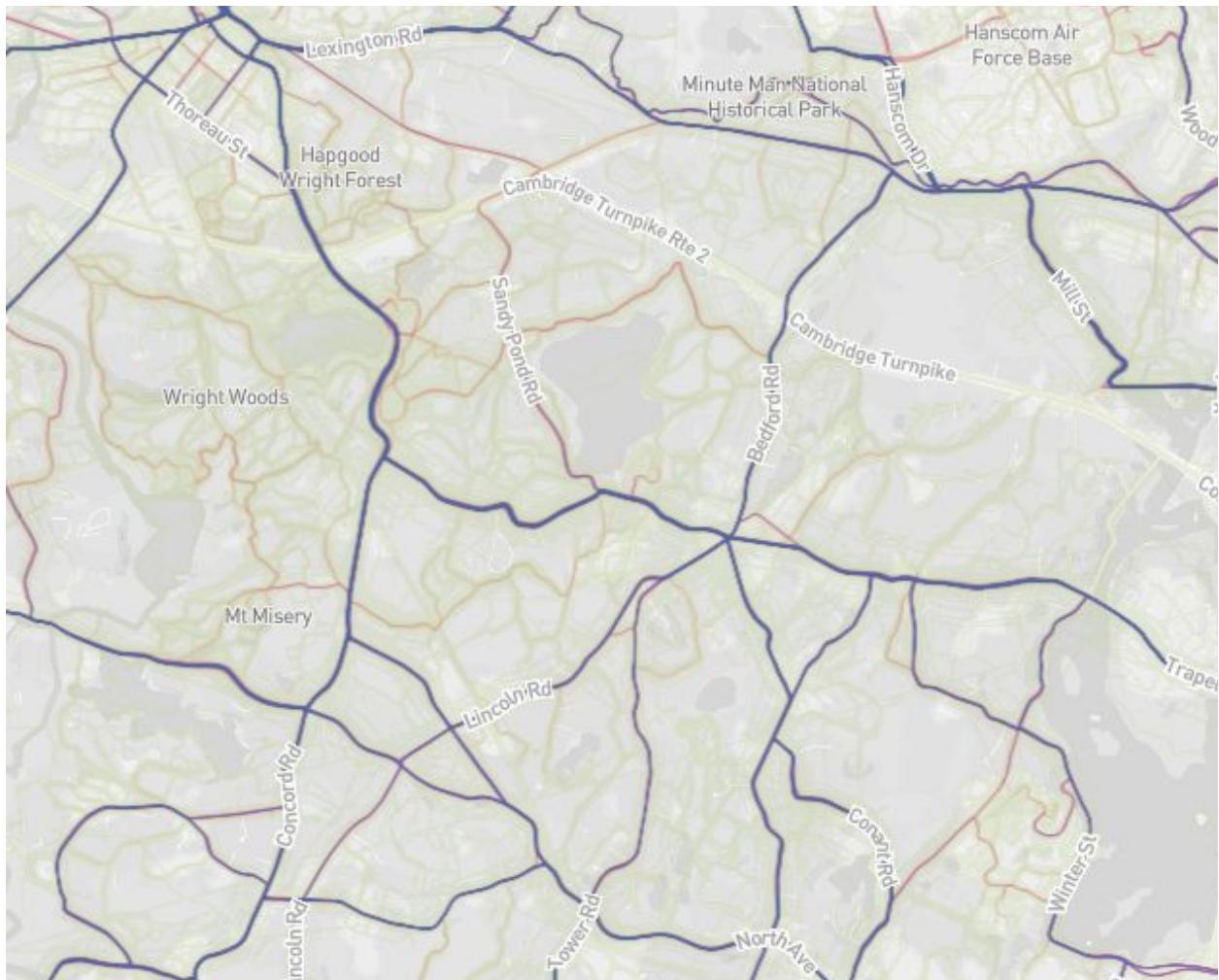


Exhibit B: Strava Heatmap; downloaded 8/30/18 from
<https://www.strava.com/heatmap#13.00/-71.29039/42.42695/gray/ride>

Using this Strava data and our own observations on bike rides through town, CSAC has constructed the current Lincoln cycling network as mapped in Exhibit C.

Lincoln's cycling network includes:

- High vehicular traffic
 - Bedford Road
 - Concord Road (MA 126)
 - Hanscom Drive
 - Lincoln Road
 - North Great Road (MA 2A)
 - South Great Road (MA 117)
 - Trapelo Road
- Lower vehicular traffic
 - Baker Bridge Road
 - Codman Road
 - Conant Road

- Mill Street
- Old Bedford Road
- Sandy Pond Road
- Silver Hill Road
- Tower Road
- Virginia Road
- Weston Road
- Winter Street

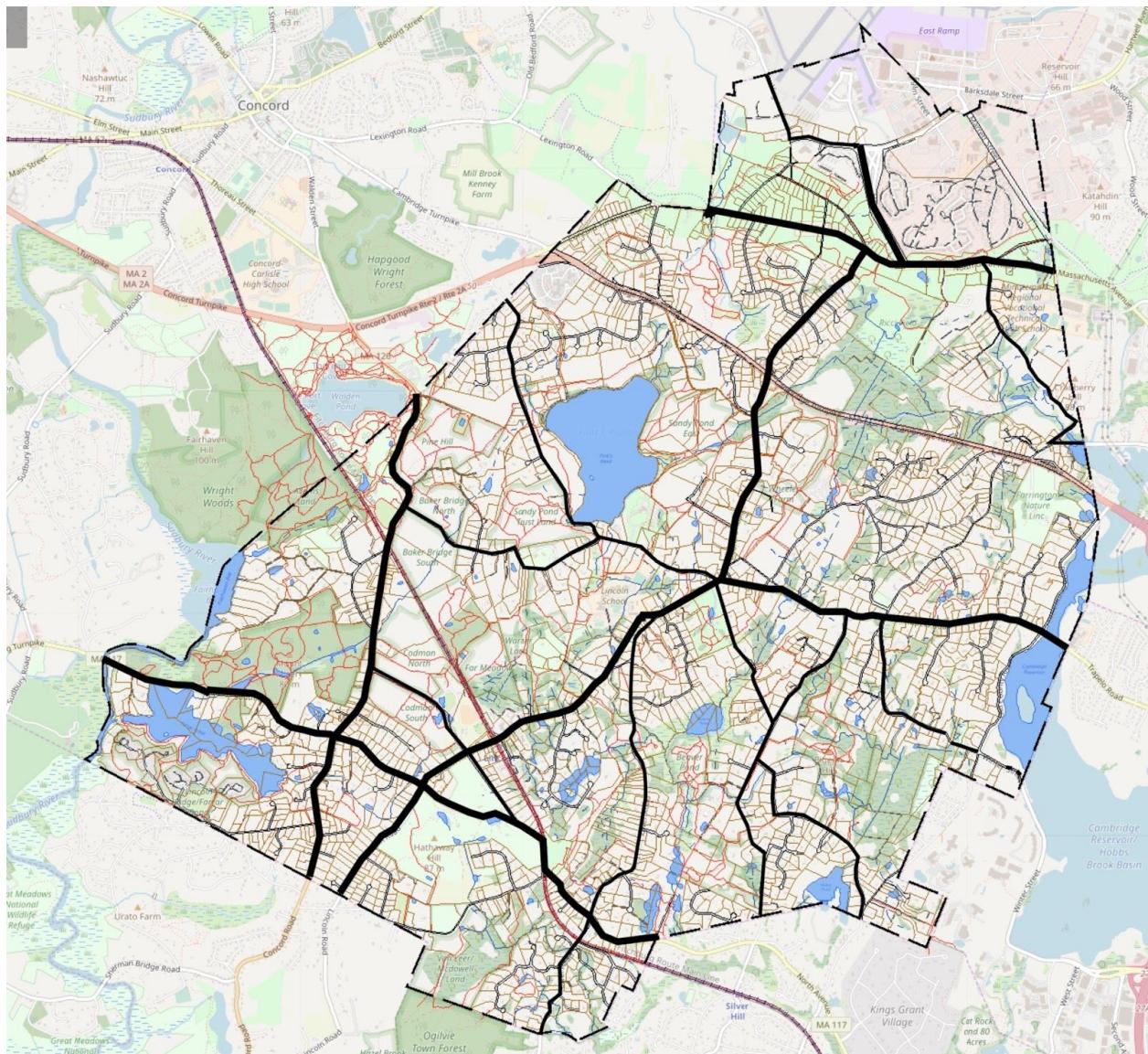


Exhibit C: Lincoln cycling network. Thick black lines have high vehicular traffic, thin black lines have low.

“Audited” the major roads in the network for cycling hazards.

Members of the Committee have systematically documented the state of cycling safety on many of the higher volume roads in Lincoln’s cycling network. We cycled each road and documented each

road hazard with GPS positioning and photographs. This process allowed us to see specific hazards and larger patterns. A sample hazard with map location is shown below, and full documentation is available in the [Lincoln Cycling Road Audit](#)³ report.

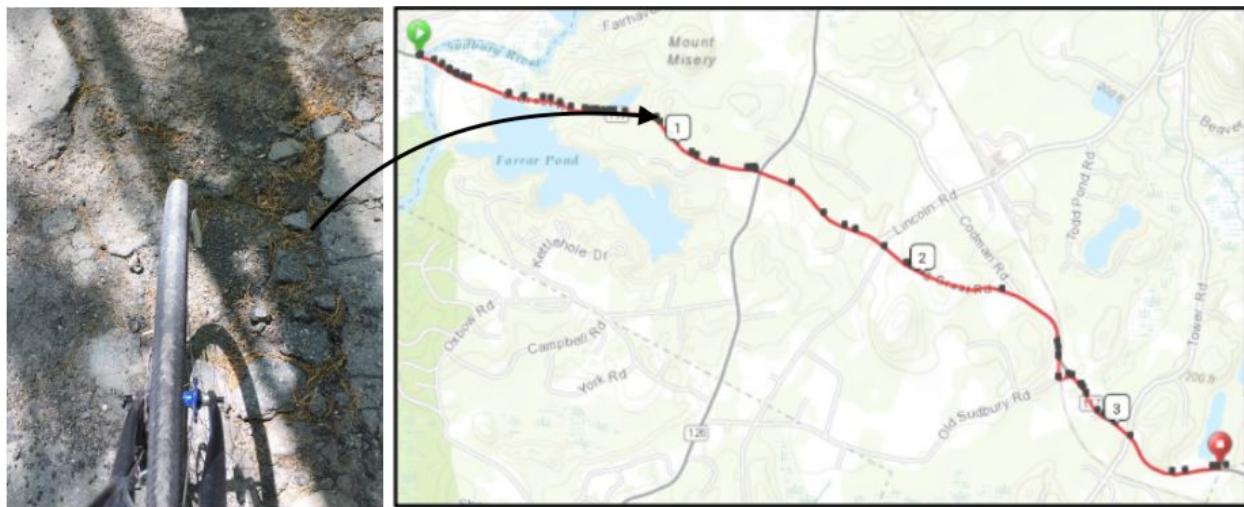


Exhibit D: Road hazard with map location on the eastbound side of MA 117. Source: Ride with GPS, <https://ridewithgps.com/trips/14656018#>, downloaded 8/30/18.

Bike to School Program

The Committee revived the Bike to School program, working with the school, Police Department, and volunteer crossing guards to organize Bike to School days, which were promoted through school e-newsletters and the Lincoln Talk town email distribution list. On some days, we offered giveaways (lights, stickers and reflective straps) from Mass DOT's Safe Routes To School program to participants. We averaged 35 child bikers on each Bike to School day.

We surveyed parents in Spring 2017 about their feelings towards their children biking to school. We found that almost 30% of respondents' children bike to school at least once a month, and that the most frequently mentioned improvements parents would like to see in order to allow more children to bike would be more roadside paths and safer street crossings. [Full survey results](#)⁴ are available online.

“Rules of the Road” flyer

The Committee developed a bookmark inspired by the City of Cambridge Transportation Department's booklet, and Committee handed it out at the 4th of July parade, the PTO picnic, and other town events (Exhibit E).

This handy guide will help educate all of Lincoln's road users regarding their rights and responsibilities.

³ https://docs.google.com/presentation/d/1TGymW0MIDbiNQd-09Pl9dx_AG3eGLn8SGMOfd-IVo00/edit

⁴ https://drive.google.com/drive/folders/0B_cv5cIxvgdLVA1RWlVUjF5Nk0

rules of the road

for drivers, cyclists and
walkers in lincoln, ma



Lincoln Cycling Safety Advisory Committee
lincoln-cycling-safety-adv-comm@googlegroups.com



People Driving

Must **stop** at stop signs and red lights.
Must **yield** to people in crosswalks.
Must **yield** (when turning) to people on bikes who are going straight.
Must pass bikes at a **safe distance** to the left.
Must **wait** behind bikes until passing at a safe distance to the left is possible.
Must **never text and drive**.
Must obey posted speed limits.



People Biking

Must **stop** at stop signs and red lights.
Must **yield** to people in crosswalks.
May use the **full lane** (except where prohibited).
If 16 or younger, must **wear a helmet**.
Must use **front lights** and **rear reflectors** between dusk and dawn.
May pass vehicles on the right and move to the front of an intersection, but should use caution.
Must bike in the **same direction** as traffic.
May ride **two abreast**, but must switch to single file when faster traffic wants to pass.
May bike on **any** roadside path in Lincoln.



People Walking

Should be mindful of the flow of traffic and, where available, use the crosswalk.

Exhibit E: CSAC produced “Rules of the Road” bookmark with help from Lis Herbert

Worked with Lincoln’s Police Department

Worked with Lincoln police to increase “educational” traffic stops for both motor vehicles and cyclists who have violated Massachusetts traffic laws related to cycling. The Committee is working further with the Police Department to create a specialized “Rules of the Road” appropriate for traffic stops.

Engaged Lincoln's boards, committees, and other professionals

Committee members consulted with Complete Streets Committee members to identify and prioritize cycling-related infrastructure improvements.

We also worked closely with the Board of Selectmen, the Roadway and Traffic Committee and the Department of Public Works to install “Bikes May Use Full Lane” (Exhibit F). We benefited from the research and lobbying of Ashley duToit, Lincoln-Sudbury high school student and Girl Scout, who worked on this initiative as part of her Gold Star project.

The DPW installed 9 signs on major roads in and out of Lincoln, reflecting a state law ([MA General Laws Chapter 85, Section 11B⁵](#)) that allows cyclists to enter the center of the lane when necessary. Most often, this is a temporary action, and occurs when the shoulder narrows or is blocked by tree limbs, dirt and sand, or potholes, and cyclists are unable to ride there. Cyclists also can take the lane if turning left. Cyclists should note that this is meant as a temporary right, and should not take the lane and obstruct traffic for long distances. “Cyclists May Use Full Lane” signs [have been proven](#) to increase awareness of these contexts and to create safer roadway conditions for all users.

This safety improvement was [reported in the Boston Globe⁶](#):



Exhibit F: “BIKES MAY USE FULL LANE” signs from MUTCD

The Committee also advised RTC on safety considerations at several key intersections, including the recent redesign of the intersection of Route 117 and Lincoln Road.

We consulted with several other town committees and departments, including the Conservation Committee on appropriate trails and signage for cycling on trails; the Police Department regarding bike related traffic stops for both drivers and riders; and the School Building Committee to elevate bike considerations in school site planning.

⁵ <https://malegislature.gov/Laws/GeneralLaws/PartI/TitleXIV/Chapter85/Section11B>

⁶ <https://www.bostonglobe.com/metro/globelocal/2018/06/27/lincoln-erects-road-signs-after-deaths-two-cyclists/r7vJj4NPd4SWPVUPKtp2UN/story.html>

Hosted a MassBike Forum (March 2018)

The Committee hosted an event bringing in cyclists from Lincoln and neighboring towns, to discuss how to improve cycling conditions throughout greater Boston towns and communities. More than fifty attendees heard a presentation by MassBike's Richard Fries, and then participated in a wide-ranging discussions of safety conditions in the suburban cycling network.

Notes from the discussion can be found [here](#).⁷

Hosted a Coffee and chat (May 2017)

For our first event, the Committee invited cycling groups from Lincoln and nearby towns to meet in Lincoln Station at the coffee shop to welcome riders and introduce ourselves.

Set up a Facebook page and Twitter account (April/May 2017)

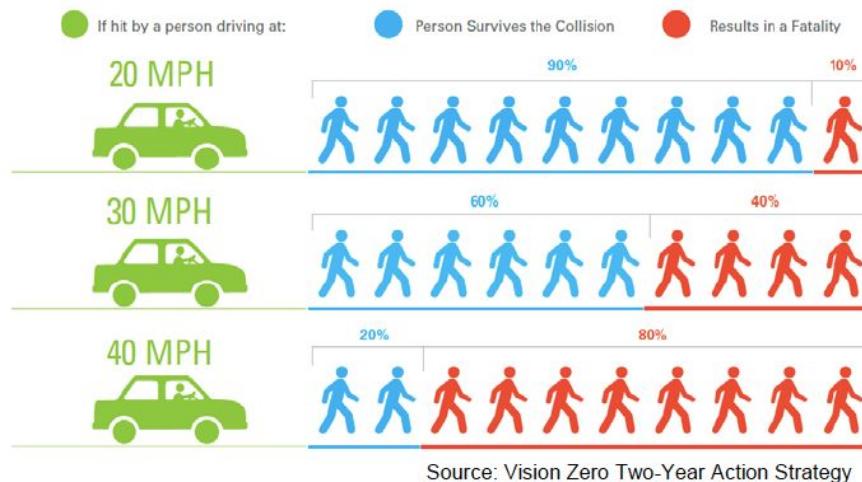
The Committee has used its [Facebook page](#)⁸ and [Twitter account \(@LincCyclingSafe\)](#)⁹ to promote events and initiatives, and to make contacts with other cycling organizations in the region.

WHAT WE HAVE LEARNED

The Lincoln cycling network is used by many cyclists, both residents of Lincoln and other cities and towns.

Because of our location, the Lincoln cycling network provides critical connectivity for all cyclists in Middlesex County.

Speed is a critical element of bike and pedestrian safety.



⁷ https://docs.google.com/document/d/1Q5kKRIVFwdIobzhu4KjDFZCqW1WdA8LlaX3_vMCIIInc/edit

⁸ <https://www.facebook.com/LincolnCyclingSafety/>

⁹ <https://twitter.com/LincCyclingSafe>

Lincoln's network is not as safe as it could and should be.

Many roads are hazardous because of deferred maintenance and associated road degradation. These come in the form of potholes, crumbling road edges, and troughs created by vehicle tires. The Committee found the DPW very responsive when we made specific roadside maintenance requests and understand that road degradation is a product of resources stretched thin, not a lack of concern.

While a full accounting is in the road audit documentation, two examples are below.



Exhibit G: Pothole on 2A eastbound and degraded road edge on 126 northbound

Others are hazardous as designed. For example, Bedford Road near the top of the hill is narrow with poor visibility of oncoming traffic and near vertical granite curbing. When there is motor vehicle traffic in both directions, this creates a “pinch point” that endangers both drivers and cyclists.



Exhibit H: A cyclist's view of Bedford Road northbound near the top of the hill

South Great Road (MA 117) at Tower Road is an example of a poorly designed intersection. It combines speeding traffic, bad sightlines, difficult starts for cyclists heading northbound on Tower, and motor vehicles cutting corners, endangering all road users.

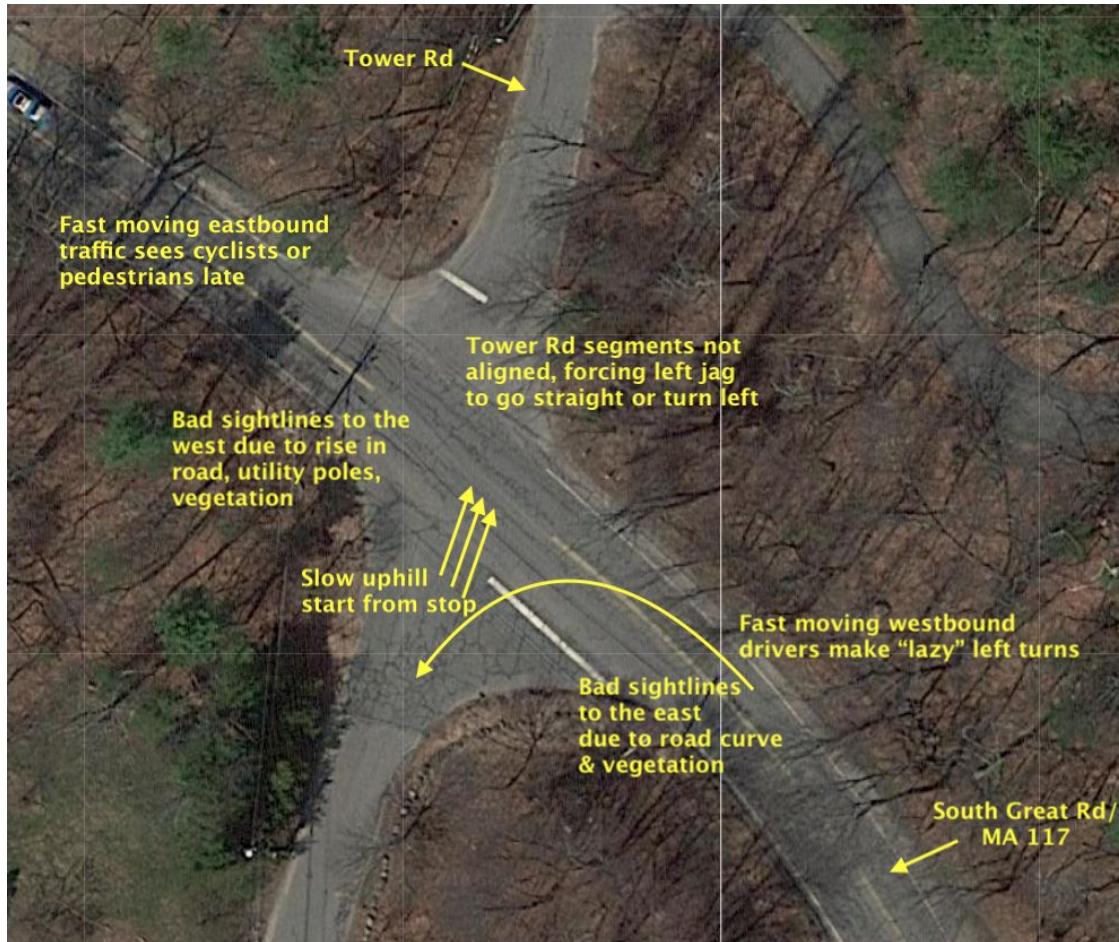


Exhibit I: Tower Road at South Great Road. Source: Google Maps.

A more complete listing of the hazards in the Lincoln cycling network can be found in the [Lincoln Cycling Road Audit¹⁰](#) report.

In some cases, we can make our roads safer soon and relatively cheaply. In others, it will require rebuilding the roadway.

Most of the roads in the cycling network are under Lincoln's control and hazards could be managed by an effective town process of road repair and improvement. North Great Road/2A will require influencing MassDOT and will require a coalition of interested towns, Minuteman National Historical Park (MMNHP), and other entities.

¹⁰ https://docs.google.com/presentation/d/1TGymW0MJDbiNQd-09Pl9dx_AG3eGLn8SGMOfd-IVo00/edit

Cyclists are often the first to observe roadway hazards.

Cyclists often notice degradation or problems that are not so clear to drivers, and need a fast and easy way to report problems on Lincoln's roads.

WHAT WE RECOMMEND

Bicycle considerations included in all roadway maintenance and rebuilding

- Include cycling safety in prioritization and scheduling of all roadway projects and expenditures,
- Include a representative from CSAC on the Roadway and Traffic Committee
- Create and maintain a consistent shoulder or another “rideable zone” along principle roads and through major intersections.
- Create a town policy that addresses bike and pedestrian safety and access on issues including minimum paved shoulder, vehicular lane widths, line striping standards, and stabilization material used on roadway edge.

Target and execute short-term safety improvements

- Utilize signage and road paint to create consistent shoulder width and space for bicycles at hazardous intersections. For example:
 - Intersection of MA 117 with Lincoln Road: “Sharrows” painted on road surface as users approach islands to compensate for lack of shoulder
 - Intersection of MA 126 with MA 117: create safe bike space/lane from both north and south; move curbing to create predictable line for cyclists; tighten northbound approach to prevent “tire troughs”
 - Intersection of MA 117 with Tower Road: align centerlines on Tower Road north and south of MA 117 and position stop lines accordingly; extend MA 117 westbound centerline to correspond to safe left turn given newly positioned stop lines; “harden” the last ~50’ of that centerline with rubber speed bump material.

Work with others on regional solutions, e.g., Route 2A:

- Contact the stakeholders at Hanscom, Minuteman National Park and the Hanscom Area Towns Committee (HATS), to lobby MassDOT for safety improvements to Route 2A.
- Advocate that MassDOT builds bike/ped tunnels to reconnect parts of the town isolated by MA 2, e.g., reconnecting Lexington Rd S or Page Rd with Lexington Rd N.

Bike Trail and Roadside Path Expansion and Maintenance:

- Work with conservation entities to increase access to trails, especially the east-west corridor connecting the school with Mt. Misery trails, some of which are already open to cycling, and the Walden Pond area.
- Maintain and expand current roadside path infrastructure.

Reporting Road Conditions:

- Develop road hazard reporting system for DPW. It should be user-friendly and enable reporting of specific conditions, e.g., snap a phone photo with geolocation and email or text to dedicated address or number.

Data Collection:

- Establish annual collection/report of data from Police Department regarding cycling accidents or infractions on Lincoln roads.

Continue Bike to School and Programs

- Establish a regular calendar, for the entire school year if possible.
- Re-institute Bike Safety Program as part of the school curriculum.

Continue to connect the local adult cycling community

- Hold regular public events around cycling issues
- Host a regular adult ride through Lincoln

Continue and refine approach to enforcement

- Work with the Police Department to complete the Rules of the Road handout and start distributing it at traffic stops.

The Committee's Future:

- The Committee recommends that the Board of Selectmen institute a Bicycle and Pedestrian Advisory Committee (BPAC) as a standing committee to continue analyzing and encouraging safer roads in Lincoln and educating drivers, cyclists, and pedestrians about the rules of the road.
 - The Committee should have a seat on the Roadway and Traffic Committee.
 - The Committee should include representatives from the Police Department, the Parks and Recreation Committee, and a member of the Board of Selectmen.