

# APPENDIX E: MOBILITY + TRANSPORTATION SUPPLEMENT

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This appendix includes additional material to complement the background information, goals, and recommendations in Sections 3, 4.5, and 5 of the Envision Concord: Bridge to 2030 Comprehensive Long Range Plan. The following information is included in this appendix: 1) initial list of locations suggested for infrastructure, design, signage, or other physical modification study; 2) considerations for developing of a Comprehensive Road Design and Complete Streets Policy; 3) possibilities surrounding introduction of Autonomous Vehicles for public mass transit; and 4) table of public comments from the EnvisionConcord.org website that are transportation or mobility-related. Information contained within this appendix may be used by the town to better scope a future transportation plan with focus on feedback received through the Envision Concord: Bridge to 2030 Comprehensive Long Range Plan process.

## **1. Initial List of Locations to Study for Potential Improvements**

The following table, created by Weston & Sampson, identifies several potential locations to study for transportation/ mobility-related improvements by mobility theme. Several of the opportunities were suggested through the EnvisionConcord.org project website. Other specific locations and suggested improvements were identified through the project website but have not been evaluated for physical or financial feasibility but could be studied as part of a future transportation plan (see 4. Transportation/ Mobility-Related Public Comments from EnvisionConcord.org and Appendix B – Community Participation).

Opportunity	General Mobility Themes			
	Connectivity (Pedestrian, Bicycle Safety)	Senior Mobility	After School Mobility	Employee Transport
Bike/pedestrian crossing at Route 2 to provide alternative travel option between different parts of Concord.	X	X	X	X
Add a sidewalk and bike lane on Harrington Avenue.	X		X	
Construct pedestrian bridge between Harrington Park and Cousins Park to connect neighborhoods.	X		X	
Utilize pedestrian activated crosswalks to provide access from Bruce Freeman Rail Trail to schools.	X		X	X
Connect Bruce Freeman Rail Trail with Reformatory Branch Trail. Would provide connection to Minuteman Bikeway. Old rail line extended to Route 2 rotary.	X			X
Upgrade Reformatory Branch Trail to accommodate multi-modal transportation and increased pedestrian traffic.	X			X

## 2. Considerations for Developing a Comprehensive Road Design and Complete Streets Policy

A consistent theme throughout the planning process has been the importance of accessibility – beyond the basic transportation definition of getting from Point A to Point B. Increasing safe options for residents, workers, and visitors to move in, out, and throughout town, also has direct impacts on environmental sustainability, connections for social and emergency services, and quality of life. In Section 4.5 Mobility/ Transportation, both Goals 1 and 3 include blending and accommodating multiple transportation modes to decrease vehicle dependence and improve pedestrian and bicycle connections and safety. The challenge for Concord’s Public Works Department (CPW) has been to balance the request for these design and infrastructure improvements with protecting the character of the Town.

Section 4.5, Goal 3 explicitly includes enhancements to improve connections from residential neighborhoods to key destinations, such as schools, village centers, and existing paths – eliminating vehicle trips and improving community health. As infrastructure improvements are being planned, CPW has been reviewing where streetscape improvements could be made to meet Complete Street design standards as described in the *Mass Highway Guiding Principles of the Highway Project Development & Design Guide*. CPW’s existing Roads Policy (originally

adopted in 1994) includes the review of streetscape and roadway improvements for current safety requirements as well as an eye towards protecting the Town’s historic character. In comparison to MassDOT’s “Complete Street” policy, however, the Roads Policy does not yet include several elements generally found in other town’s “complete street” policies.



**What is a “Complete Street?”**  
 A complete street provides safe and accessible options for all travel modes - walking, biking, transit and vehicles – for people of all ages and abilities.  
 Source of Photo: *The Elements of a Complete Streets Policy* (NCSC, 2018)

As defined on the MassDOT complete streets webpage, “a complete street is one that provides safe and accessible options for all travel modes - walking, biking, transit and vehicles – for people of all ages and abilities.”

In *The Elements of a Complete Street Policy* (2018), the National Complete Streets Coalition (NCSC), which is recognized by MassDOT and is a widely accepted collaborative authority on complete streets, identifies 10 elements of a comprehensive complete streets policy to support communities in ensuring that streets are safe for people of all ages and abilities, balance the needs of different modes while supporting local land uses, economies, cultures, and natural environments.

The elements are intended to serve as a national model of best practice that can be implemented at all levels of governance— federal, state, regional, and local. Below are the 10 elements of

a comprehensive complete streets policy and considerations for possible addition or clarification to CPW’s Roads Policy.

### NCSC Complete Streets Policy Elements

The following 10 elements of the NCSC complete streets policy are followed by a consideration to modify the Roads Policy. Each element is numbered and described in italicized text adapted from *The Elements of a Complete Streets Policy* (NCSC, 2018).

- 1. Vision and Intent:** *Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete, connected, network and specifies at least four modes, two of which must be biking or walking.*

A complete streets vision states a community’s commitment to integrate a complete streets approach into their transportation practices, policies, and decision-making processes. This vision should describe a community’s motivation to pursue complete streets, such as improved economic, health, safety, access, resilience, or environmental sustainability outcomes. The vision should acknowledge the importance of how complete streets contribute to building a comprehensive transportation network. This means that people are able to travel to and from their destinations in a reasonable amount of time and in a safe, reliable, comfortable, convenient, affordable, and accessible manner using whatever mode of transportation they choose or rely on.

The Roads Policy includes a “policy statement.” There is an opportunity to include by name several of the elements, such as pedestrian safety/access, bicycle safety/access, etc., that are typically included in Complete Streets that are already included in the Roads Policy.



- 2. Diverse users:** *Benefits all users equitably, particularly vulnerable users and the most underinvested and underserved communities.*

Complete streets are intended to benefit all users equitably, particularly vulnerable users and the most underinvested and underserved communities. Transportation choices should be safe, convenient, reliable, affordable, accessible, and timely regardless of race, ethnicity, religion, income, gender identity, immigration status, age, ability, languages spoken, or level of access to a personal vehicle.

Public safety is discussed as an important part of the Roads Policy, but the discussion could be broadened to not only include emergency vehicle access and adequate water supply but also the larger issue of overall accessibility.

- 3. Commitment in all projects and phases:** *Applies to new, retrofit/reconstruction, maintenance, and ongoing projects and comprehensively addresses modes of transportation.*

The ideal complete streets policy has a strong commitment that all transportation projects and maintenance operations account for the needs of all modes of transportation and all users of the road network.

The Roads Policy could be expanded to include language from existing and future transportation-related programs and services that the Town is actively providing, participating in, and investigating beyond privately owned vehicles.

- 4. Clear, accountable expectations:** *Makes expectations specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.*

Effective policy implementation requires a process for exceptions to providing for all modes in each project. The policy should include a clear process for making exceptions to rules and standards. The exception process must also be transparent by providing public notice with opportunity for comment and clear, supportive documentation justifying the exception.

A "Process for Roads Projects Review and Approval" is already part of the Town's policy. As with the first element, there is an opportunity to include by name several of the elements typically included in Complete Streets.

- 5. Jurisdiction:** *Implementation of successful complete streets policy general requires interagency coordination between government departments and partner agencies. The process for coordination and agency jurisdictional boundaries should be laid out in policy to ensure effective implementation.*

Creating complete streets networks is difficult because many different agencies control streets. They are built and maintained by state, county, and local agencies, and private developers often build new roads. Individual organizations do have an opportunity to influence the actions of others, through funding or development review. In the case of private developers, this may entail the developer submitting how they will address complete streets in their project through an agency permitting process, with approval of the permit being contingent upon meeting the complete streets requirements laid out within a jurisdiction. Creating a complete streets network



can also be achieved through interagency coordination between government departments and partner agencies on complete streets.

Interagency coordination between Town departments is already laid out, and language can be added to reinforce this coordination and cooperation in complete streets terms.

**6. Design:** *Directs planners and designers to the latest and best design criteria and guidelines and sets a timeframe for implementation of standards.*

Complete streets implementation relies on using the best and latest state-of-the-practice design standards and guidelines to maximize design flexibility and ensure public safety. Creating meaningful change on the ground both at the project level and in the creation of complete, multimodal transportation networks requires regulatory and review agencies to create or update their existing design guidance and standards to advance the objectives of the complete streets policy.

General criteria for design are indicated in the Roads Policy, and CPW remains up to date with latest design and construction standards. More specificity could be added to Town design standards and guidelines to provide clarity for different roadway scenarios.

**7. Land use and context sensitivity:** *Considers the surrounding community's current and expected land use and transportation needs.*

An effective complete streets policy must be sensitive to the surrounding community including its current and planned buildings, parks, and trails, as well as its current and expected transportation needs. Specifically, it is critical to recognize the connection between land use and transportation. Complete streets must be designed to serve current and future land uses, while land use policies and zoning ordinances should support complete streets by promoting dense, mixed-use, transit-oriented development with homes, jobs, schools, transit, and recreation while accounting for context and proximity.

The Roads Policy addresses historical and agricultural preservation but could be expanded to include other aspects of land use.

**8. Performance measures:** *Establishes performance standards that are specific, equitable, and available to the public.*

Communities with complete streets policies can measure success in different ways, such as miles of bike lanes, percentage of the sidewalk network completed, number of people who choose to ride public transportation, and/or the number of people walking and biking along a street. They can also measure the impact of complete streets on the other motivations and objectives specified in the policy, such as health, safety, economic development, resilience, etc. The best complete streets policies will establish performance measures in line with the goals stated in their visions. Performance measures should pay attention to how complete streets implementation impacts the communities of concern identified in the policy.

Incorporating performance standards into the Roads Policy could provide CPW with useful metrics for measuring success and performance of policies and projects.

**9. Project selection criteria:** *Provides specific criteria to encourage funding prioritization for complete streets implementation.*

A comprehensive complete streets policy should modify implementing agency's project selection criteria for funding to encourage complete streets implementation. Criteria for determining the ranking of projects should include assigning weight for active transportation infrastructure; targeting underserved communities; alleviating disparities in health, safety, economic benefit, access destinations; and creating better multimodal network connectivity for all users. Implementing agencies should include equity criteria in their project selection process and give the criteria meaningful weight.

Consideration could be given to supplement CPW's existing project selection criteria to include taking into account additional positive community impacts.

**10. Implementation steps:** *Includes specific next steps for implementation of the policy.*

A formal commitment to the complete streets approach is only the beginning. The NCSC has identified five key steps to implementation:

1. Restructure or revise related procedures, plans, regulations, and other processes to accommodate all users on every project. This could include incorporating complete streets checklists or other tools into decision-making processes.
2. Develop new design policies and guides or revise existing to reflect the current state of best practices in transportation design. Communities may also elect to adopt national or state-level recognized design guidance.
3. Offer workshops and other training opportunities to transportation staff, community leaders, and the general public so that everyone understands the importance of the complete streets vision. Training could focus on complete streets design and implementation, community engagement, and/or equity.
4. Create a committee to oversee implementation. This is a critical accountability measure, ensuring the policy becomes practice. The committee should include both external and internal stakeholders as well as representatives from advocacy groups, underinvested communities, and vulnerable populations such as people of color, older adults, children, low-income communities, non-native English speakers, those who do not own or cannot access a car, and those living with disabilities.
5. Create a community engagement plan that considers equity by targeting advocacy organizations and underrepresented communities which could include non-native English speakers, people with disabilities, etc. depending on the local context. This requires the use of outreach strategies such as holding public meetings at easily accessible times and places, collecting input at community gathering spaces, and hosting and attending community meetings and events. The best community engagement plans don't require people to alter their daily routines to participate. Outreach strategies should make use of natural gathering spaces such as clinics, schools, parks, and community centers.



CPW may want to consider adding process steps for implementation into the Roads Policy a process, though the creation of a new committee to oversee implementation is not recommended as the Town should be consolidating and reducing the number of committees.

### **3. Automated Vehicles for Mass Transit**

Section 4.5 Transportation/ Mobility, Goal 2, Action 3, recommends the Town explore shared mobility options, including both scheduled stop services and on-demand door-to-door services that would help reduce reliance on private vehicles and number of vehicle trips through town. Traditional shuttles, while effective in certain communities, may not be successful in Concord where residents are more likely to utilize a shared transit service if there is flexibility in timing and pick-up and drop-off locations versus a set route and schedule.

Automated vehicles (AVs) or self-driving cars are the current “it” topic in the field of transportation; however, one application that is less often discussed is their potential to be used for mass transit (e.g., AV shuttles and busses). While their introduction to the market is quite nascent and raises much speculation, AV mass transit has the potential to solve a number issues voiced in Concord. AV shuttles:

- Could eliminate the need for the Town to site park-and-ride locations as they can be deployed from outside of Town boundaries.
- Can be directed to go where and when they are needed and, therefore, offer the flexibility to manage many mobility issues.
- Are new and intriguing and if marketed correctly could be much more attractive to students than “big yellow” buses.
- Can be summoned as needed, leased, or owned, which means that initial capital outlay is minimized during their piloting, but that the economy of ownership can be leveraged if level of use justifies.
- Are easy to pilot test and adapt or abandon if desired.
- Are currently being offered by companies that will do much of the groundwork to plan their use and launch them.

Concord may wish to evaluate the use of AV mass transit by engaging with one or more of the companies that offer them. There are several companies who conduct planning, design and deployment of AVs, evaluate potential routes, and provide testing for focus groups. Other companies provide AVs for mass transit use with different leasing or ownership options as services and demand are evaluated. With this new technology, many companies are offering pilot programs at reduced initial costs as they test their programs and services.



MayMobility offers AV shuttles that can be called as needed or leased and deployed from remote locations. This allows for adaptive management of mobility needs in a community and eliminates the need to site overnight parking and storage.



Services, such as Mobilitye3, offer planning and 3D modeling services for self-driving vehicles that are tailored to the driving environment of subject

#### 4. Transportation/ Mobility-Related Public Comments from EnvisionConcord.org

The following list is a compilation of transportation/ mobility-related public comments submitted through the EnvisionConcord.org project website comment section and on the map on the website. Many of these comments have common themes and which summarized below. However, specific locations and recommended improvements described in the all the comments should be considered as part of a larger transportation planning study. (Full list of Public Comments from the EnvisionConcord.org website located in Appendix B.)

##### 1. Possible Focus Areas

- Access to West Concord waterfront
- Pedestrian/bike connections east of Willard School and bike paths for all schools
- Continuous rail trail access around Kennedy's Pond & the old Rifle Range
- Pedestrian bridge crossing between Cousins Park & Harrington Park
- Pedestrian bridge connection of Baker Ave business to West Concord
- Connect Bruce Freeman Rail Trail from Concord Center to Town of Bedford
- Connect bike paths and trails to commercial and tourist attractions
- Address daily commuter traffic in West Concord center
- Add a commuter parking lot
- Improve access to Warner's Pond pocket park
- Consider a new belt-way around Concord
- Make the town accessible for people with mobility issues
- Reduce the speed limit throughout town

## **2. Infrastructure Improvements Suggested by Comments**

- Pedestrian activated crosswalks to access Willard school, Sanborn school, Peabody school and Bruce Freeman Rail Trail
- Light cycle evaluations at crossings for pedestrians
- Electrical vehicle charging vehicle charging stations at Keyes Rd. parking lot and for all new developments (town and private)
- Speed limit enforcement-raised crosswalks and/or better signs
- Crosswalk from Fairhaven across Sudbury
- School bike racks and moped parking
- More park benches
- Mirror at Walden St lot onto Hub
- Pedestrian crossing signs
- Bike lane from Lexington Road to Route 2A
- Painted sharrows for commuter bike routes
- Address sidewalk narrowing (due to utility pole/structure) on Main St. at TD bank
- Crosswalk light for bikes and pedestrians from Reformatory Branch Trail
- Analyze Pine and Upland intersection- improved signage and crosswalk re-painting
- More parking for commuters and West Concord retail shopping
- More public transportation options
- Better road striping at rotary
- Widen sidewalks in Concord Center- Milldam and Walden St.
- Reinstate empty parking lot near Concord Carlisle High School for more parking
- Transition school buses to electric
- Autonomous minibuses with flexible route planning
- Remove all parking meters
- Electrify the commuter rail
- Add gates and louden train crossing bells at second crossing for West Concord train

## **3. Possible Addition of Sidewalks**

- Old Stowe Rd.
- Cambridge Tpk.
- Heaths Bridge Rd to #117
- Cottage St.
- On Route 2A
- Heath Bridge Rd. to 9 Acre Corner
- Old Pickard to Stone Root Ln.
- Route 2 to West Concord



**4. Possible Shuttle Connection Points/Destinations- *before CrossTown Connect***  
**(July 2018)**

- For kids across Concord
- Between Concord and Carlisle
- Between Concord Center train station & West Concord train station
- To/from grocery stores
- To/from Emerson Hospital
- Between Acton's business areas, Concord and West Concord
- West Concord to Depot area and Concord Center to Crosby's lot