



Preliminary Design Update – June 2014

About the Project

The Town of Concord, Concord Public Works (CPW), and the Public Works Commission (PWC) are undertaking the Cambridge Turnpike Improvement Project (CTIP) to develop and implement a comprehensive plan to address the problems affecting the roadway from Lexington Road to Routes 2 and 2A (Crosby's Corner). A primary focus of this project is to construct improvements that resolve flooding of the roadway. The Town also views the project as an important opportunity to address safety and other public infrastructure issues to improve the environment for the people who live in and use the area. To the extent feasible, a project objective is to integrate several modes of transportation in an aesthetically pleasing manner that complements the community's character and is sensitive to the nearby environmental and historical resources that are valued and enjoyed by Concord residents and visitors alike.

Design Priorities and Status

Since the December 2013 project update and public meeting, the design team has finalized the Preliminary Design, which meets the project goals and incorporates the community's interests to the extent feasible. The Preliminary Design was submitted to CPW in March 2014. CPW and the PWC are currently reviewing this Preliminary Design, which will be made available after review and acceptance on the project website at http://www.concordma.gov/pages/ConcordMA_PublicWorks/cambridgetpk. CPW and the design team will then advance the project to final design. As part of final design, the team is coordinating with companies with utilities located in the roadway right-of-way. Residents may see associated work along Cambridge Turnpike, such as test pits and limited relocations, prior to the start of construction of the CTIP. National Grid is also evaluating extending the gas line from Sandy Pond Road to Crosby's Corner. National Grid has indicated to the Town that they plan on contacting residents in that area to provide pricing in order to evaluate the economic feasibility of the gas main extension project. Residents in the potential gas main extension area are also encouraged to contact National Grid representative Wayne Burgess at 978-322-3626 to express their interest and obtain specific pricing information.

While the primary focus of this project is to address the frequent flooding conditions occurring on Cambridge Turnpike, previous public input from the 2012 Community Questionnaire and October 2012 and December 2013 public meetings established additional design priorities, some of which are included in the list below:

- Environmental Stewardship
- Traffic Congestion, Safety, and Speed
- Pedestrian Accommodations

- Sustainable Infrastructure
- Aesthetics - Landscaping, Structures
- Community Character/Historic Preservation

The Community Questionnaire Report and previous project updates can be viewed on the CTIP website at http://www.concordma.gov/pages/ConcordMA_PublicWorks/cambridgetpk.

Flooding

To correct the flooding problems that have plagued Cambridge Turnpike for many years, CPW and the PWC have undertaken this project to improve the roadway and address the flooding issues by raising the roadway profile in areas and improving the culverts underneath it. The project must be designed to conform with the Commonwealth of Massachusetts Wetlands Protection Act and Federal Emergency Management Agency (FEMA) regulations. Prior to the start of the project, CPW recognized that the FEMA flood maps for the area were incorrect, depicting flood elevations that were overly conservative. CPW included a detailed flood study as part of the design team's scope of work, to design the roadway to the correct elevations and minimize flooding.

The flood study looked at the section of the stream identified in the Flood Insurance Study (FIS) for the Town of Concord as Mill Brook 2, which encompasses the area from Main Street to Crosby's Pond and is



the flooding source near the Cambridge Turnpike. A previous flood study performed by CPW revised the FEMA flood profiles for this stream downstream of Main Street through FEMA's Letter of Map Revision (LOMR) process in 2002. This study extends the revised flood profiles to ensure the CTIP is designed appropriately. The project team filed a LOMR application with FEMA in November 2013 to incorporate the correct flood elevations into the FEMA FIS for the portion of Mill Brook 2 affecting the CTIP. The typical review process by FEMA for LOMR applications takes months to complete. Since the initial submittal, CPW and the design team have responded to

comments and requests for additional information from FEMA reviewers. The CPW anticipates that the process will be completed soon.

Once the LOMR process is complete, some homeowners within the watershed will save on annual flood insurance premiums because the revised flood study lowers the Base Flood Elevation (i.e. the 100-year flood elevation) in the project area. Additionally, the LOMR allows the project's environmental impacts to be accurately calculated throughout the environmental permitting process.

A Notice of Intent application will be prepared and submitted to the Concord Natural Resources Commission and the Massachusetts Department of Environmental Protection to obtain a permit (called an Order of Conditions) for the proposed work in wetland areas adjacent to Cambridge Turnpike. The application will include a description of the site, proposed work and measures, and designs proposed to meet the performance standards described in the Wetlands Protection Act regulations.

Additional flood control studies initiated for this project included a dam breach analysis of the Crosby's Pond dam to provide data for protecting the integrity of Cambridge Turnpike in the event of a dam

breach (or failure). Stream survey mapping and field reconnaissance were also performed to support stream flow maintenance permitting, which could alleviate upstream flooding. Initial reconnaissance did not identify any clear impediments to stream flow other than beaver activity and the accumulation of sediments. The extremely flat grade of the brook makes any significant improvements to the flow rate unlikely. A stream flow maintenance plan entails significant permitting requirements and will be performed under a separate permitting track.

Other measures to address flooding include adjustments to the roadway profile to raise it above the 100-year flood elevation to the maximum extent practicable at both the bridge near Mill Brook Farm and at the culverts at Crosby Pond.

Traffic Congestion and Safety

During Preliminary Design, information such as traffic volumes, turning movement counts, vehicle traveling speeds, recorded accident data, and intersection sight distances along Cambridge Turnpike were collected. The information was analyzed and supports the recommendations and Preliminary Design.



During the earlier phase of Preliminary Design, five conceptual alternatives were considered for the intersection with Lexington Road and coordination meetings were scheduled with representatives from the Concord Museum and the Ralph Waldo Emerson House. After receiving input from these directly affected abutters, alternative #4 from the Preliminary Design Report was selected as the best practical alternative and preliminary design is now complete. Alternative #4 consists of a right angle connection to Lexington Road in the vicinity of the existing right angle connection. The remainder of Cambridge Turnpike from the Ralph Waldo Emerson House drive to Lexington Road will be eliminated, and the area redeveloped as a pocket park and restful gathering place for visitors to the two historic properties, and pedestrians and bicyclists who travel the corridor.

The intersections of Hawthorne Lane, Mildred Circle, and Sandy Pond Road were also analyzed for possible improvements. Trimming vegetation to improve sight distance was identified for all intersections and, in response to concerns about high speeds, inclusion of a 2-foot median treatment for traffic calming has been proposed at these locations. In the area of Sandy Pond Road, the design team

proposes to lower the profile of Cambridge Turnpike to improve sight distance when entering the Turnpike.

Pedestrian Accommodations

Previous input from the community questionnaire and public meeting indicated a desire to balance traffic calming and maintaining a narrow roadway, providing sidewalk facilities for pedestrians and accommodations for bicyclists. A typical roadway that is 24 feet wide with a 5-foot sidewalk was chosen to best balance a variety of modes of transportation. The sidewalk is planned for the entire length of the project providing connectivity to the downtown Concord area. It will be located on the north side of the roadway from Lexington Road to Hawthorne Lane and on the south side from Hawthorne Lane to Crosby's Corner. A sidewalk is also proposed along the parking area in front of the Emerson House. Brick crosswalks will be installed at the Hawthorne Lane intersection where the sidewalk shifts from the south to north side of the roadway, at the intersection with Lexington Road, and between the Concord Museum and Ralph Waldo Emerson House.

Sloped granite edging will be used to provide a visually pleasing separation between the roadway and sidewalk, and provide a safety benefit to cyclists. Due to physical space constraints, cyclists and vehicles will share the available roadway width. Sloped edging makes it easier for a cyclist to get off the road than vertical edging, which can force a cyclist back into the travel lane.

Sustainable Infrastructure

The design team is continuing to evaluate options for a bio-retention (vegetated depression) stormwater management and treatment system for the space created by the elimination of a portion of the Cambridge Turnpike at Lexington Road. It would capture and treat stormwater, furthering the project goal of implementing sustainable practices to the maximum practical extent.

Tree box filters are one of the options being evaluated. Tree box filters are mini bio-retention areas installed beneath trees that can be very effective at controlling runoff, especially when distributed at various locations. Runoff is directed to the tree box, where sediment and other pollutants are filtered by vegetation and soil before entering a catch basin. The system consists of a container filled with a soil mixture, a mulch layer, under-drain system and a shrub or tree. Treated water flows out of the system through an under-drain connected to a storm drain pipe/inlet or into the surrounding soil. The runoff collected in the tree boxes also helps irrigate the trees.

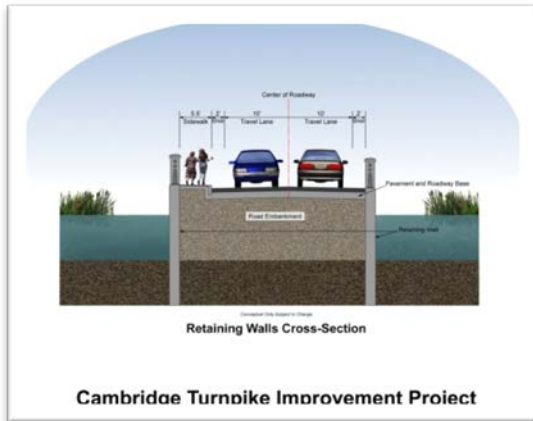


Additionally, Sandy Pond Road will be realigned to a "T" intersection with the resulting reclaimed land developed as an aesthetic improvement containing a small rain garden.

Aesthetics – Landscaping, Bridge, Retaining Walls and Culvert

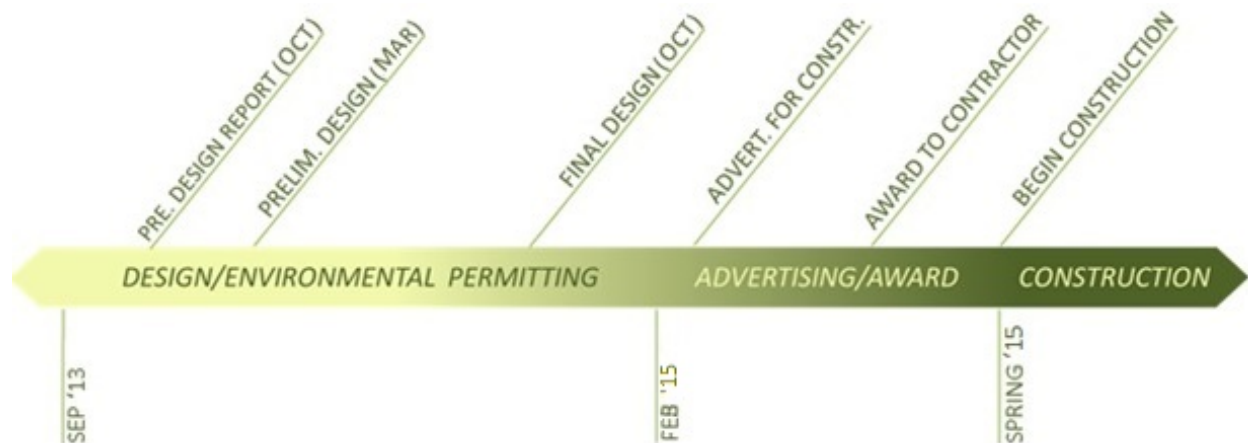
The design team understands the desire of the community to maintain the existing character of the corridor and this continues to be a priority project goal for CPW and the PWC as final design is advanced.

CPW and the design team are completing geotechnical investigations to determine design requirements for bridge and retaining wall foundations while continuing to value engineer certain design approaches.



They are continuing to evaluate various wall, bridge, and railing treatments to ensure the improvements are in keeping with the rural character of this part of Town and with other historic bridges in Town. Additionally, as a result of community input at the December 2013 public meeting, CPW and the design team are exploring the possible addition of green space between the sloped granite edging and sidewalk at selected locations along the roadway to improve the pedestrian experience.

Revised Project Schedule:



Public Involvement/Public Comment

CPW, the PWC and the design team value the community’s input and will continue to fine tune the final design to ensure it meets the project goals to the maximum extent possible. As the project progresses, updates and notices will be posted on CPW’s website at http://www.concordma.gov/pages/ConcordMA_PublicWorks/cambridgetpk. Public meetings are scheduled at key points throughout the design process. Comments may be submitted at any time during the project by US Mail to CPW at 133 Keyes Road, Concord, MA 01742, or by email to CTIPcomments@Concordma.gov. We encourage you to become actively involved and thank you for your interest and participation.